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The Open Access Issue: A Gas Producer's Perspective

by

Ole Gunnar Austvik

Today, the European Community purchases 100 % of Norwegian gas exports. Obviously, the arrangements in the market will be of the greatest importance for gas export revenues. Access to the pipelines, and the tariffs charged for using them, are crucial elements for Norwegian gas sales. Transportation through third countries is necessary in order to reach markets in non-neighboring countries.

This article will discuss the economics of natural gas pipelines and the regulation objectives and problems in connection with the introduction of the Single Market in the EC. The goals of the EC regulations and alternative means to reach them will be reviewed. Questions on how regulative attempts may function in the Western European gas market structure will be analyzed. A central focus of the article is to analyze which interests a gas producing country, like Norway, may have in various transmission regimes in Europe.

INTRODUCTION

The introduction of the European Single Market assumes free movement of labor, capital, goods and services. In the gas market, the Commission has put focus on the role of transmission companies. The reason for this, is that they consider that there are so few actors in the market that they characterize it as dominated by monopolies (EC Commission Working Document May 1988: "The Internal Energy Market"):

“The biggest barriers to the free movement of gas in Europe are government control of natural gas imports and exports and undertakings holding a monopoly or dominant position enabling them to block movements of natural gas”.

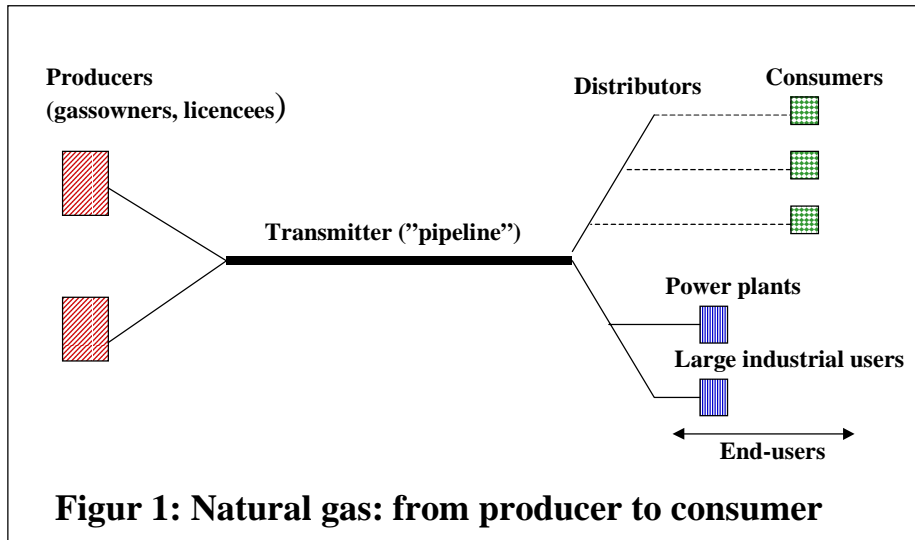
Thus, the Commission is concerned with the high degree of power concentration not only in the transmission sector, but also among export and import undertakings. Regarding the transmission lines the Commission stresses that:

"Transport of gas in the Member States is characterized by the existence of statutory or de facto monopolies in the market place. Only in West Germany there are a number of actors but even here there is only one dominant transport enterprise.....The presence of dominant or monopoly transmission undertakings in each Member State gives rise to segmentation of the Community market; these undertakings can restrict the through transport of gas and even, when no specific legislation exists, can block the import and export of gas."

On the basis of this description of today's situation, the Commission has been considering the introduction of an Open Access system, perhaps Common Carriage, for pipeline transportation of natural gas. Such a system should give access to everybody wanting to use it. The pipeline can charge a tariff covering their expenses and normal profits. But they can not charge tariffs including economic profit (profit exceeding normal profit). The Commission has assumed that a larger, cheaper (for the customers) and more flexible gas network has the potential to increase the attraction of natural gas for consumers. Security of supply can be increased, as well as consumption, and efficiency promoted, by removing what they call "bottlenecks" in the system. Obviously, this type of regulations will be of decisive interest to any seller in the market.

FROM PRODUCER TO CONSUMER: THE ISSUE OF TRANSPORTATION

Natural Gas has to pass three or four main stages, respectively, from leaving the reservoir in the ground, until it reaches its final user. Those providing these services are partly independent actors, partly horizontally and/or vertically integrated with each other.



a) The producer is usually the gas owner or licensee that extracts the gas from the ground. He does not need to be the owner of the ground itself. Example: On the Norwegian Continental Shelf, the Government owns the ground, while the rights to explore gas are given to different companies. Often several firms are producers of one field. One of these represents the others as operator.

b) The transmitter, or the pipeline, transports gas from the area of production to the area of consumption. The pipes connecting various fields of production are generally part of the production sector. The gas may often pass through several pipelines on its way to the final consumer. Often there is only one route, or very few routes to choose from.

