Cornell Hotel Indices: Third Quarter 2023

Higher Interest Rates Hinder Hotel Price Momentum

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

Executive Summary

The price performance of hotels by region was mixed in the third quarter of 2023. The Midwest, Mid-Atlantic, Mountain, and West South Central posted positive quarterly and year-over-year results. In contrast, New England and the South Atlantic regions struggled, and the Pacific region recorded only slight year-over-year gains. Hotels in non-gateway cities continued to outperform those in gateway cities. Transaction volume fell year-over- year and quarter-over-quarter. However, volume is up this quarter for large hotels and hotels in gateway cities. Based on moving averages, a "hold" signal is indicated for large hotels, with a "buy" signal for small properties. That said, the situation calls for keeping your gunpowder dry, given that the standardized prices of both large and small hotels have softened. Hotel interest rates for both Class A and Class B and C hotels rose about 3.6 percent this quarter and approximately 4 percent year over year, even as credit spreads tightened and the delinquency rate on hotel loans fell this quarter. Looking at commercial property categories, the delinquency rate on hotels is now lower than both retail and office properties. As in the prior period, the borrowing costs still exceed the return on hotels. Expect to see an uptick in the price of large hotels in the next quarter, while prices for small hotels falter, based on our leading indicators of hotel price performance. This is volume 12, number 3 of the hotel indices series.

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 the *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 the *Journal of Real Estate Finance and Economics*. He is the former co-editor of *Real Estate Economics*, the leading real estate academic journal. He continues to be on the editorial board of *Real Estate Economics*. He is also an associate editor of *Financial Review*. He previously served on the editorial boards of the *Journal of Real Estate Finance and Economics*, the *Journal of Property Research*, and the *Journal of Real Estate Finance*. He is a past president of AREUEA (2019), the leading real estate academic organization. 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 the *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 the *Journal of Real Estate Research*.

Robert M. White, Jr., CRE, is the founder and former president of Real Capital Analytics Inc., an international research firm that publishes the *Capital Trends Monthly*. On August 2, 2021, he sold Real Capital Analytics to MSCI. MSCI-Real Capital Analytics provides real time data concerning the capital markets for commercial real estate and the values of commercial properties. Mr. White is the 2014 recipient of the James D. Landauer/John R. White Award given by The Counselors of Real Estate. In addition, he was named one of National Real Estate Investor Magazine's "Ten to Watch" in 2005, Institutional Investor's "20 Rising Stars of Real Estate" in 2006, and Real Estate Forum's "10 CEOs to Watch" in 2007. Previously, Mr. White spent 14 years in the real estate investment banking and brokerage industry and has orchestrated billions of commercial sales, acquisitions and recapitalizations. He was formerly a managing director and principal of Granite Partners LLC and spent nine years with Eastdil Realty in New York and London. Mr. White is a Counselor of Real Estate, a Fellow of the Royal Institution of Chartered Surveyors and a Fellow of the Homer Hoyt Institute. He serves on the board of directors for the Pension Real Estate Association and the advisory board for the Real Estate Research Institution. He is also a member of numerous industry organizations and a supporter of academic studies. Mr. White is a graduate of the McIntire School of Commerce at the University of Virginia. White's research has been published in the *Journal of Real Estate Finance and Economics*. Mr. White is a noted authority on the real estate capital markets with credits in *The Wall Street Journal, Barron's, The Economist, Forbes, The New York Times,* and the *Financial Times*, among others.

Disclaimer
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Analysis of Indices through Q3, 2023

Mixed performance by region. Exhibits 1A through 1D show that the Midwest, Mid-Atlantic, Mountain, and West South-Central regions continued to experience positive, double-digit price gains in the current year-over-year period. In contrast, the Pacific region saw low, single-digit positive gains compared to the prior year-over-year period, even as the New England and South Atlantic regions posted price declines. On a quarter-over-quarter basis, however, a slightly different picture emerges: single-digit hotel price increases in all regions except for New England, where prices fell 5 percent, and the Pacific region, where prices remained flat.

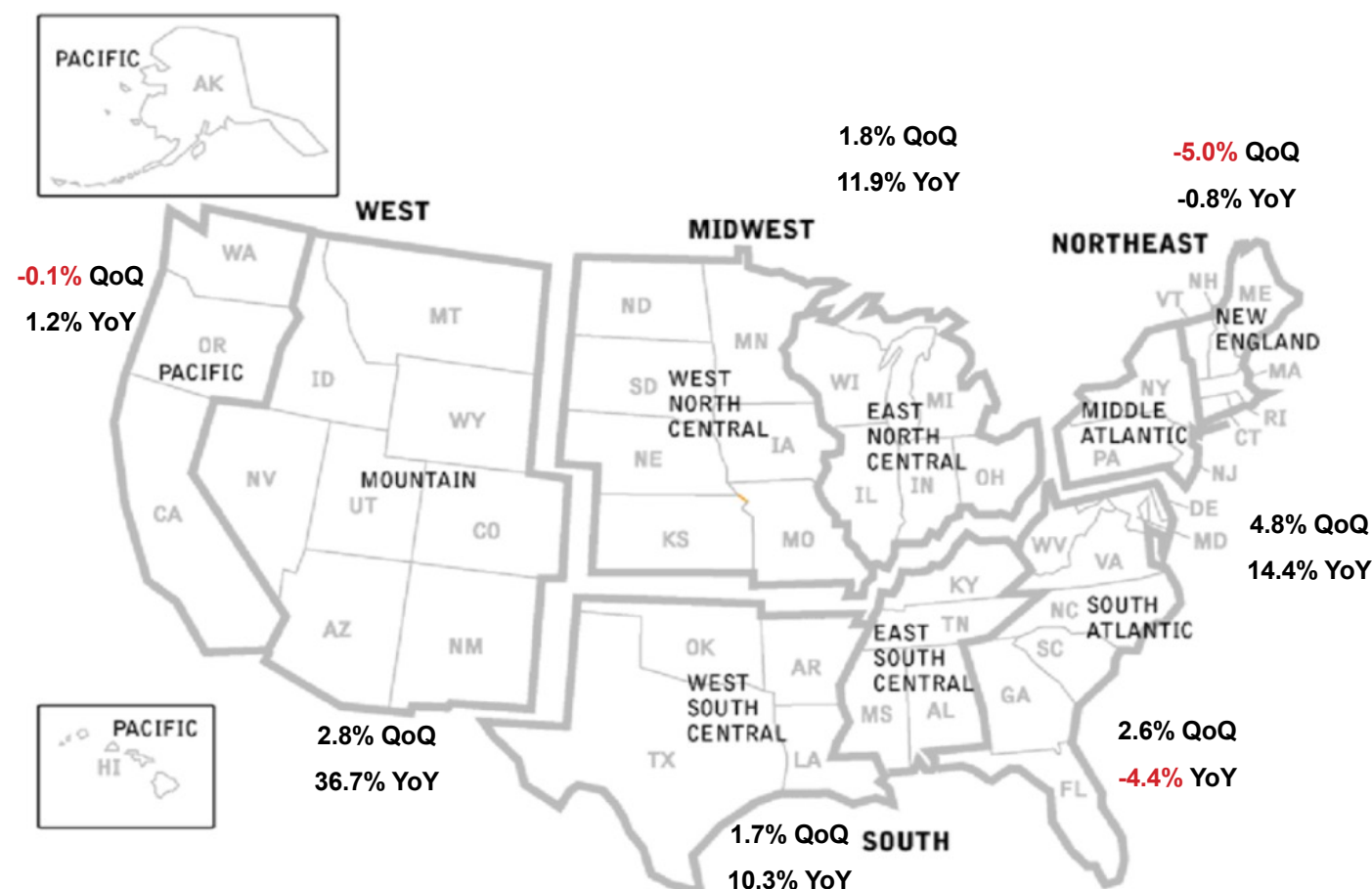**Time series hotel performance for seven regions**
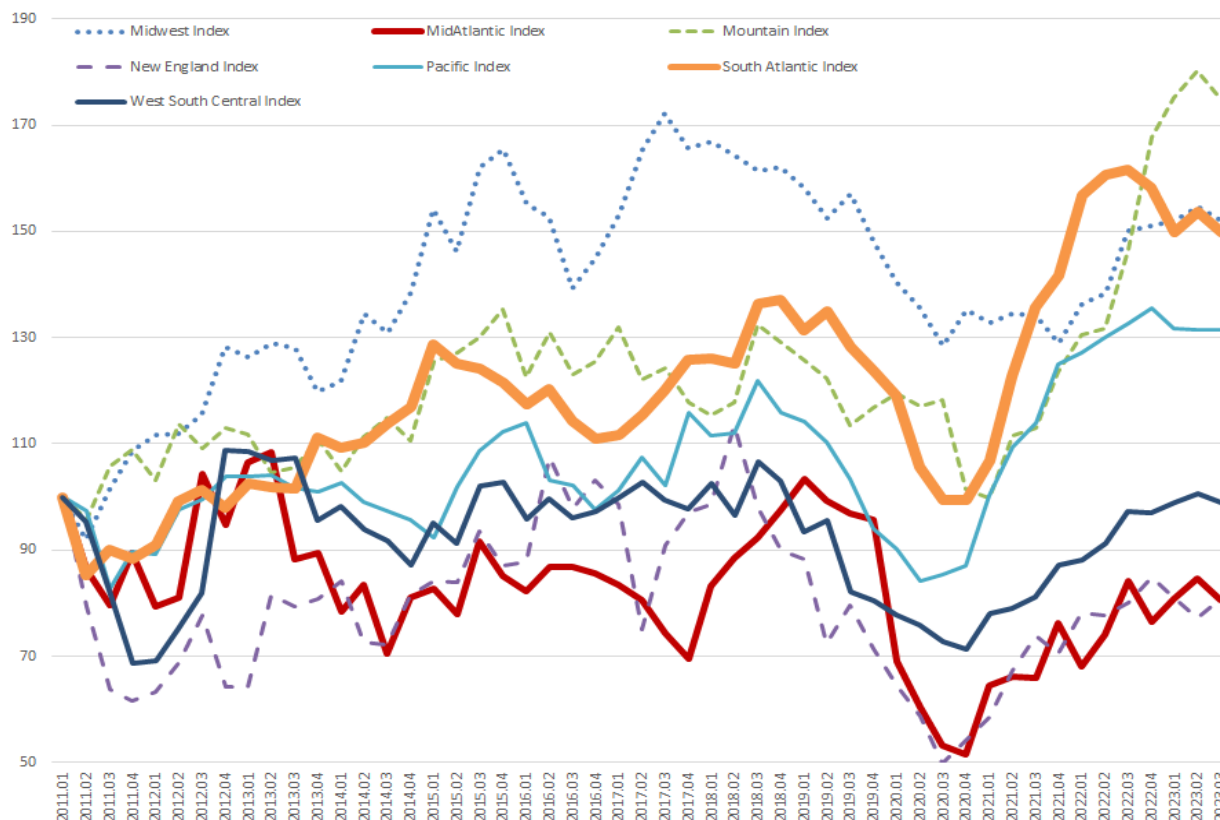
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

Cross-section hotel performance for seven regions

1.8% QoQ
11.9% YoY

-5.0% QoQ
-0.8% YoY

WEST

MIDWEST

NORTHEAST

-0.1% QoQ
1.2% YoY

4.8% QoQ
14.4% YoY

2.8% QoQ
36.7% YoY

2.6% QoQ
-4.4% YoY

1.7% QoQ SOUTH
10.3% YoY

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

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Changes in regional price indices, year over year and quarter over quarter

YoY	Midwest	Mid-Atlantic	Mountain	New England	Pacific	South Atlantic	West South Central
Current	11.9%	14.4%	36.7%	-0.8%	1.2%	-4.4%	10.3%
Prior	11.4%	18.8%	34.2%	3.9%	3.5%	-4.4%	12.0%
QoQ							
Current	1.8%	4.8%	2.8%	-5.0%	-0.1%	2.6%	1.7%
Prior	0.6%	5.5%	4.5%	-4.4%	-2.9%	-5.3%	1.8%

Standardized Unexpected Prices (Z-Scores)

	Midwest	Mid-Atlantic	Mountain	New England	Pacific	South Atlantic	West South Central
2023.02	2.08	1.39	2.72	1.16	1.08	0.77	1.77
2023.03	2.00	1.58	2.16	0.64	0.91	0.82	1.60

In terms of standardized unexpected prices (Z-Scores (Z-Scores),[1] which are useful in detecting turning points (i.e., peaks and troughs), hotel prices trended downwards in most regions, moving towards their historical averages except for the Mid-Atlantic and South Atlantic regions. However, hotel prices continue to remain above their statistical high in the Midwest and Mountain regions.
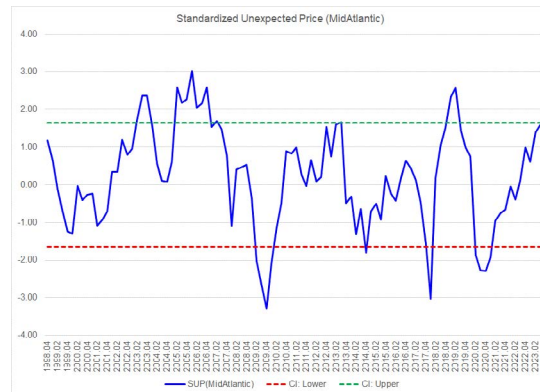
[1] A new statistical high is achieved at z = 1.645 while a new statistical low occurs at z = -1.645

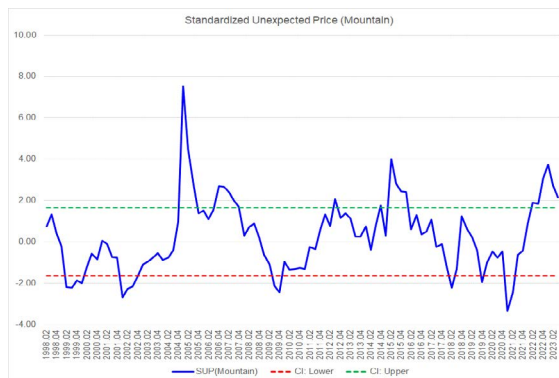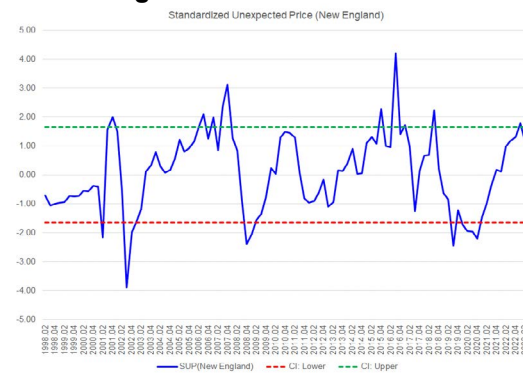# Regional comparison of standardized unexpected prices (SUP), with confidence boundaries
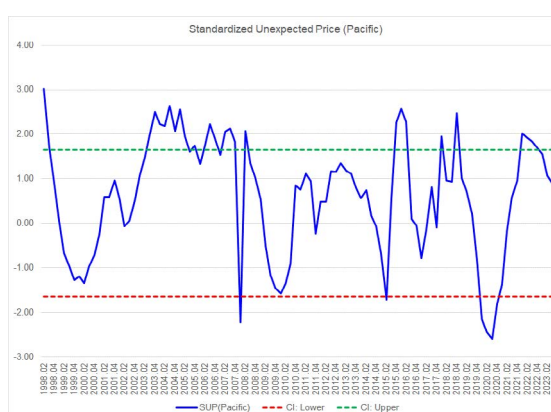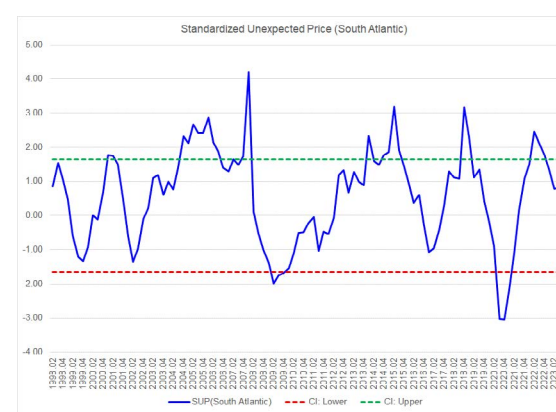
Midwest
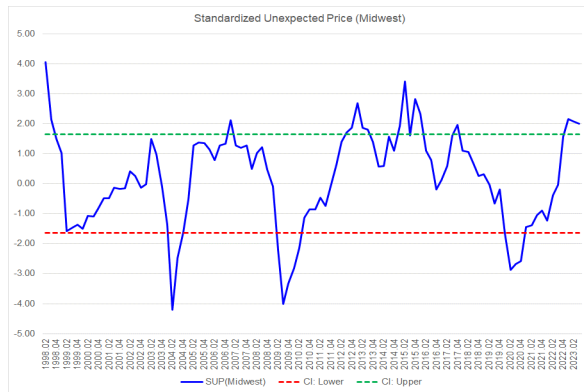
Middle Atlantic

Mountain

New England

Pacific

South Atlantic

West South Central
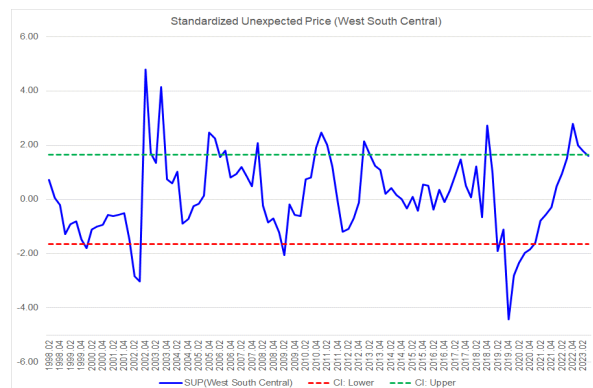
Note: Regions are as follows: **Middle Atlantic** region: New Jersey, New York, and Pennsylvania; **New England** region: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont; **South Atlantic** region: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia; **East South Central** region: Alabama, Kentucky, Mississippi, Tennessee; **East North Central** region: Illinois, Indiana, Michigan, Ohio, and Wisconsin; **West South Central** region: Arkansas, Louisiana, Oklahoma, and Texas; **West North Central** region: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota; **Mountain** region: Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Utah, and Wyoming; **Pacific**: Alaska, California, Hawaii, Oregon, and Washington.

