Second Quarter 2019: Gradual Hotel Slowdown: Has the Party Ended?

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Abstract

In this issue, we introduce our new regional indices of hotel performance. Based on these indices, hotels in the Midwest and Mountain regions (mostly hotels in Arizona, Colorado, and Nevada) have outperformed other regions, while hotels in the Pacific region (primarily California) and South Atlantic region (mostly Florida) have grown at a more moderate pace in the post-recession era. The performance of hotels in gateway cities declined this quarter, narrowing the gap in performance relative to hotels in non-gateway cities. Hotel financial performance overall is now in the red zone: operating profit stands below a hotel property's borrowing cost based on economic value analysis (EVA). The price performance of small hotels and repeat sale hotels has reversed course and has started to weaken, while larger hotels continued their downward price spiral. The cost of hotel debt financing and equity financing have declined, with no change in the relative risk premium for hotels. However, the spread between the 10-year U.S. Treasury bond and the 3-month bond is now in negative territory, which might affect market liquidity as well as contribute to slower price growth in hotels. A reading of our tea leaves suggests prices are expected to decline for both large and small hotels. This is report number 31 of the index series.

Keywords

hotel industry, performance, real estate

Disciplines

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Comments

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EXECUTIVE SUMMARY

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ABOUT THE AUTHORS

Crocker H. Liu is a professor of real estate at the School of Hotel Administration at Cornell where he holds the Robert A. Beck Professor of Hospitality Financial Management. He previously taught at New York University's Stern School of Business (1988-2006) and at Arizona State University's W.P. Carey School of Business (2006-2009), where he held the McCord Chair. His research interests are focused on issues in real estate finance, particularly topics related to agency, corporate governance, organizational forms, market efficiency and valuation. Liu's research has been published in *Review of Financial Studies, Journal of Financial Economics, Journal of Business, Journal of Financial and Quantitative Analysis, Journal of Law and Economics, Journal of Financial Markets, Journal of Corporate Finance, Review of Finance, Real Estate Economics, Journal of Urban Economics, Regional Science and Urban Economics, Journal of Real Estate Research,* and *Journal of Real Estate Finance and Economics*. He is the former co-editor of *Real Estate Economics*, the leading real estate academic journal, where he continues to be on the editorial board. He is also an associate editor of *Financial Review*. He previously served on the editorial boards of *Journal of Real Estate Finance and Economics, Journal of Property Research*, and *Journal of Real Estate Finance*. Professor Liu earned his BBA in real estate and finance from the University of Hawaii, an M.S. in real estate from Wisconsin under Dr. James A. Graaskamp, and a Ph.D. in finance and real estate from the University of Texas under Dr. Vijay S. Bawa.

Adam D. Nowak is an associate 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 *Review of Financial Studies, Economic Inquiry, Journal of Urban Economics, Regional Science and Urban Economics, Journal of Applied Econometrics, Real Estate Economics,* and *Journal of Real Estate Research*.
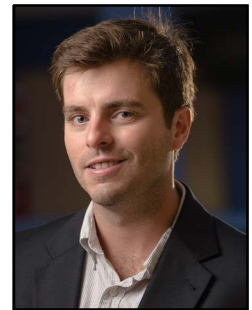
Robert M. White, Jr., CRE, is the founder and president of Real Capital Analytics Inc., an international research firm that publishes the Capital Trends Monthly. Real Capital Analytics provides real time data concerning the capital markets for commercial real estate and the values of commercial properties. 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. His research has been published in *Journal of Real Estate Finance and Economics*.

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Analysis of Indices through Q2, 2019

Regional Indices of Hotel Performance. Measuring hotel sales performance over the entire period of our analysis (i.e., 1995Q4–present), Exhibit 1 shows that on average hotels in the Mid-Atlantic region (mostly New York City hotels) and to a lesser extent the Pacific region (which consists mostly of hotels in California) outperformed hotels in all other regions.

Hotel performance for all seven regions (1995Q4–present)
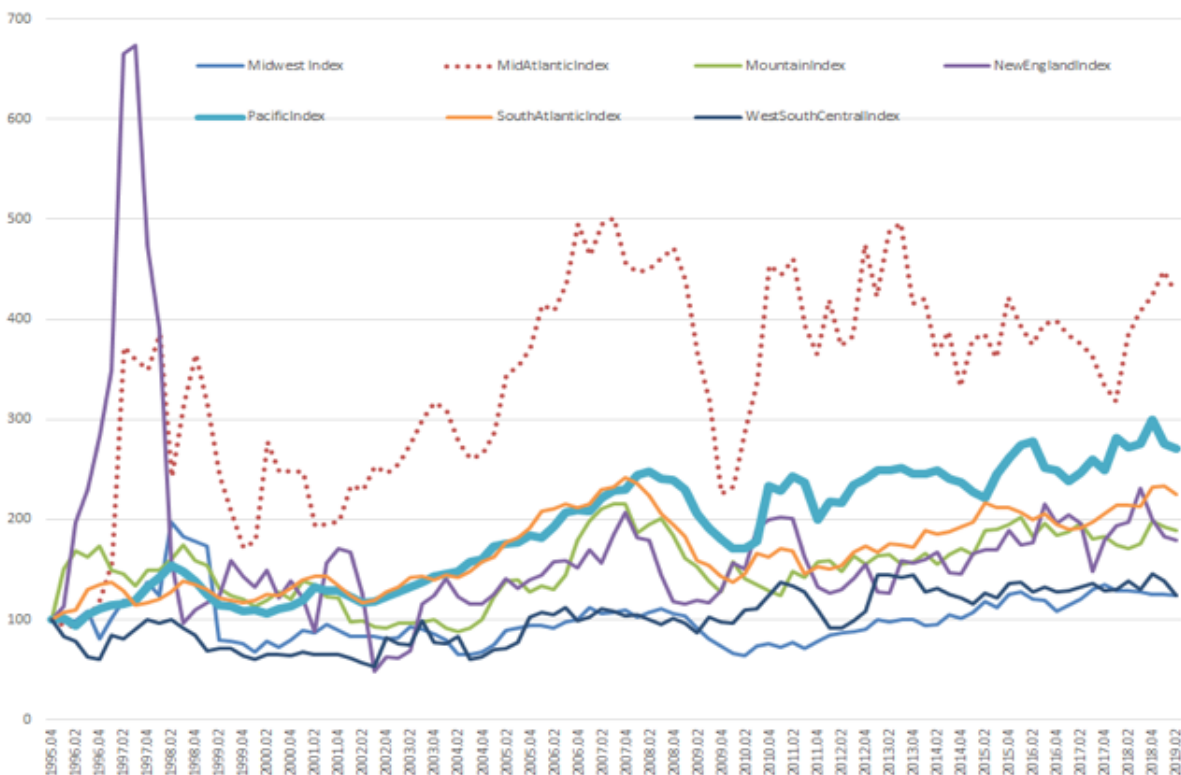
EXHIBIT 2

Hotel performance for all seven regions (post-recession)
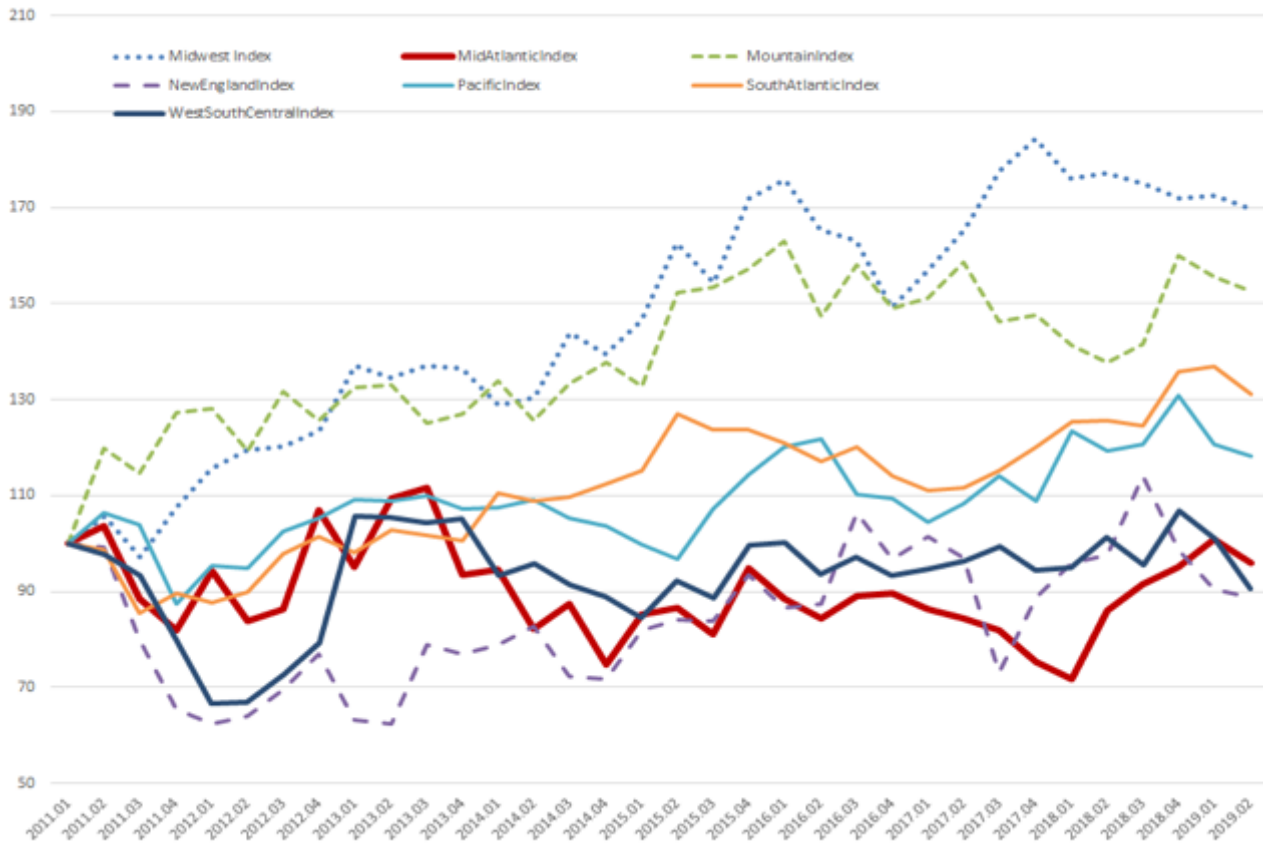
However, Exhibit 2 shows that times have changed in the post-recession era (starting in 2011Q1). During that period, the hotels in the Midwest region and Mountain region (mostly hotels in Arizona, Colorado, and Nevada) have outperformed those in other regions, with hotels in the Pacific (primarily California) and South Atlantic (mostly Florida) growing at a more moderate pace. In contrast, hotels in the Mid-Atlantic region, New England, and West South Central region (mostly hotels in Texas) exhibit relative underperformance.

Narrowing of Performance for Hotels in Gateway Cities Relative to Non-Gateway Cities. Exhibit 3 shows the relative price performance for hotels sold in gateway cities versus hotel sales in non-gateway cities. The performance of hotels in gateway cities declined this quarter, narrowing the gap in performance relative to hotels in non-gateway cities. On a year-over-year basis, the price of hotels in gateway cities fell 5 percent, compared to a 3.8-percent increase for hotels in non-gateway cities. However, hotels in both gateway cities and non-gateway cities declined

EXHIBIT 3

Hotel performance for gateway cities versus non-gateway cities
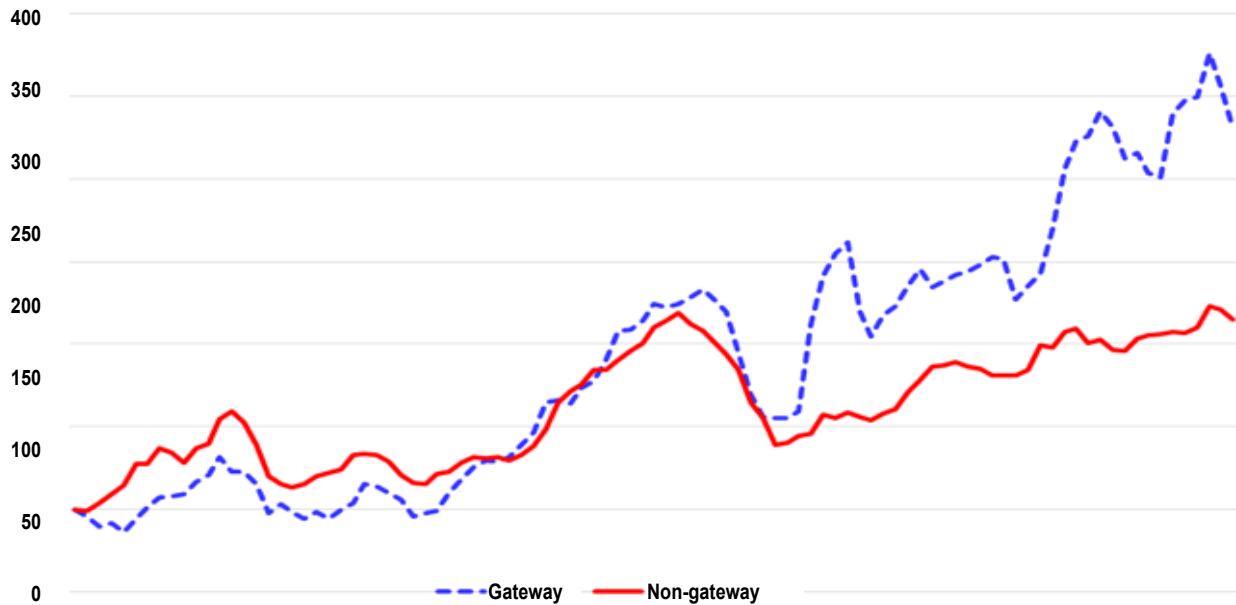
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

About the Cornell Hotel Indices

In our inaugural issue of the Cornell Hotel Index series, we introduced three new quarterly metrics to monitor real estate activity in the hotel market. These are a large hotel index (hotel transactions of $10 million or more), a small hotel index (hotels under $10 million), and a repeat sales index (RSI) that tracks actual hotel transactions. These indices are constructed using the CoStar and RCA commercial real estate databases. The large and small hotel indices are similar in nature and construction to the consumer price index (CPI), while the repeat sale hotel index is analogous to the retail concept of same store sales. Using a similar logic process for hotels, we compare the sales and resales of the same hotel over time for that index. All three measures provide a more accurate representation of the current hotel real estate market conditions than does reporting the average transaction prices, because the average-price index doesn't account for differences in the quality of the hotels, which also is averaged. A more detailed description of these indices is found in the first edition of this series, "Cornell Real Estate Market Indices," which is available at no charge from the Cornell Center for Real Estate and Finance. Starting with our 2018Q1 issue, we introduced the Gateway Cities Index as a new metric in our hotel analytics arsenal.[1] In this issue, we introduce our new Regional Indices (listed below) to add further granularity to hotel performance.[2] We also present updates and revisions to our hotel indices along with commentary and supporting evidence from the real estate market.

Introducing Regional Indices of Hotel Performance. Starting with this issue, we present seven regional indices of hotel performance. The regions are as follows: *Midwest*: Indiana, Illinois, Michigan, Ohio, and Wisconsin; *Mid-Atlantic*: New Jersey, New York, and Pennsylvania; *Mountain*: Arizona, Colorado, Idaho, New Mexico, Montana, Utah, Nevada, and Wyoming; *New England*: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont; *Pacific*: Alaska, California, Hawaii, Oregon, and Washington; *South Atlantic*: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia; and *West South Central*: Arkansas, Louisiana, Oklahoma, and Texas.

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[1] The following are gateway cities: Boston, Chicago, Honolulu, Los Angeles, Miami, New York, San Francisco, and Washington DC. For a general discussion on what constitutes a gateway city, please see: John Corgel, *What is a Gateway City?: A Hotel Market Perspective, Center for Real Estate and Finance Reports* (2012), scholarship.sha.cornell.edu/cgi/viewcontent.cgi?article=1007&context=crefpubs. The study of Corgel, J.B., Liu, C., & White, R. M. (2015). Determinants of hotel property prices. Journal of Real Estate Finance and Economics, 51, 415-439 finds that a significant driver of hotel property prices is whether a hotel is located in a gateway city. The presumption is that hotels (and other real estate) in gateway cities exceed other cities as IRR generators in part due to a generally stronger economic climate as a result of higher barriers to entry, tighter supply, and/or relatively stronger performance in terms of revenue per available room than other top cities that are not gateways.

[2] *Note*: We thank Professor Steve Carvell for suggesting that we add these indices to our hotel analytical toolbox.