c) The distributor brings gas from the end of the pipeline to the final consumers. A distribution system requires heavy investment in infrastructure in towns, industry and homes. This contributes in making consumers rather rigid in their demand for natural gas with low elasticities of demand with respect to prices in the short and medium term.

d) The Consumer. The final user of the gas. There are 3 main areas of consumption of gas in Western Europe. The residential sector has over the last couple of decades almost represented all the growth in the market. In 1987 it accounted for almost half of total consumption or 104 million tons of oil equivalents (mtoe). The second largest user is industry, representing some one third (70 mtoe) of total consumption in 1987. Industrial use of natural gas has grown very little over the last decade. The third main user group is power production. Power plants reduced their demand by some 16 per cent over a decade and represented 13 per cent of

total gas consumption in 1987 (27 mtoe). In the last few years, it seems that natural gas may regain its use in power production. The power plants and the industrial users get their gas partly from the pipelines and partly from distribution companies, while the residential sector gets their gas from distribution companies alone.

As the EC Commission describes above, each stage of the market is characterized by a strong concentration of firms, often monopolies. Thus, not only the pipeline can exercise monopoly power. The producers and distributors may also, to a variable extent, do so, as well. In Western Europe, inelasticities both in the supply and demand for gas and transportation services give each of the actors the possibility to influence profits and risks if they have a sufficiently strong position in the market. This is in contrast to the U.S. gas market, a market which is characterized by thousands of producers and numerous distributors.¹

Today, Norwegian gas is, for the most, sold to the transmission companies on the Continent. These pipelines are in their turn selling the gas to distributors, power plants and large industrial users. Each of these contracts involve huge volumes and long term stability for Norway. But Norway has also experienced difficulties with this way of selling gas. In 1986, when a 1 BCM contract with Austria was signed, the German transmission company, which physically can transport the gas from Emden to the Austrian border, refused to do so. Instead, it expressed willingness to buy the gas from Norway and resell it to the Austrians. This has also become the solution to the problem. This situation demonstrates that it is not enough for a gas producer to have a buyer. In fact, the transportation issue may be a bottleneck to such an extent that a contract can be blocked. But in some instances, third country transmission arrangements has been easier agreed upon than in the Norwegian/German/Austrian example (for example in the case of Norwegian gas to France and Spain).

TRANSMISSION SYSTEMS IN WESTERN EUROPE

The geographical position of markets relative to production areas has given the grid in Western Europe some particular features. In the period from 1975 to 1985, it doubled its transportation capacity in the EC alone.² The EC-countries are now integrated in a network in such a way that gas can be moved between most of the member countries. But some countries have to go through a third country in order to do this. There is for example no direct connection between Belgium and West Germany, nor between France and Italy or France and Spain. Similarly, there is no connection between the UK and the

¹ Austvik (1990) reviews characteristic features of the American and Canadian gas markets.

² EC Commission, Energy in Europe 1988

Continent, but the U.K. is connected to Norwegian gas through the Frigg pipelines to St. Fergus in Scotland. Neither is there any connection between the Norwegian fields and the virgin markets in Sweden and Denmark. And even though Soviet gas is supplying the entire Finnish market, no pipeline has so far been connected to the rest of Scandinavia. Three countries, Portugal, Greece and Norway, do not consume any gas, though all have plans to do so in the future.

...Map of European transmission lines for natural gas....

Three main transportation routes have been constructed from the four major producing areas, (Siberia, North Sea, North Africa and the Netherlands), to continental consumers:

The North-to-South-grid: This network transports gas from the North Sea and the Netherlands to the Continent. The Norpipe and Statpipe transmission systems bring Norwegian gas to Emden in West Germany. This gas is transmitted onwards also to the Netherlands, Belgium and France. The SEGEO line transports gas from the Groningen field to Belgium and France. The DETG, NETG, SETG and METG lines transport Dutch gas to West Germany. The TENP line runs from the Dutch border through Germany and Switzerland to Italy. The Deudan line is linking West-Germany and Denmark. To transport some of the Troll-gas to the Continent, Norway is constructing a new, large transmission system, the Zeepipe, landing in Zeebrugge in Belgium.

