



TD Economics

Special Report

September 10, 2008

NATURAL GAS OUTLOOK: THE CALM AFTER THE STORM?

With crude oil prices stealing the headlines, relatively little attention has been paid to the significant developments in the natural gas market. After surging from US\$7 per MMBtu in January to over US\$13 per MMBtu in early July – an 88% increase – natural gas prices on the NYMEX have since reversed course, falling below US\$7.25 per MMBtu in just 9 weeks. Still, prices remain 30% above year-ago levels. July's peak was the highest price – and the subsequent drop the most rapid – since the Hurricane Katrina days in 2005. This wild ride that natural gas prices have been on has raised the question as to where prices are headed in the near term, especially during the all important 2008/09 winter heating season.

Recent price swings driven largely by storage levels

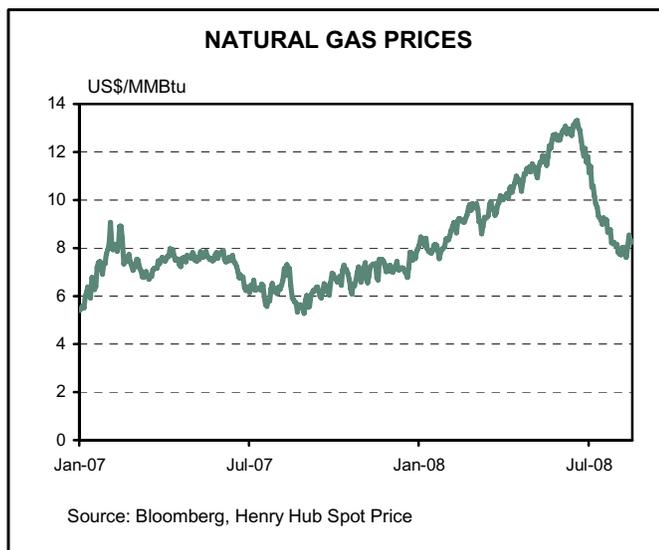
A number of factors have contributed to the large swings in natural gas prices since the start of this year, but storage levels seem to be a key driver. Following the coldest win-

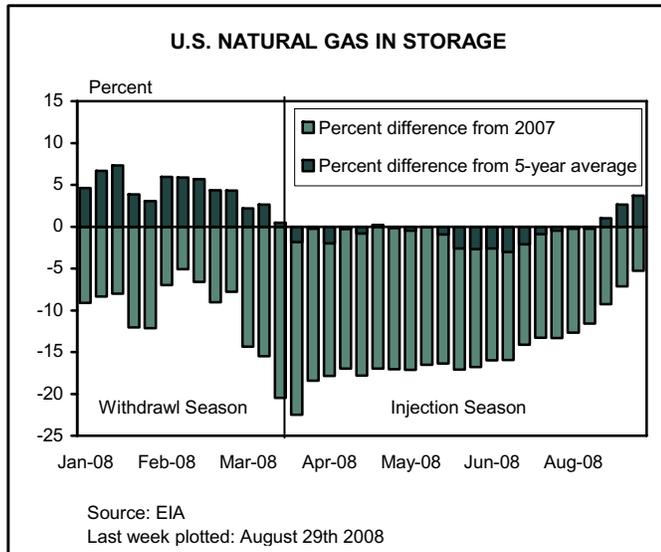
HIGHLIGHTS

- **Large swings in natural gas prices this year driven by U.S. storage levels**
- **Unconventional resources boost U.S. production**
- **Prices to rise in Q4 2008 and Q1 2009 on seasonal demand**
- **Tighter supply-demand balance in Canada to narrow the gap between AECO and NYMEX prices**

ter in 7 years – which drove consumption during the first quarter of the year up 4.5% from year-ago levels – natural gas in storage entered the current injection season (beginning April 1st) about 20% below the record-high levels seen in 2007. And although inventories were in line with the 5-year average, this difference from last year's levels triggered concerns about insufficient supply ahead of the upcoming winter heating season (beginning on November 1st) and sent prices on an upward trajectory. But since breaching US\$13 per MMBtu in July, storage levels have improved, and now sit only 5% behind year-ago levels and 3.7% above the 5-year average. This, coupled with forecasts for milder temperatures, has led to the recent plunge in prices.

