REVENUE MANAGEMENT AND COMPETITIVE PRICING FOR U.S. HOTELS

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Maximizing revenue through the strategic use of pricing is a challenge for all hotel managers. Tracking competitors’ prices is an important practice when engaged in reference pricing or the practice of pricing just slightly below most of the competition. In addition, fundamental revenue-management pricing would suggest that care must be taken to decide what price to charge for specific market segments in various demand periods. During low-demand periods, such as those experienced in recent years, effective comparative pricing becomes even more challenging and effective revenue management more important.

The study discussed in this report is an extension of our prior work on strategic pricing in the U.S. lodging industry. Our objective is to examine the degree of linkage between a hotel’s rate and its occupancy levels under various competitive situations. We are primarily interested in the extent to which revenue management is deployed by hotels that price above and below their competitors. In our previous work, we found that hotels that price above their competitors perform relatively better. As a result, it is interesting to know whether these higher priced hotels are more effective revenue managers than those who do not price as aggressively in relation to their competitors. Knowledge of these empirical relationships may be useful to both groups of managers that price below or price above their competitive sets in improving their performance.

In previous studies we found that hotels in direct competition make more money when they have comparatively higher prices, and do not discount relative to

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2 For a comprehensive summary of revenue management see G. Withiam Center for Hospitality Research.
their competitors to fill rooms.\textsuperscript{3} Using data from hotels between 2001 and 2003 our previous studies reveal that hotels that drop their prices relative to their competitive set capture market share from the competition, but do not gain higher RevPARs, suggesting that there is nothing wrong with holding relative rates constant even if demand drops. This would suggest that revenue-management practices may be altered under certain competitive conditions, although the study did not explore this. The earlier work did find that by raising prices above those of the competitive set will lead to a loss of occupancy but that loss is fully make up for with higher RevPAR. By offering lower relative price hotels gain occupancy but RevPAR performance is lower than the competitive set. This prior research brings to light some doubt about when revenue management is most effective.

In the present study we build on the earlier studies of relative competitive pricing and its impact on occupancy and RevPAR, and consider the revenue-management activity of hotels in local markets. In particular we are interested in whether there is a strong and positive relationships between a given hotel’s pricing activity and its occupancy levels when its relative pricing strategy is to offer prices either below or above its competitors. How much does demand shape the pricing strategy of a hotel when it positions itself above or below its competitors?

Specifically we examined the relationship between average daily rate and occupancy for hotels that were pricing above and below their direct competitors. We are interested in determining the degree to which various hotels employ a revenue management strategy, by which we mean an approach to pricing in which there is a strong positive association (statistically significant positive correlation) between

occupancy and rate in the context of how a hotel is overall pricing compared to their direct competitors.

A revenue management strategy would be in effect if prices worked in concert with demand levels. That is, during low demand periods a hotel would adjust rate downward, and similarly during high demand periods rates will be raised upward. Many factors shape the pricing decision, but at its core is the idea that good revenue management exists when hotel rates and occupancies are positively correlated. That is to say, when occupancy is high rate should also be high and when occupancy is low rate should be dropped. In both situations a positive correlation would exist between rate and occupancy. If no relationship exists between rate and occupancy or a negative relationship exists we can conclude that a hotel is not practicing revenue management.

In the current study we explore the relationship between annual average daily rates and annual occupancies for over 6000 United States hotels in various price segments during 2003. The focus is on individual hotels and their direct competitors in local markets. To explore this relationship the authors, in cooperation with The Center for Hospitality Research at Cornell University and Smith Travel Research, engaged in the research summarized below. The data were drawn from the Smith Travel Research database, which is effectively a census of brand-name hotels in the United States. This comprehensive sample is widely considered to be fully representative of all branded hotels in the U.S.

The Study

In this study we categorize hotels’ pricing strategies relative to those of their competitive set of hotels in order to examine whether revenue management strategies differ across pricing strategies. Typically a competitive set consists of a group of six
or more properties selected by individual hotel management or a hotel’s parent company. The competitive set data used in this study is the aggregate performance of each study hotel’s direct competition. The three key factors used by operators to select their competitive set are: (1) product offering, (2) proximity, and (3) price. Usually a hotel’s managers will select for inclusion in their competitive set hotels that offer comparable products and features, with rate parity, and close proximity. While proximity may vary by hotel segment, for example a luxury hotel may have fewer closely proximate competitors than a budget hotel, a good rule of thumb is within a three mile radius.