EXHIBIT 4

Economic value added (EVA) for hotels
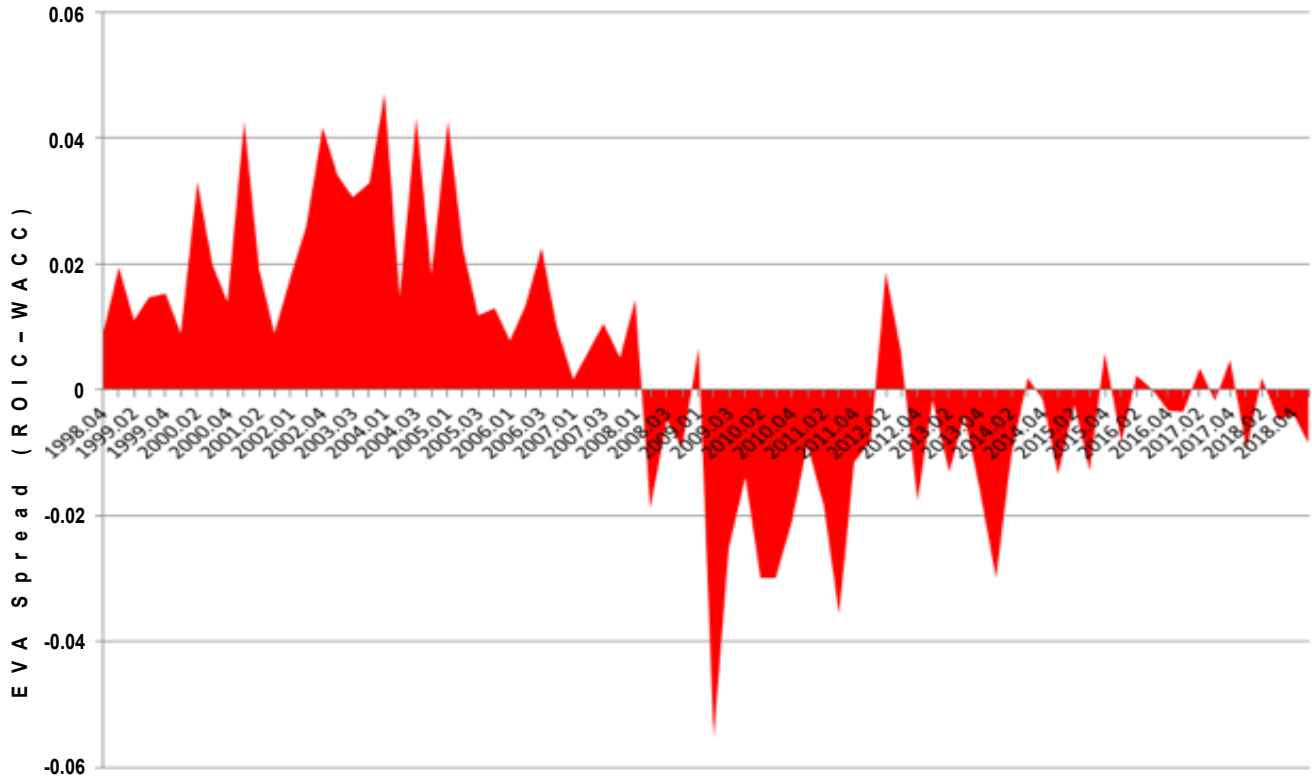
Sources: ACLI, Cornell Center for Real Estate and Finance, NAREIT, Federal Reserve

on a quarter-over-quarter basis, with hotel prices in gateway cities declining 7.2 percent compared to a 2.6-percent decrease for hotels in non-gateway cities.

Hotel Investment Based on Operating Performance Is Now in the *Red* (loss). Our economic value added (EVA) indicator shown in Exhibit 4 continues to remain in negative territory (-.008) suggesting that investors expect to receive the majority of their return when they sell their property, under the assumption that there should be capital gains on sale. Although the ACLI hotel cap rate has risen from 6.87 percent (2018Q4) to 6.93 percent (2019Q1), the cost of debt

EXHIBIT 5

Return on investment capital versus cost of debt financing

	2018Q4	2019Q1
ROIC	6.87%	6.93%
Cost of debt	6.67%	7.34%
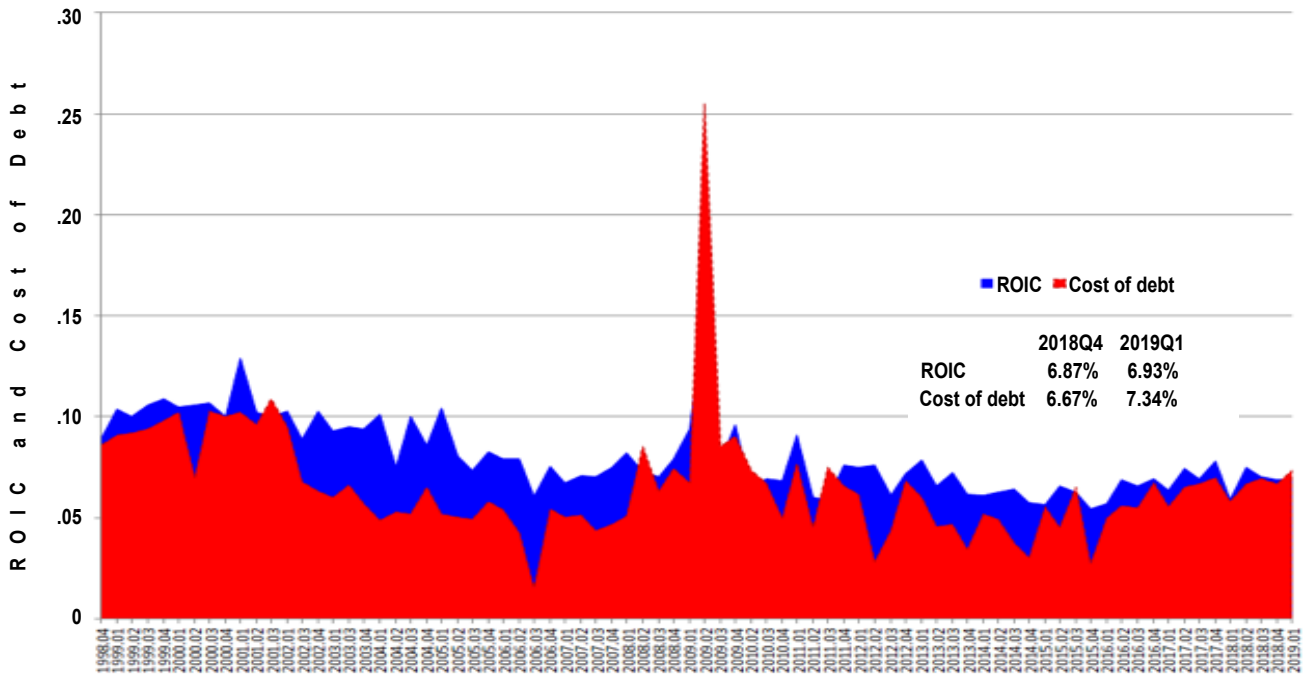
Sources: ACLI, Cornell Center for Real Estate and Finance

financing also rose, from 6.67 percent to 7.34 percent over the same period. Thus, Exhibit 5 suggests that negative leverage now exists, which makes penciling feasible deals is difficult. Negative leverage means that the return that an investor receives from operations is lower than his or her borrowing cost (cost of debt financing). This is not sustainable in the long run.

Transaction volume (obs) and median sale price (part 1: 1995–2004)

Year	Quarter	Full Sample Median Sale Price	Obs	Big Median Sale Price	Obs	% Total Sales	Small Median Sale Price	Obs	% Total Sales	Gateway Median Sale Price	Obs	% Total Sales	No Gateway Median Sale Price	Obs	% Total Sales
1995	1	2,357,500	20	NA	0	0%	2,357,500	20	100%	3,400,000	7	35%	2,100,000	13	65%
1995	2	3,150,000	29	15,712,500	6	20.68%	2,670,000	23	79.31%	3,800,000	12	41.37%	2,906,150	17	58.62%
1995	3	2,562,500	44	12,400,000	4	9.09%	2,378,000	40	90.90%	3,500,000	20	45.45%	2,000,000	24	54.54%
1995	4	3,400,000	41	27,750,000	10	24.39%	2,625,000	31	75.60%	5,075,000	14	34.14%	3,100,000	27	65.85%
1996	1	2,500,000	39	14,475,000	8	20.51%	1,700,000	31	79.48%	2,500,000	13	33.33%	2,687,500	26	66.66%
1996	2	2,925,000	43	29,150,000	12	27.90%	2,500,000	31	72.09%	3,200,000	15	34.88%	2,730,000	28	65.11%
1996	3	6,500,000	57	17,740,000	20	35.08%	3,000,000	37	64.91%	5,500,000	25	43.85%	6,890,500	32	56.14%
1996	4	2,735,000	58	19,000,000	17	29.31%	2,200,000	41	70.68%	4,650,000	27	46.55%	2,400,000	31	53.44%
1997	1	5,053,250	74	16,635,500	23	31.08%	3,500,000	51	68.91%	6,300,000	29	39.18%	4,075,000	45	60.81%
1997	2	2,862,500	72	17,750,000	17	23.61%	2,150,000	55	76.38%	2,445,000	24	33.33%	3,047,350	48	66.66%
1997	3	3,437,500	90	19,000,000	21	23.33%	2,400,000	69	76.66%	5,140,000	38	42.22%	2,550,000	52	57.77%
1997	4	4,330,950	78	17,000,000	27	34.61%	2,300,000	51	65.38%	10,435,445	27	34.61%	3,600,000	51	65.38%
1998	1	4,698,800	92	20,000,000	31	33.69%	3,100,000	61	66.30%	6,353,000	33	35.86%	4,600,000	59	64.13%
1998	2	3,630,000	96	23,765,000	21	21.87%	3,000,000	75	78.12%	3,998,240	28	29.16%	3,575,000	68	70.83%
1998	3	2,961,059	92	16,740,000	12	13.04%	2,690,550	80	86.95%	2,255,000	30	32.60%	3,365,000	62	67.39%
1998	4	2,550,000	84	35,000,000	15	17.85%	2,375,000	69	82.14%	4,225,000	30	35.71%	2,500,000	54	64.28%
1999	1	2,425,000	88	24,638,095	10	11.36%	2,125,000	78	88.63%	3,500,000	32	36.36%	2,300,000	56	63.63%
1999	2	2,100,000	95	67,000,000	5	5.26%	1,950,000	90	94.73%	2,067,500	28	29.47%	2,100,000	67	70.52%
1999	3	2,500,000	99	20,711,100	10	10.10%	2,130,000	89	89.89%	1,800,000	19	19.19%	2,522,500	80	80.80%
1999	4	2,440,000	87	18,190,000	14	16.09%	2,090,000	73	83.90%	2,210,000	23	26.43%	2,575,000	64	73.56%
2000	1	2,400,000	110	23,253,895	10	9.09%	2,300,000	100	90.90%	2,325,000	44	40%	2,428,500	66	60%
2000	2	2,450,000	88	14,500,000	9	10.22%	2,275,000	79	89.77%	2,325,000	24	27.27%	2,450,000	64	72.72%
2000	3	2,600,000	95	20,346,875	16	16.84%	2,250,000	79	83.15%	2,925,000	24	25.26%	2,525,000	71	74.73%
2000	4	2,475,000	101	18,050,000	14	13.86%	2,300,000	87	86.13%	4,500,000	26	25.74%	2,350,000	75	74.25%
2001	1	2,970,650	104	28,437,500	18	17.30%	2,422,500	86	82.69%	2,650,000	29	27.88%	3,000,000	75	72.11%
2001	2	2,800,000	110	23,795,000	12	10.90%	2,687,150	98	89.09%	5,825,000	25	22.72%	2,684,300	85	77.27%
2001	3	2,700,000	87	16,000,000	6	6.89%	2,500,000	81	93.10%	3,150,000	21	24.13%	2,600,000	66	75.86%
2001	4	2,400,000	73	20,500,000	5	6.84%	2,300,000	68	93.15%	2,800,000	17	23.28%	2,300,000	56	76.71%
2002	1	2,125,000	70	11,518,052	5	7.14%	2,000,000	65	92.85%	1,700,000	17	24.28%	2,200,000	53	75.71%
2002	2	2,400,000	106	18,125,000	10	9.43%	2,287,500	96	90.56%	3,125,000	33	31.13%	2,300,000	73	68.86%
2002	3	2,355,400	81	12,750,000	5	6.17%	2,237,500	76	93.82%	2,197,500	24	29.62%	2,470,000	57	70.37%
2002	4	2,907,500	100	23,500,000	16	16%	2,575,000	84	84%	2,907,500	34	34%	2,862,500	66	66%
2003	1	2,530,000	94	13,000,000	9	9.57%	2,425,000	85	90.42%	3,850,000	21	22.34%	2,425,000	73	77.65%
2003	2	2,750,000	110	18,500,000	10	9.09%	2,509,500	100	90.90%	3,160,000	31	28.18%	2,600,000	79	71.81%
2003	3	3,333,000	141	14,359,286	28	19.85%	2,600,000	113	80.14%	3,660,000	45	31.91%	3,032,500	96	68.08%
2003	4	2,600,000	149	16,375,000	18	12.08%	2,425,000	131	87.91%	2,950,000	35	23.48%	2,500,000	114	76.51%
2004	1	2,925,000	166	22,875,250	24	14.45%	2,536,756	142	85.54%	3,450,000	41	24.69%	2,894,000	125	75.30%
2004	2	2,700,000	195	16,280,000	28	14.35%	2,450,000	167	85.64%	4,500,000	39	20%	2,540,000	156	80%
2004	3	3,491,122	216	19,350,000	45	20.83%	2,610,000	171	79.16%	4,600,000	51	23.61%	3,306,500	165	76.38%
2004	4	4,000,000	177	20,475,000	47	26.55%	3,085,500	130	73.44%	8,850,000	36	20.33%	3,600,000	141	79.66%

Transaction volume (obs) and median sale price (part 2: 2005–2014)

Year	Quarter	Full Sample Median Sale Price	Obs	Big Median Sale Price	Obs	% Total Sales	Small Median Sale Price	Obs	% Total Sales	Gateway Median Sale Price	Obs	% Total Sales	No Gateway Median Sale Price	Obs	% Total Sales
2005	1	4,330,000	231	18,100,000	52	22.51%	3,300,000	179	77.48%	6,687,500	40	17.31%	3,800,000	191	82.68%
2005	2	4,566,250	316	18,956,812	78	24.68%	3,255,150	238	75.31%	6,475,000	68	21.51%	4,385,000	248	78.48%
2005	3	4,150,000	273	21,475,000	72	26.37%	3,100,000	201	73.62%	6,100,000	61	22.34%	3,750,000	212	77.65%
2005	4	4,425,000	300	25,000,000	93	31%	3,150,000	207	68.99%	11,200,000	65	21.66%	4,000,000	235	78.33%
2006	1	5,300,000	301	25,750,000	92	30.56%	3,800,000	209	69.43%	18,000,000	64	21.26%	4,943,744	237	78.73%
2006	2	4,750,000	313	22,750,000	82	26.19%	3,500,000	231	73.80%	6,175,000	56	17.89%	4,500,000	257	82.10%
2006	3	5,000,000	285	22,500,000	86	30.17%	3,650,000	199	69.82%	7,000,000	59	20.70%	4,705,399	226	79.29%
2006	4	4,587,500	248	21,200,000	65	26.20%	3,550,000	183	73.79%	8,093,750	56	22.58%	4,270,000	192	77.41%
2007	1	6,155,805	286	21,225,000	104	36.36%	3,700,000	182	63.63%	9,500,000	63	22.02%	5,700,000	223	77.97%
2007	2	5,650,000	385	25,125,000	120	31.16%	3,750,000	265	68.83%	9,000,000	67	17.40%	5,450,000	318	82.59%
2007	3	5,450,000	330	20,100,161	105	31.81%	3,900,000	225	68.18%	8,325,000	53	16.06%	5,011,554	277	83.93%
2007	4	4,680,000	249	23,250,000	86	34.53%	3,150,000	163	65.46%	9,375,000	36	14.45%	4,500,000	213	85.54%
2008	1	5,000,000	255	16,000,000	61	23.92%	3,985,000	194	76.07%	5,990,000	46	18.03%	4,650,000	209	81.96%
2008	2	5,062,900	228	22,150,000	50	21.92%	3,890,000	178	78.07%	8,725,000	38	16.66%	4,800,000	190	83.33%
2008	3	4,190,500	172	17,133,333	37	21.51%	3,350,000	135	78.48%	5,500,000	27	15.69%	3,900,000	145	84.30%
2008	4	4,050,000	159	18,850,000	32	20.12%	3,500,000	127	79.87%	4,972,500	27	16.98%	3,920,000	132	83.01%
2009	1	4,150,000	81	15,800,000	15	18.51%	3,600,000	66	81.48%	7,375,000	16	19.75%	3,700,000	65	80.24%
2009	2	3,090,231	86	14,722,500	11	12.79%	2,864,310	75	87.20%	5,410,250	16	18.60%	3,000,000	70	81.39%
2009	3	3,400,000	90	22,000,000	16	17.77%	3,000,000	74	82.22%	4,608,750	14	15.55%	3,195,271	76	84.44%
2009	4	3,562,500	84	14,100,000	14	16.66%	3,010,250	70	83.33%	4,520,000	12	14.28%	3,400,000	72	85.71%
2010	1	3,900,000	89	20,162,500	18	20.22%	2,825,000	71	79.77%	8,450,000	15	16.85%	3,825,000	74	83.14%
2010	2	3,700,000	138	30,833,449	34	24.63%	3,000,000	104	75.36%	15,400,000	34	24.63%	3,100,000	104	75.36%
2010	3	4,912,500	120	35,500,000	46	38.33%	2,850,000	74	61.66%	25,000,000	37	30.83%	3,117,000	83	69.16%
2010	4	3,988,800	100	30,353,182	38	38%	2,420,000	62	62%	38,500,000	23	23%	3,265,000	77	77%
2011	1	4,200,000	85	34,050,000	24	28.23%	2,795,500	61	71.76%	12,275,000	15	17.64%	3,775,000	70	82.35%
2011	2	4,200,000	97	51,200,000	31	31.95%	2,250,000	66	68.04%	15,600,000	23	23.71%	3,175,000	74	76.28%
2011	3	3,350,000	73	23,772,500	20	27.39%	2,800,000	53	72.60%	3,700,000	17	23.28%	3,275,000	56	76.71%
2011	4	5,000,000	157	32,400,000	43	27.38%	3,229,250	114	72.61%	10,950,000	34	21.65%	4,300,000	123	78.34%
2012	1	5,233,961	131	22,100,000	40	30.53%	3,275,000	91	69.46%	13,837,500	28	21.37%	4,200,000	103	78.62%
2012	2	4,000,000	209	17,000,000	61	29.18%	2,779,500	148	70.81%	15,900,000	22	10.52%	3,700,000	187	89.47%
2012	3	7,000,000	169	19,100,000	67	39.64%	2,720,250	102	60.35%	16,050,000	32	18.93%	5,250,000	137	81.06%
2012	4	5,700,000	209	26,766,613	76	36.36%	3,125,000	133	63.63%	16,300,000	41	19.61%	5,070,000	168	80.38%
2013	1	5,999,992	239	21,154,582	85	35.56%	2,962,500	154	64.43%	7,750,000	52	21.75%	5,575,000	187	78.24%
2013	2	4,700,000	217	22,000,000	71	32.71%	2,500,000	146	67.28%	16,000,000	38	17.51%	4,200,000	179	82.48%
2013	3	5,260,855	246	25,000,000	75	30.48%	3,300,000	171	69.51%	9,949,500	35	14.22%	4,750,000	211	85.77%
2013	4	4,537,500	314	24,000,000	98	31.21%	2,790,000	216	68.78%	13,500,000	55	17.51%	4,000,000	259	82.48%
2014	1	5,625,000	228	20,750,000	70	30.70%	3,300,000	158	69.29%	8,825,900	59	25.87%	5,000,000	169	74.12%
2014	2	4,300,000	320	26,125,000	88	27.50%	2,818,750	232	72.50%	11,200,000	59	18.43%	3,700,000	261	81.56%
2014	3	5,500,000	351	20,000,000	97	27.63%	3,206,500	254	72.36%	10,567,078	66	18.80%	5,000,000	285	81.19%
2014	4	4,500,000	311	29,625,000	78	25.08%	3,040,000	233	74.91%	8,200,000	73	23.47%	3,950,000	238	76.52%