EXHIBIT 2

Hotel performance for gateway cities versus non-gateway cities

Gateway cities are Boston, Chicago, Honolulu, Los Angeles, Miami, New York, San Francisco, and Washington, DC.
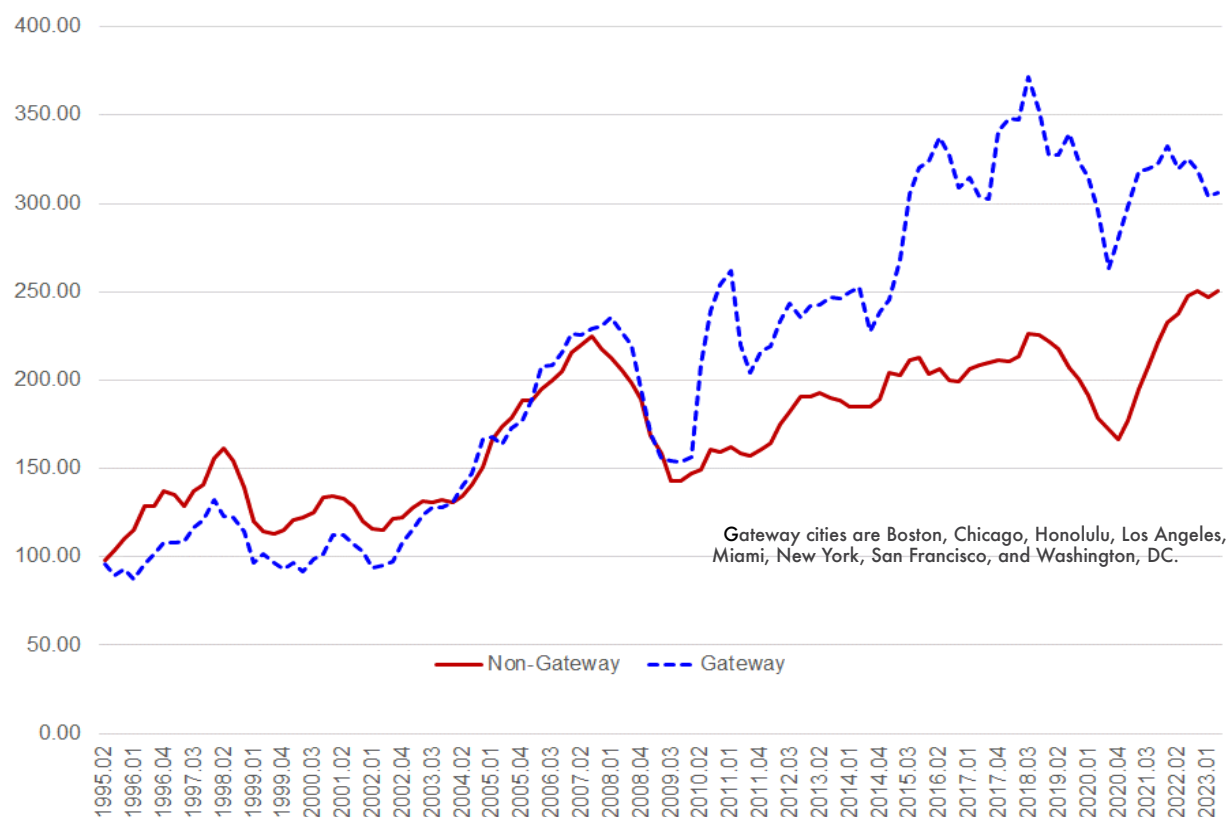
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

Hotels in non-gateway cities *continued* **to outperform gateway cities.** Continuing the trend in the prior four quarterly periods, the prices paid for hotels in non-gateway cities outperformed those in gateway cities. Year over year, hotel prices in non-gateway cities rose 5.5 percent, compared to a decline of 4.1 percent in gateway cities. The trend is similar on a quarter-over-quarter basis. The price of hotels in non-gateway cities rose 1.4 percent this quarter compared to a slightly smaller price rise of 0.7 percent in gateway cities, as shown in Exhibit 2.

Transaction volume fell year over year and quarter over quarter but is up this quarter for large hotels and hotels in gateway cities. The volume on all hotel transactions (both large hotels and small hotels combined) continued to be weaker year over year. [2] However, transaction volume was up quarter over quarter for large hotels and hotels in gateway markets. Exhibit 3 reports the transac-

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[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 necessarily as being representative of the total market activity.

Quarter over Quarter	Gateway Cities	Non-Gateway Cities
Current Period (2023Q3)	0.7%	1.4%
Prior Period (2023Q2)	-4.6%	-1.3%
Year over Year		
Current Period (2023Q3/2022Q3)	-4.1%	5.5%
Prior Period (2023Q2/2022Q2)	-8.6%	6.2%

Transaction volume (observed) and median sale price (1995–2003)

		Full Sample		Big			Small			Gateway			No Gateway		
Year	Quarter	Median Sale Price	N	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	3,635,000	95	23,765,000	21	22.10%	3,000,000	74	77.89%	3,998,240	28	29.47%	3,625,000	67	70.52%
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	2,500,000	83	35,000,000	15	18.07%	2,337,500	68	81.92%	4,450,000	29	34.93%	2,500,000	54	65.06%
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	2,106,250	94	67,000,000	5	5.31%	2,000,000	89	94.68%	2,067,500	28	29.78%	2,106,250	66	70.21%
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	2,470,000	86	18,190,000	14	16.27%	2,095,000	72	83.72%	2,325,000	22	25.58%	2,575,000	64	74.41%
2000	1	2,400,000	109	23,253,895	10	9.17%	2,300,000	99	90.82%	2,350,000	43	39.44%	2,428,500	66	60.55%
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	2,650,000	94	20,346,875	16	17.02%	2,275,000	78	82.97%	2,925,000	24	25.53%	2,537,500	70	74.46%
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	109	23,795,000	12	11%	2,690,000	97	88.99%	5,825,000	25	22.93%	2,687,150	84	77.06%
2001	3	2,650,000	86	16,000,000	6	6.97%	2,500,000	80	93.02%	3,150,000	21	24.41%	2,600,000	65	75.58%
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	105	18,125,000	10	9.52%	2,295,000	95	90.47%	3,125,000	33	31.42%	2,322,496	72	68.57%
2002	3	2,390,200	80	12,750,000	5	6.25%	2,250,000	75	93.75%	2,197,500	24	30%	2,485,000	56	70%
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	2,650,000	147	16,375,000	18	12.24%	2,430,000	129	87.75%	2,975,000	34	23.12%	2,500,000	113	76.87%

Transaction volume (observed) and median sale price (continued, 2004–2012)

| | | Full Sample | | Big | | | Small | | | Gateway | | | No Gateway | | |
| | | Median Sale Price | N | Median Sale Price | Obs | % Total Sales | Median Sale Price | Obs | % Total Sales | Median Sale Price | Obs | % Total Sales | Median Sale Price | Obs | % Total Sales |
Year	Quarter														
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	2,750,000	193	16,280,000	28	14.50%	2,500,000	165	85.49%	4,500,000	39	20.20%	2,575,000	154	79.79%
2004	3	3,535,000	212	19,350,000	45	21.22%	2,700,500	167	78.77%	5,018,750	48	22.64%	3,328,250	164	77.35%
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%
2005	1	4,400,000	229	18,100,000	52	22.70%	3,400,000	177	77.29%	6,687,500	40	17.46%	3,800,000	189	82.53%
2005	2	4,588,750	314	18,956,812	78	24.84%	3,292,650	236	75.15%	6,500,000	67	21.33%	4,400,000	247	78.66%
2005	3	4,237,500	270	21,475,000	72	26.66%	3,150,000	198	73.33%	6,100,000	61	22.59%	3,850,000	209	77.40%
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	5,387,500	298	25,750,000	92	30.87%	3,825,000	206	69.12%	19,800,000	63	21.14%	5,000,000	235	78.85%
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	6,205,000	284	21,225,000	104	36.61%	3,744,750	180	63.38%	9,525,000	62	21.83%	5,706,500	222	78.16%
2007	2	5,668,000	381	25,125,000	120	31.49%	3,800,000	261	68.50%	9,125,000	66	17.32%	5,500,000	315	82.67%
2007	3	5,500,000	327	20,100,161	105	32.11%	3,949,250	222	67.88%	8,611,500	51	15.59%	5,018,277	276	84.40%
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	4,300,000	170	17,133,333	37	21.76%	3,350,000	133	78.23%	5,500,000	27	15.88%	3,950,000	143	84.11%
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	89	22,000,000	16	17.97%	3,000,000	73	82.02%	4,608,750	14	15.73%	3,237,500	75	84.26%
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	4,925,000	119	35,500,000	46	38.65%	2,850,000	73	61.34%	25,000,000	37	31.09%	3,133,500	82	68.90%
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	4,325,000	84	34,050,000	24	28.57%	2,797,750	60	71.42%	12,275,000	15	17.85%	3,800,000	69	82.14%
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	5,100,000	156	32,400,000	43	27.56%	3,250,000	113	72.43%	10,950,000	34	21.79%	4,400,000	122	78.20%
2012	1	5,266,981	130	22,100,000	40	30.76%	3,337,500	90	69.23%	13,837,500	28	21.53%	4,225,000	102	78.46%
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	5,661,250	206	24,866,613	74	35.92%	3,150,000	132	64.07%	16,174,794	39	18.93%	5,100,000	167	81.06%

Transaction volume (observed) and median sale price (concluded, 2013–2023)

		Full Sample		Big			Small			Gateway			No Gateway		
		Median Sale		Median Sale		% Total	Median Sale		% Total	Median Sale		% Total	Median Sale		% Total
Year	Quarter	Price	N	Price	Obs	Sales	Price	Obs	Sales	Price	Obs	Sales	Price	Obs	Sales
2013	1	5,997,496	236	21,154,582	83	35.16%	2,975,000	153	64.83%	7,750,000	50	21.18%	5,575,000	186	78.81%
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	5,385,855	244	25,000,000	75	30.73%	3,500,000	169	69.26%	9,949,500	35	14.34%	5,000,000	209	85.65%
2013	4	4,633,750	312	24,000,000	98	31.41%	2,800,000	214	68.58%	13,500,000	55	17.62%	4,000,000	257	82.37%
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	317	26,250,000	87	27.44%	2,837,500	230	72.55%	11,200,000	59	18.61%	3,725,000	258	81.38%
2014	3	5,625,000	348	20,000,000	97	27.87%	3,500,000	251	72.12%	12,633,718	63	18.10%	5,000,000	285	81.89%
2014	4	4,625,000	308	29,625,000	78	25.32%	3,185,000	230	74.67%	8,225,000	72	23.37%	4,040,000	236	76.62%
2015	1	6,000,000	250	29,750,000	82	32.80%	3,156,050	168	67.20%	8,280,000	47	18.80%	5,550,000	203	81.20%
2015	2	6,300,000	267	25,000,000	91	34.08%	3,250,000	176	65.91%	18,765,000	46	17.22%	5,525,000	221	82.77%
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	18,080,000	106	36.30%	3,125,000	186	63.69%	14,415,000	51	17.46%	5,400,000	241	82.53%
2016	1	5,608,750	292	20,375,000	87	29.79%	3,400,000	205	70.20%	13,600,000	45	15.41%	5,300,000	247	84.58%
2016	2	4,100,000	319	16,000,000	61	19.12%	3,375,000	258	80.87%	11,600,000	48	15.04%	3,750,000	271	84.95%
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	4,100,000	261	19,480,000	73	27.96%	2,800,000	188	72.03%	13,352,600	28	10.72%	3,720,000	233	89.27%
2017	1	5,275,000	252	22,880,750	70	27.77%	3,600,000	182	72.22%	14,726,254	28	11.11%	4,950,000	224	88.88%
2017	2	5,150,000	329	22,660,000	91	27.65%	3,356,250	238	72.34%	16,450,000	37	11.24%	4,525,000	292	88.75%
2017	3	5,000,000	321	22,250,000	86	26.79%	3,431,000	235	73.20%	22,250,000	38	11.83%	4,525,000	283	88.16%
2017	4	4,532,000	263	28,000,000	66	25.09%	2,950,000	197	74.90%	12,208,000	26	9.88%	4,300,000	237	90.11%
2018	1	5,500,000	309	21,882,400	97	31.39%	3,500,000	212	68.60%	14,750,000	40	12.94%	5,000,000	269	87.05%
2018	2	4,805,200	364	20,000,000	81	22.25%	3,300,000	283	77.74%	17,625,000	40	10.98%	4,300,000	324	89.01%
2018	3	5,150,000	331	21,265,000	83	25.07%	3,730,000	248	74.92%	13,342,500	22	6.64%	5,000,000	309	93.35%
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	5,350,000	285	17,802,698	76	26.66%	3,600,000	209	73.33%	15,750,000	34	11.92%	4,820,000	251	88.07%
2019	2	4,080,000	330	19,848,485	62	18.78%	3,384,500	268	81.21%	6,300,000	35	10.60%	3,942,000	295	89.39%
2019	3	4,700,000	399	21,000,000	96	24.06%	3,500,000	303	75.93%	15,850,000	42	10.52%	4,350,000	357	89.47%
2019	4	5,002,498	380	21,855,650	94	24.73%	3,350,000	286	75.26%	11,000,000	35	9.21%	4,697,000	337	88.68%
2020	1	4,100,000	303	16,900,000	48	15.84%	3,400,000	255	84.15%	6,313,000	22	7.26%	4,090,000	281	92.73%
2020	2	3,380,000	80	16,787,500	10	12.50%	2,515,000	70	87.50%	6,700,000	7	8.75%	3,360,000	73	91.25%
2020	3	2,850,000	171	14,062,500	14	8.18%	2,600,000	157	91.81%	7,219,750	12	7.01%	2,670,000	159	92.98%
2020	4	3,625,000	242	23,053,000	45	18.59%	2,800,000	197	81.40%	10,725,000	36	14.87%	3,000,000	206	85.12%
2021	1	3,925,750	212	27,900,000	39	18.39%	3,100,000	173	81.60%	11,500,000	19	8.96%	3,700,000	193	91.03%
2021	2	3,500,000	346	24,352,000	69	19.94%	2,900,000	277	80.05%	9,675,000	34	9.82%	3,337,500	312	90.17%
2021	3	4,350,000	448	27,000,000	115	25.66%	3,125,000	333	74.33%	33,820,000	38	8.48%	4,000,000	410	91.51%
2021	4	4,712,500	492	17,100,000	127	25.81%	3,300,000	365	74.18%	9,687,500	36	7.31%	4,380,000	456	92.68%
2022	1	5,062,500	439	17,600,000	119	27.10%	3,475,000	320	72.89%	12,025,000	42	9.56%	4,875,000	397	90.43%
2022	2	5,300,000	556	21,140,000	126	22.66%	3,750,000	430	77.33%	9,250,000	50	8.99%	5,074,500	506	91%
2022	3	5,277,500	550	16,050,000	140	25.45%	3,650,000	410	74.54%	11,000,000	61	11.09%	5,000,000	489	88.90%
2022	4	5,675,000	468	16,358,750	126	26.92%	3,995,000	342	73.07%	9,300,000	35	7.47%	5,500,000	433	92.52%
2023	1	5,000,000	348	17,456,879	84	24.13%	3,585,000	264	75.86%	11,750,000	28	8.04%	4,850,000	320	91.95%
2023	2	5,173,300	402	14,760,099	78	19.40%	3,800,000	324	80.59%	5,025,000	24	5.97%	5,173,300	378	94.02%
2023	3	5,500,000	351	17,700,000	103	29.34%	3,700,000	248	70.65%	15,000,000	31	8.83%	5,094,096	320	91.16%

