US NATURAL GAS: BURNING UP

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OVERVIEW AND CONCLUSION

Many intertwining variables influence United States natural gas price levels and trends. Players and other observers heatedly debate the relative significance of and relationship between these factors. The numerous competing and interconnected bullish and bearish natural gas marketplace considerations spark a variety of competing marketplace scenarios promoted by wizards and weathervanes. Thus fiery quarrels regarding price trends reflect the diversity of perspectives. In midsummer 2012, what appears on the landscape?

For example, how much new natural gas supply will flood the marketplace if prices sustain levels around three dollars (and what about four dollars)? Yet will large shale gas production increases continue if natural gas prices dive under 250 a sustained basis? What are current and long run trends for conventional gas production if prices stay under 250 (or under around 400)? Note the fall in the natural gas rig count. How much incremental gas supply will derive from the US oil exploration boom? Will American gas consumption continue to expand at a significant pace? Will switching to natural gas from coal remain as substantial as it has been lately if gas prices stay over 275/300 or mount to a higher plateau? Think too of environmental regulation regarding coal, as well as that regarding shale gas exploration. When and how substantial will LNG exports be, especially since both politics and price influence this? How strong is and will be America's economy? As always, weather creates uncertainty. To what extent will alternative "investment" (and "speculation") influence natural gas price levels and trends? Probably quite a bit. Don't forget electricity and coal price behavior and supply/demand.

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Focus on natural gas days coverage levels for end October 2012 (around the close of inventory build season) and end March 2013 (approximate end of draw period) in the context of price history. Assume normal weather and relatively lofty petroleum prices. What does this perspective reveal? This not only indicates that April 2012's 190 was a major low and that major support exists around 220/240 (NYMEX nearest futures continuation). It also justifies a challenge on significant resistance around 317/330. An ascent above that range sometime in the next several months will be difficult but not surprising. Even if one fervently repeats the familiar song that much has changed in the natural gas territory in recent years (such as the shale gas story), remember the long term mean (1990 to present) for nearest futures continuation is 400. Recall some rather current history. The blast-off from September 2009's low around 241 rapidly flew to over six dollars by early January 2010. Moreover, June 2011's high around 498 was not recorded in ancient times; the high at end October 2011 was about 398.

However, days coverage probably will have to sustain a decline in its excess relative to its long run average (1990-2011) to around three days or fewer for natural gas to significantly challenge major resistance looming around 400. The sustained reduction in days coverage to such levels likely will occur eventually, even if it does not occur by the end of March 2013.

DAYS COVERAGE HISTORY

For the over two decades in the 1990-2011 NYMEX futures trading history era, the average end October US natural gas inventory is 3253bcf and 53.7 days (working gas in underground storage, lower 48 states). Days coverage for any given October is end month inventory relative to the average daily demand for the entire calendar year which includes that October. Sometimes inventory has built into calendar November, but end October levels generally represent the build season storage peak.

For US natural gas inventory at end October, the recent history days coverage record pinnacle was 60.7 days (3810bcf) in calendar 2009. Recall that NYMEX natural gas (nearest futures) collapsed to a major price bottom around 241 on 9/4/09. Keep this elevated inventory level, related storage containment fears (issues), and price action of 2009 in mind regarding recent and prospective natural gas trends. Other high end-October stockpiles were 1990's 66.0 days (3467bcf), 1991's 62.9 days (3369bcf), and 1992's 58.3 days (3223bcf).

Very low years for end October include 2000's 42.9 days (2732bcf), 1996's 45.5 days (2810bcf), 1997's 46.3 days (2886bcf), and 2002's 49.4 days (3116bcf).

In the past several years (with the exception of 2007), end October inventory has tended to run higher than the overall 53.7 day coverage average for end October. Maybe some of this relates to innovation in production techniques occurring faster than demand increases (and hence "oversupply"). However, perhaps the desired average holding in days coverage has shifted upward somewhat. Why might this be the case? The popularity of alternative investment in recent years has reduced free supply (though one can battle as to how much), thus boosting the need to have more around.

