Abstract

In a world of growing gas use that is helping to decarbonize other economies, Europe’s gas industry is in decline—it is overly costly for Europe’s consumers, and EU policy continually shifts between the goals of competition, security of supply (in the face of increasing Russian dominance), and a rejection of fossil fuels in all forms (evidenced by the widespread prohibition of domestic EU unconventional gas production). Contributing to the decline are the EU’s counterproductive industry regulations (the 2009 “Third Energy Package” and the Gas Target Model (GTM)). The GTM displays a signal problem: focusing only on optimizing the short-term “trading” of existing imported gas supplies over socialized member state “notional” gas networks. With such a focus, the GTM effectively bars competitive entry (either imported or domestic) of new gas supplies or the competitive transport bypass of parts of those existing networks to access any new gas supplies. This effectively leaves Europe’s gas consumers to pay oil-linked rather than competitive prices for gas originating with traditional oil-linked import contracts and delivered by traditional gas companies. Competitively produced and transported gas can displace gas imports and boost energy security, reduce coal-fired generation, help consumers lower energy bills, and help meet Europe’s climate targets (all goals of the European Commission’s November 2016 “Clean Energy for all Europeans” initiative). But as the Commission reassesses the future of its gas regulations, it should analyze how a possible “Fourth Energy Package” and revised GTM may help to make the industry more competitive as Europe works toward those long-term goals.
Introduction

Gas production and use is increasing in much of the world, helping nations decarbonize by displacing dirtier fuels and boosting local economies by displacing imports. Against this trend, Europe’s natural gas industry has declined. The basic supply sources have not changed in decades despite falling domestic supplies and Russian import security concerns. Most gas imports arrive from state-controlled enterprises, which are apparently pursuing a market share maximization strategy. Oil-indexed gas import prices—which represent an upper limit for the cost of gas rather than a competitive price—are more than twice as high as the (declining) cost of producing unconventional gas. Despite evidently abundant internal resources, there is no systematic European effort to develop unconventional gas.

Those high prices have prompted record-breaking European imports of high-carbon steam coal for use in electricity generation, which is displaced by cheaper gas in the electricity generation merit order in overseas markets. Since the implementation of the Third Energy Package in 2009, Europeans have paid over €500 billion more for their gas than consumers in North America because of high prices in the EU.

Regarding gas infrastructure, several EU Member States have only a single supply route and supplier. Even so, Europe builds new gas pipelines at the slowest rate of any continent in the world—an indication not of the adequacy of its infrastructure but rather of the lack of a dynamic market for the sourcing and transport of competitive supplies. Further, as a practical matter, the growing worldwide trade in liquefied natural gas (LNG) cannot reach interior EU countries that are most captive to Russian imports, and more than 80% of the EU’s LNG import terminal capacity is idle. There is no material participation of the major independent petroleum companies in developing internal gas supplies, and all major new gas supply pipelines (e.g., Nord Stream 2 and Trans-Adriatic) are highly political and involve existing importers as key participants (e.g., Russia’s Gazprom or Norway’s Statoil).

These unfortunate features serve as evidence of an EU gas market in virtual paralysis. It is not “a competitive, secure European gas market that benefits all consumers,” as envisioned by Europe’s Agency for the Cooperation of Energy Regulators (ACER). Perhaps adding to the evidence of this paralysis is the European Directorate-General for Energy’s call for a high-level review and analysis of the EU gas market. It seeks to study whether rigorous implementation of the Third Package and Gas Target Model (GTM), or a change in the regulatory framework, best contributes to maximizing overall EU welfare.

In what follows, I will describe three essential problems with the GTM. I will then offer a view of a different regulatory framework and discuss its welfare implication for Europeans as the wider community searches for pathways toward the “Clean Energy for all Europeans” initiative.

