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Price leadership within a marketing channel: A cointegration study

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Abstract

Building upon a multiple-product channel structure, this paper develops a model to test channel price leadership on the basis of time series observations on retail and wholesale prices and using absence of double marginalisation as a criterion for channel price leadership. The model studies strategic pricing decisions in a two-stage (suppliers–retailers) channel, dealing with several products. Possible long-run relationships between wholesale and retail prices are investigated in relation to three cases. Case 1: suppliers have sufficient power vis-à-vis retailers to enforce double marginalisation; Case 2: retailers do not allow suppliers to enforce double marginalisation; and Case 3: one retailer not only keeps its suppliers from double marginalisation, but is also the horizontal price leader vis-à-vis competing retailers. We explicitly take the time series properties into account to derive the testable implications of strategic price interactions in marketing channels. An attractive feature of our methodology is that price leadership can be tested on the basis of time series on retail prices and wholesale prices only. The procedure for testing the long-run causality implications of the model uses the definition of long-run causality as formulated by Bruneau and Jondeau [Oxf. Bull. Econ. Stat. 61 (4) (1999) 545], but does not use their Wald statistic, which suffers from the undesirable properties of the Wald test when there are nonlinear parameter restrictions. To interpret restrictions on the common stochastic trends of retail and wholesale prices, we show that the common stochastic trends and the deviations from the long-run equilibriums must explicitly be assigned to variables in the channel model. If a common stochastic trend consists of both the retail price and the wholesale price of a product, then the suppliers are able to enforce double marginalisation vis-à-vis the retailers (Case 1). If a common stochastic trend consists solely of a product's wholesale price, then the retailers do not allow suppliers to enforce double marginalisation (Case 2). The opposite situation is a common stochastic trend consisting solely of a product's retail price. In this situation, one of the retailers not only keeps its suppliers from double marginalisation, but is also the horizontal price leader in the retail market for the product (Case 3). The model is applied to a typical multiple product channel allowing various vertical and horizontal interactions between the channel members to co-occur.

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1. Introduction

The relationship between the fast-moving consumer goods industry and the retail sector is changing as a

result of increasing concentration on both sides. Although manufacturers have guaranteed distribution through a large number of retailers, their supremacy is waning. Nevertheless, large companies such as Danone, Heinz, Kraft, Nestlé and Unilever in the food sector are still able to exert substantial channel power because of their strong brands, international market coverage and innovative capacities. Producers and

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wholesalers can make themselves attractive, sometimes even indispensable, partners for retail companies by offering high product quality, excellent logistical services and competitive prices (Meulenber, 1997). Consequently, many channel studies in the literature on marketing and industrial organisation have been production-oriented (e.g., Gijbrecchts, 1993, p. 131; Tirole, 1988, Chap. 4): typical applications have been that retailers are passive decision makers and that manufacturers can influence their retailers' decisions through various incentives, pricing schedules, and cooperation (Choi, 1996).

Today, however, the industry is facing a few large and powerful retailers. Ranking all types of firms by revenue, the top players in the global retailing industry in 2001 include Wal-Mart Stores (the USA, the world's largest global food retailer, with 4190 stores owned, \$195.27 billion turnover and operating in 10 countries), Carrefour (France, 8926 stores owned, \$55.3 billion turnover and operating in 24 countries), Ahold (The Netherlands, 8062 stores owned, \$44.8 billion turnover and operating in 18 countries), Metro (Germany, 2169 stores owned, \$40.09 billion turnover and operating in 22 countries), Tesco (from the UK top 10 of largest companies, owning 907 stores, \$32.38 billion turnover and operating in 9 countries), Ito-Yokado (Japan, 35,600 stores owned, \$25.85 billion turnover and operating in 19 countries) and Delhaize "Le Lion" Group (Belgium's largest company with 2310 stores owned, \$15.15 billion turnover and operating in 10 countries) (www.supermarketnews.com; Dobson & Waterson, 1999). Retailers are often larger than many suppliers, sell a wide variety of substitutes, and are increasingly influencing which goods are distributed, how they are distributed and at what price (Choi, 1996). These observations suggest that certain suppliers are forced to set their prices largely on the basis of their costs and do not have the opportunity to base their prices on anticipated consumer demand and retailers' reaction functions.

Marketing studies analysing channel price formation and price leadership differ not only in their approach to the power structure in the marketing channel but also, and more particularly, in the number of decision makers at the different levels of the marketing channel and the type of demand or price function used. Alternative assumptions have been

made about the number of decision makers interacting vertically in the marketing channel. Many groundbreaking studies in the infancy of this exciting research field analyse the interaction between one manufacturer and one retailer in an exclusive dealership, i.e., a bilateral monopoly (e.g., Jeuland & Shugan, 1983; Moorthy, 1985; Shugan, 1985). Later models consider more actors interacting in the marketing channel, such as one manufacturer supplying two or more retailers (Ingene & Parry, 1995), two manufacturers supplying one common retailer (Bandyopadhyay & Divakar, 1999; Choi, 1991; Zenor, 1994), or even the interaction of several manufacturers and retailers (Coughlan & Wernerfelt, 1989; Lee & Staelin, 1997). Our model considers the case of two retailers and many manufacturers, but can accommodate more retailers too.

In the vast body of research on price formation and price leadership in marketing channels what has been investigated is the impact of type of demand function on channel pricing strategy. For instance, Gal-Or (1985) showed that in an exclusive dealer channel it is profitable to be a vertical price leader in the associated Stackelberg game if the demand function slopes downward. Moorthy and Fader (1990) confirmed this result for a linear demand function. Lee and Staelin (1997) argued that the distinction between linearity and nonlinearity of the demand function is not as relevant for understanding channel pricing strategy as the implications of the type of demand function on strategic pricing behaviour such as retail passthrough (i.e., the ratio of retail price reduction to the manufacturer price reduction, see Tyagi, 1999). Some types of demand functions imply a retailer's optimal passthrough of less than 100% (Lee and Staelin, 1997 call this vertical strategic substitutability (VSS)), other functional forms imply optimal retail passthrough of greater than 100% (vertical strategic complement (VSC)) (see also Tyagi, 1999). Empirical studies on manufacturer–retailer interaction in the channel have used linear, logit and multiplicative forms for the demand function (e.g., Sudhir, 2001). In his empirical research, Sudhir (2001, p. 256) concluded that "the logit demand model performed much better in terms of fit compared to the multiplicative demand model". In the tradition of many studies in this field, our model contains linear demand functions.

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