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The efficacy of liberalization and privatization in introducing competition into European natural gas markets

Iweta Opolska

Faculty of Economic Sciences, University of Warsaw, Warsaw 00-241, Długa 44/50, Poland

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ABSTRACT

This research examines the impact of EU liberalization policy tools on the rate of supplier switching in order to assess whether the objective of increased competition in the natural gas sector has been achieved. Three dynamic models are applied to a panel of 22 EU members between 1998 and 2013 to test the efficacy of eleven policy tools including privatization, in bringing competition to the market. Panel econometrics suggests that the liberalization tools implemented positively influence competition, although jointly rather than on a stand-alone basis. The implementation of pro-market regulations is associated with more competition in the sector. Among the various instruments, the virtual trading point, market-based balancing, market opening, and privatization have the greatest competition-enhancing potential.

1. Introduction

The liberalization of natural gas markets in the European Union member states was officially initiated by the first gas directive of 1998 (Directive 98/30/EC). Since then, gas market restructuring has evolved and intensified, with two more gas directives (Directive, 2003/55/EC and Directive, 2009/73/EC) and two additional gas regulations (Regulation (EC) No 1775/2005 and Regulation (EC) No 715/2009) contributing to the process. The primary objective of the reforms was to introduce competition into the previously regulated gas industries, along with establishing an internal pan-European gas market.

As the gas sector still exhibits features of a network industry, namely large and specific sunk investments, substantial economies of scale, and massively consumed products (Spiller, 2011), there remains the possibility of traditional market and regulatory failures and the need for regulation or reregulation (Genoud and Varone, 2002; Jaag and Trinkner, 2011). The EU regulatory policy tools were intended precisely to establish the rules of competition in the sector and restrict the potentially uncompetitive behavior of incumbent companies. Following the example of the United States and the United Kingdom, the European Commission pursued the 'competition over the network' model of liberalization, which required carving out (unbundling) the natural monopoly services related to infrastructure from the industry value chain (Klein, 1996). The gas industry was divided into potentially competitive segments (such as trade at the wholesale and retail levels) and natural monopolies requiring additional regulatory oversight due to impaired competition potential (transmission, distribution, storage). Although initially inspired by the deregulation in the Anglo-Saxon countries, the European Union eventually charted its own path to gas market liberalization.

The goal of this paper is to assess whether and which of the liberalization policy tools implemented in the EU member states, proved to be efficacious in opening up the potentially competitive segments of the natural gas industry. While previous studies analyzing the relationship of regulatory policy tools and performance mainly focused on gas prices (Brau et al., 2010; Copenhagen Economics, 2005; Florio, 2013; García, 2006; Growitsch and Stronzik, 2014), others investigated gas reforms effects on companies' financial and profitability indicators (Capece et al., 2013, 2012, 2010, 2009) or margins (García, 2006), comparable research on competition measures is lacking. Additionally, the limitation of earlier works is that the analyzed time span of the reforms' effects did not extend beyond the year 2007.

The inclusion of the post-2007 period is important, however, for at least three reasons. Firstly, the last European gas directive, which imposed new regulatory solutions and enhanced the previous ones, came into effect in 2009. Secondly, the biggest single enlargement of the European Union took place in May 2004 and involved eight Central and Eastern European countries (Czech Republic, Estonia,

E-mail address: iweta.opolska@gmail.com.

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Hungary, Latvia, Lithuania, Poland, Slovenia, and Slovakia).[1] The addition of three years of observations for the new members of the European Community, not included in prior analyses, helps to capture the full effects of gas reforms.[2] Finally, longer time-series, in general, improve the statistical properties of the research.

The contributions of this analysis are threefold. First and foremost, it tests the impact of liberalization and individual regulatory solutions on competition, as a measure of performance not tested in the previous literature. In particular, it intends to answer the question of whether the European gas reforms have reached their major objective. Second, it uses a wider set of liberalization tools than the majority of the empirical research,[3] allowing a more comprehensive approach to the problem and reducing the omitted variables issues. Third, it extends the tested sample to Central and Eastern European countries and up to the year 2013, making the paper more current than the available studies of the natural gas industry.

The paper is organized as follows. The next section presents in details the liberalization tools recommended by the European Commission and other EU-based regulatory agencies. Then, the statistical methods used to assess the impact of the policy tools on competition are explained. Next, information on data is presented, followed by the presentation and discussion of the results. To sum up, the final conclusions and policy implications are provided.