In the following table, in comparison with 2009's inventory level and price bottom, note the price level achieved for notable marketplace lows for the "fairly high" inventory levels of 2006, 2007, and 2010. Everyone remembers that marketplace prices cratered after autumn 2011 (as inventory days coverage ballooned from the given calendar month perspective). However, end October2011 inventory of 57.1 days was roughly in line with that at end October 2006, 2007, and 2010. Thus the nearest futures price during fall 2011 stood rather high in comparison with its April 2012 abyss.

Inventory End October (bcf)		**Days Coverage**	**Notable price action "roughly around" end October?**
2006	3452	58.1	Yes. 9/27/06 low 405
2007	3565	56.3	Yes. 8/27/07 low 519
2008	3399	53.4	No. Major top 1369 on 7/2/08
2009	3810	60.7	Yes. 241 major price trough 9/4/09
2010	3851	58.3	Yes. 321 price low 10/28/10
2011	3804	57.1	Somewhat. 360 is average of four interim high/lows mid-Oct/mid-Dec

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The end March inventory average is 22.2 days coverage (1342bcf; 1990-2011). This approach calculates March days coverage by dividing end March inventory by prior calendar year (January through December) average daily demand. In this analysis, the March year indicated refers to the calendar year including the preceding end October (end of build season). So dividing end March 2012 inventories of 2477bcf by the calendar 2011 average daily consumption of about 66.7bcf/day gives 37.2 days coverage. This coverage exploded fifteen days above the long run

average for end March. The 37.2 days of coverage as of end March 2012 dwarfed the prior all-time high for recent history (28.1 days in March 2006) and exceeded those of the early 1990s as well (36.4 days in March 1991 and 28.8 days in March 1992).

March 2012 inventories decisively soared over the prior end March arithmetic mountaintops (around 1692bcf of March 2006 for recent years, and even the 1912bcf one of March 1991). Hence the great containment fears for the end of 2012 build season that existed a few months ago.

The record end March low inventories of 742bcf in 2000 and 730bcf in 2002 both equaled 11.6 days coverage.

SPRING RALLIES: 2009-2012 PATHS

Some gurus have proclaimed that the rally since the 4/19/12 low at 190 is merely a typical chapter within a previously prevailing bear marketplace trend. Perhaps the designated major bear trend began on 1/7/10 at 611, or 498 on 6/9/11. This view claims that prices eventually will challenge around the 190 level by sometime in autumn 2012.

Spring rallies in natural gas (or any other marketplace) followed by a decline are not a matter of marketplace destiny or Natural law. Anyway, many advocates of the "spring rally followed by a price drop" theory for 2012 promote the evidence of the three prior years.

Survey the rallies in the past three years which commenced "around" springtime but then faded to resume bear marketplace trends. In calendar 2009, the price flew up about 45 percent in two and one-half weeks from 4/27/09's 316 to 5/13/09's 458. From 381 on 4/1/10, the marketplace jumped 36.2pc to 519 in two and one-half months. The calendar 2011 advance from 3/4/11's 373 to the crucial peak on 6/9/11 at 498 ran for just over three months and 33.5pc.

The roughly 62 percent rally since 4/19/12 to the end of last week's close at 308 exceeds that of the past three years. That should greatly trouble those with faith that the major bear trend will resume.

However, the duration of about three months from 4/19/12 to date is about that of the 2010 and 2011 spring rallies. This time element warns that one should be cautious about declaring a further big upward move lies in store for the very near term, especially given the proximity of the 317/337 resistance. Though the time since the April 2012 bottom is brief, the mean plus two standard deviations from that low is around 309 (compare the recent high), with the mean plus three SD 337. There is a price gap dating from December 2011 around 330.

However, the longer the current climb from April 2012 continues, the less likely it becomes that the marketplace will fall close to its April 2012 bottom.

Marketplace history reveals many important gas lows reached in late August and calendar September. So there is some seasonal push tendency toward bearish price trends (as inventories build to their seasonal pinnacle). However, even if prices make a second low around that time horizon, it may be quite a bit above the April 2012 level.

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Some bears also emphasize that when one looks back to 1990, no major low has occurred in natural gas during calendar April prior to 2012. Thus it would be unusual for a major low to have occurred in or around that month.

However, just over 20 years for natural gas trading is not a long history. In addition, the oversupply at end winter 2011-12 was extraordinary.

