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Are the transport fuel retail markets regionally integrated in Spain? Evidence from price transmission

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ABSTRACT

In this paper we explore whether the Spanish retail fuel markets are integrated at the regional level. We perform a comparative analysis of the transmission of international wholesale fuel prices to retail fuel prices. Our results are in favor of market segmentation, since the degree of cost pass-through differs noticeably across provinces (NUTS 3) and this outcome is clearly robust to the exclusion of the island provinces. We also found that cost pass-through is more similar for those provinces belonging to the same autonomous community (NUTS 2). It is suggested that different regulations and criteria regarding the granting of administrative authorizations from the autonomous communities could be hindering the integration of geographical markets.

1. Introduction

Since the liberalization of the energy sectors in the European Union, there has been a growing interest in knowing whether the markets in which energy firms are operating can be considered well integrated. The answer to this question is relevant mainly because it is expected that the fiercer competition generated from the elimination of barriers between regional markets would yield welfare gains (e.g. Dierx et al., 2004; Gasiorek, 2000; Gasiorek et al., 2004; Ilzkovitz et al., 2007). On the one hand, it would be reasonable to presume that greater global competition in energy sectors is an incentive to improve allocative and productive efficiency. On the other hand, it would also be likely that the credible threat of the entry of new competitors in each region would continuously encourage energy firms to invest in product and process innovations which, in turn, would lead to a situation of more dynamic efficiency.

Nowadays most research on regional market integration in energy tends to focus on the gas and electricity sectors.[1] Research related to market integration for the mineral oil sector is, in contrast, very scarce, in spite of the current importance of oil as an energy source. This is not surprising since, unlike in the gas and electricity sectors where there are apparent restrictions to access the existing transmission networks, the difficulties facing new oil competitors in entering geographical markets are presumably not so explicit. However, in the case of the oil sector, some research has highlighted the potential presence of entry barriers associated with land transport or administrative conditions, which could be relevant sources of segmentation among regional markets.

One interesting set of papers attributes the presence of market segmentation for fuel oil products to the great physical distances between some of the regions considered in the U.S. (e.g. Holmes et al., 2013; Paul et al., 2001; Slade, 1986), and Russia (e.g. Akhmedjonov and Lau, 2012).[2] As a result, some of these authors explicitly argue that market integration policies should be oriented to some extent in intensifying competition in the transport sector. Another literature stream highlights the existence of administrative obstacles to market integration that can derive from a lack of harmonization of rules and their implementation by local governments. For example, Dreher and Krieger (2008, 2010) indicate that, as a consequence of a heterogeneous taxation framework, there is significant market segmentation for fuel oil products across European Union countries. These authors reveal that, although producer prices of petroleum products have converged across European Union member countries since the beginning of liberalization, there is still a wide margin for further international convergence.

Integration among regional transport fuel markets for retailers might reasonably be questioned for Spain, even though the liberalization of

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[1] Some examples include Asche et al. (2002), Siliverstovs et al. (2005), Zachmann (2008), Bunn and Zachmann (2010), Balaguer (2011), and Nepal and Jamasb (2012).

[2] Distance as a significant determinant of segmentation between local markets in the same country has also been highlighted for non-oil products (e.g., Engel and Rogers, 1996; Parsley and Wei, 1996).

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the sector encouraged by European Union requirements was declared completed in the early nineties.[3] On the one hand, suspicions may arise about integration given the high concentration observed in many regional markets, which could suggest that retailers might be enjoying and exploiting their market power to establish barriers that hinder the entry of new competitors (e.g. by taking advantage of privileged locations, by economies of scale or local predatory pricing behavior). Thus, for instance, only two of the Spanish operating firms (i.e. Repsol and Cepsa) control more than 63% of the diesel service stations in provinces (NUTS 3) such as Álava, Segovia and Soria.[4] On the other hand, barriers may also be favored by the fact that the establishment of a new fuel oil seller in each region has come to be restricted by the specific criteria of their corresponding autonomous government (in accordance with the current Spanish regulations (RD 1905/1995)). That is, the specific rules in each autonomous community (NUTS 2) and the power of autonomous governments to grant authorizations for gas–oil stations wishing to set up in their territories could represent substantial administrative barriers to the free entry and relocation of firms from one region to another,[5] ultimately hindering the complete integration of markets.

Concern about the possible administrative barriers derived from the discretionary power exerted by the different regional governments, in a context where the authorization system has traditionally been very intricate,[6] is highlighted by the Spanish competition regulator through various reports. For example, in the 2009 sectorial report, the regulator concludes that "the current procedure for the administrative opening of service stations is excessively complex, lengthy in time, and allows a degree of discretion that is too broad" (Comisión Nacional de la Competencia, 2009, page 81).

