

US NATURAL GAS- OFF IN THE DISTANTS

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“Reluctantly crouched at the starting line,
Engines pumping and thumping in time.
The green light flashes, the flags go up.
Churning and burning, they yearn for the cup.
They deftly maneuver and muscle for rank,
Fuel burning fast on an empty tank.” “The Distance”, a song by Cake

OVERVIEW AND CONCLUSION

In commodity marketplaces, the price level and fluctuations of the spot (physical, cash) world and nearby (front) months generally attract and fascinate us more than periods (distant month contracts) out in the seemingly more misty future. In recent history, bull and bear moves in distant period NYMEX natural gas contracts to a substantial extent have mirrored those in the nearby months. Patterns in NYMEX natural gas strips, whether seasonal ones such as summer 2013 or calendar years such as 2014, 2015, and 2016, significantly resemble those of actual nearby months (and the nearest futures continuation contract perspective). For example, after marching upward and achieving peaks in spring 2011, they eventually fell off together, reaching dismal valleys in April 2012. The front months and distant spans then ascended dramatically, although not exactly the same distance. After this climb, they began to retreat together; recall the descent since late November 2012 (some trading periods started to fall off in price in October). The nearby and distant month trends thus have generally “confirmed” each other.

Nevertheless, any given natural gas near term situation is not always or necessarily the same as that of the more distant future (or ancient history) times. Because natural gas is not a cost of money commodity like gold, this similar directional relationship between spot (and front month) and forwards off in the distance is neither unchanging nor guaranteed. Some divergence may develop. Therefore marketplace players should monitor trends in NYMEX distant month natural gas contracts in addition to those of actual nearby months (and first futures continuation).

The long run major bull trend of the NYMEX natural gas complex that began in April 2012 (as represented by the nearest futures continuation bottom around 190 on 4/19/12) remains intact. However, at present the near term bearish retracement move for both nearby as well as distant month forwards such as the summer 2013 strip and the calendar strips of more faraway years also likely remains in place. See the nearest futures continuation high on 11/23/12 at 393.

The interim decline in natural gas that commenced during fourth quarter 2012 probably is near in time to at least an initial end. Assuming normal winter weather, the most likely time for this bearish NYMEX natural gas pattern to cease is in late calendar January or late calendar February 2013 (probably around nearest futures expiration). In any event, the price (nearest futures continuation basis) will not easily sustain falls beneath the 300 to 285 range (note recent lows on 1/2/13 at 305 and 1/9/13 at 309). Warmer than normal weather (as in last winter) could postpone the low (recall the late April 2012 depth). Given the likelihood of above normal US natural gas inventories in days coverage terms, there remains a significant chance of a final (second, double) bottom in late August or calendar September 2013.

As there are regional differences (basis relationships) between natural gas marketplaces, players should not restrict this comparative approach to NYMEX natural gas. Why not analyze near term relative to far out periods natural gas at a variety of different locations (and review related basis relationships over these vistas)? Also, given the links between natural gas and electricity fields, analysis of electricity marketplaces in more distant months in a given region offers insight into near term electricity trends as well as distant month (and even near term) natural gas battlegrounds.

OUT IN THE DISTANCE

The Old Testament Book, Ecclesiastes declares (1:9-10): “The thing that hath been, it is that which shall be; and that which is done is that which shall be done: and there is no new thing under the sun. Is there any thing whereof it may be said, See this is new? It hath been already of old time, which was before us.” To what extent is this Biblical claim true in regard to marketplaces?

In financial marketplaces, what equals the near term, medium term, and long run is a matter of opinion. Objective lines do not separate marketplace time horizons. Views on relevant variables for and relationships between so-called past, current, and future marketplaces reflect personal viewpoints. Marketplace players, analysts, and media consume great quantities of energy and spend most of their time focusing on near term supply/demand variables and related spot (physical, cash, outright) and nearby month price levels and trends, usually much more than on longer run horizons. Many sharp-eyed professors and trading wizards concentrate on long run factors, for these phenomena of course intertwine with those of the current and short term horizon. In any event, the near term outlook and price situation generally (though not always) receives more attention than those off in the distance. This rule of thumb is true for equities, interest rate, foreign exchange, and commodity marketplaces.

