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Third Quarter 2019: Is Bad News Fake News?

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Abstract

Only hotels in the South Atlantic region experienced a positive price momentum during this period.* The performance of hotels in non-gateway cities declined at a faster rate relative to those in gateway cities. Hotel financial operating performance has finally returned to positive profitability with operating profit exceeding both a hotel property's operating costs as well as financial (borrowing) cost, based on economic value analysis (EVA). The price of larger hotels has spiraled downward at a faster rate than that of smaller hotels and repeat sale hotels. The cost of hotel debt financing, as well as equity financing, has declined, with virtually no change in the relative risk premium for hotels. However, the spread between the 10-year Treasury and the 3-month Treasury has fallen even further into negative territory, which continues to raise concerns over its impact on market liquidity as well as its contribution to slower price growth in hotels (since this is a recession indicator). A reading of our tea leaves suggests prices are expected to decline for both large and small hotels. This is report number 32 of the index series.

Keywords

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

Disciplines

Real Estate

Comments

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Cornell Hotel Indices: Third Quarter 2019:

Is Bad News Fake News?

by Crocker H. Liu, Adam D. Nowak, and Robert M. White, Jr.

EXECUTIVE SUMMARY

Only hotels in the South Atlantic region experienced a positive price momentum during this period.* The performance of hotels in non-gateway cities declined at a faster rate relative to those in gateway cities. Hotel financial operating performance has finally returned to positive profitability with operating profit *exceeding* both a hotel property's operating costs as well as financial (borrowing) cost, based on economic value analysis (EVA). The price of larger hotels has spiraled downward at a faster rate than that of smaller hotels and repeat sale hotels. The cost of hotel debt financing, as well as equity financing, has declined, with virtually no change in the relative risk premium for hotels. However, the spread between the 10-year Treasury and the 3-month Treasury has fallen even further into negative territory, which continues to raise concerns over its impact on market liquidity as well as its contribution to slower price growth in hotels (since this is a recession indicator). A reading of our tea leaves suggests prices are expected to decline for both large and small hotels. This is report number 32 of the index series.

* That is, hotels in Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia.

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. 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, American Economic Review: Insights, 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 Q3, 2019

Only Hotels in the South Atlantic Region Have Positive Price Momentum. Exhibit 1 shows that in the most recent quarter (2019Q3), hotels in the South Atlantic region region have outperformed hotels in all other regions.[1] As we said, this was the only region to show positive price momentum.

[1] **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, Washington; **South Atlantic**: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia; and West South Central: Arkansas, Louisina, Oklahoma, and Texas.

EXHIBIT 1

Hotel performance for all seven regions (2011Q4–present)

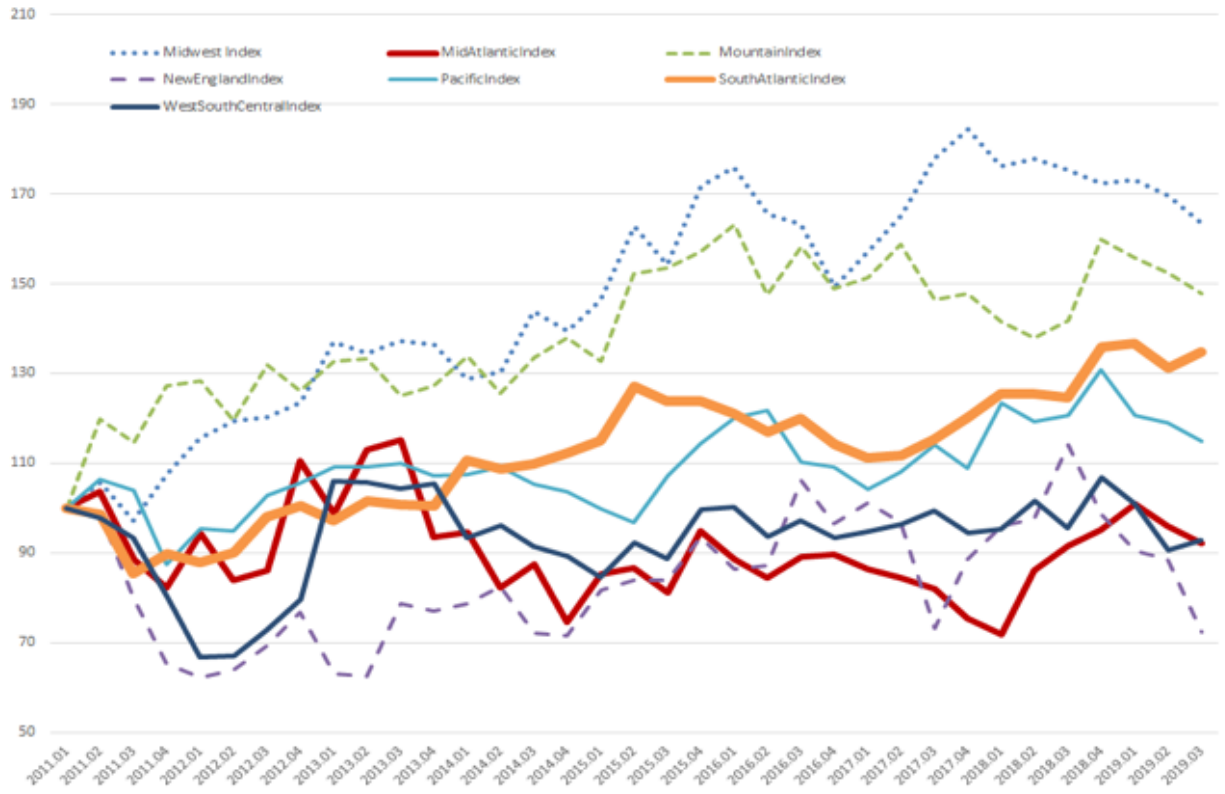
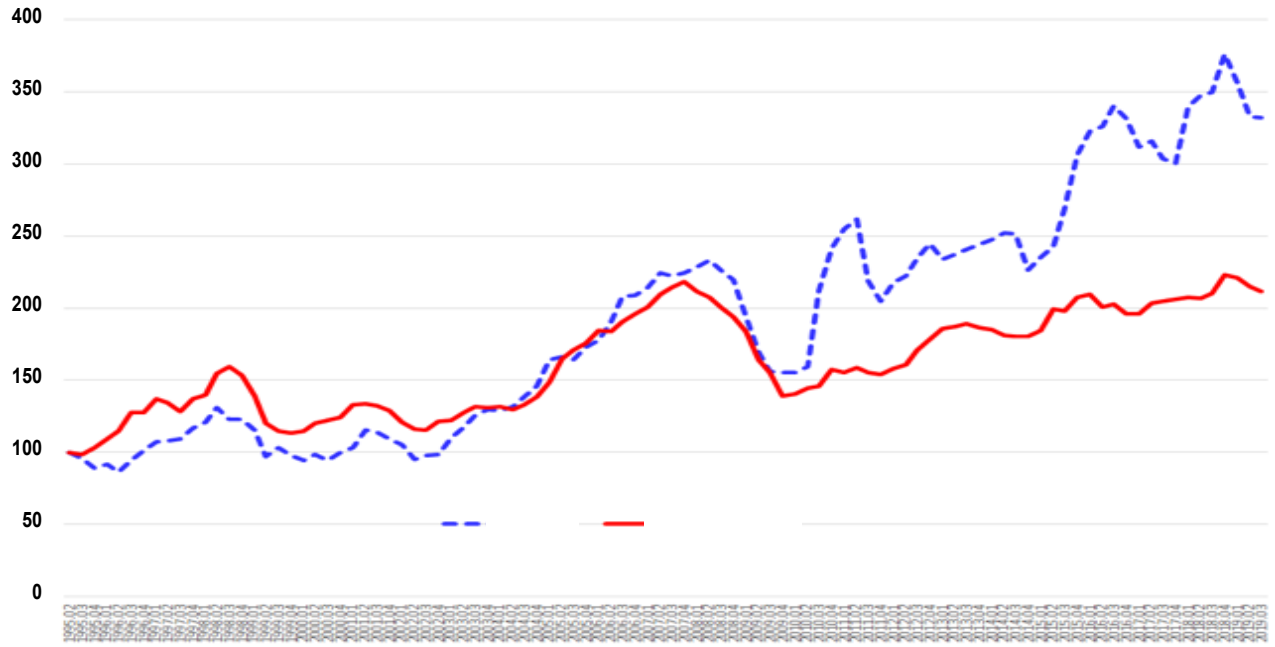


Exhibit 2

Hotel performance for gateway cities versus non-gateway cities



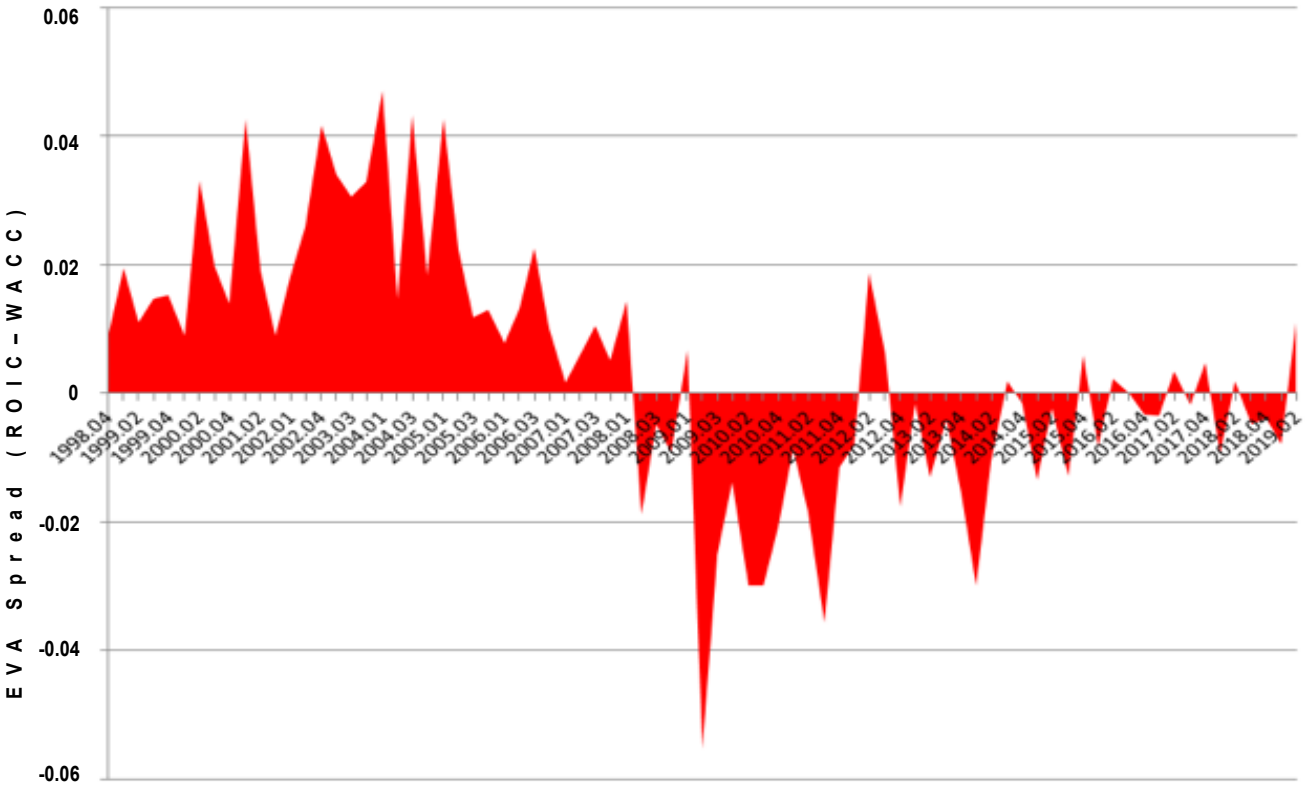
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

Performance Has Narrowed for Hotels in Gateway Cities Relative to Those in Non-Gateway Cities. Exhibit 2 shows the relative price performance for hotels sold in gateway cities versus those in non-gateway cities. The performance of hotels in gateway cities continued to decline this quarter, albeit imperceptibly (-.1%), with hotels in non-gateway cities declining even more (-1.8%). Year-over-year, however, the price of hotels in gateway cities fell 5 percent compared to a .6-percent increase for hotels in non-gateway cities. In the prior year-over-year period (2018Q2–2019Q2), the price of hotels in gateway cities fell 4.3 percent compared to a 4-percent increase in the price of hotels in non-gateway cities.

Hotel Investment Based on Operating Performance Is Now in the Green (profit). Our Economic Value Added (EVA) indicator, shown in Exhibit 3, has finally reversed and turned positive (1.1%). This is an indication that at least some of the return on hotels is coming from operations, with profits not only covering operating costs but also financial costs (both the cost of debt and the cost of equity). Taken from a slightly different perspective (no equity financing considered), the ACLI hotel cap rate, which is a proxy

Exhibit 3

Economic value added (EVA) for hotels



Sources: ACLI, Cornell Center for Real Estate and Finance, NAREIT, Federal Reserve

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 the previous issue (2019Q2), we introduced our new Regional Indices to add further granularity to the analysis of hotel performance.[2] We also present updates and revisions to our hotel indices along with commentary and supporting evidence from the real estate market.

