Natural gas in Brazil: opening the bottlenecks

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Abstract - The most noteworthy characteristic of the Brazilian natural gas industry is that it is plagued by a number of bottlenecks. These bottlenecks are major barriers to the evolution of the entire energy sector in one of the world’s major economies. While one can understand, historically, how they came into being, it is imperative that, in the context of contemporary reality, they be identified and alleviated. The bottleneck chokes are derived from a variety of sources, bureaucratic, economic, and physical, and it is useful to discuss them in terms of those three categories.

Bureaucratic Bottlenecks

The bureaucratic origins of the problem stem from two sources, the licensing system, and the heavy reliance on central planning. First, in regard to central planning, the problem is that it places all initiative in the hands of the state. It is the state that must carry out geological studies to identify potential areas for drilling, deciding whether or not to grant concessions for the rights to drill, and, if so, then define boundaries for the granting of concessions. In addition, for adding infrastructure such as natural gas pipelines, it is the state, through its planning process which predefines where investment should go. Private entities, which might be willing to put its capital to work building out infrastructure, are not allowed to do so without having to obtain a concession which is largely defined through a central planning system. While such a system might be understandable if treasury funds were put at risk, it lacks any real rationale where the capital being used is purely private. While the theory underlying the policy is that pipelines are a responsibility of the state, which the government can either perform or enable a private concessionaire to carry out, it must be cognized that that theory can also be served by a liberalized system that reduces or eliminates archaic bureaucratic barriers to putting infrastructure in place to serve the nation.

The licensing problem is that the system, largely derived from medieval French law and Portuguese colonial practice, discourages individual exploration. Interestingly, in regard to mining, Brazil has repudiated that tradition. While in natural gas, any party who conducts exploratory activities for the resource, has no assurance that he will reap the benefits of his work, because any discovery reported to the state will then have to be put out to competitive bidding that others may very well win. That is dramatic contrast to what occurs in mining, where a party exploring for minerals can obtain a license to carry out his search, and, if he is successful in finding minerals, he is very likely to be the one who benefits from the work he did. In short, the incentive for private investors to search for natural gas does not exist. Why bother to explore if you are not all that likely to be the beneficiary of your own efforts?

While it is true that the resources below the surface belong to the state in Brazil, that fact does not compel such a top down approach that strongly discourages private risk taking in searching for natural gas. The state’s interest is not in a perverse set of incentives that only makes the discovery of gas less likely, but, rather, is in gaining its fair share of the value of the resource, and in assuring that extraction is carried out in a way that least disturbs the environment and public safety. Those objectives can easily be achieved by a combination of taxes and sensible regulation, but do not require that all initiative is left to a bureaucratic process that confounds meaningful and productive economic signals.

Economic Bottlenecks

The economic arrangements within which the pipelines operate include a series of barriers to optimize the sector. These barriers include the following:

Vertical Integration

The natural gas industry has a variety of components, but its midstream consists of two basic elements, the commodity business and the transport (pipeline) business. The first component, like any other commodity market, is, absent artificial constraints, a competitive activity. The transport function, absent appropriate structural or alternative transport arrangements to preclude it, is a classic
monopoly function. Indeed, the pipeline is the only means available to transport natural gas to the marketplace. Thus, it is obvious that if a participant in the commodity market, controls the monopoly facility providing market access to all players in the commodity business, the entity controlling that access will use that position to its competitive advantage and keep competitors from accessing the marketplace. That is precisely the situation in Brazil’s natural gas industry. Petrobras, the dominant player in the commodity business, with very little, if any, constraint, also controls the transport system that all commodity players need to move their product to market. For a major world economy, such a constraint is a severe handicap, unless it is mitigated through either structural separation (i.e. no company in the pipeline transport business can be in the commodity business and vice versa), or through legal/regulatory measures that mitigate the monopoly power of the vertically integrated entity. While structural separation or disaggregation of transport and commodity functions is self-explanatory as a resolution of the problem, the problems associated with vertical integration, even without structural separation, can also be mitigated by the following measures, ones which are not currently in place in Brazil.

Open Access

The most obvious way to mitigate monopoly power in the natural gas transport business is to mandate open access, and, of course, to vigorously enforce that mandate. In Brazil, under present law, there is effectively, no open access for alternative suppliers of natural gas. While the revisions in the natural gas law a few years ago called for open access after a period of time, it is, at best a tepid step, and, at least, for a period of time, leaves vertical integration intact. In the absence of open access, a regime in which any party seeking to sell natural gas, has the ability to reach its customers, it is hardly surprising that there are precious few entrants into the market, not only to buy, sell, or trade natural gas, but also to engage in seeking natural gas because of uncertainty of market access. Indeed, “uncertainty,” is an understatement, given the fact that the pipelines are controlled by a competing supplier of gas. The problem of closed access is, of course, compounded by the fact, noted earlier, that the concession process makes it extraordinarily difficult for an investor to build its own pipelines to bypass the bottleneck controlled by a competitor. Stated simply, open access is the sine qua non of a fully functional and robust natural gas market. Without transparent and open access, the Brazilian natural gas market will remain out of sync with modern notions of the business, sync sill lack a fully functional market.

Market Monitoring

A critical component of open access is the existence of an independent market monitor. The function of the monitor is to monitor and make transparent to all, the actual real-time use if the pipeline. By having a monitor, the pipeline owner/operator will not be relied upon to indicate whether or not capacity is available for other users to access. This is a particularly valuable function where, as in the case of Brazil, the owner/operator is also a vendor of natural gas, and, therefore, has an economic incentive to deny access to a competitor. If the pipeline were entirely outside of the control of a buyer or seller of natural gas, the market monitor’s role might be a less important one, but in the context of the Brazilian situation, it is essential. It is very poor public policy to rely on representations regarding the availability of access from a party that has a powerful economic motivation to deny availability. The monitor would also be invaluable for the regulator should it be asked to mandate access for a party to whom it was denied. It would allow the regulator to know, in real time, what capacity is or ought to be available.

Capacity Market

It is important to note that the lack of multiple pipelines does not mean that competition cannot exist in providing pipeline capacity. The right to buy, sell, and use pipeline capacity is completely seizable from ownership and/or operation of the facility. Indeed, it is common practice in many pipeline systems to sell, or even lease the right to use a designated amount of a pipeline’s capacity. By making those rights fully fungible, a high degree of liquidity is injected into the capacity market and monopoly power is significantly reduced. It also offers potential investors in new pipelines as an opportunity to spread the investment risk. The fact is that secondary capacity markets are quite common in pipeline systems, and Brazil would be well served by enabling their evolution.

Physical Bottlenecks

Pipelines are not the only physical bottlenecks on the system. The absence of storage facilities is also a major handicap. Storage would enable buyers and sellers to manage pipeline constraints, avail themselves of price fluctuations in the market, and manage seasonal fluctuations that may be found in the movement of natural gas into and around Brazil. It would be useful to facilitate the process for licensing storage facilities and approving tariff arrangements for them.