Problems with the Third Package and GTM

From the broader perspective of what drives gas markets, the problems are apparent enough: the GTM’s short-term focus and essentially protectionist treatment of Europe’s incumbent gas companies and import routes. I will describe how the GTM has (1) politicized the industry, (2) ignored the essential features of risk and investment in gas as a unique part of a larger industry through an essentially abstract regulatory model derived from the electricity markets, and (3) impaired the application of new technology to tapping Europe’s own gas.
The Politicization of European Gas

Economic and regulatory policy in the European gas sector seems to be at an impasse. The Third Package and GTM seem to be never-ending works in progress, reflecting a continually shifting focus between (1) the search for economic efficiency and low cost, (2) Russia-focused security of supply, and (3) sustainable energy policy that seeks to keep fossil fuels in the ground. Such a “trilemma” is peculiarly European—not only because of the uniqueness of Russia’s role but also because of the ossification of gas supply arrangements flowing from a lack of definitive movement and certainty in regulation (with three legislative packages from 1998 to 2009 and the possibility for a fourth). Such regulatory uncertainty makes any particular movement toward a better gas industry regulatory model difficult.

Europe does indeed have unique problems not shared by other continent-sized gas markets. It has justifiable concerns about the political security of its gas supplies, given Russia’s energy politics and past supply interventions in holding up supplies to Ukraine, purposely bypassing Member States, or integrating downstream into gas supply enterprises throughout Europe. Given Russia’s dominance in Eastern European Member States, EU gas supply security is not simply a technical issue dealing with disruptions due to weather or natural disasters, which, for example, define “security” in US gas supply arrangements. Europe’s political history also weighs heavily on making a seamless and competitive continental gas market, with each of the loosely allied Member States guarding its own sovereignty and “national champion” gas companies. To be sure, pursuing a competitive gas market within such political arrangements is possible, but Member States need to confront such political boundaries directly.

One cannot study the broader implications of active sustainable energy policies, security of supply considerations, or the political barriers to a continental gas market without first having a practical grasp of a how such a continental gas market should ideally function. The current paralysis evident in Europe’s gas market traces back to both to its industrial and political inheritances (e.g., gas came late to Europe) and the unfortunate application of an unsuitable GTM regulatory regime—a square regulatory peg attempting to fit into a round industry hole.

Overlooking the Nature of the Gas as a Part of Its Wider Industry

Gas markets—in Europe or anywhere—are the downstream end of the fossil fuel industry. The upstream end involves great concentrations of sunk-cost capital committed to the exploration, production, and transport of the fuels. Often enough, abundant gas supplies appear only in inconvenient places (e.g., the North Sea, Western Siberia, the Gulf of Mexico, Northwestern Australia, or kilometers underground in shale deposits). And while other petroleum markets can use barges, railroads, or road-based tankers, as well as pipelines, to transport liquid fuels, the gas market needs pipelines to ship the fuel overland in any material quantities. Those pipelines—once built—are no good for any purpose other than their designed use in transporting the fuel from one point to another. It has long been the case, supported by theoretical economics and practical experience, that the challenges of protecting the value of the capital sunk in expensive gas production and pipeline transport facilities require long-term commitments from highly reliable buyers. The need for reliability and credit-worthiness in such markets sharply limits the range of possible buyers (simple “retailers” will not suffice to motivate sunk-cost capital in gas production and pipeline transport). Even then, the risks involved in devoting capital to gas production and long-distance gas transport often enough exclude all but state-supported firms.
Given the costs and risks involved in large-scale fossil fuel developments, it is understandable that large-scale natural gas service entered Europe as late as the 1960s. Unlike the development of gas industries in some other parts of the world, the agreements underpinning the growth of the gas industry in Europe were made between state-owned firms. The twenty-fold increase in European gas consumption since then came about through the efforts of those state-owned firms to arrange for the earliest production in the Netherlands and for major imports from Russia, Norway, and Algeria, and to collaborate with those businesses that were purchasing and transporting the gas within the Member States, which aggregated the purchasing power of their millions of gas consumers to pay for the fuel and its transport.