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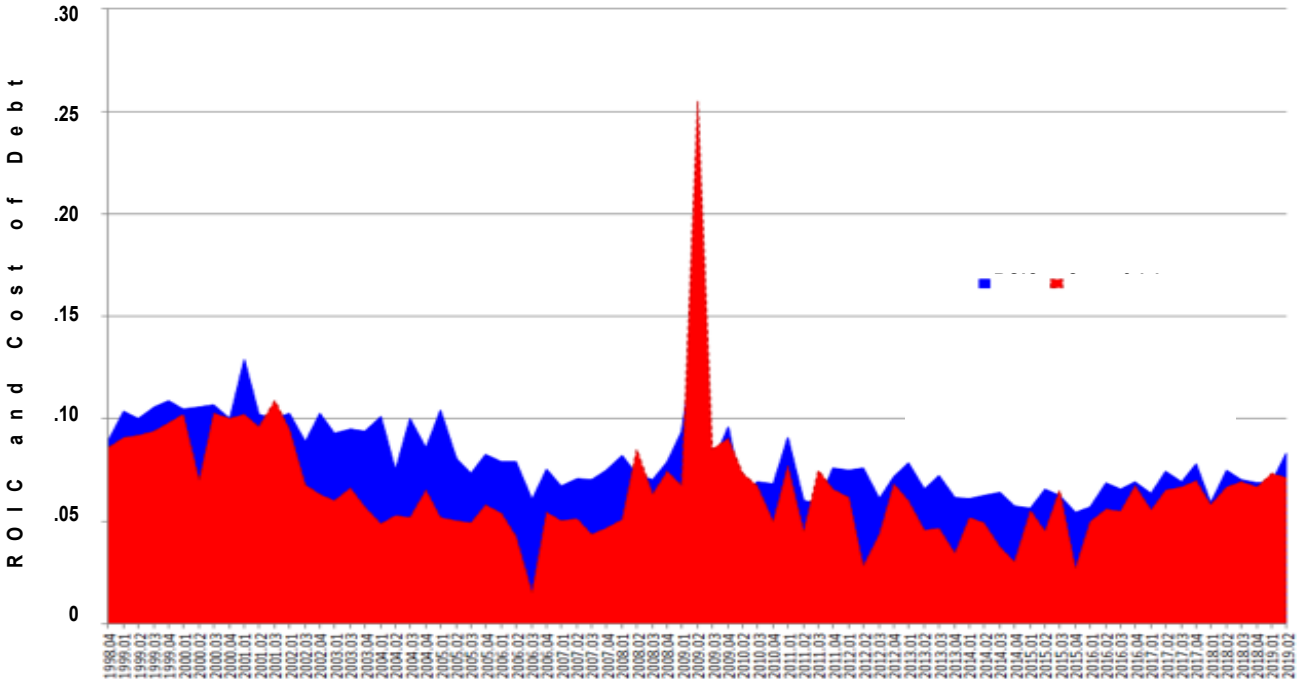
[1] The following are gateway cities: Boston, Chicago, Honolulu, Los Angeles, Miami, New York, San Francisco, and Washington DC. For a general discussion on what constitutes a gateway city, please see: John Corgel, What is a Gateway City?: A Hotel Market Perspective, *Center for Real Estate and Finance 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

Return on investment capital versus cost of debt financing



Sources: ACLI, Cornell Center for Real Estate and Finance

for the return on invested capital (ROIC) rose from 6.93 percent (2019Q1) to 8.3 percent (2019Q2), while, in contrast, the cost of debt financing as measured by the mortgage constant declined from 7.34 percent to 7.14 percent over the same period. Thus, Exhibit 4 suggests that ***positive leverage*** now exists, which makes penciling feasible deals easier. Positive leverage means that the return that an investor receives from operations is higher than his or her borrowing cost (cost of debt financing).

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

		Full Sample		Big			Small			Gateway			No Gateway		
Year	Qtr	Median Sale Price	Obs	Median Sale Price	Obs	% Total Sales	Median Sale Price	Obs	% Total Sales	Median Sale Price	Obs	% Total Sales	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%

Exhibit 5B

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

		Full Sample		Big			Small			Gateway			No Gateway		
Year	Qtr	Median Sale Price	Obs	Median Sale Price	Obs	% Total Sales	Median Sale Price	Obs	% Total Sales	Median Sale Price	Obs	% Total Sales	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%
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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%
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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%
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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 3: 2015–present)

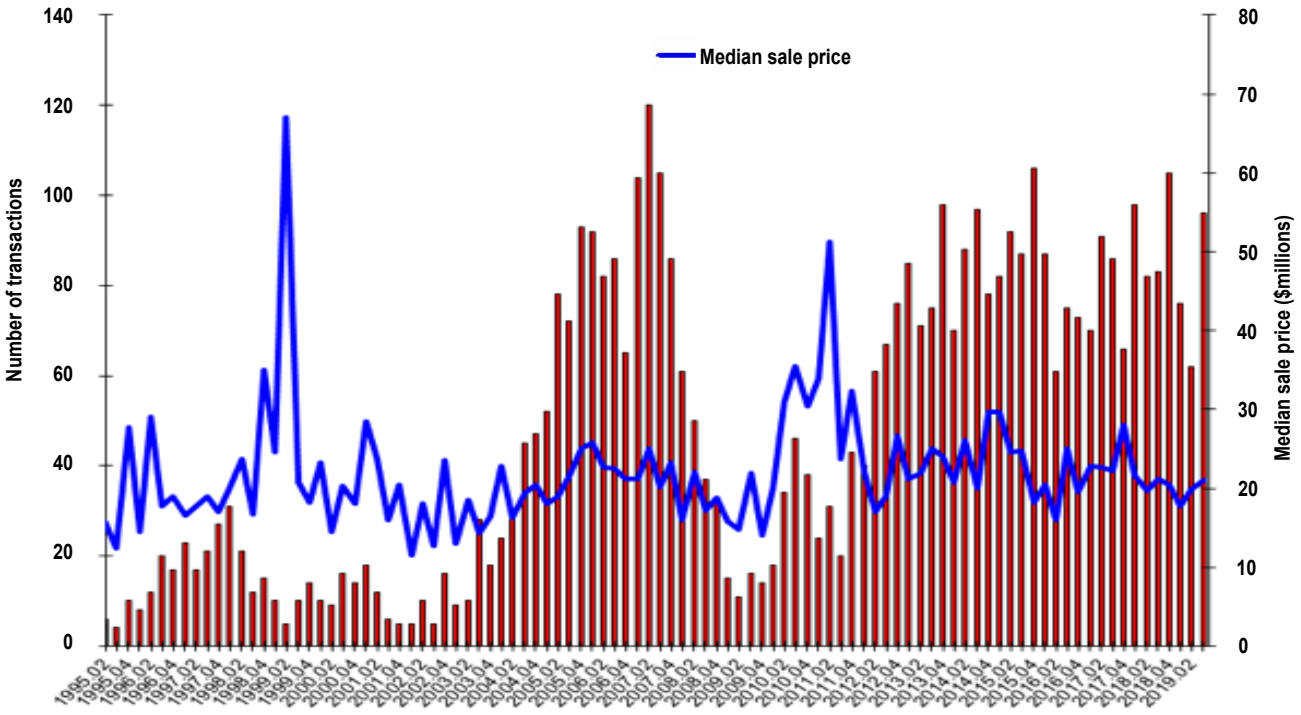
		Full Sample		Big			Small			Gateway			No Gateway		
Year	Qtr	Median Sale Price	Obs	Median Sale Price	Obs	% Total Sales	Median Sale Price	Obs	% Total Sales	Median Sale Price	Obs	% Total Sales	Median Sale Price	Obs	% Total Sales
2015	1	5,752,500	254	29,750,000	82	32.28%	3,125,000	172	67.71%	8,280,000	47	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	6,650,000	292	18,264,737	106	36.30%	3,125,000	186	63.69%	14,500,000	51	17.46%	5,400,000	241	82.53%
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	4,805,200	366	19,750,000	82	22.40%	3,300,000	284	77.59%	17,625,000	40	10.92%	4,300,000	326	89.07%
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	6,490,000	279	20,500,000	105	37.63%	3,300,000	174	62.36%	14,440,000	33	11.82%	5,580,556	246	88.17%
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	4,015,500	334	19,848,485	62	18.56%	3,335,000	272	81.43%	6,300,000	35	10.47%	3,900,000	299	89.52%
2019	3	4,707,500	402	21,000,000	96	23.88%	3,500,000	306	76.11%	15,850,000	42	10.44%	4,362,500	360	89.55%

The Median Price of Hotels Rose on a Quarterly Basis, but Declined on a Year-over-year Basis. The median price of hotels increased 17 percent from the previous quarter ($4.7M versus $4M), with the total volume of all hotel transactions (both large hotels and small hotels combined) also increasing 20.4 percent (402 transactions in the most recent quarter versus 334 transactions in the prior quarter) as reported in Exhibit 5. Year over year (2018Q3 versus 2019Q3), however, the median price of hotels fell 8.2 percent, albeit on that stronger volume (20.4%). A comparison of large hotels relative to small hotels on a year-over-year basis reveals that the median price of large hotels fell 1.25 percent compared to 16.4-percent drop in the prior period,[2] again on stronger volume (20.4%), while the median price of smaller hotels declined 5.7 percent, also on stronger volume (22%). The converse situation exists on a quarter-over-quarter basis for large hotels, with the median sale price of large hotels rising 5.8 percent on considerably stronger transaction volume (55%), while the median sale price of smaller hotels also rose approximately 5 percent, also on stronger volume (12.5%). Exhibit 6 and Exhibit 7 show these year-over-year trends in the number of transactions for large hotels and small hotels.

[2] Please 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 6

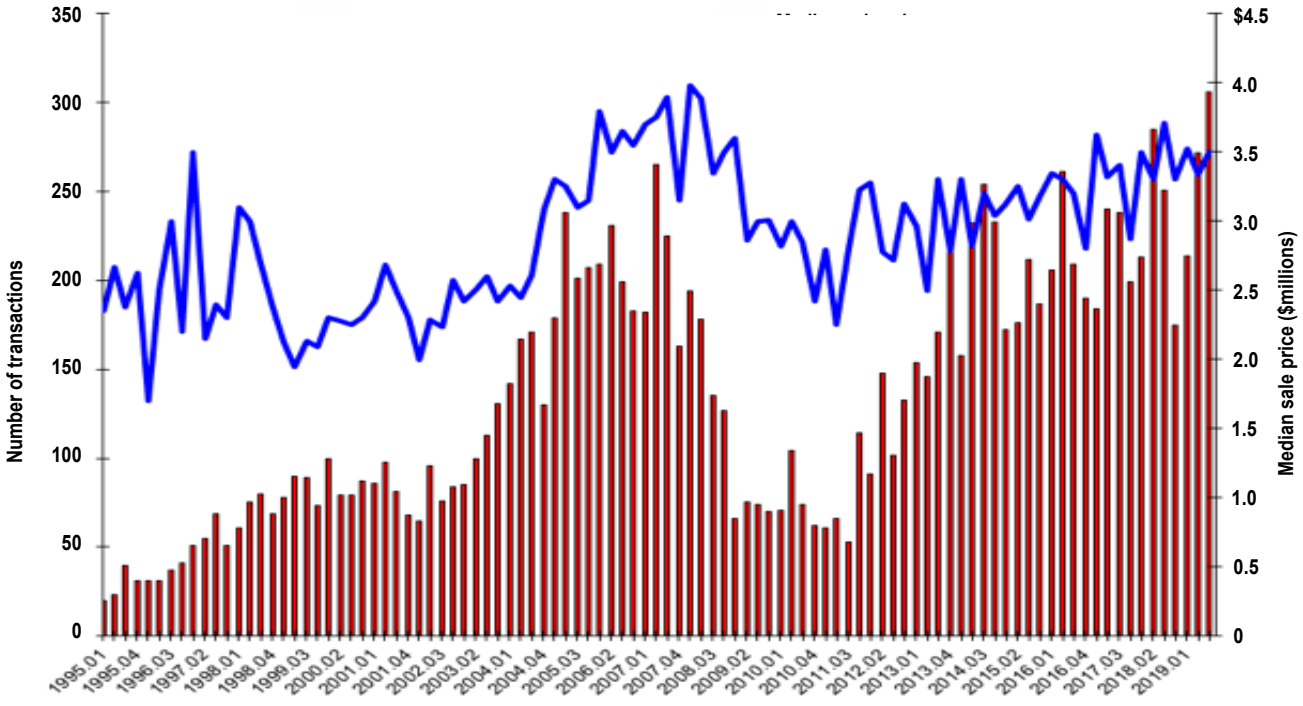
Median sale price and number of sales for high-price (large) hotels (sale prices of $10 million or more)



