

REGULATORY AND ECONOMIC ANALYSIS OF THE OPENING OF THE NATURAL GAS DISTRIBUTION MARKET IN BRAZIL

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Overview

The natural gas industry in Brazil is at a critical juncture: advances made through *Gás para Crescer* (Gas for Growth) initiative introduced pillars to develop a more competitive market have been counter-balanced by distribution companies (Discos) resistance to open the retail market. The initiative gathered stakeholders to discuss the main issues affecting the industry and resulted in an agenda of converging proposals deemed necessary for developing a competitive natural gas market. Most of the proposals are included in the Project of Law (PL) 6.407/2013. A key topic left out of the PL is the need to separate commercialization from distribution activities currently carried out by Discos. The network expansion is incipient and has been hindered by the absence of a modern regulatory framework with adequate incentives to perform. If the PL is approved it will also expose the fragility of current state-owned Discos operating under precarious risk management mechanisms for gas purchase and capacity contracting in market opening scenarios.

The current debate focus on partial perspectives because discussions about commercialization between suppliers and final consumers did not reach consensus. The distributors argue about impacts on current returns if a retail market for qualified consumers is allowed. Discos also refer to disadvantages if “free consumers” are ruled by the federal sphere and not by the states.

Those arguments, however, do not adequately consider: (i) the motivation for this return, which usually occurs without the existence of an effective counterpart on the the company side; (ii) the potential growth of the natural gas market and networks expansion, which bring a return on an effectively implemented asset-base; (iii) the overall effect on the economy – measured through local Gross Domestic Product (GDP), employment, tax collection, etc. – due to changes in suppliers and consumer strategies derived from change in prices and quality of service; and iv) the required changes on Corporate Governance and Risk Management discipline, nonexistent in the current model.

The arguments outlined above require quantifying and qualifying of expected impacts in different regulatory models under discussion. The aim of this paper is to present the results of evaluating the net benefits of alternative policy measures for natural gas distribution to different groups and to the society. For example, it will be possible to assess the effects on financials and risk measures with focus on counterparty credit risk - the risk arising from the possibility that one of counterparty (e.g. Disco) defaulting on amounts owned to a supplier on a bilateral transaction. This kind of approach allows estimating earnings-at-risk and mitigation measures through financial and/or insurance guarantees, and qualification of appropriate derivatives products (hedging), some of them not yet available in Brazil.

Methods

The methods comprise Scenario analysis and Monte-Carlo simulation, to evaluate the effects on firms in different market openings arrangements. The market opening arrangements will include different thresholds schedules and associated volume growth assumptions.

Consider that the profit function (π) for a generic distribution company is:

$$\pi = \pi_{net} + \pi_{ng} \quad (1)$$

where π_{net} represents the regulated gains from infrastructure services (provision of pipelines services) and π_{ng} the profits from selling natural gas by itself. These profits are formed by two components, taking into account the Brazilian regulatory practices: “regulated” consumers earnings – through tariffs set by a regulatory commission, and “free” market returns, through prices set by bilateral contracts.

$$\pi_{ng} = \pi_{reg} + \pi_{free} \quad (2)$$

The regulated market includes a large number of atomized clients. The profits earned by serving the regulated market is given by:

$$\pi_{reg} = \int \pi_i f_{\pi_{reg}}(\pi_{reg}) d\pi_{reg} \quad (3)$$

where $f_{\pi_{reg}}(\pi_{reg})$ stands for the probability distribution for profits from regulated market and π_i denotes individual profits from serving each client. In turn, the “free market” is composed by a small number of qualified clients. Similarly, we can see π_{free} as an expected value, considering the probability distribution for profits from free clients and individual profits for each client j on this market:

$$\pi_{free} = \int \pi_j f_{\pi_{free}}(\pi_{free}) d\pi_{free} \quad (4)$$

In this case, we can consider a different probability distribution curves for each client, considering explicitly a counterparty credit risk effect. Therefore, profits for distribution firms may be simulated for different scenarios, associated to more or less market opening levels.

Finally, a Monte-Carlo simulation approach, based on financial results for some representative firms, is used to evaluate counterparty credit risk effects and some related impacts such as indirect taxation at state level.

Results

First, description of market opening scenarios and assumptions adopted, presentation of data collected and qualification of possible consequences – positive and negative – of changes in regulatory acts. Second, quantifying such consequences, with the effective evaluation of them through the impact in the economy, including public finances, Discos financial results and associated risks in selected Brazilian states. Finally, an opinion will be given on the adoption or rejection of the new regulatory act, or suggestions for improvements.

Conclusions

The Gas Law (Law no. 11.909 of 2009) established provisions that have not been applied homogeneously among the Brazilian states. In some cases, the parameters established by the Law have not been respected or have been applied in a wrong or restrictive way. That Law also established the “free consumer” or qualified agent with the option to choosing its gas supplier, freely negotiating prices and contracts. In the current framework States understand they are responsible for regulating the retail market. Some States advanced in establishing rules and regulations for that type of agent; others, in contrary, have established clauses and conditions impeding their development.

The gas industry agents, except Discos, understand that gas sales to the final consumers should be subject to federal regulation in order to harmonize contracting rules – by doing so the Gas Law provisions and in its amendments (PL) could be implemented. The PL also assures gas distribution concessionaires will continue to perform their constitutional monopoly of building and operating the distribution networks and to be compensated for those activities. Therefore, no loss of rights arise for Discos.

A competitive gas market could greatly benefit the Brazilian industry, improving its competitiveness through gas price reduction, generating income and employment. The industry will benefit by adopting best practices on Corporate Governance and Risk Management by agents and regulators. There will also be incentives to the transport network, which since 2009 has not been expanded. In the mid and long term, states also gain by attracting new industries/consumers increasing the volume of gas sold and tax collection. Increased investment in infrastructure have direct impacts on the economy (such as direct employment, spending, etc.) but will also spread through a series of multiplier effects benefiting further states’ development.

References

- Hawdon, D (2003): Efficiency, performance and regulation of international gas industry – a bootstrap DEA approach, *Energy Policy*, 31, 1167 - 1178
- Sharabaroff, A., Boyd, Roy, Chimeli, A (2009): The environmental and efficiency effects of restructuring on the electric power sector in USA: an empirical analysis, *Energy Policy*, 37, 4884 - 4893