
Cooking up a price rise

Will CSG exports push up the price of gas?

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Summary

Gas prices in eastern Australia are going to rise substantially. These price rises are not driven by a lack of supply but rather by an increase in demand. Once the eastern Australian gas market is connected to the world gas market, domestic gas producers will be able to sell at the world netback price – also known as the export parity price – which is substantially higher than current gas prices.

This link will occur with the completion of the Gladstone liquefied natural gas (LNG) facilities. Gas prices will then rise and gas production will become far more profitable. Because of this it is understandable that gas companies are keen to expand production.

Wholesale gas prices will go up from around \$3 to \$4 per gigajoule to the world netback price of \$9 per gigajoule. This is because Australian gas producers will have the option to sell to the Japanese who are willing to pay \$15 per gigajoule. This doubling or tripling of wholesale gas prices is going to increase consumers' gas bills dramatically.

Ironically it is not a lack of supply that is going to drive up gas prices but, rather, the introduction of CSG as a new form of supply. Without this additional supply it is unlikely that gas production would have been large enough in the eastern market to justify the construction of LNG facilities.

This higher price has made the gas industry eager to increase its supply; gas is about to become far more profitable. In particular it has been attempting to expand coal seam gas (CSG) exploration. Public concern about extracting CSG has meant that, in New South Wales, further restrictions have been placed upon the location of CSG wells. This has upset the gas industry, but its claims that restrictions on CSG production are the cause of price increases are not correct. Increases or decreases in domestic gas supply will have almost no impact on the price of gas. Once the eastern Australian gas market is linked with the world market, domestic gas prices will be subject to movements in the world price and domestic production will have little influence on price.

With gas becoming far more profitable, it is not surprising that gas producers are keen to expand their supply. Their strategy of blaming CSG restrictions for coming price rises is designed to turn public support against those restrictions and increase pressure on the New South Wales state government to remove them. But these claims are little more than posturing and bear no resemblance to what is actually happening in the market.

If business or government are serious about attempting to prevent or substantially reduce the rise in gas prices there are few options available to them. A gas reserve policy similar to the one in Western Australia could work. There would be implementation problems due to the fact that the eastern gas market is made up of five states and one territory that would all have to agree. The Commonwealth government could also introduce restrictions on the export of gas.

Without large scale government intervention, gas prices are going to rise substantially in the next couple of years, and increases or decreases in domestic supply are going to have almost no impact on the price rise.

Introduction

Gas prices in eastern Australia are going to rise substantially. These price rises are not driven by a lack of supply but rather by an increase in demand. Once the eastern Australian gas market is connected to the world gas market, domestic gas producers will be able to sell at the world netback price – also known as the export parity price – which is substantially higher than current gas prices.

This higher price has made the gas industry eager to increase its supply; gas is about to become far more profitable. In particular it has been attempting to expand coal seam gas (CSG) exploration. Public concern about extracting CSG has meant that, in New South Wales, further restrictions have been placed upon the location of CSG wells. This has upset the gas industry, but its claims that restrictions on CSG production are the cause of price increases are not correct. Increases or decreases in domestic gas supply will have almost no impact on the price of gas. Once the eastern Australian gas market is linked with the world market, domestic gas prices will be subject to movements in the world price and domestic production will have little influence on price.

The connection of the eastern Australian market with the world market will occur through the construction of large Liquefied Natural Gas (LNG) facilities near Gladstone in Queensland. The viability of these facilities has been made possible by the rapid expansion of CSG extraction in Queensland. These LNG facilities will be the first in the world to source all of their gas from CSG.

The coming price rises

There is concern among Australian industry that gas prices are going to increase substantially. Large gas consumers are having difficulty securing long term gas contracts without first committing to large price increases. Consumers have had to commit to prices of around \$9 per gigajoule where prices had been around \$3 to \$4 per gigajoule. The cause of the price rise is the imminent connection of the eastern Australian gas market to the world market.

