Fourth Quarter 2017: Smaller Hotels Finish Strong; Larger Hotels Lag

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Abstract
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Supplemental File: Hotel Valuation Model (HOTVAL) We provide this user friendly hotel valuation model in an excel spreadsheet entitled HOTVAL Toolkit as a complement to this report which is available for download from http://scholarship.sha.cornell.edu/creftools/1/

Keywords
Cornell Hotel Indices, economic value analysis (EVA), hotel prices, hedonic hotel index

Disciplines
Real Estate

Comments
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EXECUTIVE SUMMARY

Hotel performance is still in the black based on economic value analysis (EVA), although returns still exceed borrowing costs (for debt). The narrowing of the spread between the cap rate and cost of debt suggests that deals may be getting harder to pencil. Transaction volume declined this quarter relative to the previous quarter, although volume remained stable on a year-over-year basis. Our various pricing metrics point to continued positive price momentum for smaller hotels, with larger hotels still losing ground. From a reading of our tea leaves, we expect a continuing positive momentum, although prices will increase at a decreasing rate. This is report number 25 of the index series.
The Cornell hotel indices produced by The Center for Real Estate and Finance at the School of Hotel Administration at Cornell University are an assistant professor of economics at West Virginia University. He earned degrees in mathematics and economics at Indiana University – Bloomington in 2006 and a degree in near-east languages and cultures that same year. He received a Ph.D. from Arizona State University. Nowak taught an introduction to macroeconomics course and a survey of international economics at Arizona State. He was the research analyst in charge of constructing residential and commercial real estate indices for the Center for Real Estate Theory and Practice at Arizona State University. Nowak’s research has been published in the Journal of Urban Economics, Regional Science and Urban Economics, Journal of Applied Econometrics, and the Journal of Real Estate Finance and Economics.

Robert M. White, Jr., CRE, is the founder and president of Real Capital Analytics Inc., an international research firm that publishes the Capital Trends Monthly. Real Capital Analytics provides real time data concerning the capital markets for commercial real estate and the values of commercial properties. Mr. White is a noted authority on the real estate capital markets with credits in the Wall Street Journal, Barron’s, The Economist, Forbes, New York Times, and Financial Times, among others. He is the 2014 recipient of the James D. Landauer/John R. White Award given by The Counselors of Real Estate. In addition, he was named one of National Real Estate Investor Magazine’s “Ten to Watch” in 2005, Institutional Investor’s “20 Rising Stars of Real Estate” in 2006, and Real Estate Forum’s “10 CEOs to Watch” in 2007. Previously, Mr. White spent 14 years in the real estate investment banking and brokerage industry and has orchestrated billions of commercial sales, acquisitions and recapitalizations. He was formerly a managing director and principal of Granite Partners LLC and spent nine years with Eastdil Realty in New York and London. Mr. White is a Counselor of Real Estate, a Fellow of the Royal Institution of Chartered Surveyors and a Fellow of the Homer Hoyt Institute. He serves on the board of directors for the Pension Real Estate Association and the advisory board for the Real Estate Research Institution. He is also a member of numerous industry organizations and a supporter of academic studies.

Mr. White is a graduate of the McIntire School of Commerce at the University of Virginia. White’s research has been published in Journal of Real Estate Research, Real Estate Economics, Journal of Urban Economics, Regional Science and Urban Economics, Journal of Applied Econometrics, and the Journal of Real Estate Finance and Economics.

Acknowledgments
We wish to thank Glenn Withiam for copy editing this paper.

Disclaimer
The Cornell hotel indices produced by The Center for Real Estate and Finance at the School of Hotel Administration at Cornell University are provided as a free service to academics and practitioners on an as-is, best-effort basis with no warranties or claims regarding its usefulness or implications. The indices are not audited, and they are not necessarily free of errors or omissions although every effort has been made to minimize these. The reported indices for any quarter of any year should be considered preliminary and subject to revision.

