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REVPAR VS. GOPPAR: PROPERTY- AND FIRM-LEVEL ANALYSIS

Abstract

Revenue per Available Room (RevPAR) has been widely used as *the* standard performance measure for the hotel industry. However, hoteliers have also recognized limitations of RevPAR and developed other alternative performance measures. Gross Operating Profit per Available Room (GOPPAR) has become popular as an important alternative performance measure because it resolves limitations of RevPAR. Nevertheless, practical implications of the comparative superiority between the two measures have not been investigated in the past literature. Therefore, the current study seeks to fill that gap by comparing RevPAR and GOPPAR to examine whether one may be a better performance measure than the other. By utilizing both property-level and firm-level data, this study found that RevPAR is, in general, a better measure than GOPPAR.

Keywords: RevPAR; GOPPAR; hotel performance measure

REVPAR VS. GOPPAR: PROPERTY- AND FIRM-LEVEL ANALYSIS

Introduction

The hotel industry has been using Revenue per Available Room (RevPAR) as *the* standard performance measure. It is defined as room revenue divided by the number of rooms available during a period of time, or the multiplication of paid occupancy percentage by average daily rate. Its emphasis on the rooms division of a hotel as the primary revenue source makes the measure relevant to all types of hotels. This is why a leading lodging consulting and data company such as STR Inc. (Smith Travel Research) provides RevPAR data as its primary property-level performance indicator. All major publicly traded hotel corporations, such as Marriott and Hilton, also report their RevPAR along with other widely used performance indicators (e.g., diluted Earnings per Share (EPS) and adjusted Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA)) in their earnings announcements.

RevPAR, however, is not a perfect measure, and the hotel industry has recognized the drawbacks of RevPAR (Brown & Dev, 1999; Schwartz, Altin, & Singal, 2016; Younes & Kett, 2003). First, RevPAR measures only revenues and ignores expenses. Although revenue is an important performance measure that represents a hotel's market power and general operating health, investors are mostly interested in a hotel's profit. In the end, it matters most to hotel owners and managers (and potential buyers) how much profit a hotel generates after considering expenses. By not capturing and reporting profitability, RevPAR is a rather limited measure of a hotel's performance. Second, RevPAR deals only with the rooms department without considering other revenue-generating departments (e.g., food and beverage and gift shops) or non-revenue generating departments (e.g., accounting and human resources). Economy hotels may be the least-influenced by this issue because the rooms division is their only revenue-

generating department. However, for other types of hotels, especially with significant revenue-generating departments other than the rooms division, focusing only on room revenue does not provide a complete or accurate picture of the entire hotel property's performance. According to Brown and Dev (1999), Horst Schultze—then the president of the Ritz-Carlton Hotel Company—criticized RevPAR by stating, “When they talk RevPAR, they talk only room revenue. My hotels are good enough that our customers spend a lot of money in our restaurants and our shops, not just in our rooms” (p. 24).

Considering these two weaknesses of RevPAR, hoteliers have developed other alternative performance measures. For example, to resolve the issue of RevPAR only representing the performance of hotel rooms, Total RevPAR has been suggested. It is defined as total revenue, across all sources, divided by the number of rooms available. However, the alternative performance measure that has seemed to receive the most attention is Gross Operating Profit per Available Room (GOPPAR). Many industry practitioners have been talking about this measure and, due to this increased attention, a recent study (Schwartz, et al., 2016) examined RevPAR and GOPPAR as performance measures from a strategic revenue management perspective.

GOPPAR has become popular in the hotel industry because it resolves both limitations of RevPAR by using profit information (i.e., gross operating profit) and including revenue from all operating departments (Younes & Kett, 2003). Nevertheless, the practical implications of the comparative superiority between the two measures have not been investigated in the past literature. Therefore, the current study seeks to fill that gap by comparing the two measures (RevPAR and GOPPAR) to examine whether one may be a better performance measure than the other. This study utilizes two different sets of data to make the comparison more comprehensive: property-level data and firm-level data on hotel performance. This study first investigates how

macro-economic indicators (i.e., GDP and unemployment rate in a market) and a hotel's characteristics explain its RevPAR or GOPPAR in 10 major U.S. cities at the property level. We argue that, more the variance of RevPAR or GOPPAR explained (or predicted) by those variables, the better measure for hotel management. Next, the study examines how well RevPAR and GOPPAR explain the market value of a hotel at the firm level. Better explanatory power would suggest a better performance indicator from a financial market perspective.

The study's overall results suggest that RevPAR is a better measure than GOPPAR at both the property and firm level. Although two macro-economic measures—GDP per capita and unemployment rates at metropolitan statistical area (MSA) level—offer better explanatory powers for GOPPAR than RevPAR, RevPAR appears to be more discriminating than GOPPAR for all other factors, such as hotel class, location, and property operational type. Further, firm-level analysis reveals that RevPAR predicts total shareholders' return better than GOPPAR. These findings provide important practical implications about both hotel performance measures. Although GOPPAR has gained some popularity based on the benefits derived from an operations and revenue management perspective, RevPAR may still be the most representative performance measure for hotels. Further discussion and implications are provided in the discussion section.

Literature on hotel performance measures

There have been limited empirical studies on hotel industry performance measures, possibly due to the wide acceptance of RevPAR in measuring hotel performance. However, as the industry and investors have become more analytical and sophisticated, a debate about the efficacy of RevPAR has arisen because of two major shortcomings discussed in a study by Brown and Dev in 1999. They highlighted two key limitations of RevPAR as follows: "(1) it

does not include revenue from food and beverage and other departments, and (2) it does not take into account costs” (Brown & Dev, 1999, p. 24). Their study provided potential alternatives to RevPAR in their investigation of the effect of a hotel’s size, service orientation, strategic orientation, and ownership and management arrangements on its productivity. As alternatives, Brown and Dev measured a hotel’s productivity with GOPPAR, Total RevPAR (termed SalesPAR in their study), and ProfitPAR (defined as income before fixed charges divided by total number of rooms available). In conclusion, they suggested moving away from RevPAR and instead using a modified productivity measure, such as Total RevPAR.