Sources: CoStar, Real Capital Analytics

Exhibit 7

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



Sources: CoStar, Real Capital Analytics

Exhibit 8a

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

YrQtr	Low Priced Hotels (<$10M)	High Priced Hotels (>=$10M)	Non Gateway Index	Gateway Index	Repeat Sales Index	Index Value Repeat Sales
1995.02	98.05	93.44	82.52	102.02	63.10	NA
1995.03	98.00	85.11	81.50	97.91	66.46	NA
1995.04	100.60	76.00	85.47	91.06	68.62	NA
1996.01	96.84	88.98	90.02	93.58	70.33	NA
1996.02	95.06	92.92	94.46	88.29	74.06	NA
1996.03	100.08	97.30	105.14	96.37	72.90	NA
1996.04	94.85	105.61	105.38	103.44	74.01	NA
1997.01	104.30	96.44	112.94	109.55	86.43	NA
1997.02	103.88	98.99	111.08	110.34	89.25	NA
1997.03	100.42	102.50	105.96	111.52	95.59	NA
1997.04	104.41	106.85	112.86	118.92	101.95	NA
1998.01	102.82	113.21	115.14	123.36	98.83	NA
1998.02	112.26	123.59	127.64	133.86	103.50	NA
1998.03	114.94	121.00	131.69	125.17	106.04	NA
1998.04	115.71	129.86	126.30	125.32	103.11	NA
1999.01	114.16	122.36	114.77	117.54	96.88	NA
1999.02	105.76	102.11	99.03	99.31	92.44	NA
1999.03	103.38	110.62	94.87	105.11	89.88	NA
1999.04	101.73	99.03	93.57	100.06	90.98	NA
2000.01	100.16	96.85	94.88	96.38	95.65	98.00
2000.02	101.65	102.52	99.20	100.55	98.46	98.00
2000.03	100.64	96.07	100.68	96.05	98.05	93.62
2000.04	103.37	101.01	102.35	101.85	98.42	95.00
2001.01	106.12	118.58	109.72	105.62	97.70	93.71
2001.02	110.07	121.32	110.35	117.61	97.84	92.71
2001.03	112.25	116.20	109.39	116.23	98.59	96.00
2001.04	110.43	116.22	106.18	111.77	97.87	91.80
2002.01	107.50	106.36	99.59	107.61	97.87	93.86
2002.02	103.57	96.77	95.84	97.25	95.73	92.16
2002.03	103.48	94.56	95.12	99.84	96.38	90.53
2002.04	106.22	94.75	100.22	100.77	96.46	95.11
2003.01	108.35	95.26	101.08	112.08	98.03	95.16
2003.02	111.84	113.55	105.44	120.10	99.91	98.26
2003.03	113.87	117.95	108.39	128.06	101.29	102.00
2003.04	113.37	125.96	107.96	132.32	103.24	104.99
2004.01	114.59	124.70	108.54	131.52	102.88	106.23
2004.02	114.69	109.93	107.16	134.09	103.65	107.41
2004.03	115.94	116.24	109.56	141.58	107.32	111.31
2004.04	120.26	107.54	114.24	149.06	108.50	111.20
2005.01	127.42	113.21	122.80	167.77	112.80	114.61
2005.02	135.19	119.36	135.89	169.32	118.28	121.53
2005.03	138.49	120.88	141.28	167.28	122.92	126.27
2005.04	140.58	127.03	145.12	176.72	128.33	132.29
2006.01	143.89	134.38	152.10	181.14	133.35	137.80
2006.02	145.06	139.60	151.94	194.29	137.08	141.06
2006.03	149.05	145.83	157.33	212.18	138.56	142.30
2006.04	151.72	149.15	161.67	213.10	143.08	144.82
2007.01	151.10	149.29	165.69	218.62	146.17	146.87
2007.02	154.16	155.98	173.13	228.73	150.17	150.88
2007.03	156.77	152.51	176.81	226.84	155.53	157.94
2007.04	155.08	151.67	180.41	229.27	156.34	159.93
2008.01	157.58	145.57	174.80	232.90	158.10	165.73
2008.02	158.74	145.11	171.37	237.66	158.30	166.64
2008.03	155.10	144.59	165.46	230.77	156.08	161.60
2008.04	156.02	142.99	159.98	224.11	158.52	165.67
2009.01	152.90	136.40	151.87	198.19	154.04	161.31
2009.02	141.94	116.98	135.75	172.86	150.57	155.83
2009.03	137.64	110.57	128.23	159.13	138.07	143.98
2009.04	133.36	93.27	114.84	158.31	123.49	129.26
2010.01	126.61	102.74	115.70	158.40	116.87	123.74
2010.02	125.94	114.83	119.11	162.43	108.90	116.49
2010.03	123.34	133.45	120.36	216.50	108.90	116.36
2010.04	118.92	159.90	129.68	245.92	112.40	118.14
2011.01	120.50	157.78	128.30	260.05	112.54	113.75
2011.02	117.92	168.47	130.74	266.68	113.09	112.91
2011.03	115.29	156.66	128.31	223.77	112.75	112.56
2011.04	120.66	155.92	126.90	208.89	113.13	113.08
2012.01	120.93	160.41	130.22	221.78	112.69	111.72
2012.02	125.38	148.83	132.84	226.97	115.45	116.73
2012.03	131.63	146.66	141.07	239.63	120.04	120.89
2012.04	132.57	143.37	146.94	249.84	121.68	122.28
2013.01	133.09	143.23	153.60	238.51	124.31	126.80
2013.02	130.76	149.41	154.47	242.28	126.94	130.17
2013.03	133.12	158.21	155.96	245.85	128.49	132.89
2013.04	131.61	159.89	153.68	248.88	130.70	136.09
2014.01	133.92	159.49	152.55	252.75	136.08	140.76
2014.02	135.37	159.82	149.23	257.62	134.07	137.15
2014.03	135.75	158.43	149.15	256.59	135.34	137.94
2014.04	137.74	157.75	149.07	231.16	135.60	137.27
2015.01	138.56	166.00	152.09	239.77	138.17	138.82
2015.02	144.19	171.94	164.34	247.57	144.36	145.07
2015.03	143.90	174.09	163.46	274.76	152.89	154.73
2015.04	146.79	170.56	171.01	312.75	161.87	164.34
2016.01	149.80	167.35	172.83	329.03	166.00	169.31
2016.02	149.93	164.64	165.46	332.49	163.90	167.88
2016.03	150.90	170.84	167.25	347.24	164.73	166.96
2016.04	147.28	173.13	161.89	337.77	161.01	164.14
2017.01	148.57	169.91	161.62	318.39	165.18	168.56
2017.02	149.70	170.41	167.83	322.05	175.17	178.51
2017.03	151.07	165.61	169.17	309.64	175.49	180.15
2017.04	152.48	169.98	169.99	306.61	179.18	182.56
2018.01	152.08	172.45	171.20	346.54	178.47	182.56
2018.02	153.67	175.45	170.83	354.98	179.00	182.46
2018.03	156.38	174.81	173.32	357.03	183.34	186.37
2018.04	161.10	171.48	184.13	383.64	185.41	187.99
2019.01	161.71	168.32	182.37	363.36	188.64	190.35
2019.02	158.67	164.75	177.59	339.55	188.36	189.26
2019.03	156.95	161.35	174.32	339.13	188.02	188.20

Exhibit 8B

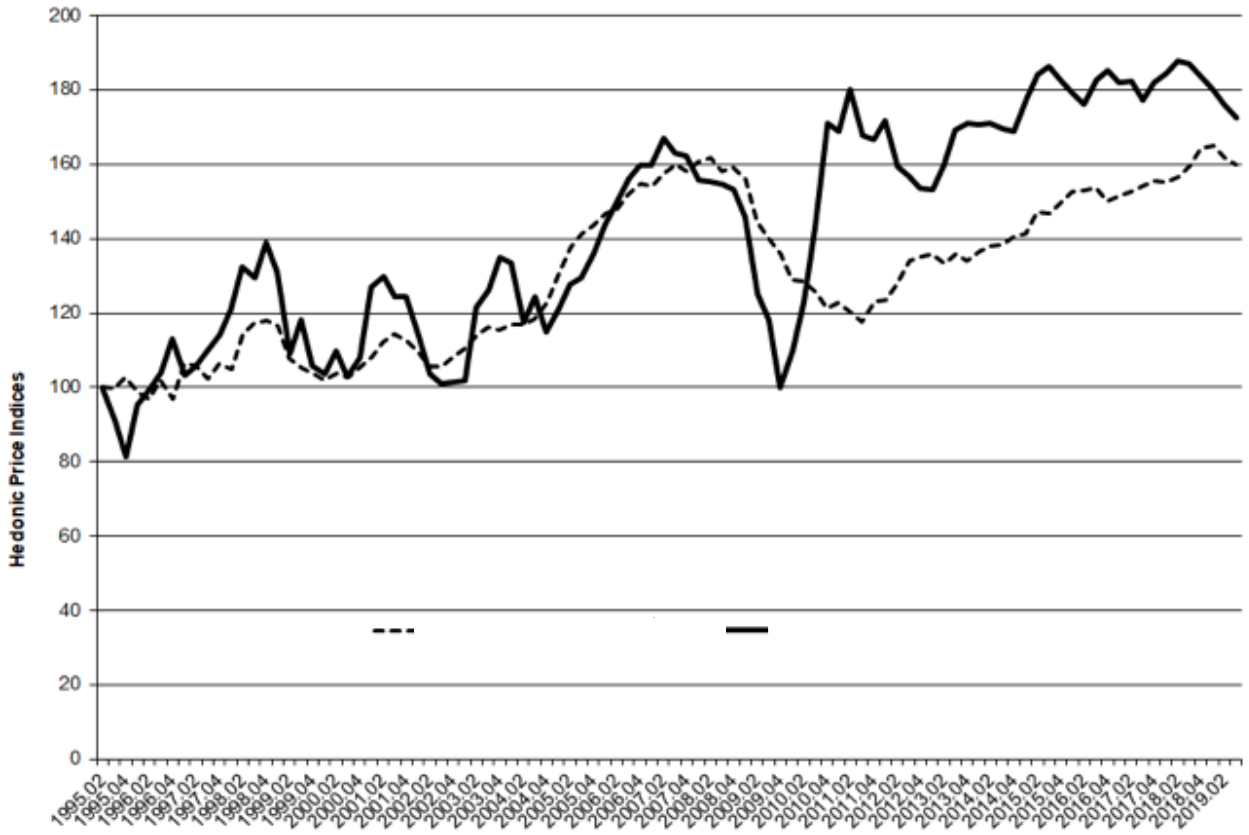
Hotel indices through 2019, quarter 3 (by region)

	Index Value						
YrQtr	Midwest	Mid-Atlantic	Mountain	New England	Pacific	South Atlantic	West South Central
1995.02	63.79	NaN	54.01	69.81	117.05	81.55	NaN
1995.03	92.48	NaN	82.98	95.60	108.62	74.65	182.92
1995.04	108.75	32.72	83.61	82.82	101.34	80.31	148.59
1996.01	108.75	30.49	125.90	93.39	102.90	86.08	124.35
1996.02	107.39	30.49	140.88	163.90	95.64	87.76	116.70
1996.03	118.11	32.68	135.65	190.87	105.85	104.77	92.82
1996.04	88.26	38.31	144.85	235.40	112.18	107.82	90.30
1997.01	110.76	50.62	125.03	290.55	115.47	109.56	126.38
1997.02	130.16	119.85	121.31	555.17	117.25	103.03	119.68
1997.03	127.80	116.01	111.25	561.88	121.11	91.37	135.55
1997.04	149.00	112.91	125.12	395.36	134.73	93.40	149.25
1998.01	134.50	124.04	125.19	326.12	144.19	96.93	143.99
1998.02	217.11	77.80	133.40	132.75	155.97	102.18	149.57
1998.03	201.33	101.28	145.56	79.60	149.48	110.80	135.39
1998.04	196.11	117.38	133.05	90.15	140.67	108.25	124.96
1999.01	189.96	101.02	128.41	95.78	127.40	104.65	101.71
1999.02	85.88	78.68	109.44	100.78	115.94	97.80	105.86
1999.03	84.87	66.37	103.39	131.00	114.07	95.69	105.68
1999.04	81.82	55.01	100.68	118.48	109.79	93.50	94.96
2000.01	73.72	57.66	94.25	109.14	110.69	95.11	89.98
2000.02	85.02	89.28	99.92	123.11	107.26	100.63	96.87
2000.03	78.33	79.70	106.18	100.64	111.52	99.67	96.75
2000.04	86.63	80.21	100.82	113.89	114.26	105.42	94.54
2001.01	97.42	79.47	115.74	100.60	120.67	112.28	99.48
2001.02	94.15	62.28	112.22	72.96	133.70	114.37	97.13
2001.03	103.37	62.82	102.31	129.46	129.96	114.65	96.50
2001.04	96.24	63.79	101.45	140.44	130.51	106.97	96.21
2002.01	90.93	75.45	81.58	138.38	124.60	99.27	91.28
2002.02	90.93	73.71	82.06	103.03	118.54	93.05	83.61
2002.03	90.18	81.61	77.05	39.48	119.94	95.41	78.89
2002.04	87.78	79.37	76.04	51.54	124.33	102.15	121.73
2003.01	89.36	82.37	80.73	50.34	129.67	105.85	112.73
2003.02	100.37	89.35	80.52	56.34	134.13	113.23	111.90
2003.03	98.40	96.84	81.56	95.80	139.03	114.90	147.37
2003.04	92.61	102.25	83.52	102.77	144.82	112.04	115.00
2004.01	86.80	99.65	76.09	116.65	147.37	115.20	113.89
2004.02	71.18	89.36	74.07	101.22	150.57	113.57	124.12
2004.03	70.63	84.24	76.45	95.35	159.54	118.41	90.50
2004.04	72.87	85.73	84.16	95.39	161.86	126.53	93.79
2005.01	80.90	92.60	102.36	103.58	175.68	130.17	103.08
2005.02	97.60	111.15	115.54	116.88	178.02	141.27	105.96
2005.03	99.98	113.56	117.19	108.60	179.32	145.94	114.01
2005.04	102.10	119.66	106.75	115.45	186.63	152.79	152.69
2006.01	102.11	133.48	111.64	119.13	184.17	167.23	159.71
2006.02	99.78	131.66	108.98	129.66	195.30	168.48	155.67
2006.03	105.69	140.32	121.19	130.80	209.26	172.47	166.71
2006.04	108.04	159.72	149.55	125.28	211.93	169.88	146.40

	Index Value						
YrQtr	Midwest	Mid-Atlantic	Mountain	New England	Pacific	South Atlantic	West South Central
2007.01	121.26	149.39	165.67	140.70	210.82	172.74	153.16
2007.02	115.11	159.53	176.42	128.93	224.60	184.05	164.69
2007.03	116.72	161.49	179.76	152.36	231.37	185.58	160.34
2007.04	119.56	146.68	180.62	170.73	233.38	194.21	153.95
2008.01	111.89	144.25	155.67	149.99	247.10	188.94	156.15
2008.02	117.12	145.06	162.41	147.95	251.03	178.83	147.67
2008.03	119.94	148.51	167.71	119.37	244.19	164.91	141.84
2008.04	115.57	151.83	153.72	97.24	241.92	155.96	150.11
2009.01	112.20	140.94	134.34	95.75	233.03	146.19	142.66
2009.02	99.24	117.34	127.53	98.44	208.61	127.42	128.61
2009.03	87.48	102.36	116.04	96.19	193.53	123.37	152.00
2009.04	79.53	72.85	106.17	106.12	182.54	114.72	144.65
2010.01	71.63	75.31	131.38	129.95	173.04	109.51	142.63
2010.02	69.68	93.20	116.94	124.69	172.71	116.43	163.16
2010.03	80.28	108.84	112.28	157.60	180.33	133.53	164.12
2010.04	81.92	146.42	107.92	165.69	236.52	130.15	184.19
2011.01	79.16	143.17	103.32	167.65	231.47	136.92	202.91
2011.02	83.74	148.47	123.89	166.08	246.19	135.01	198.33
2011.03	76.96	126.90	118.50	133.99	240.24	116.86	189.41
2011.04	85.10	117.59	131.38	109.41	202.23	122.83	162.71
2012.01	91.48	135.00	132.48	104.17	220.92	120.30	135.23
2012.02	94.57	120.06	123.46	107.27	219.66	123.14	136.28
2012.03	95.13	123.28	136.34	116.36	237.74	134.11	147.54
2012.04	97.89	158.05	130.22	128.58	244.11	137.75	161.37
2013.01	108.48	141.43	137.20	105.63	252.58	132.99	215.00
2013.02	106.55	161.62	137.62	104.60	252.44	139.23	214.37
2013.03	108.61	164.93	129.25	132.12	254.69	138.08	211.94
2013.04	108.06	133.74	131.39	129.18	248.37	137.73	213.79
2014.01	101.84	135.28	138.30	132.15	249.08	151.30	189.70
2014.02	103.21	117.58	129.82	138.51	252.48	148.92	194.79
2014.03	113.78	125.07	137.95	120.88	243.62	150.32	185.77
2014.04	110.38	106.95	142.45	120.00	239.86	153.84	180.87
2015.01	115.86	122.02	137.19	137.11	230.81	157.66	171.91
2015.02	128.79	123.93	157.24	140.71	223.86	173.85	187.25
2015.03	122.13	116.32	158.57	140.54	248.13	169.51	180.18
2015.04	136.07	135.68	162.45	156.82	264.40	169.51	202.25
2016.01	139.21	126.89	168.46	144.78	278.04	165.58	203.36
2016.02	131.00	120.92	152.48	146.25	281.95	160.24	189.85
2016.03	129.19	127.40	163.46	178.12	255.29	164.31	197.05
2016.04	118.09	128.44	153.97	161.98	252.85	156.25	189.45
2017.01	124.32	123.61	156.43	169.46	241.43	152.20	192.09
2017.02	130.79	121.03	164.04	162.20	250.33	152.88	195.78
2017.03	140.82	117.21	151.16	122.55	263.85	157.86	201.93
2017.04	146.05	108.01	152.61	148.66	251.67	164.45	191.74
2018.01	139.38	102.68	146.10	160.73	285.50	171.70	193.28
2018.02	140.71	123.36	142.45	163.57	276.01	171.90	206.03
2018.03	138.87	131.21	146.35	191.22	279.07	170.55	194.05
2018.04	136.50	136.26	165.31	165.29	303.08	186.04	216.93
2019.01	137.06	144.50	160.81	151.63	279.28	187.25	205.26
2019.02	134.30	137.54	157.64	148.61	275.33	179.66	183.77
2019.03	129.55	131.97	152.67	121.28	266.20	184.52	188.13

