A MARKOV-SWITCHING APPROACH TO MODELING THE ASYMMETRIC PRICE TRANSMISION: AN APPLICATION FOR THE SPANISH FUEL MARKET

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OVERVIEW

Currently, Spain's dependence to foreign oil exceeds 80%, as it was 30 years ago, compared to a European average around 54%. As a consequence, energy is a strategic good for any economic activity and hence, crucial for citizens' welfare. This large energetic dependence harms our competitiveness and our energetic safety in the medium and long term.

Related to this idea, it is worth mentioning that in the last years remarkable fluctuations in energy prices have been observed. In this context, the so-called "rockets and feathers" behavior is relevant for countries that depend from foreign oil, since they are particularly exposed to large volatilities in crude oil prices.

It is well known this phenomenon by which oil companies transfer the increase in international oil prices to local markets significantly faster than decreases and, as a consequence of this retail price volatility, consumers have become more reluctant to the oil companies' price setting behavior. In other words, they tend to believe that the oil companies adjust the retail gasoline and gasoil price more quickly to cost increases than to decreases. This different adjustment depending on their direction is known as price asymmetry (Bettendorf et al., 2003).

Related to this, it is worth mentioning that in January 2014, according to the fuel distribution supervision report made by the National Commission of Markets and Competence (CNMC), in the Spanish economy, the gross margin grew by a 25% year over year for gasoline and by an 11% year over year for gasoil. Furthermore, the price before taxes of these products exceeds the average for the Euro area, placed in the fourth position for gasoline and the sixth for diesel inside the EU-28. It is also worth mentioning that this remarkable increase in the gross margin has happened in a context characterized by a large decrease in international prices. This seems to support the hypothesis of rockets and feathers in Spanish retail fuel market.

In this sense, the perception is that the fuel market in the Spanish economy may not be entirely competitive with consumers not benefitting from fall in crude oil prices with the same rapidity as they are burdened with rises in crude oil prices.

There are several works devoted to the Spanish economy related to this issue, with mixed results. Galeotti et al. (2003), Grasso and Manera (2007) or Polemis et al. (2013) find evidence of prices asymmetry, whilst Contín-Pilar et al. (2009) do not find this result. Balaguer and Ripollés (2012) try to test the robustness of previous works when using daily data. Finally, the CNMC studied for Spain the relationship between crude prices and gasoline and diesel prices but the main analysis relied on graphical illustrations.

METHODS

These works for the Spanish economy have been developed in models that assume a different behavior depending on the sign for the variation rate for crude Oil price, i.e., analyzing the potential asymmetries for those sample periods characterized by an increase in crude oil price from those periods characterized by a decrease in oil price. We use a more general framework in two directions. First we follow

Bermingham and O'Brien (2011) by estimating a model that allows for the possibility of responses rates changing when passing a non-zero threshold rather than the typical zero threshold. Second, we test the robustness of these results by developing a two-regime Markov-switching estimation to model the dynamic relationship between the crude oil price and the retail price for gasoline and diesel.

RESULTS

The main result obtained from the two econometric approaches that we use in the paper is that we find evidence of an asymmetric response of the gasoline and gasoil prices to changes in the price of crude oil, both in the short-run and with respect to the adjustment towards the long-run equilibrium.

CONCLUSIONS

In this paper we analyze the potential asymmetric response of retail prices for gasoline and gasoil to changes in oil prices for the Spanish economy, the so-called 'rockets and feathers' behavior. Our approach differs from previous literature in one major aspect. Most of previous works have analyzed the different causality channel depending on the negative or positive sign of the variation rate for the oil price. That is, the previous analysis put apart those periods corresponding to increases in the price of oil from those with decreases in such a price. The standard hypothesis is that an increase in oil price will translate quickly into an increase in the petrol price, whilst a decrease in oil price will pass slowly and with a lower magnitude to the petrol price. With a different approach by using a Threshold Auto-regressive Error Correction Model we estimate endogenously the threshold in the variation rate of the price of oil that makes the difference. In a second stage, we test the robustness of the results by using a Markov-switching estimation of the model. We find evidence of an asymmetric response of the gasoline and gasoil prices to changes in the price of crude oil, both in the short-run and with respect to the adjustment towards the long-run equilibrium.

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