Other practitioner-oriented articles have also discussed the two key limitations of RevPAR. Younes and Kett (2003) compared RevPAR and GOPPAR with detailed practical illustrations. In addition to RevPAR’s two key limitations, they argued that GOPPAR is a more reliable measure than RevPAR for hotel valuations at a property level.

These studies argued against RevPAR and for GOPPAR with logical explanations and practical illustrations. However, they did not empirically compare RevPAR to other modified productivity measures, especially GOPPAR, nor did they argue for the overall superiority of one measure over the other.

Another group of researchers that has studied RevPAR and GOPPAR comes from the revenue management (RM) field. RM in the hotel context has traditionally focused on RevPAR as a hotel’s major performance measure. However, as RM has evolved more toward a strategic focus on all revenue streams, revenue managers and RM researchers have gradually focused more on other performance measures, such as GOPPAR. Kimes (2011) provides evidence of this evolutionary change in the hotel industry. Through a survey method, she collected data from 487 hotel revenue managers regarding future projections of RM. Her results indicate that “RM will

be more strategic and more technology-driven”; “RM will be applied to function space”; and “social networking/mobile technology will play a major role in distributions” (Kimes, 2011, pp. 71-72). In one of six projections based on the survey data, she predicted that, in the future, the major RM performance measure would not be RevPAR but rather GOPPAR, or Total RevPAR. This is due to the changing emphasis on comprehensively considering multiple revenue sources.

Later, Schwartz et al. (2016) empirically examined RevPAR versus GOPPAR from the strategic revenue management perspective. Similar to Kimes’ study (2011), Schwartz et al. recognized the trend of revenue management moving toward total strategic revenue and suggested that it would become necessary to re-evaluate whether revenue or profits should be measured. They first examined correlations between RevPAR and GOPPAR, then tested the explanatory power of the following six variables on the correlations: (1) rental and other revenue; (2) food and beverage (F&B) revenue; (3) undistributed expenses; (4) cancellation fees; (5) hotel size (=number of rooms); and (6) scale of the hotel (i.e., luxury, upper scale, upscale, upper midscale, midscale, and economy). Their findings suggest that rental and other revenue, F&B revenue, and undistributed expenses are negatively related to the correlations (between RevPAR and GOPPAR), while scale (a lower number means more upscale and luxury) shows a positive relationship with the correlations. In other words, their empirical findings provide evidence of which types of hotels have a high or low correlation between RevPAR and GOPPAR, without directly investigating which measure is better.

Lastly, from a financial management perspective, Chen, Koh, and Lee (2011) compared the explanatory power of RevPAR and three widely accepted firm-level performance measures—earnings per share (EPS), return on assets (ROA), and return on equity (ROE)—on total shareholders’ returns (TSRs) for five large publicly traded U.S. lodging firms. Their

findings not only suggested no particular difference in the explanatory power among the four performance indicators, but they also revealed that none of the four indicators has significant explanatory power over TSRs. They recommended searching for and developing alternative performance measures for the lodging industry but did not specify how. Further, their study did not compare RevPAR and GOPPAR directly.

Consequently, the current study has two objectives. The first purpose is to compare the power of two measurements in discriminating different types of hotels, or reflecting local economic conditions, on a property level. Instead of focusing on how different types of properties determine the correlation between RevPAR and GOPPAR, this study seeks to analyze how the two measurements can separate different hotel types by comparing the explanatory power of each property type variable, and also how the two reflect macro-economic variables on a local level. The other purpose is to compare the measures at the firm level. In contrast with Chen et al. (2011), the current study updates and expands the sample period and sample size. While Chen et al.'s (2011) final sample size was 113, spanning the first quarter of 2000 to the third quarter of 2008, the current study uses 473 data points, ranging from the first quarter of 1995 to the fourth quarter of 2018. With more data points across an extended period, our results may provide a more complete picture of the proposed relationship. Additionally, Chen et al. performed a pooled-OLS analysis with Newey-West standard errors; the present study performs a panel analysis with robust standard errors, given that it uses panel data. This methodological advancement accounts for critical issues such as unobserved effects in panel data and can provide more reliable and robust results.

As reviewed above, the relevant literature on RevPAR and GOPPAR is rather limited and has not weighed in on whether one measure is better than the other. Therefore, the current study

seeks to make a more direct and comprehensive comparison by employing two data sets at both a property and firm level to correlate with types of hotel or performance variables, and to provide empirical evidence to the lodging community. The next section describes the two main analyses including their methodology and results.

Property-level analysis

Sample and data

The dataset includes 500 properties in the 10 largest hotel markets, based on metropolitan statistical areas (MSAs) in the U.S. and measured by total rooms available. These 10 markets, in order of total available hotel rooms, include New York, Chicago, Washington, D.C., Los Angeles, Atlanta, Orlando, San Diego, Dallas, Phoenix, and Houston, according to data from STR Inc. Two types of data were collected: annual hotel property-level performance data from 2000-2017, obtained from STR Inc., and macro-economic performance variables on an MSA level, including total Gross Domestic Product (MSA GDP), Gross Domestic Product per capita (GDP per capita), and unemployment rate (MSA unemployment rate). The former variables include the characteristics of properties, such as class (luxury, upper upscale, upscale, upper midscale, midscale, and economy), operation style (chain owned/managed, franchised, and independent), location (urban, suburban, airport, interstate/motorway, resort, and small metro/town), and the MSA market where the property is located. The economic variables were retrieved from Bureau of Labor Statistics website (<https://www.bls.gov/data/>).