*Source*: Cornell Center for Real Estate and Finance

EXHIBIT 4

Median sale price and number of sales, large hotels (sale prices of $10 million or more)
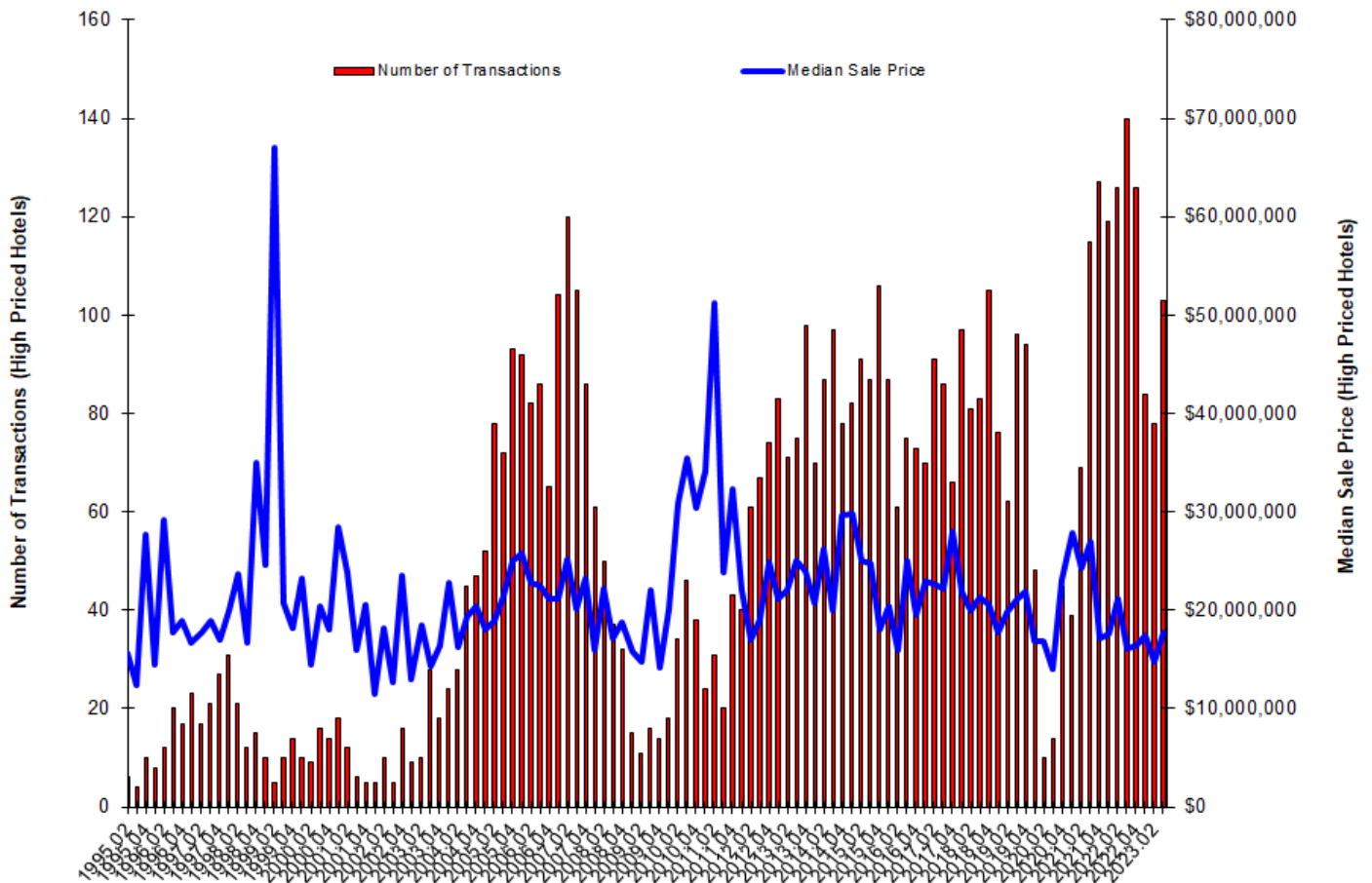
	Full Sample		Large Hotels		Small Hotels	
	Median Price	No. of Sales	Median Price	No. of Sales	Median Price	No. of Sales
2023Q3	$5,500,000	351	$17,700,000	103	$3,700,000	248
Quarter over Quarter	6.3%	-12.7%	19.9%	32.1%	-2.6%	-23.5%
Year over Year	4.2%	-36.2%	10.3%	-26.4%	1.4%	-39.5%

tion volume and median price of large and small hotels, as well as hotels located in gateway and non-gateway cities. Exhibit 4 and Exhibit 5 show this year-over-year trend in the number of transactions for large hotels and small hotels.

EXHIBIT 5

Median sale price and number of sales, small hotels (sale prices less than $10 million)
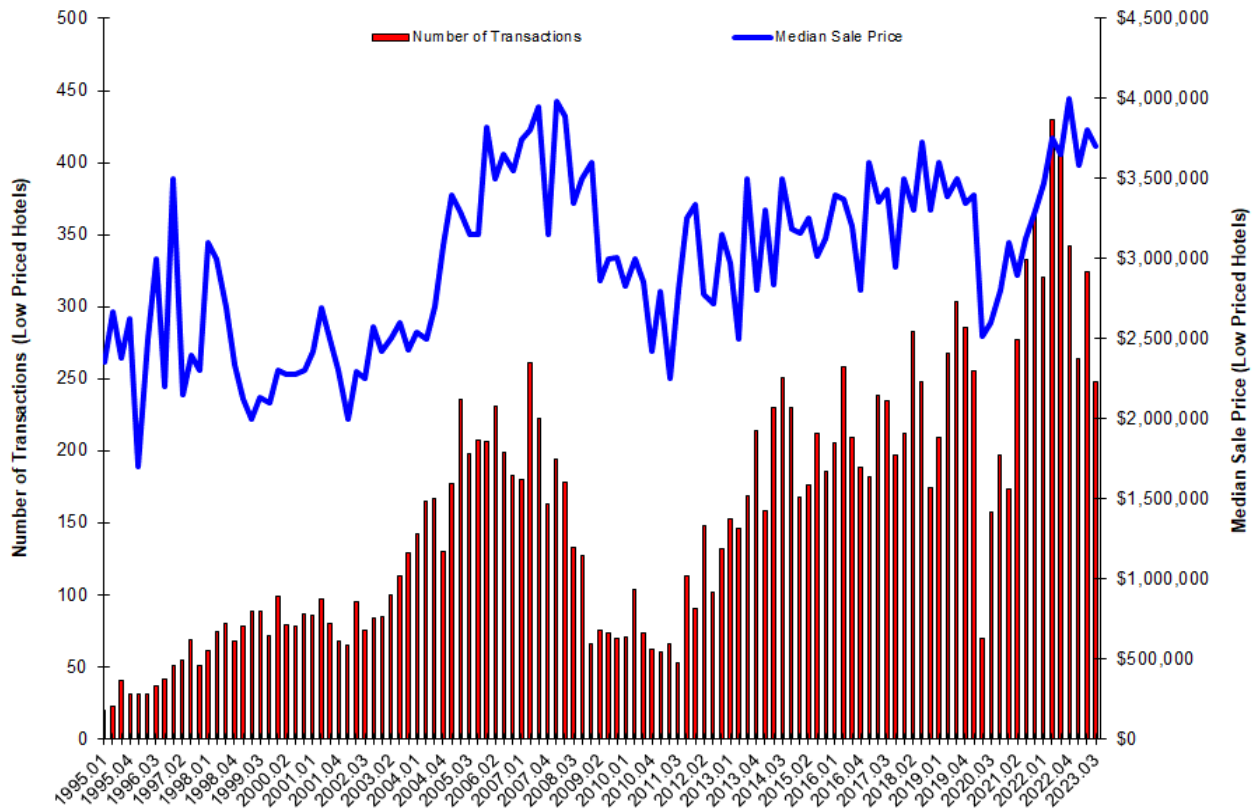
	Full Sample		Gateway Hotels		Non-Gateway Hotels	
Full Sample	Gateway Hotels	Non-Gate-way Hotels	Median Price	No. of Sales	Median Price	No. of Sales
	Median Price	No. of Sales	Median Price	No. of Sales	Median Price	No. of Sales
2023Q3	$5,500,000	351	$15,000,000	31	$5,094,096	320
Quarter over Quarter	6.3%	-12.7%	198.5%	29.2%	-1.5%	-15.3%
Year over Year	4.2%	-36.2%	36.4%	-49%	1.9%	-34.5%

EXHIBIT 6

Hotel indices through 2023, quarter 3

YrQtr	Low Priced Hotels (<$10M)	High Priced Hotels (>=$10M)	Non Gateway Index	Gateway Index	Repeat Sales Index	Index Value Repeat Sales
1995.02	98.043	94.42122	82.1913	103.804	64.597	NA
1995.03	97.817	85.94013	80.6765	99.5604	67.418	NA
1995.04	100.76	77.32415	85.3864	93.2522	69.144	NA
1996.01	97.141	90.11871	90.3103	96.301	70.894	NA
1996.02	95.415	93.80904	94.7544	90.6906	74.748	NA
1996.03	100.55	98.2814	105.901	99.4757	73.754	NA
1996.04	95.073	105.929	105.803	105.795	75.003	NA
1997.01	104.47	96.59529	112.936	112.13	88.632	NA
1997.02	103.97	98.90734	111.095	112.224	89.251	NA
1997.03	100.52	102.1513	105.925	112.987	95.255	NA
1997.04	104.64	106.5259	112.971	120.886	101.53	NA
1998.01	103.07	113.1203	115.956	125.302	98.218	NA
1998.02	112.61	123.6754	128.285	136.954	104.14	NA
1998.03	115.39	121.2977	132.587	127.724	106.16	NA
1998.04	115.74	129.9077	126.634	126.928	103.89	NA
1999.01	113.99	122.9114	114.512	118.747	96.546	NA
1999.02	105.53	103.5315	98.6182	100.057	90.622	NA
1999.03	103.04	111.4321	94.051	105.733	88.212	NA
1999.04	101.54	100.1462	92.9247	100.559	89.935	NA
2000.01	100.08	97.35685	94.4741	96.3906	95.328	92.16
2000.02	101.69	102.2208	99.1477	100.524	97.899	92.16
2000.03	100.79	95.22818	100.753	95.4122	97.622	89.142
2000.04	103.62	101.0209	102.616	102.219	95.445	89.75
2001.01	106.43	118.1561	110.026	105.787	94.391	89.786
2001.02	110.47	119.4032	110.447	116.812	94.909	89.252
2001.03	112.36	116.1245	109.102	116.651	96.004	92.502
2001.04	110.57	115.1704	105.683	111.428	95.935	90.242
2002.01	107.47	106.2284	98.8899	107.185	96.654	92.988
2002.02	103.34	97.92217	95.2063	97.4392	95.252	92.435
2002.03	103.26	95.29577	94.6193	99.155	95.909	91.313
2002.04	105.91	96.22392	99.7837	100.749	96.945	95.361
2003.01	108	95.8875	100.431	112.289	97.988	94.595
2003.02	111.59	113.7746	105.024	120.084	100.11	98.067
2003.03	113.73	117.7339	108.247	128.235	102.06	102.42
2003.04	113.53	125.2334	107.808	133.078	103.61	105.42
2004.01	114.93	124.7406	108.979	132.582	103.07	106.49
2004.02	115.19	110.8467	107.756	135.88	103.86	107.81
2004.03	116.89	117.5107	110.474	145.56	107.96	112.58
2004.04	121.24	108.885	115.43	153.074	109.36	112.88
2005.01	128.54	113.8592	123.673	172.421	114.51	117.46
2005.02	136.32	119.8796	136.818	174.128	120.29	123.89
2005.03	139.67	120.9863	142.514	170.087	123.07	125.79
2005.04	141.88	127.1416	146.857	179.191	129.12	132.78
2006.01	145.51	134.9158	154.842	183.57	133.57	137.49
2006.02	146.75	140.2322	154.912	196.441	136.89	140.65
2006.03	150.62	146.9168	160.391	215.896	139.18	142.8
2006.04	153.1	149.8396	164.242	216.372	143.17	144.99
2007.01	152.61	150.1471	168.543	223.746	146.77	147.98
2007.02	156.32	156.935	176.915	234.852	150.84	151.94
2007.03	159.49	153.0816	180.918	234.382	157.18	160.1
2007.04	158.02	152.6002	185.062	237.906	158.6	162.12
2008.01	160.33	145.994	178.728	239.649	160.4	166.73
2008.02	161.14	145.4304	174.817	244.338	160.78	168.19
2008.03	157.49	144.9672	169.001	235.937	160.39	165.59
2008.04	158.38	143.396	163.387	228.592	161.9	168.42
2009.01	155.343	137.821	155.686	202.263	156.63314	163.36
2009.02	143.915	118.051	138.605	176.458	152.34643	157.05
2009.03	139.481	111.517	130.587	161.711	137.14648	141.86
2009.04	135.225	95.5019	117.707	159.845	123.25039	127.93
2010.01	128.047	103.349	117.723	159.353	117.22637	121.53
2010.02	127.409	115.088	121.214	162.111	109.45194	114.17
2010.03	124.65	133.694	122.953	216.829	110.79268	115.81
2010.04	120.07	159.117	131.875	248.253	112.92985	116.26
2011.01	121.889	157.811	130.71	263.833	112.83436	113.97
2011.02	119.537	168.578	133.472	271.553	113.07812	113.08
2011.03	116.55	156.846	130.474	228.213	112.15316	112.07
2011.04	122.251	155.58	128.974	212.256	113.01206	113.04
2012.01	122.606	159.464	132.356	224.292	113.76694	112.84
2012.02	127.035	148.215	135.206	227.623	116.55439	117.49
2012.03	133.57	145.965	143.531	242.431	120.16468	120.51
2012.04	134.317	142.767	149.494	252.765	122.01601	122.7
2013.01	134.934	143.685	156.471	244.749	124.41908	126.72
2013.02	132.426	149.622	156.831	251.009	126.30489	129.38
2013.03	134.777	158.413	158.517	252.079	127.83085	132.25
2013.04	133.225	160.182	156.001	256.499	131.39857	137.12
2014.01	135.199	158.668	154.803	255.5	136.56727	141.69
2014.02	136.78	159.454	151.807	259.281	136.18019	139.88
2014.03	137.692	157.908	151.844	261.959	138.36117	141.33
2014.04	139.895	157.196	151.973	236.061	137.26798	138.73
2015.01	141.244	166.26	155.755	247.407	138.58937	139.39
2015.02	146.908	171.884	167.906	254.636	142.75075	143.4
2015.03	145.871	173.866	166.484	278.568	151.77774	153.33
2015.04	148.447	169.964	173.724	316.644	162.37979	164.14
2016.01	151.092	166.003	174.642	332.142	164.93746	167.23
2016.02	151.33	162.881	167.384	335.889	166.21827	169.33
2016.03	152.465	169.387	169.396	350.392	165.38894	167.06
2016.04	148.92	171.64	164.04	339.599	160.00747	162.41
2017.01	149.82	168.97	163.526	320.306	163.71156	165.99
2017.02	150.941	169.903	169.778	326.293	169.90426	172.63
2017.03	152.44	165.224	171.361	315.42	170.62306	174.36
2017.04	153.899	170.379	172.396	314.291	173.42315	176.43
2018.01	153.537	172.957	173.692	353.647	174.23244	177.65
2018.02	154.98	175.916	172.88	361.391	175.26373	177.62
2018.03	157.55	175.212	175.194	360.612	179.00948	180.87
2018.04	162.295	171.19	185.996	385.631	181.4991	183.06
2019.01	163.983	167.739	185.586	365.474	183.36978	184.47
2019.02	161.868	164.186	182.447	339.564	183.40252	183.66
2019.03	159.914	160.655	178.992	340.26	183.13327	183.73
2019.04	159.454	163.039	170.124	352.131	184.96009	185.98
2020.01	157.272	163.096	164.935	336.171	183.20049	184.6
2020.02	151.902	158.257	157.365	326.466	183.64519	185.7
2020.03	145.807	155.547	146.7	307.168	181.65452	183.77
2020.04	141.559	157.512	141.561	273.016	182.98747	185.5
2021.01	137.874	155.883	136.586	290.835	182.1336	184.58
2021.02	142.294	165.64	145.569	309.369	184.21111	186.36
2021.03	147.752	175.93	160.123	330.605	192.03349	193.19
2021.04	152.039	173.967	170.734	331.861	201.28915	200.09
2022.01	157.541	173.882	181.794	334.404	209.09252	207.23
2022.02	164.71	173.518	191.175	344.939	223.02896	221.46
2022.03	170.165	164.04	195.183	331.403	227.52012	226.57
2022.04	176.548	166.326	203.482	337.52	228.38235	230.24
2023.01	177.57	169.945	205.802	330.671	235.25952	239.36
2023.02	177.503	161.204	203.12	315.409	231.68487	237.97
2023.03	176.505	165.727	205.865	317.712	228.11465	233.61

