
Comment

KJETIL TUNGLAND

Kjetil Tunglund is Chief Analyst, Gas Markets, Statoil's Natural Gas activity

The most important response to this paper is maybe to commend Professor Odell for his ability to repeat his own success; producing high value scientific work and making exquisite presentations. Faced with the task of discussing the content of his paper, overcoming my own feeling of scientific humility is probably the biggest challenge.

I sincerely hope that Professor Odell is correct in his predictions for future developments in the gas market. The scenario of flourishing demand, increasing prices and easily accessible gas reserves all add up to a long and happy life for natural gas producers. However, I am not convinced, and I think the reason for this can be found in the following points:

- i) Some of the important **historical dynamics** of the gas market pointed out by Professor Odell are at odds with my own understanding.
- ii) On future **gas availability**, I fear Professor Odell is jumping to conclusions.
- iii) Projections for future developments are based on **assumptions** I cannot concur with.
- iv) As a producer having to make decisions, not only predictions, I cannot overlook the **risks involved**.

1. On Historical Dynamics

The paper argues that the existence of strong monopolistic gas companies with the power to make natural gas appear as a scarce resource and with the ability to link the price of gas to oil prices, inhibited gas demand in the 1960s and 1970s. This slow and cautious development in demand led, according to Professor Odell, to a restrained development of gas supply.

My reading of history suggests an explosive increase in West European gas consumption, from 80 BCM in 1970 to 200 BCM in 1980 and 290 BCM in 1994. The market took whatever volumes it could get. If anything, installed capacity was the limitation to growth.

The tremendous increase in the gas share of total primary energy supply, from 2% in 1962 to 18% in 1994, is to a large extent attributable to mega projects undertaken by a rather limited number of companies. I think it is doubtful, at least disputable, that these projects would have been launched without the participation of companies with sufficient strength to undertake long term commitments of this magnitude.

Companies present on the Norwegian continental shelf have, in my view, all the reasons for being proud of their contribution to what I am tempted to label "A Success Story for Natural Gas."

A large part of the preamble for this story was established in the early or mid-1980s, before oil prices crashed dramatically. Have a look at Figure 1 and consider the following Troll field life cycle to date: hydrocarbons were first discovered in 1978/79, technologies for evacuation studied in the early 1980s, commitments to deliver entered into in 1985/86 and first deliveries from Troll to start in 1996. Large amounts of capital have been invested over more than 17 years before Frau Klinkerhofen can enjoy Sauerkraut heated by Troll gas.

When Professor Odell argues that the fall in oil prices has not had any effect on the supplies of gas, he fails to take into account that for owners of projects like Troll the only viable response to a fall in real prices and changed

price expectations was to reduce costs. The innovations and ensuing success in cost suppression achieved by companies active on the Norwegian Continental Shelf has been truly impressive. It is an open question how much supply would have been offered if the oil prices had prevailed at the levels of the early 1980s.

It is worth noting that the results of cost cutting measures in offshore oil and gas projects are not necessarily applicable to other upstream gas projects.

One must also take into account the limitations in the potential for further cost reductions.

2. On Gas Availability

In his eagerness to persuade his audience that gas will continue to be available, only one statement is missing from Professor Odell's paper; the declaration that natural gas is a *renewable* resource!

I am sure Professor Odell is correct in his assessment of reserves in the various regions, but his prediction of the level of production in Norway deserves a few comments.

Norway's continental shelf is indeed truly rich in gas resources. But the gas is located in a number of different fields and provinces. The southern province has been exploited for sometime. The process of allocating the latest sales contracts with German and French buyers to specific production fields is likely to result in the mid province—the so called Haltenbanken—being integrated into the main transportation system.

The northern province (Southern Barents Sea) does contain large amounts of gas. However the distance to the markets will in our view continue to constitute an economic barrier to exploitation. Higher oil prices and/or improved technology might change the economics of developments in the North, but so far we have not been able to come up with economically viable development projects in this region.

In order for Norway to increase its exports to the levels of 90 BCM in 2015 and 105 BCM in 2025, as indicated by Professor Odell, the