While spill over from the oil correction also played a role in the current selloff in the natural gas market, the relationship between these commodities has seen a further disconnect over the past two months. Indeed, the oil-to-gas price ratio – which is typically in the 8-9 range – has increased from an average of 11 during the first half of the year to over 14 in August, as natural gas prices have





fallen more rapidly than oil prices. Oil is more of a global commodity and is therefore highly correlated (negatively) to movements in the U.S. dollar – which has kept prices from falling as fast as natural gas prices. Also, oil is exposed to geopolitical risks – whereas natural gas is not since most gas in North America is produced there – further limiting the slide in prices. But, even though oil prices still have some impact on the natural gas market, other factors have been driving prices lately.

U.S. output on the rise

While storage levels were falling, natural gas production in the U.S. was actually on the rise during the first half of the year. After peaking in 1973, U.S. natural gas production declined through 1986, before reversing course again, as tax incentives and new technology led to the development of unconventional resources. Tight gas, coalbed methane and shale gas have become an increasingly important source of natural gas in the U.S., as conventional resource capacity is shrinking. Once discovered, the development of these resources is timely and expensive, as more wells are required to produce the same amount of natural gas. Still, these discoveries, combined with sizeable output from the Independence Hub in the Gulf of Mexico, drove U.S. production growth up by nearly 9% during the first half of the year.

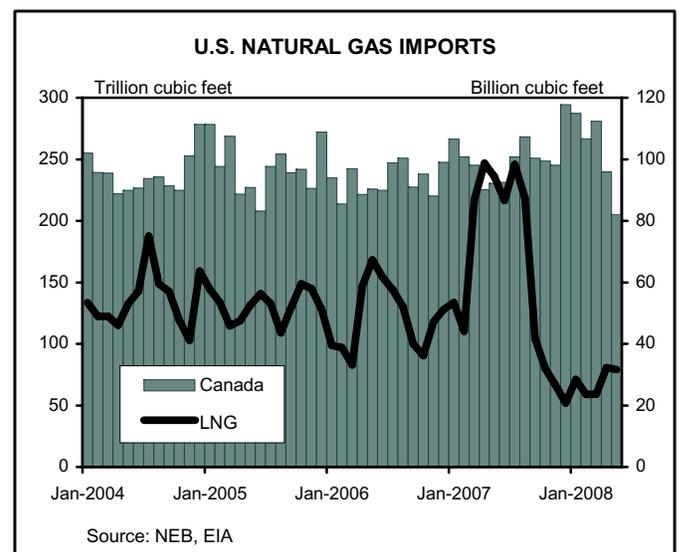
However, overall supply in the U.S. has been crimped by a 60% reduction in LNG imports this year. Robust demand in Europe and Asia-Pacific, coupled with more competitive prices in those regions due to limited storage capacity (prices have been 50-100% higher than in the

