The Durable Goods Report

November 2010 Report

Manufacturing Data Release of 11/3/2010 (September Preliminary)

Employment Data Release of 11/8/2010 (September Preliminary)

Retail Data Release of 11/15/2010 (October Advanced)

Industrial Production Data Release of 11/16/2010 (October Advanced)

Source Data: US Census Bureau, US Bureau of Labor Statistics, Department of Commerce, Federal Reserve Board, Baker Hughes

John E. Layden, Prevel Technology

By the Numbers:

Prevel Technology - Durable Goods Summary			
	Current Mo	Prior Mo	Prior Yr
New Orders-Durable	200,020	193,199	177,501
12 month moving average	188,701		172,209
% Change from Prior Year	6.7%		
Unshipped Orders - Durable	813,506	804,173	810,520
% Change from Prior Year	-1.1%		
Value of Shipments - Durable	198,164	198,420	185,857
12 month moving average	193,963		186,357
% Change from Prior Year	2.1%		
Inventory - Durables	314,734	313,187	297,925
% Change from Prior Year	4.3%		
Inv to shipments ratio - Durable	1.59	1.58	1.60
Growth Index - Durable New Ord	1.039	1.035	1.018
Growth Index - Durable Shipmts	1.027	1.029	0.987
1. Preliminary release data (~5 wks after the end of the period).			
2. Seasonally Adjusted, millions			
3. Prevel Growth Index = 3MMA / 12MMA		John Layden	317-842-6417

Monthly Rate of Change				
	This period	Last period	Change	Comments
GDP Q2 vs. Q1	14,730.2	14,578.7	1.0%	
Industrial Production (Oct)	2,505.5	2,521.5	-0.6%	
Capacity Utilization % (Oct)	74.9	74.8	0.2	
Manufacturing %	72.5	72.4	0.0	
Durable Goods %	70.2	70.6	(0.4)	
Autos and Parts %	62.0	66.0	(4.0)	
Machinery %	72.7	72.7	(0.0)	
Durable Goods ($ Mil Seasonally adjusted) Sept Data				
New orders	200,020	193,199	3.5%	
Shipments	198,164	198,420	-0.1%	
Inventory	314,734	313,187	0.5%	
Unshipped Orders	813,506	805,524	1.0%	828 bil 9/2008
Total Retail ($ Mil SA) Oct data	326,339	323,473	0.9%	
Autos and Parts	67,005	63,799	5.0%	
Gasoline	36,353	36,073	0.8%	
Core retail	229,981	229,047	0.4%	
Employment (000's SA) Oct Data				
Non-Farm	130,462	130,311	151	138 mil 1/2008
Goods Producing	18,049	18,044	5	
Manufacturing	11,669	11,676	(7)	13.7 mil 1/2008
Construction	5,625	5,620	5	
Durable Goods Mfg	7,183	7,186	(3)	9.1 mil 6/2006
Housing (000s of Units SA) Sept Data				
Single family starts	433	420	3.1%	
Single family sales (new)	288	288	0	
Single family for sale (new)	206	210	-1.9%	570 in 8/2006

Random Thoughts:

- Why do centralized systems always fail? The conventional explanation is poor implementation, or bureaucrats guided by their own interests. There is another explanation and it can be found in social networks. Networks have the ability to rapidly reconfigure themselves in response to external changes.

  All of nature is organized in networks. This includes all of human interaction and behavior. For some reason most humans gravitate to central solutions. It must satisfy some deep need to (attempt to) organize and control things. Networks are messy, unpredictable and successful. Central solutions appeal to a sense of neatness and order, but produce abysmal results. Because of the divergent objectives of citizens, central, monolithic solutions satisfy a small minority, and dissatisfy a huge majority.
- In 1950 a government license was required for 5% of the jobs in the US. Today it's 30%. Today a child's lemonade stand is shut down by local authorities. Armed officers raid a barber shop to arrest unlicensed barbers. New Castle, NY councilman calls the cops on a cupcake bake sale. Feel safer?
- High speed rail will fail. It runs between fixed points, while transportation needs to behave like a network. Only autos and trucks can behave like a network.
- Supply chains aren't chains. They're supply networks. And one necessary feature must be the ability to reconfigure quickly.
- The Bilderberg Group met recently in Spain. The meetings were confidential as is their custom, spawning conspiracy theories. On the agenda was the subject of Global Cooling. Looks like the cognoscenti have finally caught up with the real science.
- From Thomas Sowell (roughly): Bipartisanship is when a politician agrees to support another politician's worthless project, in exchange for support on his worthless project. Thus the taxpayer gets two worthless projects and is expected to fund both. This is defined as bi-partisan progress.
- When did it happen that "bringing home the bacon" became the highest ideal for an elected representative? How is it helpful to have your pet project funded by someone else? Remember that someone else is trying to get you to fund their pet project. It's now a game of "better hustler." Otherwise defined as standing in a circle while picking the pocket to the right. This can't end well.
- The World Bank has completed (but not published) a study showing 75% of the rapid rise in food prices is driven by the diversion of farm land from food production to ethanol. The higher food prices have driven 100 million people into

poverty globally. Who should be arrested for this policy debacle? Probably the same person(s) resisting publication.

- Plant life shuts down when CO2 levels fall below 200 ppm. In the mid 1700s the CO2 level was down to about 280 ppm. Life on earth was that close to extinction.
- Greenhouse operators have known for a very long time that plants thrive on levels of CO2 up to about 1500 ppm (possibly higher). That's why they inject CO2 into greenhouses to improve plant health and productivity.

Energy: As the various myths of renewable energy are exposed, the core question remains. What will fuel the industrial economy of the world? It clearly can't be any of the favorites of the greenies. Environmentalists tend to believe that we must unwind the industrial economy. But what does that mean?

A central tenant of the environmental movement is that we must drive down energy consumption. Three arguments are offered:

- The first is that energy supplies are finite and we are consuming them too rapidly. This argument has been disproved repeatedly. It is technically in error, but otherwise benign.
- The second is the rhetoric of the the global warmists who argue that CO2 does drastic and existential harm to the atmosphere and that immediate action by super-governmental institutions is necessary to save the planet. This argumet has now been completely debunked and shown to be fradulently manufactured. It's sole objective is the preservation and expansion of the powers of government regulators and the UN. This argument is technically in error but it is not benign, since it leads to damaging policy prescriptions.
- The third argument comes from the eliminationists. These people believe that the human race is an invasive species and must be reduced to a prior utopian state as hunter-gatherers. The fact that this economy would only support a 40 year lifespan and 5% of the current population is fine with these folks. This view is delusional as well as dangerous. Fortunately it is not widely held outside a few dark corners of the academic world and related areas of arrested development passing as intellectual discourse.

The industrial economy coupled with free markets have done more to reduce poverty than any other endevour in the history of the human species. All arguments to the contrary are specious from a scientific, economic, safety, security, freedom or happiness perspective.

We are at no risk of running out of fossil fuels. CO2 is not a polutant, does not cause any measureable increase in temperature, and is necessary to all life on Earth. If anything we are deficient in the concentration of CO2 (vs. an "ideal" level). Global polulation does not threaten to outrun the supply of any resource including energy. In fact birthrates have peaked and started to decline. Within a couple of generations the actual population will begin to decline. There is hard science to support all of these positions. There is no unrefuted science (as in zero) supporting the opposite positions.

None of this suggests that we should avoid research into new energy sources. But the list of options must be filtered by some hard nosed science, engineering and economics. None of the popular "alternative" or "green" sources qualifies. We will see a transition from coal to oil to natural gas, but that transition has been underway for 150 years. Longer term we will transition to nuclear power. There are no other viable options. No other pseudo-source should even be considered until three tests are passed:

- Thermodynamic break-even is exceeded
- Economic viability without subsidies for the technology or taxes on competitive sources
- Practical means for deployment and growth to at least 20% of our energy supply

Until these tests are passed (in that order) the proposed source remains either a R&D project, a hobby for government regulators and their friends in the private sector, or a whip for misguided crusaders.

It is a travesty that the progress in the nuclear industry was blocked for three decades by the environmental lobby. Allowing specious arguments to rule over the clear facts is a failure that lies at the feet of the engineering and political communities.

A by-product of this failure was the shelving in the 1970s of the most promising nuclear technology – the LFTR (pronounced lifter). Liquid Floride Thorium Reactors were at the operating prototype stage at the time. The federal regulators decided in favor fo light water uranium/plutonium reactors.