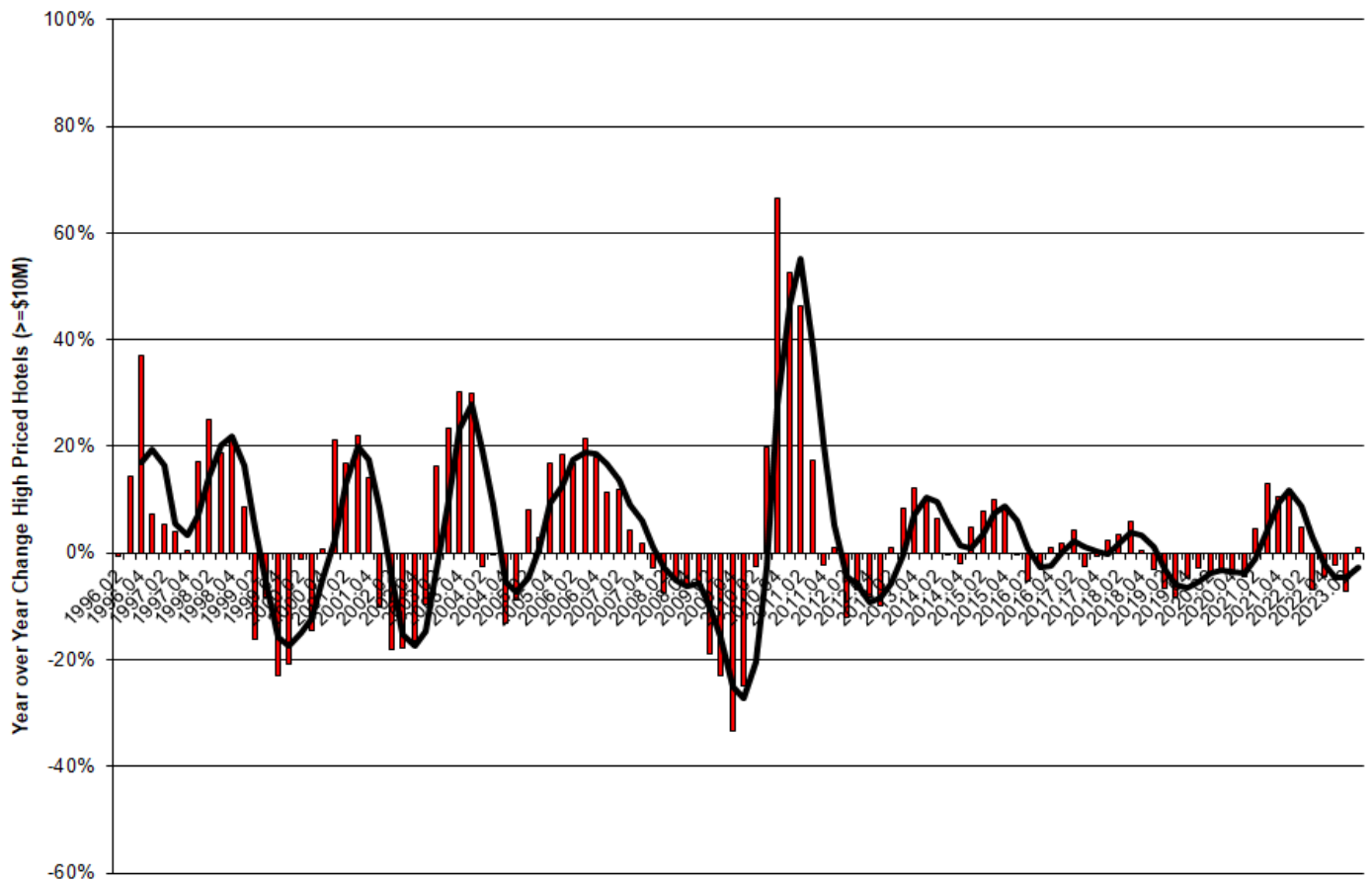*Source*: Cornell Center for Real Estate and Finance

EXHIBIT **7**

Hedonic hotel indices for large and small hotel transactions
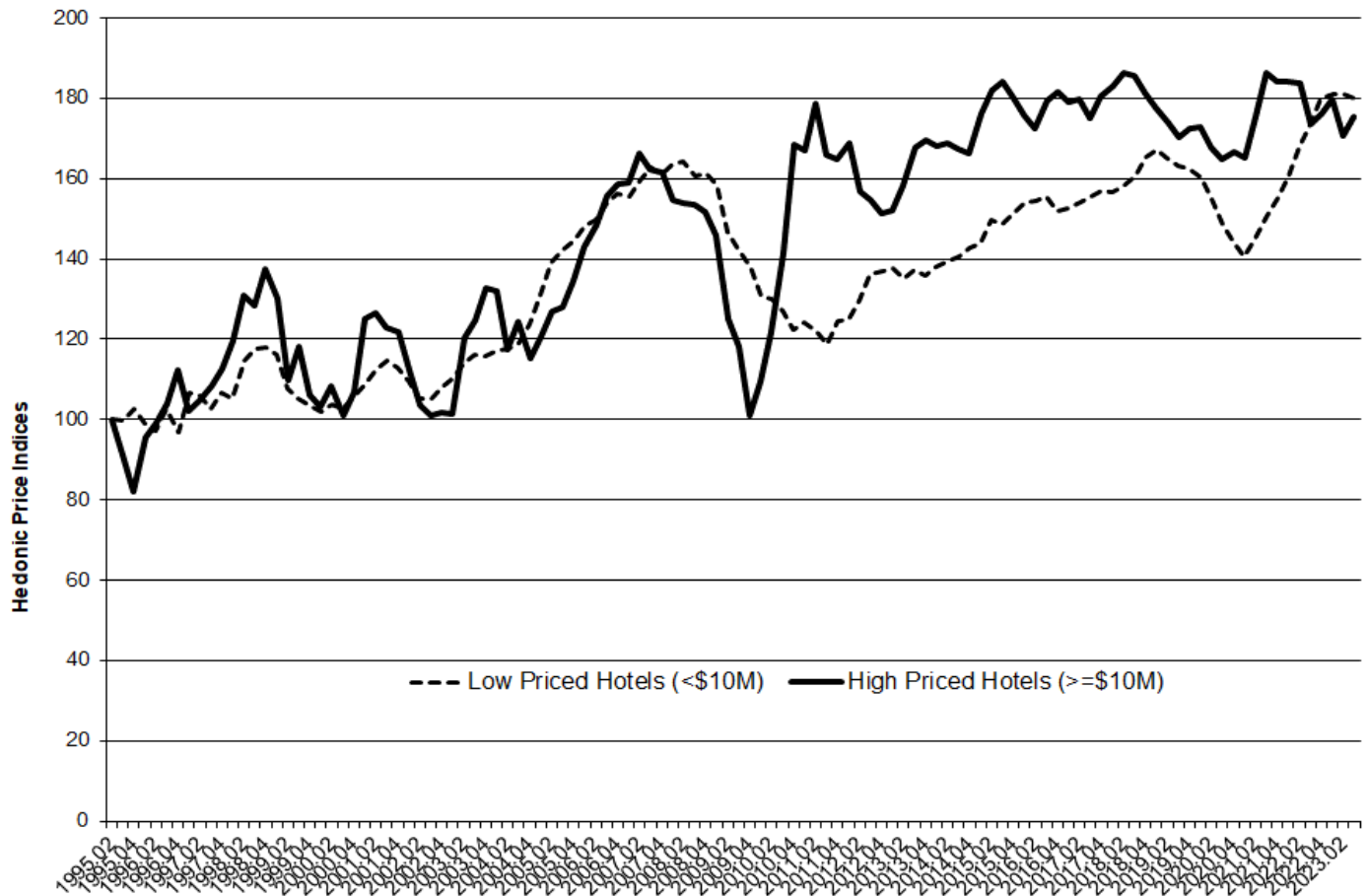
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

Moving averages indicate a "hold" signal for large hotels, and a "buy" for small hotels. At the same time, standardized prices of both large and small hotels have softened, an indication to keep your gunpowder dry. Exhibit 7 graphs the prices reported in Exhibit 6. The price of large hotels rose almost 3 percent, while the price of small hotels remained relatively flat this quarter.

EXHIBIT 8

Year-over-year change in large-hotel index with a moving average trendline

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

Exhibit 8 and Exhibit 9 show the historical year-over-year change in large and small hotel indices. Year over year, large hotels rose 1 percent compared to an almost 4-percent increase in the price of small hotels.

EXHIBIT 9

Year-over-year change in small-hotel index with a moving average trendline

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

EXHIBIT 10

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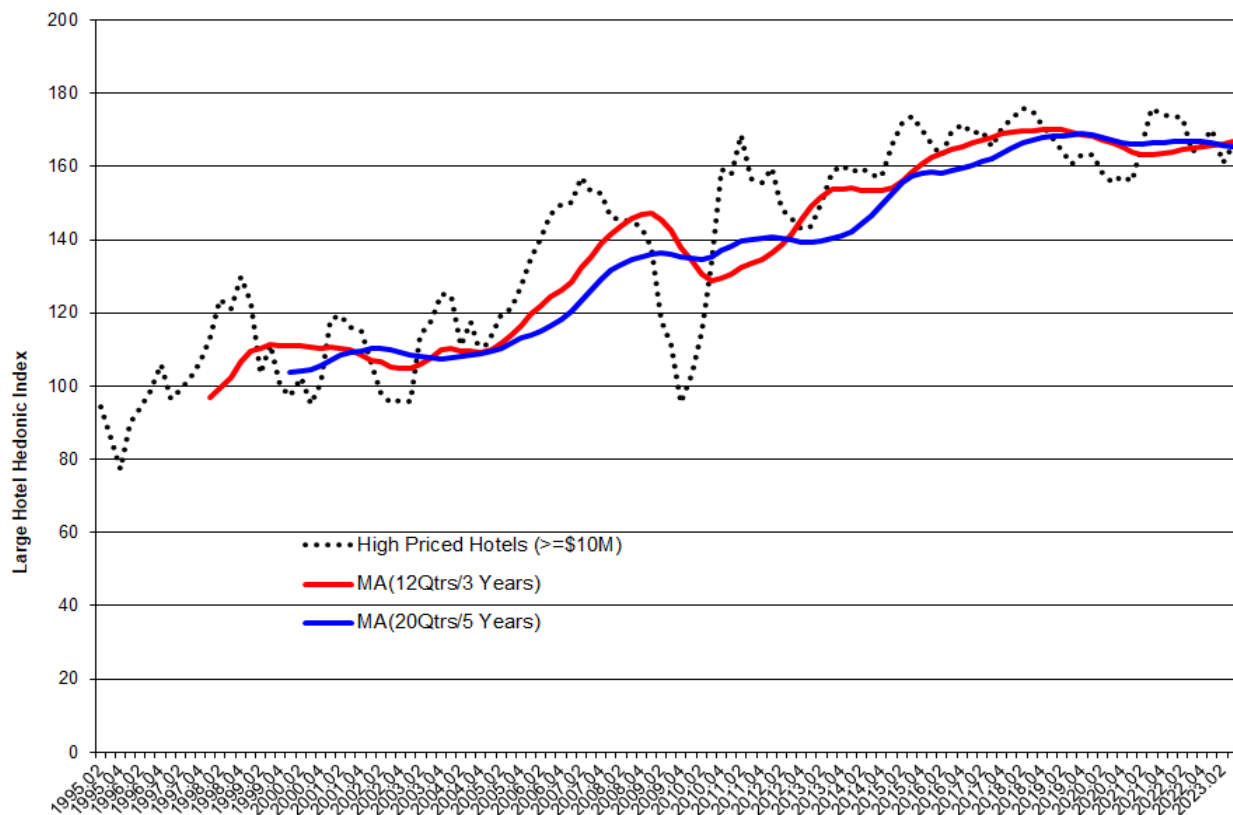
Sources: Cornell Center for Real Estate and Finance, CoStar, MSCI-Real Capital Analytics

	Hedonic Price	Moving Average		Standardized Unexpected Price (Z-Score)	
Large Hotels	**Price**	**3 Year**	**5 Year**	**3 Year**	**5 Year**
2022Q3	164.04				
2023Q2	161.20			-0.66	-0.70
2023Q3	165.73	166.96	165.36	-0.19	0.06
Quarter over Quarter	2.8%				
Year over Year	1.0%				
Small Hotels	Price	3 Year	5 Year	3 Year	5 Year
2022Q3	170.16				
2023Q3	177.50			1.32	1.64
2023Q3	176.51	160.17	159.23	1.05	1.39
Quarter over Quarter	-0.6%				
Year over Year	3.7%				

EXHIBIT 11

Moving average trendlines for small hotel index
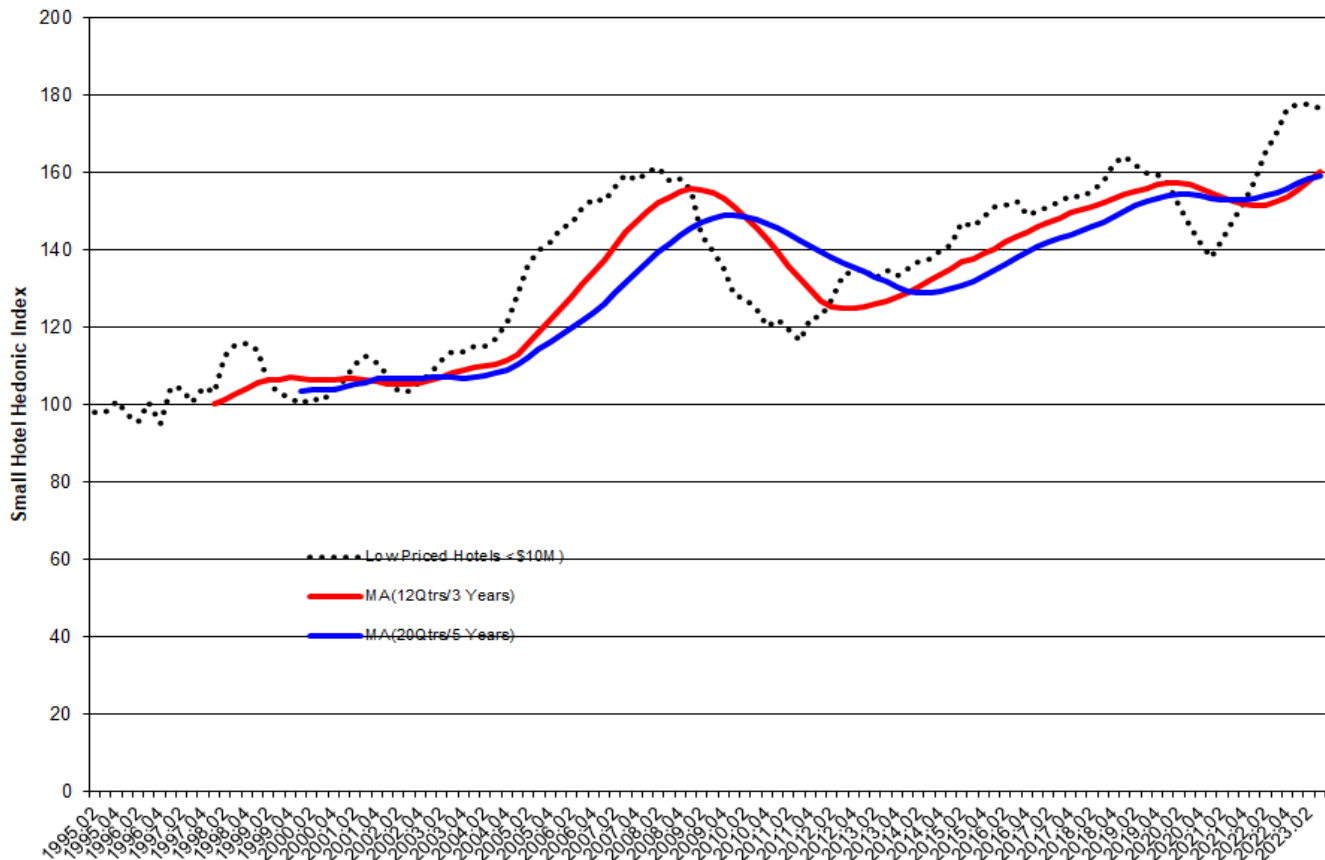
Sources: Cornell Center for Real Estate and Finance, CoStar, MSCI-Real Capital Analytics

To gauge whether the prices of large and small hotels signal a buy or a sell, we compare the hedonic price relative to the 3-year and 5-year moving averages, as shown in Exhibit 10 and Exhibit 11. If the price is above a moving average, the trend is up, and if the price is below the moving average the trend is down. Since the hedonic price for large hotels is below both its associated 3-year and 5-year moving averages, this indicates a sell signal. In contrast, the reverse is true for small hotels, where hedonic prices

are above the moving average, indicating a buy signal. To assess whether the price of a large or small hotel has reached a new statistical high or low, we use the statistical technique known as Z-scores to standardize prices so that the average price is at zero.[3] If prices rise above 1.645 then this indicates a new statistical high, Whereas if a price drop exceeds -1.645, we observe

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[3] See the appendix for a discussion of Z scores.