Fifty years later, the gas industry is highly developed in Europe. Privatization, vertical unbundling, and retail access have defined the gas industry public policies in the Member States and across the EU. And yet, most of the gas for Europe still comes from the sources developed in the 1960s through the successors to the state-to-state contracts for gas that built the European gas industry—still for the most part tied directly, or effectively, to petroleum equivalent prices, rather than to prices reflecting the competitive entry of unconventional gas found in other parts of the world (like the United States, Canada, and Australia).

Recognizing the Risk of High Technology in Modern Gas Supply

New technology has greatly changed the gas industry; freeing gas prices from petroleum equivalents—not unlike how the new technology applied to combined-cycle power generation in the 1980s changed the competitive position of older thermal power plants. The main technological advances since the 1980s have been: “unconventional” methods of drilling (horizontal drilling from a single well and “fracking” to release gas trapped within impermeable rock); more flexible LNG transportation (to overcome the separation of source and market by long sea routes); and digital market platforms (to match buyers and sellers more quickly and efficiently). Unconventional gas production, for its part, has had a tremendous effect on gas markets in North American countries where production has occurred. It has driven gas prices down to prices not seen since the 1970s, encouraged increased gas use, displaced higher-carbon alternatives (such as the steam coal that heads to Europe), and revitalized the petrochemical industry. Recent US history shows how efficient gas markets can achieve all three of Europe’s aims: low cost, lower carbon emissions, and higher security of supply.

The development and production of unconventional gas in North America required the dedication of many billions of dollars of capital in new horizontal wells, support services, and gas gathering/treatment systems. Such investment was risked by collections of large and small oil and gas production companies, secure in the knowledge that they could sell into an existing highly competitive market at any connection point within the North American pipeline system, which provides for competitive point-to-point access to customers throughout the continent. The financial industry dealt with the risk inherent in the industry through robust, years-ahead gas futures markets referenced to the singular Henry Hub—the kind of futures market unlike anything in the EU (but possible with other regulatory and market arrangements). Paradoxically, while the competitive activity in applying new technology to gas extraction is intense, the existing pipeline infrastructure to receive it was almost entirely supported by the purchasing power of many millions of gas consumers represented by their state-regulated, local gas monopolies.
Because independent local monopolies supported initial construction (by rival investor-owned pipeline companies) and subsequent expansion of North American pipeline infrastructure, those approvals were the result of regulatory action. Local regulators permitted gas distributors to aggregate long-term purchasing power within their monopoly service territories by allowing distributors to commit to long-term contracts with rival pipeline companies offering new or expanded gas service. Resting on regulatory approvals that committed consumer funds, these contracts underwrote the pipeline systems, a development needed for investors to devote capital to such long-distance pipelines. Virtually all such transport pipelines were—and are still—built upon the stable and secure buying power of millions of gas consumers, working through their local gas distribution businesses and only as permitted by local regulators, who keep an eye on ensuring secure supplies for the consumers they represent. Local gas customers pay for the pipelines that serve them through such means. Even the most established transcontinental pipeline companies need such long-term assurances to obtain financing for the great cost of major new pipelines.

**An Ideal Gas Market Regulatory Framework**

An ideal gas market regulatory framework should recognize the economic and industrial realities of gas supply chains: (1) the upstream end—whether it is thousands of kilometers away or literally underfoot, in terms of unconventional production—involves great and risky commitments of capital in the production or import of gas and oil and (2) the downstream end, tied mainly to the more densely populated areas, involves great collections of consumers connected to natural monopoly distributors. Building the pipeline links between the upstream and downstream ends of the gas market has always involved regulatory choices, taken by regulators on the recommendation of gas distributors, on behalf of consumers served by those local monopolies. Those choices involve which source of gas, over what distances and conditions, provides for the most economical long-term delivered cost of fuel, including transport.