Transaction volume (obs) and median sale price (part 3: 2015–present)

Year	Quarter	Full Sample Median Sale Price	Obs	Big Median Sale Price	Obs	% Total Sales	Small Median Sale Price	Obs	% Total Sales	Gateway Median Sale Price	Obs	% Total Sales	No Gateway Median Sale Price	Obs	% Total Sales
2015	1	5,752,500	254	29,750,000	82	32.28%	3,125,000	172	67.71%	8,280,000	47	18.50%	5,500,000	207	81.49%
2015	2	6,350,000	268	24,575,000	92	34.32%	3,250,000	176	65.67%	18,765,000	46	17.16%	5,612,500	222	82.83%
2015	3	5,050,000	299	24,800,000	87	29.09%	3,012,500	212	70.90%	12,100,000	53	17.72%	4,275,000	246	82.27%
2015	4	6,700,000	293	18,264,737	106	36.17%	3,175,000	187	63.82%	14,500,000	51	17.40%	5,440,000	242	82.59%
2016	1	5,600,000	293	20,375,000	87	29.69%	3,350,000	206	70.30%	13,600,000	45	15.35%	5,275,000	248	84.64%
2016	2	4,100,000	322	16,000,000	61	18.94%	3,300,000	261	81.05%	11,600,000	48	14.90%	3,725,000	274	85.09%
2016	3	4,862,500	284	25,000,000	75	26.40%	3,200,000	209	73.59%	24,500,000	34	11.97%	4,362,500	250	88.02%
2016	4	4,000,000	263	19,480,000	73	27.75%	2,800,000	190	72.24%	13,352,600	28	10.64%	3,664,706	235	89.35%
2017	1	5,300,000	254	22,880,750	70	27.55%	3,625,000	184	72.44%	14,726,254	28	11.02%	5,000,000	226	88.97%
2017	2	5,100,000	331	22,660,000	91	27.49%	3,325,000	240	72.50%	16,450,000	37	11.17%	4,462,500	294	88.82%
2017	3	5,000,000	324	22,250,000	86	26.54%	3,403,000	238	73.45%	22,250,000	38	11.72%	4,500,000	286	88.27%
2017	4	4,500,000	265	28,000,000	66	24.90%	2,875,000	199	75.09%	12,208,000	26	9.81%	4,250,000	239	90.18%
2018	1	5,600,000	311	21,691,200	98	31.51%	3,500,000	213	68.48%	14,750,000	40	12.86%	5,000,000	271	87.13%
2018	2	4,800,000	367	19,750,000	82	22.34%	3,300,000	285	77.65%	17,625,000	40	10.89%	4,250,000	327	89.10%
2018	3	5,125,000	334	21,265,000	83	24.85%	3,710,000	251	75.14%	13,342,500	22	6.58%	5,000,000	312	93.41%
2018	4	6,445,000	280	20,500,000	105	37.50%	3,300,000	175	62.50%	14,440,000	33	11.78%	5,550,000	247	88.21%
2019	1	5,340,000	290	17,802,698	76	26.20%	3,525,000	214	73.79%	15,750,000	34	11.72%	4,750,000	256	88.27%
2019	2	4,001,000	333	19,696,970	61	18.31%	3,335,000	272	81.68%	6,050,000	34	10.21%	3,900,000	299	89.78%

The Median Price of Hotels Fell on a Quarterly as well as a Year-over-year Basis. The median price of hotels fell approximately 25 percent from the previous quarter (to $4M from $5.34M), even though the total volume of all hotel transactions (both large hotels and small hotels combined) increased 14.8 percent (333 transactions versus 290 transactions), as reported in Exhibit 6. Year over year (2018Q2 versus 2019Q2), the median price of hotels also fell 16.7 percent on weaker volume (-9.26%). A comparison of large hotels relative to small hotels on a year-over-year basis reveals that the median price of large hotels fell less than 1 percent compared to a drop of 18 percent in the prior period, albeit on weaker volume (-26%). In contrast, the median price of smaller hotels rose by 1 percent on declining volume (-4.5%).[1] The converse situation exists on a quarter-over-quarter basis for large hotels, with the median sale price of large hotels rising 10.64 percent, again on weaker transaction volume (-20%), while the median sale price of smaller hotels fell 5 percent on stronger volume (27%). Exhibit 7 and Exhibit 8 show this year-over-year trend in the number of transactions for large hotels and small hotels respectively.

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[1] Note that the number of transactions is limited to the sales that are included in the hedonic index. As such, it should not be construed as being the total market activity.
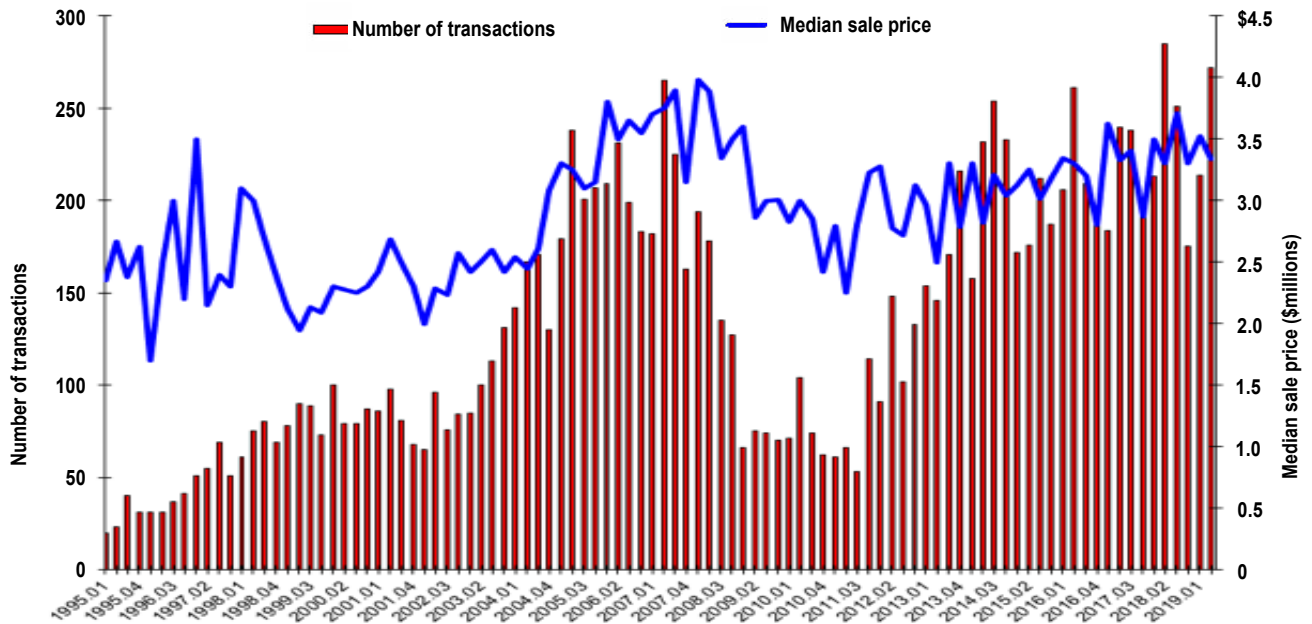
EXHIBIT 7

Median sale price and number of sales for high-price (large) hotels (sale prices of $10 million or more)
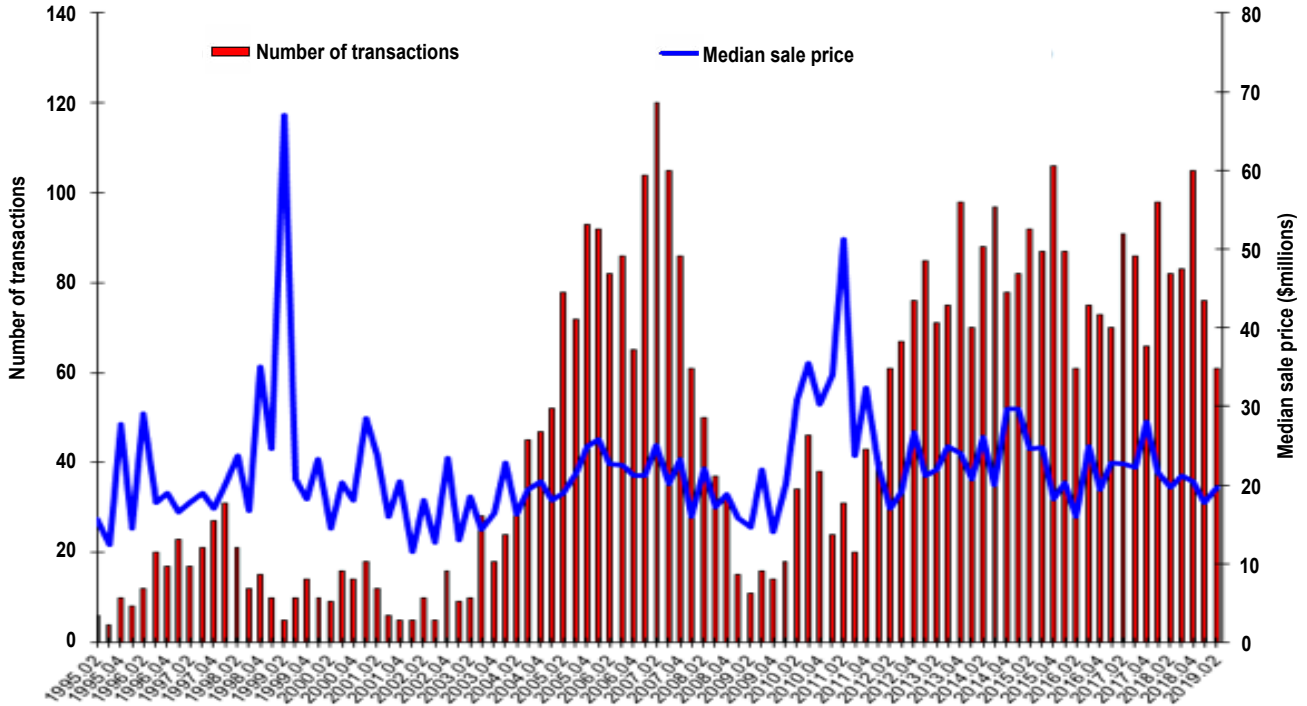
Sources: CoStar, Real Capital Analytics

EXHIBIT 8

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

Sources: CoStar, Real Capital Analytics

Hotel indices through 2019, quarter 2 (by price level, gateway status, and repeat sales)

	Index Value				RSI	RSI		Index Value				RSI	RSI
	Hedonic Low Priced Hotels (<$10M)	Hedonic High Priced Hotels (>=$10M)	Non Gateway Index	Gateway Index	Repeat Sales Index	Index Value Repeat Sales		Hedonic Low Priced Hotels (<$10M)	Hedonic High Priced Hotels (>=$10M)	Non Gateway Index	Gateway Index	Repeat Sales Index	Index Value Repeat Sales
YrQtr							YrQtr						
1995.02	98.02	93.36	82.52	101.86	63.10	NA	2007.01	151.13	149.27	165.72	218.28	146.17	146.87
1995.03	97.99	85.09	81.53	97.78	66.46	NA	2007.02	154.18	155.98	173.16	228.35	150.17	150.88
1995.04	100.58	75.92	85.42	90.91	68.62	NA	2007.03	156.79	152.52	176.85	226.50	155.53	157.94
1996.01	96.80	88.89	89.92	93.39	70.33	NA	2007.04	155.07	151.66	180.42	228.87	156.34	159.93
1996.02	95.03	92.84	94.37	88.11	74.06	NA	2008.01	157.59	145.59	174.85	232.65	158.10	165.73
1996.03	100.04	97.19	104.97	96.16	72.90	NA	2008.02	158.78	145.17	171.47	237.42	158.30	166.64
1996.04	94.84	105.54	105.27	103.23	74.01	NA	2008.03	155.11	144.67	165.57	230.53	156.08	161.60
1997.01	104.28	96.43	112.84	109.32	86.43	NA	2008.04	156.05	143.13	160.12	223.99	158.52	165.67
1997.02	103.87	98.97	110.97	110.16	89.25	NA	2009.01	152.96	136.51	151.98	198.20	154.04	161.31
1997.03	100.41	102.51	105.89	111.38	95.59	NA	2009.02	141.98	117.09	135.86	172.85	150.57	155.83
1997.04	104.40	106.86	112.77	118.77	101.95	NA	2009.03	137.67	110.69	128.34	159.15	138.07	143.98
1998.01	102.81	113.20	115.01	123.24	98.83	NA	2009.04	133.37	93.19	114.86	158.22	123.49	129.26
1998.02	112.20	123.59	127.40	133.72	103.50	NA	2010.01	126.60	102.70	115.72	158.23	116.87	123.74
1998.03	114.86	120.97	131.45	125.05	106.04	NA	2010.02	125.93	114.82	119.14	162.31	108.90	116.49
1998.04	115.64	129.85	126.10	125.23	103.11	NA	2010.03	123.34	133.46	120.36	216.28	108.90	116.36
1999.01	114.11	122.31	114.65	117.45	96.88	NA	2010.04	118.93	160.06	129.74	245.68	112.40	118.14
1999.02	105.76	102.03	99.05	99.23	92.44	NA	2011.01	120.51	157.94	128.38	259.76	112.54	113.75
1999.03	103.39	110.64	94.92	105.01	89.88	NA	2011.02	117.92	168.63	130.80	266.33	113.09	112.91
1999.04	101.73	99.03	93.60	99.96	90.98	NA	2011.03	115.31	156.78	128.41	223.45	112.75	112.56
2000.01	100.16	96.91	94.90	96.33	95.65	98.003253	2011.04	120.67	156.02	126.99	208.67	113.13	113.08
2000.02	101.65	102.61	99.23	100.53	98.46	98.003253	2012.01	120.93	160.53	130.29	221.54	112.69	111.72
2000.03	100.64	96.14	100.69	96.11	98.05	93.618371	2012.02	125.36	148.91	132.87	226.88	115.45	116.73
2000.04	103.37	101.04	102.37	101.88	98.42	95.002855	2012.03	131.61	146.78	141.13	239.41	120.04	120.89
2001.01	106.11	118.64	109.73	105.67	97.70	93.709233	2012.04	132.57	143.72	147.01	250.22	121.68	122.28
2001.02	110.06	121.54	110.37	117.75	97.84	92.712357	2013.01	133.11	143.53	153.66	238.86	124.31	126.80
2001.03	112.25	116.30	109.41	116.30	98.59	96.000651	2013.02	130.84	149.72	154.59	242.50	126.94	130.17
2001.04	110.43	116.34	106.22	111.88	97.87	91.800744	2013.03	133.19	158.47	156.06	246.20	128.49	132.89
2002.01	107.50	106.39	99.63	107.71	97.87	93.861195	2013.04	131.68	159.93	153.80	248.47	130.70	136.09
2002.02	103.56	96.66	95.88	97.20	95.73	92.163809	2014.01	133.98	159.58	152.68	252.47	136.08	140.76
2002.03	103.49	94.48	95.17	99.81	96.38	90.528071	2014.02	135.43	159.90	149.33	257.36	134.07	137.15
2002.04	106.24	94.64	100.26	100.67	96.46	95.113195	2014.03	135.80	158.57	149.26	256.40	135.34	137.94
2003.01	108.37	95.24	101.15	111.96	98.03	95.16241	2014.04	137.79	157.87	149.19	231.11	135.60	137.27
2003.02	111.86	113.63	105.49	120.07	99.91	98.258377	2015.01	138.61	166.07	152.21	239.51	138.17	138.82
2003.03	113.87	118.06	108.43	127.99	101.29	102.00006	2015.02	144.24	172.08	164.50	247.33	144.36	145.07
2003.04	113.36	126.05	107.99	132.28	103.24	104.98965	2015.03	143.94	174.19	163.59	274.49	152.89	154.73
2004.01	114.59	124.70	108.52	131.46	102.88	106.22829	2015.04	146.98	170.69	171.20	312.34	161.87	164.34
2004.02	114.69	109.79	107.13	133.95	103.65	107.41224	2016.01	149.97	167.57	173.03	328.80	166.00	169.31
2004.03	115.95	116.08	109.52	141.42	107.32	111.31065	2016.02	150.11	164.82	165.66	332.25	163.90	167.88
2004.04	120.27	107.44	114.21	148.87	108.50	111.19605	2016.03	151.09	171.03	167.49	347.00	164.73	166.96
2005.01	127.44	113.17	122.81	167.52	112.80	114.60915	2016.04	147.32	173.35	162.10	337.61	161.01	164.14
2005.02	135.21	119.36	135.92	169.07	118.28	121.53342	2017.01	148.60	170.06	161.83	318.13	165.18	168.56
2005.03	138.49	120.93	141.32	167.04	122.92	126.27198	2017.02	149.72	170.53	168.02	321.73	175.17	178.51
2005.04	140.58	127.06	145.13	176.48	128.33	132.2893	2017.03	151.09	165.72	169.34	309.23	175.49	180.15
2006.01	143.88	134.40	152.09	180.93	133.35	137.80232	2017.04	152.49	169.99	170.11	306.20	179.18	182.56
2006.02	145.05	139.58	151.90	194.12	137.08	141.0582	2018.01	152.12	172.47	171.32	346.07	178.47	182.56
2006.03	149.06	145.78	157.30	211.94	138.56	142.29507	2018.02	153.63	175.46	170.86	354.37	179.00	182.46
2006.04	151.76	149.14	161.70	212.91	143.08	144.82249	2018.03	156.35	174.81	173.36	356.46	183.34	186.37
							2018.04	160.83	171.56	183.90	383.08	185.41	187.99
							2019.01	161.41	168.42	182.13	362.96	188.64	190.35
							2019.02	158.44	164.31	177.43	336.80	188.36	189.26