**Analysis of Indices through Q4, 2017**

Hotel investment based on operating performance is in the black (break even). Our Economic Value Added (EVA) indicator shown in Exhibit 1 has turned slightly negative, although for all practical purposes it has hovered around zero since the second quarter of 2016.

While the cost of debt financing has risen from 6.52 percent in 2017Q2 to 6.67 percent in 2017Q3, the ACLI hotel cap rate has declined during that period, from 7.43 percent (2017Q2) to 6.94 percent (2017Q3). Thus, as suggested in Exhibit 2, positive leverage continues to be the norm for hotels, although it appears that deals might be getting harder to pencil given the spread between the cap rate and the cost of debt. In summary, these two exhibits signal a positive albeit weaker market trend.
The median price of hotels declined in the fourth quarter on weaker transaction volume, but median price was up on a year-over-year basis. The median price of hotels, as well as the total volume of all hotel transactions (both large hotels and small hotels combined), as reported in Exhibit 3, declined from the previous quarter ($5M versus $4.5M, and 327 transactions versus 264 transactions). However, on a year-over-year basis (2016Q4 versus 2017Q4), the median price of hotels rose by approximately 11 percent while the volume of hotel transactions remained flat at 264 transactions. A comparison of large hotels relative to small hotels on a year-over-year basis reveals that the median price of large hotels rose 27 percent on slightly weaker volume (-7.2%), while the median price of smaller hotels rose 2.2 percent on higher volume (2.6%).

A similar situation exists on a quarter-over-quarter basis for large hotels, with the median sale price of large hotels rising 20.4 percent. However, the median sale price of small hotels experienced a 15.3-percent decline. The change in median sale price for both large and small hotels occurred on weaker transaction volume (-26.4% for large hotels, and -16.7% for small hotels).
Exhibit 3b
Transaction volume (obs) and median sale price (part 2: 2005–present)

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Exhibit 4
Median sale price and number of sales for high-price (large) hotels (sale prices of $10 million or more)

Exhibit 5
Median sale price and number of sales for low-price (small) hotels (sale prices of less than $10 million)
Exhibit 6

Hotel indices through 2017, quarter 4

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<td>72.3328</td>
</tr>
<tr>
<td>2005 Q4</td>
<td>124.50547</td>
<td>119.43090</td>
<td>71.9857</td>
<td>79.8972</td>
<td>119.43090</td>
<td>71.9857</td>
</tr>
</tbody>
</table>

Exhibit 7

Hedonic hotel indices for large and small hotel transactions

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Low-price hotels (&lt;$10 MM)</th>
<th>High-price hotels (&gt;=$30 MM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000 Q4</td>
<td>110.5276</td>
<td>150.8950</td>
</tr>
<tr>
<td>2001 Q4</td>
<td>110.8709</td>
<td>152.0004</td>
</tr>
<tr>
<td>2002 Q4</td>
<td>112.0390</td>
<td>152.8400</td>
</tr>
<tr>
<td>2003 Q4</td>
<td>112.8900</td>
<td>154.0000</td>
</tr>
</tbody>
</table>

Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

for small hotels). Exhibit 4 and Exhibit 5 show this year-over-year trend in the number of transactions for large hotels and small hotels.

Our moving average trend lines and Standardized Unexpected Price (SUP) performance metrics point to positive price momentum of smaller hotels with larger hotels losing ground. Exhibit 7 which graphs the prices reported in Exhibit 6 shows that the price of large hotels rose 2.3 percent, while the price of smaller hotels rose approximately .5 percent on a quarter-over-quarter basis. Exhibits 6 and Exhibit 7 reveal that on a year-over-year basis, large hotels experienced a 1.83-percent loss in price, while small hotels rose 3.57 percent. This continues the trend outlined in our last report.
Exhibit 8
Year-over-year change in high-price (large) hotel index, with moving-average trend line