Exhibit 9

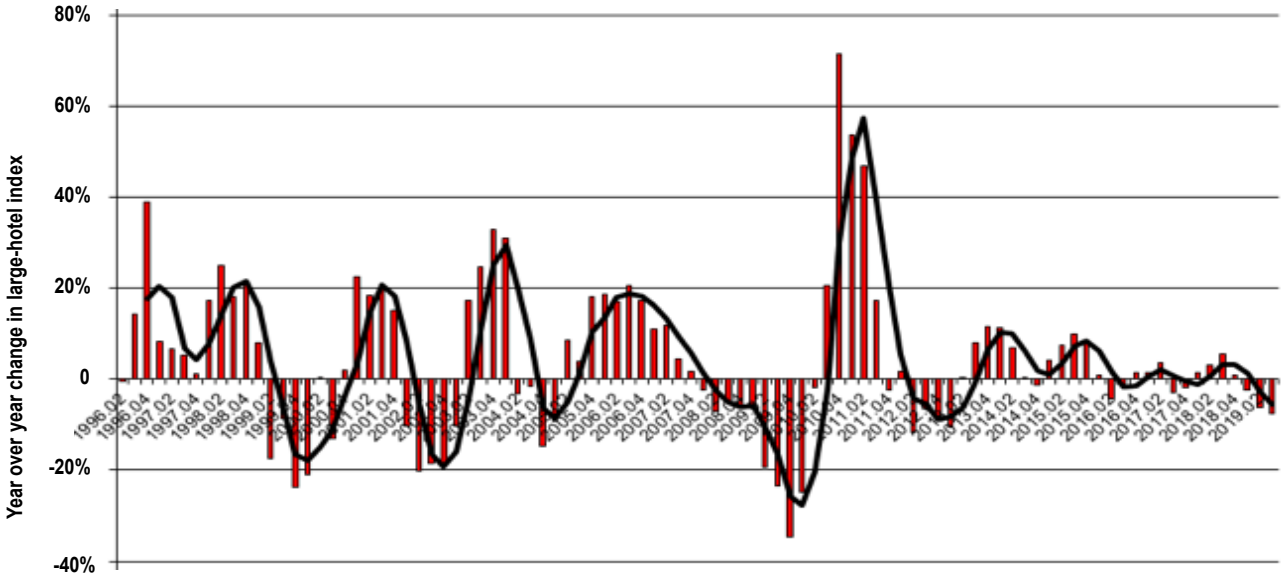
Hedonic hotel indices for large and small hotel transactions



Our Moving Average Trendlines and Our Standardized Unexpected Price (SUP) Performance Metrics Both Point to Statistically Significant Negative Price Momentum for Large Hotels, with Continued Weakening Price Performance for Small Hotels. Exhibit 9, which graphs the prices reported in Exhibit 8, shows that the price of large hotels continued their downward trend, falling 2.1 percent this quarter, following a similar 2.1-percent drop in the last quarter. Smaller hotels' prices fell 1.1 percent this quarter, compared to a drop of 1.9 percent in the prior quarter. Exhibit 10 shows that on a year-over-year basis, large hotels also fell 7.7 percent (2018Q3–2019Q3), which is a larger decline than the 6.1-percent drop posted in the prior year-over-year period (2018Q2–2019Q2). Exhibit 11 shows that smaller hotels' prices remained relatively flat at .4 percent (2018Q3–2019Q3), compared to the 3.3-percent increase in the prior period (2018Q2–2019Q2).

Exhibit 10

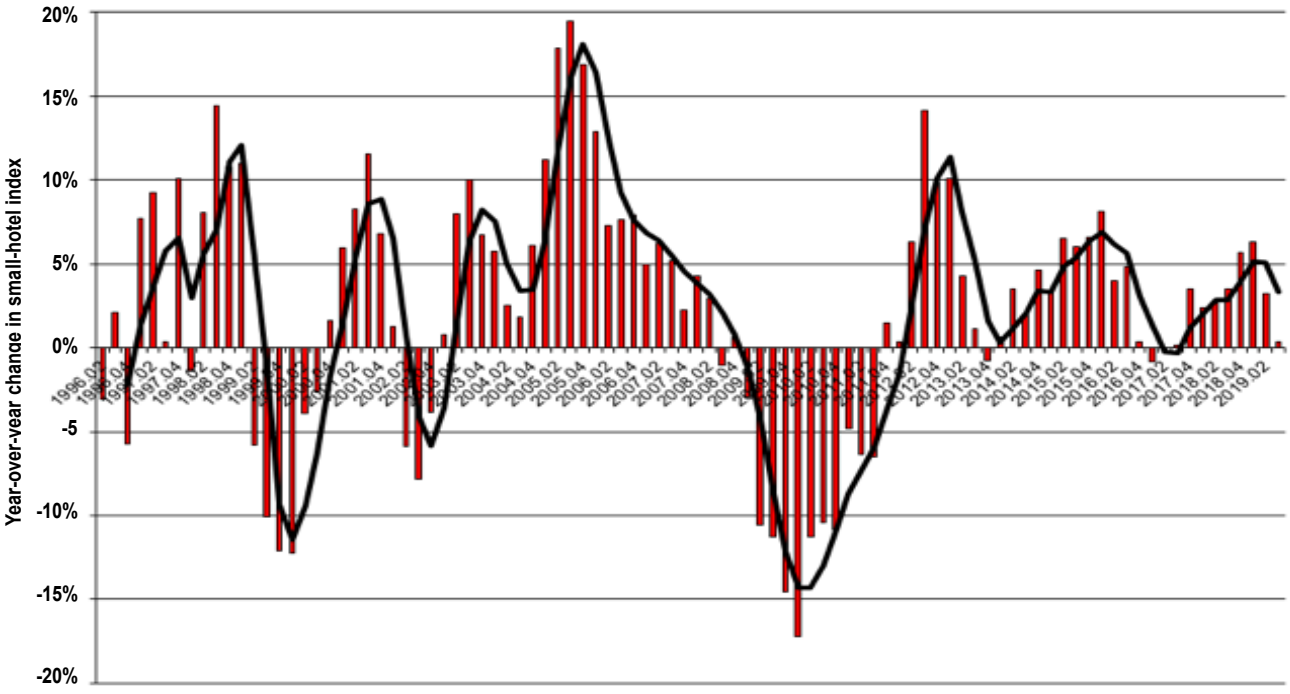
Year-over-year change in high-price (large) hotel index, with moving-average trend line



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

Exhibit 11

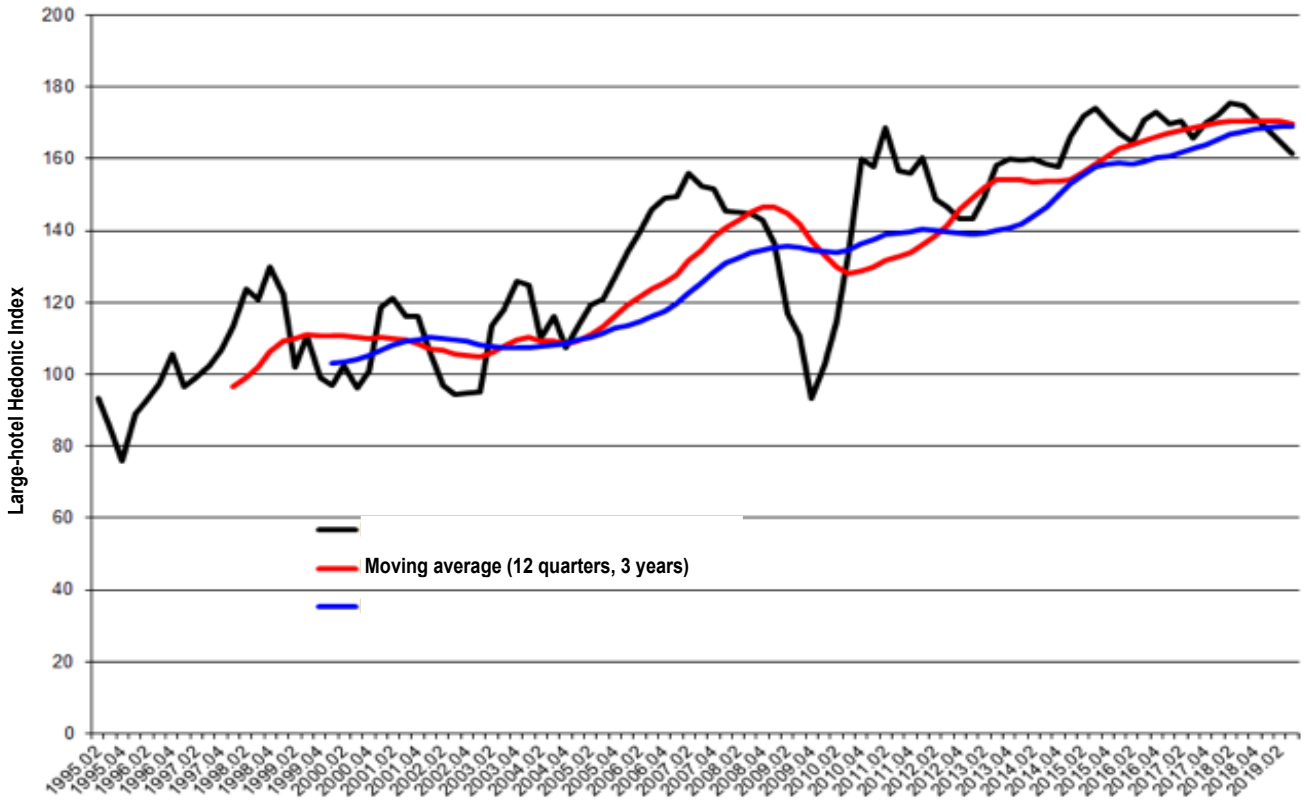
Year-over-year change in small-hotel index, with moving-average trend line



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

EXHIBIT 12

Moving average trend line for large-hotel index

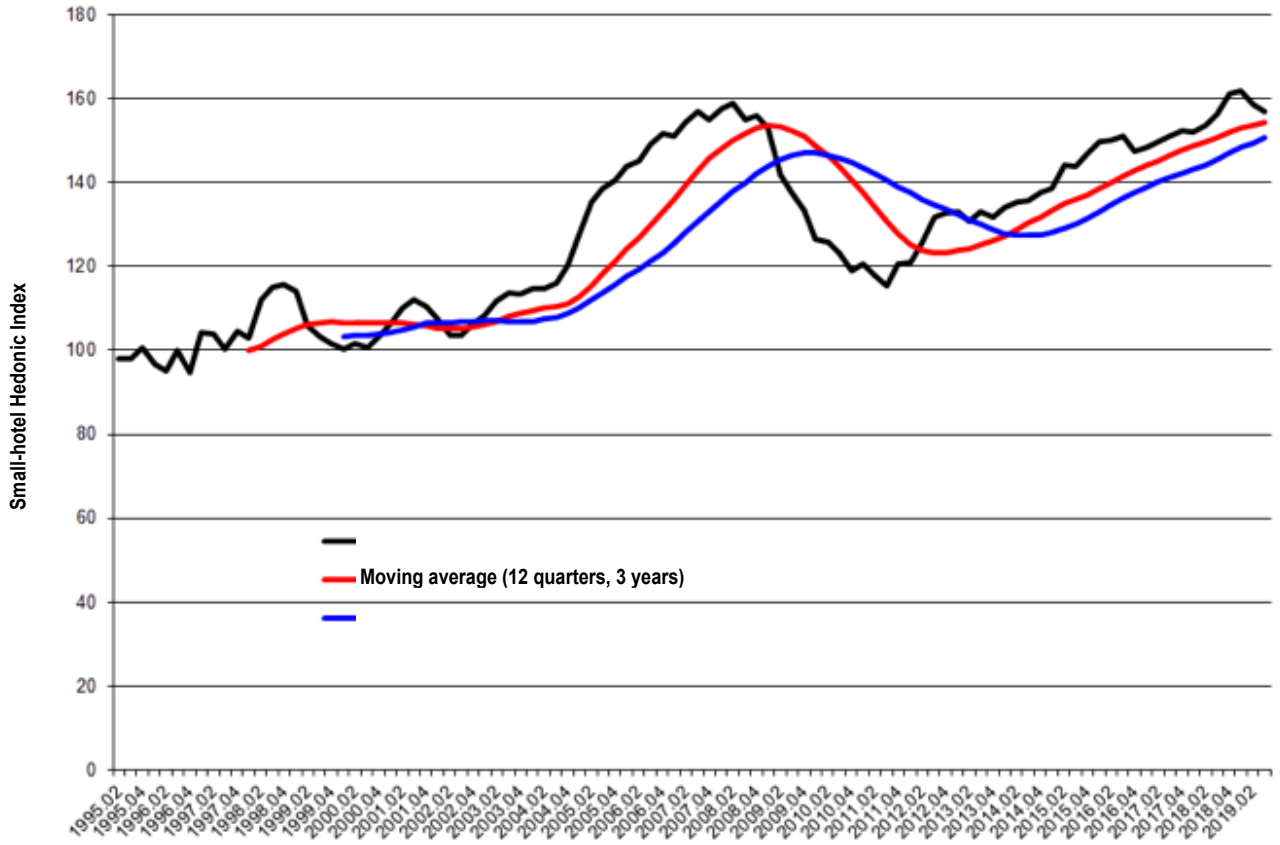


Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

Consistent with our analysis thus far, our moving average trend lines for large hotels in Exhibit 12 shows that the price for large hotels has continued to decline below both its short-term and long-term moving average trend lines. This signals that large hotels continue to exhibit a weakness in price (that is,