Hotel indices through 2019, quarter 2 (by region)

	Index Value								Index Value					
YrQtr	Midwest	Mid-Atlantic	Mountain	New England	Pacific	South Atlantic	West South Central	YrQtr	Midwest	Mid-Atlantic	Mountain	New England	Pacific	South Atlantic	West South Central
1995.02	63.97		53.76	69.49	116.92	81.34		2007.01	121.33	149.28	165.67	140.36	210.64	172.74	153.27
1995.03	92.44		82.85	95.07	108.50	74.55	183.30	2007.02	115.19	159.43	176.37	128.55	224.42	184.00	164.87
1995.04	108.73	32.21	83.54	82.44	101.19	80.08	148.84	2007.03	116.79	161.36	179.65	151.96	231.26	185.55	160.59
1996.01	108.73	30.24	125.79	92.86	102.75	85.80	124.51	2007.04	119.59	146.52	180.47	170.22	233.23	194.18	154.18
1996.02	107.33	30.24	140.85	162.61	95.46	87.59	116.76	2008.01	111.98	144.15	155.51	149.66	246.96	189.03	156.54
1996.03	118.06	32.69	135.59	189.05	105.58	104.56	92.78	2008.02	117.19	145.08	162.44	147.63	250.90	178.92	147.99
1996.04	88.13	38.52	144.73	233.01	111.94	107.74	90.17	2008.03	120.04	148.54	167.88	119.08	244.00	164.99	142.26
1997.01	110.43	50.70	124.98	287.45	115.21	109.59	126.27	2008.04	115.69	151.91	153.95	96.99	241.82	156.04	150.56
1997.02	129.84	119.78	121.26	548.13	117.06	103.00	119.61	2009.01	112.33	141.13	134.40	95.49	233.00	146.18	143.15
1997.03	127.55	115.84	111.26	555.24	120.95	91.33	135.34	2009.02	99.33	117.45	127.57	98.16	208.56	127.50	129.12
1997.04	148.69	112.78	125.11	390.85	134.59	93.32	149.22	2009.03	87.55	102.48	116.09	95.88	193.58	123.46	152.53
1998.01	134.29	124.32	125.14	322.72	144.01	96.67	144.03	2009.04	79.60	72.76	106.25	105.89	182.57	114.77	145.16
1998.02	214.69	78.15	133.35	132.13	155.75	101.95	149.66	2010.01	71.66	75.07	131.73	129.33	173.05	109.56	142.95
1998.03	198.95	101.48	145.50	79.47	149.33	110.53	135.70	2010.02	69.77	93.09	117.31	124.08	172.73	116.49	163.47
1998.04	193.92	117.57	133.10	90.09	140.52	108.06	125.17	2010.03	80.35	108.84	112.61	156.72	180.23	133.53	164.42
1999.01	187.91	100.92	128.54	95.86	127.31	104.51	101.92	2010.04	82.02	146.49	108.14	164.69	236.34	130.18	184.68
1999.02	86.04	78.65	109.58	100.93	115.86	97.70	106.10	2011.01	79.26	143.26	103.49	166.98	231.19	136.99	203.59
1999.03	85.03	66.47	103.50	131.15	113.98	95.65	105.83	2011.02	83.79	148.38	124.07	165.48	245.90	135.05	199.06
1999.04	81.91	55.09	100.74	118.61	109.72	93.44	95.11	2011.03	76.99	126.69	118.66	133.69	239.99	116.98	190.04
2000.01	73.77	57.69	94.27	109.06	110.65	95.10	90.12	2011.04	85.17	117.49	131.60	109.26	201.99	122.89	163.11
2000.02	85.05	89.24	99.92	123.07	107.25	100.63	96.93	2012.01	91.54	135.12	132.68	104.05	220.72	120.29	135.46
2000.03	78.43	79.75	106.14	100.63	111.53	99.67	96.86	2012.02	94.71	120.23	123.45	107.07	219.43	123.09	136.48
2000.04	86.69	80.20	100.76	113.88	114.23	105.43	94.66	2012.03	95.31	123.51	136.30	116.15	237.30	134.05	147.77
2001.01	97.49	79.52	115.81	100.65	120.64	112.24	99.61	2012.04	98.03	153.01	130.13	128.34	243.63	139.12	161.57
2001.02	94.29	62.37	112.32	72.94	133.70	114.32	97.28	2013.01	108.63	136.17	137.03	105.38	251.98	134.37	215.29
2001.03	103.45	62.86	102.46	129.44	129.93	114.61	96.61	2013.02	106.67	156.63	137.62	104.31	251.83	140.65	214.64
2001.04	96.31	63.85	101.65	140.45	130.48	106.96	96.31	2013.03	108.72	159.96	129.33	131.49	254.26	139.46	212.26
2002.01	91.04	75.38	81.71	138.34	124.57	99.32	91.32	2013.04	108.21	133.93	131.54	128.59	247.91	137.75	214.26
2002.02	90.98	73.70	82.20	102.92	118.45	93.11	83.77	2014.01	102.08	135.46	138.50	131.55	248.76	151.34	190.15
2002.03	90.22	81.61	77.16	39.35	119.90	95.49	79.10	2014.02	103.42	117.65	129.95	137.92	252.15	148.94	195.23
2002.04	87.90	79.30	76.06	51.44	124.27	102.20	121.83	2014.03	114.01	125.16	138.10	120.64	243.31	150.40	186.19
2003.01	89.44	82.22	80.79	50.24	129.59	105.95	112.86	2014.04	110.58	107.16	142.56	119.73	239.59	153.89	181.26
2003.02	100.45	89.16	80.58	56.29	134.07	113.32	111.99	2015.01	115.99	122.17	137.33	136.71	230.52	157.69	172.25
2003.03	98.42	96.54	81.63	95.48	138.95	114.98	147.28	2015.02	128.93	124.03	157.53	140.30	223.63	173.92	187.61
2003.04	92.61	102.03	83.65	102.33	144.73	112.13	114.93	2015.03	122.26	116.34	158.76	140.09	247.85	169.56	180.56
2004.01	86.77	99.53	76.09	116.23	147.27	115.26	113.75	2015.04	136.19	135.68	162.64	156.27	264.09	169.57	202.97
2004.02	71.14	89.22	73.87	100.87	150.45	113.62	124.08	2016.01	139.34	126.93	168.60	144.38	277.74	165.70	204.11
2004.03	70.58	84.10	76.23	95.12	159.39	118.44	90.64	2016.02	131.15	120.88	152.60	145.86	281.68	160.35	190.52
2004.04	72.79	85.53	83.92	95.18	161.74	126.54	94.03	2016.03	129.34	127.38	163.69	177.74	255.10	164.44	197.74
2005.01	80.82	92.46	102.25	103.29	175.56	130.19	103.34	2016.04	118.31	128.50	154.20	161.70	252.69	156.42	189.85
2005.02	97.56	111.08	115.58	116.61	177.92	141.27	106.17	2017.01	124.54	123.67	156.61	169.16	241.35	152.29	192.55
2005.03	99.92	113.60	117.17	108.41	179.21	145.95	114.27	2017.02	130.97	121.07	164.19	161.93	250.19	152.96	196.34
2005.04	102.05	119.73	106.59	115.37	186.48	152.82	152.85	2017.03	140.96	117.22	151.28	122.26	263.63	157.95	202.47
2006.01	102.10	133.51	111.45	119.06	184.00	167.22	159.89	2017.04	146.16	108.00	152.66	148.16	251.52	164.54	192.06
2006.02	99.79	131.60	108.72	129.58	195.12	168.49	155.81	2018.01	139.49	102.65	146.28	160.05	285.25	171.79	193.55
2006.03	105.75	140.19	120.99	130.66	209.04	172.45	166.69	2018.02	140.40	123.29	142.62	162.86	275.78	172.00	206.32
2006.04	108.13	159.66	149.54	125.04	211.77	169.89	146.49	2018.03	138.59	131.12	146.57	190.44	278.84	170.63	194.34
								2018.04	136.25	136.13	165.59	164.66	302.79	186.18	217.41
								2019.01	136.83	144.41	161.07	151.17	279.04	187.41	205.71
								2019.02	134.53	137.52	157.94	148.28	273.56	179.80	184.15

EXHIBIT 10

Hedonic hotel indices for large and small hotel transactions

Low-price (small) hotels (< $10 MM) — High-price (large) hotels (> $10 MM)
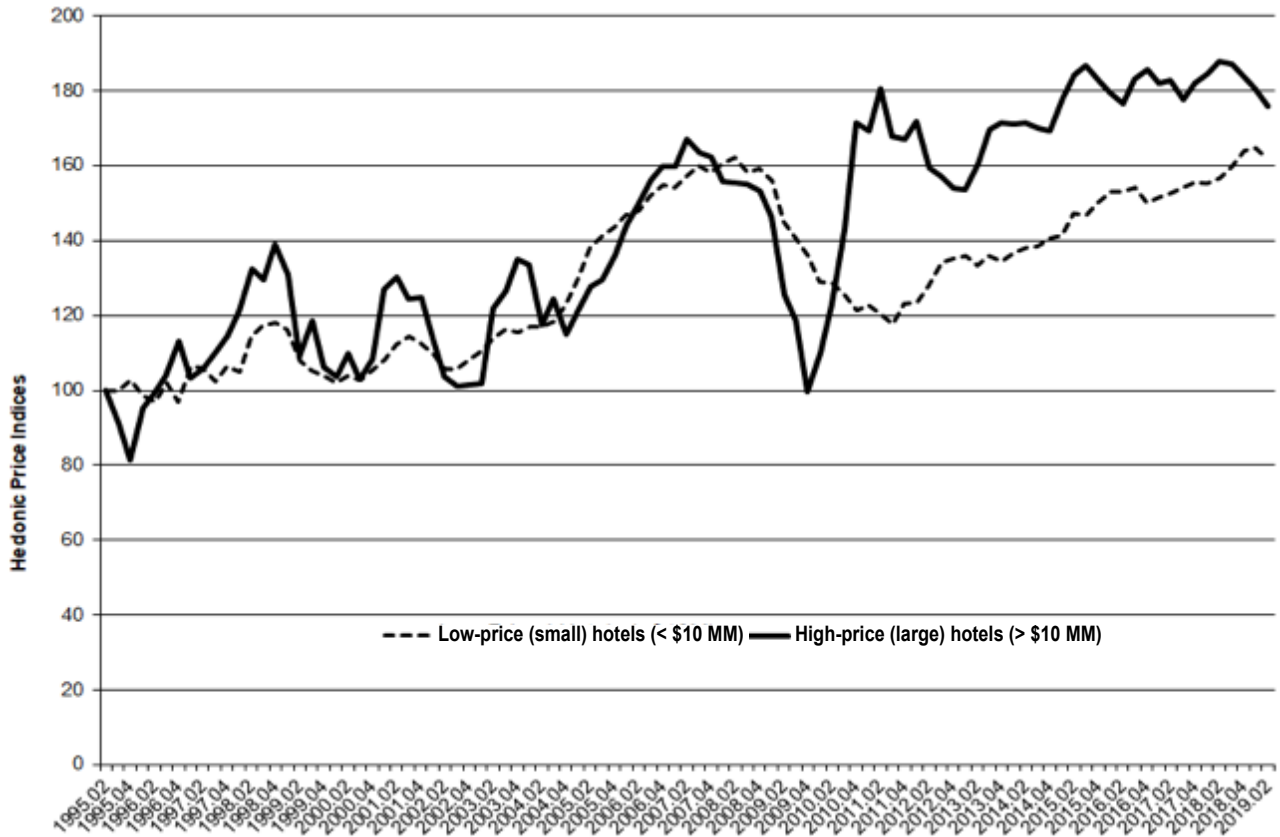
Our Moving Average Trendlines and Our Standardized Unexpected Price (SUP) Performance Metrics Both Point to Negative Price Momentum for Large Hotels, with Weakening Price Performance for Small Hotels. Exhibit 10, which graphs the prices reported in Exhibit 9, shows that the prices of large hotels continue their downward trend falling 2.4 percent this quarter, following a drop of 1.8 percent last quarter. Smaller hotel prices fell 1.8 percent this quarter,

compared to a gain of .4 percent last quarter. Exhibit 11 shows that on a year-over-year basis, large hotels also fell 6.4 percent (2018Q2-2019Q2), which is an even larger decline than the drop of 2.35 percent posted in the prior year-over-year period (2018Q1-2019Q1). Exhibit 12 shows that smaller hotel prices rose 3.1 percent year over year (2018Q2-2019Q2). That increase was about half the rise of 6.11 percent recorded in the prior period (2018Q1-2019Q1).