Exhibit 9
Year-over-year change in small-hotel index, with moving-average trend line

Exhibit 10
Moving average trend line for large-hotel index

Exhibit 11
Moving average trend line for small-hotel index

Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics
Our moving average trend lines for large hotels (in Exhibit 10) show that the price for large hotels continues to remain below the short-term moving average trend line, but is still above the long-term moving average trend line. This situation continues to signal that positive price momentum has ended for large hotels relative to our short-term price metric. Exhibit 11 shows that the price for small hotels continues to be above both its short-term and long-term moving average trend lines. This indicates that positive momentum continues to persist for smaller hotels this quarter.

Our Standardized Unexpected Price (SUP) metrics displayed in Exhibit 12 show that the price of large hotels has bounced up from its standardized mean of zero although this rise is statistically insignificant. In contrast, the price of small hotels has continued its positive price momentum as depicted in Exhibit 13.

Repeat sales metrics tell a similar story: Positive price momentum for hotels. Similar to small hotels, our repeat sale indicator shown in the moving average trend line in Exhibit 14 indicates a continuation of the positive price momentum. This momentum approaches statistically significance over a long term, but is

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3 We report two repeat sale indices. The repeat sale full sample index uses all repeat sale pairs, whereas the repeat sale index with a base of 100 at 2000Q1 uses only those sales that occurred on or after the first quarter of 2000, and that repeat sale index thus doesn’t use information on sales prior to the first quarter of 2000. As such, if a hotel sold in 1995 and then sold again in 2012, it would be included in the repeat sale full sample index, but it would not be included in the latter repeat sale index.
Insignificant in the short term, as indicated by the SUP performance metric in Exhibit 15. Exhibit 16 further shows that the repeat sale price index increased 11.78 percent year over year, continuing the upward momentum from our previous report (7.6% at that time). It also increased almost 2 percent quarter over quarter.

Mortgage financing volume for hotels increased year over year and also quarter over quarter. Exhibit 17 shows that the mortgage origination volume for hotels, as reported for 2017Q3, is about 116.5 percent higher than in the same quarter of the 2016 (2016Q3). Hotel loan originations were also up 5.7 percent on a quarter-over-quarter basis (2017Q3) compared to 2017Q2. The loan-to-value (LTV) ratio for hotels remained at 70 percent.

The cost of hotel debt financing has declined slightly, while the relative risk premium for hotels has remained constant. The cost of obtaining hotel debt financing, as reported by Cushman Wakefield Sonnenblick Goldman, remained relatively flat for Class A and Class B and C hotels compared to the previous quarter, but has trended upwards in general since July 2016. Exhibit 18 shows that interest rates on Class A and Class B and C hotel deals have remained unchanged relative to the previous quarter. Thus, we see that interest rates were 4.75 percent for Class A hotels and 4.95 percent for Class B and C properties in the fourth quarter of 2017 compared to 4.7 percent for Class A and 4.9 percent for Class B&C in the previous quarter. However, interest rates on hotels have generally declined since July 2017 when viewed from a rolling year-over-year basis (see Exhibit 19).

The cost of obtaining hotel debt financing, as reported by Cushman Wakefield Sonnenblick Goldman (CWSG), differs from the interest rate used to calculate our EVA metric, which is based on the interest rate reported by the American Council of Life Insurers (ACLI). The ACLI interest rate reflects what life insurers are charging for institutional size hotel deals. Our EVA calculation is based on property specific cap rates and the associated financing terms. The CWSG interest rate is based on deals that CWSG has brokered as well as their survey of rates on hotel deals. The CWSG deals are not necessarily similar to deals that are reported by ACLI.