The competitive set is a key element of this study, because often revenue management decisions are driven by whether competitor hotels in a local market drop their prices. It is the local pricing dynamics that this study takes into consideration when exploring the relationship between ADR and occupancy. We believe that by analyzing each hotel’s pricing strategy relative to that of its individually selected competitive set of hotels; we can understand the price/occupancy relationship in a unique and insightful way.

We chose to analyze the data on a yearly basis rather than on a monthly basis in order to avoid pricing irregularities that may have occurred in a particular month. The overall general revenue management program of adjusting prices according to demand conditions will become apparent when analyzing annual data even though various revenue management programs are implemented on a daily basis. Properties were eliminated if they had less than 12 months of data for 2003. Extended stay hotels were excluded from this study because the typical traveler stays more than ten days at these hybrid-apartment-all-suite-hotel complexes. This lengthy stay means that these operations have unique demand characteristics. We also excluded resorts
because of their unique seasonality (many close for parts of the year), and their frequent inclusion of meals in room pricing.

**Percentage differences in ADR:** The percentage difference in ADR was used as the basis for grouping hotels relative to their competitive set. The pricing strategy of a given hotel in 2003 was categorized into several different groups based on the percentage difference in ADR. The initial pricing strategy groups were simply those who priced lower than the competitive set and those that priced higher. In subsequent analyses we created more refined pricing strategy groups. After placing hotels into groups according to their pricing strategies, defined as the percentage difference above or below the ADRs of their competitive set, we calculated the Pearson product moment correlation coefficients between ADR and occupancy. The data summarized in the following results are these correlation coefficients.

**The ADR / Occupancy Relationship**

The initial analysis examined all hotels by price segment for 2003. Table 1 shows the Pearson correlation coefficients for hotels with both higher and lower ADRs compared to their competition. In correlation analysis the value of the coefficient measures the degree of association between two variables. In this study the variables are a hotel’s ADR and its occupancy. Overall, for hotels with lower prices relative to their competitive set, the relationship between ADR and occupancy was positive and statistically significant (coefficient = .23; p < .001). This pattern of a

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4 We eliminated all properties from the data sample with significant differences in RevPAR performance in the previous year (2002). These properties were eliminated in order to ensure that the categories of difference in ADR relative to the competitive set were due in fact to differences in their relative pricing strategies. The one standard deviation from zero parameter was used because of the importance of evaluating hotels that were able to achieve past RevPAR performance similar to that of their competitive set.
positive relationship between price and occupancy was the case for all hotels with lower prices relative to their competition regardless of price segment (i.e., upper upscale through midpriced without food and beverage), with the exception of economy hotels. There was not a significant relationship between price and occupancy for economy hotels that priced below their competitive set. This suggests that most hotels that offered lower prices were actively engaged in raising and lowering their rates with shifts in demand. Economy hotels that priced below their competitive set did not shift rate according to demand fluctuations, and thus were not actively revenue managing. Economy hotels that priced below the competition maintained rate stability regardless of fluctuations in demand.

For hotels that priced above their competition, the relationship between their own rate and occupancy was also positive and statistically significant (coefficient = .28; p < .001). This pattern of a positive relationship between price and occupancy was the case for all hotels that raised their prices relative to their competition regardless of price segment. Even economy hotels, that priced higher then their competitive set relied on revenue management. Noteworthy are two observations, first a stronger relationship exists between rate and occupancy for hotels that priced above their competitive set compared to those that price below. For the overall sample of hotels, for those that priced above their competitive set the correlation coefficient was 0.28 while for those that priced below their competitive set the correlation coefficient was 0.23. Secondly, since the correlation coefficients are positive and statistically significant, it is clear that industry wide, hotel operators are
employing revenue management approaches by pricing their products higher or lower as occupancy rises or falls. These results permit us to observe that hotels that price above their competitors are adjusting prices more closely to demand than those hotels that price below their competitive set.