EXHIBIT 11

Year-over-year change in high-price (large) hotel index, with moving-average trend line
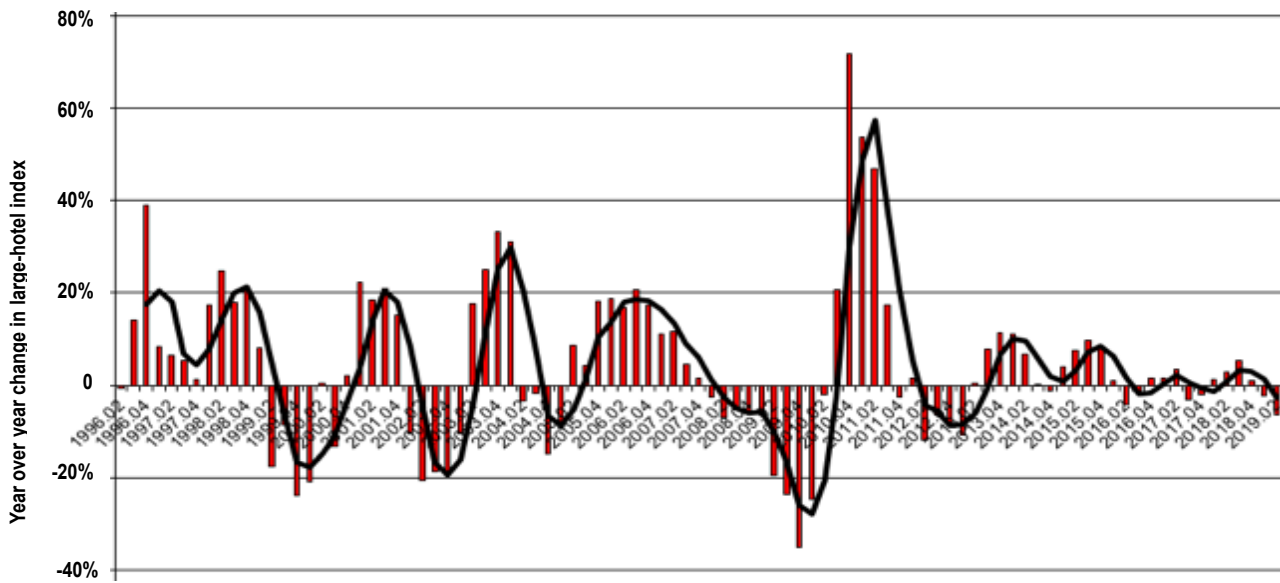
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

EXHIBIT 12

Year-over-year change in small-hotel index, with moving-average trend line
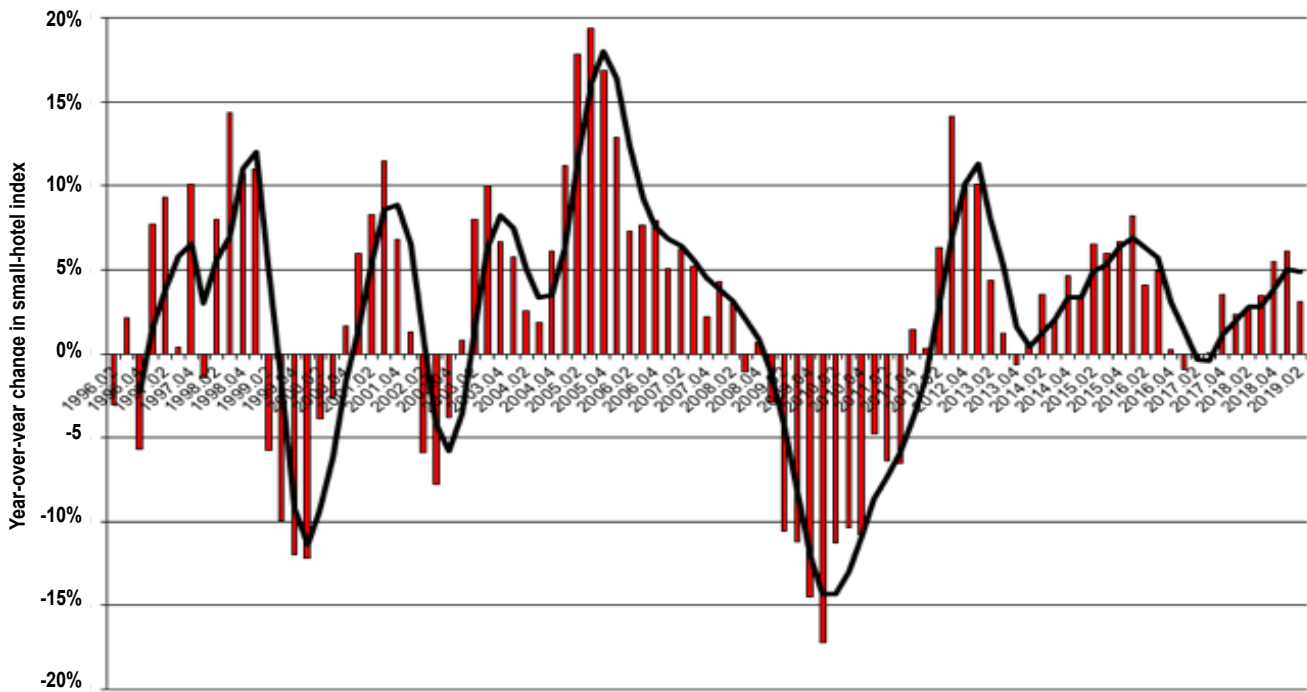
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

EXHIBIT 13

Moving average trend line for large-hotel index
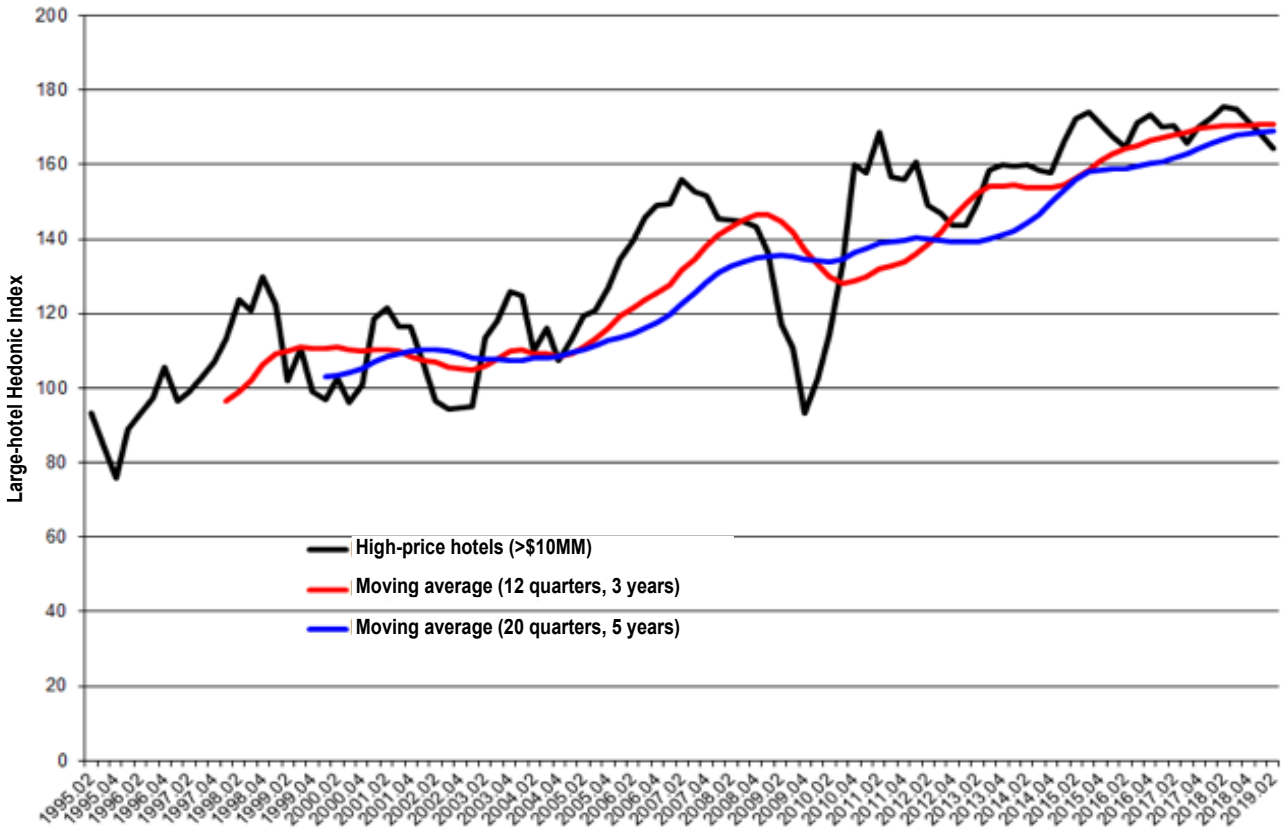
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

Consistent with our analysis thus far, our moving average trend lines for large hotels in Exhibit 13 show that the price for large hotels has continued to de-

cline below both its short-term and long-term moving average trend lines. This signals that large hotels have continued to exhibit a weakness in price. In contrast to

EXHIBIT 14

Moving average trend line for small-hotel index

Legend:
- Low-price hotels (<$10MM)
- Moving average (12 quarters, 3 years)
- Moving average (20 quarters, 5 years)
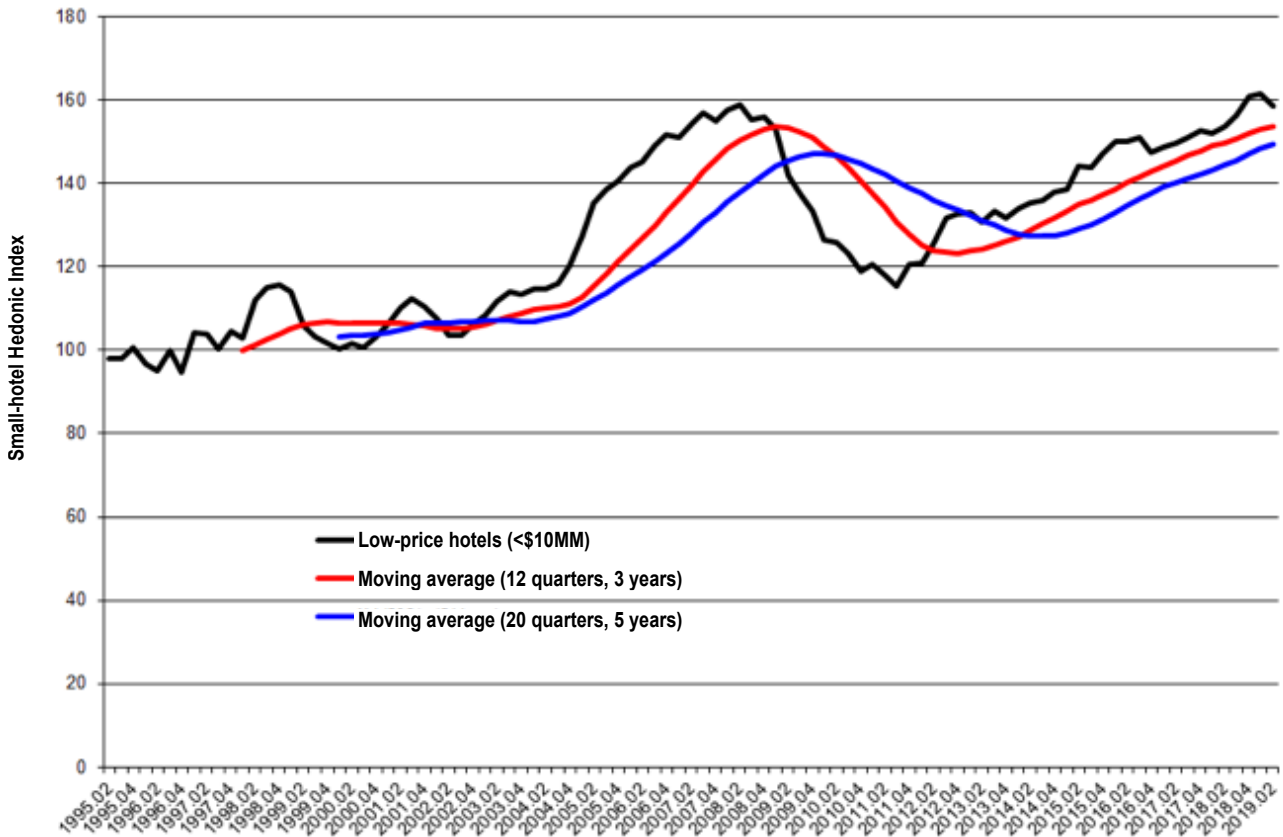
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

this, Exhibit 14 shows that the price for smaller hotels continues to exceed both its short-term and long-term moving average trend lines, although the spread between the price and these trend lines has narrowed from the prior period. As stated earlier, this is due to price momentum turning negative for small hotels this quarter (-1.8%). This indicates a continued signal that small hotels are still a *hold*, with a *sell* signal indicated for larger hotels.

EXHIBIT 15

Standardized unexpected price (SUP) for high-price hotel index
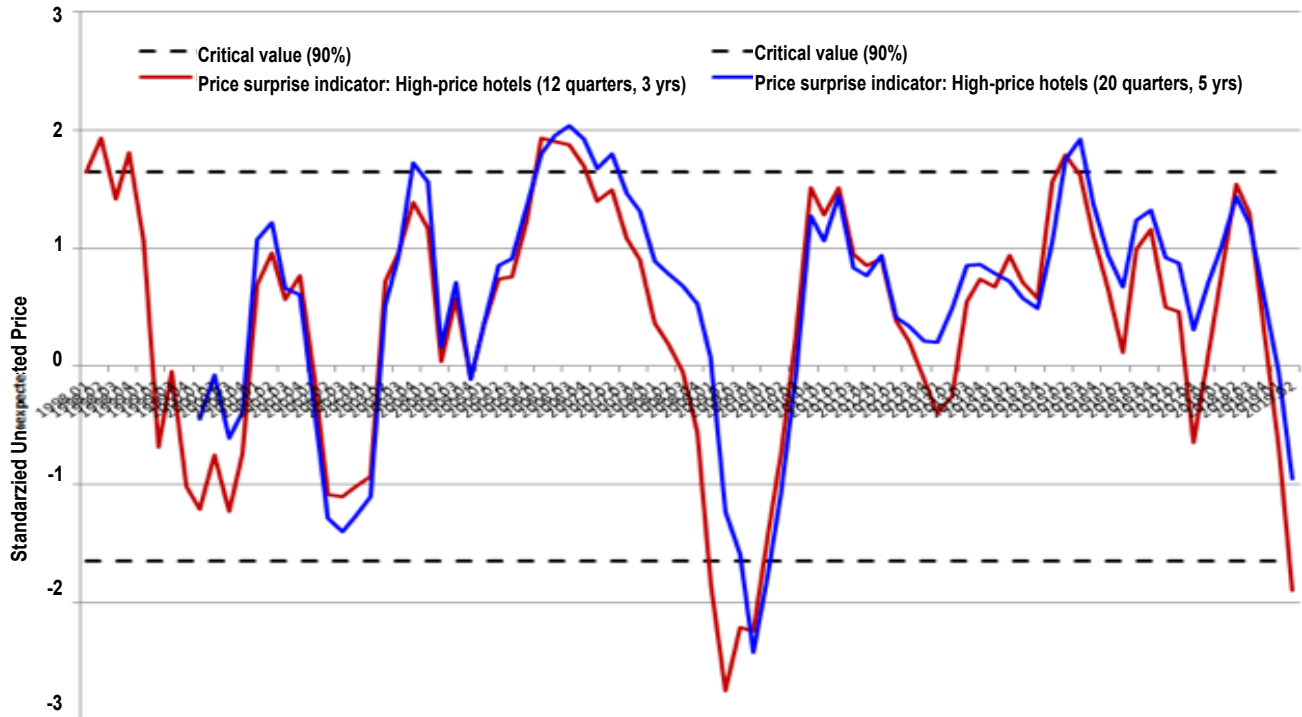
- - - Critical value (90%) ⎯ Price surprise indicator: High-price hotels (12 quarters, 3 yrs)
- - - Critical value (90%) ⎯ Price surprise indicator: High-price hotels (20 quarters, 5 yrs)

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

EXHIBIT 16

Standardized unexpected price (SUP) for small-hotel index
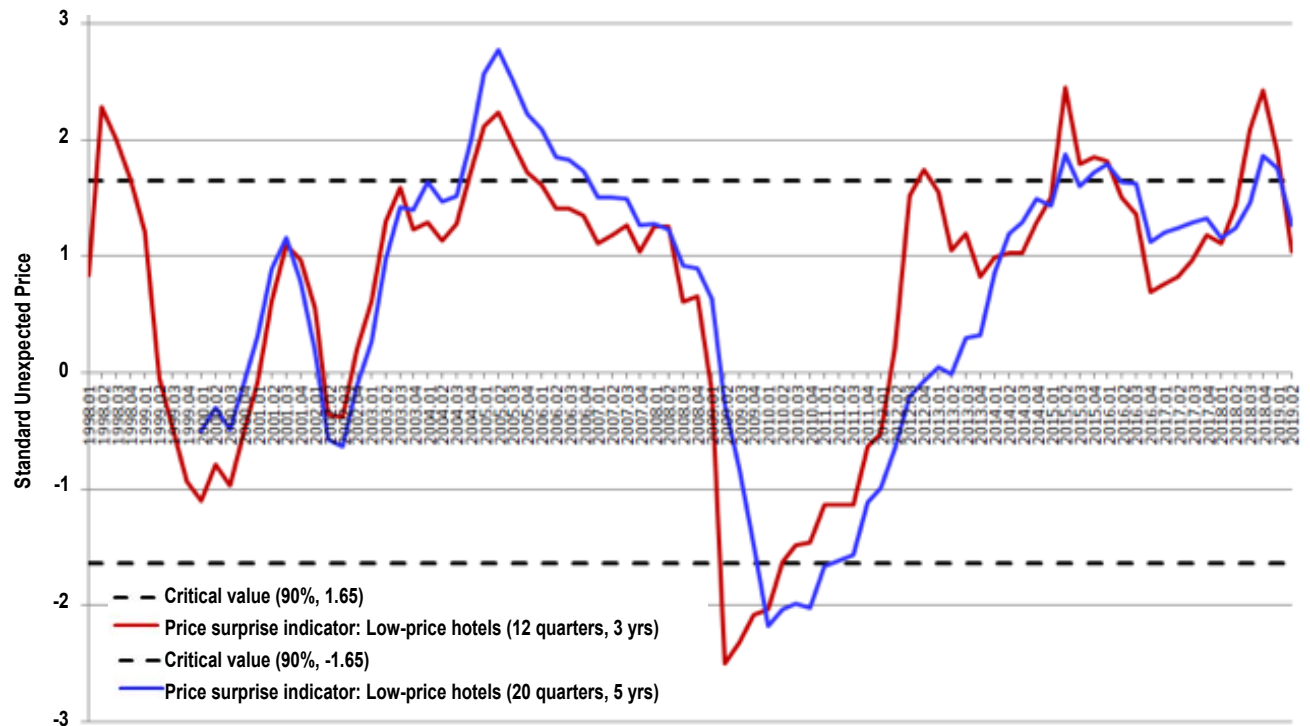
- - - Critical value (90%, 1.65)
⎯ Price surprise indicator: Low-price hotels (12 quarters, 3 yrs)
- - - Critical value (90%, -1.65)
⎯ Price surprise indicator: Low-price hotels (20 quarters, 5 yrs)