Exhibit 20 and Exhibit 21 depict interest rate spreads relative to different benchmarks. Exhibit 20 shows the interest-rate spread for full-service hotels between the ten-year Treasury bond and Class A as well as Class B and C hotels. On this metric, interest rate spreads have declined about 10 basis points for Class A properties (and for B&C) in the current quarter relative to the prior quarter (Class A: 2.4% versus 2.5%; Class B: 2.6% versus 2.7%). Lenders’ compensation for risk associated with hotel loans has thus declined, indicating that lenders are currently viewing hotels as relatively less risky relative to the last quarter of 2016 and the first quarter of 2017.
Exhibit 21 shows the spread between the interest rate on Class A (and for B and C) full-service hotels over the interest rate corresponding to non-hotel commercial real estate. This is known as the hotel real estate premium.\(^5\) The monthly hotel real estate premiums for both higher quality (Class A) and lower quality (Class B&C) hotels have remained relatively constant over the current quarter. For Class A hotels, the hotel real estate premium averaged .47 percent in the fourth quarter of 2017, compared to .41 percent in the previous quarter (2017Q3). Those percentages for Class B and C properties were .57 in the fourth quarter of 2017 and .51 percent in the third quarter. This is a signal that the perceived default risk for hotel properties has remained unchanged relative to other commercial real estate (office, retail, industrial, and apartments) compared to the previous quarter.

The cost of equity financing has remained relatively flat; expect to see lower interest rates and looser or similar lending standards for hotel financing relative to other commercial real estate in the near future. The cost of using equity financing for hotels as measured using the Capital Asset Pricing Model (CAPM) on hotel REIT returns, as shown in Exhibit 22, has remained relatively flat, with a 7-basis-point increase over previous quarter. The cost of using equity funds stood at 7.81 percent for 2017Q3, compared to 7.75 percent in the previous quarter. The cost of equity has become relatively lower since 2013Q4, falling from 13.1 percent at that time to roughly 7.8 percent over the 2017Q2–2017Q3 period. In terms of total risk (systematic risk + risk that is unique to hotel REITs), Exhibit 23 shows that the total risk of hotel REITs continues to decline relative to the total risk of equity REITs as a whole.\(^6\) This is consistent with Exhibit 21, which shows that the perceived default risk for hotels has remained stable relative to other types of commercial real estate. Expect lenders to either loosen or maintain current lending standards for hotels, given that the volatility of stocks is a useful predictor of perceived default risk for hotels.

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\(^5\) The interest rate on hotel properties is generally higher than that for apartment, industrial, office, and retail properties in part because hotels’ cash flow is commonly more volatile than that of other commercial properties.

\(^6\) We calculate the total risk for hotel REITs using a twelve-month rolling window of monthly return on hotel REITs.
Expect the price of large hotels and small hotels to rise per the tea leaves, based on moving average trendlines. Exhibit 24 compares the performance of the repeat sales index relative to the NAREIT Lodging/Resort Price Index. The repeat sales index tends to lag the NAREIT index by at least one quarter or more. This lag is consistent with prior academic studies, which find that securitized real estate is a leading indicator of underlying real estate performance, since the stock market is forward looking or efficient. Looking ahead, the NAREIT lodging index rose 3.8 percent this quarter (and 1.6 percent for the year) compared to the prior quarter or year. The moving average trendline indicates a continuing positive momentum, albeit with prices rising at a decreasing rate.

The architecture billings index (ABI) for commercial and industrial property, which represents another forward-looking metric, fell slightly this quarter from the previous quarter, as shown in Exhibit 25 (53.3 versus 54).7 The ABI metric provides confirmatory evidence that we should expect a continuing positive momentum, albeit with prices rising at a decreasing rate. The National Association of Purchasing Managers (NAPM) index shown in Exhibit 26, which is an indicator of anticipated business confidence and thus business traveler demand, continued to increase to almost 12 percent year over year (2 percent on a

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7 www.aia.org/practicing/economics/aia076265. As of the time of this writing, only the November 2017 AIA Billings Index has been reported.
quarter-over-quarter basis. Based on the moving average trend line for NAPM index, we expect the price of large hotels to continue to rise over the next quarter. The Consumer Confidence Index from the Conference Board graphed in Exhibit 27, which we use as a proxy for anticipated consumer demand for leisure travel and a leading indicator of the hedonic index for low-price hotels, rose 7.4 percent year over year (about 2 percent quarter over quarter) continuing its positive trend from the previous period. We expect the price of small hotels to rise in the next quarter based on the four-quarter moving average of the consumer confidence index.