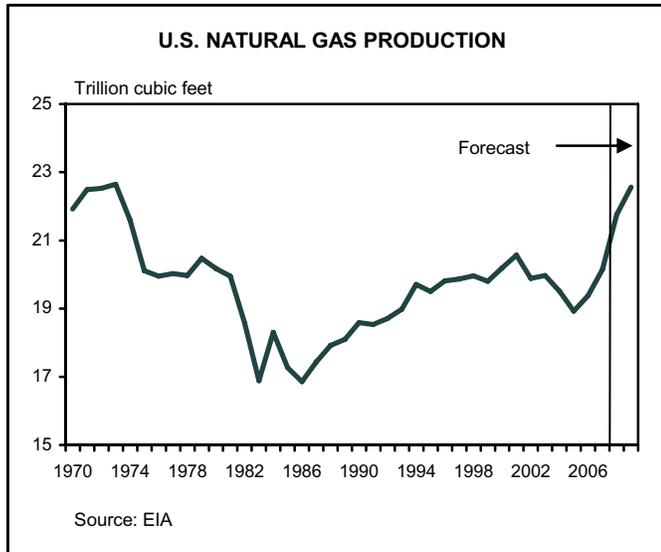
U.S.) has made the U.S. a less attractive export market. Moreover, after starting the year off strong, imports from Canada – which typically account for 12-15% of U.S. demand – fell sharply in May and June, further limiting overall available supply in the U.S. market. But, despite a 4% increase in consumption during the second quarter, storage levels have improved. And if inventory builds match or exceed those of the 5-year average for the remainder of the injection season, supply will be at a ‘comfortable’ level between 3.3 and 3.4 Tcf as we enter the winter heating season.

Unlike production, demand is very seasonal since it is heavily influenced by weather conditions – which are quite unpredictable. Natural gas is used to heat and cool many homes and commercial buildings in North America, thus an extremely cold winter or hot summer will result in a rise in demand – as proven last winter with a 6% Y/Y jump in consumption. In fact, decreasing a thermostat by 2 degrees (in the winter) in a residential home will result in a 6-10% reduction in energy use¹. Natural gas is also becoming more commonly used to generate electricity as it is one of the cleanest energy options available. In the U.S., natural gas currently fuels about 20% of total electricity, hence, natural gas price movements can impact electricity costs as well.

Heating demand to soften modestly next winter

Looking to the upcoming heating season, the National Oceanic and Atmospheric Administration (NOAA) forecasts temperatures will be cooler during the first half of the winter and milder in the second half – which if true, would mean that overall U.S. demand will be softer since





early winter loads are much lighter than second-half loads. Accordingly, this winter, we expect to see U.S. consumption fall by about 1% compared to year-ago levels.

In some cases, natural gas can be used as a substitute for oil in industrial and electric power generation – so when oil prices are higher, demand for natural gas will increase. However, the number of facilities that have the ability to switch has declined in recent years. With the oil-to-natural gas price ratio currently much higher than the historical average right now, it is likely that whoever is able to switch to natural gas has switched. Any further substitutions will not likely be enough to offset the decline in heating demand.

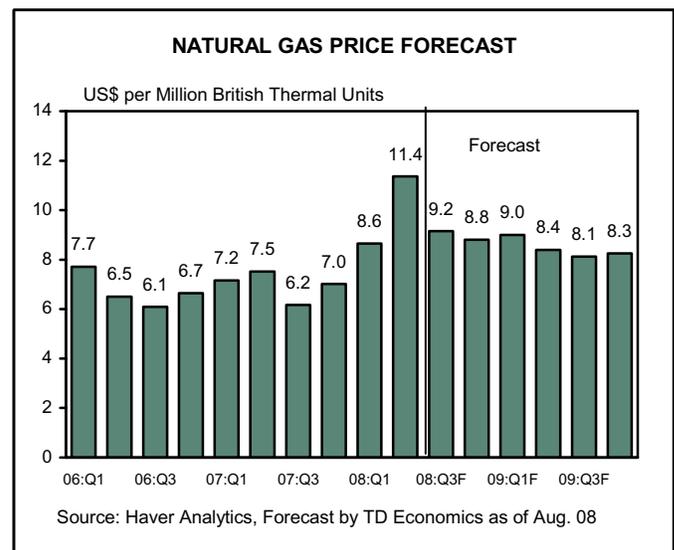
Unconventional resources plentiful

With the upcoming winter heating demand expected to be softer than last year's, supply in the U.S. should be sufficient. Natural gas production growth will continue to rely heavily on unconventional resources. A considerable number of unconventional reserves have yet to be exploited in the U.S., which could contribute significantly to production growth if producers are willing to endure the high production costs. Shale deposits in Texas and Louisiana will continue to provide a boost to output, which is likely to expand at a 9% clip for the remainder of the year, and to grow by a further 4% in 2009. Providing some offset to the increased supply will be pipeline constraints. Despite a significant addition to pipeline capacity in the U.S. last year, there is still trapped gas (not enough pipeline capacity to take the gas out) in the Rockies. Several new pipelines have been proposed for the next few years, and with

