# **Cornell Hotel Indices: Second Quarter 2022**

# Heading into Economic Headwinds

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

### **EXECUTIVE SUMMARY**

he price of hotels rose in all regions except the Mid-Atlantic this quarter. Hotel prices in the Mountain and South Atlantic regions reached new statistical highs, while hotel prices in the Pacific region continued to remain above their statistical high. Hotels in non-gateway cities posted higher quarterly gains relative to gateway cities, as non-gateway pricees increased 5 percent, compared to 3 percent for hotels in gateway cities. The transaction volume on all hotel transactions ((both large hotels and small hotels combined) surged 27 percent this quarter (61% year over year). Median prices also rose this quarter for both large and small hotels as well as hotels in non-gateway cities while hotels in gateway cities declined 23 percent. The prices of large and small hotels appear to be undervalued based on moving averages. However, the cost of hotel debt financing rose sharply this quarter, as well as year over year. Lenders are requiring relatively more compensation for hotel loans relative to other commercial real estate, and to the 10-year risk-free rate due to increased perceived risk. The rise in borrowing cost will dampen enthusiasm for undervalued hotel properties, since our EVA and SVA metrics indicate that the cost of borrowing exceeds the return for hotels.

Looking towards the next quarter, our leading indicators of hotel price performance indicate that we should expect slower or declining near-term price momentum for both larger and smaller hotels near term.

### **ABOUT THE AUTHORS**

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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, for which 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. 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 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 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 a noted authority on the real estate capital markets with credits in the *Wall Street Journal, Barron's, The Economist, Forbes, New York Times*, and *Financial Times*, among others. He is the 2014 recipient of the James D. Landauer/John R. White Award given by The Counselors of Real Estate. In addition, he was named one of National Real Estate Investor Magazine's "Ten to Watch" in 2005, *Institutional Investor*'s "20 Rising Stars of Real Estate" in 2006, and *Real Estate Forum*'s "10 CEOs to Watch" in 2007. Previously, Mr. White spent 14 years in the real estate investment banking and brokerage industry and has orchestrated billions of commercial sales, acquisitions and recapitalizations. He was formerly a managing director and principal of Granite Partners LLC and spent nine years with Eastdil Realty in New York and London. Mr. White is a Counselor of Real Estate, a Fellow of the Royal Institution of Chartered Surveyors, and a Fellow of the Homer Hoyt Institute. He serves on the board of directors for the Pension Real Estate Association and the

advisory board for the Real Estate Research Institution. He is also a member of numerous industry organizations and a supporter of academic studies. Mr. White is a graduate of the McIntire School of Commerce at the University of Virginia. White's research has been published in *Journal of Real Estate Finance and Economics*.

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### **Disclaimer**

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# Heading into Economic Headwinds

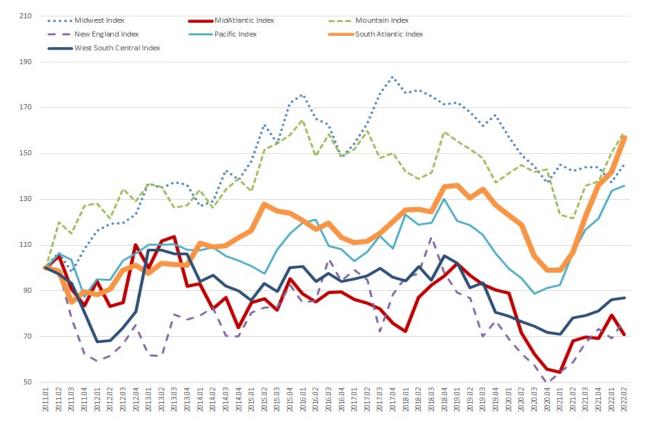
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# Analysis of Indices through Q2, 2022

otel prices in all regions rose this quarter, except for those in the Mid-Atlantic region. Exhibits 1A through 1D show that for the second quarter (2022Q2), all regions exhibited a positive year-over-year price increase. Quarter over quarter, however, the Mid-Atlantic region declined 10.6 percent, while the West South Central region experienced little growth in prices. With respect to standardized unexpected prices (Z-scores), hotel prices reached a new statistical high in the Mountain and South Atlantic regions, while hotel prices in the Pacific region continued to remain above their statistical high. Hotel prices in the Midwest and Mid-Atlantic are around their average standardized unexpected price, but hotel prices in New England and West South Central have broken above their average and are trending toward a new statistical high.

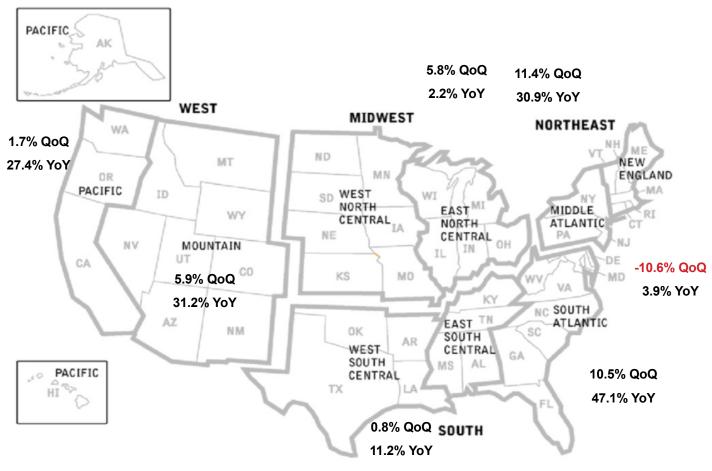
### EXHIBIT 1A

# Time series hotel performance for seven regions



### EXHIBIT 1B

# Cross-section hotel performance for seven regions



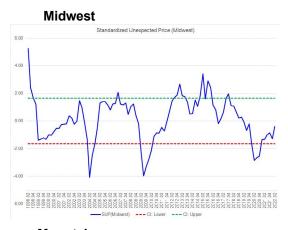
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

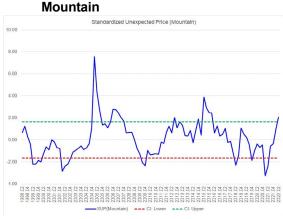
### EXHIBIT 1c

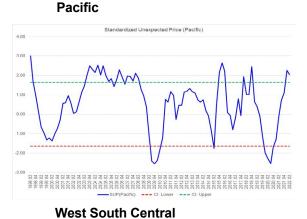
# Changes in regional price indices, year over year and quarter over quarter

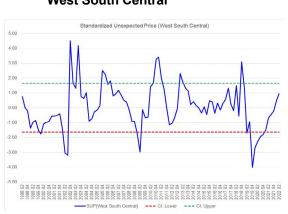
							West
		Mid		New		South	South
Y-o-Y	Midwest	Atlantic	Mountain	England	Pacific	Atlantic	Central
Current	2.2%	3.9%	31.2%	31.0%	27.4%	47.1%	11.2%
Prior	-5.2%	45.5%	22.1%	27.1%	44.3%	43.5%	21.0%
Q-o-Q							
Current	5.8%	-10.6%	5.9%	11.4%	1.7%	10.5%	0.8%
Prior	-4.6%	14.6%	9.2%	-5.6%	9.9%	4.4%	6.1%

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

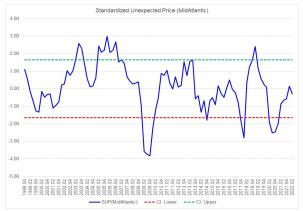




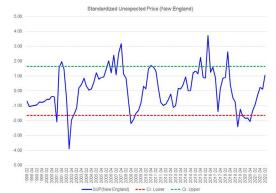




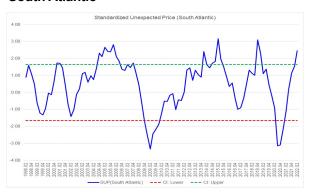
### **Middle Atlantic**



### **New England**

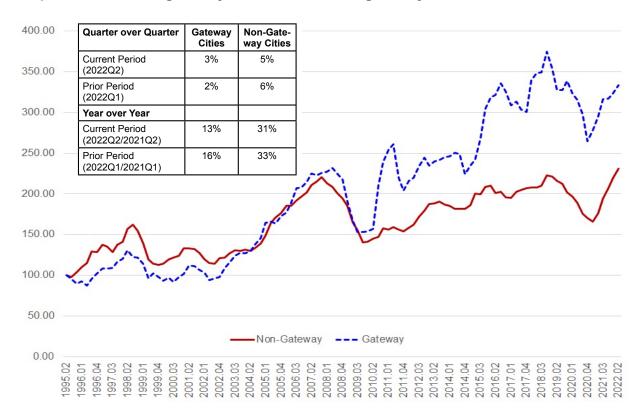


### **South Atlantic**



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; Mountain region: Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Utah, and Wyoming; West North Central region: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota; Pacific: Alaska, California, Hawaii, Oregon, and Washington.

# Hotel performance for gateway cities versus non-gateway cities



Cities that we define as gateway cities are Boston, Chicago, Honolulu, Los Angeles, Miami, New York, San Francisco, and Washington, DC.

	Full S	ample	Gatewa	y Hotels	Non-Gatev	way Hotels
	Median Price	No. of Sales	Median Price	No. of Sales	Median Price	No. of Sales
2022Q2	\$5,300,000	557	\$9,250,000	50	\$5,100,000	507
Quarter over Quarter	3%	27%	-23%	19%	4%	27%
Year over Year	51%	61%	-4%	47%	52%	63%

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

Hotels in non-gateway cities posted higher gains relative to gateway cities. Exhibit 2 shows that prices of hotels in non-gateway cities increased 5 percent, compared to a 3-percent price rise in gateway cities this quarter compared to last quarter. Year over year, a similar price momentum exists, as hotel prices in non-gateway cities rose 31 percent compared to a 13-percent hotel price increase in gateway cities.

Transaction volume surged this quarter, but prices also increased regardless of hotel size. The transaction volume on all hotel transactions (both large hotels and small hotels combined) surged 27 percent this quarter (61%)

year over year). Sales volume for small hotels (priced under \$10,000,000) accounted for the bulk of this quarterly increase, rising 35 percent, while the transaction volume for large hotels (over \$10,000,000) rose a modest 5 percent. The transaction volume for both non-gateway and gateway hotels also rose this quarter. Volume in non-gateway properties exceeded that of gateway properties by a margin of 27 percent to 19 percent. Median prices also rose this quarter for both large and small hotels, as well as hotels in

<sup>&</sup>lt;sup>1</sup> 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.

# EXHIBIT 3A

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

		Full San	nple		Big			Small		Ga	ateway		No Gateway		
		Median		Median Sale	_	% Total	Median		% Total	Median Sale		% Total	Median		% Total
Year	Quarter	Sale Price	N	Price	Obs	Sales	Sale Price	Obs	Sales	Price	Obs	Sales	Sale Price	Obs	Sales
1995	1	2357500	20	NA	0	0%	2357500	20	100%	3400000	7	35%	2100000	13	65%
1995	2	3150000	29	15712500	6	20.68%	2670000	23	79.31%	3800000	12	41.37%	2906150	17	58.62%
1995	3	2562500	44	12400000	4	9.09%	2378000	40	90.90%	3500000	20	45.45%	2.00E+06	24	54.54%
1995	4	3400000	41	27750000	10	24.39%	2625000	31	75.60%	5075000	14	34.14%	3100000	27	65.85%
1996	1	2500000	39	14475000	8	20.51%	1700000	31	79.48%	2500000	13	33.33%	2687500	26	66.66%
1996	2	2925000	43	29150000	12	27.90%	2500000	31	72.09%	3200000	15	34.88%	2730000	28	65.11%
1996	3	6500000	57	17740000	20	35.08%	3.00E+06	37	64.91%	5500000	25	43.85%	6890500	32	56.14%
1996	4	2735000	58	1.90E+07	17	29.31%	2200000	41	70.68%	4650000	27	46.55%	2400000	31	53.44%
1997	1	5053250	74	16635500	23	31.08%	3500000	51	68.91%	6300000	29	39.18%	4075000	45	60.81%
1997	2	2862500	72	17750000	17	23.61%	2150000	55	76.38%	2445000	24	33.33%	3047350	48	66.66%
1997	3	3437500	90	1.90E+07	21	23.33%	2400000	69	76.66%	5140000	38	42.22%	2550000	52	57.77%
1997	4	4330950	78	1.70E+07	27	34.61%	2300000	51	65.38%	10435445	27	34.61%	3600000	51	65.38%
1998	1	4698800	92	2.00E+07	31	33.69%	3100000	61	66.30%	6353000	33	35.86%	4600000	59	64.13%
1998	2	3630000	96	23765000	21	21.87%	3.00E+06	75	78.12%	3998239.5	28	29.16%	3575000	68	70.83%
1998	3	2961059	92	16740000	12	13.04%	2690550	80	86.95%	2255000	30	32.60%	3365000	62	67.39%
1998	4	2550000	84	3.50E+07	15	17.85%	2375000	69	82.14%	4225000	30	35.71%	2500000	54	64.28%
1999	1	2425000	88	24638095	10	11.36%	2125000	78	88.63%	3500000	32	36.36%	2300000	56	63.63%
1999	2	2100000	95	6.70E+07	5	5.26%	1950000	90	94.73%	2067500	28	29.47%	2100000	67	70.52%
1999	3	2500000	99	20711100	10	10.10%	2130000	89	89.89%	1800000	19	19.19%	2522500	80	80.80%
1999	4	2440000	87	18190000	14	16.09%	2090000	73	83.90%	2210000	23	26.43%	2575000	64	73.56%
2000	1	2400000	110	23253894.5	10	9.09%	2300000	100	90.90%	2325000	44	40%	2428500	66	60%
2000	2	2450000	88	14500000	9	10.22%	2275000	79	89.77%	2325000	24	27.27%	2450000	64	72.72%
2000	3	2600000	95	20346875	16	16.84%	2250000	79	83.15%	2925000	24	25.26%	2525000	71	74.73%
2000	4	2475000	101	18050000	14	13.86%	2300000	87	86.13%	4500000	26	25.74%	2350000	75	74.25%
2001	1	2970650	104	28437500	18	17.30%	2422500	86	82.69%	2650000	29	27.88%	3.00E+06	75	72.11%
2001	2	2800000	110	23795000	12	10.90%	2687150	98	89.09%	5825000	25	22.72%	2684300	85	77.27%
2001	3	2700000	87	1.60E+07	6	6.89%	2500000	81	93.10%	3150000	21	24.13%	2600000	66	75.86%
2001	4	2400000	73	20500000	5	6.84%	2300000	68	93.15%	2800000	17	23.28%	2300000	56	76.71%
2002	1	2125000	70	11518052	5	7.14%	2.00E+06	65	92.85%	1700000	17	24.28%	2200000	53	75.71%
2002	2	2400000	106	18125000	10	9.43%	2287500	96	90.56%	3125000	33	31.13%	2300000	73	68.86%
2002	3	2355400	81	12750000	5	6.17%	2237500	76	93.82%	2197500	24	29.62%	2470000	57	70.37%
2002	4	2907500	100	23500000	16	16%	2575000	84	84%	2907500	34	34%	2862500	66	66%
2003	1	2530000	94	1.30E+07	9	9.57%	2425000	85	90.42%	3850000	21	22.34%	2425000	73	77.65%
2003	2	2750000	110	18500000	10	9.09%	2509500	100	90.90%	3160000	31	28.18%	2600000	79	71.81%
2003	3	3333000	141	14359285.5	28	19.85%	2600000	113	80.14%	3660000	45	31.91%	3032500	96	68.08%
2003	4	2600000	149	16375000	18	12.08%	2425000	131	87.91%	2950000	35	23.48%	2500000	114	76.51%