Dependent variables

To measure the financial performance of individual hotel properties, STR provided annual RevPAR and GOPPAR for selected properties. RevPAR is a standard measure that each reporting property must report to STR Inc.; however, only a select group of hotels reports GOPPAR. In total, we obtained 500 hotel properties from the 10 biggest markets that reported GOPPAR from 2000-2017. Some hotel properties may report measures beginning several years after 2000 because they opened after that year. Thus, the time of GOPPAR reporting ranges from 8 to 18 years. The total number of annual data points for 500 hotels was 7,725.

Descriptive results for the two hotel performance measures are listed in Table 1 and the histograms in Figures 1 and 2. The mean value of RevPAR is \$105.40 among all samples, and the mean value of GOPPAR is \$54.50. Further, the comparison of the two measures indicates RevPAR has a wider range of \$801.90 versus GOPPAR's \$488.90. RevPAR has a higher value of skewness and kurtosis, indicating a bigger deviation from a normal distribution. Thus, although their distribution is more or less similar, RevPAR is more dispersed and skewed than GOPPAR (Figures 1 and 2).

[Insert Table 1 about here]

Correlation analysis

A simple correlation analysis shows a Pearson's r value of 0.895. Figure 3 further demonstrates that this correlation is even higher for properties whose RevPAR and GOPPAR are approximately under \$400 and \$300, respectively. Above \$400 of RevPAR, the data points seem more dispersed, indicating that luxury hotels are more likely to have a diverse range of RevPARs and GOPPARs, while RevPAR varies to an even larger degree. For luxury hotels whose RevPARs range from \$400-\$800, their GOPPARs range from \$100 to \$500. This indicates that not all luxury hotels can achieve a high profitability level after considering expenses.

Main variables

In this study, comparisons were made between the two hotel performance measurements and their discriminating powers for the types of hotels, as well as how well they represent overall macro-economic variables. For the former, this study adopted property-level variables such as number of rooms, class, operation, and location, as described earlier. Each property was also associated with 1 out of 10 markets, which is a fixed factor in the model. For macro-economic variables, we adopted total Gross Domestic Product (MSA GDP), Gross Domestic Product per capita (GDP per capita), and unemployment rate (MSA unemployment rate) at the MSA (market) level. We included MSA GDP in the model since it represents the overall size of an MSA's economy. Slattery has shown that RevPAR's growth is a function of GDP growth and reflects economic cycles (Slattery, 2002). MSA GDP per capita represents consumer purchasing power in one MSA and is derived by dividing the former measure by the population of the MSA. Per capita personal income can be a composite indicator of hotel market performance (Singh, Kim, & Zhang, 2011). Though tourist arrivals can significantly influence RevPAR and GOPPAR, they are usually hard to estimate for cities and statistics from different cities might not be comparable (Wöber, 2000), and thus, excluded from the estimation. Year is a repeated measure in the model.

Results

To investigate the impact of property-level and market-level variables on the two hotel performance measures, we adopted a multi-level, repeated-measure mixed model. The repeated measures are the years of performance, since multiple years of data for one property are correlated; the fixed factors are class, operations, location, and market; the covariates are the number of rooms at the property level, and MSA GDP, MSA GDP per capita, and MSA

unemployment rates at the market level. We investigated the main effect of fixed factors as well as two-way interactions between those fixed factors. A three-way or full-factorial interaction term was deemed cumbersome and unnecessary. The mixed model was run with the same fixed factors and covariates on two different dependent variables, RevPAR and GOPPAR, and compare F values and significance of each factor or covariate of the two models (RevPAR and GOPPAR) (Table 2).

[Insert Table 2 about here]

Comparing the two models, we can see that all the main effects of fixed factors, regardless of a hotel's operational type, class, location, or market, explain variances of RevPAR better than GOPPAR. Even though the F-values of the three two-way interactions, including location (i.e., Operation*Location, Class*Location, and Location*Market), are higher for GOPPAR, the difference seems small and negligible. Regarding the four covariates, GOPPAR appears to be more reflective of MSA GDP per capita and MSA unemployment rate, while MSA GDP and the number of rooms explain RevPAR better, again based on F-values.

Firm-level analysis

Methodology

Sample and data

Quarterly data from publicly traded U.S lodging firms, from 1995 to 2018, was identified by the Standard Industrial Classification (SIC) code of 7011. The dataset is a panel consisting of cross-sectional and time-series data. Various resources were used for data collection: (1) a firm's quarterly reports (10-Q) for RevPAR and GOPPAR; and (2) Compustat for financial data such as

a firm's size, leverage, return on asset (ROA), and total shareholder return (TSR). After removing missing values and outliers, an unbalanced panel dataset of 473 firm-quarter observations was obtained.

Dependent variable

To measure the financial performance of lodging firms, this study estimated TSR using a dependent variable in the model. TSR, a stock market measure, is calculated as quarter-end stock price minus quarter-start stock price, plus dividends paid, divided by quarter-start stock price (Sanders & Hambrick, 2007).

Main variables

The two main variables of this study are RevPAR and GOPPAR. This study estimated RevPAR by multiplying a hotel's average daily room rate (ADR) by its occupancy rate on a quarterly basis. In case a firm's ADR and occupancy rate were not given in its 10-Q, we collected a firm's quarterly room revenue and the number of available rooms to calculate RevPAR. GOPPAR was estimated by dividing a firm's gross operating profit by the number of available rooms on a quarterly basis.