all the unconventional gas discoveries, more capacity will be needed to transport the gas from the Rockies and the Producing region to other parts of the country. LNG exports to the U.S. are likely to pick-up modestly during the second half of the year, though still remaining about half of 2007 levels – and thus not have a significant impact on prices. Globally, LNG production capacity is on track to rise significantly in 2009 – stemming from Qatar, Russia and Indonesia – which should lead to a further uptick in U.S. imports next year. On the flipside, imports into the U.S. from Canada are expected to decline, hindering overall supply growth. As a result, we project total U.S. natural gas supply to expand by 4.5% in 2008 and 2.7% in 2009.

Seasonal demand to keep prices elevated

So what does all this mean for natural gas prices? Robust supply growth, combined with weaker demand during the heating season, will allow storage levels to continue to improve, thereby putting downward pressure on prices. Pipeline constraints will provide some offset, however not enough to send prices to new heights. Seasonal factors will still be at play, as consumption is highest during the winter heating season. Accordingly, look for prices to remain in their current range throughout the fall, before picking up modestly in the winter months alongside seasonal demand. While the average quarterly price is typically higher in the fourth quarter than the third – which has happened in 10 of the past 13 years – this year will likely be an exception, since prices were so high at the start of the third quarter and are not expected to reach those heights again this year. As such, look for prices to average US\$8.80 in the last quarter of this year – up from the current level

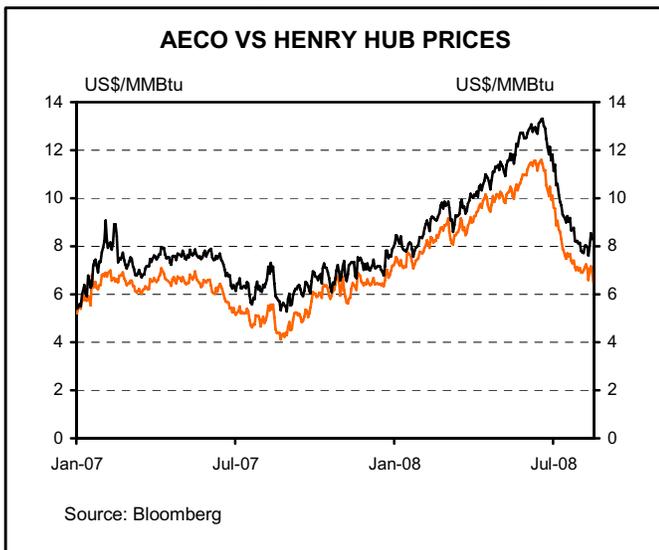
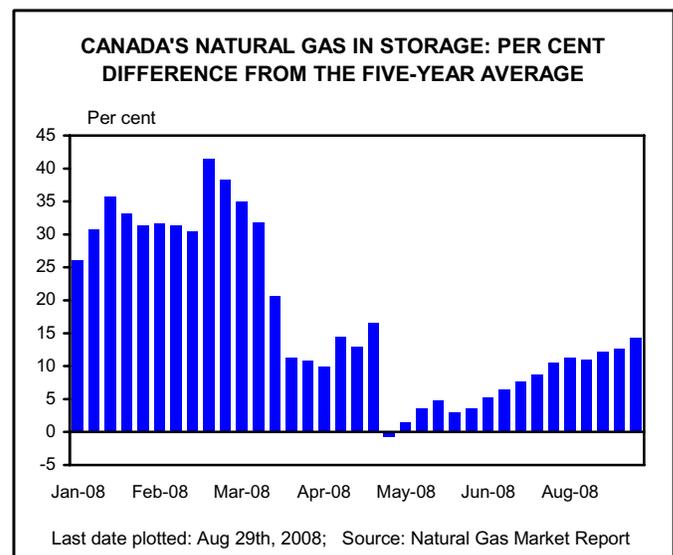
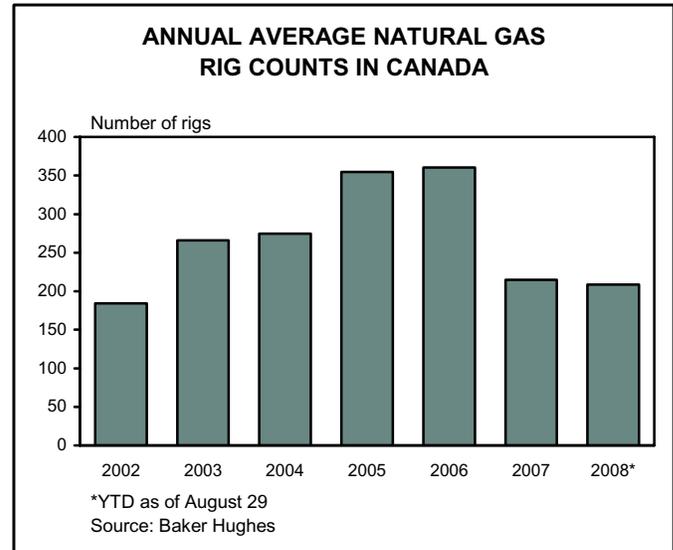


