

# **ENTRY-EXIT MODEL IN EUROPE: LESSONS FOR THE BRAZILIAN NATURAL GAS INDUSTRY**

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## **Overview**

In June 2016, through the “Gas to Grow” initiative, Brazil started a reforming process of its natural gas industry (NGI). According to Almeida (2017), the aim of this program is to attract investments to the industry in a market environment open to competition. The Brazilian Government launched this program in a context in which Petrobras, the leading Brazilian gas company, is reducing its participation in the industry.

An important reforming aspect is the change in the tariff model for gas transportation. The National Petroleum, Natural Gas and Biofuels Agency (ANP) has decided, as regards the natural gas transportation segment, to implement the entry and exit model for capacity contracting, replacing the point-to-point contracting model.

According to Alonso et alii. (2010), under a system of entry and exit tariffs, the book capacity is divided into entry capacity, to transport gas from the injection points to a virtual balancing point; and exit capacity, to transport gas from balancing point to the withdraw points of the system. Almeida (2018) points out that the adoption of this new tariff model will reduce the transaction costs for gas transport services, since, with the same entry contract, a shipper can sell the gas to all exit points. This tariff model allows to increase competition and to improve the efficiency of the transport capacity use.

The reform experience in the natural gas industry in Europe shows that competition in the industry has only become effective when Directives 2009/72/EC and 2009/73/EC, together with Regulations 713, 714 and 715 (“Third Package”), were implemented. The entry-exit tariff for gas transport systems was recommended by this third European Union Energy Package, as it reflects costs, facilitates gas trading and provides locational signals of system congestion.

According to Vazquez et alii. (2012), designing a natural gas market is equivalent to defining how natural gas (commodity), transport (transport capacity) and ancillary services will be negotiated. The European Union has sought to promote the “commoditization” of natural gas from the socialization of some activity costs. This choice aims to get more liquid markets through the creation of virtual trading points (*virtual hubs*). Such virtual hubs ignore much of the network where natural gas is bustling and the physical flows of the gas, through the creation of market zones (or market areas) of entry-exit.

The main aim of this work is to analyse the introduction of entry-exit model in the European natural gas market and to draw lessons for the Brazilian reform.

## **Methods**

From a neo-institutionalist perspective, the definition of new competition standards for the natural gas industry requires the development of institutional structures that allow the reduction of transaction costs associated with transport capacity contracts. In this context, the importance of a regulatory framework capable of stimulating the efficient allocation of the natural gas transportation service is highlighted. In order to verify the best practices used in the natural gas industry, the European experience will be analyzed. The methodological procedure consists of a literature review and comparative analyses. The challenges faced in the European case will be identified, mainly to reconcile countries with a consolidated history of competition in the gas industry and countries where the transport network is not mature and gas supply is concentrated.

## **Results**

The measures previously taken, publication of Directive 98/30/EC, in 1998, and Directive 2003/55/EC, in 2003, despite pointing to implementing free access to transport networks and require the legal independence of

transmission system operators in relation to the other segments of the industry, were not effective for transporters to adopt strategies in fact independent of their controlling companies.

Only with the publication of Directives 2009/72/EC and 2009/73/EC, together with Regulations 713, 714 and 715 ("Third Package"), which strengthened the separation and total independence of the transport activity from other activities of the natural gas chain, it was possible to implement competition in the industry. This set of rules also created a central regulatory agency for the European internal energy market and created an institution responsible for the definition of network codes. The network code was officially established by Regulation 312/2014/EC, which sets out the compensation rules such as charges, responsibilities, appointments and payments between the different transmission system operators.

## Conclusions

The European case provides important lessons regarding the development of a competitive gas market and the contribution that the entry and exit tariff can have for this purpose. To maximize the liquidity of the natural gas wholesale market, the main points are: standardization of products/contracts and maximization of the number of market participants. In this sense, the design of the market areas delimited in the transport system should aim to ensure that the number of market participants is as high as possible.

Based on the European example, the merging of market areas is an important tool to allow that, once such areas are delimited; based on studies of topology, transport bottlenecks, and projected natural gas flows; it is possible to plan and implement the necessary reinforcements in the interconnections between these areas (i.e. investments in transport infrastructures), to reach the goal of a unified market area.

Another important issue, regarding the merger of market areas, is that common rules will be required for transporters operating in the merged market area. Transporters in the market area, who are responsible for the operation of their transportation facilities, should cooperate to calculate and offer transport capacity in a joint and transparent manner, as well as to balance natural gas flows through adopt common operating rules and procedures formalized in contractual instruments, the Common Network Codes (or Network Codes).

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