

STRUCTURAL CHANGE, EXCHANGE RATE AND THE ASYMMETRIC ADJUSTMENT OF RETAIL ENERGY PRICES IN EUROPE

Jonathan E. Ogbuabor, Anthony Orji, Richardson K. Edeme, Ezebuilo R. Ukwueze*

Abstract

This paper examines the role of structural change in the asymmetric adjustment of retail energy prices following changes in crude oil costs. The paper also examines the pattern of adjustment in retail energy prices when exchange rate is accounted for as part of the marginal cost of importing crude oil in European countries with high oil import dependency ratio. The paper shows that the results of Greenwood-Nimmo and Shin (2013) no longer hold when the structural change in the relationship between retail energy prices and crude oil costs is taken into the consideration. The paper also cautions that studies like Kristoufek and Lunackova (2014) that failed to account for exchange rate as part of the marginal cost of importing oil for countries with high oil import dependency ratio may be misleading. In fact, the results of this paper further indicate that once the exchange rate effect is taken into consideration, the possibility of rent-seeking behaviour in the gasoline markets of Italy and Spain disappears; while the rockets and feathers effect observed in most of the ex-tax gasoline, diesel, domestic heating oil and industrial fuel oil markets vanishes.

Keywords: rockets and feathers effect, asymmetric adjustment of energy prices, nonlinear ARDL Model, global financial crisis, antitrust policy

JEL Classification: Q43, D40, C22, F36, L40

1. Introduction

The continuous tumbling in crude oil prices, which started in the last quarter of 2013, has renewed global interest in the asymmetric price transmission from crude oil markets to various retail petroleum products markets. Monthly oil price statistics from the International Energy Agency (IEA) indicate that average cost of imported crude oil in the United States (U.S.) declined from 97.44 U.S. dollars *per* barrel in October 2013 to 38.76 U.S. dollars *per* barrel in November 2015. In fact, the wholesale spot price of Brent crude oil as at close of February 25, 2016 was 32.83 U.S. dollars *per* barrel. Specifically, given that crude oil is

* Jonathan E. Ogbuabor, Department of Economics, University of Nigeria, Nsukka (jonathan.ogbuabor@unn.edu.ng) and Department of Economics and Related Studies, University of York, Heslington, York, United Kingdom (jonathan.ogbuabor@alumni.york.ac.uk); Anthony Orji, Department of Economics, University of Nigeria, Nsukka (anthony.orji@unn.edu.ng); Richardson K. Edeme, Department of Economics, University of Nigeria, Nsukka (richard.edeme@unn.edu.ng – corresponding author); Ezebuilo R. Ukwueze, Department of Economics, University of Nigeria, Nsukka (ezebuilo.ukwueze@unn.edu.ng).

the main input in the production of gasoline, automotive diesel, domestic heating oil and low sulphur industrial fuel oil, there are global concerns that the prices of these petroleum products at pump may respond asymmetrically to the changes in crude oil prices. Grasso and Manera (2007) provide an authoritative survey of such asymmetry in the retail gasoline markets, especially in the U.S. and the UK.

Rockets and feathers effect is used to describe the behaviour of firms in markets witnessing asymmetric transmission of input costs to product prices in such a manner that allows firms to earn temporary excess profits. Specifically, it connotes that when firms are confronted with rising input costs, they rapidly adjust prices upwards; but when they are faced with decreasing costs, they adjust prices downwards very sluggishly. This represents an important form of market failure and raises serious antitrust issues that policy makers and governments cannot overlook. In fact, it is typical of markets witnessing practices that are detrimental to consumers' welfare, such as rent-seeking, uncompetitive pricing, collusion, product hoarding, and artificial shortage/scarcity of products, among others. Given the reality of this phenomenon, especially in the global retail energy sector, economists across the globe have investigated its prevalence using various methodologies. While some studies found evidence in support of the hypothesized asymmetric response of retail energy prices to changes in crude oil prices, others did not find any evidence of such asymmetry.

Notable studies include Bacon (1991) who used data from 1982–1989 and a quadratic quantity adjustment model to examine the UK retail gasoline market for evidence of the rockets and feathers hypothesis, thus supporting the hypothesized asymmetry. Unlike Bacon (1991), Manning (1991) used dataset for the period 1973–1988 and found evidence of asymmetry in the UK retail petrol market, though the evidence was virtually absent after four months. Even though Reilly and Witt (1998) used monthly UK data from 1982–1995 and an error correction modelling (ECM) framework to investigate the retail gasoline market, the findings are consistent with Bacon (1991) and Manning (1991). Borenstein, Cameron and Gilbert (1997, henceforth BCG) used U.S. data for the period 1986–1992 and ECMs to analyse price transmission at different points in the distribution chain and find that retail gasoline prices respond more quickly to increases than to decreases in crude oil prices. The asymmetry was attributed to production/inventory adjustment lags and market power of some sellers. Grasso and Manera (2007) studied the gasoline markets of France, Germany, Italy, Spain and UK over the period 1985–2003 using asymmetric ECM, autoregressive threshold ECM and ECM with threshold cointegration. The results indicate that all the models captured some evidence of asymmetric behaviour. Greenwood-Nimmo and Shin (2013, henceforth GS13) used the nonlinear ARDL framework to examine the UK gasoline, diesel, kerosene and gas oil markets over the period January 1999 to March 2013 and found evidence in support of the presumed asymmetry, which is largely obscured at pump where prices include both tax and duty, suggesting the possibility of firms using the tax system to conceal rent-seeking behaviour. Other studies that have found evidence in support of the rockets and feathers effect are Karrenbrock (1991) for U.S. gasoline market using ARDL framework; Balke, Brown and Yucel (1998) for U.S. gasoline market using ECM/ARDL; Asplund, Eriksson and Friberg (2000) for Swedish gasoline market