PRICE STRATEGIES OF INDEPENDENT AND BRANDED DEALERS IN RETAIL GAS MARKET. THE CASE OF A CONTRACT REFORM IN SPAIN

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We analyse how the contract structure between gas stations and the wholesale operator affects price strategies. Using daily data on prices of different gas stations in Spain, and exploiting the introduction of a regional excise duty in gas stations, the paper finds that independent dealers charge lower margins and react more to competition than supplier operated and branded dealers. We use this result to interpret the inexistent reduction in markups that followed an increase in independent stations due to a change in the Spanish regulation that took place in 2013.

Introduction

Between 2011 and 2012 the Euro Area pre-tax gasoline prices peaked from almost 600 euros/000 liter on the 3rd of January 2011 to 800 euros/000 liter on the 27th of August 2012. The increase in Spain was from 622 euros/000 liter to almost 820 euros/000 litre. This raise in prices increased the public concern regarding the competitive behaviour of the retail gas market and whether dealers, especially those more attached to the upstream supplier, were benefiting from positive oil price shocks. In this paper we analyse how price stations with different upstream supply contracts are affected by changes in the marginal cost of nearby competitors. We do so by exploiting the introduction of heterogeneous regional excise duties.

Understanding the price setting behaviour of the retail gasoline market is important because most of the automotive fuel is channelled through the gas station network. Moreover, according to the input output tables, gasoline is an important input in many key sectors such as transportation and electricity. Using the Spanish network of gas stations as a case study to analyse this question is interesting in the international context because (1) historically, station ownership has been very concentrated among upstream suppliers; and (2) Spain reacted to the raise in international oil prices by passing a new regulation with the aim of increasing competition in the retail segment by changing the long lasting relationship between retailers and suppliers.

Pricing strategies in the retail gas sector by type of contract

In order to explore the price setting behaviour of gas retailers in Spain, we exploit a database of daily 95 octane gas prices, as notified by each gas station to the Ministry of Energy, Tourism and the Digital Agenda, covering the period January 1st 2011 to December 31st 2017. Note that gas stations are required to send information on the prices charged, as well as on price changes and gas station closures. Note also that prices are gross of discounts and we have deducted taxes in order to eliminate the possible distortions generated by local tax differences. There are around 10,000 fuel stations distributed along the Spanish territory. Moreover, the database contains information on the type of contract that the gas station has with respect to the major supplier. There are three types of contract arrangements:1) "Independent" gas stations have no exclusive dealing arrangements with any major supplier; 2) gas stations directly operated to a supplier ("supplier operated"); and 3) "branded" dealers, meaning those managed by an independent operator with an exclusivity contract that guarantees the supply of fuel from one single supplier.

The following equation estimates differences of markups, defined as the pre-tax price of the 95 octane gasoline minus the international wholesale price, by type of contract:

$$p_{i,t} - gas_t = constant + \sum_{j=\{branded,supplier\}} \alpha(j) * contract(j)_{i,t} + \beta comp_{i,t} + \gamma_{i,t} + epsilon_{i,t}$$

where, $p_{i,t}$ refers to the pre-tax retail gas price in euros per liter of the i station at the t period and gas_t to the wholesale price in international markets. The two dummy variables $contract_j$ are set equal to one when the contract subscribed by the i station corresponds with the type of contract j and their values are zero otherwise. The number of competitors $comp_{i,t}$ is defined as the number of gas stations within a radium of 15 km. In order to capture differences in the demand by location and time we incorporate dummy variables of area and time captured by $\gamma_{i,t}$. Finally, $epsilon_{i,t}$ is a random error term. In this setting, the constant is the average markup of independent dealers, and average markups of branded and supply operated stations are characterized by $constant + \alpha_j$.

TABLE 1

	First Specification	Second Specification	Third Specification	Fourth Specification
STABLE LONG RELATIONSHIPS				
Dependent variable:				
$p_{i,t} - gas_t$				
$Competitors_{i,t}$	-0.0000548***	-0.0000662***	0.000000887	0.00000587
	(0.000)	(0.000)	(0.975)	(0.84)
$Contract_{i,t}$				
Branded dealer	0.0269746***	0.0277505***	0.0265198***	0.0272814***
	(0.000)	(0.000)	(0.000)	(0.000)
Supplier operated dealer	0.0253902***	0.02581***	0.0256511***	0.0261756***
	(0.000)	(0.000)	(0.000)	(0.000)
CONSTANT	0.15043741 (a)	0.15059596 (a)	0.1475661***	0.1468385***
			(0.000)	(0.000)
Daily fixed effects	Yes	Yes	No	No
Municipality fixed effects	Yes	No	No	No
Zip code fixed effects	No	Yes	No	No
Daily and muncipality fixed effects	No	No	Yes	No
Daily and zip code fixed effects	No	No	No	Yes
Number of observations	21,156,573	21,190,843	21,156,573	21,190,843
Adjusted R^2	0.505	0.522	0.637	0.633
Prob > F	0	0	0	0

SOURCE: Author's calculations.
NOTES: Robust p-values standar errors are reported in parenthesis. The asterisks *, ** and *** indicate significance at a confidence level of 90%, 95% and 99%, respectively.

a These constants correspond to the average of predicted values for the dependent variable in the correspondent regression case. Hence, it is not fully comparable with the estimated constants for the others two especifications where there is a baseline for a specific day and a particular geographic zone.

Table 1 shows the results. As it is observed in columns 1 to 4, independent dealers are the ones setting the lowest markups (15 cents/liter in average over the analyzed period), while markups of supplier operated and branded dealers are higher and very similar to each other (around an additional 2.5 cent/liter).