You are urged to watch the 16 minute composite video on LFTR technology at the link below.

http://blogs.howstuffworks.com/2009/12/01/how-a-liquid-fluoride-thorium-reactor-lftr-works/

When you hear the characteristics of the system, it is inconceivable that we pursued light water reactors. LFTRs produce no weapons grade by-products, will not melt down, easily modulate output levels in response to demand and can be shut down and restarted over a weekend if you like. A prototype research reactor was routinely shut

down on Friday evening when the researchers went home. They turned off the switch. On Monday morning they restarted it by turning the switch on. Since the LFTR contains no control rods or mechanical devices, it is cheaper, smaller and more scalable and relaible. Since it can't melt down or explode there is no expensive containment structure.

Add to this the abundance of thorium in the US and we can no longer make the case for so-called renewable energy. None of these sources (ethanol, wind, solar, tide, geothermal) have been shown to have the ability to achieve theromdynamic break even (our first test above). They are not energy sources.

A modest proposal: Immediately redirect all federal subsidies for energy in any form to the completion of the engineering necessary to comercialize the LFTR. Coal, oil and gas should be freed of all regulation except for safety and true polution (not CO2). They should be forced to compete. LFTR reactor research should be directed in two ways. 1) The design and approval of a gigawatt scale reactor site design and 2) the design and approval of a 10 kilowatt package unit suitable for installing in your garage (a decentralized power system that eliminates the "smart grid").

In a century the world will be free of the current tensions surrounding energy supply. I wonder how they will view the "China Syndrome" generation that betrayed the promise of nuclear power to eliminate much of th epoverty in the world?

Hybrid Vehicles: Readers of this report are well aware that electric cars and hybrids are not held in high regard here. The argument has been that these vehicles offer no improvement in any of the defining features of motor vehicles. A straight turbo-diesel yields better efficiency than the best hybrid. The appeal of a coal powered (i.e. electric) car with a $30,000 lithium-ion gas tank has always eluded me. But…

I've finally found a hybrid vehicle I can believe in. The new Jaguar C-X75 concept car is a car guy's dream. Electric traction motors at all four corners deliver 195 x 4 = 780 hp. The lithium ion batteries are recharged by twin 94 hp micro gas turbine engines turning switched reluctance generators. Time for 0-60 is 3.4 seconds. Top speed is 205 mph in first gear (by the way, it only has one gear). Range is 560 miles on 15 gallons of gas (36 mpg???). Torque is an astounding 1180 lb ft. (are the anti-G suits standard?)

Some electric cars have found it necessary to add noise makers to warn pedestrians. No need with the Jag. The tires squealing will alert anyone within range.

http://www.jaguar.com/us/en/#/about_jaguar/75th_Anniversary/c_x75/?utm_campaign=Rich_Ads_in_Search&utm_medium=SEM&utm_term=title&utm_source=Yahoo

No save-the-planet aphorisms here. Just huge torque and horsepower in a really creative piece of engineering. It outperforms anything below $1 million. The pursuit of happiness now has one more option, including all the angst associated with having to choose between the C-X75 and the Bugatti Veyron (16 cylinder, quad turbo, 1200 hp, 268 mph, 0-60 in 2.5 seconds, $2.8 million).

My excitement about the Jaguar is not based on it's efficiency or greenness, but its honesty. Anyone choosing to drive one of these will do so without financial subsidy from you or me.

If you can't get excited about this one, you may need to check your pulse. Good on the Jaguar team.

If you get the feeling that the above disertations are a way of avoiding a discussion of the economy, you would be right.

It's still a mess. But eventually we need to talk about things that matter to manufacturers.

Solid, steady and slow growth from the bottom of a hole so deep it would have been rejected as implausible fiction three years ago. But in the last three months there are new signs that the recovery has stalled. The signals to date suggest that we will avoid a double dip. But there are ominous signs. Cisco was the canary in the coal mine in 2000 meltdown. They have again signaled a reversal. Check out this excelent analysis: http://blogs.forbes.com/mikemalone/2010/11/15/the-cisco-in-the-coal-mine/

The New York state manufacturers index plumeted last month, from 15 points positive to 11 points negative.

This is all a bit uncomfortable, but there are plenty of opportunities around. Just keep the sensors on full scan.

Taxes and Regulation: The voting public has probably not absorbed the subtle arguments from the political class on economic policy. But it seems increasingly clear that their BS dector was triggered. The election results are now being spun in every possible direction. The nanny-state is in real trouble.

The problems of the health care legislation are now being exposed. Workers are losing coverage or about to lose coverage. The pre-existing condition stipulation is resulting in insurance companies dropping out of the individual policy market rather than accept the risk. The most visible example has been the recent announcement by McDonalds that they need a waiver to be able to keep their employee coverage. To date 111

companies have received waivers. The administration-granted exemptions run for one year. Next year there will be a different story. Without an election there will be no reason to grant another waiver. Many of the companies now on waivers will be forced to drop coverage, providing justification for the government to step in. The question is whether the House of Representitives can effectively intervene to reverse the actual and potential damage.

The irony is that when workers lose health coverage, they will have the option of buying a policy themselves (far more expensive) or being fined for not having coverage. The only punishment is to the consumer. This great irony seems to be lost on politicians. Good intentions aren't enough. You can't legislate economics any more than you can legislate physics.

The following is admitedly redundant. It bears restating: The health care legislation will increase insurance costs, reduce insurance availability, and reduce health care access. The ensuing crisis will then be offered as an argument for a government takeover of the entire system.

Close attention here.

The cost to US manufacturers will be far greater than we have been led to believe to date. We're now hearing stories of increases in private coverage of 300%. Group coverage increases are sure to follow, although spread over multiple years to slow the shock. Employers will probably need to radically restructure their coverage plans.

A potential solution may be to do as a corporation what the legislators failed to do. Build incentives into your offering. Provide employees with a defined base line insurance program that protects them from personal bankruptcy in a medical crisis (we used to call it major medical). Then allow a purchase option to expand coverage at the employee's expense. Under no circumstances should a first dollar coverage option bbe included. Employees need skin in the game. This prevents the overuse of the system that occurs with first dollar coverage.

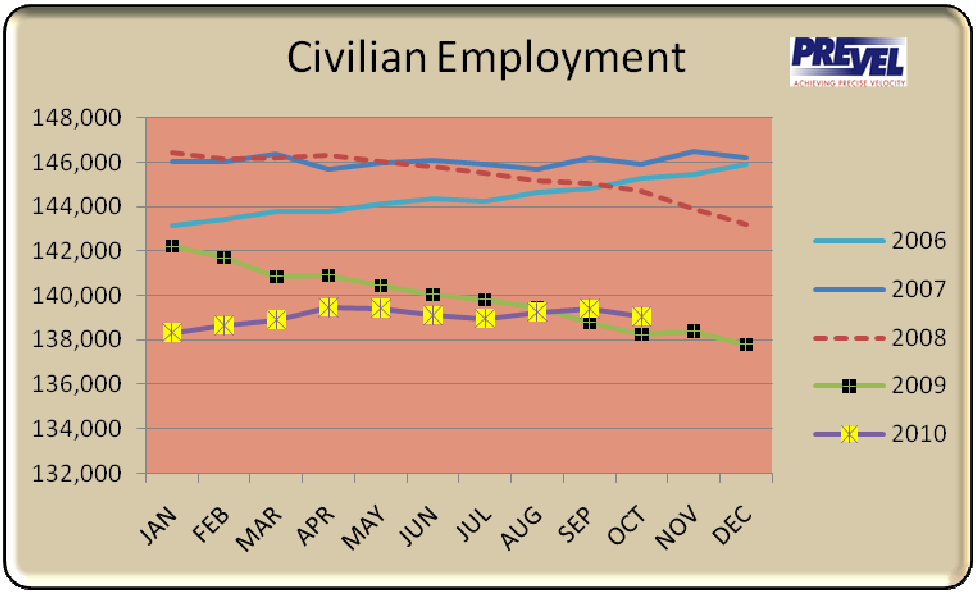
Employment: Employment increased by 151,000 in October after a decline of 41,000 in September. The third quarter saw the economy shed a total of 108,000 jobs. But the October numbers need a closer look. It appears that a shift in the seasonal adjustment factor came with the October numbers, and may have turned a decline into an increase. By any measure the situation remains bleak. We need to be creating about 350,000 jobs per month.

