US NATURAL GAS PRICE ARCHITECTURE

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OVERVIEW AND CONCLUSION

What is the near term outlook for United States natural gas prices (nearest futures continuation)? They probably will retreat further from around the ceilings reached in mid-April to early May 2013. A 20 percent decline gives around 356, rather close to the 6/28/13 low at 353. However, assuming normal weather, a breach of 350 probably will be modest. Some support exists around 328, the 7/31/12 high; important support exists around the 305/310 first quarter 2013 level. The most likely time for at least an interim bottom is late August to calendar September 2013.

Why remain somewhat bearish on US natural gas for the near term? After all, natural gas clearly constructed a major low around 190 on 4/19/12, and that floor probably will not be broken anytime soon. Also, US gas inventory in days coverage terms at end October 2013 from the long run (1990-2012) perspective probably will be only slightly above average. Moreover, perhaps the desired levels of natural gas inventory holding have shifted upward in recent years. This is by no means certain, though. In any event, if one selects the 2006-12 horizon as the relevant one, then end October supplies fall modestly below this revised average.

Nevertheless, even if marketplace engineers adopt the 2006-12 vista as the most relevant one for inventory analysis, natural gas stocks at end winter 2013/14 draw season probably will be moderately high relative to average in days coverage terms. In addition, the noncommercial long position in natural gas that helped to propel prices to their spring 2013 heights, though it has slumped in recent weeks, remains substantial. Its liquidation will pressure prices. Despite the neutral (or even slightly bullish) inventory situation in days coverage terms for October 2013, the American supply/demand situation from the production and consumption trend perspective for 2013 (at least the past few months and "nowadays") and (especially) 2014 on balance is slightly bearish. Demand from the key electric power sector arguably will not jump up in the near term unless prices sustain falls under 350. Notable US LNG exports remain a prospect for the relatively distant future. Overall US electricity consumption growth remains mediocre.

Over the mystical time horizon called the long run, assuming normal weather and moderate American economic growth, the longer run natural gas trend probably is sideways. The broad range stands from roughly 280/310 to 490/520.

BUILDING UP AND DRAWING DOWN: HISTORY

The first two columns in the table below display the long run average (1990 through 2012) for US working natural gas inventories at end build season (end October) and end winter draw season (March). The two columns on the right detail highs for those two decades. Bcf totals are from the EIA.

	Long Run End Calendar Month Arithmetic (Bcf) Average	**Long Run End Calendar Month Days Coverage Average**	**Season Highs (Year) Arithmetic (Bcf)**	**Days Coverage**
October	**3282**	**53.8**	**3930 (2012); 3851 (2010)**	**66.0 (1990); 60.7 (2009)**
March	**1359**	**22.3**	**2477 (2011);** 1692 (2005)	**37.1 (2011);** 28.1 (2005**)**

End October 2012's 56.4 days coverage, despite the hefty 3930bcf stockpile, lurked well beneath prior summits. Since consumption varies over time, days coverage for a given inventory total can shift accordingly, sometimes dramatically. Rising consumption (as in recent years) reduces days coverage for any given inventory total. Several years- including the past four- saw slight additional builds into calendar November.

Those digging into the distant past may insert March 1990's 1912bcf. Recall as well as March 1990's ancient 36.4 day roof shattered by March 2011's 37.1 days. End March 2013 was 1724bcf (about 750bcf less than the prior year end March) and 24.7 days.

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The EIA reports US natural gas working gas inventory on 7/5/13 of 2687bcf. That is down 443bcf and 14.2 percent from 7/5/12.

Assuming normal weather, the United States natural gas inventory situation at end October 2013 (around the end of build season) probably will be at about average height in days coverage terms relative to the long run (1990-2012) end-October average of about 53.8 days. Based on the EIA's Short-Term Energy Outlook's estimate of 3809bcf for end October ("STEO", page 6; next release 8/6/13), October 2013 inventories will close with 54.3 days coverage (3809bcf divided by average calendar year 2013 consumption of 70.1bcf/day. However, at the end of winter draw season in March 2014, days coverage reaches around 27.4 days (1923bcf/70.1bcf per day), stretching about five days beyond the 22.3 day long run average.

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Perhaps the desired level of natural gas inventory holding in days coverage terms in recent years (2006-12) has climbed relative to its overall (1990-present) long run average. See "US Natural Gas in Winter 2012-13: Drawing Conclusions", 12/17/12. Consider one factor in this context. Over the past several years, significant alternative "investment" in natural gas, as in other commodities, probably has reduced free supply to some extent. One can debate how much. The natural gas industry therefore in practice needs to grasp relatively more inventory to achieve desired (free supply) days coverage target levels.

In any event, uncertainty on what constitutes average (typical, normal, reasonable, desirable) days coverage underlines the need to be cautious regarding natural gas supply/demand analysis in general and inventory viewpoints and benchmarks in particular.

In regard to this issue, review the following table. Arithmetical records are interesting and grab headlines, but demand has not stood still in recent years.