Standardized unexpected price (SUP) for large hotel index
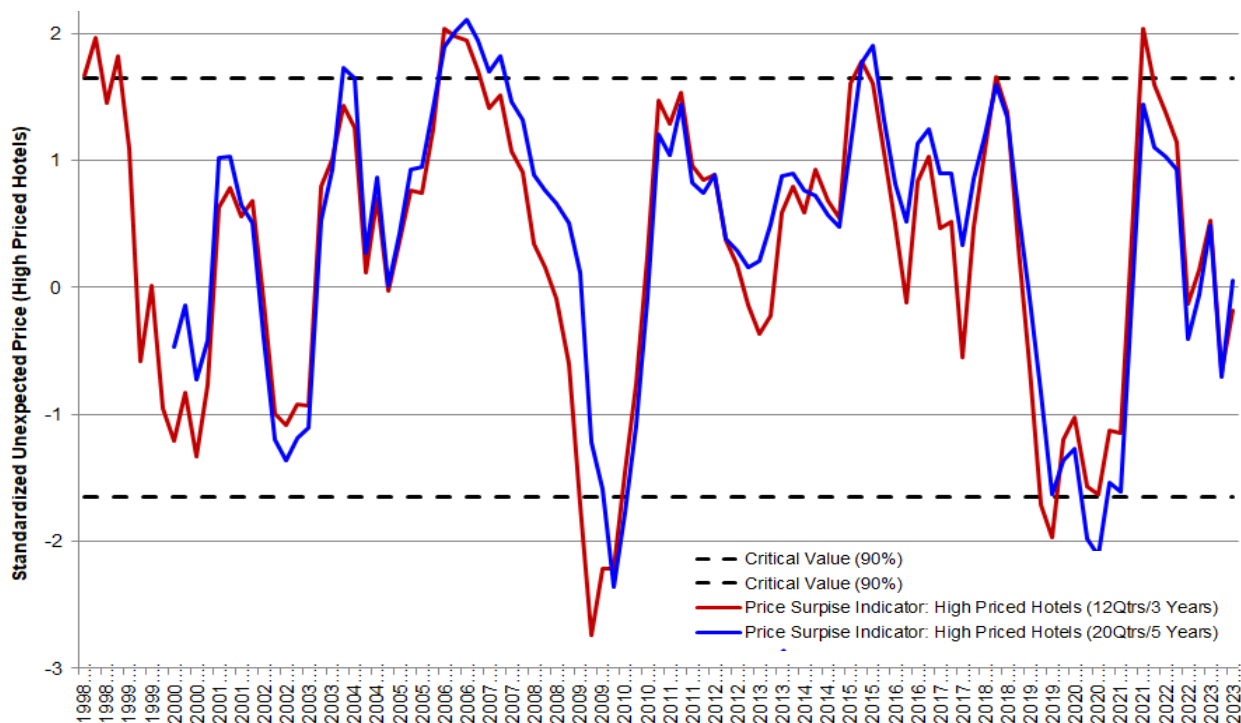
Legend:
- Critical Value (90%)
- Critical Value (90%)
- Price Surpise Indicator: High Priced Hotels (12Qtrs/3 Years)
- Price Surpise Indicator: High Priced Hotels (20Qtrs/5 Years)

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

Standardized unexpected price (SUP) for small hotel index

Legend:
- Critical Value (90%)
- Critical Value (90%)
- Price Surpise Indicator: Low Priced Hotels (12Qtrs/3 Years)
- Price Surpise Indicator: Low Priced Hotels (20Qtrs/5 Years)

EXHIBIT 14
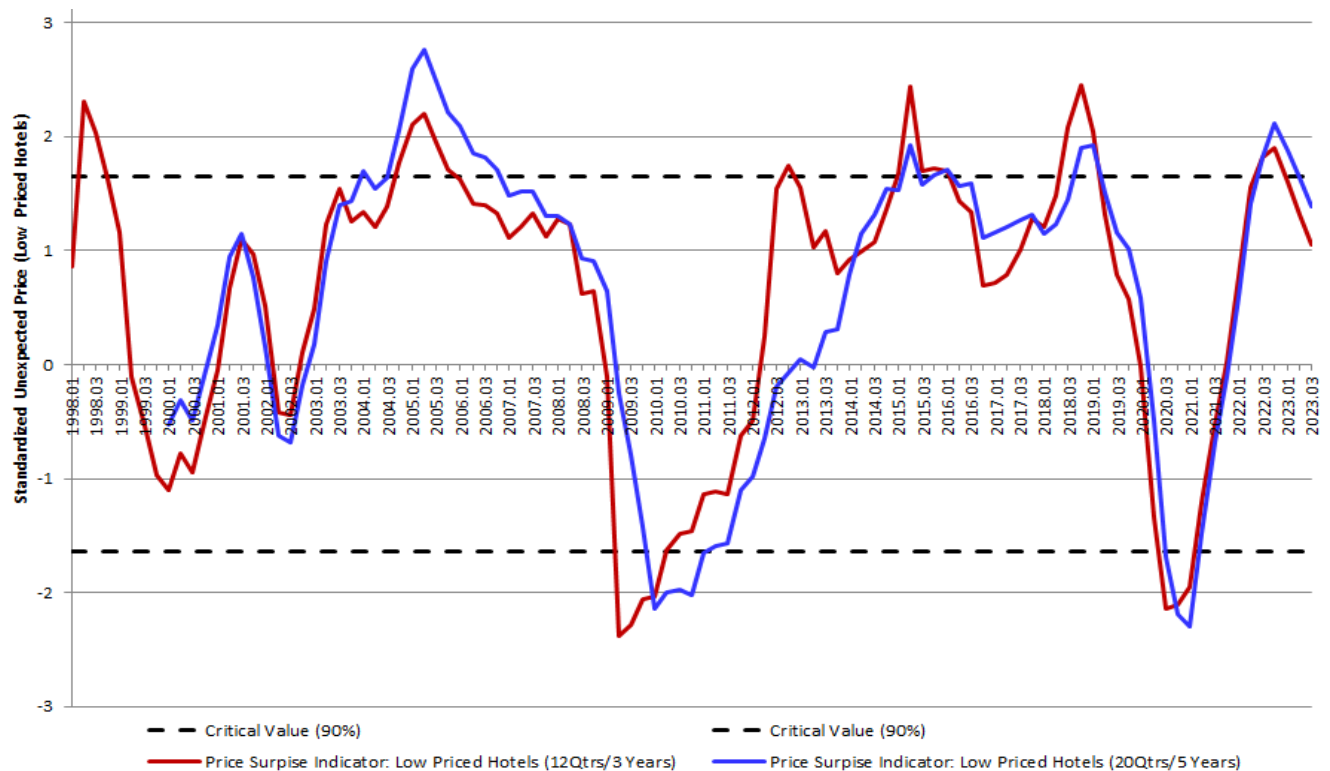
Moving average trendline for repeat-sale hotel index
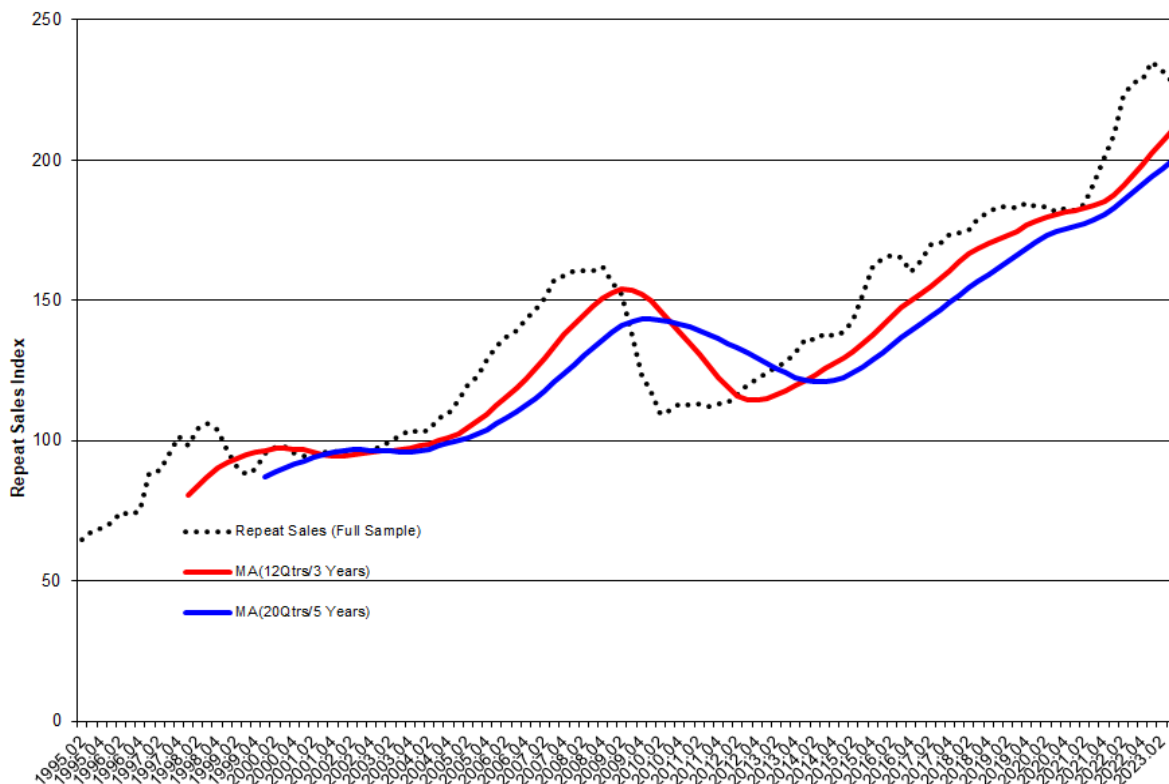
Sources: Cornell Center for Real Estate and Finance, CoStar, MSCI-Real Capital Analytics

	Repeat Sale Price	Moving Average		Standardized Unexpected Price (Z-Score)	
Repeat Sale Hotels	Price	3 Year	5 Year	3 Year	5 Year
2022Q3	227.52				
2023Q2	231.68			1.16	1.70*
2023Q3	228.11	210.48	199.53	0.84	1.36
Quarter over Quarter	-1.5%				
Year over Year	0.3%				

a statistical low. As shown in Exhibit 12, the standardized price of large hotels is currently hovering around its mean of zero, while the standardized price of smaller hotels is trending down (shown in Exhibit 13). This indicates the standardized price of large hotels has mean reverted to its standardized average price while the standardized price of smaller hotels has softened.

Prices of frequently sold hotels remain above moving averages, signaling a buy or hold. However, standardized prices of repeat-sale hotels have now fallen below their statistical highs, based on a five-year window. Since most hotels that sell frequently tend to be small hotels, it is not surprising that hotels that tend to sell frequently (i.e., have repeat sales), fell 1.5 percent in price this quarter but remained flat year over year (see Exhibit 14; see also Exhibit 16). Like small hotels, our repeat-sale indicator remains above both its short term (228.11>210.48) and long-term (228.11>199.53) moving averages. This indicates that these hotels continue as a buying opportunity. Our standardized unexpected price

EXHIBIT 15

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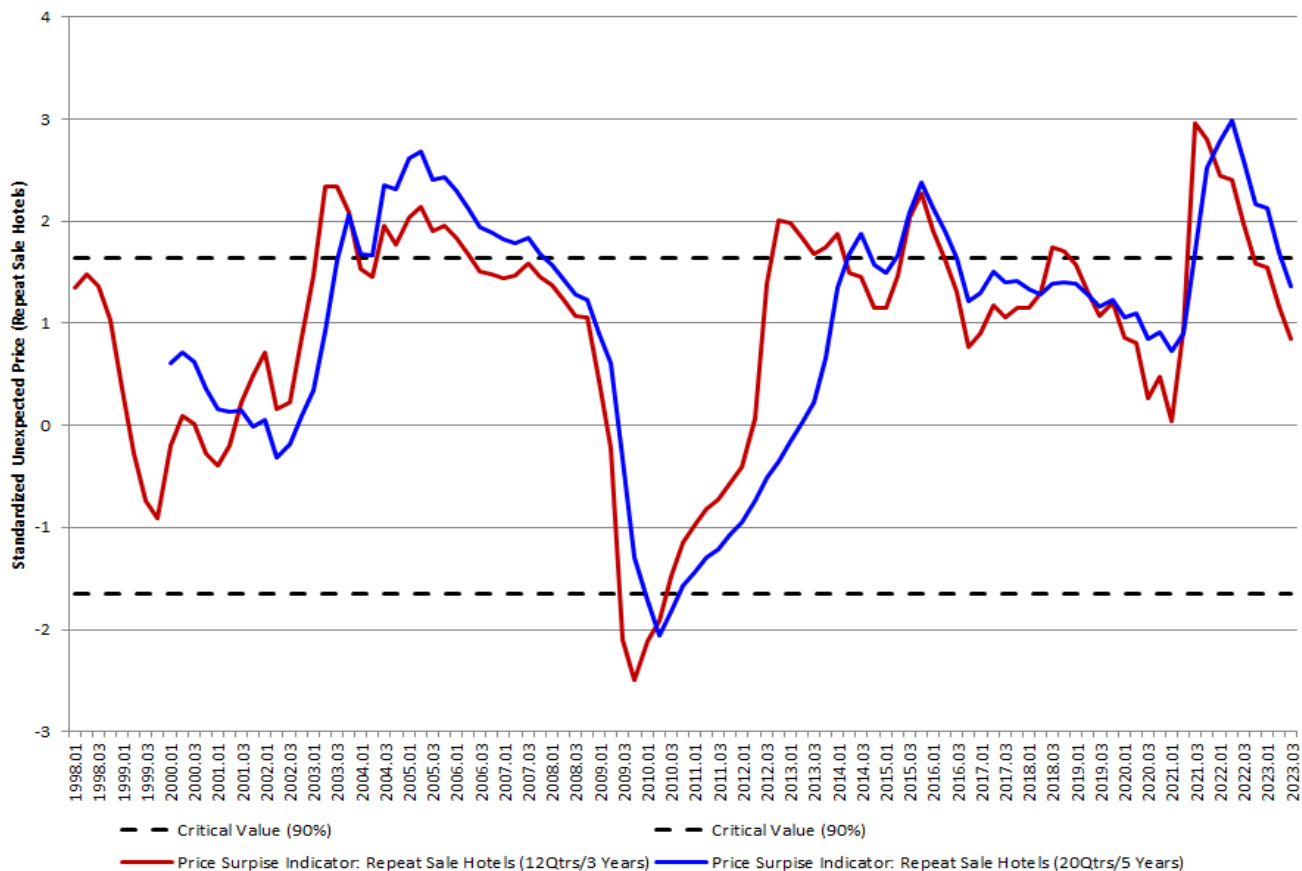
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

performance metric (SUP, in Exhibit 15) indicates that the standardized price based its 5-year moving average has now fallen below its statistical upper boundary. Both the 3-year and 5-year SUPs are reverting toward their standardized mean (of zero).

