

# Competition and Competitors: Evidence from the Retail Fuel Market

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Insufficient competition in retail fuel markets and its impact on retail prices is raising concern among policy makers and antitrust authorities. This is a particularly relevant issue because fuel purchases not only represent a significant portion of many consumers' budgets, but they also affect competitiveness in the sectors where fuel is an input.

This paper aims to empirically analyze the role of the intensity of local market competition on fuel prices at a retail level. Intensity of competition is measured by the number of gas stations in the local market -a standard practice in the literature- as well as by the distance and the brand affiliation of the closest competitor. We assess whether premium brands soften competition in the local markets where they operate by setting higher own prices (direct effect), thereby promoting higher prices from rivals (indirect effect). Likewise, we also study whether low-cost brands contribute to reducing prices through their own prices (direct effect) and to encourage competitors to also lower their prices (indirect effect). Finally, we explore whether price setting by premium-brand stations differs depending on the brand of their nearest rivals.

This research question is of particular interest in Spain, where the two larger premium brands (Repsol and Cepsa) account for nearly half of all its gas stations while the presence of super-market and other low-cost stations remains scarce as compared to neighboring countries.

We address our research questions using a panel data set comprising daily diesel prices, locations and brands from nearly all the gas stations operating within Spain's mainland. Data were collected from 18 August 2014 to 15 June 2015. Altogether, we have nearly 2 million price observations on nearly 8,500 gas stations.

We estimate a reduced-form price equation that includes as explanatory variables the intensity of competition, measured by the number of competitors in the local market and the distance to the closest competitors, which are considered endogenous. Our identification strategy assumes that, controlling for the type of gas stations and demographics, market-specific consumers' valuations are independent across local markets. Thus, our instruments exploit information about the intensity of competition in nearby local markets with the same entry regulation and similar cost conditions. The methodology used to estimate our model is a GMM approach. Moreover, we control for a wide range of cost- and demand-based fuel price determinants to the end of controlling, insofar as possible, for other factors that could affect prices. The demand shifters are income and traffic intensity in the area, the location of gas stations (highway, airport, shopping mall or industry park) along with weekly and monthly cycles. Regarding the supply side, we consider the most important input cost (Brent price) allowing for an asymmetric pattern.

Our results confirm that local competition is an important determinant of the price-setting behavior of gas stations. Prices are negatively associated with the number of gas station in a given geographical area (local market); higher the farther away the first competitor and, finally, premium

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and low-cost brands have an opposite effect on the intensity of competition and prices. The pricing strategies adopted by premium brands (both Repsol and Cepsa) are similar: (i) their prices are both comparable and higher than the price of other brands; (ii) both brands soften competition in their local markets, thereby allowing other operators to set higher prices; and (iii) their prices are even higher when they are located close to each other. On the contrary, low-cost brands set the lowest prices and (in so doing) even encourage all competitors to lower their prices. We verify that the indirect effect on prices disappears when the closest competitor is over 3 km away.

Our findings are also relevant for the policy debate. The Spanish Competition Authority published a recommendation to facilitate the opening of unmanned (self-service) stations arguing that consumers would benefit from low-cost stations. The results of our research give support to this recommendation. They even add a nuance that would help achieve the proposed price reduction objectives. This is namely to define the exclusion area for the premium operators preferably based on local markets rather than extensive administrative areas (provinces) as is currently done.