of about US\$7.25 per MMBtu, but down from a quarterly average of US\$9.15 per MMBtu in the July-September period. We do expect seasonality to play out in the first quarter of 2009, with prices rising to US\$9.00 per MMBtu. Given TD Economics' forecast for oil prices to hover around the US\$100 per barrel mark for the rest of this year and into next, the seasonal rise in natural gas prices will likely move the oil-to-gas price ratio down closer to the historical average.

The big question mark for natural gas prices in the very near term is hurricane season. In fact, fears that Hurricane Gustav would hit the Gulf of Mexico – which is at most risk with respect to hurricanes – bid up prices in late August. But since it is impossible to predict hurricane damage, our forecast assumes that potential hurricanes do not directly impact the production infrastructure in the Gulf of Mexico, as was the case with Hurricane Katrina. Given that the NOAA is forecasting normal to above-normal hurricane activity this year, there exists potential for hurricane damage in key producing regions. As such, it could lead to further intermittent bouts of upward pressure on prices between now and the end of October. Also, if the coming winter is as cold as or colder than last year's, prices could move back to the US\$11-12 per MMBtu range.

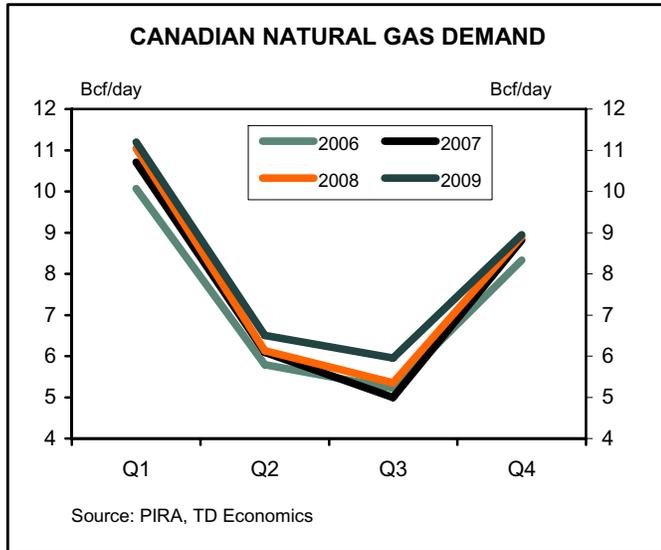
AECO prices underperform NYMEX prices

In Canada, the natural gas story is a little different. AECO prices – the Canadian benchmark for natural gas prices – followed a similar trend as NYMEX prices, although the swings were not as large. AECO prices peaked in late June at only US\$11.56 per MMBtu, before plunging below US\$7.00 in August. The 76% surge in prices since



the start of the year fell short of the 88% rise in NYMEX prices, widening the gap between the two to US\$1.50-2.00.