Ownership of international pipelines in Western Europe

Pipeline:	Route:	Ownership:
SEGEO	Dutch gas to France, through Belgium	Distrigaz, Gaz de France
TENP	Dutch gas to Italy, -through Germany -through Switzerland (Transitgas)	-Ruhrgas, Snam -Swissgas, Snam, Ruhrgas
DETG,NETG SETG,METG	Dutch gas to Germany	Ruhrgas, Shell, Exxon
Deuda	Danish gas to Germany	DONG, Deudan Holdings (BEB/Ruhrgas)
MEGAL	Soviet gas to Germany/France through Austria (WAG) and Germany	Ruhrgas, Gaz de France, OMV, Megal Foundations, Netherlands
TAG	Soviet gas to Italy and Yugoslavia through Austria	Snam, ÖMV
Statpipe	Norwegian gas to Norpipe (Continent) Hydro, Mobil, Exxon, Shell, Total, Saga	Statoil, Elf, Norsk Hydro
Norpipe	Norwegian gas to Germany	Statoil, Phillips Group.
Zeepipe	Norwegian gas to Belgium (under construction)	Statoil, Norsk Hydro, Shell, Exxon, Saga, Elf, Total, Conoco, Mobil.
Frigg	Norwegian/British gas to the U.K. -Norwegian owned -British owned	Elf, Norsk Hydro, Total, Statoil. Total, Elf
FLAGS	British gas (Brent) to the U.K.	Shell, Exxon
Transmed	Algerian gas to Italy	Snam, Sonatrach

Source: Bundgaard-Jorgensen (May 1988), Fact Sheet (1989).

The East-to-West-grid: This network transports gas from the Soviet Union to Western Europe. The key east west line is a twin MEGAL line carrying gas through Czechoslovakia to West Germany and France. The TAG line also carries Russian gas to Western Europe, but crosses the border between Czechoslovakia and Austria at Baumgarten near Vienna. This gas is supplied to and through Austria to Italy and Yugoslavia. The WAG line carries part of the gas destined for France from Baumgarten through Austria and joins the MEGAL line in West Germany.

The South-to-North-grid: The Transmed line transports gas from North-Africa (Algeria)

through Tunisia to Italy. A lot of the gas from North Africa is, however, transported in the form of LNG. While 11.2 BCM were transported through the Transmed line in 1989, the figure was 17.1 for LNG transport. The LNG is exported from Algeria and Libya to France, Belgium, Spain and Italy as well as to the U.K. and the U.S..

These grids are not the only ones, but illustrate the over-all North-to-South, East-to-West and South-to-North orientation of the systems.

Underground storage plays an increasingly important role in determining the gas network. As load factors are expected to decline in line with the growing in importance of the residential sector, storage is expected to increase its importance in the years to come. This is due to larger seasonal variations in residential as opposed to industrial and power plant, use. With more variable demand, it may in many cases become cheaper, and also increase security of supply, to build storage facilities (old gas fields, salt caverns, aquifer etc) rather than more pipeline capacity.

But is the existing structure of the European transmission systems that evolved according to needs 10 years ago and before, optimal for tomorrow's, or even today's, energy situation with its few and large international trunk lines?

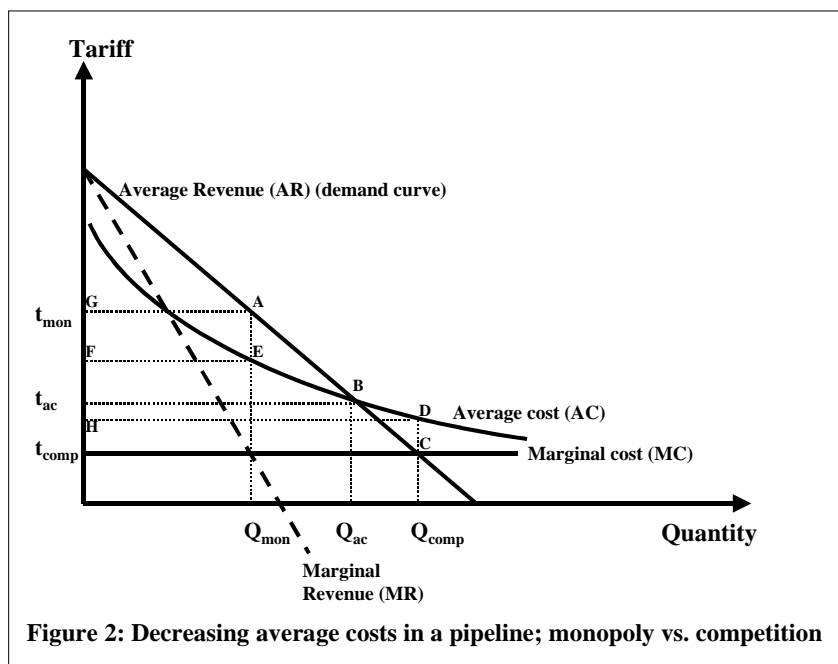
The gas network, as it is today, contributes to some extent to the security of supply. Through back-up facilities, interconnections and storage alternatives, it provides some flexibility. If one source of supply is interrupted, the system can provide gas from other sources. If there is an interruption on the east-to-west axis, increased quantities of gas may go along the north-to-south axis as replacement and at rather low costs. But obviously, the more integrated a grid is, the more security it can provide. Further increases in flexibility will help to give natural gas a larger share of the Western European energy balance and thus increase security-of-supply further.