One potential explanation for those lower markups is that independent stations compete more fiercely against other nearby stations. In order to have a clean natural experiment of how competition affect prices, we exploit exogenous changes in marginal costs of actual competitors by different types of gasoline dealers. In particular, we use a discretional regional excise duty (IVMDH) levied on competing gasoline stations. The IVMDH is an excise duty levied on the volume of fuel sold. It was introduced in 2002 in order to increase the revenues of the regional governments. Since then, regions could decide to establish a tax subject to a ceiling that is currently set at 4.8 cent /liter. Most of the regions only decided to use this possibility during the last recession, as a way to alleviate their fiscal problems. That is the reason why, within a particular local market, the imposition of this tax is exogenous to local economic conditions, being more generally related to regional fiscal problems. The paper shows that there is enough variation by region and time to identify changes in markups of bordering stations.

We estimate the following equation:

$$p_{i,t} - gas_t = \sum_{j=\{branded,supplier\}} \beta(j) comp_{i,t} * contract(j)_{i,t} + \sum_{j=\{branded,supplier\}} \beta(j) 1(comp_{i,t}^{Higher\ IVMDH}) * Dif_{IVMHD} * contract(j)_{i,t} + \sum_{j=\{branded,supplier\}} \beta(j) 1(comp_{i,t}^{Lower\ IVMDH}) * Dif_{IVMHD} * contract(j)_{i,t} + \mu_i + \delta_t + \varepsilon_{i,t}$$

Where $1(comp_{i,t}^{Higher\ IVMDH})$ is a dummy variable indicating that the station has at least one competitor that faces a fiscal disadvantage and $1(comp_{i,t}^{Lower\ IVMDH})$ is a dummy indicating that the station has at least one competitor that faces a fiscal advantage. The variable Dif_{IVMHD} indicates the size of the difference in taxes between one region and the other. As a consequence, the coefficients $\beta(j)^+$ and $\beta(j)^-$ identify the percentage of the differential tax relative to that of the competitor that is passed to the consumers via prices. As an example, $\beta(j)^+ = 1$ means that the gas station with a fiscal advantage

charges 100% of the tax differential to their consumers, whereas $\beta(j)^{-} = -1$ means that the gas station with fiscal disadvantage reduces its markup by the total amount of the tax-differential.

The first specification in table 2 shows that gas stations that are at the border and have a fiscal disadvantage tend to reduce their markups. The economic magnitude of this decrease is 60% of the size of the imposed tax. These results are consistent with those obtained by Stolper (2016), suggesting that those stations with more competition tend to reduce the pass through of levied tax. On the other hand, those stations that do not face the levy do not increase markups, since the magnitude of the coefficient is very small.

STABLE LONG RELATIONSHIPS TABLE 2

	First Specification	Second Specification
STABLE LONG RELATIONSHIPS		
Dependent variable: $p_{i,t} - gas_t$		
Total competitors $_{i,t}$	-0.000279***	
	(0.000)	
Independent dealer		-0.0003942***
		(0.000)
Branded dealer		-0.000232***
		(0.000)
Supplier operated dealer		-0.0002719***
		(0.000)
Competitors with fiscal disadvantage$_{i,t}$	0.00000215	
	(0.757)	
Independent dealer		0.0000485***
		(0.004.000)
Branded dealer		0.0000439
		(0)
Supplier operated dealer		-0.0000429***
		(0.000)
Competitors with fiscal advantage $_{i,t}$	-0.0023408***	
	(0.000)	
Independent dealer		-0.0025289***
		(0.000)
Branded dealer		-0.001867***
		(0.000)
Supplier operated dealer		-0.0026567***
		(0.000)
Fixed effects in petrol stations	Yes	Yes
Fixed effects in day	Yes	Yes
Number of observations	21,190,762	21,190,762
Adjusted R^2	0.647	0.647
Prob > F	0	0

SOURCE: Author's calculations.
NOTE: Robust p-values standar errors are reported in parenthesis. The asterisks *, ** and *** indicate significance at a confidence level of 90%, 95% and 99%, respectively.

The second specification repeats the exercise but distinguishing by type of gas station. We observe differences by type of contractual arrangement. In particular, independent stations with a fiscal disadvantage appear to decrease their markups to fully compensate for their higher marginal costs (a coefficient of 1 suggests a 100% decrease of markups). On the other hand, neither supplier operated, nor branded dealers react as much. In particular, supplier operated dealers reduce their markups 51%, whereas branded dealers decrease them by 38%. Finally, regardless of the type of contract, the increase in markups of disadvantage competitors is not relevant quantitatively.

We interpret these results as suggestive evidence that real competition, defined as a change in the actual marginal cost of current competitors, affect all gas stations and especially, those that are independent.

Discussion of recent developments in gasoline markets

We use those results to interpret the effect on prices of a regulation change in Spain that occurred after the increase in oil prices in 2012. As the requirements to open a gas station were eased in 2013, the number of gas stations went up from 8,979 to 9,805 in 2017. This increase is almost fully attributed to new independent stations. Despite this increase, the paper finds that only Spanish independent dealers decreased their markups after 2013, while other dealers increased them. One potential explanation is that the relevant market for different dealers might differ. It might be the case that independent dealers, which were increasing in number (especially in the low cost segment), only compete against other independent dealers while branded and supplier operated dealers compete with each other and are increasingly trying to differentiate their product with respect to the one sold by independent dealers.