2. Liberalization policy tools

The policy tools implemented in the EU member states for the purpose of gas market restructuring are based on the standard regulatory prescriptions for the introduction of competition into the network industries, as advocated by the theoretical literature (Joskow, 1996; Newbery, 2000). They consist of unbundling services of the incumbent, third-party non-discriminatory access to the network, and network access pricing regulation. These general regulations were supplemented with more specific recommendations by the EU. The framework of the European regulatory model presented in Table 1 summarizes the key liberalization issues addressed in the three gas directives and two regulations and their evolution across those main gas documents. They were subsequently translated into the liberalization tools analyzed in the study. Additionally, the analysis considered other essential instruments (like VTP, gas exchanges, gas release programs, lifting gas price controls) that may not have been directly addressed in the directives or regulations but that appear in most significant papers or antitrust actions by EU gas market-dedicated agencies (e.g. EC, ERGEG, ACER, ENTSOG). Furthermore, following both research and practice, privatization as a structural solution is also considered.

The selection of liberalization policy tools was based on relevance but also dependent on data availability. The second predefined criterion, that is, the availability of information on the implementation of liberalization policy tools in the EU countries in the analyzed period, proved to be challenging. For example, data on implementation of various congestion management procedures (CMP) in the longitudinal format seemed unobtainable at that moment, as the first ACER's monitoring report on that issue, published in January 2013, indicated the CMP application status as of Q3 2013 only. Additionally, some pro-market measures approved by the European Commission in relation to antitrust proceedings, like the package of commitments by Distrigas for the Belgium market, are unobservable for research purposes, as they involved changes in bilateral supplier-customer contracts over few years. The ten liberalization policy tools and their relevance in the literature are described below.

2.1. Unbundling

Unbundling appears in four general modes that differ in magnitude of economic and legal separation (Künneke and Fens, 2007):

- Administrative (or accounting) unbundling: separate financial accounts for network activities and sales/production, but shared operations under one company;
- Management unbundling: in addition to administrative unbundling, staff are assigned to different business divisions/units that function independently from other business activities, but are still managed from a central holding;
- Legal unbundling: network activities are organized in a separate legal entity, which might, however, function in a holding company together with production and sales activities;
- Ownership unbundling: the former vertically integrated company divests its competitive segment assets and separates from natural monopoly bottleneck segment.

The separation of the market segments of the gas industry was proposed by the EU in stages: starting from the weakest form of accounts separation (accounting unbundling) for transmission, distribution, and storage up to the preference for ownership unbundling of transmission system operators (TSOs) in the third gas directive.

In the literature the last two forms (legal and ownership unbundling) are investigated, as they are easily observable and seem to make a difference, as opposed to the administrative and management unbundling.

The divestiture of transmission networks or key pipelines off vertically integrated incumbent companies was also a measure chosen to terminate some antitrust and merger cases initiated by the European Commission in the gas market. For example, to settle antitrust proceedings, ENI committed to divesting its shares in three international transport pipelines: the TAG, the TENP, and the Transitgas pipeline. Similarly, in reaction to EC's concerns, RWE offered to divest its entire Western German high-pressure gas transmission network. As a remedy to the merger of Gaz de France and Suez, the parties offered the divestiture of Distrigaz and SPE and Suez relinquishing its control of Belgian network operator Fluxys.

2.2. Third-party access (TPA) to the gas network

Unbundling is a concept fundamentally associated with open access to infrastructure. The EC distinguished two TPA regimes: negotiated TPA and regulated TPA. Under the negotiated TPA, those willing to conclude a gas supply contract should be able to negotiate the infrastructure access in good faith. The facility owners were bound to publish the main commercial conditions for the use of the system. Nonetheless, the negotiated TPA left the information supremacy and negotiation power in the hands of the incumbent (Haase, 2009). The regulated TPA was a more transparent and pro-liberalization regulatory tool as it necessitates the facility owner to publish not only major terms but, first and foremost, common

[1] Additionally, two Mediterranean countries (Malta and Cyprus) accessed the European Community on that date but they are excluded from the analysis due to non-existent gas markets.

[2] An exception is the work of Growitsch and Stronzik (2014) who included four Central and Eastern European countries in their sample: Czech Republic, Hungary, Poland, and Slovakia.

[3] Only Copenhagen Economics (2005) tested more regulatory solutions than the current study but their analysis ended in 2003, and their sample is limited to Western Europe.

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