The other aspect of the integration and diversification process is to promote economic efficiency. Increased competition between transporters will usually lead to a more optimal use and extraction of natural gas and enable the market to function more efficiently. Until now, a buyer and a seller of gas needed to have a pipeline in place in order to sign a contract. Such a system tend to lower quantities traded in the market compared to one where the actors know they can buy transportation services at a reasonable cost.

The development in the Western European gas market has to a large extent been supply-driven. But the rate of increase in demand has been rather modest for several years now. Will the next jump in gas consumption occur when bottle-necks in the transportation sector are eliminated and the market is allowed to work more efficiently? This is part of the philosophy behind the EC Commission's considerations around some sort of an Open Access system. Before turning to this point, however, we will try to answer the question why the transmission sector tend to be so concentrated.

PIPELINE ECONOMICS AND THEIR REGULATION

The huge sunk costs needed to construct a pipeline leads to decreasing costs with the scale of operation. Therefore pipelines are subject to significant elements of natural monopoly. It is a natural monopoly because it is usually cheaper for one pipeline to provide transportation service over a specific distance and relevant quantities transported than for two or more firms. Obviously, a market with such technological economies of scale tends to evolve toward very high concentration. The natural monopoly can achieve high return on its investments, especially if demand is sufficiently inelastic. A pipeline without competitors can restrict output in order to earn more than normal profits.



When a monopolistically behaving pipeline company restricts its service to the point where marginal revenue equals marginal costs ($MC=MR$), this is illustrated by point X in figure 2. Production (or quantity transported) will be Q_{mon} and consumers are willing to pay the price, or tariff, t_{mon} . If the pipeline increased the quantity of service provided, its marginal cost would be higher than its marginal revenue, and it would lose money on the margin. On the other hand, as quantity is increased, the firm will, in terms of efficiency, be more optimal. But as long as it is the only pipeline serving the distance, it is better off by not increasing service beyond Q_{mon} , where its profit is the largest.

If the pipeline should go break even, price should equal average costs ($AC=AR$ in point B). The pipeline would earn normal profit but no economic profit. This point is in

efficiency terms better than the monopoly solution (consumers surplus gained is larger than producer surplus lost). But it is still inferior to point C as customers would be willing to pay for the incremental service as $AR > MC$ up to quantity Q_{comp} . Average costs would still be decreasing as quantity increases. If the pipeline should produce at the most efficient level, price should equal marginal costs ($MC=MR$), represented by point C. The problem is that, for a natural monopoly, this price would be less than average costs. The pipeline would suffer a loss, and no transportation would, in fact, be provided, unless someone were willing to pay the deficit.

When transmission companies buy the gas from the producers at the entry and sell it at the exit of the pipe, often without competition, they will, as profit maximizers, charge maximum prices and exploit any possible inelasticity of demand in each segment of the market. We can denote a private carrier³ of natural gas's "tariff" (t) the difference between the price it pays for the gas from the producer (p) and the price it receives from the distribution company (D): $t = D - p$.

A monopsonistic pipeline, in one of the segments, will face a price function that will increase with quantity (q) purchased from the producer. Being the only purchaser, the pipeline will bid up its own price paid to the producers when increasing the throughput. If we, for simplicity reasons, assume the absence of all other costs and physical losses during the transmission process, this function can be expressed as:

$$(i) \quad p = p(q), \text{ where } dp(q)/dq = p' > 0$$

On the other hand, being a monopolist towards its customers at the exit of the pipeline, the price he receives from them will decrease with increases in quantity sold:

$$(ii) \quad D = D(q), \text{ where } dD(q)/dq = D' < 0$$

The pipeline's profit (P) will be:

$$(iii) \quad P = t * q = D(q) * q - p(q) * q$$

Setting the derivative of (iii) with respect to quantity to zero yields:

$$(iv) \quad \begin{aligned} dP/dq &= q * D' + D - p - q * p' = 0 \\ \Rightarrow p + q * p' &= D + q * D' \end{aligned}$$

The left side of (iv) expresses the marginal cost of buying gas from the producers. The

³ Private Carriage is transportation where the pipeline buys the gas from the producer for resale to local distribution companies, power plants or large industrial users. Contract Carriage, on the other hand, is transport of gas owned by others.

element $q * p'$ tells us how much the price of gas to producers will increase if the pipeline buy an incremental unit. The right side of the equation expresses the marginal revenue of selling one additional unit of gas. The element $q * D'$ tells us how much the price of gas to producers will decrease if it sells one more unit of gas. The equation (iv) shows that at maximum profit, marginal revenue from selling an additional unit of gas shall equal its marginal cost. By restricting quantity traded towards producers and distributors, power plants and large industrial users in this optimal manner, the pipeline company can simultaneously exploit inelasticities of demand and supply in order to maximize its own advantage.⁴

Another particular feature of gas markets is the economies of scope. Producers, pipelines and distributors provide a unique service in bringing the gas to its ultimate users. Very often firms "bundle" together services. This may be justified by economies of scope, which give the industry savings in costs by combining services at any given level. In particular the bundling between transportation and ownership of gas, where the pipeline buys the gas from producer for resale to local distribution companies, has been frequently used.⁵

There may be cost-saving "natural" economies of scope as a result of bundling. But very often it is a forced situation, giving monopoly power to the firm involved. In the latter situation, the benefits of the bundling firm overtakes the increased costs caused by the inefficiency created. While the pipeline gains, it may be a net loss for society. We must ask how to avoid inefficient bundling in the natural gas industry and keep, or even create, efficient bundling.