Three large LNG facilities are being built near Gladstone in Queensland. Once these facilities are completed they will produce LNG for export to Asia. This will link the eastern Australian market to the world market by giving gas suppliers the choice to sell gas domestically or have it turned into LNG and exported.

The world price, particularly in Asia, is higher than the eastern gas market price. The linking of the markets will cause the eastern gas market price to rise to the world price minus the cost of liquefaction and transportation. Once gas suppliers have the option to sell to Asia, domestic consumers will have to match that price in order to secure supply. The recent increase in gas contract prices is directly linked to the choice that gas suppliers have to export to the Asian market.

World gas markets

The world gas trade is split into three reasonably distinct markets, each with its own pricing structure.¹ At the moment the eastern Australian gas market has been largely insulated from the effect of other markets on local gas prices because the world gas markets and the eastern Australian gas market are not currently linked. This is set to change in a couple of years as three LNG facilities near Gladstone become operational.

¹ BREE (2012) p25

In North America the pipeline network's price is generally determined by the Henry Hub price. Prices in the United States have recently been low because of the rapid expansion of unconventional gas production and the United States having little capacity to export. While there are a large number of proposed LNG export facilities at the moment, few have been approved. Should a large number of export facilities be approved and completed this is likely to increase the Henry Hub gas price.

In Europe, prices are set against gas from inside Europe and pipeline imports from Russia. Prices are also set in relation to other fuel sources such as low-sulphur residual fuel oil and coal. The final world market is the Asian market. It traditionally has the highest world price and the price is set in reference to Japanese crude oil prices. Australia exports to the Asian market because of its proximity to Asia and the high Asian gas price.

Australian gas markets

The Australian domestic gas market is split into three separate regions.² The first region is the eastern market, which includes Queensland, New South Wales, the Australian Capital Territory, Victoria, Tasmania and South Australia. The eastern market produces about a third of Australia's natural gas and is the only market that produces CSG. Currently all gas produced in the eastern market is consumed domestically – there are no exports. This market is the largest producer of domestic natural gas.

The second market is the western market, which includes Western Australia. The western market produces 59 per cent of Australia's natural gas, which makes it the largest producer of natural gas in Australia. It exports a significant quantity of natural gas in the form of LNG.

The third market is the northern market, which includes the Northern Territory as well as some gas produced in northern Western Australia and piped across to the Northern Territory. The northern market is the smallest producer, only producing nine per cent of Australia's natural gas. The majority of this is exported as LNG.

All gas is either domestically consumed within the market or exported as LNG. This is because the three markets are geographically isolated from one another. The isolation also means that each market has separate supply and demand conditions leading to different pricing structures.

The eastern market

The eastern market is the only market that currently has no export capacity. This means that it is currently unaffected by world gas prices. Prices in the eastern market are determined by supply and demand within the market. This has resulted in relatively low gas prices when compared to world prices. However, new LNG export facilities in Gladstone are scheduled to begin exporting gas in 2014. This will open the eastern market up to the world market and its associated higher prices.

The eastern market has plentiful supply and relatively low demand. This has led to wholesale prices for pipeline gas of around \$3 to \$4 per gigajoule.³ By comparison, in the Asian market, the price for delivered LNG is about \$15 per gigajoule. This price includes the cost of liquefying and transporting the gas.

² BREE (2012) p23

³ Chambers (2013)

Netback pricing

The netback price for LNG is the price minus the cost of liquefaction and transportation. This is the price that gas producers in Australia will be able to get when exporting from the new Gladstone LNG facilities. A Queensland government study found that there was a range of possible netback prices. The range depended on a number of factors, all of which were “exogenous to Australia and are difficult to assess”.⁴ By 2015, the study estimated, the contract price for gas in the eastern market would be between \$6 and \$7 per gigajoule and up to \$10 per gigajoule.

