



# Competitive price interactions and strategic responses in the lodging market



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## HIGHLIGHTS

- Establishing a good pricing strategy requires understanding of competitor responses.
- Price interactions among hotels are analyzed with spatial panel econometric model.
- Hotels of greater sizes affect price discounts of smaller hotels.
- Chain and independent hotels have asymmetric impacts regarding price decisions.
- Older hotels' prices are affected by newer hotels, whereas the converse does not hold.

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## ABSTRACT

It is generally expected that competitors do not react uniformly in response to a cut in price. Although the literature suggests that firms are heterogeneous in their price responses, little empirical research has examined how competitors actually respond. This study investigates how hotels strategically respond to competitors' room rate decisions through the lens of the firm dyad. Through an empirical analysis using a fixed effect spatial panel, we find 1) that smaller hotels reduce their room rates following price cuts of larger hotels, while the larger hotels are unaffected by discounts of smaller hotels, 2) that chain and independent hotels are interdependent in their price decisions, and 3) that older hotels discount room rates when their newer competitors cut prices while price cuts by older hotels are not associated with price-cutting by newer properties. Implications for practitioners and suggestions for future research are discussed along with findings of the study.

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## 1. Introduction

Strategic pricing is a critical practice for hotel business success today. Given the specific inventory problem—fixed upper limit in capacity with a perishable product (Weatherford & Bodily, 1992)—hotel managers often use price as a strategic lever to increase revenue in the short run. As the unsold rooms cannot be stored for future sale, hotels may reduce their room rates in off-peak times to gain incremental revenues from price-sensitive customers. In times of peak demand, hotels may be unable to serve all customers due to

their short-term constrained capacity, which incentivizes them to increase their room rates to capture customers with higher willingness-to-pay. Industry generally reports a 2 to 5 percent increase in revenue due to these strategic price decisions (Sanket & Bowman, 2004).

However, pricing is a challenging job that requires detailed thinking about scenarios and their likely outcome. For example, the degree to which a hotel's price discount generates incremental revenues is determined not only by customers' quantity responses (how many customers are attracted by the price cut) but also by competitors' price responses (whether competitors follow or ignore the price cut) (Karakaya & Yannopoulos, 2011). While a hotel's pricing decision should be based on a systematic process that investigates and integrates both sides of these forces affecting pricing effectiveness, a majority of the relevant literature has

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focused on the one side of this mechanism—customers' responses (e.g., Beldona & Kwansa, 2008; Lockyer, 2005b; Mathies, Gudergan, & Wang, 2013; Mei & Zhan, 2013; Rohlfis & Kimes, 2007; Smith, 2016)—and less attention has been paid to the other side—competitors' responses.

Without an understanding of market pricing behaviors, a good pricing strategy can be difficult to identify because competitors' reactions partially determine the success of any pricing strategy. For example, a hotel's discounting effort to increase demand may not succeed if its competitors immediately match or exceed the price cut of the hotel (Eliot, 2013). Therefore, hotel managers must understand the dynamics of competitive price interactions among hotels and accurately predict competitors' price responses in order to ensure the successful implementation of a hotel pricing policy.

The literature in competitive dynamics shows that competitors do not react uniformly in response to a cut in price, as each firm experiences different competitive tensions with each competitor (Chen & MacMillan, 1992; Guiltinan & Gundlach, 1996; Smith, Grimm, Gannon, & Chen, 1991). Specifically, this literature argues that when faced with a firm's price cut, competitors that are less likely damaged from the price cut may be more able to maintain their prices and can ignore the competitive price attack (price cut). On the other hand, competitors that are more likely to suffer from the price cut may have more need to match the price cut to secure their market shares and revenues. Therefore, a *heterogeneous* pattern is expected in terms of competitor price reactions.

Yet the dynamics of this *heterogeneous* pattern has not been the focus of empirical work, as stated by Lee and Jang (2013, p.57) that “the possibility of asymmetric pattern in price competition among hotels has not been examined”. Earlier studies that have examined hotel pricing behaviors (e.g., Baum & Mudambi, 1995; Enz, Canina, & van der Rest, 2015; Gan & Hernandez, 2013; Overstreet, 1989) have implicitly treated competitors of a hotel as a *homogenous* group, and thus expected that pricing behaviors of all competitors would be similar. To the best of the authors' knowledge, only Lee and Jang (2013) have empirically examined the possibility of *heterogeneous* price interactions among hotels to date, finding that price interactions between lower- and higher-quality hotels are *heterogeneous*. However, there are many aspects of this *heterogeneous* pattern of hotel action and competitor response that have not been addressed despite the argument from studies in competitive dynamics.