EXHIBIT 13

Moving average trend line for small-hotel index



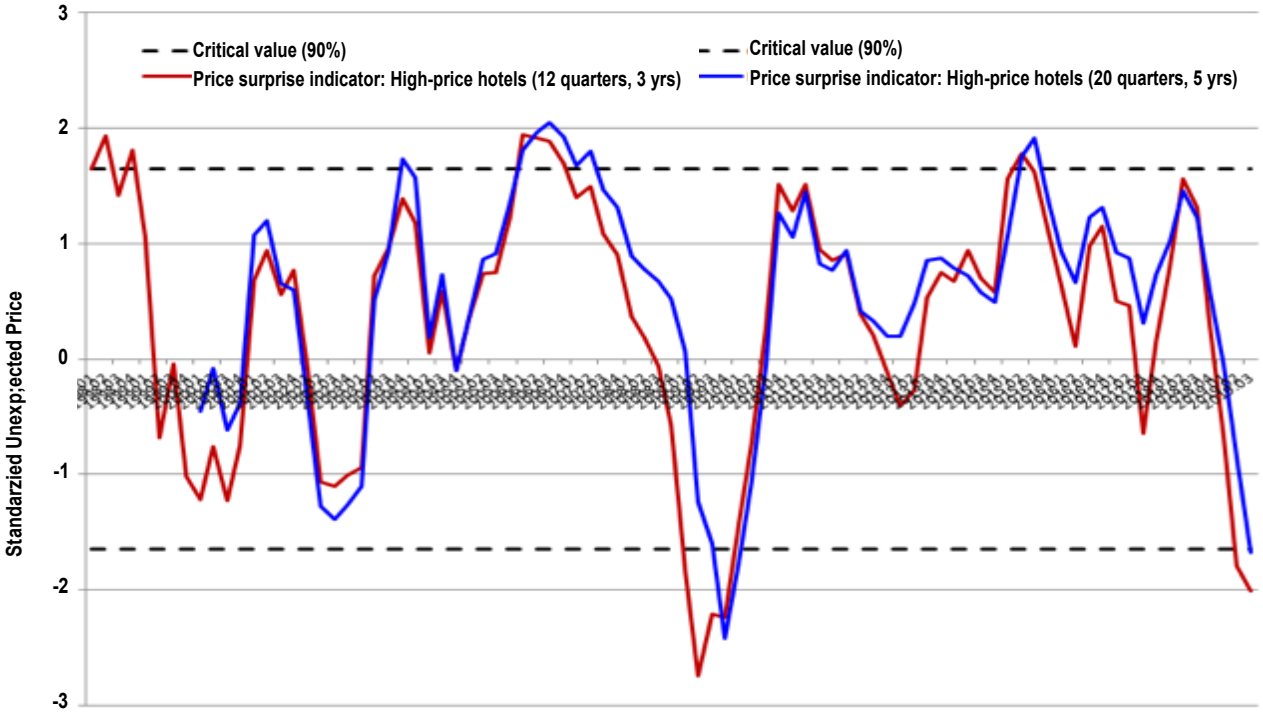
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

negative price momentum). In contrast to this, Exhibit 13 shows that the price for smaller hotels is still above both its short-term and longer-term moving average trend lines, although the spread between the current price and these trend lines continued to narrow from the prior period. As stated earlier, this is due to declining price momentum for small hotels this period. This indicates a continued signal that small hotels are still a ***hold*** with a ***sell*** signal indicated for larger hotels.

Our Standardized Unexpected Price (SUP) metrics in Exhibit 14 show that the decline in the price of large hotels is statistically significant, with both price surprise indicators breaking below the lower confidence band. The standardized price for small hotels also continued to fall, although unlike large hotels, the standardized price of small hotels has not crossed below the lower confidence band, as Exhibit 15 shows.

Exhibit 14

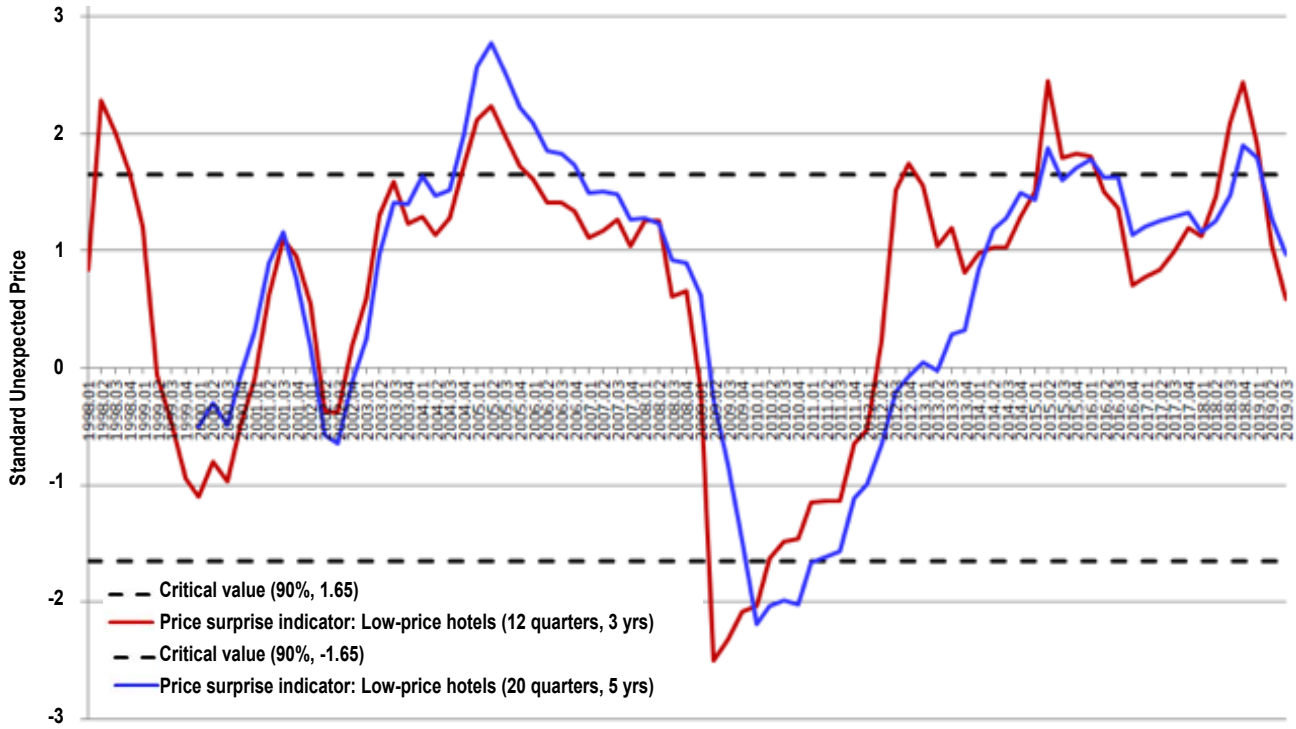
Standardized unexpected price (SUP) for high-price hotel index



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

Exhibit 15

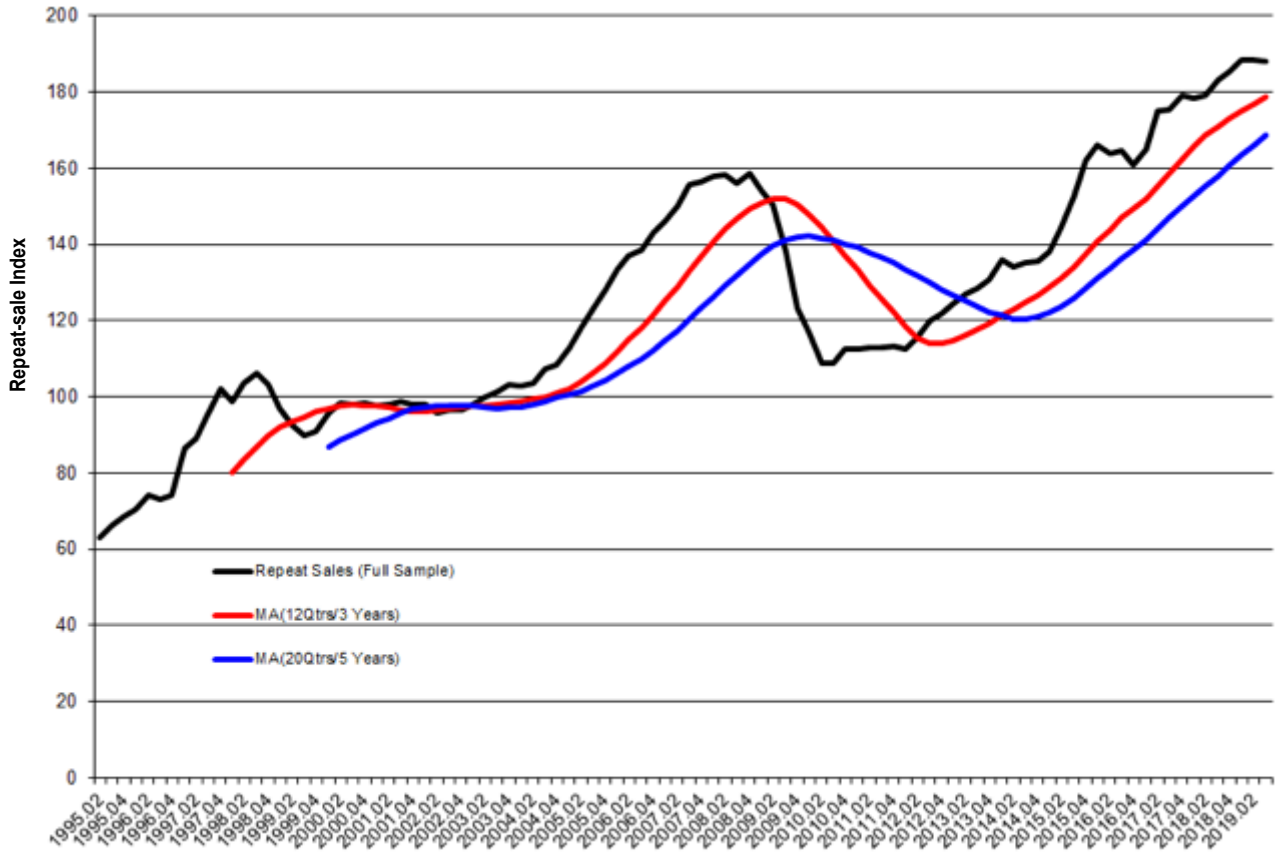
Standardized unexpected price (SUP) for small-hotel index



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

EXHIBIT 16

Moving average trend line for repeat sale-hotel index

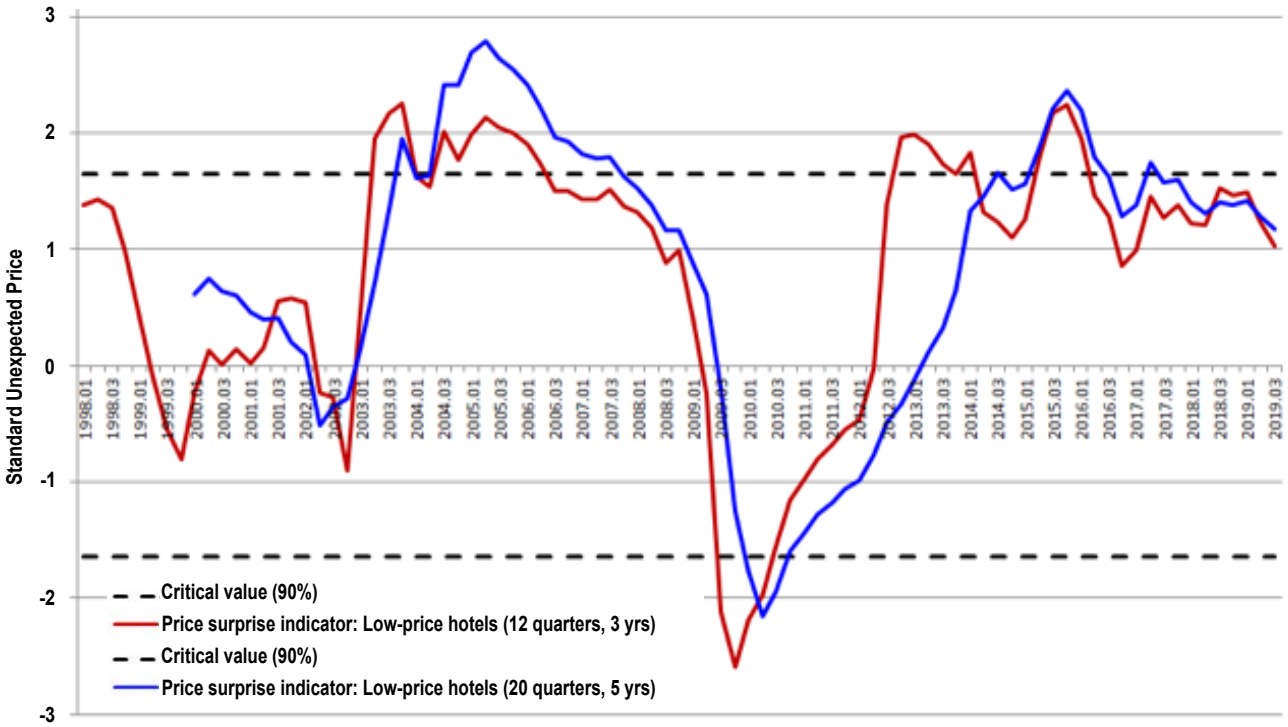


Repeat Sales Metrics: Prices Continue to Moderate. Similar to smaller hotels, our repeat sale indicator for the moving average trendline in Exhibit 16 indicates that although positive price momentum continues to exist, it is showing signs of weakening.[3] The price of hotels that have sold more than once is still higher than either its short-term or long-term moving averages, although the spread continues to narrow. Our SUP performance metric in Exhibit 17 indicates that standardized prices have continued their descent this quarter. Exhibit 18 shows that the repeat sale price index rose barely 1 percent year over year this period (2018Q3 to 2019Q3), which is lower than the 3.7-percent year-over-year increase in the previous period (2018Q2 to 2019Q2). From a quarter-over-quarter perspective, the index remained relatively flat at -.6 percent in the current period (2019Q3–2019Q2), compared to -.6% in the previous quarter (2019Q2–2019Q1).