The factors that created the range and were difficult to assess related primarily to movements in the world price of gas. Being only one exporting country, Australia has very little impact on the world price of gas. Australia produces about two per cent of the world’s natural gas and its product makes up about nine per cent of world LNG exports.⁵

When the eastern market links with the world price, the two prices will not become the same. Natural gas sold domestically from a pipeline is cheaper to supply. This is because there are costs associated with liquefying and transporting the gas. So while the Asian price of LNG is \$15 per gigajoule, Australian gas producers may only get \$9 to \$10 per gigajoule in the domestic market. This is still substantially higher than the \$3 to \$4 per gigajoule that was the prevailing eastern market price until recently.

Current price movements in the eastern market

In recent months there have been reports that gas prices have begun to rise. Santos has reported that it is negotiating gas contracts at the higher end of the \$6 to \$9 per gigajoule range.⁶ These contracts go beyond 2014 and 2015, when the new Gladstone gas plants will commence operations. This is very close to the world netback price and gives us a strong indication about what gas producers are assuming the price will be in the next couple of years.

From a commercial perspective this makes perfect sense. From 2014 gas producers in the eastern market will have a choice. They can supply to the world market and receive the world netback price, which is currently around \$9 to \$10 per gigajoule, or they can sell domestically. If domestic consumers want to negotiate a contract that includes 2014 or beyond they will need to pay the world netback price.

This of course represents a doubling or tripling of wholesale gas prices. Increases of this magnitude are likely to put significant pressure on those businesses that are highly dependent on gas. There have already been some commentators, particularly in manufacturing, that have raised concern about the increasing gas price.⁷

Gas reserve policy

The western gas market is linked to the world gas price through large LNG gas facilities. To help mitigate higher domestic gas prices, the West Australian government introduced a policy that set aside a portion of gas for domestic use. With the imminent linking of the

⁴ Government (2012) p103

⁵ BREE (2012) p1

⁶ Chambers (2013)

⁷ NIEIR (2012)

eastern market to the world market, Manufacturing Australia has called on the government to introduce a similar gas reserve policy as has been implemented in Western Australia.⁸

The gas industry is strongly resisting these calls, claiming that such a policy will prevent investment in new gas supply. The industry is effectively arguing that a reserve policy would force it to sell some gas at a lower price and hence collect a reduced profit. This reduced profit and lower price, the industry claims, will discourage further expansion of gas supply.

The cost of extracting gas varies depending on the gas field. Some gas is easy to access and close to infrastructure and this makes its extraction and transportation cheaper. Other gas is in difficult-to-reach places far from existing infrastructure, making it more expensive to extract. Put simply, some gas is cheap to extract and some gas is more expensive. When the gas price is low, only the cheap gas is extracted – but as the price rises more expensive gas fields become viable.

A gas reserve policy will not lower the price of all gas supplies. Rather it will create two separate markets. One for the reserved gas sold domestically at a lower price and the other for LNG sold to the world market at a higher price. Since, at the current relatively low price, gas suppliers can supply the domestic Australian market, there must be sufficient gas that can be extracted and be profitable at a low price. Additional gas produced would therefore be sold at the higher world netback price. If additional gas supplies are attracting the world netback price, then the gas reserve policy is not acting as a disincentive to further investment in new gas production.

The role of CSG

The main growth in gas supply has come from CSG. CSG is on average more expensive than conventional gas and the expected higher price that will be available through exporting gas in coming years is driving new CSG projects. In New South Wales, concern about CSG has led the conservative state government to implement a number of new measures to restrict where new CSG wells can be placed, which has seen a number of CSG projects put on hold.