Briefly scan assorted commodity sectors. Pricing relationships between spot and forward marketplaces vary. Pundits draft competing and often arcane dissertations on these topics. Yet how can one briefly summarize these?

At one extreme, take a “financial”, easily storable (and fairly readily transportable) marketplace such as gold. Although these realms do not have static supply/demand pictures, and though they may display some seasonal considerations, the prices for forward months nevertheless very closely reflect interest rate (borrowing) costs plus storage fees. This holds true for all the distant months relative to “now”; whether for mid-2013, March or December 2014, calendar 2015, and so forth. The term “distant” covers numerous months or years “way out or at least pretty far out there”.

Whereas gold historically displays contango (nearby price under that of distant months), base metal (copper, aluminum, lead, and so on), agricultural, and energy playgrounds very often unveil significantly less than full carry situations. Moreover, and very unlike gold, these realms frequently present backwardation (prices of given prompt and relatively nearby months exceed those of more deferred ones). Base metal, agriculture, and energy territories are not “pure cost of money” fields.

Although gold’s distant months incorporate interest rate and storage charges, most observers would agree that spot gold and December 2015 gold essentially are the same animal. They rise

and fall and twist and turn in almost exactly the same way at the same time. However, United States wheat (assume a given delivery location) for delivery in May 2013 is not quite the same creature as that in May 2014 or December 2015. Brent/North Sea crude oil for physical or nearby month delivery is not exactly the same beast as that lurking a year or more forward. Is winter 2012-13 NYMEX natural gas “the same” as summer 2013, winter 2013-14, or even more distant duration natural gas? Surely not exactly, even though it is not divorced from them.

For commodities that do not constitute pure cost of money realms, distant month pricing and supply/demand considerations are not unrelated to nearby pricing and phenomena associated with it. The short and long run are not separated islands. Nevertheless, from some perspectives, relative to “the” near term situation and its variables, “the” supply/demand factors influencing distant months “out there” in these pastures arguably to some significant extent (or a great degree) “are new or different (or divergent), or intertwine differently, or should be weighted differently”. This qualitative viewpoint admittedly is imprecise.

Even though base metals may be fairly easily stored (but considerably less easily than gold for a given dollar value), they are less of a cost of money commodity than gold. Since they have substantial industrial (as opposed to “investment”) use, sometimes a nearby month will venture over a distant one. Agricultural commodities such as wheat, corn, and soybeans do not last forever (like gold), but they can be stored for extensive durations. Thus their distant months to some extent can reflect interest rate and storage charges. We all know that many agricultural commodities such as wheat are produced around the globe. However, in general, those in key producing (and trading) regions- such as the United States- have seasonal production. There is an old crop and a new crop. Consequently planting and harvest factors (and total inventories, including levels in days coverage terms; and weather events) substantially influence the relationship between nearby trading months and distant ones. Sometimes the price for the old crop month travels much higher than that of the upcoming (subsequent) new crop period. For an extreme even more distant from gold, ponder livestock landscapes. Beasts such as live cattle do not live forever. Supply/demand for herds reveals seasonal characteristics.

Energy commodities such as petroleum and natural gas are storable for long periods of time. Their forward price structure therefore clearly can evidence current and anticipated cost of money considerations (interest rate plus storage fees), especially when supplies of them are ample.

Yet the worldwide petroleum complex “in general” and the United States natural gas universe (in its various regions) are not pure cost of money commodities. Not only may contango between two (or more) months be less than interest rates plus storage costs; but also backwardation may exist, persist, and be substantial.