Control variables

This study includes three control variables in the regression model: firm size, leverage, and accounting performance. Firm size, measured by the log of total assets, was included in the model to control for its confounding effects on a firm's TSR, possibly due to economies of scale and market power (Sanders & Hambrick, 2007). A firm's leverage, measured by debt-to-asset ratio, was included to account for the effects of its capital structure (Opler & Titman, 1994). A firm's accounting performance was measured by return on assets (net-income divided by total

assets), and it was included to control for any systematic effect on the relationship between the main variables and dependent variable (Cordeiro & Sarkis, 1997).

Model

To account for unobserved effects such as heterogeneity in firms and autocorrelations in time for the panel data used in this study, we performed fixed- or random-effects models, which would achieve an unbiased and efficient inference (Greene, 2003). According to Hausman test for each model in Tables 5, 6, and 7, either a fixed- or random-effects model was chosen to control for firm, quarter, and year effects. In other words, when Hausman test rejected the null hypothesis, a fixed-effects model was performed over a random-effects model, and vice versa. In addition, to estimate robust standard errors, the current study used a one-year clustering method by firms, which alleviates potential problems of heteroscedasticity and autocorrelations within clusters (Cameron & Miller, 2015; Petersen, 2009). The proposed models are as follows:

$$TSR_{iq} = \beta_0 + \beta_1 RevPAR(GOPPAR)_{iq-1} + \beta_{2-4} Controls_{iq-1} + \epsilon_{iq} \quad (1)$$

$$TSR_{iq} = \beta_0 + \beta_1 RevPAR(GOPPAR)_{iq-2} + \beta_{2-4} Controls_{iq-1} + \epsilon_{iq} \quad (2)$$

$$TSR_{iq} = \beta_0 + \beta_1 RevPAR(GOPPAR)_{iq-3} + \beta_{2-4} Controls_{iq-1} + \epsilon_{iq} \quad (3)$$

$$TSR_{iq} = \beta_0 + \beta_1 RevPAR(GOPPAR)_{iq-4} + \beta_{2-4} Controls_{iq-1} + \epsilon_{iq} \quad (4)$$

$$TSR_{iq} = \beta_0 + \beta_1 RevPAR_{iq-1} + \beta_2 GOPPAR_{iq-1} + \beta_{3-5} Controls_{iq-1} + \epsilon_{iq} \quad (5)$$

$$TSR_{iq} = \beta_0 + \beta_1 RevPAR_{iq-2} + \beta_2 GOPPAR_{iq-2} + \beta_{3-5} Controls_{iq-1} + \epsilon_{iq} \quad (6)$$

$$TSR_{iq} = \beta_0 + \beta_1 RevPAR_{iq-3} + \beta_2 GOPPAR_{iq-3} + \beta_{3-5} Controls_{iq-1} + \epsilon_{iq} \quad (7)$$

$$TSR_{iq} = \beta_0 + \beta_1 RevPAR_{iq-4} + \beta_2 GOPPAR_{iq-4} + \beta_{3-5} Controls_{iq-1} + \epsilon_{iq} \quad (8)$$

where TSR_{iq} represents a total shareholder return calculated as quarter-end stock minus quarter-start stock price plus dividend paid for firm i at quarter q ; $RevPAR_{iq-1\sim 4}$ represents a firm's revenue per available room estimated by multiplying an average daily room rate and occupancy rate on a quarterly basis for firm i at quarter q ; $GOPPAR_{iq-1\sim 4}$ represents a firm's gross operating income per available room estimated by dividing a firm's gross operating profit by the number of available rooms on a quarterly basis for firm i at quarter q .

Results

Descriptive statistics

Table 3 provides descriptive statistics of the variables. TSR ranges from -1 to 4.909 with a mean of 0.066 and a standard deviation of 0.442. This implies that total shareholder returns of hotel firms generally increase by 6 percent quarterly. RevPAR ranges from 22.820 to 370.000 with a mean of 100.599 and a standard deviation of 58.966. GOPPAR ranges from -1121.738 to 267.072 with a mean of 4.312 and a standard deviation of 80.234.

[Insert Table 3 about here]

Table 4 shows the results of the Pearson's correlation analysis representing the bivariate relationship between variables. Firm Size has a significant and negative correlation with TSR ($r = -0.097$). RevPAR has a significant and positive correlation with GOPPAR ($r = 0.109$), Firm Size ($r = 0.370$), and Leverage ($r = 0.387$). GOPPAR has a significant and positive correlation with Firm Size ($r = 0.129$) and ROA ($r = 0.295$). Firm Size has a significant and positive correlation with ROA ($r = 0.346$). Thus, there is no extremely high correlation between variables. We also estimated variance inflation factors (VIF) to test a potential multicollinearity. All VIF

values were within an acceptable level of 10 (Tabachnick & Fidell, 2001). Therefore, there is no severe multicollinearity issues.

[Insert Table 4 about here]

Main findings

Table 5 shows the association between RevPAR and TSR, holding control variables constant. Models 1-1 through 1-4 indicate that RevPAR positively affects TSR within one, two, three, and four quarters ($\beta = 0.0008, 0.0006, 0.0007, 0.0007, p < 0.05$ for Model 1-1, 1-2, 1-3, and 1-4 respectively). Among three control variables, Firm Size has a significant and negative coefficient for TSR ($\beta = -0.0328, -0.0306, -0.0316, -0.0311, p < 0.05$ for Model 1-1, 1-2, 1-3, and 1-4 respectively). Table 6 presents the effect of GOPPAR on TSR, holding control variables constant. Models 2-1 through 2-4 show that GOPPAR is positively associated with TSR within one and three quarters ($\beta = 0.0001, p < 0.10$ for Model 2-1; $\beta = 0.0001, p < 0.05$ for Model 2-3), but not within two- and four-quarter.

