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Cartel sustainability in retail markets: Evidence from a health service sector[☆]

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This paper studies the role of cost asymmetries and product differentiation on cartel sustainability by drawing data from a failed retail cartel. Unlike the extensive theoretical literature, little empirical evidence exists on these relationships. First, we analyze cartel compliance and find that players are more likely to comply when cost is symmetric and own cost is high. Next, based on a structural model and counterfactual experiments, we show that a cartel price that satisfies all cartel members does not exist. This result indicates an inherent difficulty of sustaining collusion in retail markets with heterogeneous players. We also show that firm heterogeneities, especially product differentiation rather than cost asymmetries, hinder collusion more. Finally, we derive the level of patience (or the discount factor) required for cartel sustainability when firms split profits based on the Shapley value.

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1. Introduction

Each year, competition authorities around the world convict cartels in various retail markets. These include retail gasoline, retail banking, transportation, and health care services, to name a few.[1] In these markets, although the goods and services provided often look similar, important heterogeneities still exist in other dimensions. For example, even though gasoline itself may be homogeneous, gasoline stations may still be differentiated by other dimensions such as whether a convenience store is attached to the station. Also, firms may be asymmetric in terms of cost and capacity. To what extent do these heterogeneities affect cartel sustainability? Our aim is to study these issues, focusing on a failed retail cartel in a health-care sector.

The relationship between firm heterogeneity and cartel sustainability has attracted interests of economists. Theoretical studies have extensively examined the roles of cost asymmetries and product differentiation on cartel sustainability. For cost asymmetries, the theoretical literature shows that cost asymmetry hinders collusion because it makes the deterrence of deviation more difficult (e.g., Bae, 1987; Harrington, 1991).[2] In contrast, the impact of product differentiation on cartel sustainability is much less clear.[3] The lack of consensus is due to the inherent trade off that differentiation brings: while gains from collusion will be smaller for differentiated firms, gains from deviation will also be smaller for them. Thus, the effect of differentiation on cartel sustainability depends on the specific assumptions of the model (Tyagi, 1999; Thomadsen and Rhee, 2007).

In contrast to the large body of theoretical literature, empirical studies on firm heterogeneity and cartel sustainability are quite limited. Given that real-world firms are rarely symmetric and that the theoretical prediction of the relationship is ambiguous, this lack of studies represents an important omission. This lack of attention may be due to the difficulty of observing collusive markets with sufficient variations in marginal costs or product differentiation. Moreover, marginal costs are rarely observed in the real world.

We attempt to fill this gap by empirically examining the sustainability of cartels when firms are heterogeneous. We draw data from a failed flu-shot cartel in Japan, which was organized by a regional medical association and involved a large number of medical providers. Using the data, we first study cartel compliance by conducting a provider-level analysis. The results based on a simple probit model indicate that medical providers are

[1] For example, a number of price fixing cases have been charged in the retail gasoline market in Canada and Japan. In the transporting and courier service market, the European Commission charged 14 international groups of companies in 2012 for fixing prices and other trading conditions. In addition, collusive behavior of ferry services in Greece and international removal services in Belgium were recently detected. Austrian banks have been charged for fixing prices for a variety of retail services, including interest rates on bank loans and bank deposits. A more detailed description of these and other cases can be found on the website of the competition authorities of the U.S., Canada, Europe and Japan. Please see: justice.gov, competitionbureau.gc.ca, ec.uuropa.eu, and jftc.go.jp, respectively.

[2] Miklós-Thal (2011) shows, however, that this conclusion may be sensitive to the specific strategies assumed in the model.

[3] Although some studies found that differentiation makes cartels more sustainable (e.g., Chang, 1991; Ross, 1992; Ecchia and Lambertini, 1997), others found the complete opposite (e.g., Häckner, 1994; Symeonidis, 1999).