The standardized unexpected price metric (SUP) is similar to the standardized unexpected earnings (SUE) indicator used to determine whether earnings surprises are statistically significant. An earnings surprise occurs when the firm’s reported earnings per share deviates from the street estimate or the analysts’ consensus forecast. To determine whether an earnings surprise is statistically significant, analysts use the following formula:

\[ \text{SUE}_Q = \left( \frac{A_Q - m_Q}{s_Q} \right) \]

where \( \text{SUE}_Q \) = quarter Q standardized unexpected earnings,
\( A_Q \) = quarter Q actual earnings per share reported by the firm,
\( m_Q \) = quarter Q consensus earnings per share forecasted by analysts in quarter Q-1, and
\( s_Q \) = quarter Q standard deviation of earnings estimates.

From statistics, the SUE is normally distributed with a mean of zero and a standard deviation of one (~N(0,1)). This calculation shows an earnings surprise when earnings are statistically significant, when \( \text{SUE}_Q \) exceeds either \( \pm 1.645 \) (90% significant) or \( \pm 1.96 \) (95% significant). The earnings surprise is positive when \( \text{SUE}_Q > 1.645 \), which is statistically significant at the 90% level assuming a two-tailed distribution. Similarly, if \( \text{SUE}_Q < -1.645 \) then earnings are negative, which is statistically significant at the 90% level. Intuitively, SUE measures the earnings surprise in terms of the number of standard deviations above or below the consensus earnings estimate.

From our perspective, using this measure complements our visual analysis of the movement of hotel prices relative to their three-year and five-year moving average (µ). What is missing in the visual analysis is whether prices diverge significantly from the moving average in statistical terms. In other words, we wish to determine whether the current price diverges at least one standard deviation from µ, the historical average price. The question we wish to answer is whether price is reverting to (or diverging from) the historical mean. More specifically, the question is whether this is price mean reverting.

To implement this model in our current context, we use the three- or five-year moving average as our measure of µ and the rolling three- or five-year standard deviation as our measure of σ. From our perspective, using this measure complements our visual analysis of the movement of hotel prices relative to their three-year and five-year moving average (µ). What is missing in the visual analysis is whether prices diverge significantly from the moving average in statistical terms. In other words, we wish to determine whether the current price diverges at least one standard deviation from µ, the historical average price. The question we wish to answer is whether price is reverting to (or diverging from) the historical mean. More specifically, the question is whether this is price mean reverting.

To implement this model in our current context, we use the three- or five-year moving average as our measure of µ and the rolling three- or five-year standard deviation as our measure of σ. Following is an example of how to calculate the SUP metric using high price hotels with regard to their three-year moving average. To calculate the three-year moving average from quarterly data we sum 12 quarters of data then divide by 12:

\[
\text{Average (µ)} = \frac{70.6 + 63.11 + 58.11 + 90.54 + 95.24 + 99.70 + 108.38 + 99.66 + 101.62 + 105.34 + 109.53 + 115.78}{12} = 93.13
\]

Standard Deviation (σ) = 18.99

\[
\text{Standardized Unexpected Price (SUP)} = \frac{(115.78 - 93.13)}{18.99} = 1.19
\]
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Center for Real Estate and Finance Reports
Vol. 7 No. 1 (January 2018)

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The CREF Report series is produced for the benefit of the hospitality real estate and finance industries by The Center for Real Estate and Finance at Cornell University

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