Durable goods manufacturers continue to avoid hiring until there is no other choice. Several reasons are cited for the aversion to hiring:

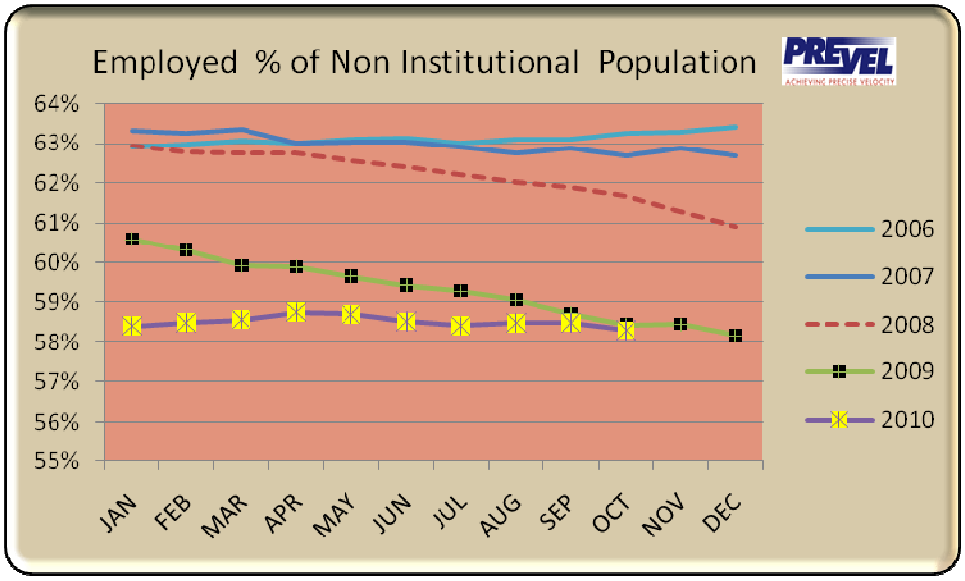
- The growing cost and regulatory complexity of employment
- The elimination through automation of semi-skilled jobs to cope with these added costs.
- The uncertainty produced by the anti-business populism of the current administration and Congress.

It's hard to argue that it would be better if people could make more money for their work. Trying to achieve it with legislation has the opposite result. The government mandated increases in the cost of labor makes it easier to justify the substitution of capital for labor. The only way workers can earn more is for their labor to produce more value.

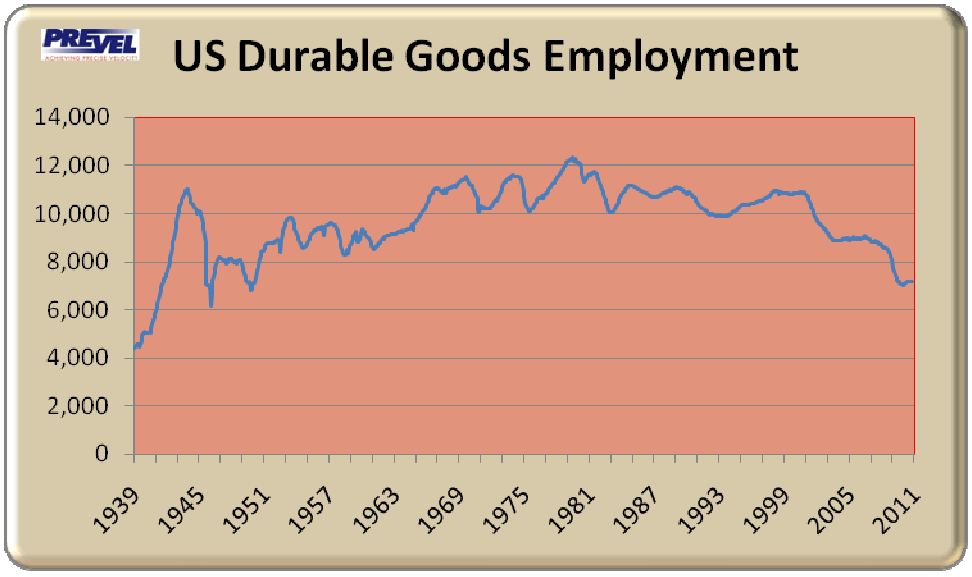
The reports on unemployment have become too hard to understand in the current context. The changes in adjustment factors further reduce their value. Our recent focus has been and will remain with the size of the labor force. The measure is more direct and less subject to spin.



Civilian employment over 16 years of age is a key measure of the health of the economy. This measure remains weak and is again declining.



Labor force participation rate remains stuck at levels a full 5 points below traditional levels. This is the weakest performance for the US economy in the history of this measure. Note that the fade began almost a year before the "meltdown" in early 2007.

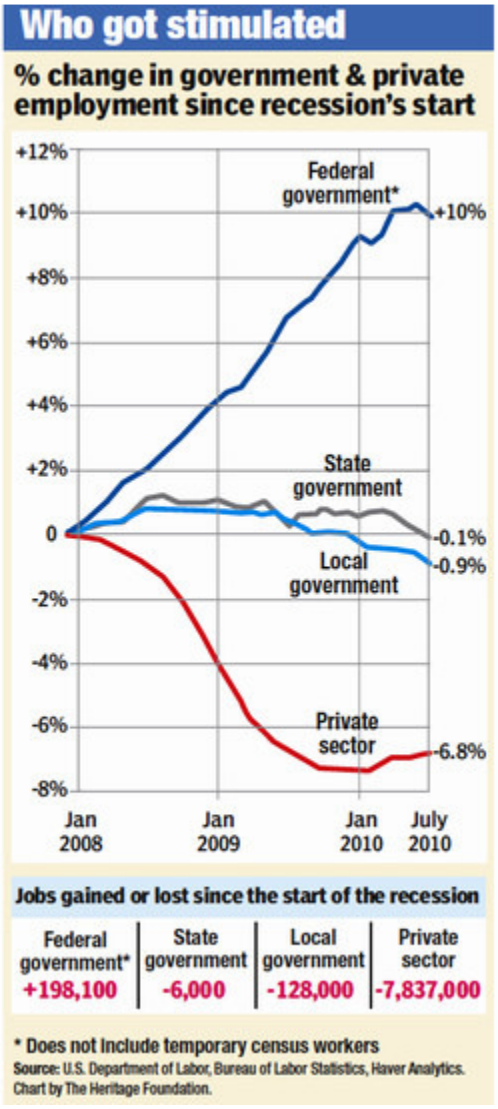


Durable goods employment has been essentially neutral since June. The growth in orders might result in some hiring. But the combination of added capital plus supply chain ramp-up problems will keep a restraint on this growth.

Note that the long term trend has been downward since the peak in 1979. The argument has been that the jobs are going offshore. There are a few examples of that, but most of the lost jobs simply went away. The same trend is noted everywhere in the world, including China where the manufacturing labor force has declined 15% in a decade. A new generation of cheap computers and automation technology resulted in

the elimination of manufacturing jobs worldwide while output has continued to increase. The trend has been accelerated by the use of union monopoly power in the US and Europe. Increasing wages without increasing productivity always eliminates jobs, either by automation or by competition.

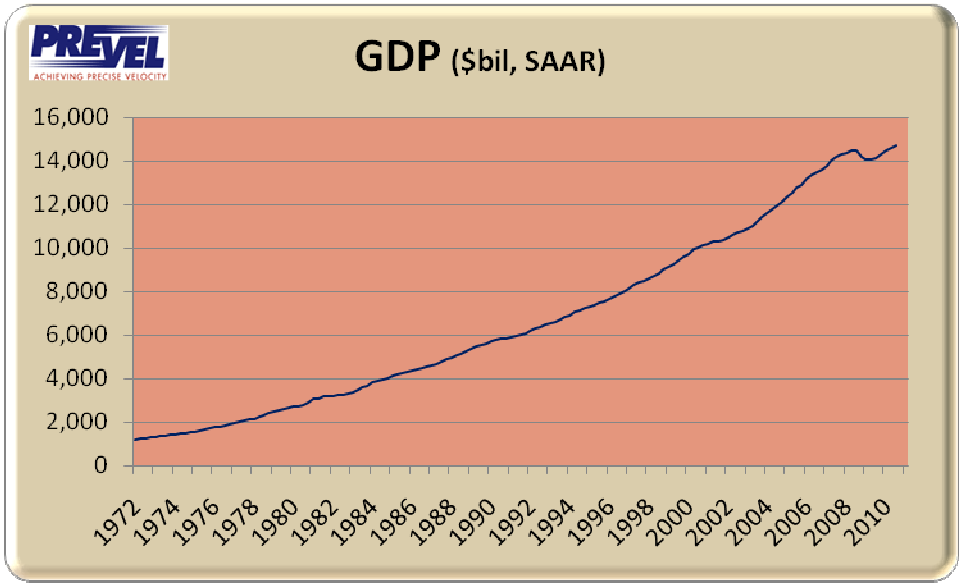
Looking at some of the details of the job growth statistics turns up an even more troublesome signal. The weak job growth is worse than it looks. It is distorted by the heavy dose of hiring by the federal government.