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

Exhibit 17

Moving average trend line for repeat sale-hotel index
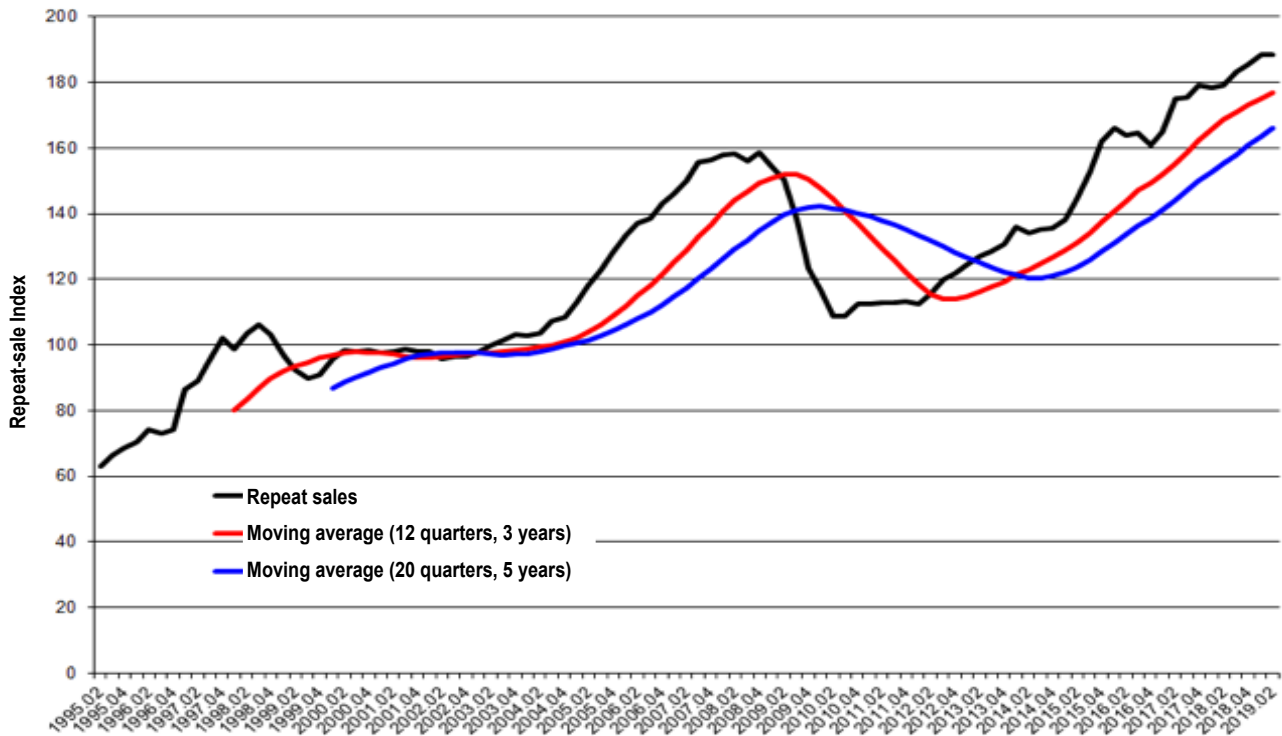
Our standardized unexpected price (SUP) metrics in Exhibit 15 show that the price of large hotels not only continued to decline this quarter, but more importantly this was a statistically significant fall: price broke below the lower confidence band. This period also marks a statistically significant downward price trend for small hotels, since Exhibit 16 shows that the standardized price has fallen below the upper confidence band.

Repeat Sales Metrics: Prices Have Begun to Moderate. Similar to small hotels, our repeat sale indicator for the moving average trendline in Exhibit 17 indi-cates that although positive price momentum contin-ues to exist, it is starting to show signs of weakening.[2] The price of repeat-sale hotels is still higher than its short-term and long-term moving average, although

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[2] We report two repeat sale indices. The repeat sale full sam-ple 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. In other words, the latter 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 first repeat sale index (i.e., repeat sale full sample index), but it would not be included in the latter repeat sale index.

EXHIBIT 18

Standardized Unexpected Price (SUP) for hotel repeat sale index (full sample)
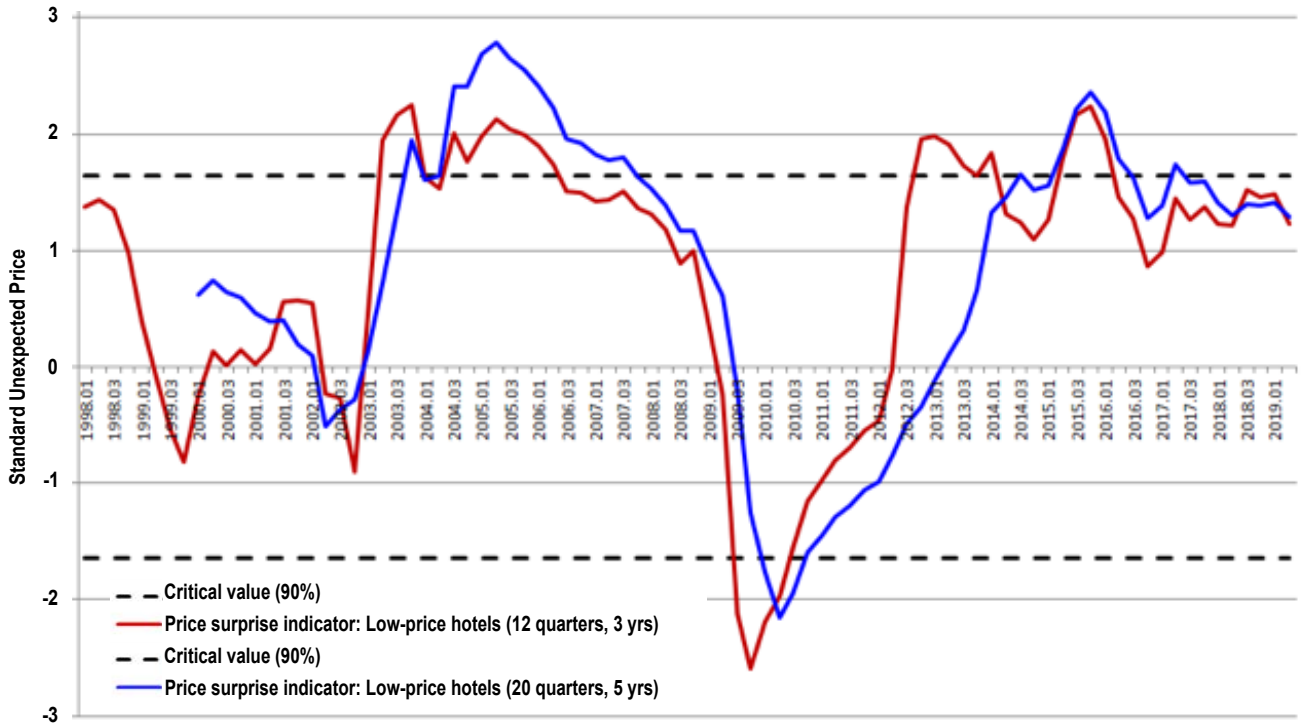
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

EXHIBIT 19

Year-over-year change in repeat-sale index, with moving-average trend line
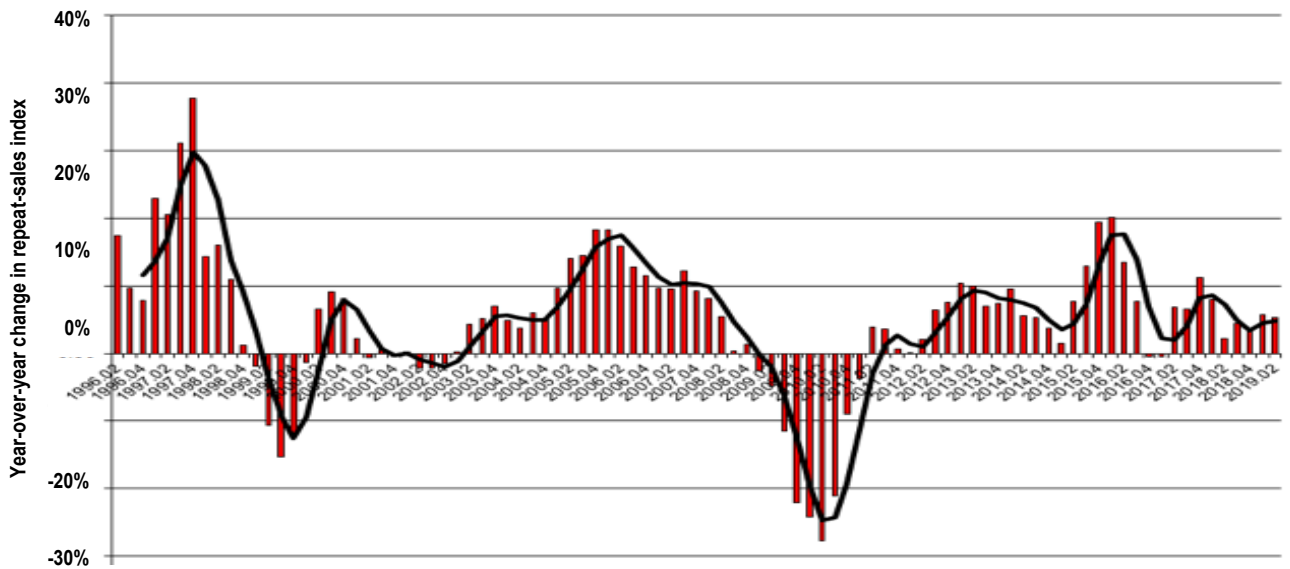
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

EXHIBIT 20

Mortgage origination volume versus loan-to-value ratio for hotels
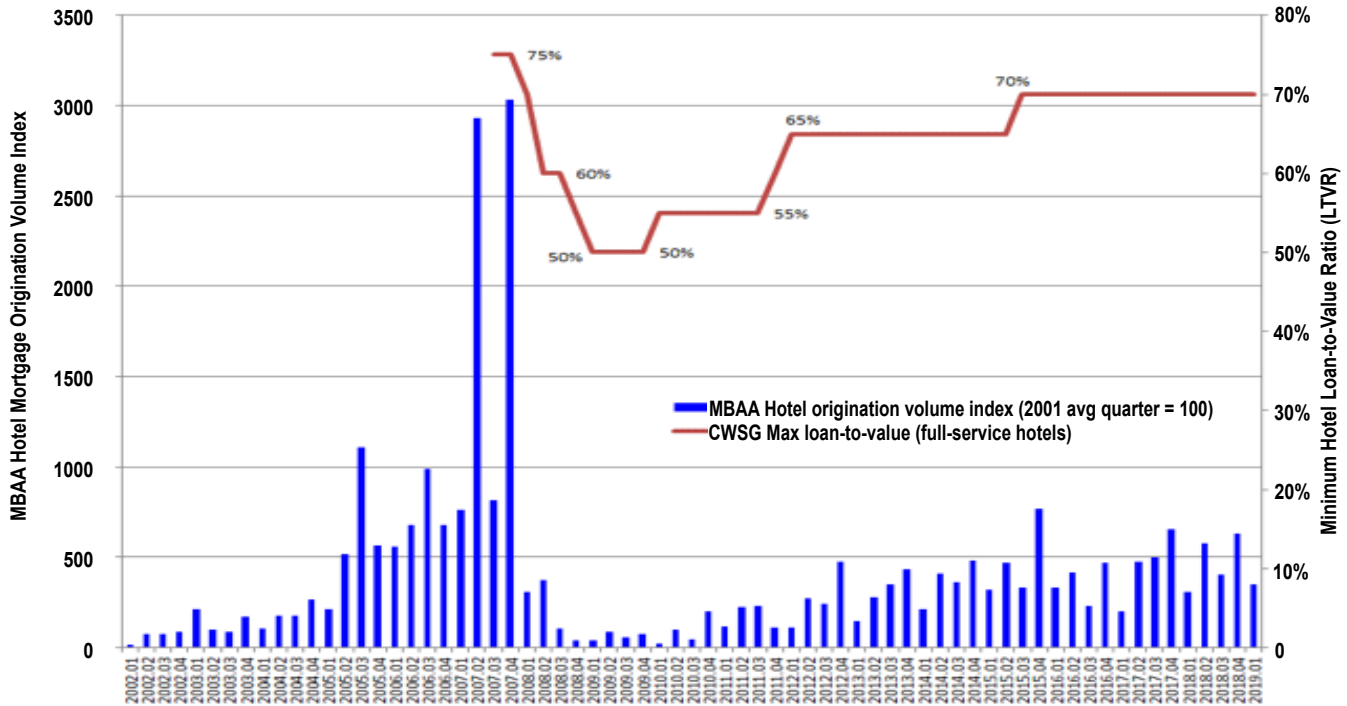
Sources: Cornell Center for Real Estate and Finance, Mortgage Bankers Association

the spread is starting to narrow. Our SUP performance metric in Exhibit 18 indicates that standardized prices have moved almost imperceptibly downward this quarter. Exhibit 19 shows that the repeat-sale price index rose 5.2 percent year over year (2018Q2 to 2019Q2), down from 5.7 percent year over year in the previous period (2018Q1 to 2019Q1). From a quarter-over-quarter perspective, the index remained relatively flat (0%) in the current period (2019Q1 to 2019Q2) compared to a 1.7-percent increase in the previous quarter (2018Q4 to 2019Q1).

Mortgage Financing Volume for Hotels Increased Year over Year but fell Quarter over Quarter. Exhibit 20 shows that although mortgage origination volume for hotels as reported for 2019Q1 is 14-percent higher on a year-over-year basis (2018Q1 to 2019Q1), it declined almost 45 percent on a quarter-over-quarter basis (2019Q1 compared to 2018Q4). The maximum loan to value (LTV) ratio for hotels continued to remain at 70 percent.[3]

[3] This is the latest information reported by the Mortgage Bankers Association as of the writing of this report.