What should then be the goal of a regulation? Should service be provided at the most efficient level where price equals marginal costs (point C in the graph) and the government pay the loss? This has often been the European solution to a natural monopoly; usually through governmental ownership of electric utilities, gas companies, airlines, banking, postal services etcetera. Or should some regulatory institution set the price = AC which has often been the U.S. solution? Or should some other principles be applied? How should bundling be introduced, or hindered, in an optimal manner?

A pure Common Carriage arrangement will set the tariff equal to average costs in the system. Thus, the proposal is in this respect a follow-up of U.S. traditions in the regulation of natural monopolies.

But obviously, the U.S. experience cannot wholly be applied in Europe. As already mentioned, there are thousands of producers and numerous distributors and other customers in the U.S., making the market structure at the entrance and exit of the pipeline

⁴ Austvik (1990) presents a more thorough discussion of the economics of natural gas pipelines.

⁵ See Kalt (1988) for a more detailed description of various bundling of services.

much more competitive than in Europe.⁶ Also, the transmission lines in Europe are crossing numerous countries' borders. The huge amount of money and often long-term contracts, affect foreign economic and security considerations. Inter-state relations in the U.S. parallel international relations inside Europe.⁷

Nevertheless, even though in Western Europe the market structure, the political and not least the juridical area are different from in the U.S., a gas pipeline tends to become a natural monopoly anywhere in the world for technical economic reasons. But one should not therefore expect that a similar policy in the U.S. and Europe would have exactly the same effects on these markets.

THE DESIGN OF A COMMON CARRIAGE (OPEN ACCESS) ARRANGEMENT

The general conditions for what initially has been called a Common Carriage arrangement are traceable to British law and consist of four main elements:⁸

- a. The carrier must not refuse to serve.
- b. The carrier must serve at a reasonable price. The criterion FERC uses in the U.S. gas market to judge "reasonableness" of a rate is a return-on-valuation standard. Valuation is determined mainly by the pipeline's depreciation costs.
- c. The carrier must serve in a non-discriminatory fashion.
- d. The carrier is responsible for the safe delivery of the goods entrusted in its care.

A Common Carrier system establishes the pipelines as transporters as opposed to brokers of natural gas. If one can agree on what is "just and reasonable" returns on investments, one should be able to reach (on average) the point where price equals average costs (including normal profits), illustrated at point B in the graph. The idea is that the producer and distributor shall make direct contracts. They shall pay a reasonable tariff to use the pipeline, like a toll road. A reasonable tariff is usually assumed to equal average costs + normal profits but no economic, or monopoly, profit.

⁶ Ref. Austvik (1990).

⁷ Some have anticipated that the Commission will be able to play the role of the U.S. federal government in this area.

⁸ Broadman (1987) page 140-41. The term "Common Carriage" has over the last years often been understood similar to the system introduced in the U.S. in the mid-eighties, where excess demand is allocated on a pro rata basis (see below). This is originally, however, a limited interpretation of the concept. There are many ways of allocating excess demand within a "Common Carriage" regime. In this article, however, the system referred to will mostly be named "Open Access" regimes in order to avoid any misunderstanding about such a more limited interpretation of the term.

Thus, the merchant function of the transmission lines today is in conflict with a pure Common Carriage arrangement. But the system does not preclude the possibility of finding mixed solutions. For example, a system can be designed in a way such that the pipeline can act as a trader if it at the same time is obliged to transport the gas at a reasonable price for third parties.

Here we can already observe an important consequence for Norwegian gas sales of the regulation of the European gas market. If a pure Common Carriage system is introduced, the existing contracts are closed with parties that no longer are allowed to be a producer's customer. If a mixed solution is found, the contracts may still have to be renegotiated because of the lower profit margins and changed rules of the game for the transmission companies.

On the other hand, it will be easier to reach markets in more distant countries. Under a Common Carriage regime, a situation like the one of the Norwegian/Austrian deal should become impossible. The German transmission line would be forced to transport the gas at a reasonable price.