Despite the popularity (over the past ten years or so) of alternative “investment” in them, these energy arenas (like base metals) remain far more industrial than gold. Inventory levels (and days coverage) for petroleum and natural gas can change significantly within a given time span (for example, from end March to end October) and vary substantially across similar calendar time periods (such as end first quarter from one calendar year to the next). In addition, the past few decades as well as the current environment show that petroleum at times faces substantial risk of supply interruption. In an increasingly tumultuous and fearful world, inventory holding desires may shift from a just-in-time to a just-in-case viewpoint. Also, demand (and therefore output) for refined petroleum products can be seasonal (think of gasoline or heating oil). What about the United States natural gas scene? As the labels “build season” and “draw season” reflect, United States natural gas has significant demand variation between seasons. Weather (freezing winters,

burning summers) obviously matters a great deal for natural gas consumption. Natural gas supply/demand and price trends entangle with electricity (and note electricity's seasonal consumption swings), coal, nuclear, and renewable marketplace ones.

Since natural gas is not a cost of money commodity, since the supply/demand horizon for its long term entangles in misty, diverse, and changing ways with so-called current time considerations, observers should monitor price levels and patterns of natural gas "distant" (deferred months) alongside those of nearby ones (both nearest futures continuation and actual months such as February or March 2013).

NYMEX NATURAL GAS: THE PRICE AND TIME THEATER

NYMEX natural gas has traveled a long distance in diverse directions since spring 2011. In the following summary of several NYMEX natural gas marketplaces and strips, note the similar turning points in time for the commencement of key bull and bear moves. Prices tops and bottoms for nearest futures continuation, the February 2013 actual contract, and the summer 2013 strip are daily bar highs and lows. Highs and lows for the 2014 through 2017 (four years, combined) calendar strip are on a daily settlement basis.

Note how the trends generally, even if not precisely, have tended to confirm each other. This shows the benefit of studying the movements of and relationships between spot and distant month marketplaces.

**Nearest futures continuation: peak 6/9/11 at 498 (recall the more distant height at 611 on 1/7/10), major low 4/19/12 at 190, very important top 11/23/12 near 393 (initial high 10/30/12 at 382).

**February 2013 actual contract: peak 5/3/11 at 566, followed by a bottom about 308 on 4/23/12. It then topped at 409 on 10/19/12 (not long before the initial nearest futures one in late October) and a bit over 407 on 11/23/12.

**NYMEX summer 2013 strip (April through October contracts): key high around 540 on 5/4/11, major low 315 on 4/23/12 (compare the timing for the nearest futures and the February 2013 contract). After rallying for around half a year, it established highs at just beneath 406 on 10/19/12 and 11/23/12 (the November level was slightly above the October one).

**NYMEX 2014-2017 calendar strip (four years of contracts combined): high 4/1/11 at about 632. Key bottom achieved around 406 on 4/23/12; it then rallied to 10/29/12's 458, slumping further from 11/21/12's 451.

Intramarket spreads reflect relationships between a given marketplace and one more distant in time. In commodities, including NYMEX natural gas, trends and levels in some intramarket relationships can offer additional guidance regarding trends in outright marketplaces, whether in nearby month trading lands or in more distant horizons. People tell stories about these spreads. Of course not all natural gas intramarket spreads behave in the same fashion. However, many of these spreads at times can help to confirm flat price price trends, or warn of changes in them. For example, note the NYMEX February less August 2013 natural gas spread as well as the March 2014 less April 2014 relationship.

**February 2013 less August 2013: a notable top of about 27 cents backwardation (near month over the distant one; settlement basis) on 6/6/11, not long before the pinnacle in nearest futures

continuation around 498. It made a trough at about 15 cents contango on 3/30/12, peaking at just over flat (tiny backwardation) on 10/19/12, diving sharply from around four cents contango on 11/23/12 (and decisively breaking under the 3/30/12 low).