[Insert Table 5 about here]

[Insert Table 6 about here]

Table 7 presents the marginal effect of RevPAR (GOPPAR) on TSR, holding control variables and GOPPAR (RevPAR) constant. Models 3-1 through 3-4 show that both RevPAR and GOPPAR have a generally positive effect on TSR. For example, RevPAR has a significant and positive coefficient for TSR within one-, two-, and three-quarter ($\beta = 0.0008, 0.0006, 0.0006, p < 0.05$ for Model 3-1, 3-2, and 3-3 respectively). GOPPAR also has a significant and positive coefficient for TSR within three-quarter ($\beta = 0.0002, p < 0.05$ for Model 3-3). However,

comparing the coefficients of the variables in each model, the effect of RevPAR is found to be stronger and more persistent than the effect of GOPPAR on TSR.

[Insert Table 7 about here]

Sensitivity analysis

To enhance the robustness of the findings, sensitivity analyses were performed. First, a firm's accounting performance (ROA) was removed from the model to see if such removal changed the results. Sensitivity analysis was conducted because GOPPAR may be highly correlated with ROA since both measures indicate a firm's accounting profitability, although the correlation analysis does not support such suspicion. The sensitivity analysis results remained qualitatively the same with the main findings. Further, ROA by earnings before interest expense and income taxes (EBIT) was measured over total assets, to see if the main results still held. Results from this sensitivity analysis were also qualitatively same with the main results, providing some evidence of the robustness of the study's main results at the firm level.

Discussions

The current study was designed to compare two debatable performance measures in the hotel industry: Revenue Per Available Room (RevPAR) and Gross Operating Profit per Available Room (GOPPAR). RevPAR is the historically dominant and currently the most widely used and accepted measure. However, hoteliers and scholars have pointed out certain limitations of RevPAR in their efforts to search for alternative performance measures for the hotel industry. Some candidates for such alternative measures include GOPPAR, Total RevPAR, and ProfitPAR, where GOPPAR seems to have garnered the most attention from both practitioners

and scholars. The key difference between RevPAR and GOPPAR is the use of room revenue (for RevPAR) and gross operating profit (for GOPPAR), which relates to both major limitations of RevPAR. Accordingly, this study compared RevPAR to GOPPAR in terms of explanatory power of characteristics of hotels and macro-economic factors, and their discriminating power in explaining hotel firms' stock performance.

This study does not directly recommend one measure over the other, but rather takes an exploratory approach. The choice is still an empirical question due to the existence of benefits from both measures. Although GOPPAR overcomes two widely known limitations of RevPAR (i.e., being limited to room revenue only, and revenue without considering costs), the use of RevPAR is still comparably dominant in the industry at both the property and firm level. This study's analysis produces interesting and valuable findings that suggest a somewhat mixed picture at the property level, but in general supports the superiority of RevPAR over GOPPAR at both the property and firm levels.

Property-level analysis reveals that all four property-level characteristics (i.e., operation, class, location, and number of rooms) explain RevPAR better than GOPPAR. While two of four macro-level variables (i.e., MSA GDP per capita and MSA unemployment rate) explain GOPPAR better than RevPAR, the other two (i.e., market and MSA GDP) explain RevPAR better than GOPPAR. Overall, the findings clearly support that RevPAR is highly correlated with more factors known to be influential on hotel performance than GOPPAR. One potential speculation for this finding is that it may be more difficult to explain variances of a less volatile GOPPAR compared to a more volatile RevPAR. However, addressing this will require more empirical examination. Further, the finding that the two macro-level factors (i.e., MSA GDP per capita and MSA unemployment rate) present better explanatory power for GOPPAR makes

intuitive sense. MSA GDP per capita and MSA unemployment rate reflect the bargaining power of the labor market and the personal income levels of the residents in one market. Since hospitality is a labor-intensive industry that hires many entry-level workers, the performance of a property is closely connected to labor cost. In turn, labor cost is closely associated with the bargaining power and relative income levels of the local labor market.

Next, firm-level analysis suggests that RevPAR, with various lagging periods, consistently predicts future total shareholders' return (TSR) better than GOPPAR. Based on the notion that a firm's profitability significantly affects its value, this finding is somewhat surprising. However, financial markets and the investment community are keenly interested in a firm's growth. For example, after Panera Bread was sold to the JAB Holding in 2017, Ron Shaich, the former CEO of the company, said in an interview with *The New York Times*, "For the last 20 years, I've spent 20 percent of my time telling people what we've done to grow and another 20 percent of my time telling people what we're going to do to grow" (Strom & Bray, 2017). Considering the importance of a firm's growth in financial markets, our findings make sense because revenue (RevPAR) reflects a firm's growth better than profit (GOPPAR). Alternatively, it may simply be the case that the hotel investment community has always perceived RevPAR as a key performance indicator for hotels.

Based on the main findings of the current study, we suggest that RevPAR is still a better measure than GOPPAR, but we caution against viewing RevPAR as absolutely superior. It is superior only in terms of correlation with hotel property characteristics and certain macro-level factors, as well as its predictive power when it comes to a hotel firm's equity return. Therefore, future studies are encouraged to compare these two hotel performance measures in more diverse and different contexts in order to provide a more comprehensive and complete picture.

Nevertheless, we strongly believe that our study makes meaningful contributions to the hotel performance literature by exclusively comparing these two hotel performance measures.