**ЕХНІВІТ З**В

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

		Full Sample			Big			Small		Ga	ateway		No Gateway		
		Median		Median Sale	_	% Total	Median		% Total	Median Sale		% Total	Median		% Total
Year	Quarter	Sale Price	N	Price	Obs	Sales	Sale Price	Obs	Sales	Price	Obs	Sales	Sale Price	Obs	Sales
2004	1	2925000	166	22875250	24	14.45%	2536756	142	85.54%	3450000	41	24.69%	2894000	125	75.30%
2004	2	2700000	195	16280000	28	14.35%	2450000	167	85.64%	4500000	39	20%	2540000	156	80%
2004	3	3491122	216	19350000	45	20.83%	2610000	171	79.16%	4600000	51	23.61%	3306500	165	76.38%
2004	4	4000000	177	20475000	47	26.55%	3085500	130	73.44%	8850000	36	20.33%	3600000	141	79.66%
2005	1	4330000	231	18100000	52	22.51%	3300000	179	77.48%	6687500	40	17.31%	3800000	191	82.68%
2005	2	4566250	316	18956812	78	24.68%	3255150	238	75.31%	6475000	68	21.51%	4385000	248	78.48%
2005	3	4150000	273	21475000	72	26.37%	3100000	201	73.62%	6100000	61	22.34%	3750000	212	77.65%
2005	4	4425000	300	25000000	93	31%	3150000	207	68.99%	11200000	65	21.66%	4000000	235	78.33%
2006	1	5300000	301	25750000	92	30.56%	3800000	209	69.43%	18000000	64	21.26%	4943744	237	78.73%
2006	2	4750000	313	22750000	82	26.19%	3500000	231	73.80%	6175000	56	17.89%	4500000	257	82.10%
2006	3	5000000	285	22500000	86	30.17%	3650000	199	69.82%	7000000	59	20.70%	4705399	226	79.29%
2006	4	4587500	248	21200000	65	26.20%	3550000	183	73.79%	8093750	56	22.58%	4270000	192	77.41%
2007	1	6155805	286	21225000	104	36.36%	3700000	182	63.63%	9500000	63	22.02%	5700000	223	77.97%
2007	2	5650000	385	25125000	120	31.16%	3750000	265	68.83%	9000000	67	17.40%	5450000	318	82.59%
2007	3	5450000	330	20100161	105	31.81%	3900000	225	68.18%	8325000	53	16.06%	5011554	277	83.93%
2007	4	4680000	249	23250000	86	34.53%	3150000	163	65.46%	9375000	36	14.45%	4500000	213	85.54%
2008	1	5000000	255	16000000	61	23.92%	3985000	194	76.07%	5990000	46	18.03%	4650000	209	81.96%
2008	2	5062900	228	22150000	50	21.92%	3890000	178	78.07%	8725000	38	16.66%	4800000	190	83.33%
2008	3	4190500	172	17133333	37	21.51%	3350000	135	78.48%	5500000	27	15.69%	3900000	145	84.30%
2008	4	4050000	159	18850000	32	20.12%	3500000	127	79.87%	4972500	27	16.98%	3920000	132	83.01%
2009	1	4150000	81	15800000	15	18.51%	3600000	66	81.48%	7375000	16	19.75%	3700000	65	80.24%
2009	2	3090231	86	14722500	11	12.79%	2864310	75	87.20%	5410250	16	18.60%	3000000	70	81.39%
2009	3	3400000	90	22000000	16	17.77%	3000000	74	82.22%	4608750	14	15.55%	3195271	76	84.44%
2009	4	3562500	84	14100000	14	16.66%	3010250	70	83.33%	4520000	12	14.28%	3400000	72	85.71%
2010	1	3900000	89	20162500	18	20.22%	2825000	71	79.77%	8450000	15	16.85%	3825000	74	83.14%
2010	2	3700000	138	30833449	34	24.63%	3000000	104	75.36%	15400000	34	24.63%	3100000	104	75.36%
2010	3	4912500	120	35500000	46	38.33%	2850000	74	61.66%	25000000	37	30.83%	3117000	83	69.16%
2010	4	3988800	100	30353182	38	38%	2420000	62	62%	38500000	23	23%	3265000	77	77%
2011	1	4200000	85	34050000	24	28.23%	2795500	61	71.76%	12275000	15	17.64%	3775000	70	82.35%
2011	2	4200000	97	51200000	31	31.95%	2250000	66	68.04%	15600000	23	23.71%	3175000	74	76.28%
2011	3	3350000	73	23772500	20	27.39%	2800000	53	72.60%	3700000	17	23.28%	3275000	56	76.719
2011	4	5000000	157	32400000	43	27.38%	3229250	114	72.61%	10950000	34	21.65%	4300000	123	78.34%
2012	1	5233961	131	22100000	40	30.53%	3275000	91	69.46%	13837500	28	21.37%	4200000	103	78.62%
2012	2	4000000	209	17000000	61	29.18%	2779500	148	70.81%	15900000	22	10.52%	3700000	187	89.47%
2012	3	7000000	169	19100000	67	39.64%	2720250	102	60.35%	16050000	32	18.93%	5250000	137	81.06%
2012	4	5622500	207	24866613	74	35.74%	3125000	133	64.25%	16174794	39	18.84%	5070000	168	81.15%

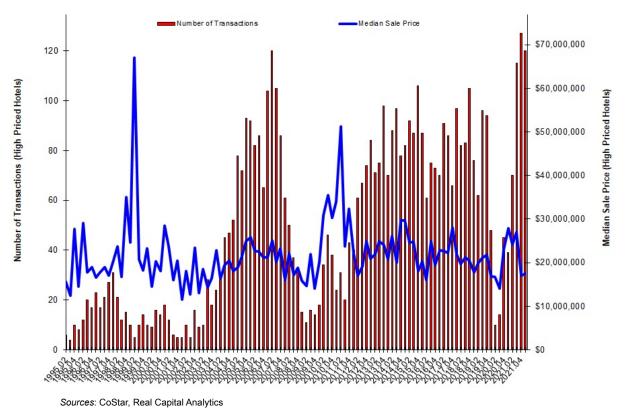
**ЕХНІВІТ 3**С

# Transaction volume (observed) and median sale price (concluded, 2013–2022)

		Full Sar	nple		Big			Small		G	ateway		No	У	
		Median		Median Sale		% Total	Median		% Total	Median Sale		% Total	Median		% Total
Year	Quarter	Sale Price	N	Price	Obs	Sales	Sale Price	Obs	Sales	Price	Obs	Sales	Sale Price	Obs	Sales
2013	1	5997496	238	20927291	84	35.29%	2962500	154	64.70%	6500000	51	21.42%	5575000	187	78.57%
2013	2	4700000	217	22000000	71	32.71%	2500000	146	67.28%	16000000	38	17.51%	4200000	179	82.48%
2013	3	5260855	246	25000000	75	30.48%	3300000	171	69.51%	9949500	35	14.22%	4750000	211	85.77%
2013	4	4537500	314	24000000	98	31.21%	2790000	216	68.78%	13500000	55	17.51%	4000000	259	82.48%
2014	1	5625000	228	20750000	70	30.70%	3300000	158	69.29%	8825900	59	25.87%	5000000	169	74.12%
2014	2	4300000	320	26125000	88	27.50%	2818750	232	72.50%	11200000	59	18.43%	3700000	261	81.56%
2014	3	5500000	351	20000000	97	27.63%	3425000	254	72.36%	10567078	66	18.80%	5000000	285	81.19%
2014	4	4550000	310	29625000	78	25.16%	3107500	232	74.83%	8225000	72	23.22%	3950000	238	76.77%
2015	1	5950000	252	29750000	82	32.53%	3156050	170	67.46%	8280000	47	18.65%	5500000	205	81.34%
2015	2	6300000	267	25000000	91	34.08%	3250000	176	65.91%	18765000	46	17.22%	5525000	221	82.77%
2015	3	5050000	299	24800000	87	29.09%	3012500	212	70.90%	12100000	53	17.72%	4275000	246	82.27%
2015	4	6650000	292	18080000	106	36.30%	3125000	186	63.69%	14415000	51	17.46%	5400000	241	82.53%
2016	1	5600000	293	20375000	87	29.69%	3350000	206	70.30%	13600000	45	15.35%	5275000	248	84.64%
2016	2	4100000	322	16000000	61	18.94%	3300000	261	81.05%	11600000	48	14.90%	3725000	274	85.09%
2016	3	4862500	284	25000000	75	26.40%	3200000	209	73.59%	24500000	34	11.97%	4362500	250	88.02%
2016	4	4000000	263	19480000	73	27.75%	2800000	190	72.24%	13352600	28	10.64%	3664706	235	89.35%
2017	1	5275000	254	22880750	70	27.55%	3600000	184	72.44%	14726254	28	11.02%	4950000	226	88.97%
2017	2	5100000	331	22660000	91	27.49%	3325000	240	72.50%	16450000	37	11.17%	4462500	294	88.82%
2017	3	5000000	321	22250000	86	26.79%	3431000	235	73.20%	22250000	38	11.83%	4525000	283	88.16%
2017	4	4500000	265	28000000	66	24.90%	2875000	199	75.09%	12208000	26	9.81%	4250000	239	90.18%
2018	1	5500000	310	21882400	97	31.29%	3500000	213	68.70%	14750000	40	12.90%	5000000	270	87.09%
2018	2	4805200	366	19750000	82	22.40%	3300000	284	77.59%	17625000	40	10.92%	4300000	326	89.07%
2018	3	5125000	334	21265000	83	24.85%	3710000	251	75.14%	13342500	22	6.58%	5000000	312	93.41%
2018	4	6490000	279	20500000	105	37.63%	3300000	174	62.36%	14440000	33	11.82%	5580556	246	88.17%
2019	1	5350000	289	17802698	76	26.29%	3550000	213	73.70%	15750000	34	11.76%	4800000	255	88.23%
2019	2	4045000	332	19848485	62	18.67%	3372500	270	81.32%	6300000	35	10.54%	3900000	297	89.45%
2019	3	4707500	402	21000000	96	23.88%	3500000	306	76.11%	15850000	42	10.44%	4362500	360	89.55%
2019	4	4950000	383	21855650	94	24.54%	3300000	289	75.45%	11000000	35	9.13%	4600000	340	88.77%
2020	1	4100000	306	16900000	48	15.68%	3470000	258	84.31%	6313000	22	7.18%	4095000	284	92.81%
2020	2	3380000	80	16787500	10	12.50%	2515000	70	87.50%	6700000	7	8.75%	3360000	73	91.25%
2020	3	2800000	173	14062500	14	8.09%	2600000	159	91.90%	7219750	12	6.93%	2667500	161	93.06%
2020	4	3600000	246	23053000	45	18.29%	2750000	201	81.70%	10725000	36	14.63%	3000000	210	85.36%
2021	1	3951500	215	27900000	39	18.13%	3150000	176	81.86%	11431000	20	9.30%	3750000	195	90.69%
2021	2	3500000	346	24352000	69	19.94%	2900000	277	80.05%	9675000	34	9.82%	3337500	312	90.17%
2021	3	4350000	448	27000000	115	25.66%	3125000	333	74.33%	33820000	38	8.48%	4000000	410	91.51%
2021	4	4750000	493	17100000	127	25.76%	3300000	366	74.23%	9687500	36	7.30%	4400000	457	92.69%
2022	1	5131250	440	17550000	120	27.27%	3475000	320	72.72%	12025000	42	9.54%	4887500	398	90.45%
2022	2	5300000	557	21140000	126	22.62%	3750000	431	77.37%	9250000	50	8.97%	5100000	507	91.02%

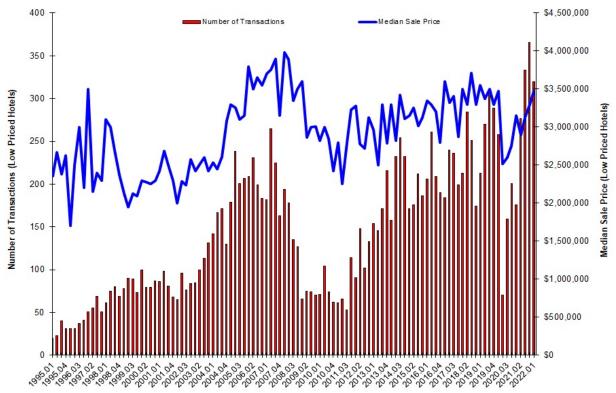
Source: Cornell Center for Real Estate and Finance