But even if these general ideas are quite clear, numerous techno-economic problems arise. We shall mention some of the aspects that have to be clarified in order to critically evaluate the Common Carriage/Open Access idea, many of them taken from the U.S. experience. We will discuss these factors in order to illustrate how complicated the matter is. It may give some answers to why regulatory agencies, such as FERC in the U.S., easily become large bureaucracies. It illustrates the high competence requirements needed in such a bureaucracy. Errors made may impose huge costs on companies and national economies involved.

1. What is a reasonable tariff? Average costs in a natural monopoly are decreasing with the use of capacity. A pipeline with half of its capacity filled may have a substantially higher average cost than when it operates at full capacity.
2. Which depreciation period to use? The shorter the period the higher the tariff.
3. How shall average costs be recovered? Shall everybody be charged the same rate or should the pipeline discriminate on the basis of customers' inelasticity of demand, either by season or sector?
4. How to allocate excess demand? When demand exceeds capacity, not everybody can get their gas transported. In the U.S. different methods have been used: a pro rata system: some sort of priority: firm versus interruptible contracting of the service.
5. Who shall decide how large the capacity is? If it resides with the pipeline, it can

downgrade the capacity in order to exploit inelasticities of demand and use monopoly power towards the gas owners on the margin.

6. How shall new capacity be priced? The average cost of the existing pipeline will obviously not be enough to cover the average cost of a new pipeline with newer and more expensive capital. Should the cost of the new pipeline be rolled into all old tariffs? Or should each pipeline be priced independently according to its costs?
7. How large should capacity be? Corrected for uncertainty, a new pipeline project should give a positive net present value at an appropriate discount rate. With society's usually lower discount rates compared to the private sector, mainly because of a more overall view of the national and EC economies than private businesses has, a project can give a positive net present value for the public sector at the same time as it gives a negative one for the private sector. This could give arguments for both subsidies (as was done in Canada) and even publicly owned pipelines.

However, some sort of Open Access (or Common Carriage) system is not the only way to increase flexibility and decrease transportation costs in the market.

ALTERNATIVES TO COMMON CARRIAGE

Lack of competition is a major reason for pipelines to become monopolies. We have touched upon a few technical-economic reasons why this competition is lacking. However, in parts of the market "enough" competition may exist. Considering the often large regulatory costs, there should be less need for regulation of pipelines with competitors. In fact, if competition could be increased at strategically important distances, one could avoid regulations of today's monopoly pipelines. Obviously, the costs of regulations have to be withdrawn from the benefits that the regulation creates in order to evaluate possible net benefits.

Another approach is to change the property rights of the pipeline. In economics, very often the bundle of property rights is taken as a datum, and the forces determining the price and the number of units of goods to which these rights attach is examined. But a pipeline is behaving monopolistically because its owner has an interest in maximizing profit in the pipeline. By changing the property rights, the new owners may have different goals than profit-maximum for the pipeline alone. If the owner of the pipeline has overall efficiency in society, or maximum profit in the distribution or production sector, as a goal, profit maximum for the pipeline may not be in the owners' interest. New property rights schedules may be, for example, public ownership or producers/distributors being "undershippers" in the pipeline. The public ownership, on a non-profit basis is, as already mentioned, is the "old" European way of approaching the

problem of natural monopolies.

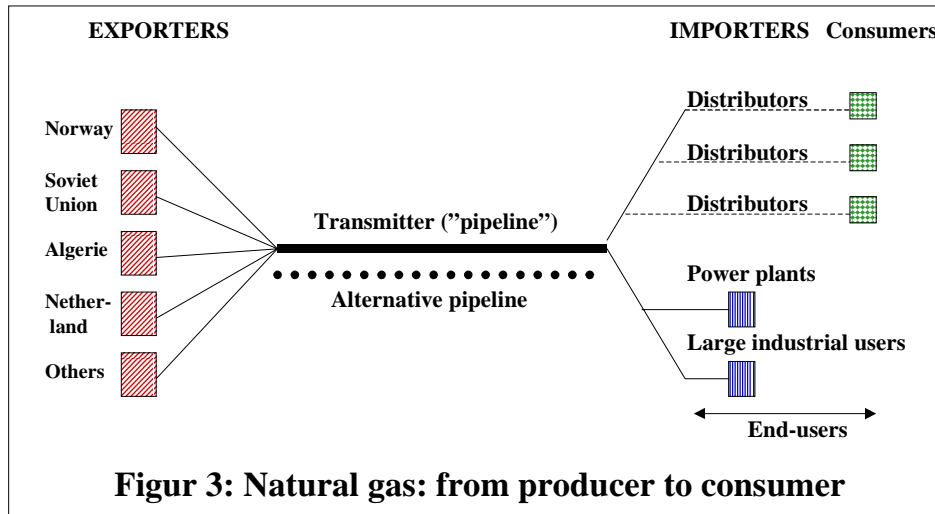
Also anti-trust legislation and taxes and subsidies are possible means of regulating a natural monopoly, approaches that we shall not go deeper into in this article.