EXHIBIT 21

Interest rates on Class A hotels versus Class B and C properties
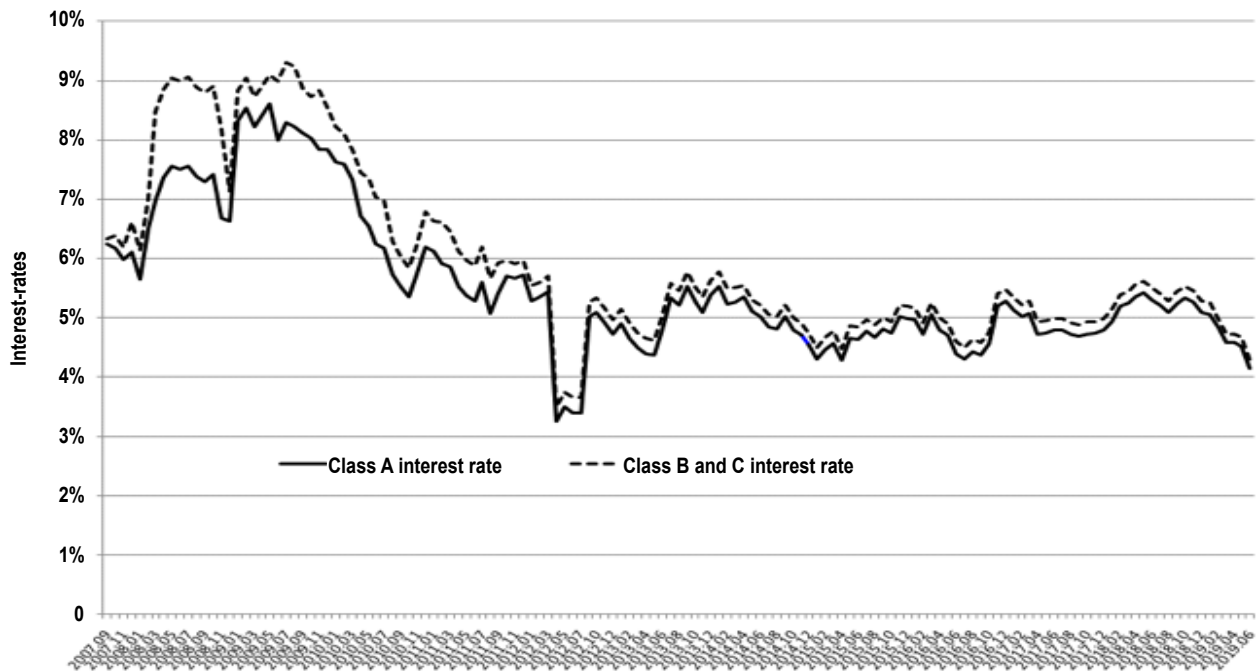
Source: Cushman Wakefield Sonnenblick Goldman

The Cost of Hotel Debt Financing Has Declined, with No Change in the Relative Risk Premium for Hotels. The long-term decline in interest rates continued in the second quarter of 2019. The cost of obtaining hotel debt financing for this quarter, as reported by Cushman Wakefield Sonnenblick Goldman, declined 9.6 percent for Class A hotels and dropped 9.3 percent for Class B&C hotels.[4] Exhibit 21 shows that interest rates on both Class A and Class B and C hotel deals also declined on a year-over-year basis by approximately 22 percent. In particular, interest rates were 4.14 percent for Class A and 4.29 percent for Class B and C properties this quarter, compared to 4.58 percent for Class A and 4.73 percent for Class B and C deals in the first quarter (March) of 2019. Year over year, interest rates fell from 5.31 percent to 4.14 percent for Class A hotels and from 5.51 percent to

4.29 percent for Class B and C hotels. This long-term downward trend in interest rates started in November 2018.

Exhibit 22 and Exhibit 23 depict interest rate spreads relative to different benchmarks. Exhibit 22 shows the spread between Class A and Class B and C interest rates on full-service hotels over the 10-year U.S. Treasury bond. On this metric, interest rate spreads fell 5 basis points for both Class A and Class B and C hotels in the current quarter relative to the prior quarter (for Class A the spread dropped to a 2.05 percent spread from 2.10 percent; for Class B, the spread was 2.20 percent in this quarter versus 2.25 percent previously). The fall in interest rate spreads signals that lenders view hotels as relatively less risky as compared to our last report, and as such lenders' compensation for risk associated with hotel loans has decreased. Exhibit 23 shows the spread between the interest rate on full service hotels over the interest rate corresponding to non-hotel commercial real estate, a calculation known as the hotel real estate premium.[5] The monthly hotel real estate premiums for

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[4] The interest rate 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. Those deals are not necessarily similar to deals that are reported by ACLI.

[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.

EXHIBIT 22

Interest-rate spreads of hotels versus U.S. Treasury ten-year bonds
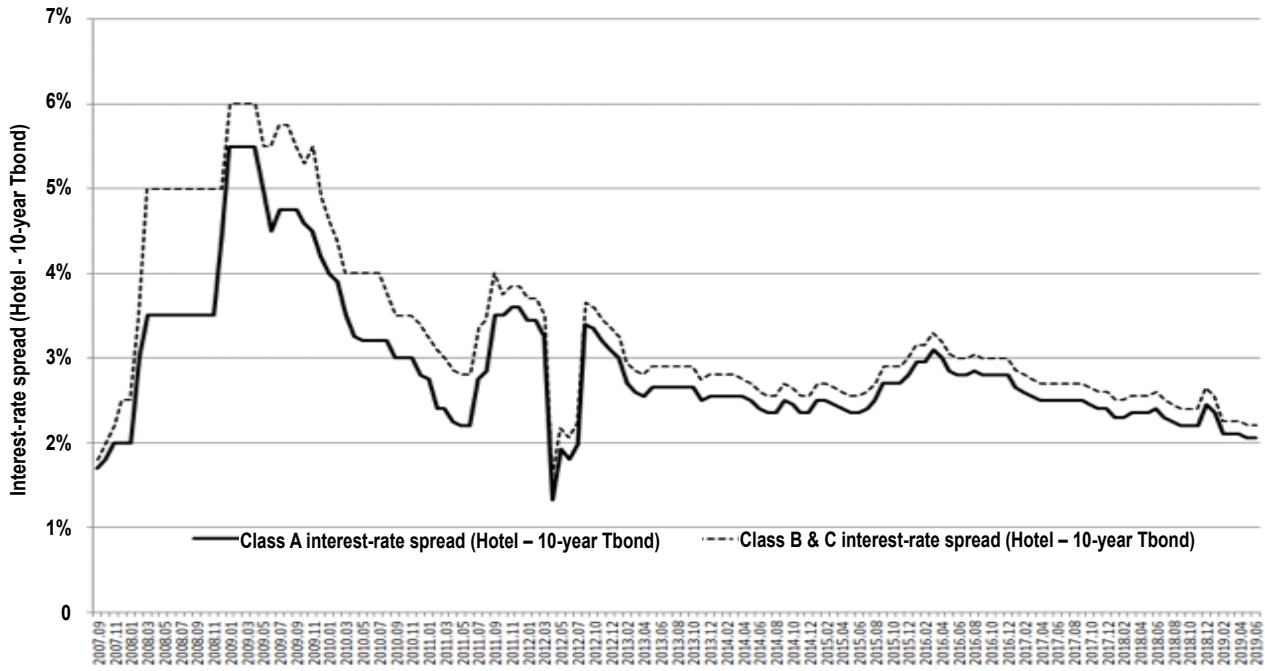
Source: Cushman Wakefield Sonnenblick Goldman

EXHIBIT 23

Interest-rate spreads of hotels versus non-hotel commercial real estate

Source: Cushman Wakefield Sonnenblick Goldman

Cost of equity financing using the Capital Asset Pricing Model and hotel REITs

Sources: Cornell Center for Real Estate and Finance, NAREIT

Risk differential between hotel REITs and equity REITs
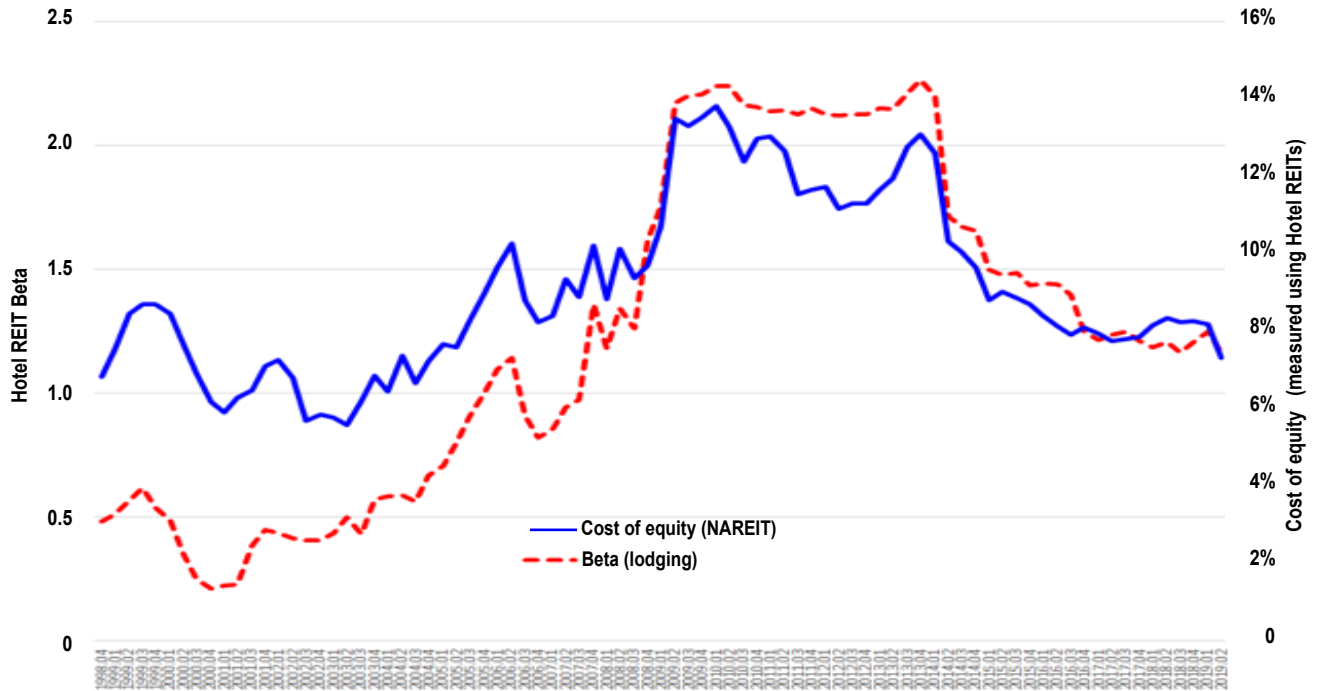
Sources: Cornell Center for Real Estate and Finance, NAREIT

EXHIBIT 26
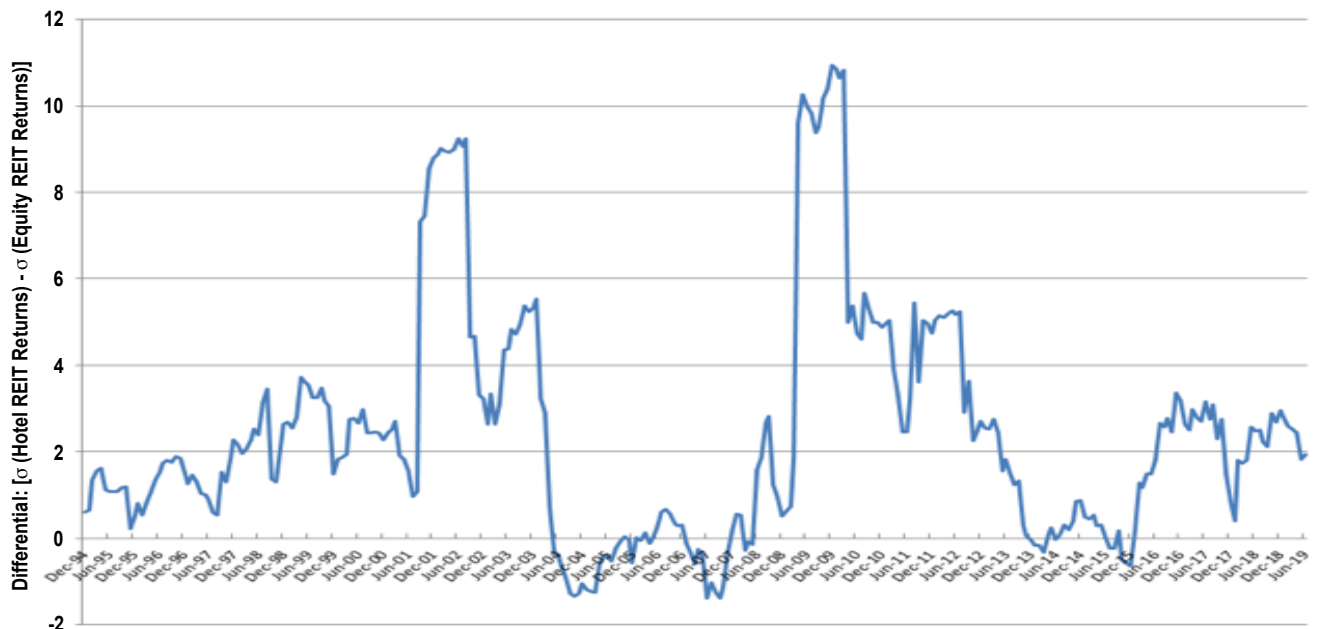
Yield spread of 10-year and 3-month U.S. Treasury bonds
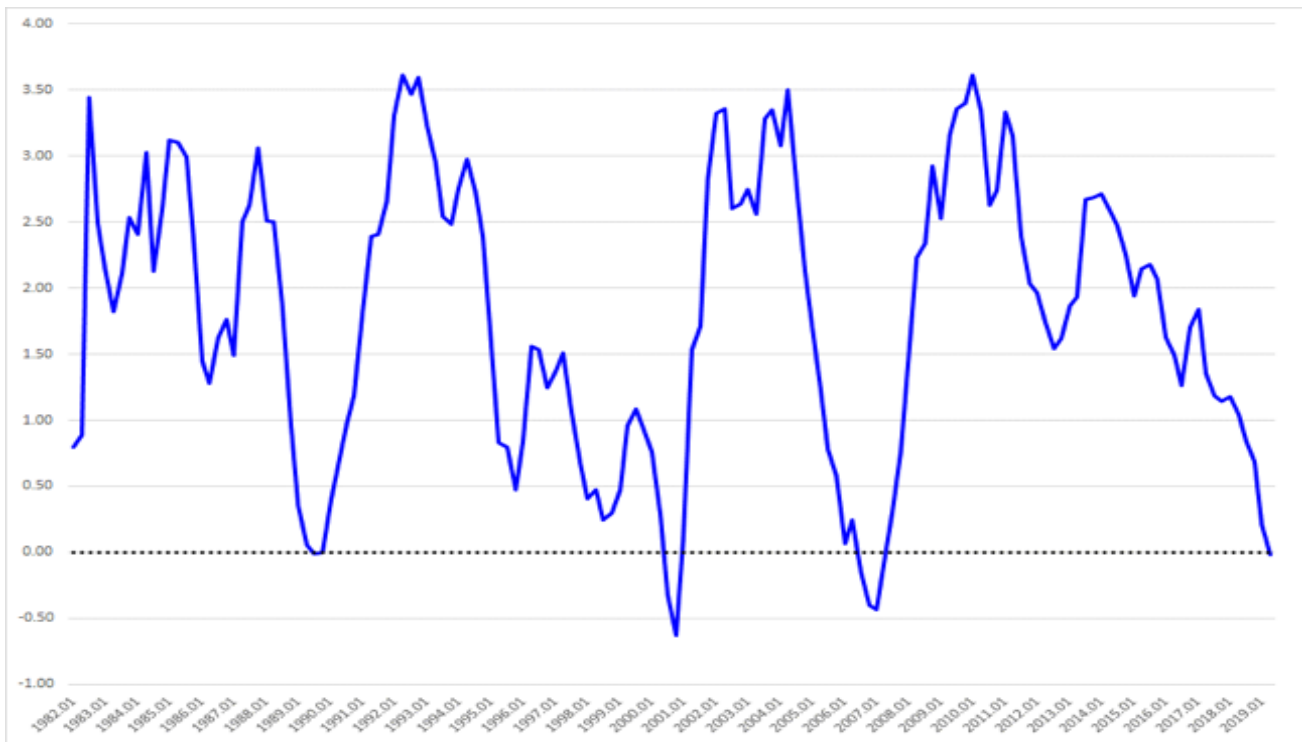
Sources: Cornell Center for Real Estate and Finance, St Louis Federal Reserve

both higher quality (Class A) and lower quality (Class B and C) hotels have remained stable relative to the prior quarter. For Class A properties, the hotel real estate premium averaged .35 percent in the current quarter (2019Q2), identical to the .35-percent premium in the previous quarter (2019Q1). For Class B hotels, the premium averaged .40 percent in both the current quarter and previous quarter. These figures are a signal that the perceived default risk for hotel properties relative to other commercial real estate (i.e., office, retail, industrial, and apartments) has not changed this quarter compared to the previous quarter.

Cost of Equity Financing Is Now Lower, with the Riskiness of Hotels Declining Relative to Other Types of Commercial Real Estate. The cost of using equity financing for hotels, as measured using the Capital Asset Pricing Model (CAPM) on hotel REIT returns (shown in Exhibit 24), declined this quarter. The cost of using equity funds is currently at 7.3 percent for 2019Q2 compared to 8.18 percent in the previous quarter. In short, the cost of borrowing equity capital has fallen. In terms of total risk (systematic risk + risk

that is unique to hotel REITs), Exhibit 25 shows that the total risk of hotel REITs continued to decline once again this quarter relative to the total risk of equity REITs as a whole.[6] In other words, the perceived default risk for hotels has declined relative to other types of commercial real estate. Expect lower borrowing costs for hotel loans to ensue given these metrics, all else equal.

The Spread between the 10-year Treasury and 3-month Treasury Is the Joker in the Deck. The difference between the 10-year constant maturity U.S. Treasury rate and the 3-month constant maturity Treasury rate is widely used metric to study the yield curve. As the spread approaches zero, the yield curve flattens. A negative spread has historically been a leading indicator of a recessionary period. Exhibit 26 shows that the spread has declined since the first quarter of 2010 (2010Q1) and is in negative territory at the time of this report (-2%). This situation poses a

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[6] We calculate the total risk for hotel REITs using a twelve-month rolling window of monthly return on hotel REITs.