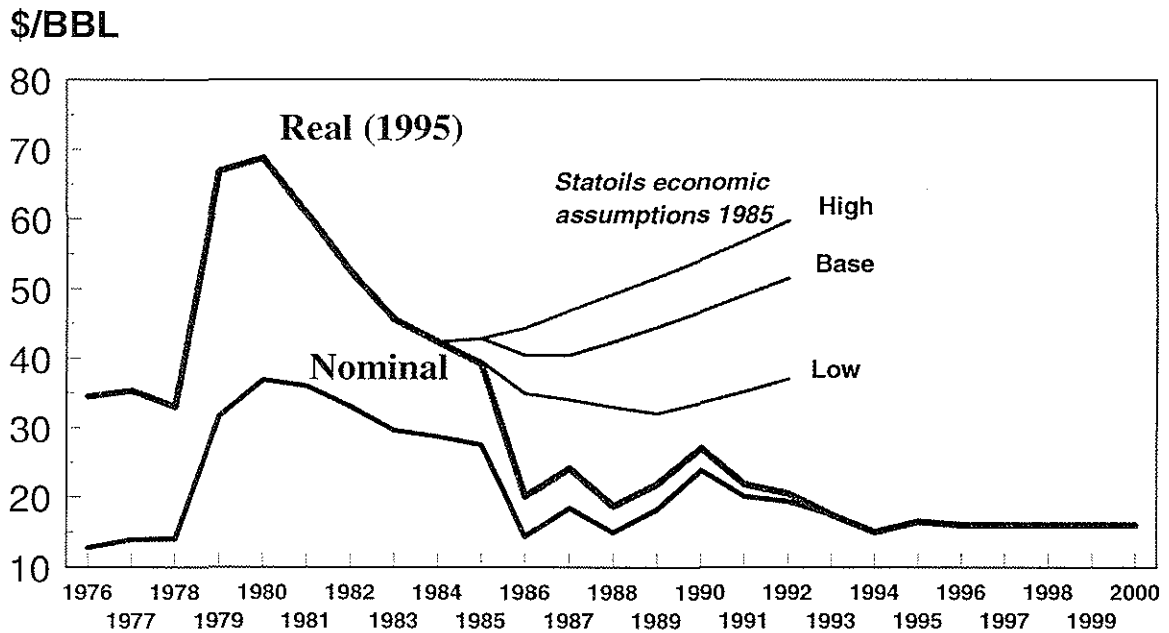


Figure 1: Crude oil prices, yearly averages (1976-94, actual; 1995-2000, Statoil's 1995 forecast).

Source: BP Statistical Review Forties (1976-1984); Brent (1985-1994)

Norwegian producers would have to enter into sales contracts based on supplies from the northern province. This is clearly possible physically, but not commercially.

Of course, integrating the Haltenbanken province into the main transportation system—and speculating on the possibilities of finding more gas close to the installed infrastructure—clearly adds to the perception of a cost-efficient, flexible, Norwegian production and transportation system with high potential for extensions, and even increases, in future exports. But producers are clearly confronted with uncertainties and dilemmas, when planning for the future. We know that production can be increased and that the gas will be found somewhere. However, when production levels are increased, reserve replacement becomes urgent. Production levels as indicated in the paper would clearly necessitate a move to the northern, currently non-commercial, province.

3. On Assumptions

Professor Odell uses rising oil prices as an assumption in his analysis. Thus, over time, new and more distant gas reserves become profitable to develop. Figure 1, including Statoil's past and present price forecasts, serves as a good illustration of how we as a company have regained prudence in our planning assumptions.

Of course oil prices *might* rise, but we are not willing to risk making our investments dependent on such assumptions. In fact, we see a risk that prices might fall, or at best prevail at today's levels in real terms. An even greater risk is that the link between oil and gas prices might break.

4. On Risks

It remains a fact, both in practice and theory, that the consumers are willing to pay the prevailing end user prices for the gas actually consumed. If they were not, they could always

turn to existing substitutes.

Competition for market share, and an ensuing increase in supply will obviously lower the price, but the consumer benefit from such developments is in no way assured. Consider the UK. When British Gas was broken up and 100 new marketing companies stepped in, they all had ambitions for market shares that went far beyond what the market would take. The producers increased the volumes offered. The result is now self evident; oversupply and falling prices, which compromise the long-term viability of supply. Such a development is what we fear in future in continental Europe.

If the UK experience is what is envisaged by Professor Odell when speaking of deregulation, maybe the best thing producers can do is to be cautious with capacity expansions in order not to destroy the industry's value creation potential.

The debate over gas market deregulation is particularly pertinent when considering a possible Swedish gas market. Virtually all gas consuming European countries have chosen some form of monopolistic or collusive structure when first introducing gas into their energy systems. Strong groups of private or publicly owned companies accorded monopoly rights have proven necessary to attract sufficient capital to realize the economies of scale and to shoulder the cost of long project lead

times. Typically, only when the infrastructure is in place, does deregulation come on the agenda. If Swedish companies are considering positioning themselves in a future Swedish gas market, a serious risk to consider is that imposed deregulation may prevent them from harvesting the returns from their investments once these investments are in place.

Conclusion

From a scientific point of view there is clearly a possibility that time will prove all my arguments irrelevant. Professor Odell's paper describes a consistent scenario with a positive likelihood. The points I have tried to raise are mostly inspired by the corporate perspective that I represent.

My main message springs from an understanding of producer behaviour. For Professor Odell's scenario to come about, substantial investments will have to be made on the basis of speculative gas reserves and rising oil prices. I do not see many producers willing to shoulder that kind of risk; my company would indeed hesitate.

But as a true believer in Socrates, I wish Professor Odell all the best of luck in his mission to convince conservative producers like me, and to persuade European consumers, that low cost gas will be available for generations to come.