Summary and Sector Analysis

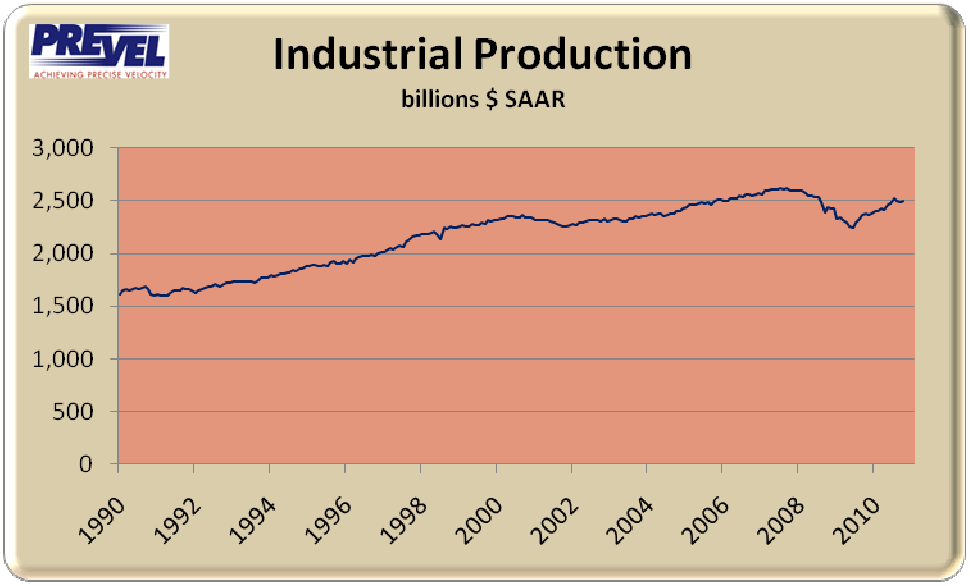
GDP: US GDP showed a 1% increase over the prior quarter. The average for the past 5 quarters has also been about 1%. The US GDP now stands at a record high of $14.7 trillion, 4.4% above the third quarter of 2009.

Gross Domestic Product				
Year	Qtr	GDP $b (SAAR)	Chg from Prior Pd	Chg from Prior Year
2008	1	14328.4	0.3%	3.9%
2008	2	14471.8	1.0%	3.3%
2008	3	14484.9	0.1%	2.3%
2008	4	14191.2	-2.0%	-0.7%
2009	1	14049.7	-1.0%	-1.9%
2009	2	14034.5	-0.1%	-3.0%
2009	3	14114.7	0.6%	-2.6%
2009	4	14277.3	1.2%	0.6%
2010	1	14446.4	1.2%	2.8%
2010	2	14578.7	0.9%	3.9%
2010	3	14730.2	1.0%	4.4%

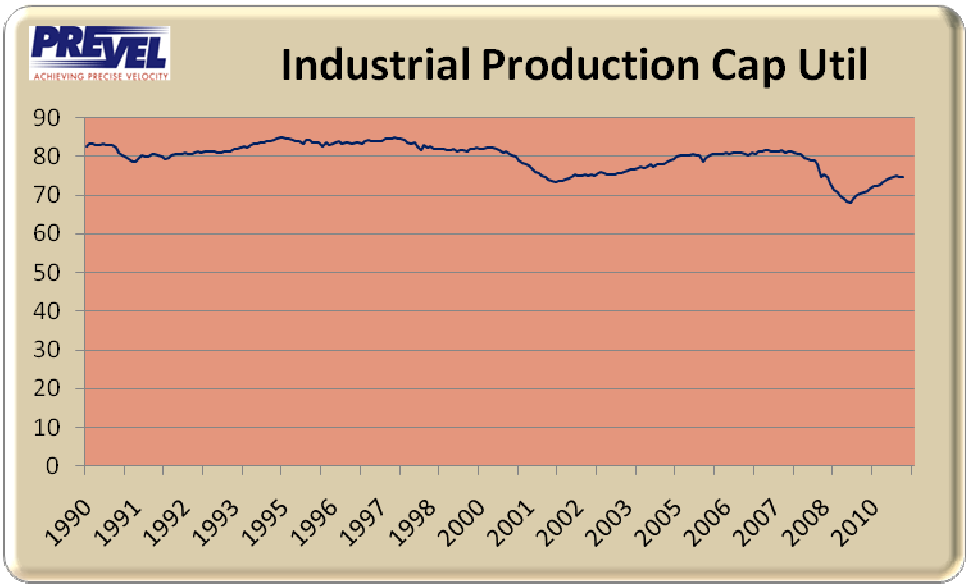


Industrial Production (excluding industrial supplies) decreased by 0.6% in August, the biggest drop since May 2009. While the current value is 6.8% above the prior year, it remains 5% below the 2007 peak. This is the main problem with job growth, since this sector has the greatest secondary hiring impact.

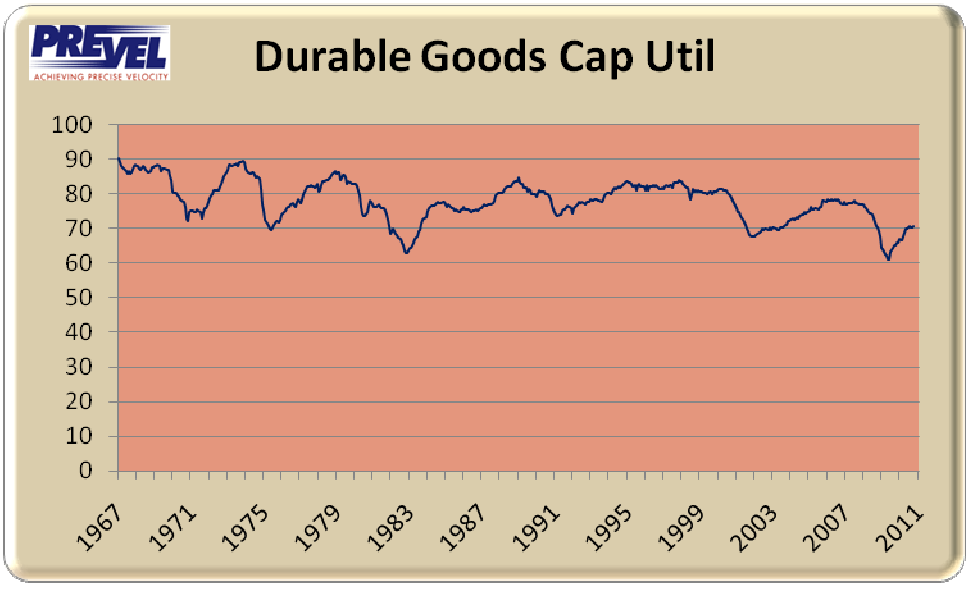
Industrial Production $b SAAR				
Year	Mo	Ind Prod - Value of Prod	Chg from Prior Pd	Chg from Prior Year
2009	5	2,257.3	-1.6%	-11.2%
2009	6	2,249.1	-0.4%	-11.3%
2009	7	2,297.3	2.1%	-9.3%
2009	8	2,328.4	1.4%	-6.2%
2009	9	2,364.4	1.5%	-1.3%
2009	10	2,377.5	0.6%	-2.5%
2009	11	2,369.6	-0.3%	-2.3%
2009	12	2,380.9	0.5%	-1.7%
2010	1	2,401.7	0.9%	3.2%
2010	2	2,399.2	-0.1%	2.6%
2010	3	2,429.3	1.3%	5.0%
2010	4	2,420.5	-0.4%	5.6%
2010	5	2,469.3	2.0%	9.4%
2010	6	2,475.8	0.3%	10.1%
2010	7	2,521.5	1.8%	9.8%
2010	8	2,505.5	-0.6%	7.6%
2010	9	2,492.8	-0.5%	5.4%
2010	10	2,495.6	0.1%	5.0%