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Table 1. Descriptive Statistics of RevPAR and GOPPAR of Property-Level Data

	N	Range	Min	Max	Mean	Std. Deviation	Skewness	Std. Error	Kurtosis	Std. Error
RevPAR	7725	787.590	14.290	801.880	105.424	78.556	3.008	0.028	14.891	0.056
GOPPAR	7725	556.680	-67.790	488.890	54.505	43.218	2.599	0.028	12.771	0.056

Table 2. Main Results of Property-Level Data

	Variables	Numerator df	RevPAR as DV			GOPPAR as DV		
			Denominator df	F	Sig.	Denominator df	F	Sig.
Fixed Factors	Intercept	1	3342.043	11.5	0.001	3773.87	0.16	0.689
	Operation	2	5290.006	93.7	0	5576.92	86.076	0
	Class	5	5101.921	276	0	5434.99	103.422	0
	Location	4	5471.267	23.6	0	5801.68	21.635	0
	Market	8	5502.515	70.4	0	5727.36	27.082	0
	Operation * Class	5	4831.651	50.6	0	5396.66	36.534	0
	Operation * Location	5	5146.204	3.63	0.003	5601.32	5.216	0
	Operation * Market	12	5336.164	10.4	0	5662.09	8.696	0
	Class * Location	16	5139.483	7.18	0	5642.32	8.997	0
	Class * Market	38	5235.931	49.2	0	5661.62	30.816	0
Location * Market	17	5058.899	13.7	0	5594.6	13.91	0	
Co- Variates	Number of Rooms	1	5002.859	80.8	0	5607.3	10.593	0.001
	MSA GDP Per Capita	1	3692.54	1.28	0.257	4072.03	6.319	0.012
	MSA GDP	1	3656.491	906	0	3773.95	216.521	0
	MSA Unemployment Rate	1	3579.997	140	0	3667.31	175.996	0

Table 3. Descriptive Statistics of Firm-Level Data

Variable	Obs.	Mean	Std. Dev.	Min	Max
TSR	477	0.066	0.442	-1.000	4.909
RevPAR	477	100.599	58.966	22.820	370.000
GOPPAR	477	4.312	80.234	-1121.738	267.072
Firm Size	477	7.274	1.609	3.658	10.185
Leverage	477	0.708	0.257	0.290	1.599
ROA	477	0.000	0.040	-0.199	0.141

Note: TSR represents a firm's total shareholder return calculated as quarter-end stock minus quarter-start stock price plus dividend paid; RevPAR represents a firm's revenue per available room estimated by multiplying an average daily room rate and occupancy rate on a quarterly basis; GOPPAR represents a firm's gross operating income per available room estimated by dividing a firm's gross operating profit by the number of available rooms on a quarterly basis; ROA represents a firm's return on asset calculated as the net-income divided by the total assets.

Table 4. Pearson Correlation Analysis of Firm-Level Data

	TSR	RevPAR	GOPPAR	Firm Size	Leverage
RevPAR	-0.060				
GOPPAR	0.024	0.109**			
Firm Size	-0.097**	0.370***	0.129***		
Leverage	0.030	0.387***	0.024	-0.008	
ROA	-0.057	0.001	0.295***	0.346***	-0.016

*, **, and *** represent 10%, 5%, and less than 1% significance level respectively.

Note: TSR represents a firm's total shareholder return calculated as quarter-end stock minus quarter-start stock price plus dividend paid; RevPAR represents a firm's revenue per available room estimated by multiplying an average daily room rate and occupancy rate on a quarterly basis; GOPPAR represents a firm's gross operating income per available room estimated by dividing a firm's gross operating profit by the number of available rooms on a quarterly basis; ROA represents a firm's return on asset calculated as the net-income divided by the total assets.

Table 5. Panel Regression Analysis for RevPAR of Firm-Level Data

DV: TSR_t	Model 1-1			Model 1-2			Model 1-3			Model 1-4		
	β	Std. Err.	p-value									
$RevPAR_{t-1}$	0.0008***	0.000	0.000									
$RevPAR_{t-2}$				0.0006***	0.000	0.001						
$RevPAR_{t-3}$							0.0007***	0.000	0.000			
$RevPAR_{t-4}$										0.0007***	0.000	0.000
Firm Size $_{t-1}$	-0.0328***	0.008	0.000	-0.0306***	0.009	0.001	-0.0316***	0.010	0.001	-0.0311***	0.009	0.001
Leverage $_{t-1}$	-0.0176	0.041	0.667	-0.0075	0.043	0.861	0.0050	0.038	0.896	0.0014	0.039	0.972
ROA $_{t-1}$	0.2380	0.384	0.536	0.2674	0.385	0.487	0.3470	0.401	0.387	0.3636	0.390	0.351
Constant	0.1977***	0.068	0.003	0.1926**	0.075	0.010	0.1885**	0.079	0.017	0.1864**	0.081	0.021
Obs.		458			445			432			419	
Hausman test		2.18			3.93			3.56			7.60	
Wald Chi ²		66.40***			155.92***			196.77***			192.88***	

*, **, and *** represent 10%, 5%, and less than 1% significance level respectively.

Note: TSR represents a firm's total shareholder return calculated as quarter-end stock minus quarter-start stock price plus dividend paid; RevPAR represents a firm's revenue per available room estimated by multiplying an average daily room rate and occupancy rate on a quarterly basis; GOPPAR represents a firm's gross operating income per available room estimated by dividing a firm's gross operating profit by the number of available rooms on a quarterly basis; ROA represents a firm's return on asset calculated as the net-income divided by the total assets.