Regulation of those natural monopolies at the downstream end is inescapable; thus, it is optimal for the specialized regulatory bodies and those local natural monopolies, working together, to decide which sources of gas best serves the long-term public interest in their locales. This includes consideration of whether the source provides the best mix of competitive options and the lowest cost for the inherently captive users of those monopoly distribution facilities (note that the existence or absence of independent gas retailers is not relevant here; the distributors remain the relevant natural monopolies). Experience around the world shows that local regulators and natural monopoly gas distribution companies can be innovative and far-sighted in such choices. They have a documented history of pursuing new pipeline routes or incremental LNG supplies to set the stage for long-term competitiveness and low cost supplies for consumers—even in some cases with higher short-term costs to provide for long-term competitive alternatives.

This ideal framework recognizes that the collective purchasing power of those millions of consumers, physically tied to local gas distributors, provides the funding engine required to support the capital investments needed for (1) long-distance pipeline transport networks and (2) production activities that spur competitive rivalry at the upstream end of the gas supply chain. That is, ideal local monopoly regulation for gas companies is not just about recouping local distribution costs through tariffs. Local monopoly regulation is also ideally about long-term
planning in the public’s interest for the most economical supplies from the various competitive sources. Such regulation can readily serve as the vehicle to deal with unusual or idiosyncratic supply risks (as in a gas source that is unreliable—for either natural or political reasons), as well as a desire to commit customers’ funds to diversifying supply options. In this respect, “security of supply” is, for every major consumption center within a larger market, a practical and local concern. Given the cost and risk involved in the upstream industry, competitive options at the downstream end will not arise any other way.

In this respect, the regulation of local natural monopoly distributors is important to advance long-term competitive, welfare-enhancing alternatives for local gas consumers. Many hold a contrary opinion: that regulation should not advance a solution for long-term choices but should aim only to construct the conditions of a level playing field for potential gas producers to enter the market. Indeed, this is the philosophy that underlies the regulation of electricity markets around the world—where system operators manage a regulated transmission network that any generator can access according to common rules regarding payment for short-term power and longer-term (e.g., three years) capacity commitments. The EU’s GTM regulations for energy markets adopt this vision for both EU electricity and gas transmission markets—which is a mistake, given the different technologies, capital requirements, and spatial differences in those two energy markets.26

An idealized framework also recognizes the cost of moving gas efficiently through pipelines from place to place. The cost of longer distance shipments in competitive markets generally are borne through either lower prices for the distant seller, higher delivered prices for the buyer, or both. Therefore, in efficient gas markets, all else equal, gas prices for longer distance shipments should be lower at the origin and higher at the destination to reflect both the sunk-cost capital consumed in devoting pipelines to ship from one spot to another and the value in the gas market that those links represent. Pipeline pricing, ideally, can be straightforward, reflecting physical routes that match contractual purchases with costs built up from standardized regulatory accounts, including recognized methods to apportion both capital and operating costs to particular lines or routes. Of course, there is no assurance that the actual costs of long-built pipelines reflect the current marginal cost of building new lines or that regulated prices reflect the value of particularly desirable (or undesirable) pipeline links. Further, point-to-point pricing can be abused if available transport quantities are not known and if pipeline companies (or specific shippers) can inappropriately deny access. But such problems have remedies in carefully regulating the amount of capacity available and recovering capacity costs through long-term contracts with cost-reflective prices, signed before construction of the capacity gets underway. Flexibility and efficient use of pipeline capacity can then be achieved by permitting shippers to “sublet” their contract access to particular routes at market prices. In such a way, it is possible for a point-to-point pipeline pricing regime to be simultaneously reflective of the pipeline companies’ regulated costs (through the prices that contract shippers pay regulated pipeline companies), reflective of the value of pipelines links in the gas market (in those shippers’ desire to use or sublet their capacity in unregulated markets), and inexpensive to regulate.27 In such regimes, the “liquidity” in transport that supports a competitive market comes from the physical specificity of contracts and the freedom to sublet, which spawns the market that allows shippers to reallocate their capacity efficiently, without the intervention of monopoly gas transporters.
The Harmful Elements of the Existing Gas Target Model (GTM)