EXHIBIT 27

Hotel repeat sales index versus NAREIT lodging/resort price index
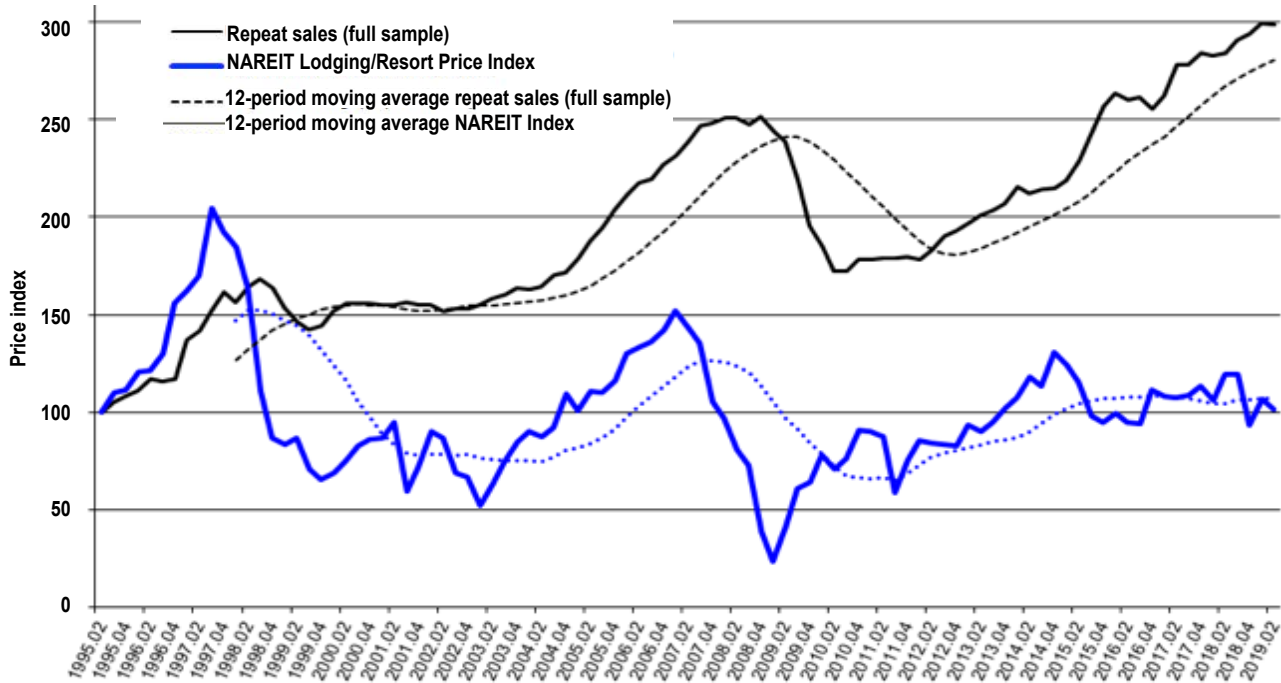
Sources: Cornell Center for Real Estate and Finance, NAREIT

problem for banks who borrow short and lend long, as well as for the CMBS market that relies on an upward sloping yield curve for arbitrage. This situation might have an impact on broader market liquidity. A flat or inverted yield curve means that many floating rate loans are going to have rates that are higher than the coupon rate of a fixed-rate loan. Expect to see slower price growth in hotels and at best more modest gains in hotel sales if this trend persists.

Expect the Price of Large Hotels and Small Hotels to Fall, Based on our Reading of the Tea Leaves. Exhibit 27 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 is consistent with academic studies which find that securitized real estate is leading indicator of underlying real estate performance, since the stock market is forward looking or efficient. Looking ahead, the NAREIT lodging index fell 4.7 percent this quarter compared to an increase of 14.25 percent in the prior quarter while it also declined 15 percent year over year.

The architecture billings index (ABI) for commercial and industrial property, which represents another forward-looking metric, increased this quarter from

the previous quarter, as shown in Exhibit 28 (53 versus 47).[7] Year over year, however, the ABI fell by almost 1 percent in the current period compared to a drop of 1.1 percent in the previous period. Expect price momentum to moderate based on the year-over-year trend in the ABI. As shown in Exhibit 29, the National Association of Purchasing Managers (NAPM) index, which is an indicator of anticipated business confidence and thus business traveler demand, decreased by 14.1 percent year over year (dropping 6.5 percent on a quarter-over-quarter basis), compared to a drop of 6.7 percent in the prior year-over-year period (2018Q1 to 2019Q1).[8] Based on this indicator, expect the price of

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[7] www.aia.org/practicing/economics/aias076265. As of the time of this writing, only the February 2019 AIA Billings Index has been reported.

[8] The ISM: Purchasing Managers' Index, (Diffusion index, SA) also known as the National Association of Purchasing Managers (NAPM) index is based on a survey of over 250 companies within twenty-one industries covering all 50 states. It not only measures the health of the manufacturing sector but is a proxy for the overall economy. It is calculated by surveying purchasing managers for data about new orders, production, employment, deliveries, and inventory, in descending order of importance. A reading over 50% indicates that manufacturing is growing, while a reading below 50% means it is shrinking.

EXHIBIT 28

Hotel repeat sales index versus architecture billings index

- **····** Repeat sales
- **——** Architecture Billings Index
- **——** 4-period average moving average (architectural billings)
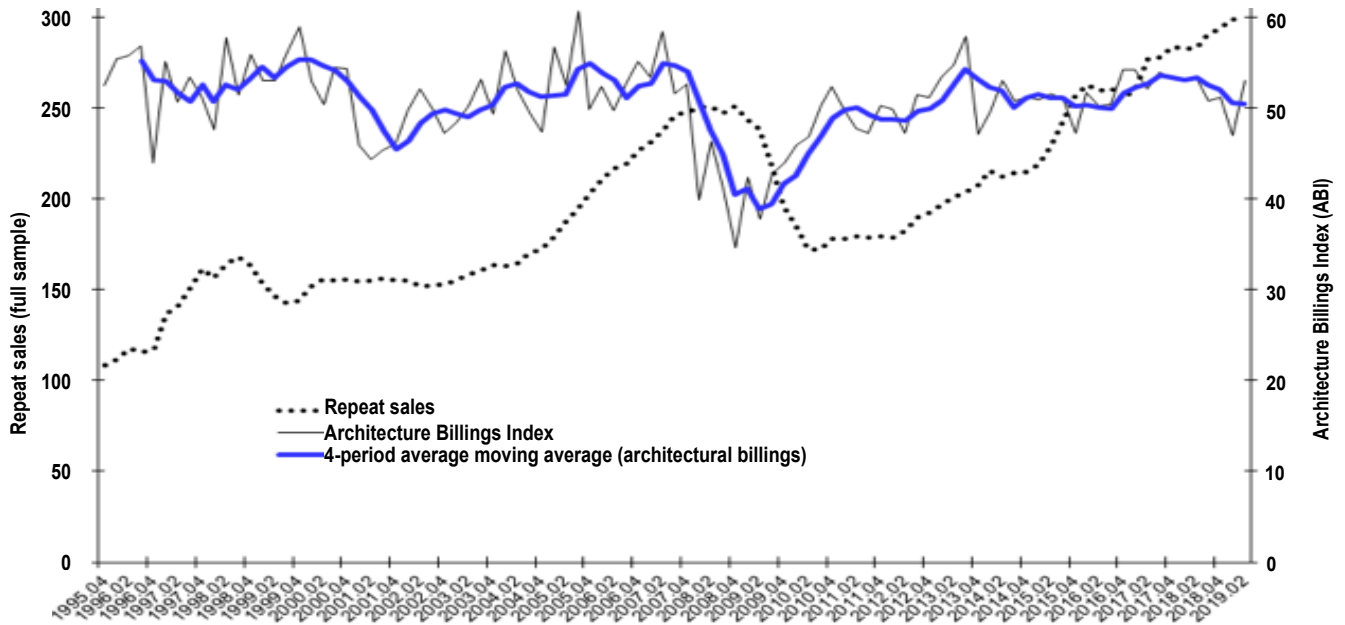
Sources: Cornell Center for Real Estate and Finance, American Institute of Architects

EXHIBIT 29

Business confidence index (National Association of Purchasing Managers) and high-price hotel index

- **······** High-price hotels
- **——** ISM Purchasing Managers Index (Diffusion index, SA)
- **······** Four-period moving average, ISM Purchasing Managers Index
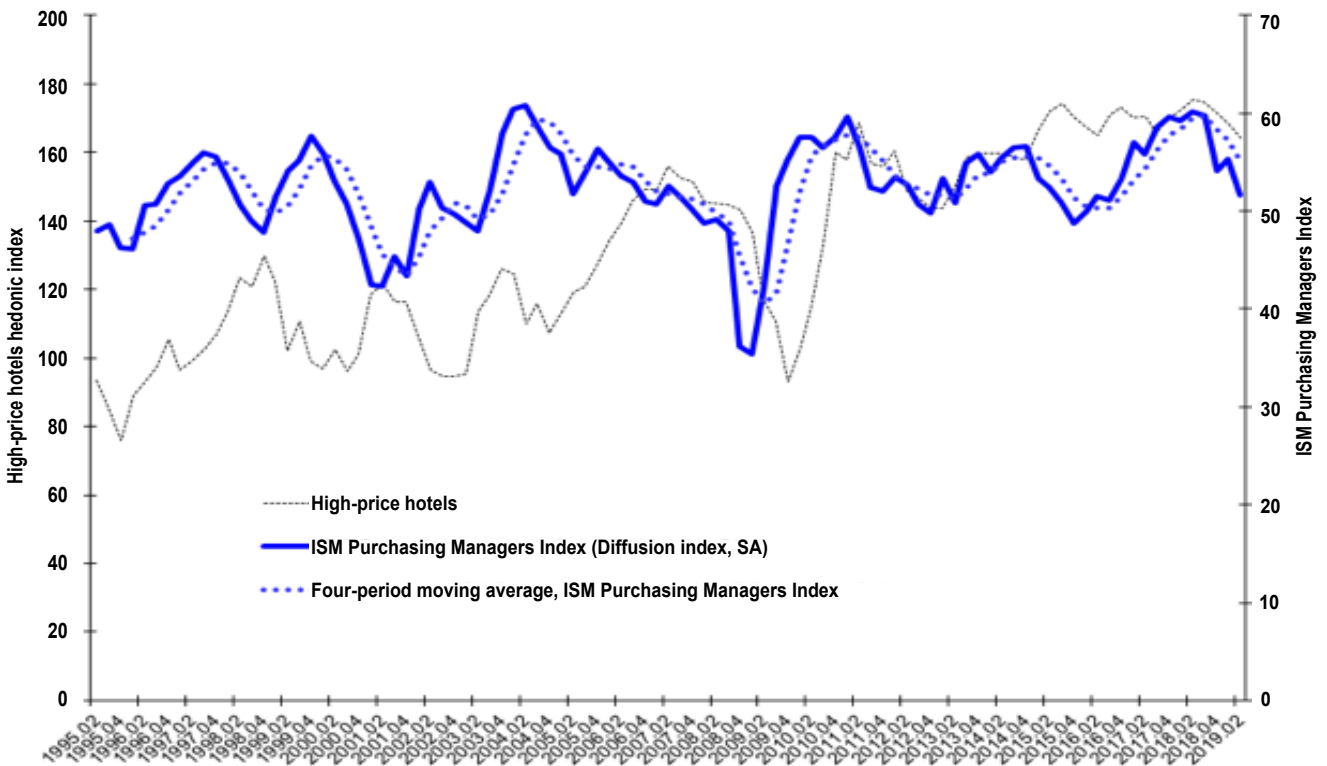
Sources: Cornell Center for Real Estate and Finance, Institute for Supply Management (ISM)

EXHIBIT 30

Consumer confidence index and low-price hotel index
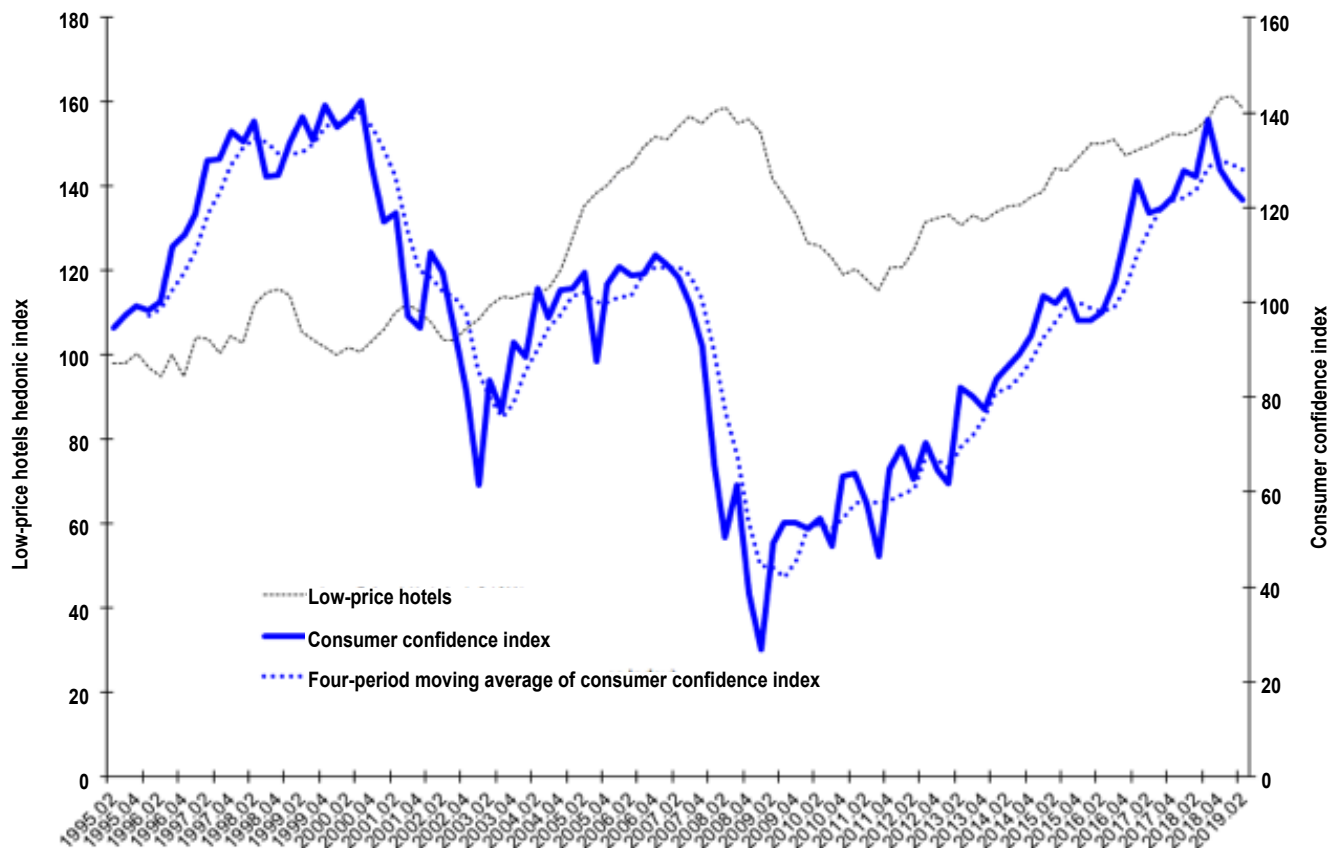
Sources: Cornell Center for Real Estate and Finance, Conference Board

large hotels to continue to decline on a year-over-year basis. The Consumer Confidence Index from the Conference Board graphed in Exhibit 30, which we use as a proxy for anticipated consumer demand for leisure travel and a leading indicator of the hedonic index for low priced hotels, fell by almost 4 percent year over year (as well as a 2-percent drop quarter over quarter) continuing the negative trend from the previous period (which saw a 3.1-percent drop year over year and a 2.8-percent decline quarter over quarter). Expect the price momentum for small hotels to decline in the next quarter. ■

Hotel Valuation Model (HOTVAL) Has Been Updated

We have updated our hotel valuation regression model to include the transaction data used to generate this report. 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 our CREF website.

Appendix

SUP: The Standardized Unexpected Price Metric

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:

$$SUE_Q = (A_Q - m_Q)/s_Q$$

where 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_Q 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 SUE_Q exceeds either ±1.645 (90% significant) or ±1.96 (95% significant). The earnings surprise is positive when $SUE_Q > 1.645$, which is statistically significant at the 90% level assuming a two-tailed distribution. Similarly, if $SUE_Q < -1.645$ 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.

SUP data and σ calculation for high-price hotels (12 quarters/3 years)				
Quarter	High-price hotels μ	Moving average	σ	Price surprise indicator (SUP)
1995.02	70.60			
1995.03	63.11			
1995.04	58.11			
1996.01	90.54			
1996.02	95.24			
1996.03	99.70			
1996.04	108.38			
1997.01	99.66			
1997.02	101.62			
1997.03	105.34			
1997.04	109.53			
1998.01	115.78	93.13	18.99	1.19
1998.02	126.74	97.81	19.83	1.46

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:

Average (μ) = $\dfrac{(70.6+63.11+58.11+90.54+95.24+99.70+108.38+99.66+101.62+105.34+109.53+115.78)}{12}$ = 93.13

Standard Deviation (σ) = 18.99

Standardized Unexp Price (SUP) = $\dfrac{(115.78-93.13)}{18.99}$ = 1.19

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