# Median sale price and number of sales, large hotels (sale prices of \$10 million or more)



# EXHIBIT 5

# Median sale price and number of sales, small hotels (sale prices less than \$10 million)



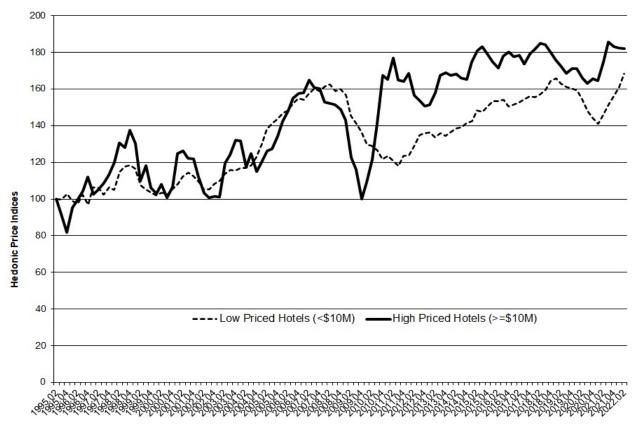
Sources: CoStar, Real Capital Analytics

# Hotel indices through 2022, quarter 2

Priced   Priced   Priced   Nor   Repeat Value   Holels   Galeway		Low	High				Index		Low	High				
				Non		Repeat					Non			Index Value
					Gateway	•						Gateway	Repeat	
1995 0.0   98.096   49.8937   82.695   10.749   64.18 NA	YrQtr							YrQtr				•	and the second	
1989.0.0   97.93 86.03371 81.1665   99.403 67.492 NA   20.006    24.2561   116.4178   136.406   77.6074   136.406   77.6072   90.43519   90.9649   58.732   77.43 NA   20.006    13.8194   90.5066   16.0569   159.026   159.32   137.63556   22.22626   1896.10   97.0052   90.43519   90.9647   73.03 NA   20.006   13.8194   95.006   16.0569   19.0869   12.855562   28.51178   18.9187   19.9187   17.305 NA   20.0010   127.56   10.7537   11.65   19.9187   17.305 NA   20.000   12.64   11.5236   11.6787   11.678   10.0014   12.006   12.0078   11.768   10.0014   12.0078   11.768   10.0014   10.0014   12.0078   11.768   10.0014   10.0014   12.0078   11.768   10.0014														
1986.01 971.052 09.43519 99.0945 98.737 07.03 NA 2009.03 138.188 110.0744 12.6602 159.32 137.751099 12.226602 19.996.01 97.7502 09.52953 94.05031 95.2191 90.6197 73.035 NA 2010.01 127.15 103.7537 116.58 159.022 118.01042 122.62836 19.86 03 10.0389 99.00153 106.337 92.514 72.034 NA 2010.02 126.43 115.5285 119.87 16.58 159.023 118.01042 122.62836 19.97 10.039 19.00153 106.337 92.514 72.034 NA 2010.02 126.43 115.5285 119.87 16.58 123.030 10.0389 19.00153 106.337 92.514 72.034 NA 2010.03 12.5964 138.1987 10.039 13.95899 113.516 112.56 87.176 NA 2010.04 119.528 168.8777 150.029 246.24 112.857022 116.02134 1997.03 10.0394 103.2502 106.39 113.267 95.759 NA 2011.00 12.1077 157.1072 129.079 205.242 118.002134 1997.03 10.0394 103.2502 106.39 113.267 95.759 NA 2011.00 11.03 11.579 115.544 12.0827 12.04 NA 2011.00 11.03 11.579 115.544 12.0827 11.544 12.0870 12.04 NA 2011.00 11.03 11.579 115.544 12.0827 11.590.04														
1996 0.0   97.1052 90.43519 90.9649 98.8732 70.743 NA   2009 0.4   333.943 95.066 116.099 159.088 123.855562 128.9115														
1996.02   95.2983   94.00531   95.2191   90.6197   73.035 NA   2010.02   126.34   115.2985   11967   163.03   180.0142   122.62895   1997.01   104.39   99.0105   106.37   92.514   126.58   73.552 NA   2010.02   126.34   115.285   71.78   117.88   112.578   73.552 NA   2010.03   123.964   134.1895   121.763   218.013   110.932222   161.4219; 1997.01   104.39   39.8779   111.788   112.578   57.78 NA   2010.04   119.528   156.777   105.29   224.24   12.857022   161.4219; 1997.03   100.391   30.9899   113.516   132.67   95.795 NA   2011.01   121.07   157.1072   129.078   234.24   112.68672   112.64673   119.9743   1997.03   100.391   102.992   114.0977   11.544   120.827   120.04 NA   2011.02   118.654   160.822   13.837   270.913   112.26652   111.82044   1997.04   104.997   104.997   11.544   120.827   120.04 NA   2011.02   121.091   156.5422   225.997   227.778   117.28652   111.82044   1997.04   104.997   104.9														
1989.0.9 100.389 99.00153 106.837 99.2514 72.034 NA 2010.02 126.64 3115.2852 119.87 163.003 109.792151 10.93022 116.42151 1987.01 104.39 97.38899 113.616 112.58 67.178 NA 2010.04 119.528 18.88777 130.529 248.424 112.887022 116.02134 1987.02 103.913 99.8779 111.788 112.571 89.721 NA 2010.04 119.528 18.88777 130.529 248.424 112.887022 116.02134 1997.04 104.947 107.4973 113.547 12.0529 57.578 NA 2011.02 116.664 166.1022 313.87 270.913 112.04644 1997.04 104.947 107.4973 113.547 12.0529 67.578 NA 2011.02 116.664 166.1022 313.87 270.913 112.26626 111.52044 1997.04 104.947 107.4973 113.547 12.0529 68.728 NA 2011.03 115.791 165.642 128.987 227.776 110.763737 109.910.43 1999.02 112.6803 13.799 11.0667 10.06237 10.														122.628367
1996.04 95.004 106.5715 106.314 105.974 73.562 NA 2010.03 123.984 134.1695 121.783 128.013 10.93222 116.1213 1997.02 103.93 97.3589 111.788 112.571 89.721 NA 2011.01 121.107 157.1027 129.078 263.424 111.860327 112.0494 11997.03 103.93 4103.2502 106.39 113.267 95.799 NA 2011.02 118.654 168.1022 131.837 270.913 112.2663 111.5204 11997.01 104.979 107.4973 113.444 120.827 102.04 NA 2011.02 118.654 168.1022 131.837 270.913 112.2663 111.5204 11999.004 104.997 107.4973 113.454 120.827 102.04 NA 2011.03 117.979 116.5422 128.987 227.793 112.2663 111.5204 11998.00 1102.993 114.0697 116.57 125.066 98.728 NA 2011.04 121.069 166.0397 127.472 211.603 112.23511 111.59082 11998.02 112.676 114.570 114.570 114.570 114.04 NA 2011.03 114.03 106.129 130.822 223.61 111.55041 111.59082 11998.04 116.13 130.5173 12.7644 126.617 104.04 NA 2012.03 132.399 146.1504 133.811 22.783 117.801412 118.84961 1999.02 105.618 104.3276 94.724 100.287 91.417 NA 2012.03 132.399 146.1504 141.984 242.783 117.801412 118.84961 1999.02 105.618 104.3276 94.724 100.287 91.417 NA 2012.03 132.399 146.1504 141.984 242.483 11.8612 127.15642 1999.03 103.209 112.2639 94.1836 105.233 88.838 NA 2013.02 131.144 150.0227 155.583 241.117 128.61768 128.1470.0199.04 101.641 100.7265 93.0805 101.222 89.531 NA 2013.03 133.438 1591.079 157.319 250.45 126.675008 130.59555 100.220 101.5616 95.9868 100.758 97.831 99.255 2013.04 131.88 10.6223 156.442 242.020 132.5668 134.696 132.200 101.5616 95.200 95.9868 100.758 97.831 99.255 2013.04 131.88 10.6223 156.033 123.595668 134.6960 132.200 101.5616 11.6200 95.106.169 95.722 97.688 93.190 2014.02 138.618 115.0303 123.595668 134.7960 139.0565 134.0560 134.0560 132.0000 101.007 97.76613 190.756 105.659 95.9868 100.758 97.831 90.250 2014.04 138.618 157.6505 150.232 255.513 135.9000 130.2579 115.856 105.854 115.6595 91.2900 91.0402 135.0560 134.4503 112.0560 134.4503 112.0560 134.4503 112.0560 134.4503 112.0560 134.4503 112.0560 134.4503 112.0560 134.4503 112.0560 134.4503 112.0560 134.4503 112.0560 134.4503 112.0560 134.4503 112.0560														
1997.02   103.913   99.8779   111,786   112,561   87.718   NA   2011.04   115,281   185,8777   130,529   248.424   112,85702   116,02144   1997.04   104.497   107.4973   113,544   120,827   102,049   NA   2011.01   118,664   168,1022   131,837   270,731   112,26626   111,52044   1997.04   104.497   107.4973   113,544   120,827   102,049   NA   2011.02   118,664   168,1022   131,837   277,757   107,6737   109,191.045   1999.01   102,999   114,0697   116,571   250,669   89.728   NA   2011.04   116,691   21,693   130,822   224,36   113,650153   112,5225301   111,59022   1999.02   112,762   124,481   129,708   136,038   104,19   NA   2012.02   126,069   166,3638   133,811   227,337   111,59022   1999.02   114,693   133,769   126,6875   162,516   186,524   133,811   227,337   117,60142   118,4695   1999.01   114,382   123,7916   115,161   118,692   73,27   NA   2012.02   126,016   148,5294   133,811   227,333   112,5924   122,37044   139,901   114,382   123,7916   115,161   118,692   73,27   NA   2012.02   124,033   160,129   148,106   242,486   121,88924   122,37044   1999.01   114,382   123,7916   115,161   118,682   73,27   NA   2012.04   133,379   143,0297   148,106   242,486   124,80799   139,009   104,000														
1997.03 103.38 98779 111.788 112.571 89721 NA 2011.01 121.107 157.1027 129.076 263.424 111.860327 112.0494 11997.03 1003.84 103.2502 106.39 113.696 170.4973 113.544 120.827 102.04 NA 2011.02 118.654 168.1022 131.837 270.913 110.763737 109.91043 11998.01 102.939 114.0697 116.571 125.086 99.728 NA 2011.04 121.069 166.0397 127.472 211.603 112.25031 111.59031 11998.02 112.676 124.248 129.708 130.830 104.19 NA 2011.04 121.069 166.0397 127.472 211.603 112.25031 111.59031 112.59032 111.59093 113.590 116.650 112.59172: 1998.03 115.590 121.6853 133.769 126.987 106.25 NA 2012.01 21.403 160.129 130.822 223.63 113.650153 112.59172: 1998.04 116.13 130.5173 127.844 126.617 104.04 NA 2012.03 13.393 146.1504 11.969 427.783 117.800142 118.49694 11999.01 114.382 123.7916 115.516 118.682 97.327 NA 2012.04 133.399 146.1504 11.969 427.783 117.800142 118.49694 1999.01 114.382 123.7916 115.516 118.682 97.327 NA 2012.04 133.379 143.0297 148.106 253.85 123.312654 124.00799.1999.03 103.99 112.2639 91.8136 106.328 89.838 NA 2013.03 133.844 143.9142 155.512 24.5764 125.00014 129.0909 112.2639 91.136.189 143.59 143.25 143.45 1														116.021347
1997.04 104.497 107.4973 113.267 195.79 145.694 120.204 NA 2011.02 118.684 168.1022 131.837 270.913 112.26626 111.52044 1998.00 102.939 114.0697 116.57 125.066 99.728 NA 2011.04 121.069 156.0337 127.472 211.603 112.23501 111.59062 11998.03 115.069 121.6803 13.769 12.6987 106.25 NA 2011.04 121.069 156.0337 127.472 211.603 112.23501 111.59062 1998.03 115.069 121.6803 13.769 12.6987 106.25 NA 2012.02 120.016 148.5294 133.81 127.718 103.112 227.801 112.59162 1999.04 116.113 130.5173 127.844 126.617 104.04 NA 2012.03 132.399 146.1504 141.964 242.485 121.88694 122.37916 115.516 118.6869 97.327 NA 2012.04 133.391 143.097 148.106 233.31654 124.004 129.99 119.900.1 114.3276 98.742 110.287 91.327 140.028 133.433 13.277.844 125.00416 127.15642 1999.03 103.209 112.2639 94.1836 163.23 88.38 NA 2013.04 133.844 143.942 155.132 43.764 125.00416 127.15642 1999.03 103.209 112.2639 94.1836 163.23 88.38 NA 2013.02 131.144 150.0227 155.593 249.117 125.61786 128.1474 1999.03 103.209 112.2639 94.1836 163.23 88.38 NA 2013.03 133.483 159.1079 157.319 250.45 126.61780 130.58955 100.000 110.087 97.76631 94.554 98.68643 94.274 98.255 2014.01 134.18 160.5223 154.644 254.203 129.54686 134.73841 1999.03 100.555 95.69967 100.615 95.2722 97.688 93.199 2014.02 135.796 159.616 150.232 255.15 35.39037 140.0967 103.0967 103.097 103.098 103.0985 102.599 103.0985 102.599 103.0985 102.599 103.0985 102.599 103.0985 102.599 103.0985 102.599 103.0985 102.599 103.0985 102.599 103.0985 102.599 103.0985 102.599 103.0985 102.599 103.0985 102.599 103.0985 102.599 103.0985 102.599 103.0985 102.599 103.0985 102.599 103.0985 103														112.04946
1999.01 102.939 114.0697 16.57 125.069 98.728 NA 2011.03 115.791 165.5422 128.987 227.775 110.763737 (109.910.43) 11998.01 112.762 124.246 129.708 136.038 104.19 NA 2012.01 121.069 156.0387 127.472 211.603 112.223501 111.59082 11998.01 111.3 130.5173 172.841 126.67 104.04 NA 2012.01 121.403 160.129 130.822 224.36 113.605153 112.53172: 1999.03 115.509 121.6853 137.69 126.997 106.25 NA 2012.02 126.016 148.5294 133.811 227.783 117.603142 118.846951 1999.01 114.382 123.7916 115.516 18.682 97.327 NA 2012.03 133.399 146.106 141.964 224.58 121.88094 123.3004 1999.01 114.382 123.7916 115.516 18.682 97.327 NA 2012.04 133.379 143.0297 148.106 253.85 123.31654 124.007939 1999.02 105.618 104.3276 97.42 100.25 97.417 NA 2013.01 133.844 143.9142 155.312 23.764 125.00041 627.16542 1999.03 103.209 112.2639 94.1836 106.323 88.838 NA 2013.02 131.144 150.0227 155.593 249.117 125.61786 128.14740 1999.04 101.641 100.7265 93.085 101.222 89.531 NA 2013.01 131.88 160.5235 154.644 24.03 129.5465 126.567008 130.59855 2001.00 10.00														111.520449
1998.02 112.762 124.28 129.708 136.038 104.19 NA 2012.01 121.093 136.038 127.272 218.603 112.53172. 1998.03 115.509 121.6853 133.769 126.987 106.25 NA 2012.02 126.016 148.5294 133.811 227.783 117.803142 118.846951 1999.01 113.832 123.7916 115.516 186.82 97.327 NA 2012.02 130.391 146.1504 141.964 242.458 121.8188924 122.37064 1999.01 113.832 123.7916 115.516 186.82 97.327 NA 2012.04 133.391 413.097 148.106 253.85 123.12564 120.0799. 1999.02 105.618 104.3276 98.742 100.287 91.417 NA 2013.01 133.844 413.912 155.312 243.764 125.000416 127.156420 1999.03 103.299 112.2539 91.80 150.338 88.38 NA 2012.04 133.84 413.912 155.312 243.764 125.000416 127.156420 1999.03 103.299 112.2539 91.80 150.338 88.38 NA 2013.03 133.48 189.1079 157.319 250.45 126.675008 130.59855 2000.01 100.087 97.76631 94.556 98.9865 107.889 98.31 NA 2013.03 133.481 189.1079 157.319 250.45 126.675008 130.59855 2000.02 101.557 102.5159 89.8986 100.789 97.216 93.795 2013.04 131.88 160.5223 154.64 254.203 129.54668 134.73814 120.000.02 101.057 102.5159 89.8986 100.789 89.7319 92.014.02 135.796 159.6166 153.222 25.513 135.390372 100.000.02 101.0505 118.4862 109.726 106.5154 96.18 92.299 2014.04 138.618 157.5635 150.232 259.11 31.106.2557 137.10567 102.5159 10.0004 157.696.917 93.713 2015.02 144.90 13.90 17.406.05 150.23 259.11 31.106.77 130.42500 100.01 100.007 97.6563 14.006.91 100.004 157.696.917 93.713 2015.02 144.90 17.406.01 120.20 17 10.165 16.20 96.115 90.488 20.20 14.40 13.8618 157.1245 150.331 22.591 137.110677 130.90500 100.01 100.007 97.7663 19.706 17.60 19.706 97.70 97.71 10.155 10.20 14.00														
1998.03 115.509 121.6833 133.769 126.987 106.25 NA 2012.01 121.403 160.129 130.822 224.36 113.650153 112.63172.9189.03 115.059 121.6833 133.769 126.987 106.25 NA 2012.02 126.016 148.5294 133.811 227.783 117.803142 118.84695199.04 116.113 130.5173 127.844 126.617 104.04 NA 2012.03 132.399 146.1504 141.994 24.2458 121.886924 122.37004 1999.01 114.382 123.7916 115.516 118.682 97.327 NA 2012.04 133.379 143.0297 148.106 253.85 123.312654 124.007999.01 114.382 123.7916 115.516 186.822 97.327 NA 2013.01 133.344 143.9142 155.312 24.3764 125.000416 127.16542 1999.03 103.209 112.633 94.183 106.833.88 NA 2013.01 133.44 143.9142 155.312 24.3764 125.000416 127.16542 1999.04 101.641 1007.255 93.0805 101.22 89.531 NA 2013.01 131.44 150.0227 155.93 249.117 125.61766 1281.4700 10.087 97.76631 94.555 26.93057 101.639 97.216 93.795 2000.01 101.087 97.76631 94.555 26.934 94.274 98.255 2013.04 131.84 159.0056 15.223 25.513 33.930372 140.0989.75 2000.03 100.559 26.5936 100.758 97.831 98.255 2013.04 131.85 159.0076 155.23 25.9513 33.930372 140.0989.75 2000.03 100.559 26.59367 101.639 97.216 93.795 2014.01 134.186 159.0056 150.223 25.9513 133.693072 140.0989.75 2000.03 100.559 26.59367 101.639 97.216 93.795 2014.03 136.461 157.5635 150.222 258.386 137.79257 2000.03 100.5608 118.4862 100.726 163.6956 96.102 90.452 2014.03 136.461 157.5635 150.222 258.386 137.108149 139.07855 2000.03 10.206 81 184.862 100.726 163.69514 96.18 22.32 2014.04 136.186 157.5635 150.222 258.386 137.108149 139.07855 2000.03 112.536 163.537 189.9767 10.654 110.659 56.009 99.242 2015.03 138.641 157.5655 150.223 25.9511 137.110677 138.042500 2000.04 110.207 110.165 162.02 96.115 90.482 2015.03 13.944 144.903 174.044 164.753 278.737 153.255231 113.645 10.245 12.002.04 110.797 115.8546 10.5545 10.954 19.9														
1998.04 116.509 121.6883 133.769 126.897 106.25 NA 2012.02 126.016 148.5294 133.811 227.783 117.803142 118.84695 1998.04 116.113 130.5173 127.844 126.617 104.04 NA 2012.03 132.399 146.160 141.964 242.45 121.886924 122.370044 1999.01 114.382 123.7916 115.516 118.882 97.327 NA 2012.04 133.379 143.0297 148.106 253.85 123.31626 124.070992 1999.03 103.299 112.636 98.742 100.287 91.417 NA 2013.01 133.844 143.9142 155.312 243.764 125.000416 127.156421 1999.03 103.09 112.6369 91.836 105.333 88.88 NA 2013.02 131.144 150.0227 155.93 249.117 125.6176 123.1470 1999.03 103.09 112.636 93.086 101.222 98.931 NA 2013.03 133.438 159.1079 157.319 260.45 126.675008 130.58655 120.000.01 100.087 97.76631 94.554 96.8643 94.274 98.255 2013.04 131.88 160.5223 154.644 254.03 129.54668 134.73814 120.000.01 100.087 97.76631 94.554 96.8643 94.274 98.255 2013.04 131.88 160.5223 154.644 254.03 129.54668 134.73814 120.000.01 100.087 97.76631 99.9866 100.758 97.831 98.255 2014.01 134.186 159.0066 153.222 255.513 135.390372 140.08937 103.03 100.552 95.69367 100.615 95.2722 97.688 93.199 2014.02 135.796 159.6166 150.293 255.513 135.390372 140.08937 103.043 100.257 101.639 97.216 93.755 2014.02 135.796 159.6166 150.293 259.512 134.629567 103.792576 102.010 120.010 110.01 10.0267 115.6546 102.597 107.568 97.819 97.597 2014.02 135.796 159.6166 150.293 25.9912 134.629567 103.93625 103.010 110.0267 115.8546 105.664 115.767 96.917 93.713 2015.02 145.479 171.813 165.796 251.386 144.09030 134.27560 120.010 110.0														