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Nevertheless (assuming normal weather), even if natural gas prices plummet from current (or higher) levels, such a substantial retracement to the April 2012 trough is very unlikely to occur. Why? Underscore the reduction of containment risks (fears) during calendar 2012, as well as the probability of sustained very significant reduction in days coverage relative to the March 2012 level by October 2012 (and into March 2013). The 2009 experience (keep its 241 price low in mind) is very enlightening in that regard.

REMEMBRANCE OF THINGS PAST: CALENDAR 2009 DAYS COVERAGE ERA

Calendar 2009 had substantial oversupply. However its severity was not as extreme as that reached by natural gas for end March 2012. Also, calendar 2009, like 2012 (at least until recently), had substantial containment fears (issues) due to large arithmetic inventory relative to available storage. But calendar 2009 eventually reduced its oversupply significantly. Review 2009's days coverage pattern from mid-year forward. For end June through end November, inventories ranged about seven to nine days above average (extend the horizon to produce this average by including years up through calendar 2011; averages for the given month are in parentheses). End June 2009 actual inventory was about 44.0 days coverage (35.9 average), July's 49.2 (40.8), and August's 53.5 (45.2). End September's was 58.1 (50.3), end October 60.7 (53.7), and November 61.1 (52.0).

High inventories persisted after the September 2009 price low. But arguably the bottoming in price fits a viewpoint that containment problems were dealt with (suffered through) sufficiently. So what would further inflame an upward price move? The perception, and of course the reality, of declining inventories, especially from the days coverage viewpoint, probably is a crucial factor.

Look at 2009. End-December inventories days coverage narrowed the oversupply situation to about six days, falling to 49.9 days (44.0 average). This massive reduction in oversupply accelerated. Look at end January 2010's 36.7 days (versus the 33.0 day long run average for that end month) and end February 2010's 26.8 days (only 1.7 days above the end February average). Obviously days coverage and inventory drawdowns were not the only influences on the remarkable natural gas price rally that peaked at 611 on 1/7/10. The 2009 uptrend in commodities "in general" and in the S+P 500 (the US and worldwide economic revival) preceded and interrelated with the natural gas rally.

But the 2009/early 2010 period teaches an important lesson for natural gas. It strongly suggests that elimination of containment fears, when followed by a dramatic reduction in days coverage, can help to propel natural gas prices much higher (and perhaps quite quickly). Inventory prospects several months out, not just the current (or very near term), matter.

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As a footnote in regard to the January 2010 price peak, note that the days coverage "oversupply" relative to long run averages grew from end February 2010 to end March 2010, from 1.7 days to about 4.1 days.

LOOKING FORWARD: DAYS COVERAGE FOR OCTOBER 2012 AND MARCH 2013

As a preliminary consideration, the distance and duration of the bull charge (nearest futures continuation) since the 4/19/12 low around 190 alongside probable days coverage levels for October 2012 suggests that the April 2012 low was a major bottom. The roughly 62 percent leap from the April trough to the end of last week's close at 308 is both a substantial climb and exceeds the spring rallies of the past three years.

But even if prices retreat from recent highs (or higher), they very probably will not reach close to the 190 low. Also, even if natural gas heads lower in the fairly near future, it is probable that the lows around 220 (6/14/12 at about 217, 1/23/12 at 223) will not be revisited for very long (if visited at all).

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The United States Energy Information Administration ("EIA") offers arithmetic (bcf) estimates in its July 2012 Short-Term Energy Outlook ("STEO"; 7/10/12) for natural gas inventories for at various times, including end October 2012 and end March 2013.

The STEO predicts calendar year 2012 demand of about 69.9bcf/day. The STEO (p8) forecasts "slightly above 4,000 Bcf" inventory for end October. This represents about 57.2 days coverage relative to calendar year average daily consumption (4000/69.9bcf/day). Recall the long run average for end October (1990-2011) US working gas inventory is 53.7 days of coverage. **Thus end October 2012 stocks will be only 3.5 days above average.**

Very significantly, from the oversupply perspective, this represents an enormous cut in the oversupply situation that existed at end March 2012. The 37.2 days of coverage as of end March 2012 was fifteen days above the 22.2 days coverage average for that end month. Thus about 11.5 days of oversupply will disappear by October 2012 (fifteen days above average for March 2012 less the 3.5 days above average for October 2012) if the STEO estimates hold true. **This 11.5 day cutback in days supply far exceeds the 6.4 days evaporation in "oversupply" (9.1 days less 1.7 days above average) from mid-year calendar 2009 to end calendar February 2010.**

Suppose inventory days coverage at end October 2012 if 4050bcf. That leaves end October stocks at 58.2 days. Even at 4050bcf, around 10.5 days coverage relative to monthly averages disappears by end October 2012 versus March 2012.