Turning to hotels that price just below (under 1 percent) or just above their competitors, the results (not presented in the Tables) show strong positive correlations between ADR and occupancy. Pricing just below the competitive set is the best example of reference pricing, and revealed the strongest correlations between a hotel's own ADR and occupancy (coefficient = .30; p < .001). For hotels that price just above the competition (less than one percent) the correlation between rate and occupancy was also statistically significant and positive (coefficient = .23 p < .001). The larger correlation between rate and occupancy for those that price just below their competitors suggests this reference pricing group of hotels is the most actively engaged in raising and lowering their rates with shifts in demand. The implication of this finding is that hotels that choose to strategically price just under their competitors need to effectively revenue manage to fluctuations in demand.

**Large Pricing Gaps Among Competitors**

Hotels that priced substantially higher than their comparative sets in 2003 also had positive relationships between their own hotel pricing and occupancy levels. As Table 2 reveals, revenue management was clearly evident for all hotels overall. However, as the table shows, hotels in various segments employed different strategies for rate setting in relationship to demand. Luxury / upper upscale hotels for example aggressively fit rate to occupancy if they priced between 1 and 5 percent above the competition. In contrast, hotels in this segment that priced substantially below the
competitive set (5 – 10 percent lower) were not found to have a significant rate/occupancy relationship.

Upscale hotels that priced substantially above their competition were the strongest hotels in this segment to revenue manage. The midscale market showed a positive relationship between rate and occupancy regardless of the competitive pricing strategy of hotels. In the mid market everyone was busy managing their revenue by adjusting rate to demand levels. The economy segment hotel operators were the least likely to adjust rate to occupancy. With the exception of the very lowest priced economy hotels relative to their competition, all other economy hotels did not adjust their own hotel rates to occupancy, as the insignificant and even negative correlation coefficients reveal. Economy hotels appear to maintain clear and consistent prices and hence do not increase or decrease rate according to demand fluctuations.

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INSERT TABLE 2 ABOUT HERE
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Conclusion

Our study found that hotels that engaged in the practice of pricing just slightly below most of their competitors (reference pricing) were likely to have strong and positive correlations between their average daily rates and occupancies. In essence they were practicing good revenue management and raising rates as demand increased. Weaker relationships were found between rate and occupancy when hotels priced substantially lower than their competitors. In fact, in the luxury segment hotels that priced substantially lower than their competitors were not practicing revenue management as the insignificant correlations between rate and occupancy revealed for these operators (See Table 2). This finding in conjunction with our previous results that showed hotels that priced substantially below their competitors experienced much
lower RevPARs, would suggest that if a hotel manager decides to price his hotel products substantially below those of the competition, he may enhance his RevPAR performance by more aggressively adjusting rates upward when occupancy rises.

Economy hotels that price below their competitors do not appear to be using the revenue management strategy of raising rates as demand increases. Those that price just below the competition are maintaining rate stability that may be the result of being unable to offer lower prices and also cover costs. In addition economy hotels compete on the basis of price and are thus unable strategically to raise their rates much as demand increases. In short, economy hotels appear to be a pure play in which fixed pricing is part of the positioning strategy needed to attract guests. Interestingly there is modest revenue management in those instances when an economy hotel is pricing substantially below the competition (over 5% lower prices). This practice may reflect opportunistic pricing of potentially lower quality products.

In previous research we have found that lower-end hotels obtain RevPAR spillover benefits from locating next to higher-end hotels. In some markets it may be possible for economy hotels to raise their rates as demand for the entire market increases because there are a larger proportion of higher priced hotels in the market.

Economy hotels that priced above their competitors were far more likely to engage in revenue management strategies, although our data would suggest that this was more often the case for those hotels that priced just above their competitors. Although the sample size was too small to draw meaningful inferences, we found that a strong positive correlation between rate and occupancy (coefficient = .59 p < .05) was found for economy hotels that prices under one percent above their competitors.

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The strategy of these higher priced economy hotels is to carefully monitor demand and actively revenue manage.