In this paper we will start our empirical analysis by investigating whether the Spanish retail markets of transport fuel are well integrated at the provincial level (NUTS 3). Our operational idea for testing market integration will be based on the fulfillment of relative version of the law of one price. Thus, we admit that even if (pre-tax) prices can differ among regions due to structural differences, highly integrated markets should have similar price variations. Hence, under this last context, we will presume that common changes in raw material cost (i.e. the wholesale price of refined fuel oil) should be transmitted to producer retail prices equally across provinces.[7] If this is not the case, we would not consider regional markets to be well integrated and, as a further analysis, we would explore whether the power held by governments of autonomous communities (NUTS 2) could be playing a relevant role in the regional segmentation.

To meet the study objectives, we adopt an empirical approach that differs from that used in most papers in this research area. Much recent research in this field compares the variation of final prices from different locations by using long-run cointegration techniques to avoid spurious relationships between typical non-stationary prices (e.g. Asche et al., 2004; De Vany and Walls, 1993; Paul et al., 2001). They are based on the underlying idea that if markets are completely integrated, there are common supply/demand factors determining good price changes and, therefore, those changes should be closely related. Although the assumption of full market integration is the same that we use here (i.e. the relative law of one price), testing for cointegration of final price series would only provide a yes or no answer to the inquiry. However, we are further interested in providing some information about the degree of market integration, as in other previous studies that follow approaches adapted to the nature of the context analyzed and the availability of data (e.g. Balaguer, 2012; Engel and Rogers, 1996; Goodwin, et al., 1990; Kleit, 2001). In our case, producer retail prices of transport fuel are widely characterized by their frequent variations as a response to changes in international wholesale oil prices, for which high frequency time series are available to researchers. Then, we have opted for comparing the cost pass-through to producer retail prices across regions. This type of comparative analysis of pass-through has also been applied in the banking context, which is broadly characterized by the dependence on frequent changes in interest rates (e.g. Sander and Kleimeier, 2004, 2006).

This study may be useful to both academics and policymakers. To our knowledge, this is the first paper to formally address the question of whether retail fuel oil markets can also be considered well integrated within one European Union member state. The study therefore contributes to filling a gap in the literature and may encourage further research on the question for other European countries. In addition, our empirical results may be useful to Spanish national authorities since they will help to better evaluate whether, under the current regulation, autonomous regional government actions could be considered as a real source of inefficiencies. Moreover, since market integration within each member country is obviously a prerequisite for achieving a larger single market, evidence for individual countries can be also particularly interesting to European policymakers.

The paper is organized as follows. In the next section we describe our dataset and develop the econometric specification used in the analysis. In Section 3 we present the empirical results and discuss their implications. Finally, in Section 4 we present the concluding remarks.

2. The empirical framework

2.1. Basic hypotheses

Let us illustrate the underlying idea of market integration by considering, for each of the geographical regions ($i = 1, \ldots, R$), a representative firm which sells a transport fuel product in a context of monopolistic competition. For the sake of simplicity, we assume that the demand curves perceived by the representative firms can be described by a set of R exponential functions as follows:

$$X_{it} = AP_{it}^{-bi}, \quad b_i > 1 \tag{1}$$

where P_{it} represents the retail price for transport fuel product and b_i is the absolute value of the constant price elasticity of demand perceived by the representative firm that operates in the region i. The first-order conditions for profit maximization in each region i at time t imply that the firm equates the specific marginal revenue to the common marginal cost. Then, the optimal price can be expressed as the product of a specific-

[3] For a detailed discussion about measures adopted in the liberalization process of the fuel sector see, for instance, the oil directorate report of the Spanish National Energy Commission (July 2006) available at http://www.cne.es/cne/doc/publicaciones/IAP_CRONO_DP06.pdf.

[4] In relevant data for 6th July 2009 collected from the Spanish Ministry of Industry, Energy and Tourism.

[5] Different criteria from the regional governments are specifically related with the requirements concerning technical installations, environmental conditions, licensing and start-up business activity, and complying with road access conditions. According to the Spanish competition regulator, a large part of the discretionary actions from these governments has unjustifiably prevented the entry of new firms in their regions (Comisión Nacional de la Competencia, 2009, page 79). This fact could occur in an even more pronounced manner when the governors and fuel firms share some economic interests. A fairly explicit example is the case of Petrocat, which operates exclusively in Cataluña and is owned by Repsol and the autonomous government of Cataluña.

[6] Indeed, the 1995 report of the national competition regulator indicated that the system of authorizations in the transport fuel sector "favors the lack of transparency, discrimination and even the existence of corruption" (Tribunal de Defensa de la Competencia, 1995, page 181).

[7] Therefore, our hypothesis of market integration is defined according the size of the cost transmission to producer prices in the long run. Obviously, the fulfillment of the hypothesis admits temporary deviations from the accomplishment of the relative version of the law of one price. Dynamic models could be used to test this kind of short-term divergence (e.g., Bachmeier and Griffin, 2006; Lutz et al., 1995; Ravallion, 1986).