So from the inventory days coverage standpoint, and particularly when read relative to the 2009 context and its eventual price rally from 241, what follows? This huge reduction in oversupply from March 2012 to October 2012 strongly indicates that there was a major low in April 2012 (not a mere interim bottom), that prices will not easily (if at all) come back to that level, and that a major bull move from that April 2012 low (not a mere interim rally) is underway.

Admittedly days coverage issues are not exactly the same as containment ones. There could, for example, still be a big reduction in days coverage, yet noteworthy remaining containment ones.

However, US inventory of 4000bcf (and even another 50bcf or so higher) probably does not represent a containment problem. **Thus as in 2009, the containment fears of several months ago generally will be overcome on a national basis** (even if issues within some regions appear). **There also probably will not be a containment problem in autumn 2012 in the key Producing Region either.** See "US Natural Gas- Building Enthusiasm" (4/16/12) and "US Natural Gas Inventory- the Producing Region Story" (5/1/12). Also see "US Natural Gas Build Season: Eastern Consuming Region" (5/17/12) and "US Natural Gas Build Season: Western Consuming Region" (5/21/12).

Thus from both the containment and big change in days coverage vantage points, a major bull trend began in April 2012, as it did in September 2009.

Many factors in addition to inventories influence natural gas price trends and levels. But anyway, **now recall the inventory levels for end October 2006, 2007, 2010, and 2011. These exceed the long run average by between 2.5 days and 4.5 days; they thus neighbor the 57.2 days and 3.5 days of above-average coverage anticipated for end October 2012. Yet the autumn low prices reached in those four years are nowhere close to 190, or 220, or even 241. Moreover, the October 2009 days coverage of 60.7 days far exceeds the expected days coverage inventory for end October 2012. So all else equal, how likely is it that prices will sustain moves under 241 for long? This viewpoint supports the view that April 2012 established a major low, and that a slump under the 217 (6/14/12 low) to 240 range also is unlikely.**

Is the around 56 or 57 days of coverage sometimes seen since 2006 a so-called new normal for end October, as opposed to the 1990-2011 long run average of 53.7 days? Suppose it is. Then all else equal, the odds increase regarding a move toward 400 if end October 2012 inventories are around those somewhat higher "desired" (target; average) levels. The same considerations of course apply to other calendar months.

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Assume natural gas made a major low in April 2012. This does not mean that prices necessarily will rise far above current levels, say to five or six dollars, as they did over the September 2009 to January 2010 vista. Of course the natural gas world has changed since 2009 in important ways. Shale gas output as well as gas production associated with petroleum probably will act to subdue prices for quite some time. But even a move up to the high 300s/low 400s is a terrific rise relative to 190.

In regard to the issue of how far prices could move, peer at the EIA's projected inventory for March 2013. As always, much obviously can and will happen in natural gas and related marketplaces between now and then. The EIA predicts first quarter 2013 gas inventories will be 1933bcf, over 540bcf less than end March 2012. Thus looking out into the distance, there probably will not be containment worries linked to build season for autumn 2013. **Prices for winter 2012-13 and the 2013 build season (unlike that for winter 2011-12) probably will not be weighed down by containment terrors.**

End March 2013 days coverage terms will be about 27.7 days (versus full year calendar 2012 consumption). **This floats about 5.5 days over the 22.2 day long run average. This is much less than the fifteen days above average at end March 2012. Thus anticipated March 2013 days coverage supports the perspective that April 2012 represents a major low. However, that 5.5 days oversupply is quite a bit more than February 2010's 1.7 day excess. Moreover, it slightly increases (two days) from the forecast 3.5 day excess for October 2012. Thus for**

the near term, rallies to around 400 (the 380/400/415 resistance range) will be somewhat difficult to achieve, and hard to sustain for long if they do occur. Moreover, it indicates that bullish forecasts for prices far above four dollars for NYMEX nearest futures continuation, as occurred after the September 2009 major low, currently are very conjectural.