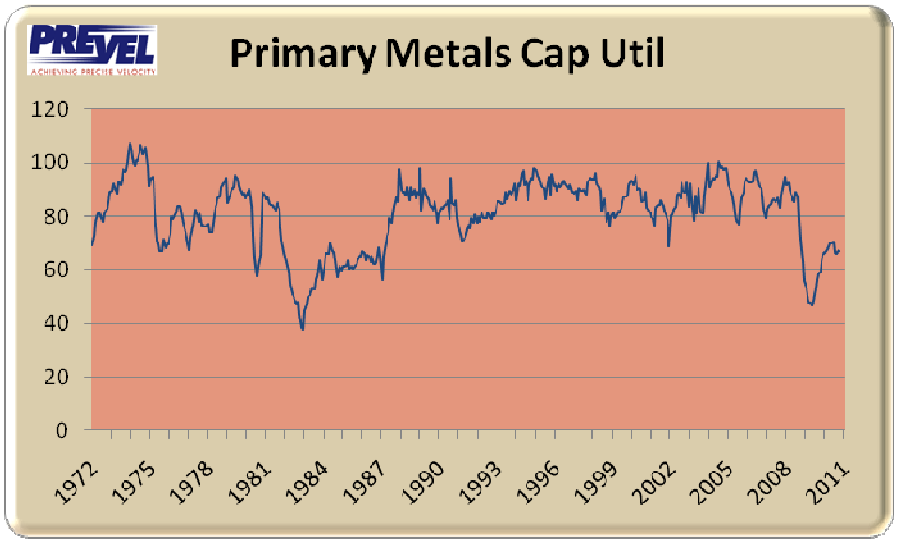
Capacity Utilization:

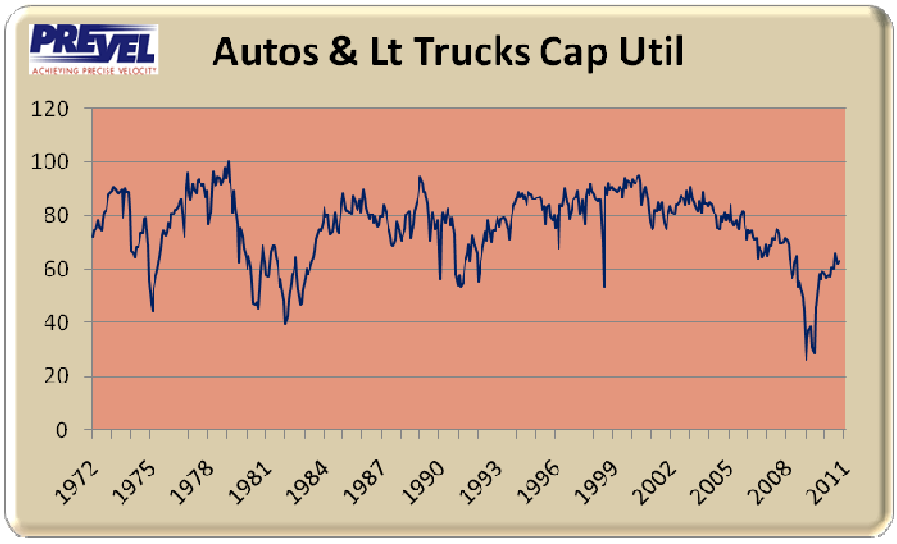


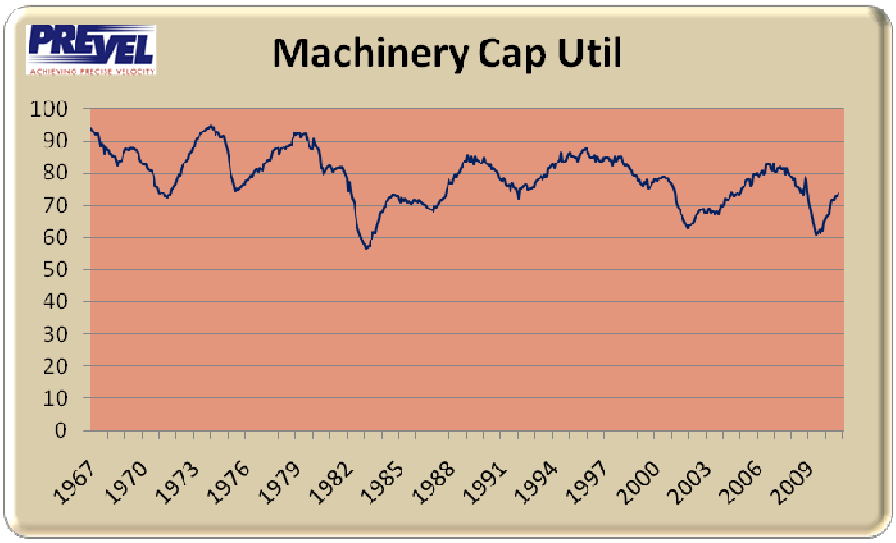
Utilization of industrial capacity remains below 75%, well short of the 80% norm. The recovery in utilization rates has been flat since June. Don't expect major improvements in capital investment spending until this measure improves further. Politicians are fond of pointing to two trillion of cash on balance sheets and asking why businesses don't invest. Simple answer: excess capacity. When there is real demand, or when entrepreneurs see a market opportunity, investment will happen. Anything else would be irresponsible (maybe like the way government "invests" in infrastructure we don't need?)



The durable goods sector capacity utilization remained flat at just over 70%. That's an improvement from the 66% level in January, but all of that improvement happened in the first 5 months of the year. The nominal 80% target for this sector offers at least 10 points of expansion before plant and equipment becomes a priority. There will be spot exceptions, of course, but overall manufacturers are not faced with capacity constraints.

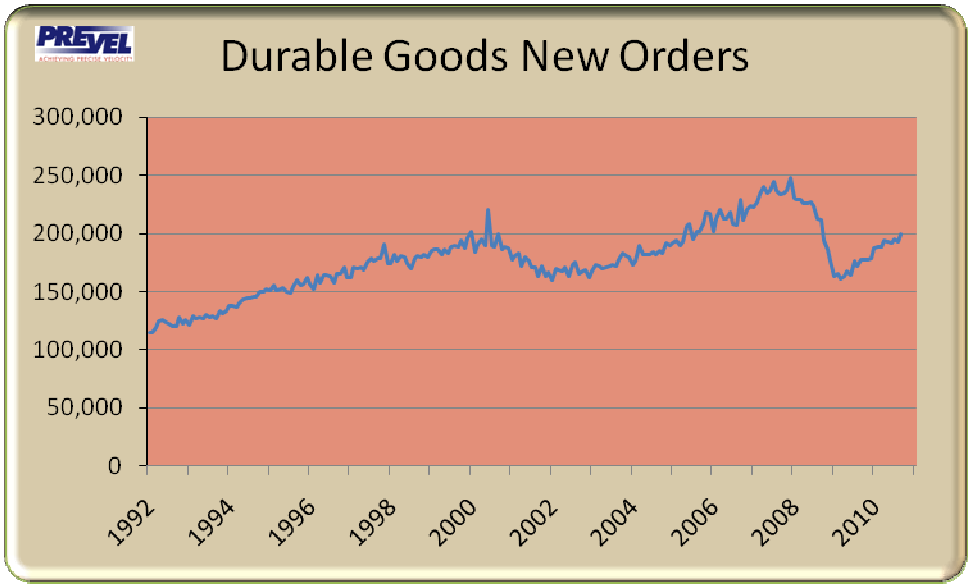






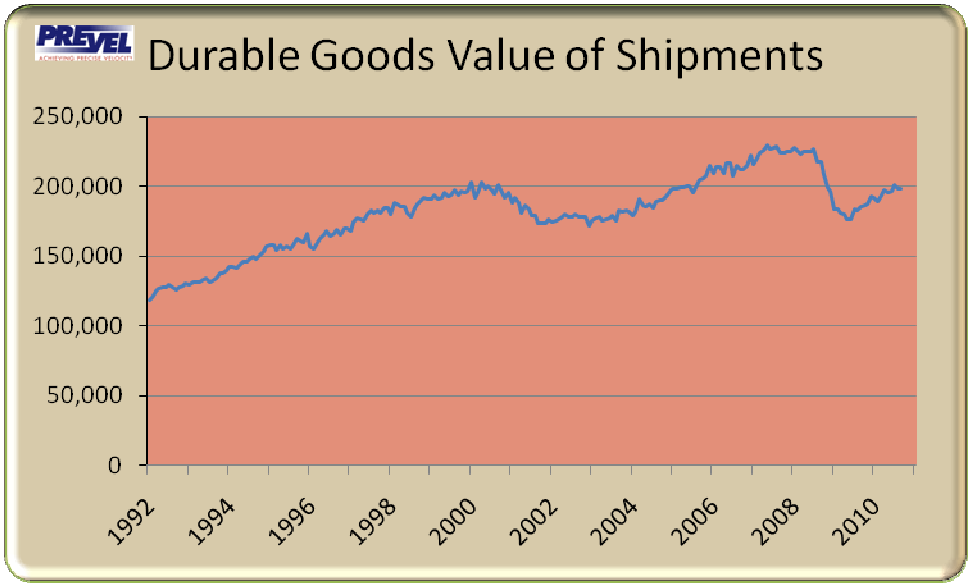
It's interesting to note that machine builders are increasing their utilization rates, but commercial and industrial contractors are still largely on the sidelines. We've been commenting for six months that there is interest in automation to avoid hiring production workers, even though current physical plant capacity is still slack. Labor has just become more expensive (health care etc. – see above). Automation takes over more jobs when that happens.