HOW WOULD AN OPEN ACCESS SYSTEM WORK FOR A EUROPEAN EXPORTER?

The natural gas industry is an important part of the economy in both producing and consuming countries. An efficient well-functioning natural gas grid should, from society's point of view, allocate costs and benefits between producer, pipeline, distributor and consumer so that net benefits are maximized. However, among the various parties, the views of for whom benefits are to be maximized diverge. Some countries and companies may be better off by exploiting a possible monopoly power in the market, even if it is not a zero-sum game as a total. Therefore, there will be contrasting views in determining net benefits for the companies, the countries, the Community, and in Europe as a whole.

If an industry is not structured "by itself" to operate competitively, some sort of intervention is normally needed in order to reduce the social losses of a monopolistic and/or monopsonistic behavior. Monopolistic and monopsonistic behavior does not usually lead to the most cost effective way of producing a commodity or a service, with often large gaps between price and costs. Both seller and buyer of the pipeline service, as well as the pipeline itself, wish to capture the net benefits that this gap represents. Each of them may therefore have diverging views on how the market should be organized and these views may in its turn be different from the societal point of view. These interests are important reasons why the issue is a complex economic and political controversial one.

In Europe today, gas exporters sell their gas to the pipelines. Many of these pipelines are organized in a purchasing consortium on the continent, while the suppliers (between these, Norway, the Soviet Union and Algeria) do not cooperate. The dividing of suppliers and distributors and the uniting of pipelines in a purchasing consortium may have led to lower prices on the part of the exporters and higher prices to the pipeline companies than otherwise might have been obtainable (assuming that a monopsony has stronger market power than an oligopoly). When we add the fact that the pipelines tend to be natural monopolies for technical economic reasons, this cooperation makes for a very concentrated market structure, underlining the strong position of the transmission lines in Europe.



Schematically, in the draft above, under some sort of an Open Access regime, the exporters will sell their gas at point B rather than at point A as today. Will the old monopoly structure then be replaced by a new one consisting of producers and importing firms?⁹ And what about prices at different stages in the market?

Under an Open Access regime, it seems unlikely that (oligopolistic) producers should manage to end up in a strong enough position to be able to charge specifically higher prices from the customers than (monopolistic) transmission lines do today. Whether the prices to end-users (in this context: distribution companies, power plants and large industrial users) will remain the same or decrease, will to a large extent depend on the positions of importers and exporters in the market. Obviously, both parties wish to redistribute the possible economic profit of the pipelines to themselves. Therefore, it is logical that the Commission also considers how to regulate producers' and importers' monopolies.

But as long as the EC countries mostly are importers of gas, and the most important exporting countries are non-EC members (Norway, the Soviet Union and Algeria), a regulation of producers oligopoly may prove to be difficult (this situation may be somewhat changed if Norway becomes an EC member). Some sort of monopsony (or oligopsony) power should, from the consuming countries' point of view, be maintained in order to balance a possible producer market power. With a market structure like the one in Western Europe, the change may be marginal for many actors and it may lead to new inefficiencies in the market with the redistribution of income from pipelines to producers

⁹ The pipelines themselves will, of course, be suffering from such a regime if it works according to the premises of the proposal.

and/or importers.

One argument that is posed against the Common Carriage proposal is that the long-term stability for producers in today's contracts with the transmission lines will be challenged. However, a main reason for these contracts to be long term and stable is that consumers have a rather stable use of natural gas. It is difficult to see that this stability cannot be maintained for a producer by signing contracts with the customers directly rather than indirectly, through the transmission lines, as today. Saying this, the argument should be modified by the costs of the transitional arrangements in moving from the existing system to a new one. Therefore, a gas producer may end with a negative view on the proposal in the short term and a positive one over the longer term.

The situation in Germany is especially interesting. Germany is the biggest importer as well as the biggest consumer of gas on the Continent. At the same time they are the most important country for transmission of natural gas to other countries. Both Soviet, Dutch and Norwegian gas passes through Germany for destinations in France and Italy. Potential Soviet exports to the Netherlands, Belgium and Great Britain can be transported through German territory. Norwegian and Dutch gas to Austria and Switzerland has to pass through Germany. Germany's geographic location indicates that several destinations for natural gas are on a most cost effective basis to be reached through Germany. The strategic importance of the country and the potential intensity of the trade may therefore give reasons to emphasize a market approach in that country, implying the construction of new pipelines and splitting the transmission sector into several independent companies. Such an approach would avoid regulative costs and physically secure routes by different shippers. Politically it may also represent an easier approach than regulation. No other European countries may be large enough, considering the size of the optimal capacity investment, for such a solution.