Since end March 2013 oversupply of 5.5 days still is rather elevated by historical standards, it does not preclude a challenge of support around 220/240, even if that assault is not sustained for long. The EIA forecasts that 2013 calendar year consumption will be 71.1bcf/day, a 1.7pc rise over calendar 2012. Though production levels obviously matter, such demand increases tend to bolster prices.

NATURAL GAS PRICE SUPPORT AND RESISTANCE GUIDELINES

The following framework is for NYMEX nearest futures continuation, though it is relevant for other actual calendar months. Means and standard deviations of course are likely to change as time passes, particularly when the measurement duration is relatively brief (as in from the April 2012 low to the present). Monitor natural gas intramarket price trends (such as the October/January and March/April spreads) and electricity and coal marketplaces.

The NYMEX natural gas calendar strips for 2013 through 2016, like nearest futures continuation, achieved lows in April 2012.

Suppose days coverage eventually is reduced to about the long run average level (this of course could take quite some time). This boosts the odds for an eventual move above 400. In contrast, if days supply jump dramatically due to a very warm 2012-13 winter, natural gas prices may tumble back beneath 241 and toward April 2012's 190 depth.

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***610/600**: 1/7/10 major high at 611.

***530/500**: One-third the all-time high of 1578 (12/13/05) is 526; 6/15/10 top 519, 8/16/10 high 501; 498 peak 6/9/11. Low at 519 on 8/27/07. The interim high after the 9/4/09 low was 532.

***460/440**: The mean since the 7/2/08 major high at 1369 is around 438. 460 was the 12/20/96 major high. 439 low 9/22/03, 452 bottom 9/16/04.

***415/400/380**: Interim highs at 414 (8/11/11) and 398 (10/31/11; 20pc fall from 498 is 398). Note the gap after the 9/25/09 high around 404. The 11/19/09 low at 416 was the last noteworthy one before the spike up to 611. The mean for nearest futures continuation since futures trading began in 1990 is 400. The mean since the 1/7/10 summit is 382. The mean plus one standard deviation from the 6/9/11 high is about 394. Recall the 405 depth on 9/27/06. Twice the 4/19/12 low at 190 is 380.

Incidentally, in the context of years with elevated end October inventory levels from 2006 through 2011, the price levels of the three years with notable price lows achieved "around that time" (2006, 2007, 2010) plus autumn 2011's "level" (an average of fall 2011's notable highs and lows) divided by four is just over 400 (405, 519, 321, plus 360/four).

***360**: Average of four autumn 2011 interim highs/lows (10/13/11 low at 345, 10/31/11 high at 398, 11/18/11 low at 329, and 12/11/11 high at 369) is 360. Price gap low (expiration rollover) at end October 2010 was 365; 50pc rally from 241 is 362.

***337/317**: See the tiny price gap between 12/9/11 low at 3.309 and 12/13/11 high at 3.299; 33pc fall from 498 is 331; 321 low achieved 10/27/10. The mean since the key 6/9/11 peak at 498 is about 317. The mean plus three SD since the 4/19/12 low is 337. A 66pc rally from 190 gives 317.

***300/280**: Half the 611 pinnacle is 305; 50pc rally from 190 is 285 (about 284 is the 1/30/12 top). The mean plus two SD from the 4/19/12 low is about 309. The mean less one standard deviation since the 611 peak is about 297. The mean less one SD from the 7/20/08 pinnacle is about 280.

***250/240**: The mean since the 4/19/12 low is 252. Around 250 is a 50pc dive from 498. 241 is the major low on 9/4/09. The mean less one SD from June 2011's top is about 240.

***220**: About 223 low on 1/23/12, 217 on 6/14/12. Mean less one SD from the 4/19/12 low is 224.

***190/175**: 4/19/12 bottom was 190; double bottom 9/26/01 at 176 to 1/28/02 at 185.

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