Durable Goods:

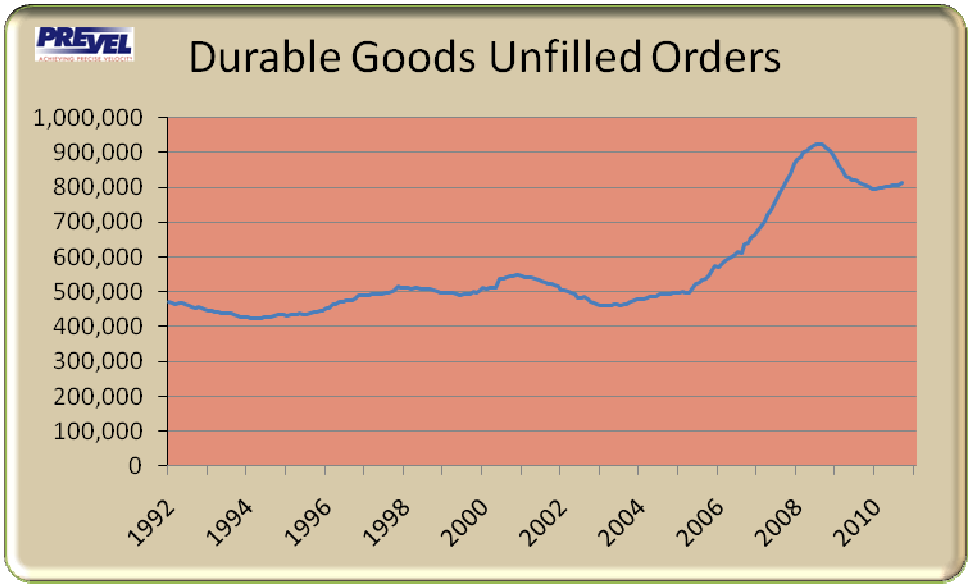


New Orders (September data): Durable new orders surpassed $200 billion for the first time since September 2008. The trend of the recovery continues for durable. Reports of persistent supply chain problems also continue. The 3.5% jump in new orders

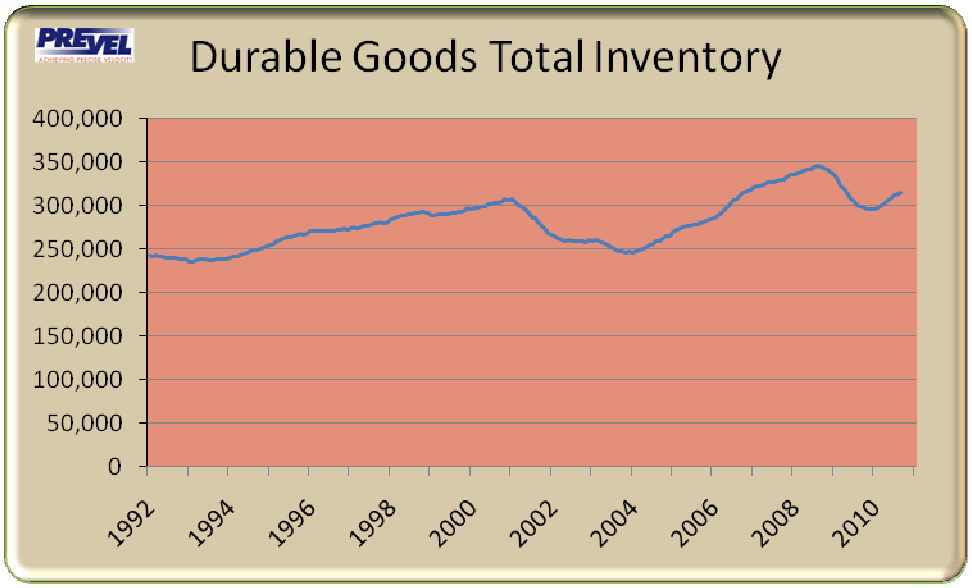
suggests more trouble to come. Note also that what looks like a big jump is within the 3.6% standard deviation for the month-to-month changes. Durable goods orders are notoriously lumpy.



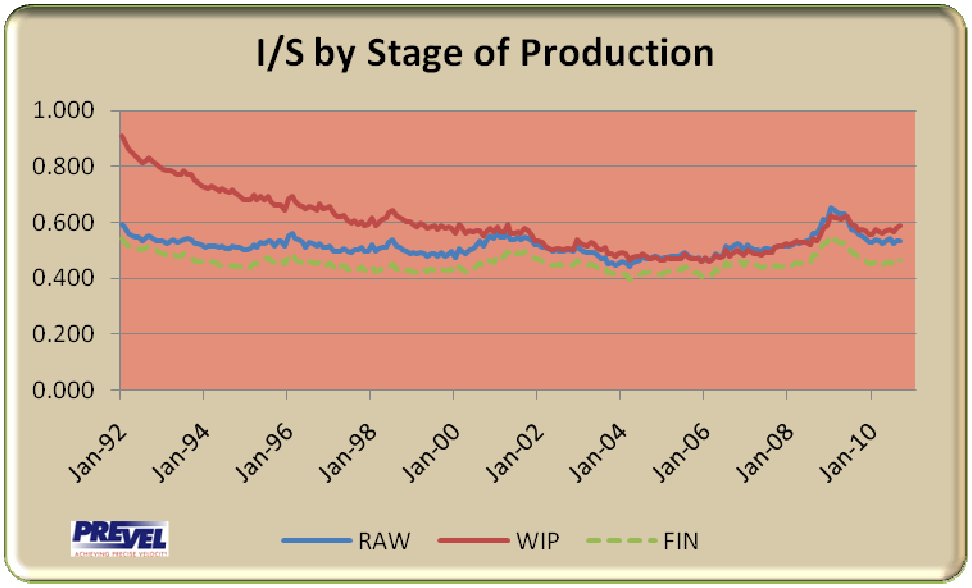
Value of Shipments: Shipments remained flat in September. While the recovery is now solid, there's a long road ahead. It took more than 5 years after the Y2K meltdown. We're just over a year into the current recovery.



Durable Goods Unfilled Orders: Backlogs of unfilled orders grew 1% in September as a result of the surge in new orders.