1998.01 114.382 123.7916 115.516 118.682 97.327 NA 2012.03 132.399 148.1504 141.964 242.485 121.886624 122.37004 1999.02 105.618 104.3276 98.742 100.287 91.417 NA 2013.01 133.384 143.9142 155.312 243.764 125.000416 127.156629 1999.03 103.209 112.2639 94.1836 106.323 88.38 NA 2013.02 131.144 150.0227 155.593 249.117 125.61786 1999.04 101.41 1007.265 93.0805 101.222 89.531 NA 2013.02 131.144 150.0227 155.593 249.117 125.61786 1999.04 101.41 1007.265 93.0805 101.222 89.531 NA 2013.02 131.144 150.0227 155.593 249.117 125.61786 13.000.00 101.507 102.5159 98.9886 100.758 97.831 98.255 2014.01 134.186 159.0066 153.222 255.513 153.390372 140.09837.200.00 1 100.557 102.5159 98.9886 100.758 97.831 98.255 2014.01 134.186 159.0066 153.222 255.513 153.390372 140.09837.200.00 1 103.618 102.357 101.639 97.216 93.759 2014.01 134.186 159.0066 153.222 255.513 153.390372 140.09837.200.00 1 103.618 102.357 101.639 97.216 93.759 2014.03 136.461 157.5635 150.222 255.386 136.791809 139.07865 100.00 100.0														
1999.02 105.618 104.3276 98.742 100.287 91.417 NA 2013.04 133.844 143.0297 148.106 253.85 123.31265 124.00798; 1999.03 103.209 112.2639 94.136 106.323 88.388 NA 2013.02 131.344 165.0227 155.93 249.117 125.61786 125.176642; 1999.03 103.209 112.2639 94.136 106.323 88.388 NA 2013.02 131.444 165.0227 155.93 249.117 125.61786 125.176642; 1999.04 101.641 100.7265 93.0805 101.222 89.531 NA 2013.03 133.343 159.1079 157.319 250.45 126.67500 130.59855. 2000.01 100.0789 77.6631 94.559 98.9886 100.758 97.831 98.255 2014.01 134.186 159.0066 153.222 255.513 135.390372 140.08937. 2000.02 101.557 102.5159 98.9886 100.758 97.831 98.255 2014.01 134.186 159.0066 153.222 258.386 136.73102 140.08937. 2000.03 100.552 95.69367 100.615 95.2722 97.888 93.199 2014.02 135.796 155.6156 156.293 259.912 258.386 136.73102 140.08937. 2000.04 103.279 101.3618 102.357 101.639 97.216 90.482 2015.03 136.461 157.6563 150.222 258.386 136.73109 139.07805 120.010.2 110.01 120.0217 10.165 116.029 66.15 90.482 2015.03 149.081 139.817 166.16 153.33 23.591 137.11067 130.2010.01 10.01 120.0217 10.165 116.029 66.159 90.482 2015.03 149.091 139.817 166.16 153.33 43.845 213.89804250. 2001.03 112.36 116.2803 109.064 110.5776 96.917 93.713 2015.02 145.479 171.813 165.796 21.386 144.08302 144.27540. 2001.04 110.297 115.8546 105.654 101.659 96.102 94.522 2016.04 147.632 169.9289 172.03 16.074 105.315 105.034 129.034 147.032 169.9289 172.03 103.277 95.658 94.5477 99.6786 95.029 30.323 2015.04 147.632 169.9289 172.03 160.01 150.33 165.098 187.338 189.0450 120.020 10.03 41.059 130.037 190.5371 190.														
1999.02         05.618         104.3276         98.742         100.287         91.417         NA         2013.02         133.844         143.9142         155.312         243.764         125.000416         127.156422           1999.04         101.641         100.7265         39.0805         101.222         89.531         NA         2013.03         133.488         169.072         157.319         250.45         126.675008         130.59855           2000.02         101.557         102.5159         89.8986         100.758         97.838         89.255         2014.01         134.88         169.2023         255.513         35.390372         140.08937           2000.03         100.552         95.69367         100.619         52.722         97.688         93.199         2014.02         135.796         159.616         150.222         255.913         134.629576         137.792576           2001.01         10.06.088         114.862         100.163         97.216         39.79         2014.02         135.796         159.616         150.222         258.386         136.79109         139.07865           2001.01         110.61         116.802         109.249         2014.04         138.618         157.124         150.242         255.511														
1999.03         103.209         112.2639         841.836         106.328         88.83 NA         2013.02         131.144         150.027         155.593         249.117         125.61768         128.14740           1999.04         101.641         100.027         97.76631         94.555         102.22         89.555         2013.04         131.83         169.0223         154.644         254.203         129.54686         134.73814           2000.03         100.557         102.5159         98.9886         100.758         97.831         98.255         2014.01         134.186         159.0666         153.222         255.513         135.390372         140.089377           2000.04         103.279         101.3618         102.357         101.639         97.216         93.795         2014.02         136.616         157.6563         150.222         258.361         136.791809         139.0957           2001.02         110.01         120.217         110.166         112.202         611.59         92.239         2014.04         138.618         157.126         150.331         232.991         134.710077         138.04250           2001.03         112.136         116.2803         109.084         120.59482         120.501         144.903         174.9														
1999.04         101.641         100.7265         93.0805         101.22         89.531         NA         2013.03         133.438         159.1079         157.319         25.045         126.675008         130.59855           2000.02         101.557         102.5159         95.8498         80.0758         193.31         82.55         2014.01         134.186         169.0026         15.22         255.13         133.03372         140.09937.           2000.03         100.552         95.69367         100.615         95.2722         97.688         93.199         2014.02         135.796         159.616         150.293         259.912         134.629576         137.792576           2001.01         106.058         118.4862         019.726         161.639         97.216         93.793         2014.03         136.461         157.695         150.22         258.386         136.79109         139.07865           2001.01         110.01         120.0217         101.65         161.292         96.115         90.482         2015.01         139.817         160.106         153.836         243.852         138.98079         319.07865           2001.02         110.417         161.65803         160.65814         160.6596172         90.452         2015.03														128.147407
2000.01         100.087         97.76631         94.554         96.8643         94.274         98.255         2013.04         131.88         160.5223         154.644         254.203         129.54668         134.78814           2000.03         105.557         150.5199         98.986         100.758         97.831         98.255         2014.01         134.186         150.202         255.513         133.39072         140.08937           2000.04         103.279         101.3618         102.357         101.639         97.216         93.795         2014.03         136.461         157.635         150.222         258.386         136.791077         137.792577           2001.01         100.01         120.0217         110.165         162.02         96.115         90.482         2015.01         138.611         157.6353         162.22         251.386         144.093         17.110677         138.04250           2001.02         110.217         110.165         116.269         96.102         90.482         2015.01         145.971         161.171         163.331         183.893         133.255251         154.27520         133.271         162.518027         163.65612           2002.01         107.347         106.55371         98.9767         106.6479														
2000.02         101.557         102.5159         98.9886         100.758         97.831         98.255         2014.01         134.186         159.0066         153.222         255.131         135.990372         140.08937.           2000.04         103.279         501.3618         102.357         101.639         97.186         93.799         2014.03         136.481         157.6253         165.222         258.386         136.979180         139.07865           2001.01         106.058         118.4862         109.726         105.154         96.18         92.399         2014.04         138.618         157.1245         150.331         232.591         137.110677         38.042507           2001.03         112.136         116.2803         109.064         116.776         96.179         37.13         2015.01         139.817         166.106         153.382         278.737         153.255321         154.51524           2002.01         107.347         106.5371         99.767         106.647         98.09         93.243         2015.03         147.0844         164.753         278.737         153.255321         154.51524           2002.02         130.345         96.2012         95.977         97.5518         95.139         92.237         2015.01 <td></td>														
2000.03         100.552         95.69367         100.615         95.2722         97.688         93.199         2014.02         135.796         159.6156         150.293         259.912         134.629576         137.792576           2000.04         103.279         101.3618         105.154         96.188         92.399         2014.04         136.618         157.5635         150.222         258.386         136.791807         139.07865           2001.02         110.01         120.0217         110.65         116.202         96.115         90.488         2015.01         138.817         166.1016         153.836         243.852         138.988079         139.29597           2001.04         110.207         115.8546         105.654         110.695         96.102         90.452         2015.03         144.903         174.0841         164.753         278.737         153.255321         154.51524           2002.01         107.347         106.5371         98.9767         96.108         92.3243         2016.01         150.333         166.4753         278.737         153.255321         154.51524           2002.04         106.003         36.3014         99.7457         90.6788         97.497         91.17         2016.02         150.333         166.49														
2000.04         103.279         101.3618         102.375         101.639         97.216         93.795         2014.03         136.461         157.5635         150.222         258.386         136.791809         139.07865           2001.02         110.01         120.0277         101.665         116.202         96.115         90.488         2015.01         138.917         161.016         153.832         238.981         138.98079         139.29577           2001.03         112.136         116.2803         109.064         115.776         96.917         93.713         2015.02         145.479         171.813         165.796         251.386         144.008302         144.275403           2000.01         110.297         115.8546         105.654         110.699         94.52         2015.03         144.093         174.0844         164.753         278.737         152.552521         154.51524           2002.01         103.445         98.2012         95.2977         97.5518         95.136         92.327         2016.01         150.331         165.899         172.288         330.831         164.91245         166.5837           2002.04         106.003         96.3148         99.747         194.922         2016.04         147.641         171.222 <td></td>														
2001.01         106.058         118.4862         109.726         105.154         96.18         92.239         2014.04         138.618         157.1245         150.331         232.591         137.110677         138.042502           2001.02         110.01         120.0217         110.65         116.202         96.115         90.488         2015.02         145.479         171.813         165.796         251.386         144.008302         144.275402           2001.03         112.36         116.2803         109.064         115.776         96.102         90.452         2015.03         144.903         174.0844         164.753         278.737         153.255321         154.51524           2002.01         107.347         106.5371         98.9767         106.47         96.809         93.243         2016.01         150.333         165.898         173.385         303.21         164.91245         163.68612           2002.02         103.277         95.6358         94.5477         99.6788         96.487         91.17         2016.01         150.331         169.064         167.562         347.967         164.542548         165.442548           2003.01         1108.064         96.19748         100.363         112.2245         96.599         95.818 <td></td>														
2001.02         110.01         120.0217         110.165         116.202         96.115         90.488         2015.01         139.817         166.1016         153.836         243.852         138.988079         139.29597-7           2001.03         112.136         116.2803         109.064         115.776         96.917         93.713         2015.03         144.093         174.0844         164.753         278.737         153.255321         154.51524           2002.01         107.347         106.5371         98.9767         106.647         96.809         93.243         2015.03         144.903         174.0844         164.753         278.737         153.255321         154.51524           2002.02         103.445         98.2012         95.2977         97.5518         95.136         92.327         2016.01         150.33         165.8498         173.385         330.321         164.91245         166.58337           2002.04         106.003         96.3014         99.7475         90.789         94.932         2016.04         147.641         171.3222         161.868         338.175         159.25301         161.22415           2003.01         118.069         113.697         104.913         120.126         2017.02         149.805         169.591														138.042502
2001.03         112.136         116.2803         109.064         115.776         96.917         93.713         2015.02         145.479         171.813         165.796         251.386         144.008302         144.275402           2001.04         110.297         115.8546         105.654         110.695         96.102         90.452         2015.03         144.903         174.0844         164.753         278.737         153.255221         154.51524           2002.01         107.347         106.5371         98.9767         106.647         96.809         32.37         2016.01         150.331         165.8498         173.335         330.321         164.912425         166.58327           2002.02         103.477         95.6388         94.5477         96.788         95.497         91.17         2016.02         150.39         162.7564         165.932         333.883         165.338881         167.74924           2003.01         108.064         96.19748         100.363         112.926         97.97         94.932         2016.04         147.641         171.3222         161.868         338.175         159.253501         161.2424           2003.02         111.569         113.6077         104.913         120.175         100.16         98.598 <td></td>														
2001.04         110.297         115.8546         105.654         110.695         96.102         90.452         2015.03         144.903         174.0844         164.753         277.751         153.255321         154.51524           2002.02         107.347         106.5371         98.9767         106.647         96.809         93.243         2016.01         150.333         165.8498         173.385         330.321         164.912425         165.8337           2002.02         103.445         98.2015         95.2977         97.518         95.138         95.381         2016.01         150.331         162.7554         165.932         333.883         165.335881         167.74924           2002.04         106.003         96.3174         90.7875         101.422         96.959         95.818         2016.03         151.331         169.0064         167.562         347.967         164.542548         165.46268           2003.01         118.0677         104.913         120.175         100.16         98.558         2017.01         148.684         168.6713         161.083         330.144         163.523482         165.49918           2003.03         113.695         117.6945         108.095         128.466         102.41         102.62         2017.02<														