[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. 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 e.g., repeat sale full sample index but it would not be included in the latter repeat sale index.

Exhibit 17

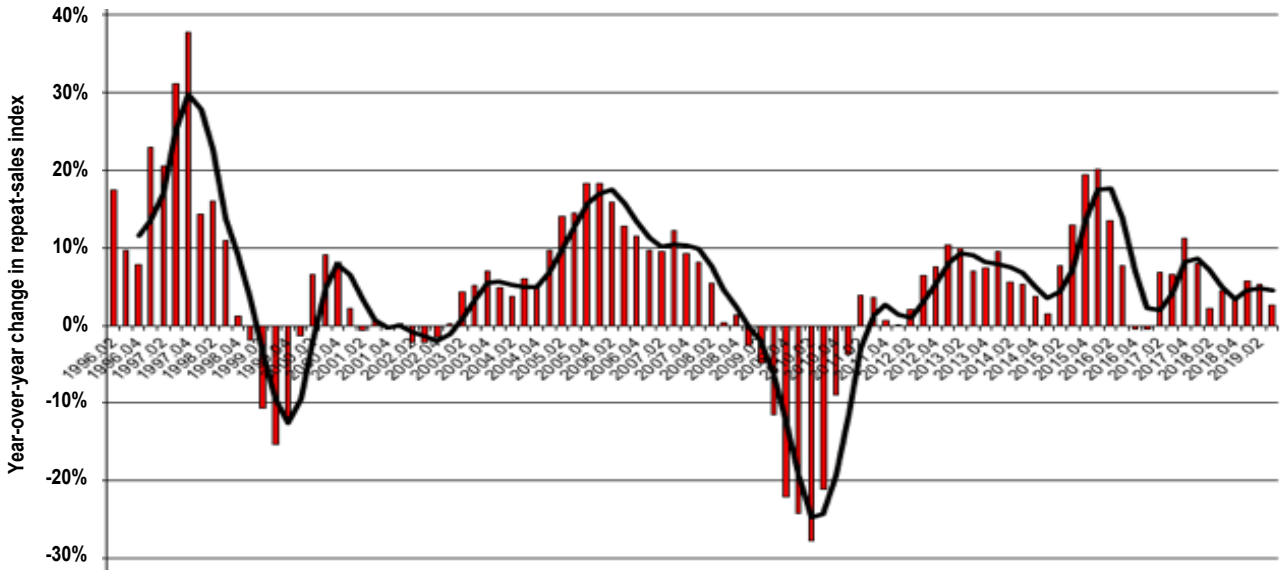
Standardized Unexpected Price (SUP) for hotel repeat sale index (full sample)



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

Exhibit 18

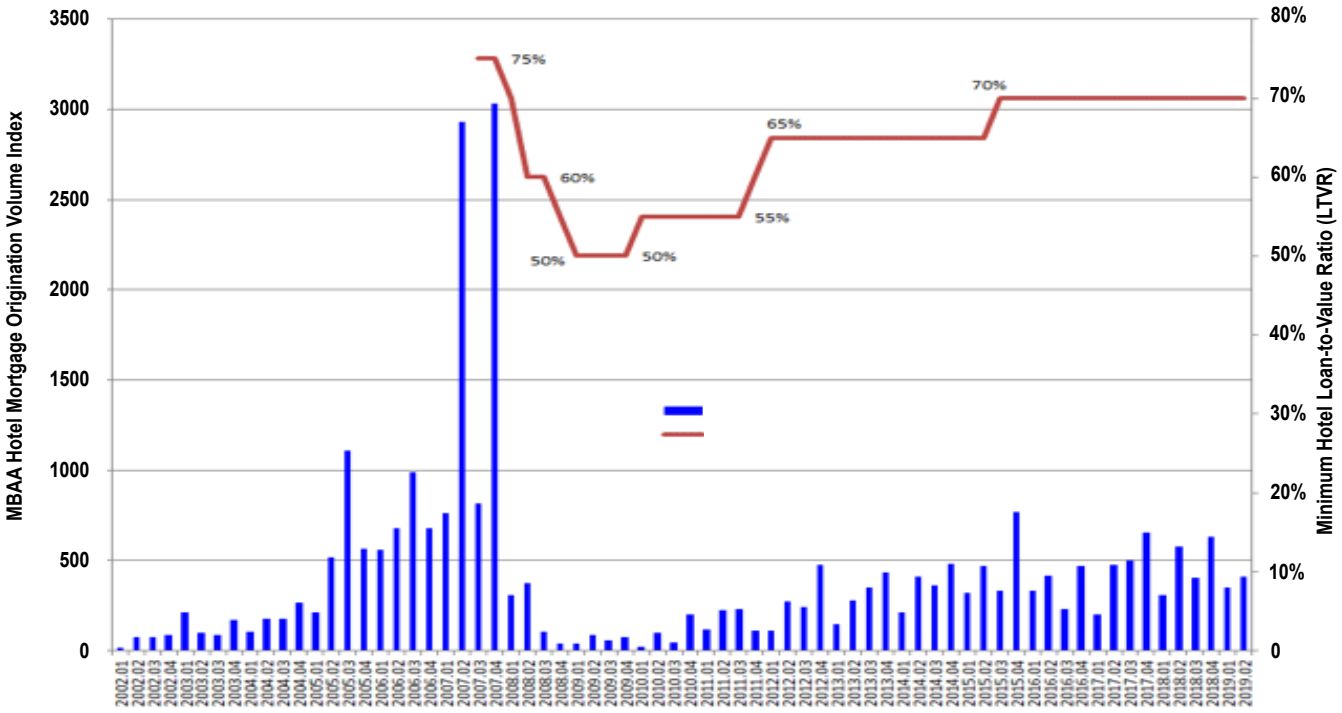
Year-over-year change in repeat-sale index, with moving-average trend line



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

EXHIBIT 19

Mortgage origination volume versus loan-to-value ratio for hotels



Sources: Cornell Center for Real Estate and Finance, Mortgage Bankers Association

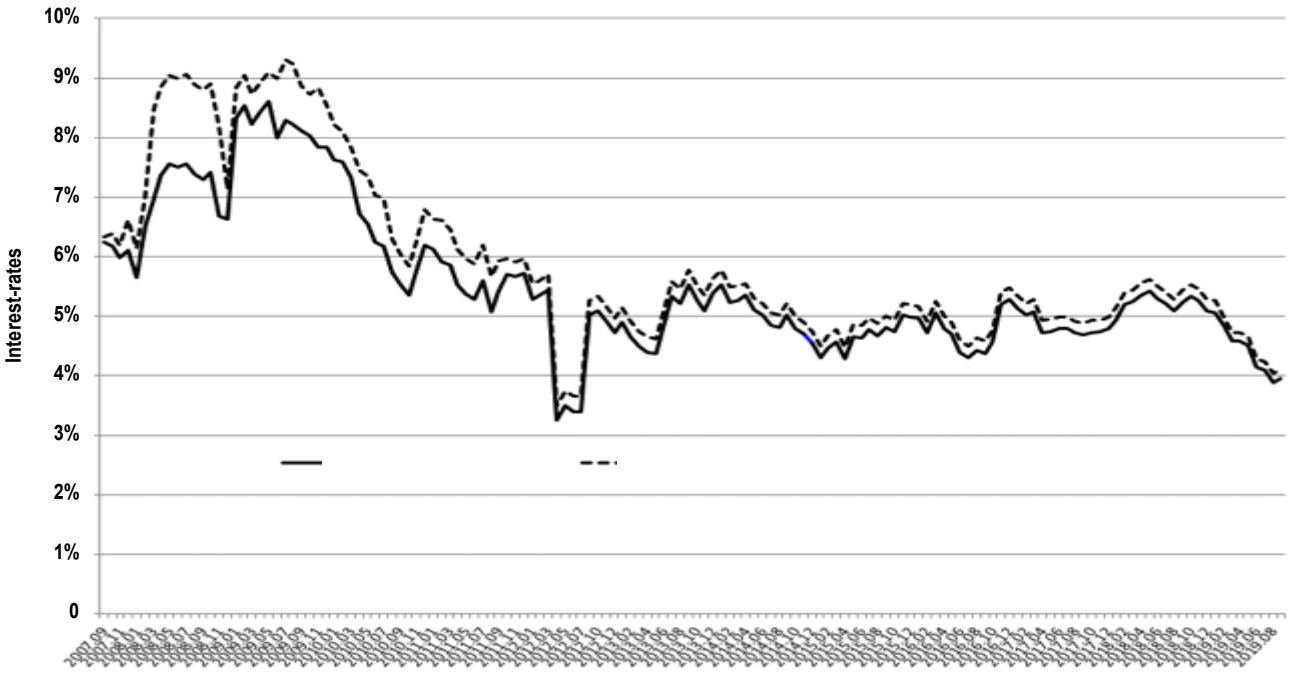
Mortgage Financing Volume for Hotels Fell Year over Year, but Rose Quarter over Quarter. Exhibit 19 shows that although mortgage origination volume for hotels as reported for 2019Q2 is 28.5 percent lower on a year-over-year basis (2019Q2–2018Q2),[4] it rose 18 percent on a quarter-over-quarter basis (2019Q2 compared to 2019Q1). The maximum loan-to-value (LTV) ratio for hotels continues to remain at 70 percent.

The Cost of Hotel Debt Financing Has Declined, with No Change in the Relative Risk Premium for Hotels. The cost of obtaining hotel debt financing as reported by Cushman Wakefield Sonnenblick Goldman declined 4.3 percent for Class A properties and

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

Exhibit 20

Interest rates on Class A hotels versus Class B and C properties



Source: Cushman Wakefield Sonnenblick Goldman

dropped 4.2 percent for Class B and C Hotels.[5] Exhibit 20 shows that interest rates on both Class A and Class B and C hotel deals also declined on a year-over-year basis by 24 percent. In particular, interest rates were 3.96 percent for Class A hotels and 4.11 percent for Class B and C properties this quarter, compared to 4.14 percent for Class A and 4.29 percent for Class B and C hotels in the second quarter (ended June 2019). Year over year, interest rates fell from 5.24 percent to 3.96 perent for Class A hotels, and from 5.44 percent to 4.11 percent for Class B and C hotels. This downward trend in interest rates started in November 2018.

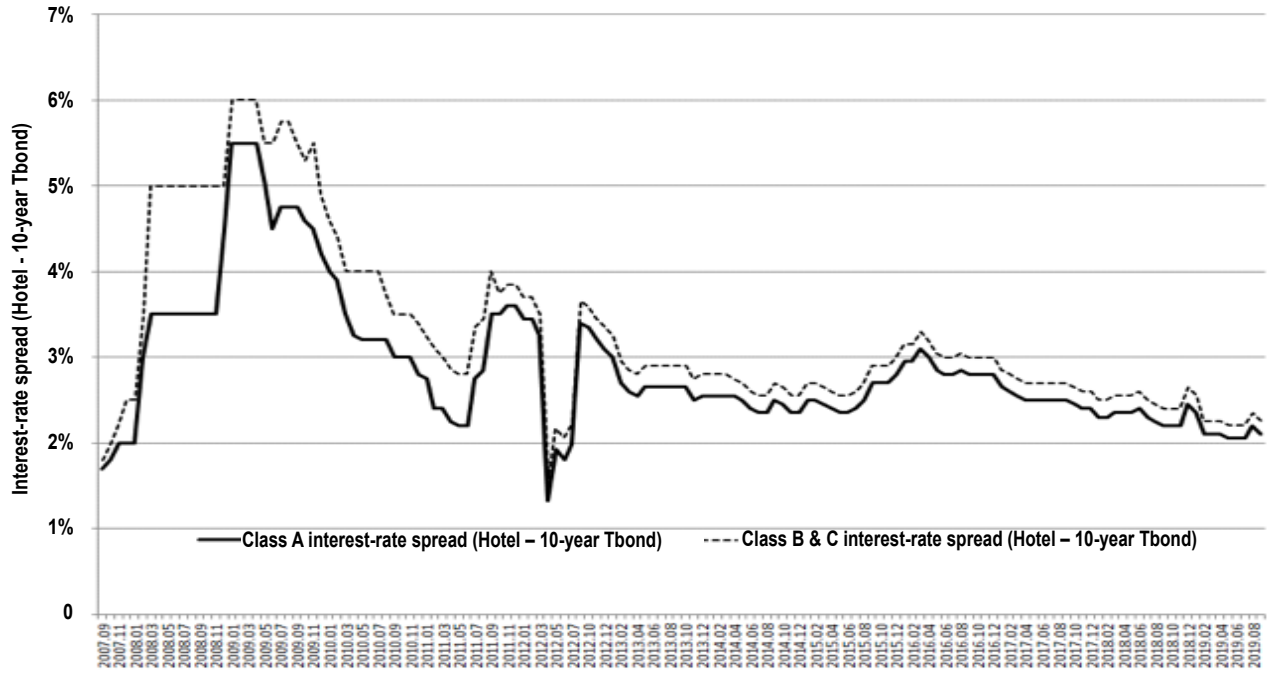
Exhibits 21 and 22 (on the next page) depict interest rate spreads relative to different benchmarks. Exhibit 21 shows the spread of interest rates on full-service Class A hotels (as well as B and C properties) over the ten-year Treasury bond. On this metric, interest rate spreads rose 5 basis points (bps) for both Class A and Class B and C hotels in the current quarter relative to the prior quarter. (Class A spread: 2.10% vs. 2.05%; Class B spread: 2.25% vs. 2.20%). The rise in interest rate spreads signals that lenders view hotels as slightly riskier relative to our last report, although this change is imperceptible. As such, lenders' compensation for risk associated with hotel loans has increased, although the magnitude of this rise isn't economically meaningful. Exhibit 22 shows the spread between the interest rate on Class A full service hotels (and B&C properties) over the interest rate corresponding to non-hotel commercial real estate (known as the hotel real estate premium).[6] The monthly hotel real estate premiums for both higher quality (Class A) and lower quality (Class B and C) hotels have continued to remain stable relative to the prior quarter, changing by an imperceptible .02 percent for both Class A and Class B properties. For Class A hotels, the hotel real estate premium averaged .367 percent in the current quarter (2019Q3), compared to .35 percent in the previous quarter (2019Q2). For Class B and C hotels, those

[5] 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 sized 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 deals are not necessarily similar to deals that are reported by ACLI.