The gas industry has been very unhappy about the new restrictions. But strangely, rather than blaming the government, which introduced the changes, it is blaming those protesting against expansions to CSG production. The Australian Petroleum Production and Exploration Association (APPEA) of Australia's chief operating officer Rick Williams said;

Rising gas prices are something the people of NSW may have to get used to unless the industry can get on with developing NSW gas resources... For this, they have local anti-CSG activists to thank.⁹

The industry's argument is that the rejection of CSG expansion is decreasing potential supply, meaning there will be less gas and the price will be higher. In normal circumstances this would be correct – an increase in supply, all other things being equal, would put downward pressure on prices.

Impact of expanding supply on gas prices

There are problems with simply applying this principle of economics to the eastern gas market without taking into account the large changes that are occurring within the market. The lack of an ability to export to the world market has led to a situation where the domestic

⁸ Robinson (2013)

⁹ Clennell (2013)

price is considerably lower than the world price. With the completion of the new Gladstone LNG facilities the eastern market will be linked to the world market for the first time. In particular the eastern market will be linked to the Asian LNG market, with its high prices, because of Australia's proximity to Asia.

The domestic price will then become the world netback price. Increases in supply can only lower the domestic price under two circumstances. The first is if domestic production is greater than the export capacity of the LNG plants plus domestic demand. This would require a substantial increase in gas production.

To put the size of this increase in perspective, we need to know how large current eastern market production is and the capacity of the new LNG facilities. According to the Australian Energy Market Operator (AEMO), domestic gas demand in the eastern market in 2011 was 674 PJ.¹⁰ The three Gladstone LNG facilities will have a combined capacity of 1,346 PJ per annum.¹¹

It is planned that the new LNG facilities will be supplied through an expansion of CSG production in Queensland. It is the expansion of CSG production in Queensland that has made the Gladstone LNG facilities viable. Without CSG production it is unlikely that the eastern market could have produced a sufficient quantity of gas to make the construction of LNG facilities, as well as the other infrastructure required for its export, viable.

It is also worth noting that, should such a huge expansion in LNG production take place, it is highly likely that the LNG facilities would be expanded or new LNG facilities would be built. Indeed AEMO reports that currently proposed LNG export facilities would expand capacity by between 2,316 PJ and 6,612 PJ per annum.¹² Any proposed increase in gas production over and above that planned to supply the new LNG facilities could easily be exported. Put simply, once the Gladstone LNG facilities are up and running the eastern market will be linked to the world market and additional production will not break this link, regardless of the size of the increase in domestic production.

The second way that expanding production in the eastern market could reduce price is if the expansion increases Australia's LNG exports sufficiently to lower the world price of LNG. In 2011 the world trade in LNG was 13,283 PJ (241.5 Mt).¹³ Looking at the list of CSG projects in New South Wales from BREE's major project listing, there were only four CSG projects in New South Wales.¹⁴ Two of those projects have been suspended because of the changes put into place by the New South Wales government. If these projects were completed, this would amount to 30 PJ per year of lost production. If this gas had been exported it would have increased world exports by 0.2 per cent. This of course assumes that these were the only projects that would have gone ahead had the changes not been made, which is highly unlikely.

At the other extreme, the New South Wales government estimates that there is 19,000 PJ of "potentially recoverable CSG" in New South Wales.¹⁵ If all of that were recovered over, say, 30 years, then this would increase production by, on average, 633 PJ per year. If all of it were exported it would increase world LNG exports by less than five per cent. This assumes

¹⁰ This quantity comes from the 2012 GSOO *figure data and tables* (figure A-3) that are used in AEMO (2012). It should be noted that this is gas demanded (consumed) and does not include gas used by the gas industry for distribution and processing which could be as much as 10 per cent of gas used by consumers.

¹¹ Core Energy Group (2012) p22

¹² Core Energy Group (2012) p23

¹³ IGU (2011)

¹⁴ BREE (2013)

¹⁵ NSW Government (2013)

that all the gas can be extracted, which would include gas reserves over large parts of Sydney. This is equally unlikely.