2002.01         107.347         106.5371         98.9767         96.647         96.809         93.243         2015.04         147.632         169.9289         172.208         316.071         162.518027         163.656126           2002.02         103.445         98.2012         95.2977         97.5618         95.437         91.71         2016.01         150.333         165.8498         173.385         333.331         164.912425         166.58337           2002.04         106.003         96.30154         97.775         101.422         96.995         95.818         2016.03         151.331         169.0064         167.562         347.967         164.542548         165.462684           2003.01         108.064         96.19748         100.4913         120.175         100.16         98.558         2016.04         147.641         171.3222         161.868         381.75         152.53601         161.242162           2003.03         113.695         117.6945         108.095         128.486         102.41         102.62         2017.02         149.805         196.568         325.095         717.093763         173.675966           2003.04         113.267         107.697         135.261         103.93         107.71         2017.03         151.503														
2002.02         103.445         98.2012         95.2977         97.5518         95.136         92.327         2016.01         150.333         165.8498         173.385         330.321         164.912425         166.583377           2002.04         106.003         96.30154         99.7475         101.422         69.599         95.818         2016.03         151.331         169.0064         167.562         347.967         164.542548         165.46268           2003.01         108.064         96.19748         100.363         112.926         97.97         94.932         2016.04         147.641         171.3222         161.868         338.175         159.253501         161.22415           2003.02         111.569         113.6077         104.913         120.175         100.16         98.558         2017.01         148.684         168.6713         161.37         320.144         163.523482         165.40918           2003.03         113.695         117.6945         108.095         128.486         102.41         102.62         2017.02         149.805         169.592         314.682         171.093763         173.67566           2004.01         114.626         125.2295         108.882         131.777         103.42         106.8         2017.04<														
2002.03         103.277         95.6358         94.5477         99.6788         95.497         91.17         2016.02         150.39         162.7554         165.932         333.883         165.335881         167.749244           2002.04         106.003         96.30154         99.7475         101.422         95.99         95.818         2016.03         151.331         169.0064         167.562         347.967         164.542548         165.462683           2003.02         111.569         113.6077         104.913         120.175         100.16         98.558         2017.01         148.684         168.6713         161.37         320.144         163.523482         165.409183           2003.03         113.695         117.6945         108.095         128.486         102.41         102.62         2017.02         149.864         168.6713         161.37         320.144         163.523482         165.40918           2003.04         113.226         125.4882         107.645         132.361         103.73         105.4         2017.03         151.503         164.9219         169.528         314.682         171.890916         175.295272           2004.01         114.626         125.2295         108.882         131.777         103.42         106.8<														166.583377
2002.04         106.003         96.30154         99.7475         101.422         96.959         95.818         2016.03         151.331         169.0064         167.562         347.967         164.542548         165.462683           2003.02         110.6064         96.19748         100.363         112.926         97.97         94.932         2016.04         147.641         171.3222         161.868         338.175         159.253501         161.22415           2003.03         113.695         117.6945         108.095         128.486         102.41         102.62         2017.02         149.805         169.5912         167.686         325.095         171.093763         173.67596-           2003.04         113.226         125.4882         107.645         132.361         103.73         105.4         2017.03         151.503         164.9219         169.528         314.662         171.993763         173.67596-           2004.01         114.626         125.295         108.882         131.777         103.42         106.8         2017.04         153.019         170.0728         170.854         311.981         176.701313         179.131316           2004.02         114.794         111.777         103.42         106.8         2017.04         153.0														167.749244
2003.01         108.064         96.19748         100.363         112.926         97.97         94.932         2016.04         147.641         171.3222         161.868         338.175         159.253501         161.224152           2003.02         111.569         113.6077         104.913         120.175         100.16         98.558         2017.01         148.684         168.6713         161.37         320.144         163.523482         165.409182           2003.03         113.695         117.6945         108.095         128.486         102.41         102.62         2017.02         149.805         169.5912         167.686         325.095         171.093763         173.67596-6           2004.01         114.626         125.2295         108.882         131.777         103.42         106.8         2017.04         153.019         170.0728         170.864         311.981         176.701313         179.1314           2004.02         114.794         111.7729         107.67         135.296         103.49         172.68         2018.02         154.141         175.5377         171.549         361.409         177.261769         178.83396           2004.03         1127.657         114.0832         123.1166         199.69         112.74         201	2002.04	106.003	96.30154	99.7475	101.422	96.959	95.818	2016.03	151.331	169.0064	167.562	347.967	164.542548	165.462683
2003.02         111.569         113.6077         104.913         120.175         100.16         98.558         2017.01         148.684         168.6713         161.37         320.144         163.523482         165.409183           2003.03         113.695         117.6945         108.095         128.486         102.41         102.62         2017.02         149.805         169.5912         167.686         325.095         171.093763         173.675964           2003.04         113.226         125.4882         107.645         132.361         103.73         105.4         2017.03         151.503         164.9219         169.528         314.682         171.890916         175.295273           2004.01         114.626         125.2295         108.882         131.777         103.42         106.8         2017.04         153.019         170.0728         170.854         311.981         176.701313         179.131316           2004.04         114.692         118.4246         110.242         143.076         108.4         112.68         2018.02         154.141         175.597         171.599         361.921         180.905689         182.24954           2005.01         127.657         114.0832         133.13         170.544         114.41         167.7		108.064	96.19748	100.363	112.926	97.97	94.932		147.641	171.3222	161.868	338.175	159.253501	161.224152
2003.03         113.695         117.6945         108.095         128.486         102.41         102.62         2017.02         149.805         169.5912         167.686         325.095         171.093763         173.675964           2003.04         113.226         125.4882         107.645         132.361         103.73         105.4         2017.03         151.503         164.9219         169.528         314.682         171.890916         175.295272           2004.01         114.626         125.2925         108.882         131.777         103.42         106.8         2017.04         153.019         170.0728         170.864         311.981         176.701313         179.131314           2004.03         116.097         118.4246         110.242         143.076         108.4         112.68         2018.02         154.141         175.5377         171.549         361.409         177.261769         178.83396           2004.04         120.52         109.348         115.093         151.126         109.69         112.74         2018.03         156.61         174.9993         173.695         361.921         180.096689         182.24954           2005.01         127.657         114.0832         133.13         170.544         114.31         167.14<		111.569							148.684					165.409182
2004.01         114.626         125.2295         108.882         131.777         103.42         106.8         2017.04         153.019         170.0728         170.854         311.981         176.701313         179.131314           2004.02         114.794         111.7729         107.67         135.296         103.93         107.71         2018.01         152.514         172.5279         171.986         351.936         177.23732         180.216286           2004.03         116.097         118.4246         110.242         143.076         108.4         112.68         2018.02         154.141         175.5377         171.549         361.409         177.261769         178.833963           2004.04         120.52         109.348         115.093         151.126         109.69         112.74         2018.03         156.61         174.9993         173.695         361.921         180.905689         182.249544           2005.01         127.657         114.0832         123.113         170.544         114.41         116.71         2018.04         161.312         170.7663         184.201         388.436         182.741985         183.84313           2005.02         135.353         119.861         135.999         1272.28         120.51         123.67<			117.6945						149.805					173.675964
2004.02         114.794         111.7729         107.67         135.296         103.93         107.71         2018.01         152.514         172.5279         171.986         351.936         177.23732         180.216288           2004.03         116.097         118.4246         110.242         143.076         108.4         112.68         2018.02         154.141         175.5377         171.549         361.409         177.261769         178.833963           2004.04         120.52         109.348         115.093         151.126         109.69         112.74         2018.03         156.61         174.9993         173.695         361.921         180.905689         182.249547           2005.01         127.657         114.0832         123.113         170.544         114.41         116.71         2018.04         161.312         170.7663         184.201         388.436         182.741985         183.843133           2005.02         135.353         119.8613         135.999         172.228         120.51         123.67         2019.01         162.461         167.1673         182.856         366.948         184.189608         184.30897           2005.04         140.848         127.4235         145.618         179.508         129.07         132.5	2003.04	113.226	125.4882	107.645	132.361	103.73	105.4	2017.03	151.503	164.9219	169.528	314.682	171.890916	175.295272
2004.02         114.794         111.7729         107.67         135.296         103.93         107.71         2018.01         152.514         172.5279         171.986         351.936         177.23732         180.216288           2004.03         116.097         118.4246         110.242         143.076         108.4         112.68         2018.02         154.141         175.5377         171.549         361.409         177.261769         178.833963           2004.04         120.52         109.348         115.093         151.126         109.69         112.74         2018.03         156.61         174.9993         173.695         361.921         180.905689         182.249547           2005.01         127.657         114.0832         123.113         170.544         114.41         116.71         2018.04         161.312         170.7663         184.201         388.436         182.741985         183.843133           2005.02         135.353         119.8613         135.999         172.228         120.51         123.67         2019.01         162.461         167.1673         182.856         366.948         184.189608         184.30897           2005.04         140.848         127.4235         145.618         179.508         129.07         132.5	2004.01	114.626	125.2295	108.882	131.777	103.42	106.8	2017.04	153.019	170.0728	170.854	311.981	176.701313	179.131316
2004.03         116.097         118.4246         110.242         143.076         108.4         112.68         2018.02         154.141         175.5377         171.549         361.409         177.261769         178.833963           2004.04         120.52         109.348         115.093         151.126         109.69         112.74         2018.03         156.61         174.9993         173.695         361.921         180.905689         182.249547           2005.01         127.657         114.0832         123.113         170.544         114.41         116.71         2018.04         161.312         170.7663         184.201         388.436         182.741985         183.843133           2005.02         135.353         119.8613         135.999         172.228         120.51         123.67         2019.01         162.461         167.1673         182.856         366.948         184.189608         184.30899           2005.03         138.749         120.999         141.403         169.999         123.37         126.05         2019.02         159.653         163.4617         178.483         339.777         184.659669         184.007736           2006.01         144.224         135.1083         153.141         183.633         133.51         137.	2004.02	114.794	111.7729				107.71							180.216288
2004.04         120.52         109.348         115.093         151.126         109.69         112.74         2018.03         156.61         174.9993         173.695         361.921         180.905689         182.24954           2005.01         127.657         114.0832         123.113         170.544         114.41         116.71         2018.04         161.312         170.7663         184.201         388.436         182.741985         183.84313           2005.02         135.353         119.8613         135.999         172.228         120.51         123.67         2019.01         162.461         167.1673         182.856         366.948         184.189608         184.3089           2005.03         138.749         120.999         141.403         169.999         123.37         126.05         2019.02         159.653         163.4617         178.483         339.777         184.659669         184.007736           2005.04         140.848         127.4235         145.618         179.508         129.07         132.56         2019.03         157.902         159.991         175.241         340.092         185.429493         185.150313           2006.01         144.224         135.103         153.347         196.259         136.77         140.07 </td <td></td> <td>178.833963</td>														178.833963