Table 6. Panel Regression Analysis for GOPPAR of Firm-Level Data

DV: TSR_t	Model 2-1			Model 2-2			Model 2-3			Model 2-4		
	β	Std. Err.	p-value	β	Std. Err.	p-value	β	Std. Err.	p-value	β	Std. Err.	p-value
$GOPPAR_{t-1}$	0.0001*	0.000	0.074									
$GOPPAR_{t-2}$				0.0000	0.000	0.792						
$GOPPAR_{t-3}$							0.0001**	0.000	0.029			
$GOPPAR_{t-4}$										0.0001	0.000	0.576
Firm Size $_{t-1}$	-0.0209***	0.007	0.004	-0.0653	0.030	0.032	-0.0558	0.036	0.121	-0.0532	0.043	0.215
Leverage $_{t-1}$	0.0499	0.051	0.324	-0.0293	0.042	0.486	-0.0022	0.050	0.966	-0.0198	0.050	0.691
ROA $_{t-1}$	0.0550	0.333	0.869	0.0271	0.496	0.956	-0.0186	0.504	0.971	-0.0088	0.482	0.985
Constant	0.1435*	0.070	0.042	0.2807**	0.132	0.033	0.459***	0.158	0.004	0.3329*	0.196	0.090
Obs.		458			445			432			419	
Hausman test		7.12			15.25***			19.68***			23.24***	
Wald Chi ²		11.85**			487.21***			285.76***			163.91***	

*, **, and *** represent 10%, 5%, and less than 1% significance level respectively.

Note: TSR represents a firm's total shareholder return calculated as quarter-end stock minus quarter-start stock price plus dividend paid; RevPAR represents a firm's revenue per available room estimated by multiplying an average daily room rate and occupancy rate on a quarterly basis; GOPPAR represents a firm's gross operating income per available room estimated by dividing a firm's gross operating profit by the number of available rooms on a quarterly basis; ROA represents a firm's return on asset calculated as the net-income divided by the total assets.

Table 7. Panel Regression Analysis for RevPAR and GOPPAR of Firm-Level Data

DV: TSR_t	Model 3-1			Model 3-2			Model 3-3			Model 3-4		
	β	Std. Err.	p-value	β	Std. Err.	p-value	β	Std. Err.	p-value	β	Std. Err.	p-value
RevPAR $_{t-1}$	0.0008***	0.000	0.000									
RevPAR $_{t-2}$				0.0006***	0.000	0.001						
RevPAR $_{t-3}$							0.0006***	0.000	0.001			
RevPAR $_{t-4}$										-0.0008	0.001	0.336
GOPPAR $_{t-1}$	0.0001	0.000	0.191									
GOPPAR $_{t-2}$				0.0001	0.000	0.318						
GOPPAR $_{t-3}$							0.0002***	0.000	0.007			
GOPPAR $_{t-4}$										0.0008	0.000	0.432
Firm Size $_{t-1}$	-0.0328***	0.008	0.000	-0.0309***	0.009	0.000	-0.0322***	0.009	0.001	-0.0525	0.042	0.215
Leverage $_{t-1}$	-0.0168	0.041	0.683	-0.0069	0.043	0.873	0.0067	0.039	0.863	-0.0222	0.045	0.618
ROA $_{t-1}$	0.2122	0.380	0.577	0.2590	0.386	0.502	0.3252	0.400	0.416	0.0712	0.498	0.886
Constant	0.1986***	0.068	0.003	0.1948***	0.075	0.009	0.1937**	0.079	0.014	0.3498	0.195	0.073
Obs.		458			445			432			419	
Hausman test		6.72			3.75			3.31			21.75***	
Wald Chi ²		64.02***			155.57***			229.22***			242.80***	

*, **, and *** represent 10%, 5%, and less than 1% significance level respectively.

Note: TSR represents a firm's total shareholder return calculated as quarter-end stock minus quarter-start stock price plus dividend paid; RevPAR represents a firm's revenue per available room estimated by multiplying an average daily room rate and occupancy rate on a quarterly basis; GOPPAR represents a firm's gross operating income per available room estimated by dividing a firm's gross operating profit by the number of available rooms on a quarterly basis; ROA represents a firm's return on asset calculated as the net-income divided by the total assets.