The actual effect of the policy on world LNG exports will likely fall between these two unlikely extremes, but regardless of the final effect, the increase in exports is not likely to be large in comparison to the world trade in LNG, so its effect on the world price will be extremely small. This effectively means that increasing or decreasing domestic supply is going to have a minimal effect on the price of gas after the Gladstone LNG facilities are finished.

Gas prices are certainly going to rise substantially in the next few years, but the increase in price will have virtually nothing to do with a decrease in CSG production in New South Wales. The increase is because the eastern gas market will now be linked to the world market and gas suppliers will be able to sell their gas at the world netback price. Domestic customers will have no choice but to pay this higher price unless the government sets aside a domestic reserve.

Price will ration gas

Another claim being made is that New South Wales needs to develop its CSG resources so that it will not have to import gas from other Australian states.¹⁶ The claim goes on to say that, with a coming gas shortage, long term supply will be harder to secure and having to import gas will make the state more vulnerable.

In order to assess this claim we need to consider a number of things;

- In 2012 New South Wales depended on interstate supply for 98 per cent of its gas¹⁷
- Demand for gas in New South Wales has been falling in recent years¹⁸
- This fall in demand is likely to continue when wholesale gas prices double or triple after the Gladstone LNG facilities become operational.

This tells us a number of things about the state of the gas market in New South Wales. The first is that New South Wales is already overwhelmingly reliant on gas from interstate. The second is that there is sufficient gas infrastructure in place to allow it to source gas easily from other states. With the state's demand for gas set to decrease in coming years, expanded infrastructure is unlikely to be necessary unless New South Wales sources its gas from new locations. If, over time, new infrastructure is required to enable gas supply to continue to flow to New South Wales, this can be built as it becomes necessary.

The idea that New South Wales will somehow be unable to continue to rely on other states to supply it with gas would appear to be false. The coming gas shortage is not being caused by a drop in gas supply. It is rather being caused by an increase in demand for gas to feed the Gladstone LNG facilities. The shortage in gas will be resolved in the market through increases in price. New South Wales consumers who are willing to pay the higher price will have the same access to gas supply as those consumers in Queensland, Victoria or any other state in the eastern gas market.

Finally there are no trade restrictions for gas created by different state governments. The idea of 'importing' gas from another state is as meaningful as the idea of 'importing' gas from one region of New South Wales to another. Gas companies in Australia often operate in multiple states and are unconcerned which state the final consumer is in. Like most

¹⁶ AAP (2013)

¹⁷ DomGas (2012)

¹⁸ AEMO (2012) pA-32

businesses in a market economy, they are going to sell to the consumers they believe will give them the most profit regardless of the state they live in and this includes international consumers, who will be able to buy Australian gas from the eastern market in 2014.

Conclusion

The coming gas price rises are not being driven by a lack of supply, but rather the linking of the eastern Australian gas market with the world LNG market. This link will occur with the completion of the Gladstone LNG facilities. Gas prices will then rise and gas production will become far more profitable. Because of this it is understandable that gas companies are keen to expand production.

Ironically it is not a lack of supply that is going to drive up gas prices but the introduction of CSG as a new form of supply. Without this additional supply it is unlikely that gas production would have been large enough in the eastern market to justify the construction of LNG facilities.

With gas becoming far more profitable, it is not surprising that gas producers are keen to expand their supply. Blaming restrictions on CSG for coming price rises is designed to turn public support against those restrictions and increase pressure on the New South Wales state government to remove them. But these claims are little more than posturing and bear no resemblance to what is actually happening in the market.

If business or government are serious about attempting to prevent or substantially reduce the rise in gas prices there are few options available to them. A gas reserve policy similar to the one in Western Australia could work. There would be implementation problems due to the fact that the eastern gas market is made up of five states and one territory that would all have to agree. The Commonwealth government could also introduce restrictions on the export of gas.

Without large scale government intervention, gas prices are going to rise substantially in the next couple of years, and increases or decreases in domestic supply are going to have almost no impact on the price rise.

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