To fill this research gap, the current study investigates the possibility of *heterogeneous* price reactions in the lodging market in three competitive dimensions: size, chain-affiliation and age. More specifically, this study examines how competitors actually responded to each other's price cut between three pairs of firms: between larger and smaller hotels, between chain and independent hotels, and between older and newer hotels. Information on this subject is critical to hotel revenue managers and controllers in establishing a good pricing strategy ensuring better business performance. To accomplish this study's objective, we used a fixed effects spatial model with property-level data accumulated from 11 consecutive years from a U.S. lodging market.

## 2. Literature review

### 2.1. Potential variations in competitors' responses

Earlier studies in industrial organization (IO) economics (Porter, 1985) examined competition at the industry level, assuming that all firms in the same industry are competitors. Later, this view of competitors was advanced by strategic group researchers who argued that firms only in the same strategic group (firms within an industry that follow a similar strategy) are direct competitors (Cool

& Schendel, 1987; Peteraf & Bergen, 2003). These models implicitly assume that firms in the same strategic group encounter an *analogous* extent of competition, and thus their competitive behaviors would be *similar*. Therefore, researchers have often ignored the complexity of various relationships and the potential difference of competitive behaviors for different pairs of firms (Chen, 1996).

The recognition that there may be different levels of competition between firms was initiated by studies in competitive dynamics (Chen & MacMillan, 1992; Guiltinan & Gundlach, 1996; Smith et al., 1991). These studies argued that competitors do not necessarily react uniformly because each firm experiences different levels of competitive pressures with each competitor. More specifically, Chen and MacMillan (1992) revealed that when facing a firm's price attack (price cut), its competitors responded in varying ways based on the degree to which the price attack threatens the competitors' profits. They found that the more the competitors' profits are hurt, 1) the more they are likely to respond, 2) the quicker their responses will be, and 3) the more likely they are to match the price cut of the initiator. Similarly, Smith et al. (1991) showed that competitors tended to react more aggressively toward the competitive attack when their key markets were threatened. Guiltinan and Gundlach (1996) asserted that competitors responded differently based on their countervailing power (an ability to reduce the extent of economic damage that may cause due to a price cut by another firm). Specifically, competitors either 1) reduced the level of production or even exited from the market in the absence of countervailing power, or 2) cut their prices to preserve market shares if their countervailing power was enough to remain in business, or 3) disregarded the attack and did not respond at all if their countervailing power was sufficient so that the price attack was less likely to induce significant economic damage. As a result, taking a firm dyad (firm-pair) approach is the proper framework for competitor analysis. Namely, different competitive pressures inherent for each pair of firms should be considered in estimating firms' competitive behaviors.

These studies in competitive dynamics led us to believe that a hotel's room rate discount may also result in different responses by its competitors. Competitors that can be hurt more by others' price cuts (or that have weaker countervailing power) may adapt and respond to the price cuts by reducing their room rates to secure market shares. Competitors that are less likely to be harmed by others' price cuts (or that have stronger countervailing power) may ignore the market signal and do not respond. In the short run, market exit and reduction of production level (e.g., closing some guest rooms) are less likely to happen in the hotel industry due to the potentially considerable costs involved.

The subsequent question is what factors affect the degree to which the competitors' profits are hurt from others' price cuts (or affecting the competitors' countervailing power), and thus result in variations in their competitive responses. We examined three potential factors—size, chain-affiliation, and age—in the subsections below.

#### 2.1.1. Hotel size

Small and large firms often rely on different combinations of resources and strategies despite engagement in similar activities (Hannan & Freeman, 1977). Small and large hotels differ in terms of market share, economies of scale, and access to high technologies, and should be treated as heterogeneous groups (Assaf, Barros, & Josiassen, 2009).

Earlier studies have shown that being larger provides several benefits. For example, Baum and Haveman (1997, p. 314) wrote that “large hotels can offer a wider range of services (dining, recreational, and personal) and can cater to a greater variety of clients (e.g., business travelers, corporate meetings, conferences, tourists,

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