EXHIBIT 16

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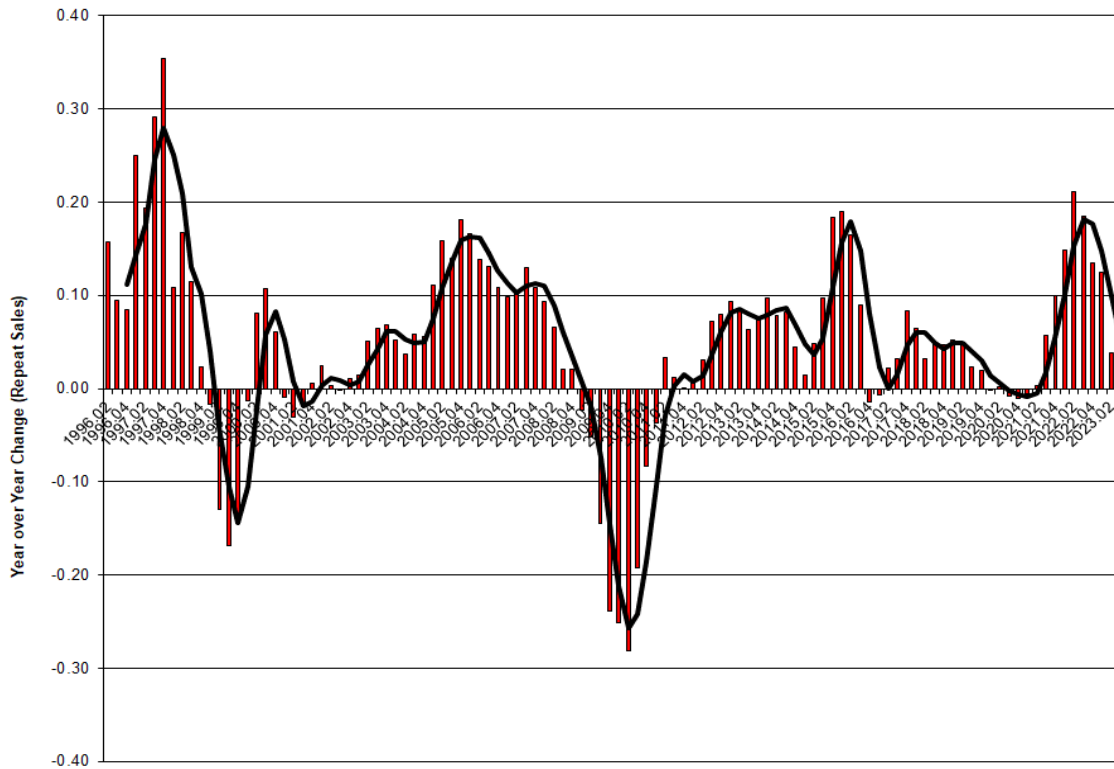
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

EXHIBIT 17

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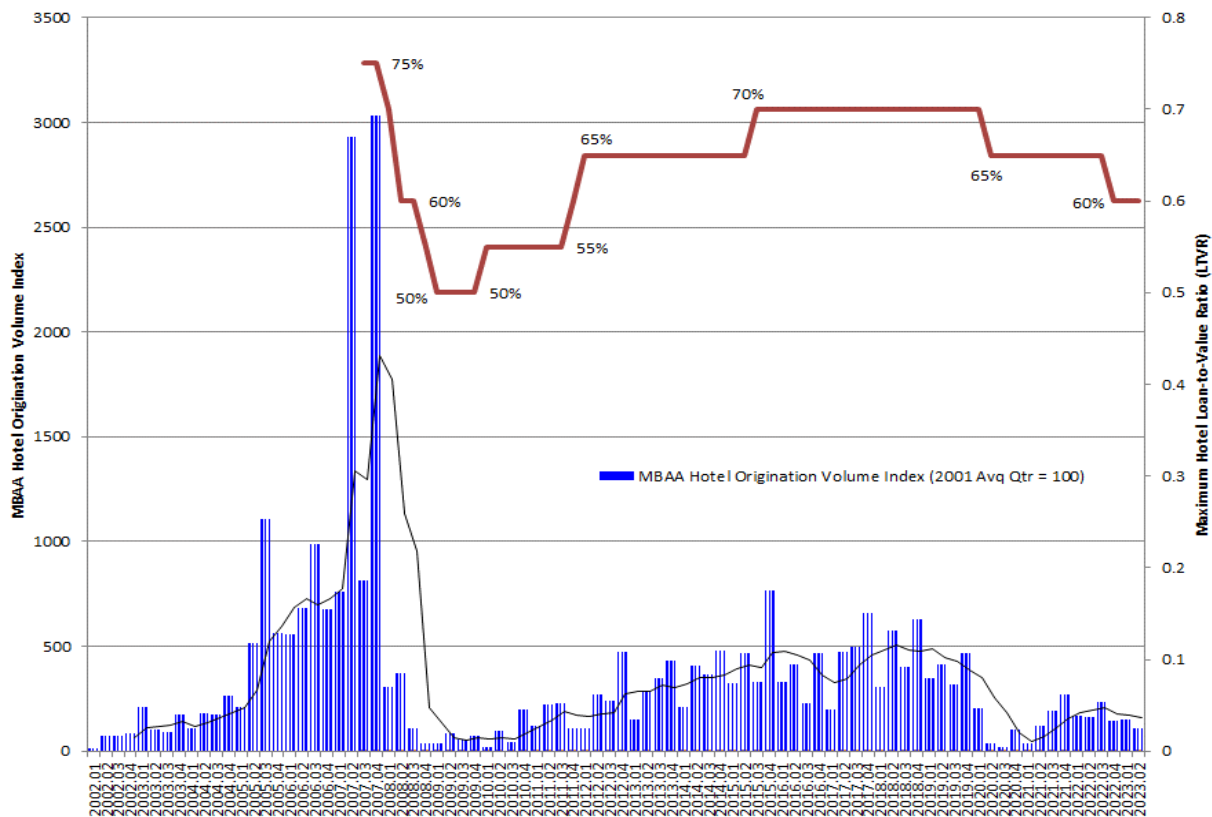
Sources: Mortgage Bankers Association, Cornell Center for Real Estate and Finance, Cushman Wakefield Sonnenblick Goldman

	MBAA Hotel Origination Volume Index (2001 Avq Qtr = 100)
2022Q2	162
2023Q1	152
2023Q2	111
Quarter over Quarter	-27.0%
Year over Year	-31.5%

Mortgage financing volume *fell* 27 percent for the most recent quarter reported. Exhibit 17 shows that the mortgage origination volume for hotels, as reported for the second quarter of 2023, fell -27% this quarter. [4] Loan volume was also 31.5-percent lower than the hotel loan origination volume from a year earlier (year over year). The maximum loan to value (LTV) ratio for hotels remains at 60 percent this quarter.

The cost of hotel debt financing rose in the recent quarter, although credit spreads tightened, signaling that lenders lowered the amount of additional compensation required to make hotel loans relative to other commercial real-estate (CRE) loans. Relative risk was also lower based on the relative volatility of hotel REITs versus other property types. The cost of obtaining hotel debt financing increased on both a quarterly and yearly basis. [5] The interest rate as of September 5, 2023, is 8.07

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

[5] The interest rate reported by Cushman Wakefield Sonnenblick Goldman (CWSG) is based on deals that CWSG has brokered as well as their survey of rates on hotel deals.

EXHIBIT 18

Interest rates on Class A versus Class B & C hotels
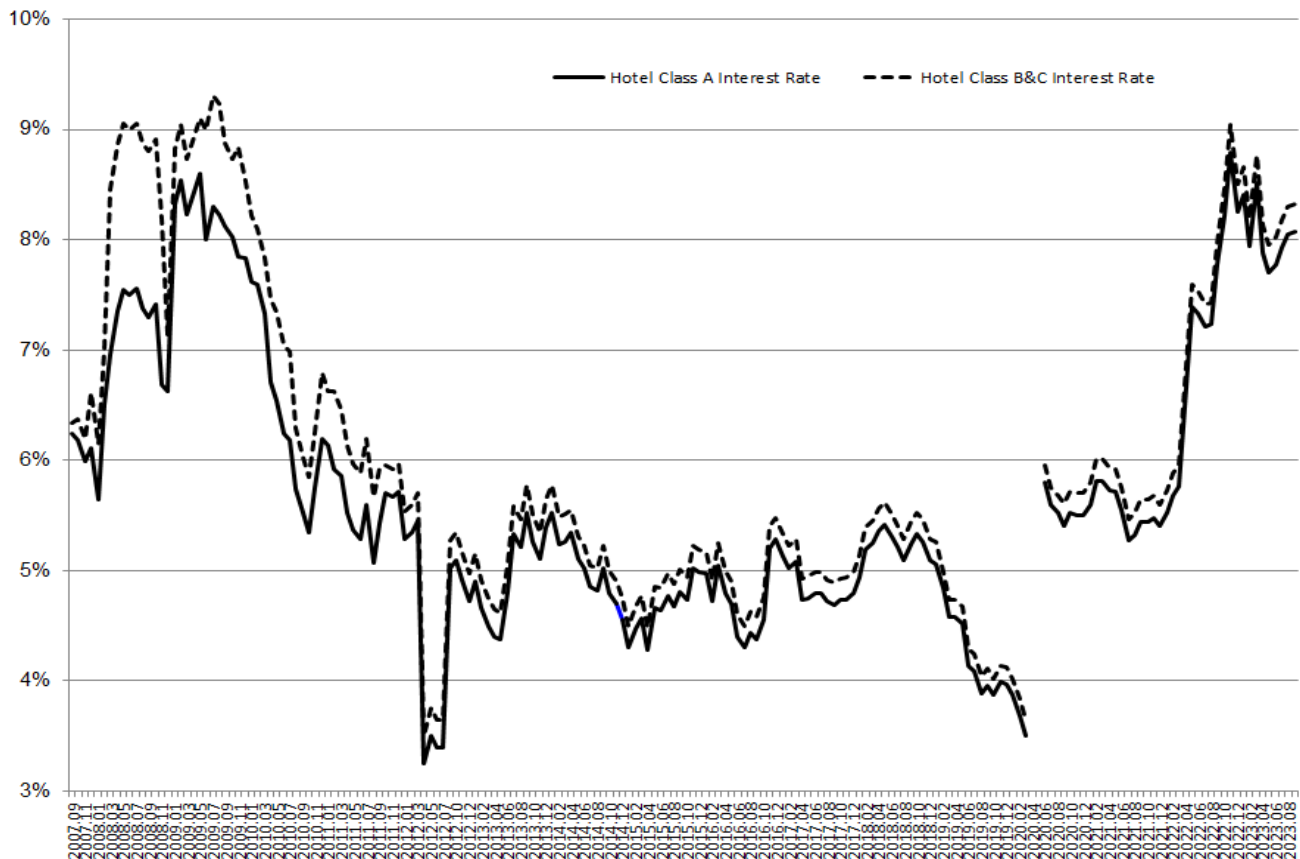
Sources: Cornell Center for Real Estate and Finance, Cushman Wakefield Sonnenblick Goldman

percent for full-service Class A hotels and 8.32 percent for Class B and C hotels, up from 7.78 percent (Class A) and 8.03 percent (Class B and C) in June 2023, representing an interest rate increase of 3.6 to 3.7 percent over a three-month period. Year over year, interest rates in the current period also rose compared to the prior year (September 2022), rising 3.9 percent for Class A properties and 4.4 percent for Class B and C hotels. This continued rise in interest rates makes hotel deals challenging near term. Exhibit 18 displays the historical time series graph of hotel interest rates.

EXHIBIT 19

Interest rate spreads of hotels versus non-hotel commercial real estate
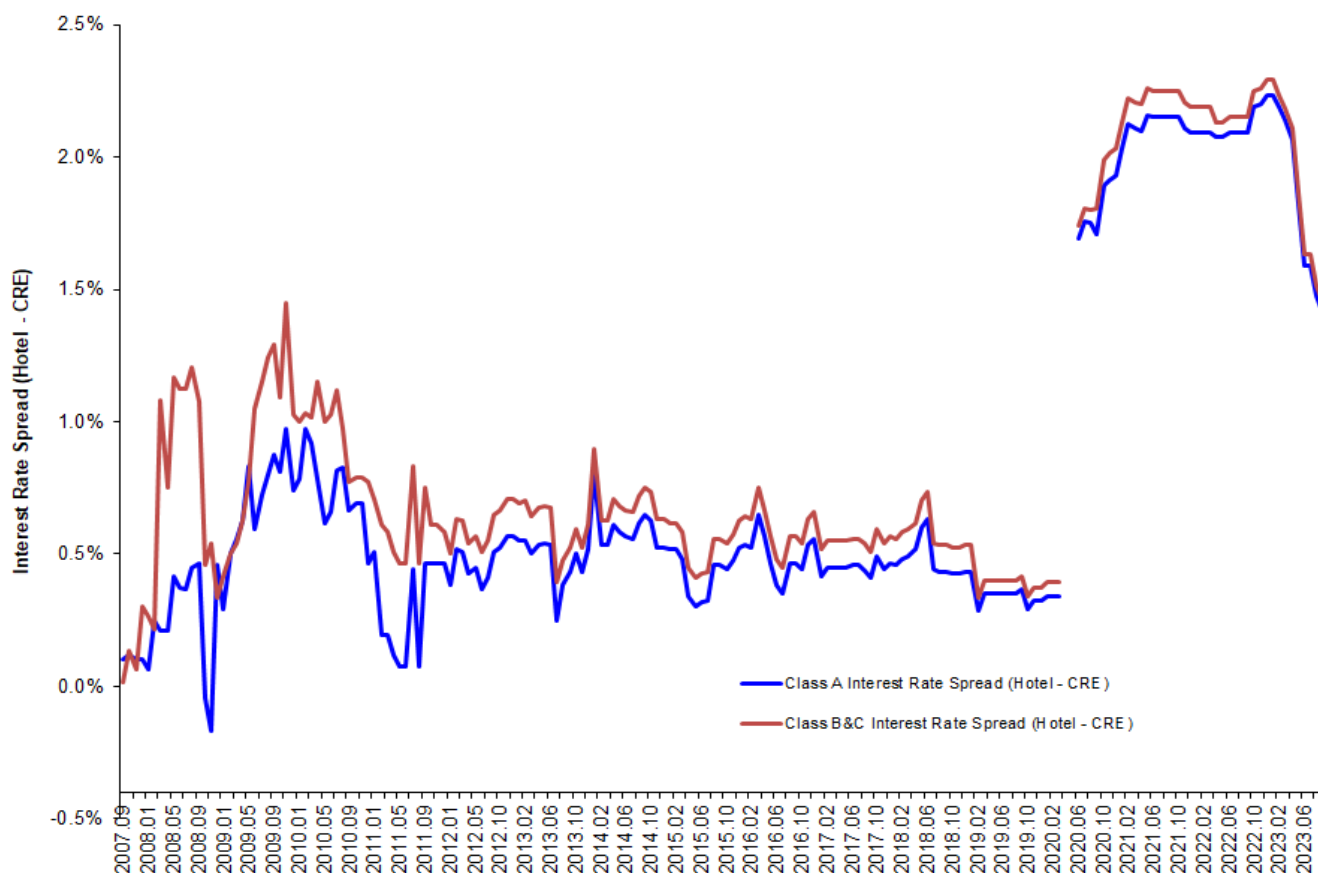
Sources: Cornell Center for Real Estate and Finance, Cushman Wakefield Sonnenblick Goldman

	Interest Rates Full Service Hotels		Interest Rate Spread (Hotel – CRE)		Interest Rate Spread (Hotel – 10 Yr TBond)	
	Class A	Class B&C	Class A	Class B&C	Class A	Class B&C
September 2022	7.77%	7.97%	2.09%	2.15%	4.50%	4.70%
June 2023	7.78%	8.03%	1.59%	1.63%	4.05%	4.30%
September 2023	8.07%	8.32%	1.40%	1.44%	3.85%	4.10%
Quarter over Quarter	3.7%	3.6%	-12.0%	-11.7%	-4.9%	-4.7%
Year over Year	3.9%	4.4%	-33.1%	-32.9%	-14.4%	-12.8%

To evaluate how risky hotel interest rates are, we compare the interest rate on hotels to other CRE types. As shown in Exhibit 19, the interest-rate spreads for both higher quality hotels (Class A) and lower quality hotels (Class B and C) have decreased approximately 19 basis points (bps) this quarter from the previous quarter. This indicates that lenders have lowered the additional compensation they require to make hotel loans compared to loans on other major CRE property types, given the relative riskiness for hotels. To obtain further insights, we also compare the interest rate on hotels to the yield on a 10-year Treasury bond. The interest rate spread on this metric has narrowed by 20 bps for both Class A and Class B and C hotels, from 4.05 percent to 3.85 percent for Class A and from 4.30 percent to 4.10 percent for Class B and C over a three-month period.