[6] 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 21

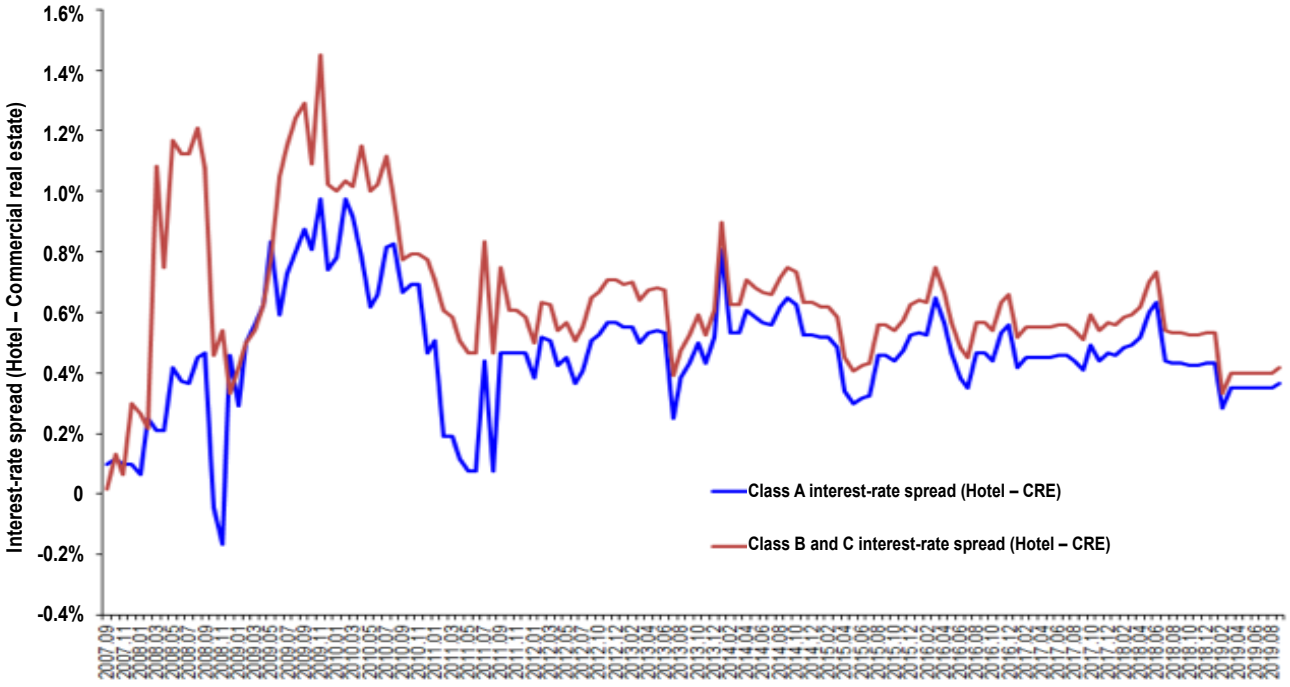
Interest-rate spreads of hotels versus U.S. Treasury ten-year bonds



Source: Cushman Wakefield Sonnenblick Goldman

Exhibit 22

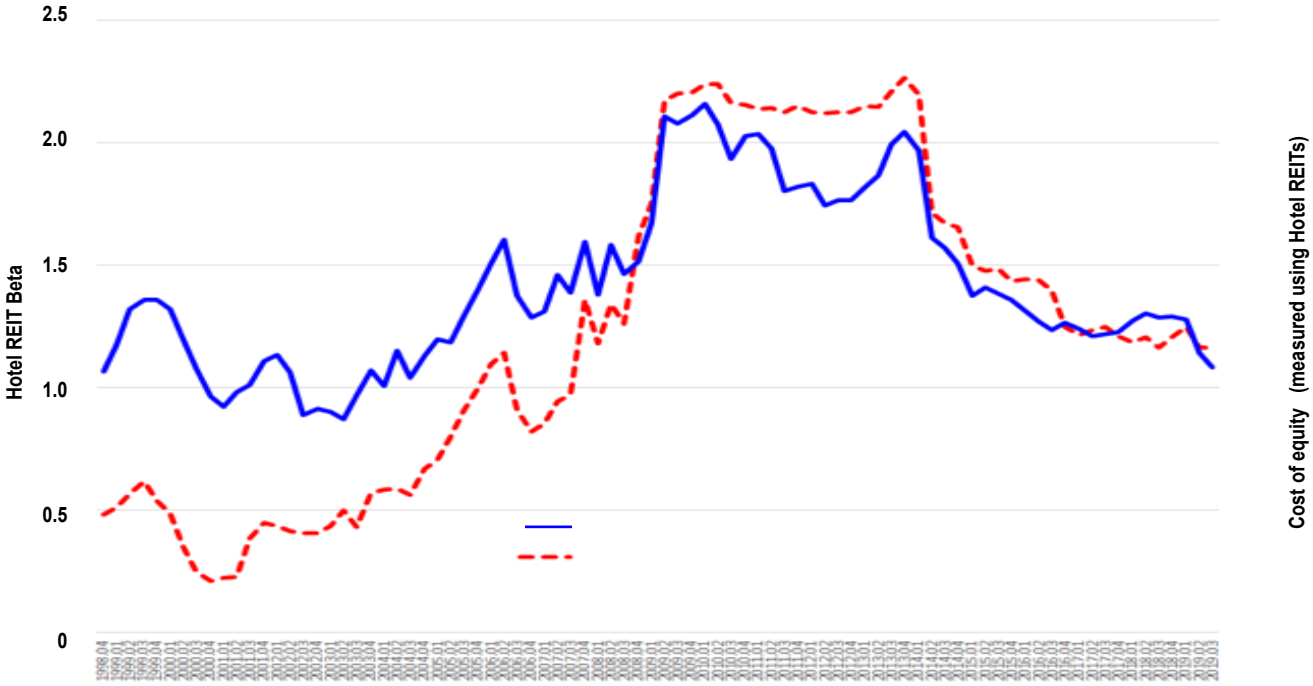
Interest-rate spreads of hotels versus non-hotel commercial real estate



Source: Cushman Wakefield Sonnenblick Goldman

Exhibit 23

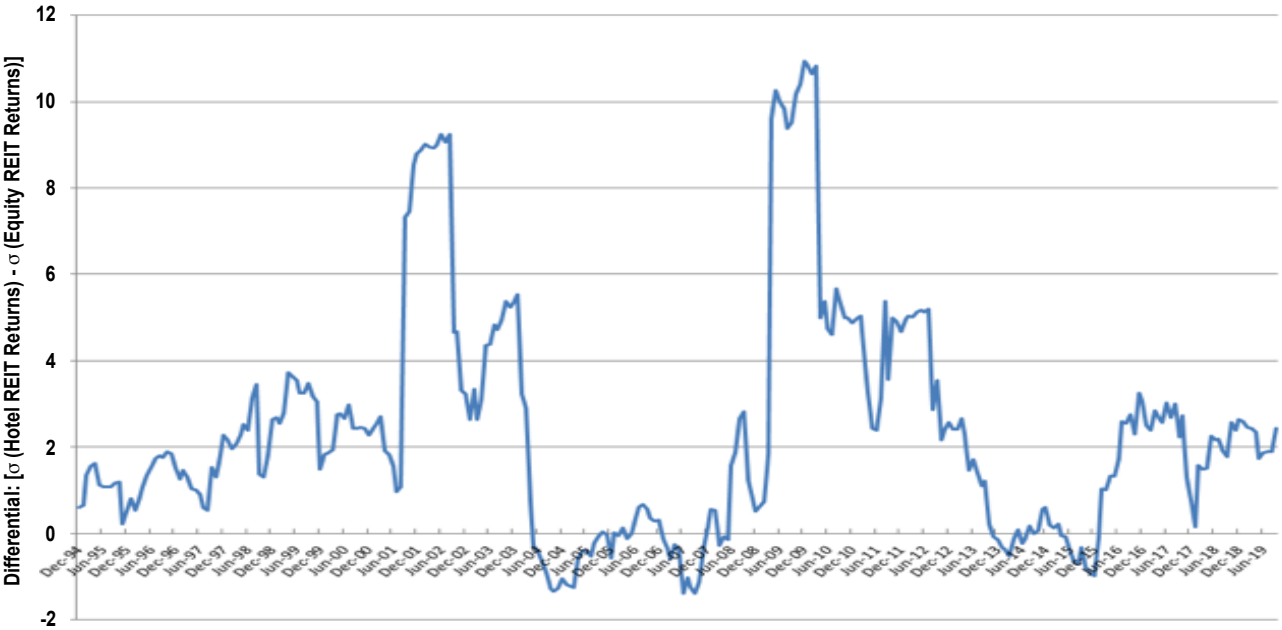
Cost of equity financing using the Capital Asset Pricing Model and hotel REITs



Sources: Cornell Center for Real Estate and Finance, NAREIT

Exhibit 24

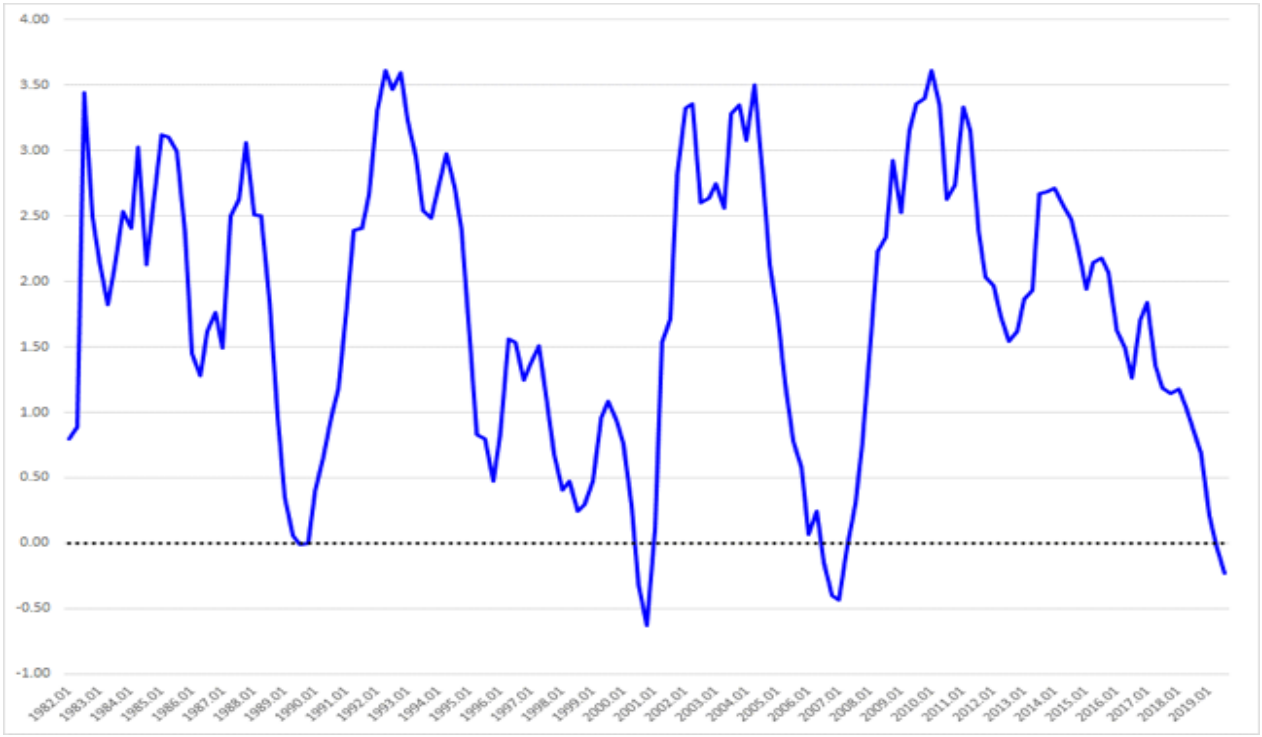
Risk differential between hotel REITs and equity REITs



Sources: Cornell Center for Real Estate and Finance, NAREIT

EXHIBIT 25

Yield spread of 10-year and 3-month U.S. Treasury bonds



Sources: Cornell Center for Real Estate and Finance, St Louis Federal Reserve

figures were .417 percent in this third quarter, versus .40 in the previous (second) quarter. This is a signal that the perceived default risk for hotel properties relative to other commercial real estate (office, retail, industrial, and apartments) has not changed this quarter compared to the previous quarter.