ACER and national energy regulators developed the GTM to develop an EU gas market that is consistent with the Third Energy Package. The GTM abstracts from point-to-point transport costs within the separate market zones; uses relatively short-term arrangements for booking capacity (from yearly to within-day) with occasional multi-year agreements in limited quantities; specifies auctions for “contractual congestion”; and commits to after-the-fact gas balancing. Compared to an ideal transport system, entry/exit pricing—with its socialized costs and notional gas trading points—is opaque and dizzyingly complex, without reasonable ties to the particular costs needed for such transactions. Unlike point-to-point systems, which essentially link multi-pipeline shipments together into a single transaction, entry/exit prices “pancake” as a shipment spans different market zones (similar to how electricity transmission tariffs pancake when crossing different transmission zones). As a result, shippers pay socialized pipeline network costs in each zone. When shippers wish to reallocate capacity under such a regime, only the transportation companies owning the pipelines can carry out such operations—thereby creating a monopoly where none is needed. Such a system, in addition to obscuring useful pricing signals for overland pipeline transport, is massively more expensive to administer (with distinct network codes in each zone, continuous monopoly regulation, and special arrangements for “cross-border” capacity). In such a system, a shipper that wants a 10 km contracted link to an LNG terminal cannot buy it—except by building it with a specific exemption from the entry/exit regime. Some proposals for modifying the GTM call for connecting the existing market zones, perhaps across national boundaries, purportedly to increase “liquidity” (i.e., the number of traders and perhaps the volume of trades) of the notional trading of gas in those larger zones.

Contrasting with the GTM are the underlying workings of Europe’s gas markets that reflect the realities of risk and investment in such markets. In particular, long-term contracts indexed to other petroleum products continue to have a dominant role in imports, except in relatively self-sufficient UK and Dutch production, where prices are somewhat lower but tend to follow oil equivalent price movements anyway instead of the cost of gas production, as in North America. Wholesale importers resell to retailers, who sell on to consumers and may trade resold supplies at the various hubs based on short-term deviations in demand (e.g., weather-induced deviations). European consumers choose among retailers in their respective market zones and physically receive their gas through their incumbent gas transmission system operator (TSO) and local distributor.

Abstracting from point-to-point transport costs, by constructing the elaborate entry/exit regimes required by the Third Package, has eliminated price signals associated with how particular shipments use actual pipeline capacity. Pipeline-specific prices have been replaced with postage stamp tariffs or else tariffs based on the estimated marginal costs of “idealized” gas flows. The result has been a loss of transparency in tariff-making and of efficient pipeline use. It has also contributed to the pancaking of diverse entry/exit and gas balancing charges when shippers wish to move gas across multiple Member States. The relatively short-term nature of capacity commitments, ex-post balancing, storage, and cross-border capacity have left pipeline capacity, access, and planning in the hands of TSOs and Member State incumbent gas companies. The EU has to wholly or partially promote publicly funded “projects of common interests” to deal with broader security issues and supply diversity.

The GTM deals with gas that is already imported or acquired by Europe’s gas industry traditional suppliers. It relates entirely to: (1) rivalry for gas supply among wholesalers or retailers with short-term gas to sell in market zones (i.e., “trading” at the various hubs); (2) complex and
often repeated procedures for defining and allocating capacity at the interfaces between market zones; and (3) rivalry to book, balance, or store gas in periods of actual or contractual congestion for entry or exit within those zones or on cross-border capacity. Such a focus embraces only short-term optiumums on given networks. The GTM is blind to strategic or long-term competitive entry into the gas pipeline industry where the choice of routes or sources of gas—conventional or unconventional—lies with those who might have the ability to commit the “funding engine” of captive gas distribution customers to different supply routes or non-traditional gas supply options, including LNG and unconventional supplies.