**March 2014 less April 2014: Note the high of about 29 cents backwardation on 6/6/11. It made an important low 1/17/12 at slightly under eight cents backwardation. Though the major low in nearest futures continuation was in April 2012, its initial notable valley was 1/23/12 at 223. The spread ascended from its interim low of 12 cents backwardation on 4/19/12. It achieved crucial highs at nearly 21 cents on 10/19/12 and just over 20 cents on 11/23/12. Like nearest futures continuation and other outright natural gas marketplaces, the February/August 2013 and the March/April 2014 intramarket spreads then plummeted precipitously.

Note the coincident timing for the recent lows in these NYMEX natural gas marketplaces. Nearest futures continuation (and so the February 2013 actual, the front month) slumped to 305 on 1/2/13 and 309 on 1/9/13. The summer 2013 strip reached 331 on 1/9/13; the 2014-17 calendar strip made a low that day at 425. Also on 1/9/13, the intramarket spreads made lows, the February/August 2013 at about 28 cents backwardation and the March/April 2014 at around seven cents backwardation.

Natural gas basis relationships offer further insight into the present and future natural gas supply/demand situation as well as NYMEX natural gas price trends.

Electricity, like natural gas, obviously offers marketplaces at diverse geographic locations. These domains enable deals to be made over various contractual time horizons, whether in the near term or for more distant periods. Thus as in natural gas, electricity guides can analyze US electricity marketplaces such as PJM to ascertain and assess trends of and linkages between a given near term situation and a more distant time horizon. Also, analysts often compare these electricity marketplaces for the given contract time period (whether an outright or a strip) in relation to the corresponding natural gas one.

THE “CURRENT” US NATURAL GAS HORIZON

In the movie “The Wizard of Oz” (Victor Fleming, director), Dorothy wonders: “A place where there isn’t any trouble. Do you suppose there is such a place, Toto? There must be. It’s not a place you can get to by a boat or a train. It’s far, far away. Behind the moon, beyond the rain...”

The current overall supply/demand United States natural gas situation remains bearish. Dig into recent Energy Information Administration statistics, particularly the Short-Term Energy Outlook, (“STEO”, 1/8/13). The STEO provides supply/demand data for the 2012 through 2014 calendar span.

The EIA states: “Inventories of working natural gas in storage remain at high levels, after setting an all-time weekly record in November 2012. As of December 28, working gas stocks totaled 3,517 Bcf, which is 23 Bcf greater than the same time in 2011 and 389 Bcf greater than the previous five-year (2007-11) average” (STEO, p8).

With US end October working gas inventory around 3923bcf (interpolation from weekly EIA figures), days coverage at end October 2012 was about 56.6 days. This hovered about three days over 1990-2011’s 53.7 day average for end October. Moreover, the days coverage burden

increases by end first quarter 2013. The STEO predicts end 1Q13 stocks will slip only to 2077bcf (Table 5a). Relative to full calendar year 2012 demand of around 69.3bcf/day, coverage at end of draw season is about 30.0 days. Admittedly end March 2013 gas inventory falls short of last year's stratospheric end March total of 2477bcf and 37.2 days coverage, but it still soars 7.8 days beyond the long run (since 1990) end March 22.2 day average.

Compare this 7.8 day excess for end March 2013 with the three days above average at end October 2012. The oversupply situation worsens as autumn ends and winter progresses.

Suppose end March inventories slump to 1900bcf, even though much of winter 2012-13 has evaporated. That equals 27.4 days coverage, which is 5.2 days greater than normal and still significantly greater than the three days above average for end October 2012.

What about end first quarter 2014, a fairly remote time relative to now (at least from the risk taking perspective of many traders)? The prospective supply/demand situation out through first quarter 2014 remains rather bearish. The STEO forecasts end 1Q2014 inventory of 1949bcf. That equals about 28.0 days coverage. This is still comfortably above the 1990-2011/12 season end March average and not far from hypothetical end March 2013 levels.

In the context of this days coverage perspective, look at end October and end November 2012 price highs for various NYMEX natural gas contracts, particularly the key nearest futures peak on 11/23/12 around 393. Thus for some time it will be difficult for natural gas (nearest futures continuation) to sustain moves over 400 for some time.