Therefore, a flexible approach that involves both increased competition and the establishment of open access and some sort of Common Carriage introduced over a period of time seems to serve the interests of many parties in the gas market. By introducing the regulations over some period of time, with some flexibility and in an increasingly more detailed manner, some of the costly inefficient decisions (as was made in the U.S.) may be avoided.

THE STEPS TOWARDS A MORE OPEN NETWORK

A transit directive has been the starting point of the EC towards establishing some sort of a (more efficient) Open Access system. This directive, which was adopted by the Commission in October 1990, implies that one transmission line shall have access to the other pipelines in the Community in order to reach non-neighboring markets. The pipelines shall negotiate the terms. If they do not agree, they can appeal to the

Commission. When the first appeal eventually is made to the Commission, however, some decision must be made about tariffs and capacity allocation (ref. point 1-7 in the list above). This can be made by some pre-set rules/laws decided upon within that time. If such rules still does not exists, the courts must set them according to, as of yet, unknown principles (competition rules?).

The introduction of the transit directive is to a large extent in line with what we have suggested about moving slowly and with some sort of flexibility. Nothing is yet said about the terms for transportation. The choices about how to define what is reasonable, depreciation periods, whether all tariffs should be equalized or not, how excess demand should be allocated, how large pipeline capacity really is, how new capacity shall be prices as opposed to old capacity, how large the overall optimal capacity really is etcetera still remains to be made. The alternatives to Open Access, such as increased competition (where it is possible), establishing of publicly owned pipelines, anti-trust legislation or taxes and subsidies are not ruled out. But the directive represents the first step towards loosening up todays rather rigid infrastructure existing in Western Europe. Thus, the process towards finding some solution to all these rather complex techno-economic issues has started.

As the transit directive now is formulated, producers or consumers do not have the right to access the pipelines. The next step in the process will probably be to let them have this right. When and how the technical issues will be sorted out is very difficult to determine (other articles in this book discusses the speed of the EC process). Most likely, the Single Market is not necessarily introduced as a dramatic shift from one set of rules to another in 1992. "1992" may also work as a symbol of a process that may be expected to last throughout the decade, where the various regulations step by step may be introduced i.e. with majority voting as with the transit directive.

Obviously, regulations and arrangements in this sector are of a very complicated economic, juridical and political nature. The half century long struggle in the U.S. with trials, new laws, regulations and deregulations is clear evidence of this. In Europe, one should similarly expect strong resistance, especially from the pipelines, against any regulatory efforts. Therefore, the difficulties and the complexity of the issue when establishing a possible regulative body to formulate details and find practical solutions should not be underestimated, and has not, till now, been underestimated by the Commission.

For a gas producer, it is therefore vital, as it is for other actors, to establish themselves as lobbies in Brussels, EC members or not, in order to influence the process of formulating the technical aspects and the speed of the process. For Norway the will and ability to do this may perhaps in this sector where Norway may have a say on the basis of being a significant gas seller, be of more importance than whether one becomes an EC member or not.

A result of these re-regulations will eventually be that both exporters and importers must increase their activity in the market in order to replace the broker role of the transmission lines today. Producers should get a portfolio of direct customers, stabilize incomes and possibly increase sales. End-users (in this context: distribution companies, power plants and large industrial users) should allocate purchases between local producers and exporters in order to optimize their portfolio to secure supplies and minimize dependency on each seller. Thus, a re-regulation of the market, should possibly, for Norway imply a significantly larger downstream network and activity. A gas strategy that does not include such an increased activity run the risk that the competitors will, and, thus, take market shares from Norway in the long run.

Whether the net result of these changes for a gas exporter will be positive or negative may well depend on the companies and the government's ability to be active both in the markets and vis-à-vis the policy makers and regulators in Brussels. A strategy towards the "new market rules" should not be in conflict with the maintenance of contacts with today's customers of gas (the pipelines) and their governments. The transition period may last for a long period with both old and a new rules to various extent, functioning in the market simultaneously.

What may prove difficult for Norway is if EC regulations also affect the way gas sales are organized. Obviously, a decrease in the purchaser's market power may be in Norway's interest. But if it also implies competition between gas producers on the Norwegian shelf, the "new" buyers may be able to push producer prices down. Therefore, concentration in this area should be focussed on how to maintain a maximum bargaining strength vs the market. Whether this must be done informally, whether the Norwegian Gas Negotiation Committee (GFU) can/should be maintained or whether entirely new concepts here must be found will be of decisive interest when assessing the totality of Norwegian interests.

As this article has tried to outline, it is difficult to really assess an Open Access system before details are clarified, whatever the streamlined theory is. IN public regulations, many mistakes can be made that may will not be in the interest of a gas producer. Obviously, there are no easy once-and-for all solutions. But the idea of the proposal, to get a freer movement for gas and reduce monopoly power in the market, should, in our opinion, be in a gas producing country's interest, if the country (both the government and the companies) approaches the issue actively and the problems of organizing gas sales are solved.

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