Put another way, the reach of competition under the GTM is sharply limited. It does not embrace possible competition between new gas pipelines and the TSO’s Member State-based facilities, rivalry between the pipelines at the internal borders where they abut, or explicit rivalry between new gas sources and pipelines, and traditional wholesale importers like LNG importers or private unconventional gas developers. Rather, the GTM deals with a static infrastructure and existing long-term contracted imports and domestic supplies, both in the source of gas and its transport. In that static world, competition is limited to buying from existing stocks of contracted internal or imported gas supplies and the existing facilities for transporting and storing it. Gas distributors—acting on behalf of Europe’s gas consumers—cannot reach through or around the incumbent transmission networks to build new pipeline capacity for deliveries from low-cost and abundant new sources of gas. Europe’s gas consumers cannot—individually for major users or collectively through distributors—reach through or around the TSOs, existing retailers, or wholesalers to purchase independent supplies backed up with contracted physical links over these pipelines. Such opportunities for competitive bypass are the most potent form of competitive restraint on gas prices. Such competitive bypass is forbidden by the GTM because it permits TSOs to exercise their discretion in pricing to minimize the threat of bypass.32

In such respects, the GTM mirrors modern electricity market models, where consumers purchase from retailers drawing electricity from the common grid, into which competitive power producers sell. There is no link between individual consumers or groups, and particular power suppliers. The technological nature of power grids necessarily prevents such a link through physical contract paths. Thus, a common electricity grid that connects electricity distributors and their customers to competitive electricity generators is rightfully held to be the optimal foundation for competition in that industry, given the underlying technology of AC (alternating current) networks. But gas technology is not so limiting—indeed, pipeline businesses naturally sell point-to-point physical service if they are permitted to do so. Commercial and regulatory arrangements inspired by electricity grids inevitably limit the scope for competition in gas markets, given gas markets’ roots in the fossil fuel industry and the long-term physical relationships needed to underwrite the long-term capital commitments needed for competitive entry in gas supply.

This point about the signal defect of the GTM deserves emphasis. The GTM fails to target dynamic efficiency through competition in different routes or sources of gas (i.e., in the construction of new pipelines) and instead focuses on short-term optimization with a static supply and infrastructure. To be sure, the gas supply systems in the Member States, originally built with public funds, were not designed to encourage or facilitate supply choices or physical contracting routes across particular internal or cross-border pipeline pathways. Those physical systems were not built by investor-owned firms (backed by banks and other sources of long-term capital) that endeavored to compete for the supply of gas for consumers, as in other gas markets. Yet, physical pathways would facilitate long-term contracts to support LNG’s competitive entry in EU Member States and would support the development of particularly
promising unconventional gas fields. Subletting and capacity markets would then allow shippers
to optimize the competitive use of the capacity that has been built. For example, if a shipper
wishes to access an LNG terminal that is 10 km away, that shipper either sublets available
capacity for its desired contract term from the holder of a long term contract, or if desired
capacity is unavailable, it contracts with a new entrant or with an existing pipeline firm to
build it—in either case paying for service on a 10 km pipeline and nothing else. The pursuit of
such dynamic efficiency should be part of current efforts seeking to maximize competitive gas
supplies’ contribution to the welfare of the EU’s gas consumers.

Examples of this idealized gas market can be found in other countries, particularly in the US and
Canada, which independently adopted similar models in 1985. The rules that define US and
Canadian gas markets emerged from the specific institutions in each country, at different times
and in different forms, so that the underlying legal and economic model could only be seen
“through a glass, darkly.” But the gas market model in those countries corresponds more or less
closely to the principles of efficient asset operation espoused decades ago by British economist
Ronald Coase: contracts reflect the nature and costs of the underlying physical assets, so
decisions based on contracts result in efficient choices about physical assets. By peering
through the “dark glass” with Coase’s model in mind, it is possible to discern the links between
physical assets and regulatory infrastructure that create a commercial framework likely to
promote efficient construction and use of pipeline capacity. Creating such links in the EU would
confront historical and institutional obstacles, but nothing that cannot be overcome in principle.