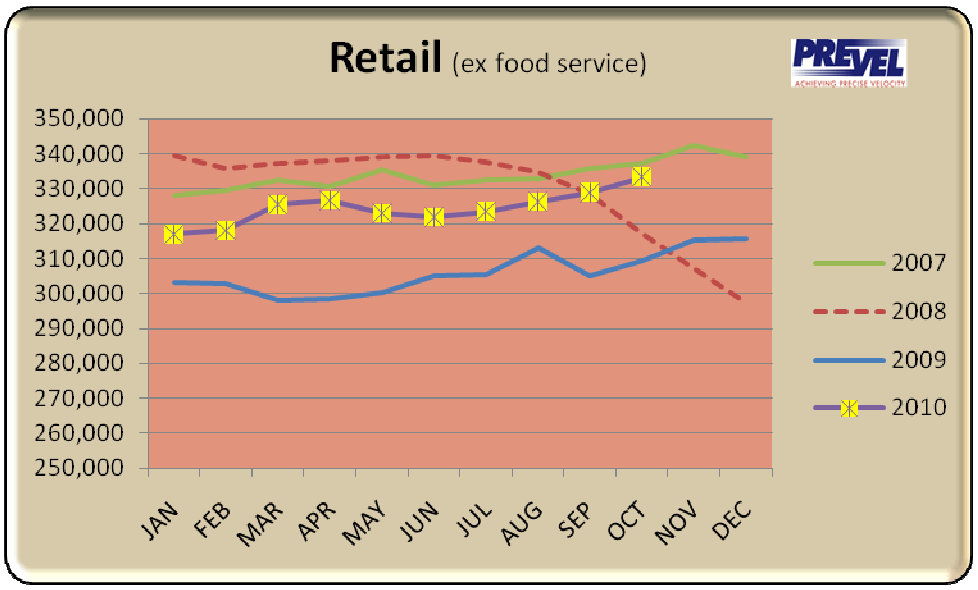


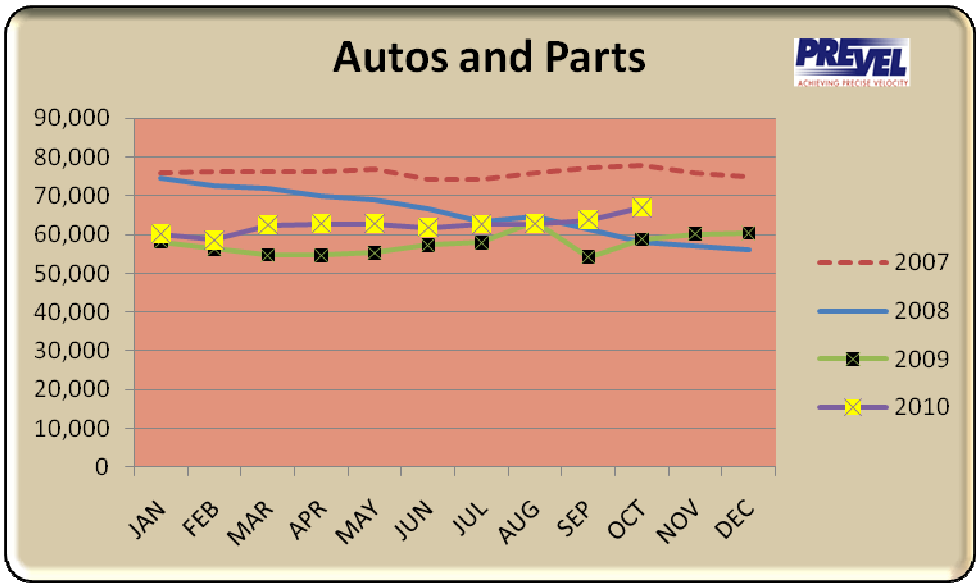
Inventory: Up by 0.5% for the third month. Inventory to shipments ratio also increased. Inventory by stage of production (below) shows the increases occurred in WIP and RAW. This signals that the supply chain friction during the ramp up is the primary cause.

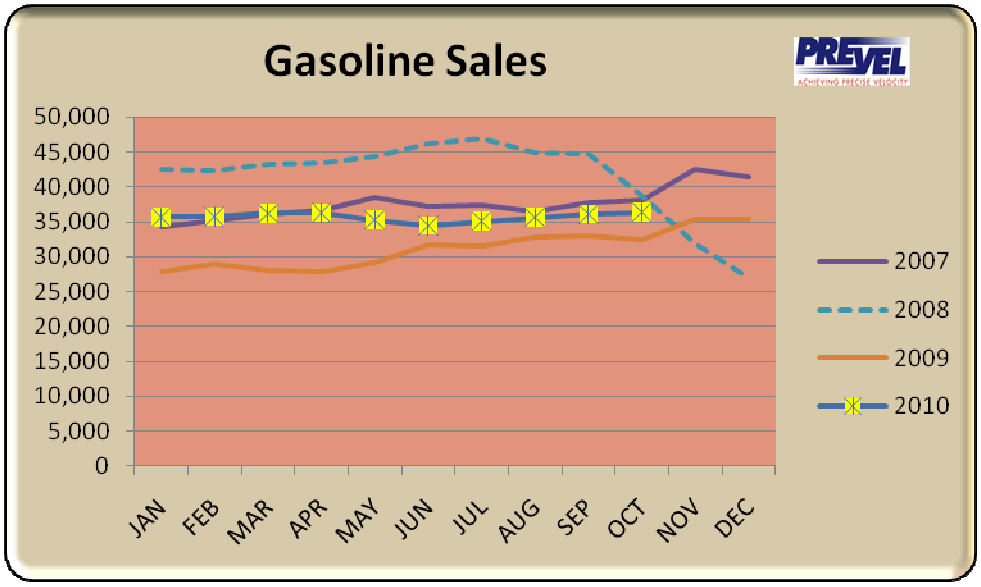


Retail Data (October – Advanced Estimate)

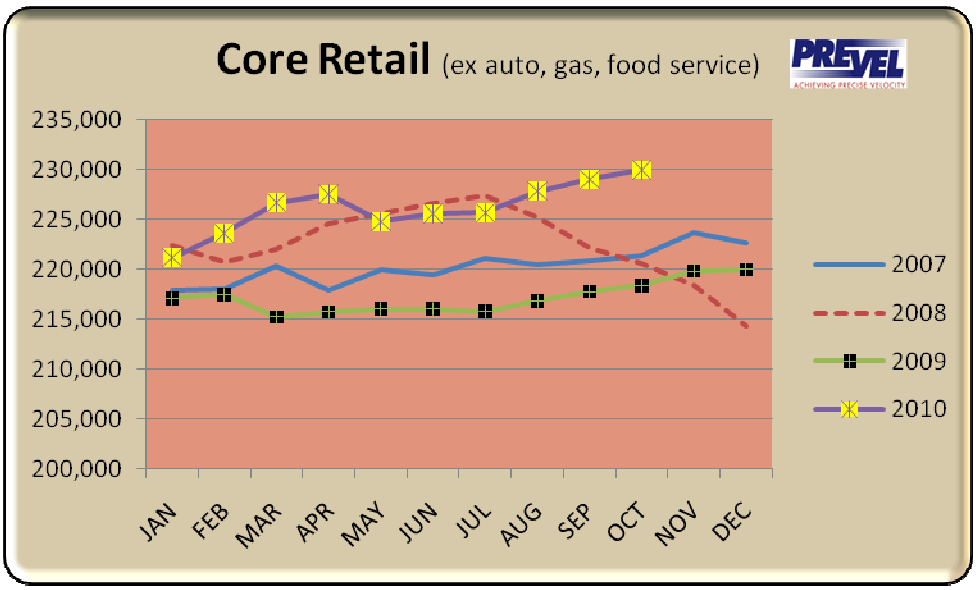
Retail Sales: The October Advanced Release showed signs of significant improvement, led by the 5% growth in autos and parts. Gasoline sales also increased by 0.8% and now stand over 12% above the year ago value, mostly due to price inflation.





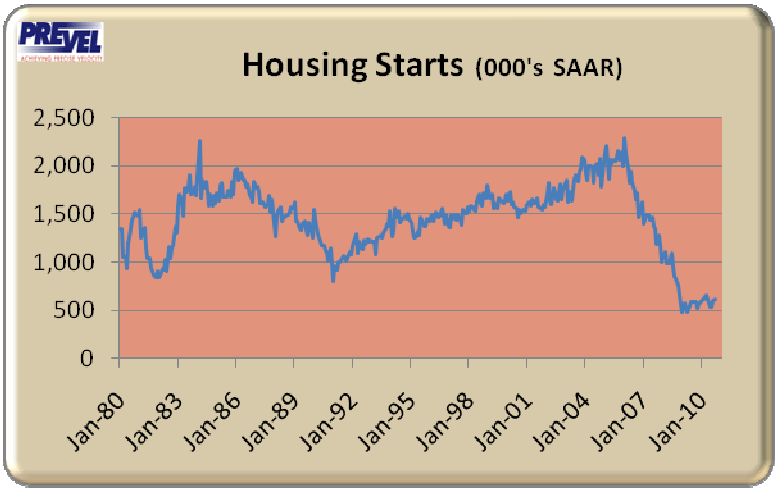


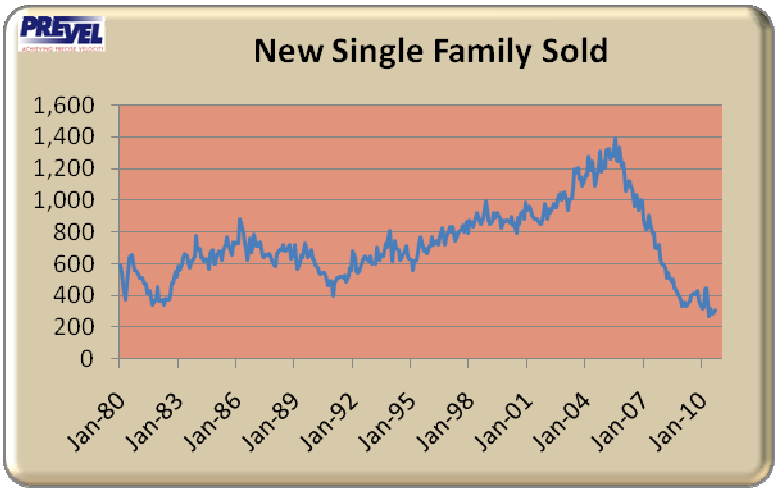
Core Retail Sales (excluding food service, autos, gas):