All else equal, despite being elevated partly by some carry (cost of money and storage) aid, today's "overall structure" of NYMEX natural gas distant months "in general" will tend to slide down in price as time passes. As they become nearer and nearer to spot, they consequently will tend to fall within the nearest futures continuation's support and resistance band. However, a sustained bull move in nearest futures over around 375 probably will boost "distant months in general" over 400 or so.

The EIA yardstick predicts overall US natural gas consumption will stay about flat in calendar 2013 versus calendar 2012 (Table 5a). At about 69.7bcf/day, 2013's demand relative to 2012's roughly 69.3bcf/d inches up only about .6pc (less than one percent), with 2014 slipping slightly to 69.43bcf/day.

Natural gas and coal prices will influence the key parameter of natural gas/coal switching in the key electric power sector. The January STEO proclaims the Henry Hub price will average \$3.74 per mmbtu in calendar 2013 (compare 2012's \$2.75mmbtu average) and \$3.90 per mmbtu in 2014. US electric power sector consumption falls from about 25.0bcf/day in 2012 to 22.9bcf/d in 2013 and 22.5bcf/d in 2014.

Total dry gas production remains about unchanged from 2012 through 2014, with 2013 rising modestly to about 66.3bcf/day from 2012's 65.7/d; 2014 edges down slightly to 66.0bcf/d (total marketed production shows a similar view).

See "US Natural Gas in Winter 2012-13: Drawing Conclusions" (12/17/12) for additional discussion of the near term natural gas universe.

Over the next couple of years, US natural gas demand (and prices) apparently will not receive much new assistance via increased demand from the US electricity world. According to the EIA, total US electricity consumption will remain about flat in 2013 relative to 2012, at 10.44 billion kilowatt hours per day. Calendar 2014 scrapes slightly higher, to 10.52bbkwh/d (STEO, Table 7a). The residential sector is essentially flat all three years.

Some may wonder regarding the extent to which increased payroll taxes on consumers for calendar 2013 will cut or slow electricity demand.

Many major highs and lows in NYMEX natural gas (nearest futures continuation) occur “around” expiration. The 305 low achieved 1/2/13 probably should not be interpreted as being close to expiration. Note its slightly later 309 low on 1/9/13, for lows in the summer 2013 strip and other marketplaces also were 1/9/13. However, one should not be dogmatic about the expiration parameter. For example, the major high at 611 on 1/7/10 was not around expiration. Neither was the 6/9/11 pinnacle at 498.

Nevertheless, suppose a noteworthy rally commences. The January 2013 STEO statistics and the sharp decline from the November 2013 heights imply that it probably will be difficult over at least the next several months for NYMEX prices (nearest futures continuation) to sustain rallies over the 400/425 range.

Those seeking to analyze a much longer and more remote time span should investigate the EIA’s “Annual Energy Outlook 2013 Early Release Overview” (12/5/12). This offers information out to calendar 2040 for natural gas, petroleum, electricity, and other marketplaces.

[http://www.eia.gov/forecasts/aeo/er/pdf/0383er\(2013\).pdf](http://www.eia.gov/forecasts/aeo/er/pdf/0383er(2013).pdf)

Here are a few highlights from this long run EIA viewpoint. “Relatively low natural gas prices, facilitated by growing shale gas production, spur increased use in the industrial and electric power sectors, particularly over the next 15 years.” (page 1). See Figure 3 for a picture of America’s dry natural gas production by source from 1990 to 2040 (p2). “With increasing natural gas production, reflecting continued success in tapping the nation’s extensive shale gas resource, Henry Hub spot natural gas prices remain below \$4 per million Btu (2011 dollars through 2018 in the AEO2013 Reference case....After 2018, natural gas prices increase steadily...” (p5). See Figure 12, the electricity generation by fuel measurements (p12). Table 1 (pp15-16) offers supply/demand details for the energy sector. The US eventually becomes a net exporter of natural gas (see calendar 2025).

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