Welfare Implications of the EU’s Choices

The EU, like other democracies, lives with a longstanding and complicated array of inherited
institutions and political realities that define the possibilities for such a continental gas market.
Such institutional foundations make for “path dependency” in choices of policy, limiting the
choices for such a complicated, cross-border industry. Not every policy or regulatory possibility
is practical given the political realities of a gas industry that spans across all EU Member States.

Nevertheless, it is critical for the EU to study the implications of the existing GTM regulatory
arrangements against a gas industry competitive ideal where: (1) local or regional regulators
decide, in light of recommendations from local gas distributors, what “security of supply”
means in their own particular environments; (2) independent new suppliers have the ability to
connect with those local markets with specific physical links through the existing market zones;
(3) the cost of competitive entry by LNG or unconventional gas tracks physically through the
system—paying by contract only for service on the facilities they use; and (4) the right to sublet
capacity allows efficient use of all of the available capacity. By creating a baseline functioning
market based on these ideal arrangements (rooted in the well-investigated cost of LNG imports,
new unconventional gas, and known pipeline development costs), one can assess the welfare
implications of this approach and of constraints in the EU that are not consistent with such an
ideal model.

A fundamental analysis of Europe’s potential gas market raises important questions. There
is no generic “local regulator”—the powers, responsibilities and levels of independence of
the regulators of local gas distributors vary widely—both in Europe and around the world.
There is also no generic “local gas distributor”—the organizational independence, unbundling
history, and responsibilities of such distributors also vary widely around the world. It is also
true that the extent to which the potential competitive advantages of new entry projects are not socialized (i.e., are not included within general third-party access (TPA) pipeline tariffs) has deep implications for: the rationale and computation of entry/exit tariffs; how to define zones; whether to contemplate point-to-point transportation; and how to price it.

Competitive entry may reveal redundancies in the EU’s pipeline supply and storage system that lower the market value for particular transit lines and import routes, which would affect the equity holders or partners in those lines, including many of the public and now-private gas companies in the EU. The type of competitive entry that would reveal such redundancies would cause those who own the infrastructure to wish to oppose it. The institutional and administrative tasks associated with creating the rules to permit such orderly competitive entry within a secure and reliable gas system (like the one that exists, for example, in North America) may be difficult to create for the members of the EU—particularly in an era of rising nationalism. Europe’s democracies may have some trouble promoting a gas market that permits its variously situated gas customers the ability to underwrite the long-term commitments needed to foster a competitive gas market, including the power to choose some routes and abandon others.

But then again, considering the great cost savings for EU consumers, the high-carbon coal that would be displaced from the EU power generation merit order, and the unreliable imports that would be turned away in favor of domestic EU gas production, it would be well worth the trouble to seriously pursue a better gas regulatory arrangement for the EU.
This paper is an expanded and fully referenced version of the “discussion paper” provided as NERA Economic Consulting’s response to the European Commission’s “Quo vadis EU gas market regulatory framework—Study on a Gas Market Design for Europe,” (ENER/B2/2016-413) and posted on the EC’s site: https://ec.europa.eu/energy/en/studies.

Europe’s gas demand has dropped since 2010, whereas coal demand has increased, as reported by the US Energy Information Administration. See: http://www.eia.gov/todayinenergy/detail.php?id=13151.

See: Call for Tenders, No. ENER/B2/2016-413, European Commission, Directorate-General for Energy, p. 6 (Section 2).