EXHIBIT **20**

Risk differential between hotel REITs and non-hotel commercial-property REITs
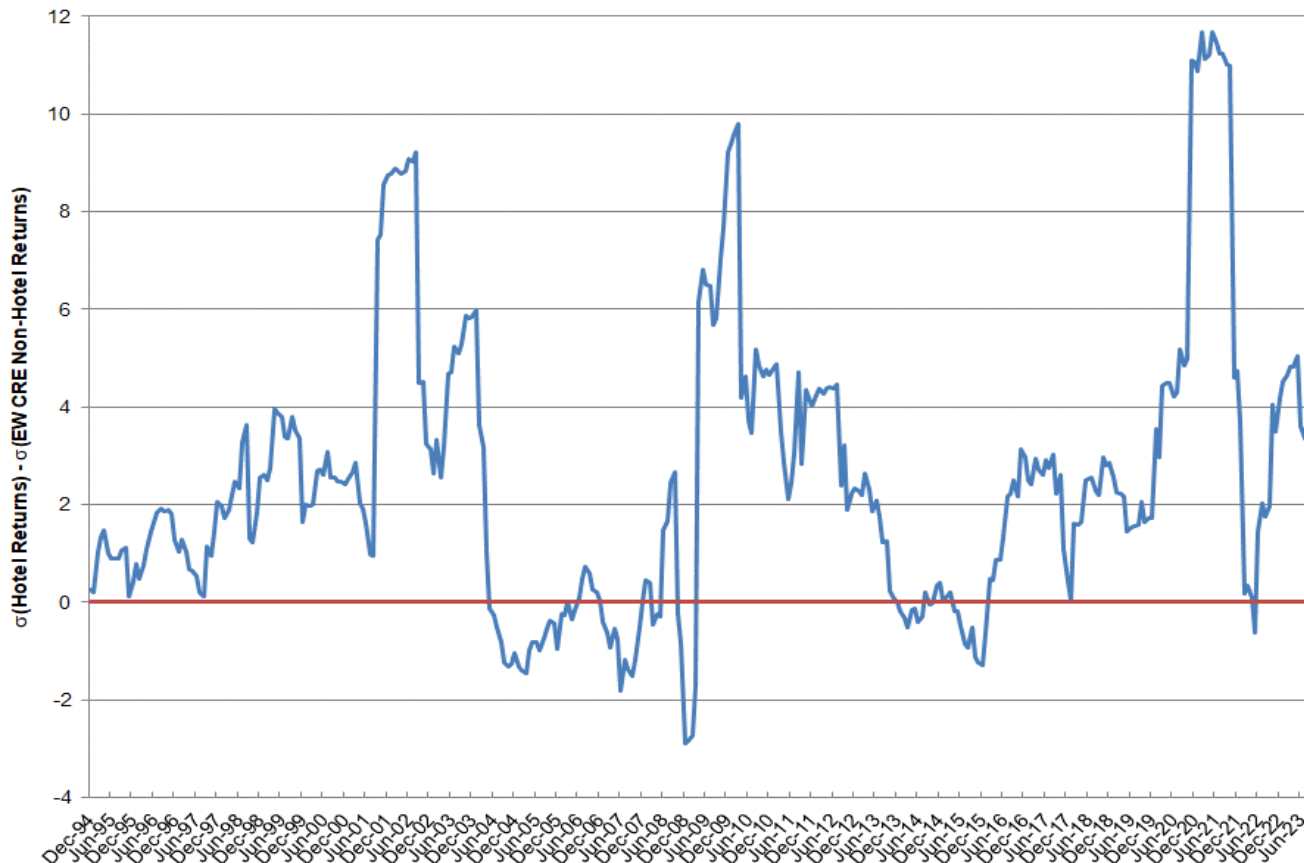
Sources: NAREIT, Cornell Center for Real Estate and Finance

Another way to view default risk is to look at the equity market. Exhibit 20 shows that the total risk of hotel REITs relative to the total risk of an equally weighted portfolio of commercial real estate equity REITs (including office, industrial, retail and multifamily).[6] The risk differential, which should reflect the risk that is unique to hotel properties, is currently at 3.57 percent (σ_{Hotel} - σ_{CRE} = 9.66% - 6.09%) down from 3.61 percent (σ_{Hotel} - σ_{CRE} = 10.83% - 7.22%) in the prior quarter. This indicates that the expected default risk for hotels has decreased relative to other major types of commercial real estate. This suggests that the cost of financing is moderating for hotels relative to other major property types in the short run.

[6] We calculate the total risk for hotel REITs using a 12-month rolling window of monthly returns on hotel REITs.

EXHIBIT **21**

30-plus-day delinquency rate for hotels
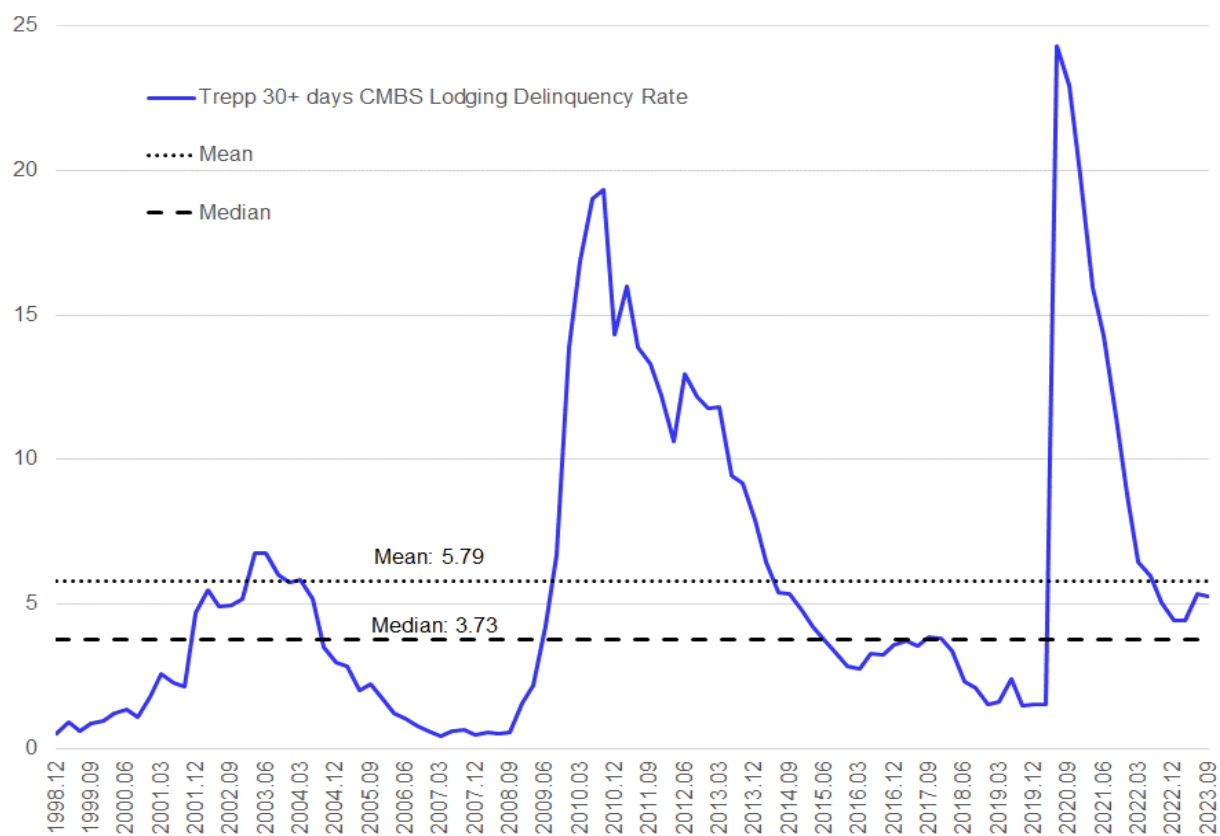
Source: Trepp

	Trepp 30+ days CMBS Lodging Delinquency Rate				
	Lodging	**Industrial**	**Multifamily**	**Office**	**Retail**
September 2022	5.02	0.43	0.93	1.58	6.61
June 2023	5.35	0.42	1.59	4.50	6.48
September 2023	5.27	0.30	1.85	5.58	6.92
Quarter over Quarter	-1.5%	-28.6%	16.4%	24.0%	6.8%
Year over Year	5.0%	-30.2%	98.9%	253.2%	4.7%

The delinquency rate on hotel loans fell this quarter. The CMBS delinquency rate (30+ days) of 5.27 percent for lodging properties in September is lower than the previous quarter's hotel delinquency rate of 5.35 percent (as of June 2023). However, it is higher than the 5.02-percent hotel delinquency rate in same period for the prior year (September 2022). The hotel delinquency rate is lower than the retail delinquency rate of 6.92 percent and the office delinquency rate of 5.58 percent. Exhibit 21 displays the historical 30+ day delinquency rate for hotels, while Exhibit 22 shows the standardized version of the 30+ day delinquency rate for hotels.

Cost of borrowing exceeds return for hotels. Our economic value added (EVA) or economic profit is -.48 percent, while the shareholder value added stands at -3.34 percent. Both the EVA and SVA have been negative, since April 2022. This indicates that economic profit for hotels is negative. That is, the return on hotels is less than their total borrowing cost (EVA) and the return on equity for hotels is less than their cost of equity (SVA). Consequently, the return on hotels is driven mainly from anticipated future price gains. Exhibit 23 depicts the historical EVA and SVA hotel performance.

EXHIBIT 22

Standardized 30-plus-day delinquency rate for hotels
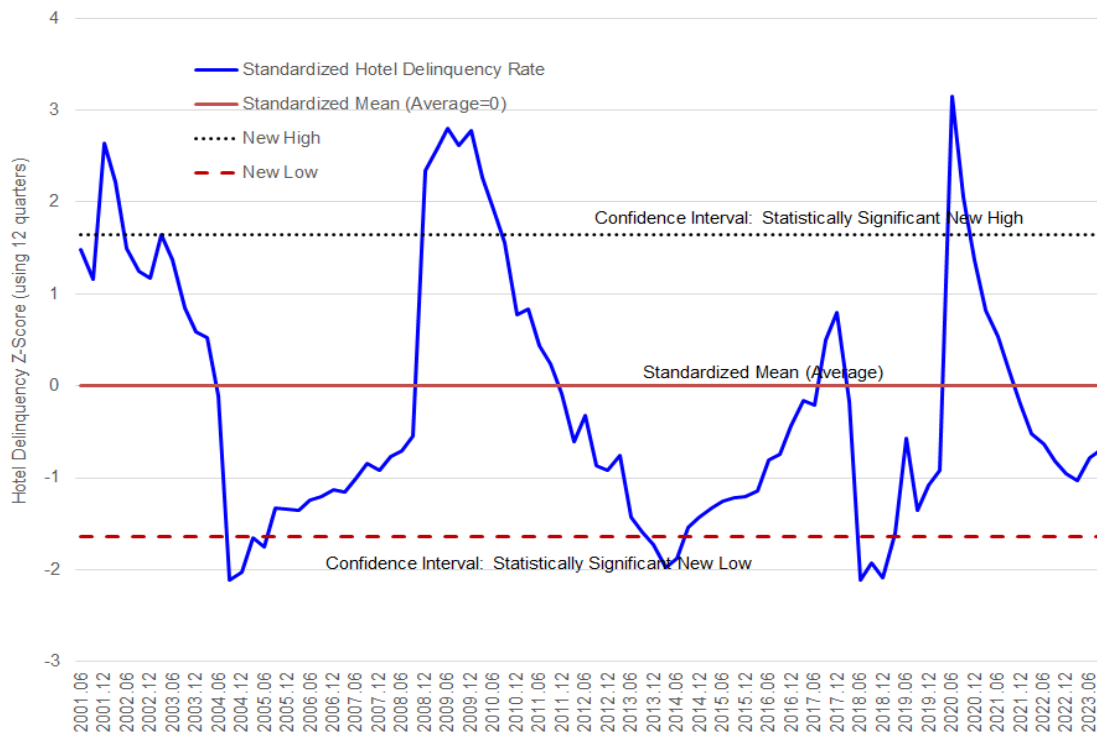
Source: Trepp

EXHIBIT 23

Economic value added (EVA) and equity (shareholder) value added (SVA) for hotels
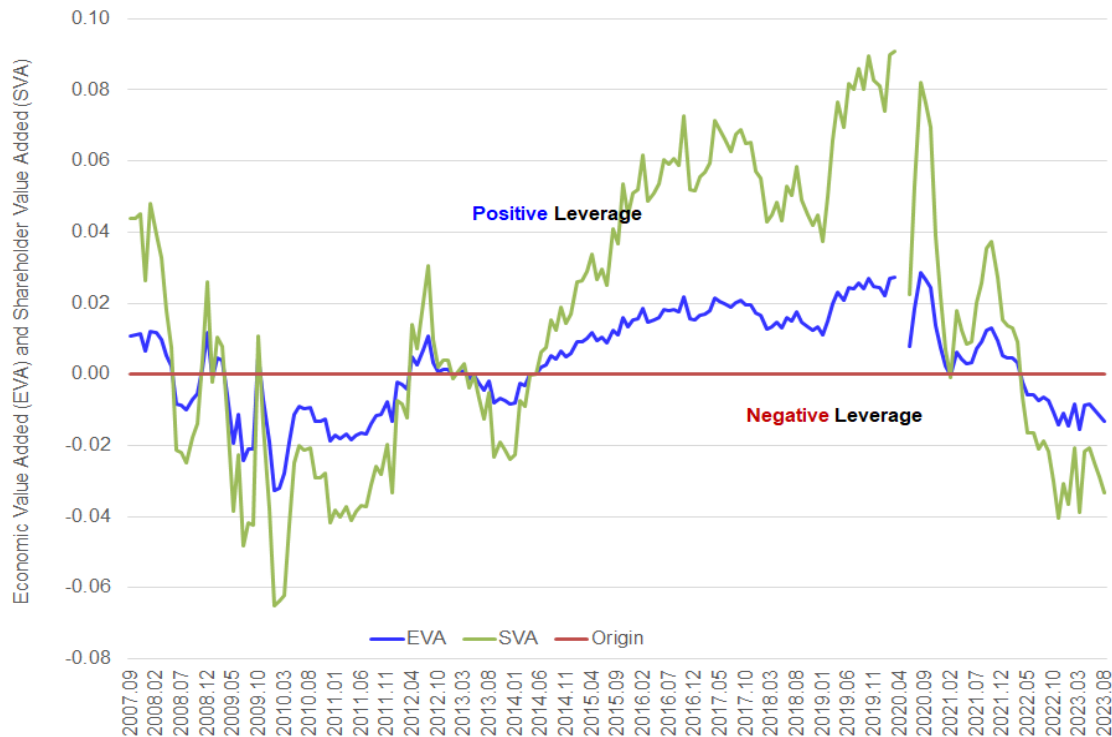
Sources: Cornell Center for Real Estate and Finance, Cushman Wakefield, NAREIT, MSCI-Real Capital Analytics, St Louis Fed

