Asymmetric Oil–Gasoline Price Transmission and Regulation in China: Evidence from Twenty Provinces

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**INTRODUCTION**
- The production of gasoline is inevitably affected by international crude oil price shocks, domestic large-scale refinery behaviors, and government price regulations.
- Whether fluctuations in gasoline prices effectively respond to crude oil price shocks is a useful tool for assessing the overall market efficiency of the industry, as well as government regulation impacts.
- This is an important issue in China, given the increasing demand for energy.

**DATA**
- Our raw data consists of daily prices of No. 93 gasoline and crude oil, spanning a period from March 23, 2009 to March 8, 2013.
- The gasoline price series covers 20 provincial-level administrative divisions in China.
- The crude oil price series is the weighted average of Brent, Dubai, and Minas prices, using the weights specified by the regulatory authority.
- Under minimal daily fluctuations, our converted data is in the weekly format.

**RESULTS**
- Each oil-gasoline cost-price pair shows a statistically significant correlation, and cointegration cannot be rejected at the 95% level by the estimation of equation (1). We then use a feasible GLS-based seemingly unrelated regression (SUR) method to estimate equation (3) for all 20 administrative divisions simultaneously.
- The estimated coefficient $\hat{\alpha}_i$ is statistically significant in 18 provincial-level divisions, except Heilongjiang and Shanxi. The coefficient $\hat{\alpha}_1$ is also significant in 6 divisions. The results imply that the cost-price pass-through is immediately effective following an increase in the crude oil price.
- In contrast, none of the $\hat{\alpha}_0$’s is statistically significant. In other words, none of the 20 provincial-level administrative divisions exhibits any significant gasoline price adjustment within the same week when a decrease in the crude oil price takes place.
- The Wald test results on $H_0: \alpha_0 - \alpha_1 \leq 0$ vs. $H_1: \alpha_0 - \alpha_1 > 0$ further imply asymmetries in one direction. The null hypotheses are rejected in 16 provincial-level divisions at the 90% level.
- Selected impulse response functions are shown in Fig. 1, where the solid lines represent the adjustment paths following a positive shock of one dollar (+1), and the dotted lines represent the adjustment paths following a negative shock of the same dollar amount (−1).

**CONCLUSION**
- Our major finding is that 16 provincial-level administrative divisions exhibit statistically significant asymmetries in one direction, i.e. the “rockets and feathers” phenomena, accompanied by slow recovery speeds.
- This may be due to a combination of inventory costs, consumer search costs, imperfect competition, and possibly tacit collusion between oligopolists.
- Government regulatory policies, including price ceilings, price floors, and vertical disintegration, may also cause the “rockets and feathers” phenomena.
- More recent data will be needed to evaluate the role that government regulation plays in the formation of asymmetric price pass-through in China.

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**REFERENCES**

**CONTACT INFORMATION**
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