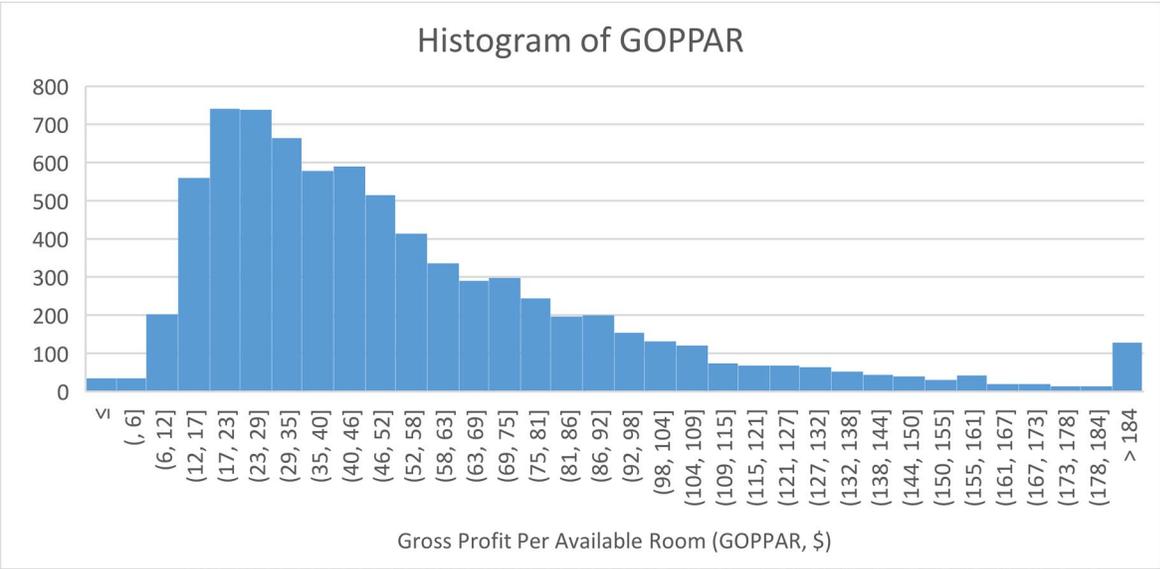


Figure 1. Histogram of GOPPAR

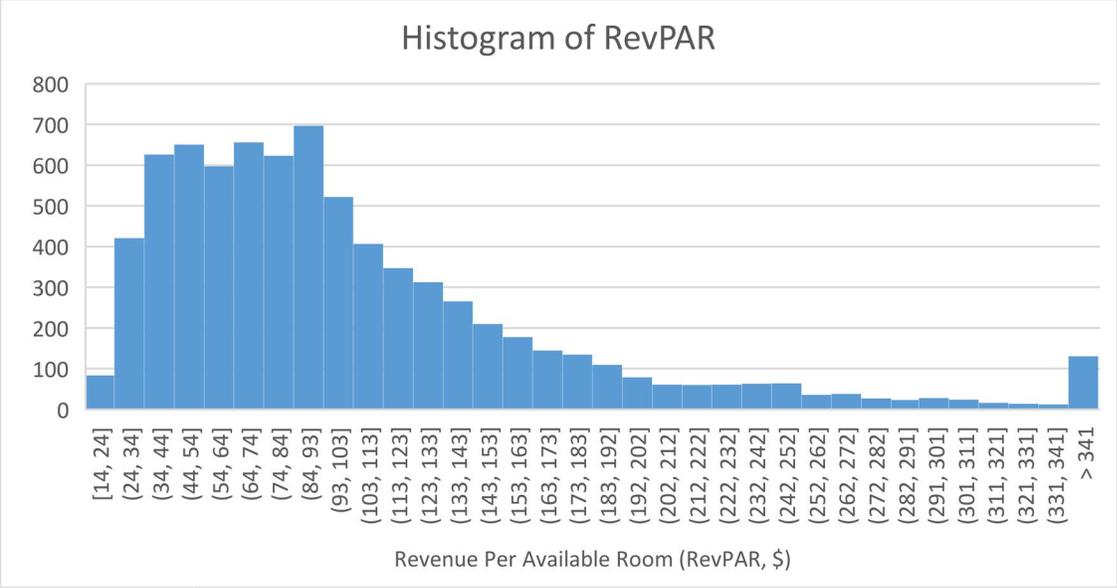


Figure 2. Histogram of RevPAR

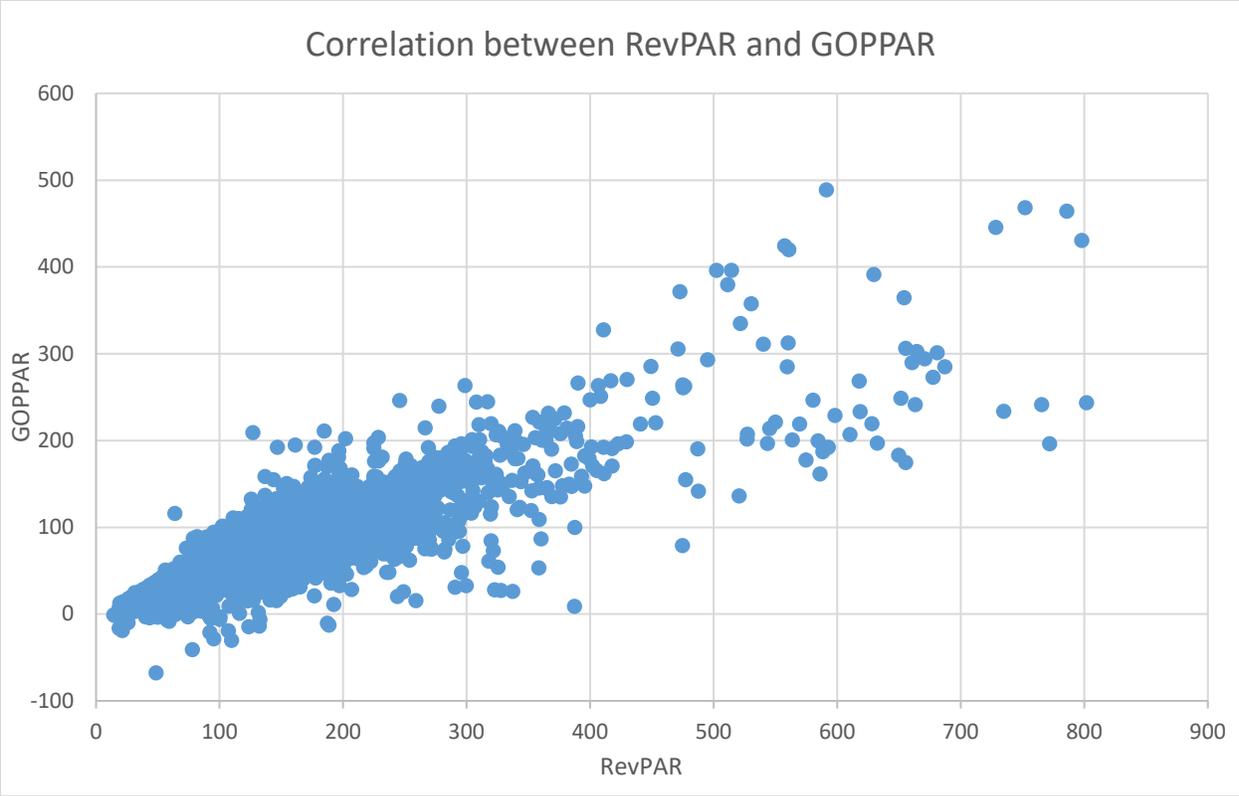


Figure 3. Correlation between RevPAR and GOPPAR