EXHIBIT **24**

Standardized unexpected RevPAR (36-month moving average) vs. NAREIT lodging-price index
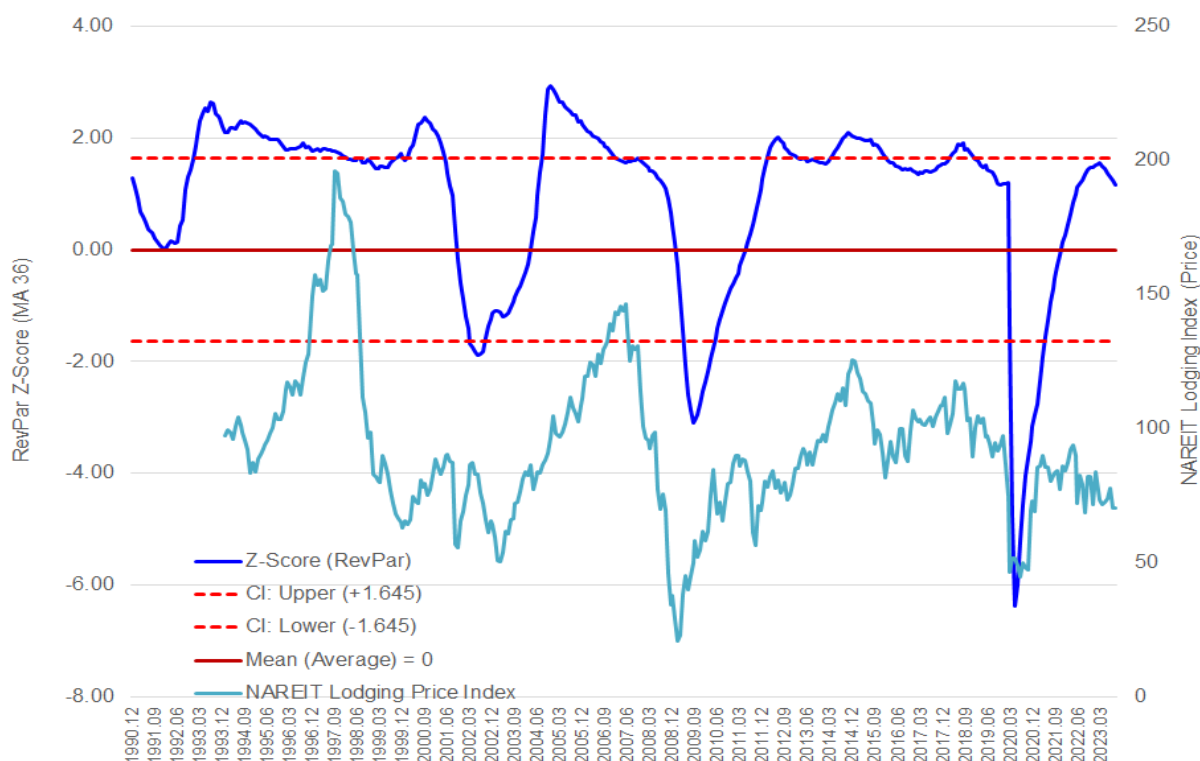
Sources: Cornell Center for Real Estate and Finance, CoStar (STR), NAREIT

	ROIC	WACC	EVA	ROE	Cost of Equity	SVA
December 2022	8.50%	9.12%	-.62%	7.34%	10.43%	-3.08%
March 2023	8.46%	9.35%	-.89%	7.12%	11.00%	-3.88%
June 2023	8.49%	8.73%	-.23%	8.14%	10.64%	-2.49%
August 2023	8.47%	8.95%	-.48%	7.74%	11.08%	-3.34%

Note: ROIC is the return on invested capital (cap rate), WACC is the weighted average cost of capital, and ROE is the return on equity or cash on cash.

Our reading of the tea leaves suggests we should see more positive price action for large hotels and slower to negative price momentum for small hotels near term. Standardized unexpected RevPAR continued its decline, falling from 1.55 in March 2023 to 1.38 in June 2023 to 1.16 in September 2023, as shown in Exhibit 24. The NAREIT Lodging Price Index fell from 73.81 last quarter (second quarter) to 70.40 this quarter. The standardized unexpected price of the NAREIT Lodging Index is currently -.96; it has fallen below its standardized average of zero, as Exhibit 25 depicts. Based on the standardized unexpected price and also the 12-month moving average of the NAREIT Lodging Price Index, we expect hotel prices based on repeat sales to decline near term.

The architecture billings index (ABI) for commercial and industrial property, shown in Exhibit 26, rose 7.7 percent this quarter to 51.50 (based on the August 2023 report) from 47.8.[7] Year over year, the index was also up 3.8 percent, rising from 49.6 to 51.5 from the prior year. Based on the moving average of the ABI index, we should expect an uptick in price momentum in the next period.

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[7] http://www.aia.org/practicing/economics/aias076265

EXHIBIT 25

Standardized unexpected NAREIT lodging/resort price index
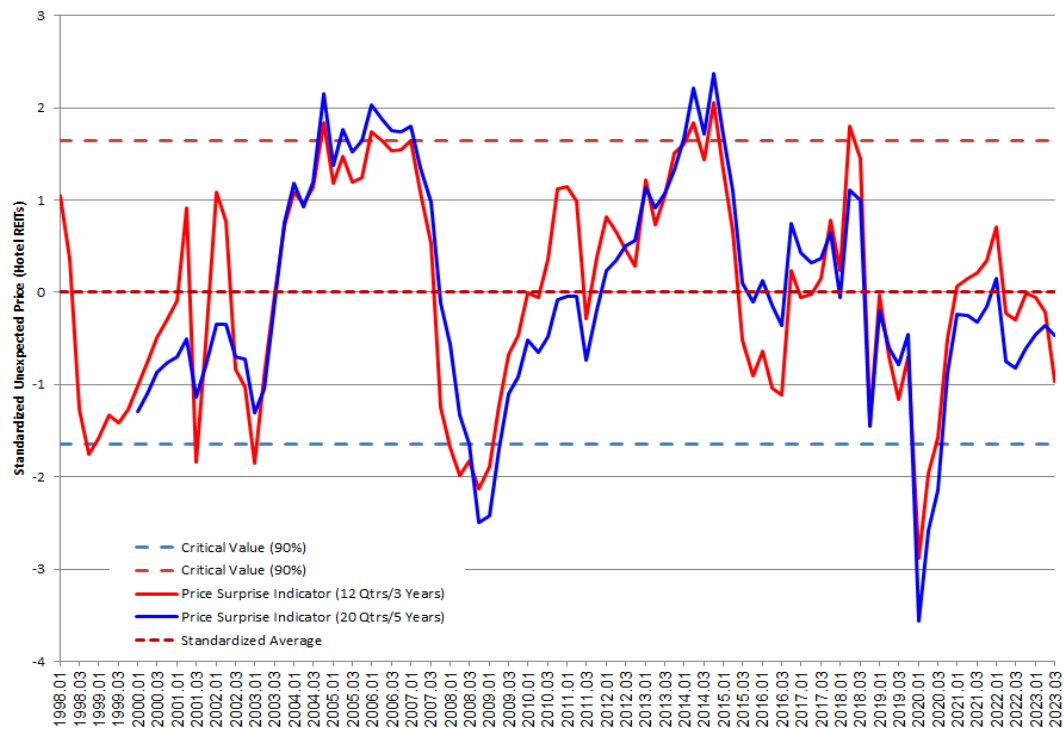
EXHIBIT 26

Repeat sales index versus the architecture billings index
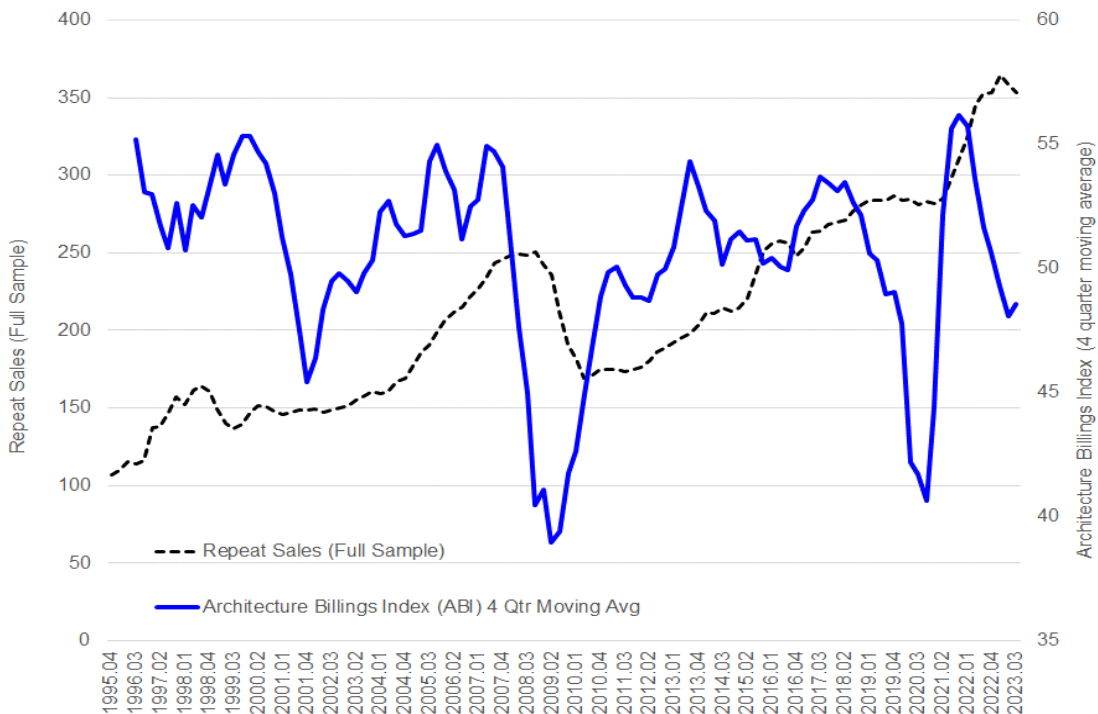
EXHIBIT 27

Business confidence and high-price hotels index
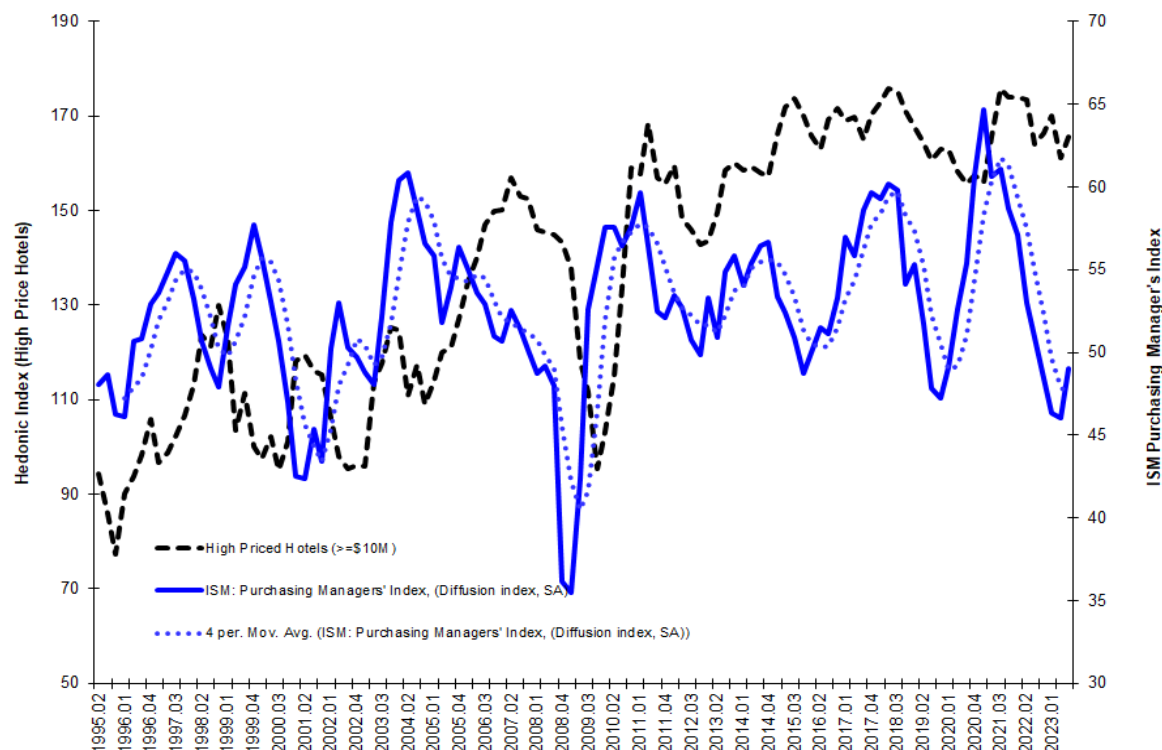
Sources: Cornell Center for Real Estate and Finance, Institute for Supply Management (ISM)

The National Association of Purchasing Managers (NAPM) index shown in Exhibit 27, an indicator of anticipated business confidence, currently stands at 49.[8] It increased 6.5 percent this quarter (46 to 49), compared to a slight decline last quarter of 0.6 percent (46.3 to 46). Year over year, the NAPM index declined 3.7 percent (50.9 to 49). This decline is lower than the fall of 13.2 percent in the prior period (53 to 46). Expect higher priced hotels to increase in price near term.

The Conference Board's Consumer Confidence Index graphed in Exhibit 28, our proxy for anticipated consumer demand for leisure travel and a leading indicator of the hedonic index for low price hotels fell 6.1 percent this quarter and dropped 4.6 percent year over year. Thus, we expect a continued drop in low price hotels in the near term, based on a four-quarter moving average of the Consumer Confidence Index. ■

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[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

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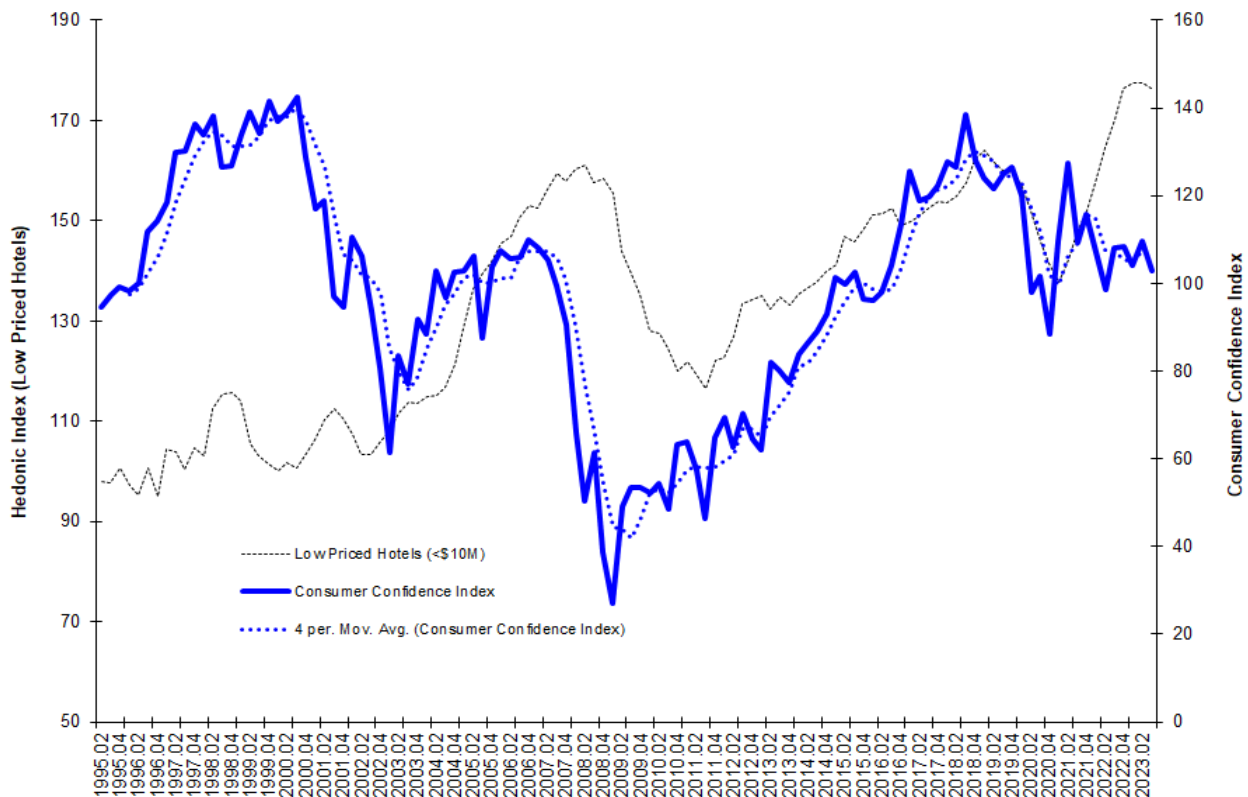
Sources: Conference Board, Cornell Center for Real Estate and Finance

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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 (cref.cornell.edu).

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

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

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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-sale 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.* In our 2019Q2 issue, we introduced our new regional indices to add further granularity to hotel performance. More recently, we have included information on hotel delinquencies, as well as short-term and long-term hotel earnings expectations to aid hotel decisionmakers. We also present updates and revisions to our hotel indices along with commentary and supporting evidence from the real estate market. Starting in 2021Q2, we included standardized unexpected price for our regional price indices as well as standardized unexpected RevPAR for the U.S. as a whole. We also introduced shareholder value added (SVA) as a complementary metric to EVA so that readers can now compare the profitability of hotel real estate to investors' equity return.

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* Cities that we define as gateway cities are 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 Corgel, J.B. (2012), What is a Gateway City?: A Hotel Market Perspective, *Center for Real Estate and Finance Reports*, Cornell University School of Hotel Administration (https://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.