



What affects intranational price dispersion? The case of Japanese gasoline prices

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Abstract

The empirical analysis on price dispersion, as described by [Engel, C., Rogers, J.H., 1996. How wide is the Border? *American Economic Review* 86, 1112–1125], is to investigate the determinants of international relative price fluctuations. Using data from the Japanese gasoline industry, we investigate the implications of the market structure for intranational price dispersion. Our empirical results suggest that: (1) in conformity with the double marginalization model, the dispersion of the wholesale gasoline price is affected by the relative retailer's margin and (2) the dispersion of the retail gasoline margin is influenced by the degree of competition and advertising. Considering these results synthetically, the retail price dispersion is amplified by the retail market structure both *directly* and *indirectly*.

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1. Introduction

Varian (1980) asserted that “[e]conomists have belatedly come to recognize that the ‘law of one price’ is no law at all”. Many recent empirical studies also disprove the formation of this ‘law’, as it is very likely that prices are dispersed. The gasoline prices across prefectures in Japan, both wholesale and retail, are also dispersed. This argument is supported by Table 1. The purpose of this paper is to identify the source of these dispersions.

A large number of studies have investigated the source(s) of price dispersion. Many economists regard distance or national borders as the most influential factors for the presence of

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Table 1
Descriptive statistics of gasoline prices

	2000	2001	2002	2003	2004
Wholesale price of gasoline					
Max	38.9	37.5	36.7	38.0	43.5
Min	35.5	34.4	32.2	34.5	40.3
Max–min	3.4	3.1	4.6	3.5	3.2
Average	36.8	35.8	34.4	36.3	41.3
S.D.	0.7	0.7	0.8	0.7	0.6
Retail price of gasoline					
Max	55.7	57.1	53.4	55.0	58.9
Min	44.9	42.0	40.5	43.3	49.4
Max–min	10.8	15.1	12.9	11.7	9.5
Average	50.1	49.0	45.7	47.8	53.5
S.D.	2.7	3.0	2.7	2.4	1.9

(1) These descriptive statistics are based on the annual average monthly retail price data. (2) The currency unit used is Yen. The descriptive statistics of the wholesale price in 2000 is based on the latter 6 months, July 2000–December 2000. (3) These prices exclude the tax on gasoline.

price dispersion. “Distance” is considered the most influential factor because transportation cost has a close affinity with price; the reason for considering “borders” as the most influential is that “the price of a consumer good might be sticky in terms of the currency of the country in which the good is sold” (Engel and Rogers, 1996, p. 1114).

Engel and Rogers (1996, 2001) used 14 consumer price indices categorized by good characteristics and tested the importance of distance and national borders for price dispersion. They found that distance and national borders are highly significant factors for price dispersion. Using the price data of 27 tradable goods in Japan and the United States, Parsley and Wei (2001) verified the importance of the unit-shipping cost and exchange-rate variability on price dispersion.

Ceglowski (2003) used intranational data and showed that distance and provincial borders were related to the speed of price convergence between Canadian cities. Berkowitz and DeJong (1999) showed that price dispersion in Russia is the result of internal borders, which are denoted as the “Red Belt”. These studies have shown that price dispersion can be explained by anthropogeographical factors.

As pointed out in Cheung and Fujii (2006), the works of Engel and Rogers presumed that the market was imperfectly competitive. Cheung and Fujii regarded market structure as the important factor that affected cross-country relative price fluctuations. They investigated the impact of market structure on cross-country relative price variability with OECD data. They found evidence that market structure affects cross-country relative price volatility.

Another paper that analyzes this problem from a different point of view is by Adams (1997). Using data for 23 goods that are sold in convenience stores, he focused on the consumer’s search cost as the cause of price dispersion and found a relationship between search and information costs for consumers and price dispersion.

To the best of our knowledge, almost none of the empirical studies controverts the influence of the vertical relationship on price dispersion. As pointed out in Choe (1999), it is important to take into account market structures in both upstream and downstream markets.

In this paper, we separate the Japanese gasoline market into two markets, the wholesale market and the retail market, and we investigate the relationship between market structure and price dispersion in each market. Considering the wholesale and retail markets individually, we

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