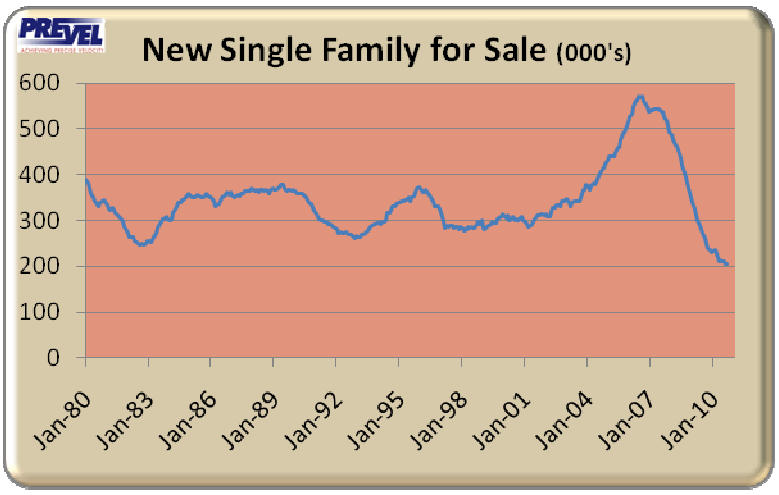


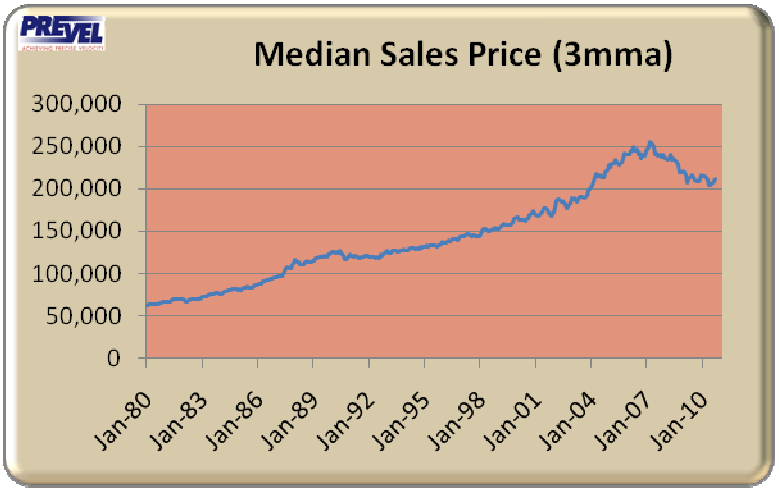
Core Retail set a record in the October advanced release data. There are reasons to question how well the numbers reflect physical reality. Signs of inflation have appeared according to a recent Wal-Mart survey of typical commodity items. Grain and cotton prices are exploding. This inflation is being driven by a smaller crop worldwide, diversion of grain stocks to ethanol production, and the actions of the Federal Reserve. The Fed has the ability to control the inflation by shrinking the money supply as economic activity increases, but they seem to fear the risk reversing the fragile recovery. Milton Friedman argued that the Fed should be replaced with a computer to prevent this problem. It's sounding like a better idea every day.

Housing:









The slight uptick in housing activity is a sign of…nothing. The advanced release for October starts was off almost 12%. For the past few months we've reported the same thing on housing. No sense trying to come up with a clever way to say it differently:

"Housing activity remains depressed. Unsold inventory of new single family homes is at an all time low. The only explanation of the slow sales and starts is that the "phantom inventory" of homes in foreclosure is serving to satisfy the demand caused by new household formation. A variety of subtle factors outside the standard measures can also influence activity. One is the return of illegal immigrants to their home countries. Eventually this segment of the economy must gain some steam for the economy to thrive."

Nothing new to add.

About Prevel and The Durable Goods Report

Prevel Technology provides business consulting and information technology tools in support of high performance organizations. Our focus is on manufacturing and telecom, and through our business partners we support health care and other high-demand business environments.

The goal of the Prevel Durable Goods Report is to offer context for the published monthly statistics on durable goods manufacturing in the US. The analysis is historical in nature, and includes no forecasts beyond what may be obvious from current conditions. The analysis of historical patterns provides a necessary framework for understanding plausible scenarios. Since a high percentage of durable goods go through retail, this analysis offers a leading indicator of future durable goods activity.

Prevel uses source data from the US Census Bureau, Bureau of Labor Statistics, and the Federal Reserve. Rig count data source is the Baker Hughes Corp. For data sourced from the US government, the preliminary publication is used, available about 5 weeks after the end of the period. An earlier publication (advanced release) is available about 3 weeks after the end of the period, but is often subject to substantial revisions, and is not considered adequately reliable for growth trend analysis.

A similar analysis is available for many industry sub-sectors. Contact Prevel for details about this subscription based service.

Technical Note: The “Prevel Growth Index” is measured as the ratio of the 3 month moving average divided by the 12 month moving average. This removes some of the natural noise in the industry data, but also results in a slight response lag. An index value greater than 1.000 is a sign of recent growth.

About the Author:

John Layden serves as CEO of Prevel Technology, a management consulting and technology consulting firm serving manufacturing, distribution, and their supporting technologies. Prevel has developed a suite of high-performance real-time applications systems in support of their client industries.

Prior to launching Prevel, Layden’s career included 22 years’ in manufacturing and another 20 years in enterprise software. Most recently he has served as VP of Supply Chain Management for SAP and VP of Supply Chain Market Development for Frontstep, Inc. He served as President of Pritsker Corporation, an early innovator in discrete event simulation and Advanced Planning and Scheduling fields. He negotiated

the Pritsker acquisition by Frontstep. He was a founder and CEO of Automated Technology Associates, Inc., a leader in the development of real-time quality control systems and factory management applications.

Layden has authored over 40 articles and papers on both the theory and practice of manufacturing and supply chain operations. He was described by one editor as one of the “founding fathers” of the Advanced Planning and Scheduling (APS) industry. He also authored the supply chain chapter in Maynard’s Industrial Engineers Handbook. He speaks worldwide on the subject of world class operating strategies. He has been the keynote speaker at numerous conferences including the Automation Hall of Fame Awards.

As a software company CEO, Layden delivered to market the first real-time advanced planning and scheduling system; the first real-time SPC system; and the first real-time, fourth-normal-form database system. He is the originator of the Return on Capacity modeling process for analysis and improvement of supply chain profitability and delivery performance.

As a key partner to Motorola, Layden developed the quality control concepts that became the Six Sigma Initiative. He introduced the same concepts to GE and the Cadillac Division of General Motors. These initiatives contributed to the Malcom Baldrige awards won by Motorola and Cadillac, and to the highly publicized Six Sigma program at GE. He introduced the Six Sigma concepts to software development and delivered the only application software release to meet these exacting quality standards. Layden holds three patents and is the only American to hold a Japanese patent in quality control.

Prior to his tenure in manufacturing software, Layden spent 20 years as an engineer, operating executive and board member with three Fortune 200 manufacturing companies. The advisory services of Prevel retain the practical, no-nonsense approach familiar to world class operating executives. His operating roles included plant manager, director of business planning, and VP of Supply Chain Management.

Layden currently serves on 3 boards, and advises several high-tech startup companies.

Mr. Layden holds a BS degree from Purdue University in Electrical Engineering and an MBA from the University of Wisconsin-Milwaukee (Executive Program). He is active with the Purdue University President’s Council, and has served as a guest lecturer in the MBA programs of Villanova University, Columbia University, New York University, Ball State University, and others. He can be reached at jlayden@preveltech.com or 317-842-6417.

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