Overall hotels that price above their competitors were found to be more active in adjusting rate to fluctuations in demand. Put simply, higher priced players are more aggressive revenue managers. In addition, luxury/upper upscale, and midscale hotels appear to be the strongest revenue managers when they choose to price between 1 and 5 percent above their competitors. As pricing increases the relationship between rate and occupancy remains significant but the correlations are not as strong. However, revenue management is more likely for all hotels in this sample that also position themselves in pricing positions above their competitors. This result suggests that those hotels we have found most able to extract high RevPARs are also most likely to engage in revenue management practices.

This study clearly shows that hotels in the United States in 2003 carefully priced in relationship to fluctuations in occupancy. For hotels that priced above their competitors, generally speaking more revenue management was evidenced, than for those who deployed reference pricing strategies of below competitor pricing. Economy hotels, perhaps because they position themselves on the basis of price were the least likely to alter rate with demand, although some very low priced hotels began to take advantage of revenue management strategies. In contrast, midscale hotels consistently set rates in alignment with demand.

While this study extends previous pricing studies by looking at the role of effective revenue management as defined by the relationship between rate and occupancy it has not addressed other important questions around revenue management, such as which segments of business are most important to revenue manage. By examining the practice of revenue management (i.e., the rate / occupancy
relationship) in the context of competitive pricing strategies, this study has revealed that the industry does rely on demand shifts to set price, but that this practice is not in as strong practice for economy hotels or for hotels that price below their competitive set. Future studies should continue to expand our understanding on this topic by investigating the profitability of hotels with strong rate to demand relationships.
Table 1
Pearson Correlation Coefficients of Average Daily Rate to Occupancy
For U.S. Hotels with Higher or Lower Prices than their Competitive Set for 2003

<table>
<thead>
<tr>
<th>Price Segments (Number of observations)</th>
<th>Pricing Below Competitive Set (From lower than 0 to 15% lower)</th>
<th>Pricing Above Competitive Set (From 0 to 15% higher)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>0.23*** (2717)</td>
<td>0.28*** (2391)</td>
</tr>
<tr>
<td>Luxury / Upper Upscale</td>
<td>0.21*** (231)</td>
<td>0.29*** (294)</td>
</tr>
<tr>
<td>Upscale</td>
<td>0.27*** (284)</td>
<td>0.28*** (264)</td>
</tr>
<tr>
<td>Midscale with food &amp; beverage</td>
<td>0.29*** (533)</td>
<td>0.32*** (432)</td>
</tr>
<tr>
<td>Midscale without food &amp; beverage</td>
<td>0.21*** (1157)</td>
<td>0.21*** (1181)</td>
</tr>
<tr>
<td>Economy</td>
<td>0.09 (394)</td>
<td>0.25** (108)</td>
</tr>
</tbody>
</table>

p<.01 = **
p<.001 = ***
Table 2
Pearson Correlation Coefficients of Average Daily Rate to Occupancy
For U.S. Hotels with Substantially Higher or Lower Prices than their Competitive Set for 2003

<table>
<thead>
<tr>
<th>Price Segments (Number of observations)</th>
<th>Pricing Below the Competition</th>
<th>Pricing Above the Competition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt;5 % – 10 % Below</td>
<td>&gt;1 % – 5 % Below</td>
</tr>
<tr>
<td>Overall</td>
<td>0.22*** (895)</td>
<td>0.29*** (1007)</td>
</tr>
<tr>
<td>Luxury / Upper Upscale</td>
<td>0.19 (60)</td>
<td>0.25** (105)</td>
</tr>
<tr>
<td>Upscale</td>
<td>0.24* (96)</td>
<td>0.31*** (105)</td>
</tr>
<tr>
<td>Midscale with food &amp; beverage</td>
<td>0.23*** (192)</td>
<td>0.32*** (200)</td>
</tr>
<tr>
<td>Midscale without food &amp; beverage</td>
<td>0.23*** (378)</td>
<td>0.28*** (478)</td>
</tr>
<tr>
<td>Economy</td>
<td>0.17* (130)</td>
<td>-0.002 (79)</td>
</tr>
</tbody>
</table>

p<.05 = *
p<.01 = **
p<.001 = ***