Asymmetric Pass-Through in U.S. Gasoline Prices

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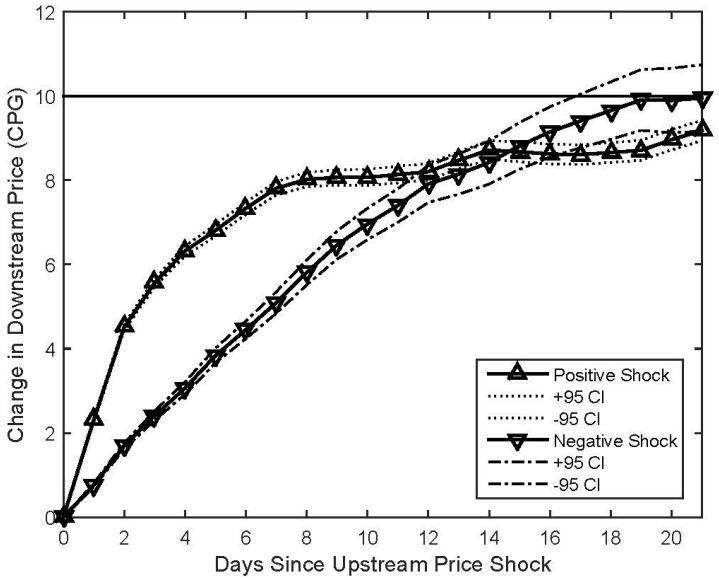
This paper provides new evidence of asymmetric pass-through in U.S. gasoline prices. The asymmetry is in reference to the response of downstream prices to positive and negative changes in the cost of an upstream input. In the gasoline literature, this phenomenon is commonly known as *rockets and feathers* because many studies have shown that cost increases are more quickly passed through than cost decreases. I seek to provide additional evidence of the asymmetry in pass-through rates, showing where it exists both geographically and at what points in the vertical supply chain. I also relate my findings to the current literature that tries to explain why the asymmetry occurs and I find evidence consistent with both theories of consumer search and market power.

I use an error-correction model to estimate the degree of asymmetric pass-through in the transmission of upstream to downstream prices. I run the model separately for 27 U.S. cities in my sample spanning 2000-2013 and for different pairs of price series (spot crude oil and gasoline, wholesale rack, and retail prices). I also estimate the model separately for branded and unbranded rack prices as well as comparing daily versus weekly data frequencies.

The results show significant asymmetric adjustment at several points in the supply chain and in all U.S. cities in the sample. However, I find more asymmetric adjustment in the rack to retail price relationship than in other price series and more asymmetry in certain cities (such as, Salt Lake City, Louisville-IN, and Cleveland) and less in others (such as, Minneapolis-WI, St. Louis-IL, and New York). I find more asymmetric adjustment in branded prices compared with unbranded, which is consistent with the consumer search cost explanation in Lewis (2011).

1 The opinions expressed here are those of the author and not necessarily those of the Federal Trade Commission or any of its Commissioners.



One way to visualize the asymmetry is by plotting the impulse response function following positive and negative cost changes as shown above. The figure plots the change in the downstream price following a 10-cent per gallon increase (up arrows) and a 10-cent per gallon decrease (down arrows) in the upstream price. The area between these lines quantifies the magnitude of the asymmetry.

Finally, I show that the degree of asymmetric pass-through across U.S. cities is negatively associated with both the degree of cycling (i.e. prices that move in a saw-tooth pattern) and the overall speed of pass-through. Asymmetry is also positively correlated with the level of retail concentration, consistent with findings by Verlinda (2008) and Deltas (2008). Across all years and all cities, I find that retail prices rise three to four times as fast as they fall. In 2013, gasoline prices would have been 3.35 cents per gallon (or around 1%) lower if retail prices fell as quickly as they rose.