Nord Stream 2 is owned by Gazprom, Gerosgaz Holdings B.V., the Netherlands, an affiliate of PJSC Gazprom, and supported by Uniper SE and BASF SE/Wintershall Holding GmbH (Germany), the Royal Dutch Shell plc (UK and the Netherlands), OMV AG (Austria), and Engie S.A. (France). See: https://www.nord-stream2.com/company/


For example, a continental gas market that overrides individual state interests in favor of broader continental interests defines the gas markets in the United States and Canada. But those markets required specific recognition of how internal boundaries could impair national markets (e.g., in the United States, the national interest comes from the 1789 US Constitution’s “commerce clause,” which gives the federal government sole jurisdiction on matters of “interstate commerce”).


For example, the “Algonquin Incremental Market Project” in the Northeast United States, expected to be completed in December 2016, is an expansion of Algonquin pipeline’s existing interstate pipeline capacity, licensed by the Federal Energy Regulatory Commission (the FERC). It added 342 dekatherms/day of capacity with a combination of 71 miles of new lines and 82,000 horsepower of additional compression. All of the new capacity was reserved under long-term contracts by ten distribution companies in three New England states, approved by the regulators in those states. It was a typical interstate expansion project.

In practice, local regulators regularly seek out long-term competitive options. In a number of cases, particularly in the 1980s and 1990s, both federal and state regulators approved pipelines that provided head-to-head competition with incumbent pipelines in expanding gas markets, giving greater weight to the potential for long-term pipeline competition than arguments from incumbent gas pipeline companies that they could serve those areas more cheaply. In 1987, the Wisconsin Public Service Commission licensed an entrant over the objections of the incumbent, saying that “this ability to choose provides Wisconsin consumers with options and flexibility ... both next year and fifty years from now” (Wisconsin PSC, Docket No. 6650-CG-104, 10 Dec 1987, p. 19). The Commission in New York encouraged the same pipeline entry in 1991, saying “New Yorkers clearly will benefit from the additional gas transportation option provided by Empire [Pipeline]” (New York PSC, Opinion No. 91-3 (1 March 1991), p. 33). The Federal Energy Regulatory Commission did the same in 1989, approving a gas distributor’s (Citizens Gas) desire to connect to a new interstate pipeline supplier, saying that a “new supply would give Citizens Gas a second pipeline supplier and thus the ability to diversify” (46 FERC ¶61,010 (1989), p. 61,046).

See: Makholm (2015), pp. 119-120.


European Gas Target Model: Review and Update, Agency for the Cooperation of Energy Regulators (ACER), Ljubljana, Slovenia, January 2015.

Article 36 of the Third Package contains a procedure for requesting exemptions from entry/exit and the jurisdiction of the transmission system operators.

The question of “liquidity” is a vexing one, for the pursuit of such “liquidity” across larger and larger entry/exit zones is destructive of the potential for competitive pipeline entry. See: Makholm, J.D., “‘Entry/Exit’ Pipeline Pricing in Gas ‘Islands’ Enables EU to Resist Competition,” Natural Gas and Electricity, Volume 32, Issue 3 (October 2015), pp. 27–29. In practice, combining market zones reduces the need for gas trading because it declares more gas to be geographically equivalent and reduces the need for gas retailers with customers in a particular location to swap gas in the “wrong” place for gas in the “right” place.

As stated before, the exception is Article 36 of the Third Package.

Canada’s version became known as the “Halloween Agreement” (i.e., the Western Accord on Energy Pricing and Taxation). The US version was contained in FERC Order No. 436. Those initial actions in 1985 started different trains of legal and regulatory events working toward their current transport and gas markets.

I describe Coase’s contribution to such pipeline markets in detail in my book The Political Economy of Pipelines.

The apparent fear among some European policymakers that contracts for specific facilities reduce flexibility to switch suppliers is misplaced. First, such contracts are necessary to motivate investment, either in new pipeline links or new production facilities—banning contracts simply bars entry into either enterprise. Second, an ideal pipeline regulatory framework makes switching (“subletting”) easy and amenable to unregulated prices. Shippers are no more captive to their contracts than commercial tenants are captive under a lease that permits subletting of their space.


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