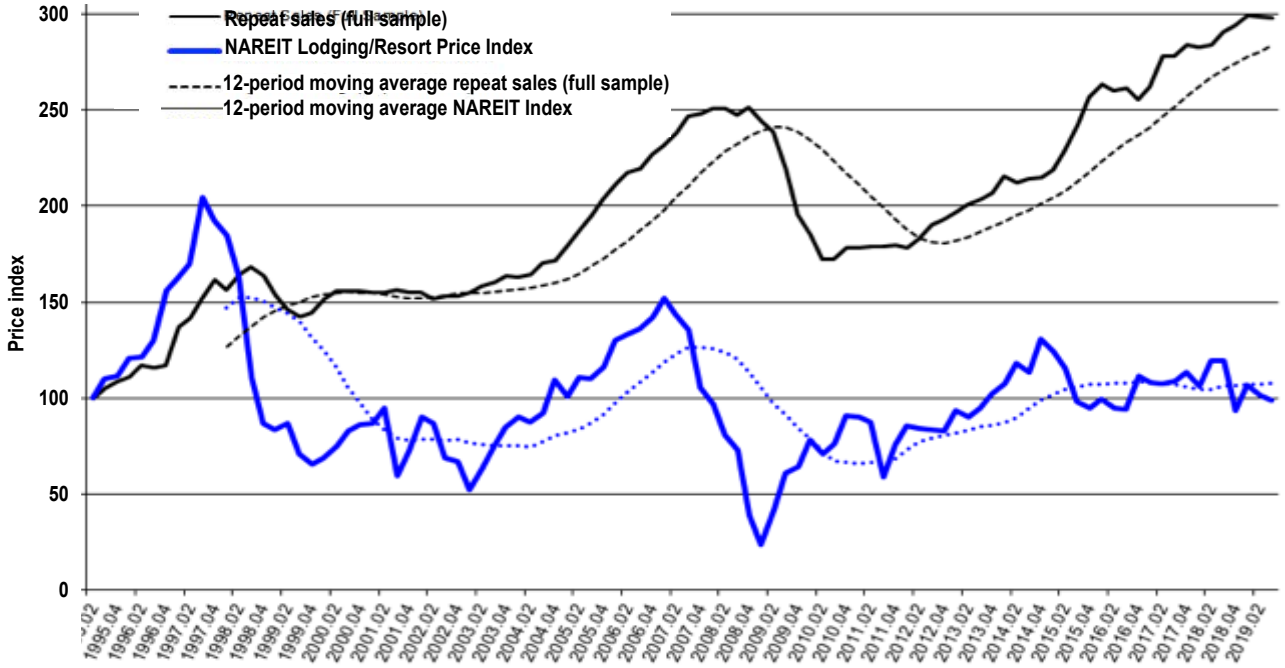
Cost of Equity Financing Is Now Less Expensive, Albeit the Riskiness of Hotels Has Started to Rise Relative to Other Types of Commercial Real Estate. The cost of using equity financing for hotels as measured using the Capital Asset Pricing Model (CAPM) on hotel REIT returns continued to decline this quarter, as shown in Exhibit 23. The cost of using equity funds is currently at 6.9 percent for 2019Q3 compared to 7.3 percent for 2019Q2 (and 8.18 percent for 2019Q1). The cost of borrowing equity capital has thus fallen noticeably. That said, in terms of *total* risk (systematic risk + risk that is unique to hotel REITs), Exhibit 24 shows that the total risk of hotel REITs relative to the total risk of equity REITs as a whole reversed course this quarter and started to rise.[7] This indicates that the perceived default risk for hotels has risen relative to other types of commercial real estate. Expect borrowing costs for hotel loans to start rising if this trend persists, all else equal.

The Spread between the 10-year Treasury and 3-month Treasury Continues to Be the Joker in the Deck. The difference between the 10-year constant maturity 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, and a negative spread has historically been a leading indicator of a recessionary period. Indeed, Exhibit 25 shows that the spread has declined since the first quarter of 2010 (2010Q1) and has fallen further into negative territory. This situation poses a problem for banks who borrow short and lend long, as well as

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

Exhibit 26

Hotel repeat sales index versus NAREIT lodging/resort price index



Sources: Cornell Center for Real Estate and Finance, NAREIT

for the CMBS market that relies on an upward sloping yield curve for arbitrage. This 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 Continue Falling Based on Our Reading of the Tea Leaves. Exhibit 26 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 a leading indicator of underlying real estate performance, since the stock market is forward looking or efficient. Looking ahead, the NAREIT lodging index fell 2.6 percent this quarter, compared to decline of 4.7 percent in the prior quarter. It also declined 17 percent year-over-year, which is a larger decline than the 15-percent drop in the previous year-over-year period.

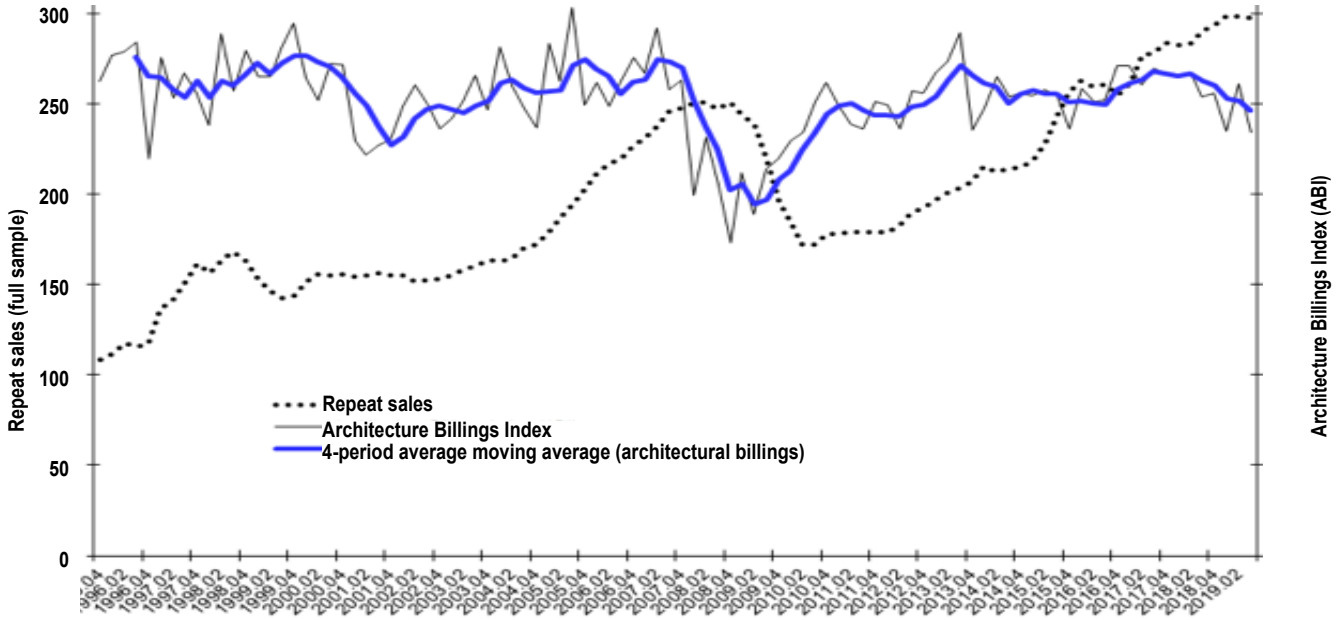
The architecture billings index (ABI) for commercial and industrial property, which represents another forward-looking metric, fell this quarter from the previous quarter, as shown in Exhibit 27 (46.9 versus 52.3).[8] Year over year, the ABI declined 7.7 percent in the current period, compared to a fall of 2 percent in the previous period. Expect negative price momentum based on the year-over-year trend in ABI. The National Association of Purchasing Managers (NAPM) index shown in Exhibit 28, which is an indicator of anticipated business confidence and thus business traveler demand, decreased 20.1 percent year over year (-7.5% on a quarter-over-quarter basis) compared to -14.1 percent in the prior year-over-year period (2019Q2–2018Q2).[9] Based on this indicator, expect the price of

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

[9] 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 27

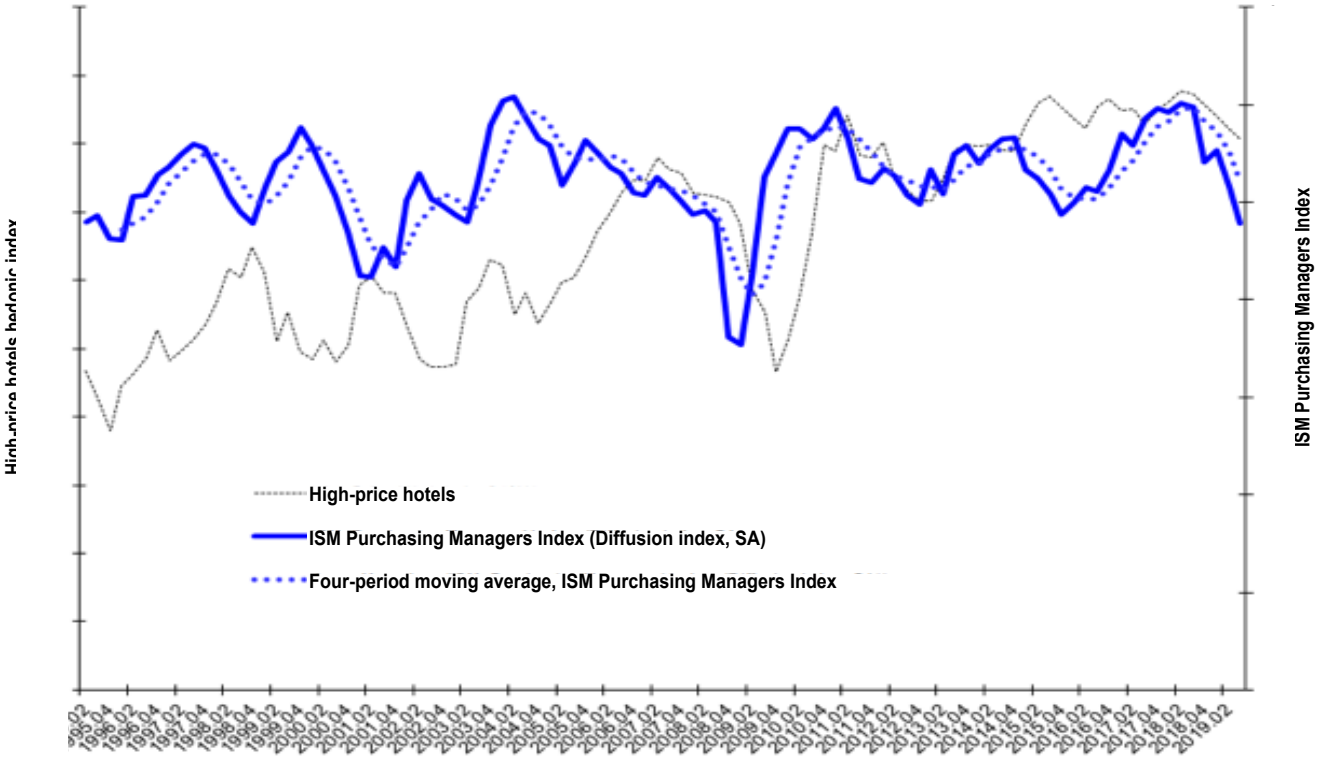
Hotel repeat sales index versus architecture billings index



Sources: Cornell Center for Real Estate and Finance, American Institute of Architects

Exhibit 28

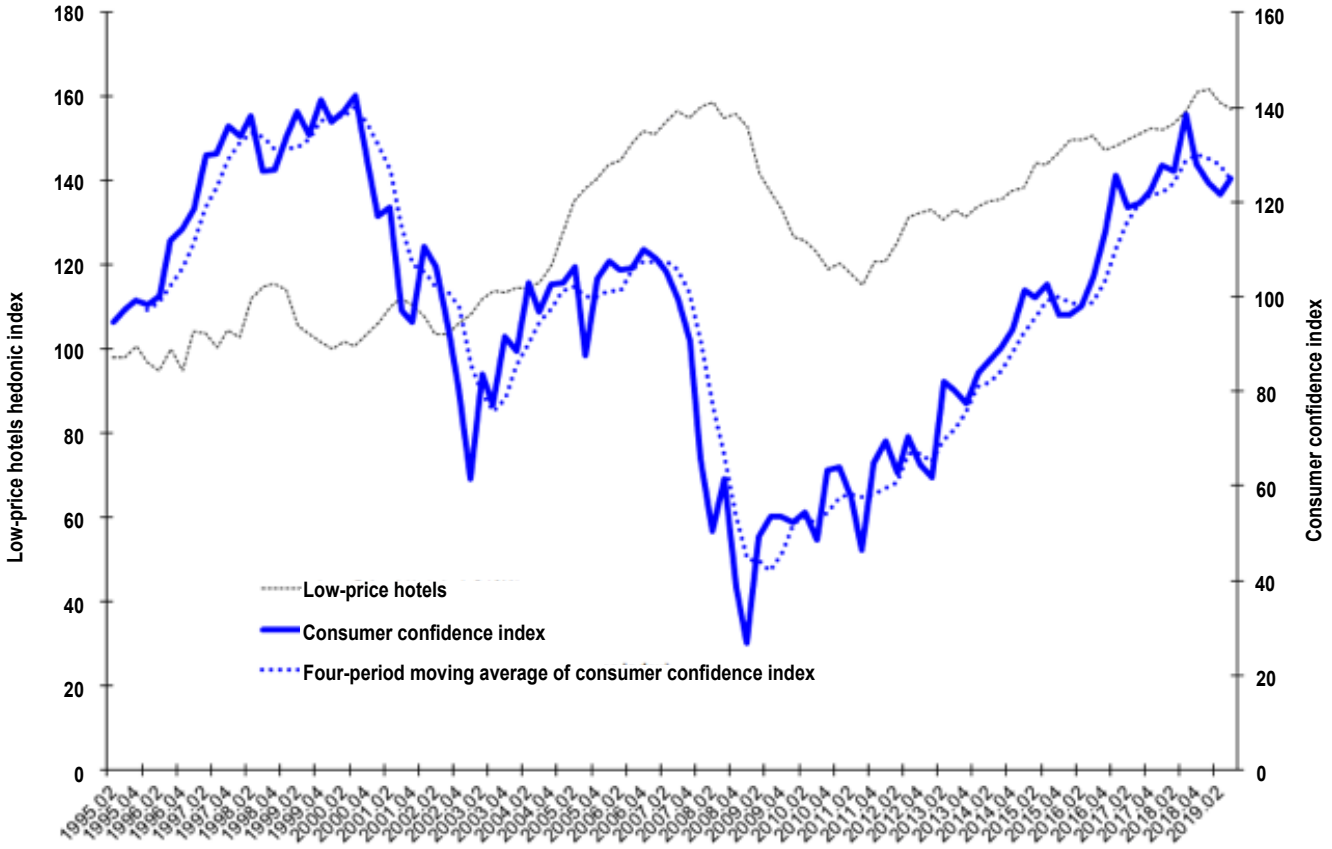
Business confidence index (National Association of Purchasing Managers) and high-price hotel index



Sources: Cornell Center for Real Estate and Finance, Institute for Supply Management (ISM)

Exhibit 29

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 29, 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, fell almost 10 percent year over year (3% quarter-over-quarter) continuing the negative trend from the previous period (-4% year over year; -2% quarter over quarter). Consequently, 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:

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

Standard Deviation (σ) = 18.99

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

CREF Advisory Board

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