2005.01       127.657       114.0832       123.113       170.544       114.41       116.71       2018.04       161.312       170.7663       184.201       388.436       182.741985       183.84313         2005.02       135.353       119.8613       135.999       172.228       120.51       123.67       2019.01       162.461       167.1673       182.856       366.948       184.189608       184.30899         2005.03       138.749       120.999       141.403       169.999       123.37       126.05       2019.02       159.653       163.4617       178.483       339.777       184.659669       184.007736         2005.04       140.848       127.4235       145.618       179.508       129.07       132.56       2019.03       157.902       159.991       175.241       340.092       185.429493       185.150313         2006.01       144.224       135.1083       153.141       183.639       135.77       140.07       2020.01       156.104       162.471       166.497       351.642       186.927675       187.111119         2006.02       145.43       140.7034       153.347       196.259       136.77       140.07       2020.01       156.104       162.4438       162.489       335.123       185.005202		120.52	109.348			109.69	112.74		156.61	174.9993	173.695			182.249547
2005.02       135.353       119.8613       135.999       172.228       120.51       123.67       2019.01       162.461       167.1673       182.856       366.948       184.189608       184.330899         2005.03       138.749       120.999       141.403       169.999       123.37       126.05       2019.02       159.653       163.4617       178.483       339.777       184.659669       184.007736         2005.04       140.848       127.4235       145.618       179.508       129.07       132.56       2019.03       157.902       159.991       175.241       340.092       185.429493       185.150313         2006.01       144.224       135.1083       153.141       183.639       133.51       137.26       2019.04       157.414       162.471       166.497       351.642       186.927675       187.111118         2006.02       145.43       140.7034       153.347       196.259       136.77       140.07       2020.01       156.104       162.4438       162.489       335.123       185.005202       185.885933         2006.03       149.365       147.2442       158.909       215.146       138.75       141.87       2020.02       151.58       157.754       156.132       327.022       185.500785			114.0832						161.312	170.7663				
2005.03         138.749         120.999         141.403         169.999         123.37         126.05         2019.02         159.653         163.4617         178.483         339.777         184.659669         184.007736           2005.04         140.848         127.4235         145.618         179.508         129.07         132.56         2019.03         157.902         159.991         175.241         340.092         185.429493         185.150313           2006.01         144.224         135.1083         153.141         183.639         133.51         137.26         2019.04         157.414         162.471         166.497         351.642         186.927675         187.111111           2006.02         145.43         140.7034         153.347         196.259         136.77         140.07         2020.01         156.104         162.4438         162.489         335.123         185.005202         185.885933           2006.03         149.365         147.2442         158.909         215.146         138.75         141.87         2020.02         151.58         157.754         156.132         327.022         185.500785         187.10606           2007.01         151.313         150.0462         166.729         222.619         147.49         148.0														
2005.04       140.848       127.4235       145.618       179.508       129.07       132.56       2019.03       157.902       159.991       175.241       340.092       185.429493       185.150313         2006.01       144.224       135.1083       153.141       183.639       133.51       137.26       2019.04       157.414       162.471       166.497       351.642       186.927675       187.111115         2006.02       145.43       140.7034       153.347       196.259       136.77       140.07       2020.01       156.104       162.4438       162.489       335.123       185.005202       185.885933         2006.03       149.365       147.2442       158.909       215.146       138.75       141.87       2020.02       151.58       157.754       156.132       327.022       185.500785       187.106066         2006.04       151.867       149.8402       162.524       215.59       143.32       144.5       2020.03       145.296       154.7753       145.454       308.503       184.058189       185.778994         2007.01       151.313       150.0462       166.729       222.619       147.49       148.04       2020.04       141.49       157.612       140.97       274.365       185.128559 <td></td>														
2006.01       144.224       135.1083       153.141       183.639       133.51       137.26       2019.04       157.414       162.471       166.497       351.642       186.927675       187.111119         2006.02       145.43       140.7034       153.347       196.259       136.77       140.07       2020.01       156.104       162.4438       162.489       335.123       185.005202       185.885933         2006.03       149.365       147.2442       158.909       215.146       138.75       141.87       2020.02       151.58       157.754       156.132       327.022       185.500785       187.106066         2006.04       151.867       149.8402       162.524       215.59       143.32       144.5       2020.03       145.296       154.7753       145.454       308.503       184.058189       185.778994         2007.01       151.313       150.0462       166.729       222.619       147.49       148.04       2020.04       141.49       157.1612       140.97       274.365       185.128559       187.36796         2007.02       154.55       156.5717       174.494       233.107       151.47       152.02       2021.01       138.303       156.1142       136.886       288.858       184.600791 <td></td>														
2006.03       149.365       147.2442       158.909       215.146       138.75       141.87       2020.02       151.58       157.754       156.132       327.022       185.500785       187.106066         2006.04       151.867       149.8402       162.524       215.59       143.32       144.5       2020.03       145.296       154.7753       145.454       308.503       184.058189       185.778994         2007.01       151.313       150.0462       166.729       222.619       147.49       148.04       2020.04       141.49       157.1612       140.97       274.365       185.128559       187.36796         2007.02       154.55       156.5717       174.494       233.107       151.47       152.02       2021.01       138.303       156.1142       136.886       288.858       184.600791       186.61344         2007.03       157.267       152.7767       178.219       230.786       157.54       159.76       2021.02       142.84       165.808       146.073       306.351       186.474197       187.95438         2007.04       155.8       152.0676       182.297       233.9       158.96       161.97       2021.03       148.603       176.2235       160.846       327.858       194.057618	2006.01	144.224	135.1083	153.141	183.639	133.51	137.26	2019.04	157.414	162.471	166.497	351.642	186.927675	187.111115
2006.03       149.365       147.2442       158.909       215.146       138.75       141.87       2020.02       151.58       157.754       156.132       327.022       185.500785       187.106066         2006.04       151.867       149.8402       162.524       215.59       143.32       144.5       2020.03       145.296       154.7753       145.454       308.503       184.058189       185.778994         2007.01       151.313       150.0462       166.729       222.619       147.49       148.04       2020.04       141.49       157.1612       140.97       274.365       185.128559       187.36796         2007.02       154.55       156.5717       174.494       233.107       151.47       152.02       2021.01       138.303       156.1142       136.886       288.858       184.600791       186.61344         2007.03       157.267       152.7767       178.219       230.786       157.54       159.76       2021.02       142.84       165.808       146.073       306.351       186.474197       187.95438         2007.04       155.8       152.0676       182.297       233.9       158.96       161.97       2021.03       148.603       176.2235       160.846       327.858       194.057618														
2006.04       151.867       149.8402       162.524       215.59       143.32       144.5       2020.03       145.296       154.7753       145.454       308.503       184.058189       185.778994         2007.01       151.313       150.0462       166.729       222.619       147.49       148.04       2020.04       141.49       157.1612       140.97       274.365       185.128559       187.36796         2007.02       154.55       156.5717       174.494       233.107       151.47       152.02       2021.01       138.303       156.1142       136.886       288.858       184.600791       186.61344         2007.03       157.267       152.7767       178.219       230.786       157.54       159.76       2021.02       142.84       165.808       146.073       306.351       186.474197       187.95435         2007.04       155.8       152.0676       182.297       233.9       158.96       161.97       2021.03       148.603       176.2235       160.846       327.858       194.057618       194.405176         2008.01       158.253       145.3569       176.119       235.718       160.05       166.28       2021.04       152.836       173.7824       171.186       328.747       203.710527														
2007.01       151.313       150.0462       166.729       222.619       147.49       148.04       2020.04       141.49       157.1612       140.97       274.365       185.128559       187.367967         2007.02       154.55       156.5717       174.494       233.107       151.47       152.02       2021.01       138.303       156.1142       136.886       288.858       184.600791       186.61344         2007.03       157.267       152.7767       178.219       230.786       157.54       159.76       2021.02       142.84       165.808       146.073       306.351       186.474197       187.95435         2007.04       155.8       152.0676       182.297       233.9       158.96       161.97       2021.03       148.603       176.2235       160.846       327.858       194.057618       194.405176         2008.01       158.253       145.3569       176.119       235.718       160.05       166.28       2021.04       152.836       173.7824       171.186       328.747       203.710527       201.477598         2008.02       159.49       144.3802       172.374       240.639       159.92       167.16       2022.01       157.854       173.3065       181.649       335.651       211.247222														
2007.02       154.55       156.5717       174.494       233.107       151.47       152.02       2021.01       138.303       156.1142       136.886       288.858       184.600791       186.61344         2007.03       157.267       152.7767       178.219       230.786       157.54       159.76       2021.02       142.84       165.808       146.073       306.351       186.474197       187.95438         2007.04       155.8       152.0676       182.297       233.9       158.96       161.97       2021.03       148.603       176.2235       160.846       327.858       194.057618       194.405176         2008.01       158.253       145.3569       176.119       235.718       160.05       166.28       2021.04       152.836       173.7824       171.186       328.747       203.710527       201.477598         2008.02       159.49       144.3802       172.374       240.639       159.92       167.16       2022.01       157.854       173.3065       181.649       335.651       211.247222       208.43773         2008.03       155.917       143.644       166.279       233.74       158.7       163.45       2022.02       165.129       172.9955       191.113       346.006       225.019349									141.49	157.1612	140.97	274.365	185.128559	187.367961
2007.03       157.267       152.7767       178.219       230.786       157.54       159.76       2021.02       142.84       165.808       146.073       306.351       186.474197       187.95438         2007.04       155.8       152.0676       182.297       233.9       158.96       161.97       2021.03       148.603       176.2235       160.846       327.858       194.057618       194.405176         2008.01       158.253       145.3569       176.119       235.718       160.05       166.28       2021.04       152.836       173.7824       171.186       328.747       203.710527       201.477598         2008.02       159.49       144.3802       172.374       240.639       159.92       167.16       2022.01       157.854       173.3065       181.649       335.651       211.247222       208.43773         2008.03       155.917       143.644       166.279       233.74       158.7       163.45       2022.02       165.129       172.9955       191.113       346.006       225.019349       222.649728														186.61344
2007.04       155.8       152.0676       182.297       233.9       158.96       161.97       2021.03       148.603       176.2235       160.846       327.858       194.057618       194.405176         2008.01       158.253       145.3569       176.119       235.718       160.05       166.28       2021.04       152.836       173.7824       171.186       328.747       203.710527       201.477596         2008.02       159.49       144.3802       172.374       240.639       159.92       167.16       2022.01       157.854       173.3065       181.649       335.651       211.247222       208.43773         2008.03       155.917       143.644       166.279       233.74       158.7       163.45       2022.02       165.129       172.9955       191.113       346.006       225.019349       222.649728														187.95435
2008.01       158.253       145.3569       176.119       235.718       160.05       166.28       2021.04       152.836       173.7824       171.186       328.747       203.710527       201.477598         2008.02       159.49       144.3802       172.374       240.639       159.92       167.16       2022.01       157.854       173.3065       181.649       335.651       211.247222       208.43773         2008.03       155.917       143.644       166.279       233.74       158.7       163.45       2022.02       165.129       172.9955       191.113       346.006       225.019349       222.649728														
2008.02       159.49       144.3802       172.374       240.639       159.92       167.16       2022.01       157.854       173.3065       181.649       335.651       211.247222       208.43773         2008.03       155.917       143.644       166.279       233.74       158.7       163.45       2022.02       165.129       172.9955       191.113       346.006       225.019349       222.649728														
2008.03 155.917 143.644 166.279 233.74 158.7 163.45 2022.02 165.129 172.9955 191.113 346.006 225.019349 222.649728		159.49	144.3802	172.374					157.854	173.3065	181.649	335.651	211.247222	208.437731
2008.04 156.847 141.4408 160.582 225.825 159.73 165.87	2008.03					158.7	163.45		165.129	172.9955	191.113	346.006	225.019349	222.649728
	2008.04	156.847	141.4408	160.582	225.825	159.73	165.87							