Despite the sharp rise in prices earlier this year, it was not enough to stimulate more drilling, as sky-rocketing oil prices made drilling for oil more desirable. In fact, natural gas drilling activity is down 3% compared to last year, and 47% from 2006 levels. Accordingly, production in Canada was down 5% as of May. And contrary to the U.S. story, inventories in Canada have been on the rise and now sit 14% above the 5-year average. This is largely due to the fact that exports to the U.S. have declined in recent months and output has instead worked its way into Canadian storage. As a result, Canadian inventories are also likely to enter the winter heating season at a comfortable level.



Canadian supply-demand fundamentals to tighten

Conventional production in Canada peaked in 2006 and output has been declining ever since. And even with the unconventional discoveries, output will not be able to match the heights seen in 2006 anytime soon. British Columbia's Horn River Basin has the most potential, but given the winter-only access and the remoteness of the region – lacking basic infrastructure, including roads, pipelines and labour and equipment – full development is at least 9-10 years away. Large deposits have also been discovered in the Maritimes, but again, it would take at least a decade before supply could hit the market. In Alberta, the new royalty regime set to come into effect in January 2009 will limit the profitability of these higher cost projects, thereby sending some producers to neighbouring provinces.

On the demand side, winter heating consumption will likely be similar to last year's as Environment Canada is predicting normal to above-normal temperatures for the majority of the country. Nonetheless, demand in Canada is set to rise in the near term, due in part to increased production in the oilsands – where natural gas is used to

Implications for consumers and inflation

Higher natural gas prices have certainly left their mark on consumer prices. In addition to spill over effects to other markets – for example, electricity – the rise in natural gas prices has had a direct effect on consumer price inflation (CPI) as well due to the magnitude of the price swings. In Canada, natural gas has a weighting of only 1.3% (weighting is similar for U.S. CPI) – much less than the 4.9% weight given to gasoline prices. But given that prices were up 25% in July, natural gas still contributed 0.3 percentage points to overall inflation of 3.4%. This is quite a change from the 0.3 percentage points that natural gas was subtracting from headline inflation at the start of 2007. While 0.3 percentage points is certainly significant, it doesn't compare to the 0.4-1.4 percentage points that gasoline prices have been contributing to inflation for the past 11 months. But the recent pullback in prices will ease some of this upward pressure on inflation in the coming months. Nonetheless, with prices expected to remain above US\$8 per MMBtu in the near term, natural gas will continue to contribute positively to inflation – just by a lesser amount.

heat oil underground in order for it to flow to horizontal wells. Also, Ontario is in the midst of moving away from coal-fired electricity generation and towards more environmentally friendly alternatives – including natural gas – which has the potential for higher demand from the province. This rising demand, coupled with falling production, will keep more domestic production in Canada, thereby further reducing exports south of the border. As such, prices in Canada will likely follow the same general trend as in the U.S., although a tighter supply-demand balance will support higher prices in the range of US\$7.50-8.00 per MMBtu, and thus narrow the gap between AECO and NYMEX prices.

Dina Cover, Economist
416-982-2555

Endnotes

¹ Natural Gas Week, Energy Intelligence Group Inc. July 28, 2008

The information contained in this report has been prepared for the information of our customers by TD Bank Financial Group. The information has been drawn from sources believed to be reliable, but the accuracy or completeness of the information is not guaranteed, nor in providing it does TD Bank Financial Group assume any responsibility or liability.