	Inventory at End October (bcf)	**Days Coverage**
2006	3452	58.1
2007	3565	56.3
2008	3399	53.4
2009	3810	60.7
2010	3851	58.4
2011	3804	56.9
2012	3930	56.4

These seven years (2006-12) average 57.2 days. This is a noteworthy amount, 3.4 days, above the long run average including them (57.2-53.8 days). Suppose end October 2013 days coverage ends

with 54.3 days. From this 2006-12 perspective, the potential upcoming October 2013 days coverage of 54.3 days is around 2.9 days under this seven year "revised normal" figure.

Suppose the desired holdings for end March (and for other calendar months) likewise shifted upward in recent years. Boost the end March long run average of 22.3 days (1990-2012 seasons) by the same 3.4 days that end October for the 2006-12 span rises relative to the 1990-2012 longer run. That makes a hypothetical end March average (2006-present) of 25.7 days.

So what about March 2014 days coverage? The July2013 STEO predicts end March 2014 natural gas working gas stocks of 1923bcf. The hypothetical 27.4 day end March 2014 level is lofty from the long term perspective (22.3 days average). Moreover, it is somewhat high versus the potential 25.7 day "new normal" height. Thus from the days coverage perspective, not only is the prospective March 2014 natural gas inventory bearish, it becomes bearish relative to the October 2013 days coverage situation.

OTHER SUPPLY/DEMAND YARDSTICKS

What does a further brief survey of the US natural gas landscape unveil? On balance, the scene looks somewhat bearish.

Much of course depends on price assumptions and trends. The EIA gives the calendar 2013 Henry Hub spot price at 3.76 dollars per mmbtu (2012's was 2.75/mmbtu), with 2014 predicted at 3.91 (July STEO, Table 2).

US demand looks sluggish for the 2013 and 2014 span, a bearish sign. Total US natural gas demand inches up only .6 percent to 70.1bcf/day in calendar 2013 versus 2012's 69.7bcf/d (STEO, Table 5). Note the fall in 2014 demand to 69.7bcf/day, nearly a .6pc dip.

Not only is overall US demand for 2013/14 versus calendar 2012 relatively flat, but also 2013/14 production patterns relative to that demand seem mildly bearish. Although traditional (conventional) natural gas production has eroded in recent years, the shale gas revolution continues. Drilling rig productivity has jumped in recent years. In addition, increased drilling for petroleum due to elevated oil prices has resulted in more natural gas output. For the near term, according to the EIA, US total marketed production climbs 1.1pc, more than the 2013 rise in US demand, reaching almost 70.0bcf/day in calendar 2013 versus 2012's 69.2bcf/d. Production ascends further in calendar 2014, by .6pc to 70.4bcf/d. This 2014 output rise contrasts with the US demand drop that year.

Admittedly, US net exports fall slightly from 2012 to 2013 (about .4bcf/day), with a further .1bcf/d decline in 2014. This mitigates the production/demand bearishness. The eventual potential for the US to begin exporting substantial amounts of LNG has sparked substantial interest. However, although significant net American LNG exports may develop, that eventuality is still somewhat distant in time relative to 2013 (and 2014).

Natural gas demand in the commercial and industrial arenas expands in 2013 relative to 2012; it climbs further in calendar 2014. But what about the crucial natural gas electric power sector? Here, low gas prices in most of calendar 2012 sparked a jump in gas demand in that field. This demand rise in turn encouraged the mighty natural gas bull move from its 2012 depths. Yet as prices rallied, demand destruction in the key electric power domain eventually appeared. Review its EIA statistics on a year-on-year basis. At sustained price levels decisively above 400, and all else equal, probably consumption in the electric power sector sags significantly. Calendar 2012

electric power sector demand was about 25.0bcf/day. However, it fell sharply (about 10.3 percent) to 22.4bcf/d in 2013; the STEO framework predicts it to slide slightly lower in calendar 2014 to about 22.2bcf.

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Spotlight the overall American electricity demand vista. US 2013 total electricity consumption rises only merely .7 percent to 10.51 billion kilowatt hours per day versus calendar 2012. Calendar 2014 demand grows just over 1.0pc (EIA, July 2013 STEO, Table 7a). All else equal, this flat growth does not ensure much of an increase in natural gas demand.

NATURAL GAS: A PRICE AND TIME BLUEPRINT

Keep in mind the percentage declines from the 443/444 tops (nearest futures continuation) of 4/18/13-5/1/13. A ten percent drop gives a price of 400, 20 percent 356, 25pc 333 (modest support exists around 328, the 7/31/12 interim top), and 33pc about 296. Relative to the major low around 190 on 4/19/12, a 33 percent rally is 254 (recall the 8/29/12 interim low at 258), 50pc 285, 100pc 380 (10/30/12 high 382; 11/23/12 top 393), 133pc 444 (note the spring 2013 plateau), 150pc 476.

The bear move in the NYMEX natural gas winter 2013/14 calendar strip (November 2013 through March 2014 contracts) NYMEX confirms and intertwines with the downtrend in nearest futures continuation. Note the high of about 4.72 on 5/1/13. Its 7/1/13 low around 379 is close to its 378 depth on 1/9/13 and not far from the basement near 360 on 4/23/12.