Source: Cornell Center for Real Estate and Finance

# Hedonic hotel indices for large and small hotel transactions



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

non-gateway cities. However, prices for hotels in gateway cities declined 23 percent. A similar picture emerges from a year-over-year perspective, except that the median price of large hotels fell, particularly those in gateway cities. Exhibit 3 reports the transaction 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.

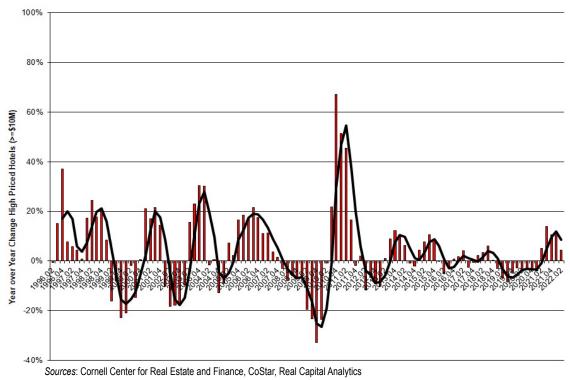
The prices of large and small hotels continue to represent a buying opportunity, based on moving averages. According to our standardized price metric, small hotels reached a new statistical high this quarter. Exhibit 7 graphs the prices reported in Exhibit 6. The price of large hotels fell .2 percent this quarter, compared to a 4.6-percent gain for small hotels. However, both large and small hotel prices

posted gains relative to their respective price point the previous year—prices of small hotels increased 15.6 percent year over year, while those of large hotels increased a more modest 4.3 percent. Exhibit 8 and Exhibit 9 show the historical year-over-year change in large and small hotel indices. To gauge whether the prices of large and small hotels signal a buy or sell, we compare the hedonic price relative to the 3-year and 5-year moving averages.

Having the hedonic price for large hotels still above its moving averages (Exhibit 10) indicates that large hotels are still a great buying opportunity (3-year calculation: 173 > 164.4; 5-year calculation: 173 > 166.61). As shown in Exhibit 11, small hotels are also worth purchasing (3-year calculation: 165.13 > 151.28; 5-year calculation: 165.13 > 153.3). To assess whether the price of a hotel has reached a new statistical high or low, we use the statistical

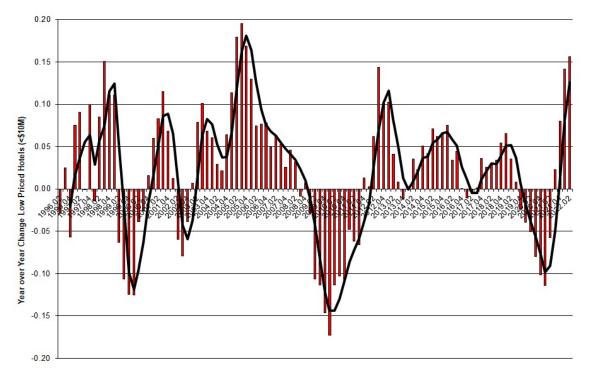
## EXHIBIT 8

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

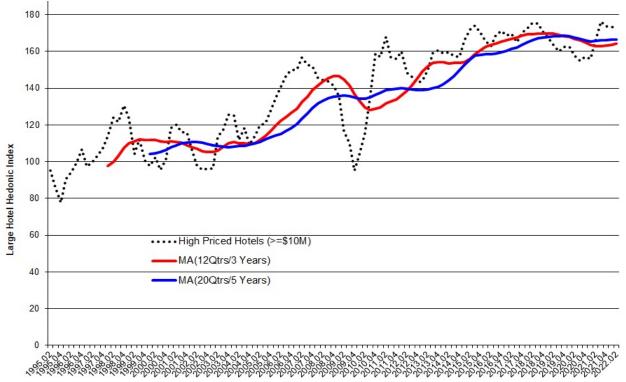


### EXHIBIT 9

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



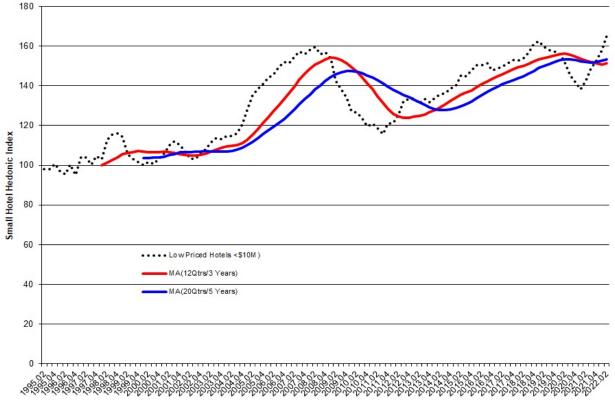
# Moving average trendlines for large hotel index



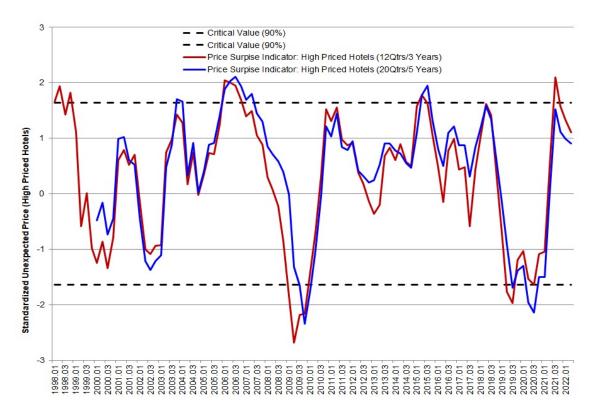
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

# **ЕХНІВІТ** 11

# Moving average trendlines for small hotel index



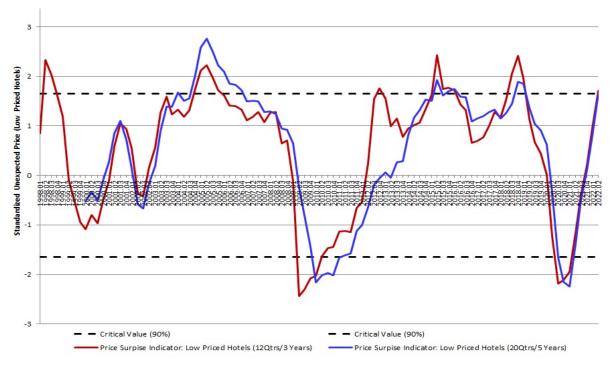
# Standardized unexpected price (SUP) for large hotel index



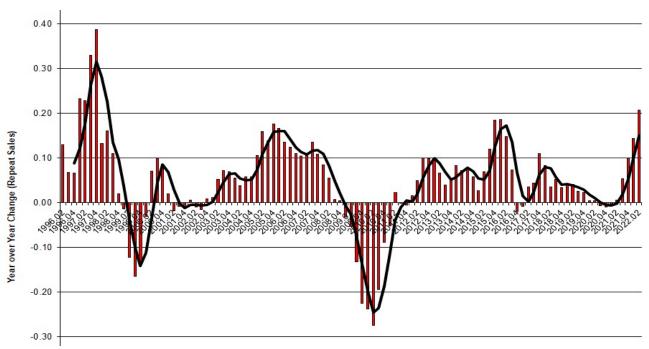
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

## **EXHIBIT 13**

# Standardized unexpected price (SUP) for small hotel index



# Year-over-year change in repeat-sale hotel index, with a moving average trendline



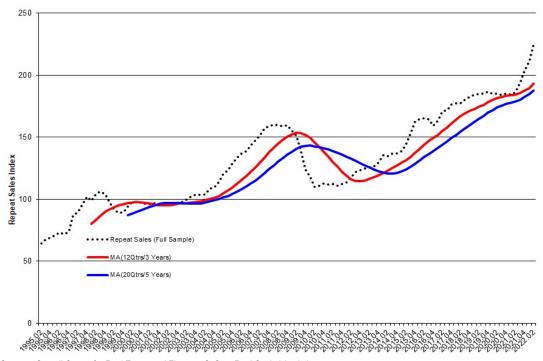
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

	Hedonic Price	Moving	Average		nexpected Price core)
Large Hotels	Price	3 Year	5 Year	3 Year	5 Year
2021Q2	165.81				
2022Q1	173.31				
2022Q2	173.00	164.40	166.61	1.10	0.90
Quarter over Quarter	2%				
Year over Year	4.3%				
Small Hotels	Price	3 Year	5 Year	3 Year	5 Year
2021Q2	142.84				
2022Q1	157.85				
2022Q2	165.13	151.28	153.33	1.71*	1.65*
Quarter over Quarter	4.6%				
Year over Year	15.6%				

technique known as a Z-score to standardize prices so that the mean price is at zero (see Appendix, p. 28). If prices rise above 1.645, this indicates a new statistical high. (By the same token, a Z-score below -1.645 indicates a new statistical low.) Using this metric, the price of small hotels has reached a new statistical, high both in terms of using 3-year

or 5-year standard price calculations. In contrast, the standardized price of large hotels continues to decline, reverting towards its mean. Exhibit 12 and Exhibit 13, along with the table above, show standardized prices for large hotels and small hotels.

# Moving average trend line for repeat-sale index

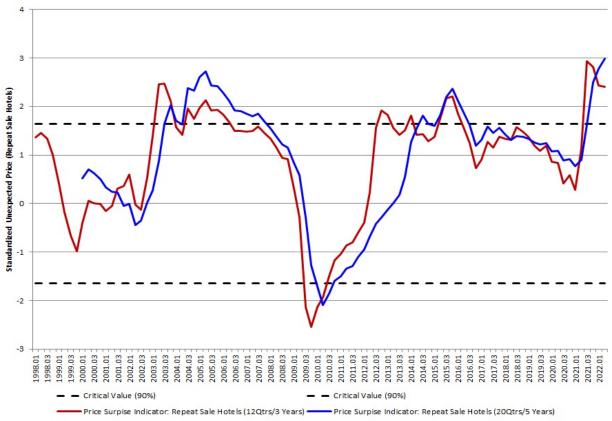


Sources: Cornell Center for Real Estate and Finance; CoStar, Real Capital Analytics

Repeat-sale metrics: Prices remain above their moving average, indicating a continued buy. Indeed, hotel prices continue to reach new statistical highs. Since most hotels that sell frequently tend to be small hotels, it isn't surprising that hotels that tend to sell frequently rose in price this quarter (6.5% increase), as well as year over year

(20.7% increase from 2021Q2 to 2022Q2; see also Exhibit 14). Like both large and small hotels, our repeat-sale indicator remains above both its short-term moving average (225.02 > 193.10) and its long-term moving average (225.02 > 187.64; see Exhibit 15), indicating that these hotels continue to remain a buying opportunity.

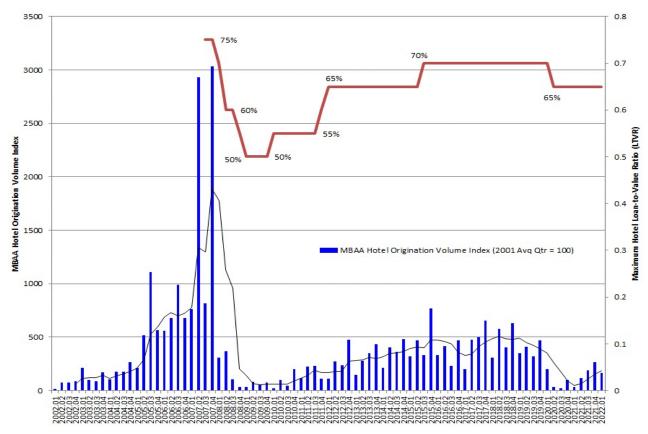
# Standardized unexpected price (SUP) for hotel repeat-sale index (full sample)



	Repeat Sale Price			Standardized U	nexpected Price (Z-Score)
Repeat Sale Hotels	Price	3 Year	5 Year	3 Year	5 Year
2021Q2	186.47				
2022Q1	211.25				
2022Q2	225.02	193.10	187.64	2.40*	2.99*
Quarter over Quarter	6.5%				
Year over Year	20.7%				

Our SUP performance metric in Exhibit 16 (together with the accompanying table) indicates that the standardized price continues to remain above its statistical upper boundary based on either its 3-year moving average or its 5-year moving average.

### 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

Mortgage financing volume fell for the most recent quarter. Exhibit 17 shows that the mortgage origination volume for hotels as reported for the first quarter of 2022 fell 38.1 percent this quarter.<sup>2</sup> Nevertheless, loan volume was still 361 percent ahead of the volume from a year earlier (that is, year over year, as shown in the table at right). The maximum loan-to-value (LTV) ratio for hotels remained at 65 percent.

The cost of hotel debt financing rose sharply this quarter as well as year over year. Due to increased perceived risk, lenders are requiring relatively more compensation for hotel loans relative to other commercial real estate and relative to the 10-year risk-free rate. The cost of obtaining hotel debt financing as reported by Cushman Wakefield Sonnenblick Goldman continues to rise this quarter, as well as year over year. The interest rate as of July 5, 2022, was 7.2 percent for full-service Class A hotels

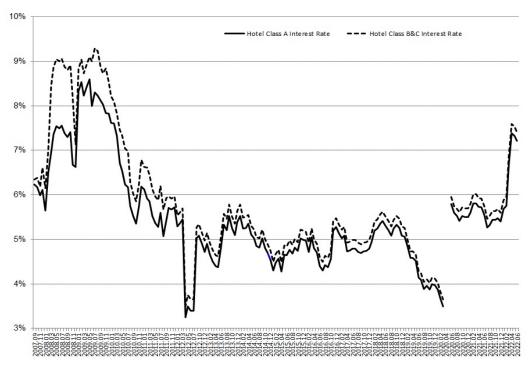
<sup>2</sup> This is the latest information reported by the Mortgage Bankers Associa-	-
tion as of the writing of this report.	