The recent bear move in the NYMEX 2014/17 calendar strip (four calendar strip years combined, all months) confirms the downtrends in NYMEX natural gas nearest futures continuation and the NYMEX winter 2013/14 calendar strip. Note the decline from the 454 high on 5/23/13 (settlement basis), which was beneath the 458 tops of October 2012.

The collapse in the NYMEX March 2014 less April 2014 spread likewise fits the bear marketplace story for natural gas. It crested at about 45 cents backwardation on 4/12/13, establishing final highs on 4/18/13 at 42 and 4/30/13 at 40. It collapsed from 27 on 5/24/13 to around eight cents now.

Electricity's crumbling in recent weeks mirrors that in the US natural gas landscape. The widely-watched winter 2014 PJM electricity strip (January and February contracts) has dived from its 5/23/13 close around 5030 (this height was beneath its 5175 top on 11/21/12. It is not far from its key bottoms around 4385 (1/20/12) and 4400 (1/9/13; compare the timing of the January 2013 natural gas nearest futures low).

Appalachian coal (NYMEX nearest futures continuation) began to crash a bit later this spring than natural gas, beginning its bear move around 6180 on 5/31/13. However, its subsequent fall to around 5500 fits the natural gas price decline and helps to undermine gas prices.

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Not only was the major bull move from the dismal April 2013 bottom around 190 (4/19/12) to recent highs around 443 (4/18/13)/444 (5/1/13) monumental (about 133 percent). Its diagonal time move from the April 2012 major low also occurred over a long period, and that actual duration- about a year- is an important one for assessing commodity price trends. This long-lasting advance, as it intertwined with a big upward price move, signals that the spring 2013 natural gas price highs represent a key pinnacle.

In the price trend and inventory level context, suppose a rather significant bear trend in natural gas (nearest futures continuation) occurred at the recent April and May 2013 elevation near 445. When should one look for a notable bottom? Assuming normal weather, the most likely time is late August to sometime in calendar September. Recall that several very important natural gas lows appeared in late August and calendar September. Recall 8/27/98 at 161 (and the interim low of 8/29/12 at 258), 9/26/01 at 176, 9/22/03 at 439, 9/16/04 (final bottom) at 452, 9/27/06 at 405, and 9/4/09's 241. With the exception of a top almost 20 years ago (9/23/92 at 279), significant summits have not occurred in this calendar period window.

In employing time factors (variables) as guidelines to help forecast marketplace highs and lows, underscore that the time variables interrelate with distance (yardstick measures in percentage and arithmetic terms) and historical price level (support and resistance) ones.

In any case, because one should not be dogmatic regarding timing forecasts for any given marketplace bottom or peak, note other calendar history of key lows and highs.

**October- Key October highs are 10/28/97 at 385, 10/28/99 at 328, and 10/28/04 at 920. Major lows generally have not occurred in calendar October. However, see 10/27/10's interim low at 321.

**November- one low, that of 11/24/99 (208; part of a double bottom with 1/15/00's 213); highs 11/26/90 (at 265), 11/5/91 (at 214), and 11/30/06 (905), with a recent interim top 11/23/12 at 393.

**December- no noteworthy lows; important tops 12/21/95 (at 372), 12/20/96 (460), 12/27/00 (1010), 12/13/05 (1578; all-time high).

**January- significantly, there have been four key bottoms in calendar January. The two highs that also occurred in January point out the potential for trend change during that month. Major low 1/24/92 (102), 1/13/95 (125), 1/15/00 (213; see November), 1/28/02 (185; preceded by the 9/26/01 low at 176); tops 1/9/04 (763) and 1/7/10 (611). Keep in mind the interim lows in early January 2013 (1/2/13's 305 and 1/9/13's 309).

**February- troughs at 2/24/97 (168), 2/26/99 (163); summits 2/2/94 (269), 2/25/03 (1190)

**March- no noteworthy lows or highs.

**April- major bottom 4/19/12 at 190. From the time perspective, the key double top of 4/18/13 at 443 and 5/1/13 at 444 averages out to a late April pinnacle.

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In watching for a price level and time for declaring a bottom to the ongoing bear trend, monitor the natural gas net noncommercial position in the CFTC's Commitments of Traders. Focus on the NYMEX traditional futures contract (including options), the NYMEX European options contract (in futures equivalent terms), and the ICE natural gas contract.

Note the leap in the net noncommercial ("speculators" and "investors") long position from around the time of the January 2013 price lows a bit over 300 to the spring 2013 peak over 440. These noncommercial buyers represent an important building block in that bull ascent. The net long position of about 25,000 contracts on 1/8/13 (the net NC long had fallen from 148m on 10/23/12 and 129m on 11/27/12, around the time of the 393 interim high on 11/23/12). Net NC longs

reached their peak on 4/30/13 at about 367,000 contracts. Although the net NC long total since has tumbled to about 207m contracts (as of 7/2/13, the most recent data period) as prices have slumped, the net NC long position probably remains substantial.

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