<sup>&</sup>lt;sup>3</sup> 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.

	MBAA Hotel Origination Volume Index (2001 Avq Qtr = 100)
2021Q1	36
2021Q4	268
2022Q1	166
Quarter over Quarter	-38%
Year over Year	361%

and 7.4 percent for Class B&C properties. This is a substantial three-month increase of 8 percent over the corresponding figures in March 2022 of 6.7 percent (Class A) and 6.9 percent (Class B&C). Even more telling, these figures represent a 30-percent rise in year-over-year hotel interest rates, compared to the prior June/July period when interest rates on Class A properties were 5.55 percent and those for Class B&C hotels stood at 5.75 percent. This rise in interest rates is worrisome, as it might hinder penciling hotel deals near term. Exhibit 18 displays the time series graph of hotel interest rates.

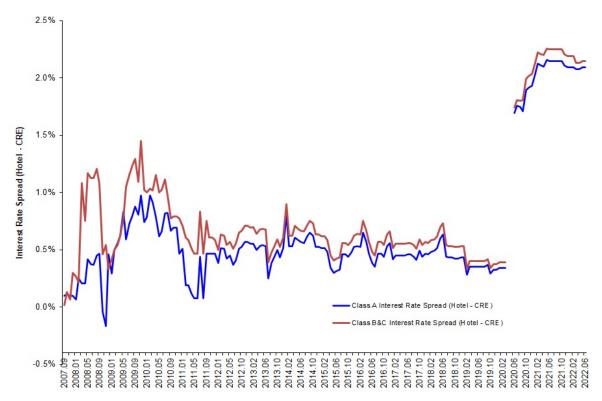
### Interest rates on Class A versus Class B & C hotels



Sources: Cornell Center for Real Estate and Finance, Cushman Wakefield Sonnenblick Goldman

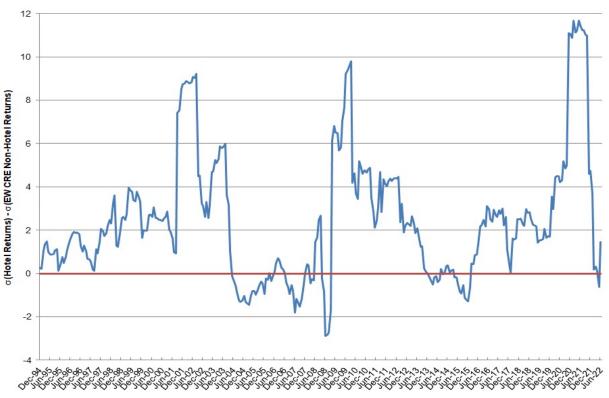
### **EXHIBIT 19**

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



Sources: Cornell Center for Real Estate and Finance, Cushman Wakefield Sonnenblick Goldman

### Risk differential between hotel REITs and non-hotel commercial-property REITs



Sources: NAREIT, Cornell Center for Real Estate and Finance

	Interest Rates Full Service Hotels			ate Spread - CRE)		ate Spread ) Yr TBond)
	Class A	Class B&C	Class A	Class B&C	Class A	Class B&C
June 2021	5.55%	5.75%	2.15%	2.25%	4.10%	4.30%
March 2022	6.66%	6.86%	2.075%	2.133%	4.25%	4.45%
June 2022	7.21%	7.41%	2.092%	2.150%	4.40%	4.60%
Quarter over Quarter	8.3%	8%	0.8%	0.8%	3.5%	3.4%
Year over Year	30%	29%	-2.7%	-4.4%	7.3%	7.0%

To evaluate the perceived risk embedded in hotel interest rates, we compare the interest rates on hotels to those of other types of commercial real estate (CRE), as shown in Exhibit 19 and the table above. The interest rate spreads for both higher quality (Class A) and lower quality (Class B&C) hotels have widened imperceptibly this quarter, indicating that lenders are demanding a tad more compensation (approximately 2 basis points) to make hotel loans compared to those on other major property types. Again, this is based on lenders' perception of the increased relative riskiness for hotels. To obtain further insights, we also compared the interest rate on hotels to the yield on the 10-year U.S. Treasury bond. The interest rate spread on this

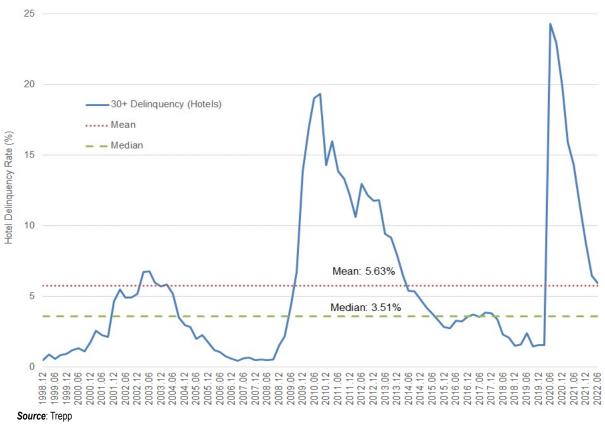
metric has also widened. For Class A properties the spread went from 4.25 percent to 4.4 percent, and for Class B&C hotels the spread went from 4.45 percent to 4.6 percent. In sum, lenders are requiring higher compensation relative to the risk-free rate represented by Treasuries.

Another way to view default risk is to look at the equity market. Exhibit 20 shows the total risk of hotel REITs relative to the total risk of an equally weighted portfolio of CRE equity REITs (comprising office, industrial, retail, and multifamily equities). <sup>4</sup> The risk differential, which should reflect the risk that is unique to hotel properties, is current-

<sup>&</sup>lt;sup>4</sup> We calculate the total risk for hotel REITs using a 12-month rolling window of monthly returns on hotel REITs.

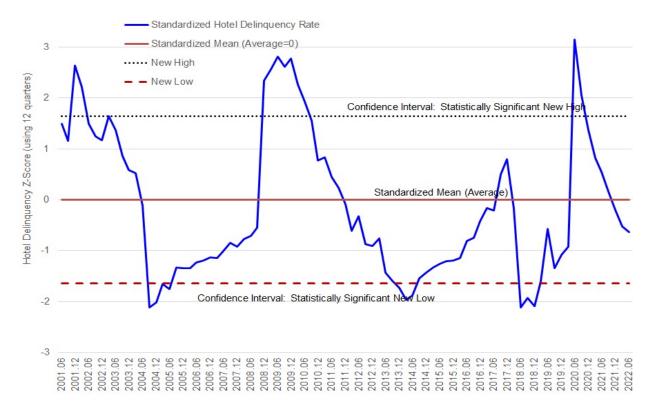
# EXHIBIT 21

# 30-plus-day delinquency rate for hotels

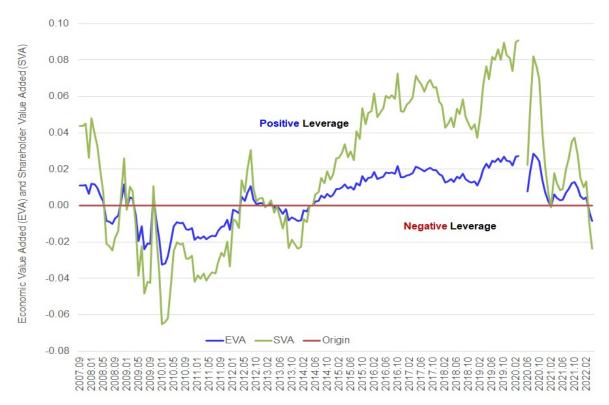


# **EXHIBIT 22**

### Standardized 30-plus-day delinquency rate for hotels



# Economic value added (EVA) and equity (shareholder) value added (SVA) for hotels



Sources: Cornell Center for Real Estate and Finance, Cushman Wakefield, NAREIT, Real Capital Analytics, St Louis Fed

	Trepp 30+ days CMBS Lodging Delinquency Rate										
	Lodging	Industrial	Multifamily	Office	Retail						
2021 June	14.27	0.65	2.02	2.09	10.71						
2022 March	6.45	0.33	0.26	1.56	7.19						
2022 June	5.94	0.49	1.03	1.68	6.69						
Quarter over Quarter	-7.9%	48.5%	296.2%	7.7%	-7.0%						
Year over Year	-58.4%	-24.6%	-49.0%	-19.6%	-37.5%						

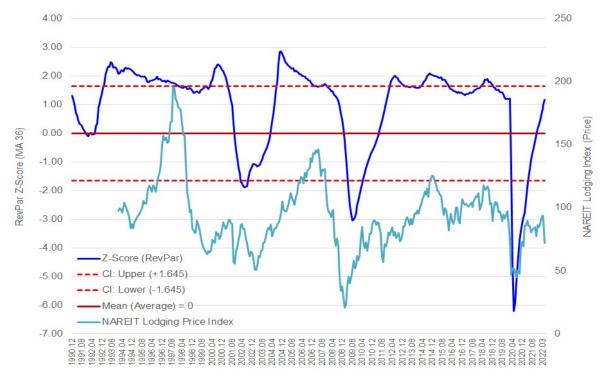
Source: Trepp

ly at 1.45 percent ( $\sigma$ Hotel -  $\sigma$ CRE = 7.85% - 6.39%) compared to .34% ( $\sigma$ Hotel -  $\sigma$ CRE = 5.39% - 5.06%) in the prior quarter. This indicates that the perceived default risk for hotels has started to inch up relative to other major types of commercial real estate. This is another confirmatory sign that the cost of financing for hotels should be pricier for hotels relative to other major property types.

The delinquency rate on hotel loans continues to decline toward its pre-pandemic level. The CMBS delinquency rate (30+ days) for lodging properties in June is 5.94 percent, down from 6.45 percent last quarter (March 2022) and 14.3 percent a year ago (June 2021), as shown in the ta-

ble above. This is a good sign that hotels continue to revert to their pre-pandemic delinquency level of approximately 1.5 percent (December 2018 – March 2020). The 5.94-percent hotel delinquency rate is lower than the retail delinquency rate of 6.7 percent, but it's higher than all other property types, including office (1.7%), multifamily (1%), and industrial (.5%). The continued slide in hotel delinquencies (and also retail delinquencies) runs counter to delinquencies for all other property types, which rose this quarter. Exhibit 21 displays the historical 30-plus-day delinquency rate for hotels, while Exhibit 22 shows the standardized version of that delinquency rate.

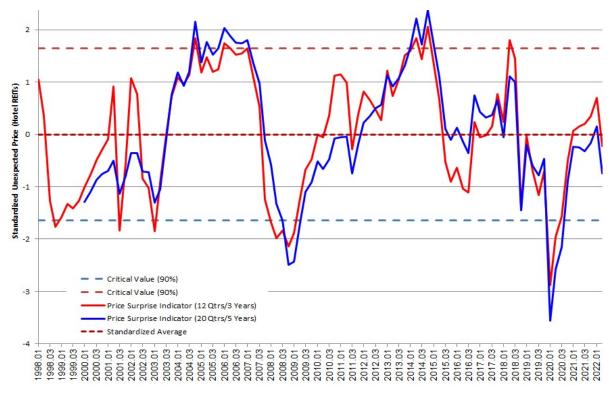
# Standardized unexpected RevPAR (36-month moving average) vs. NAREIT lodging-price index



Sources: Cornell Center for Real Estate and Finance, CoStar (STR), NAREIT

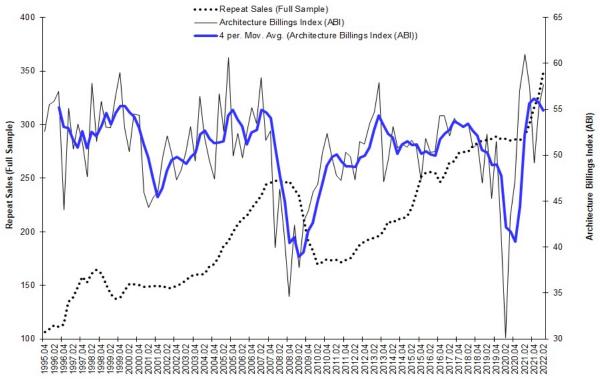
# **EXHIBIT 25**

# Standardized unexpected NAREIT lodging/resort price index



Sources: Cornell Center for Real Estate and Finance, NAREIT

# Repeat sales index versus the architecture billings index



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

Cost of borrowing exceeds return for hotels. Our economic value added (EVA) or economic profit is -.83 percent, while the shareholder value added (SVA) stands at -2.4 percent, as shown in the table below. Both the EVA and SVA continue to be negative, which indicates that on average economic profit 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, this indicates that the return on hotels is driven mainly from anticipated future price gains. Exhibit 23 depicts the historical EVA and SVA hotel performance.

Our reading of the tea leaves suggests we should see slower positive or negative price momentum for both large and small hotels near term. As predicted in our prior report, the Standardized Unexpected RevPAR continued to exhibit positive price momentum, as shown in Exhibit 24. However, not only has the NAREIT Lodging Price Index turned downwards, but the standardized unexpected price of the NAREIT Lodging Index has also fallen below its standardized average and is currently negative, as Exhibit

25 depicts. We therefore expect our hotel prices based on repeat sales to fall near term.

While the architecture billings index (ABI) for commercial and industrial property increased 4 percent this quarter in spite of economic headwinds (based on the May 2022 report), it fell 5.4 percent from the prior year, as shown in Exhibit 26.<sup>5</sup> Based on the moving average of the ABI index, we should expect price momentum to trend downwards in the next period.

The National Association of Purchasing Managers (NAPM) index, shown in Exhibit 27, an indicator of anticipated business confidence, fell 7.2 percent this quarter compared to a 3-percent decline last quarter. 6 It also

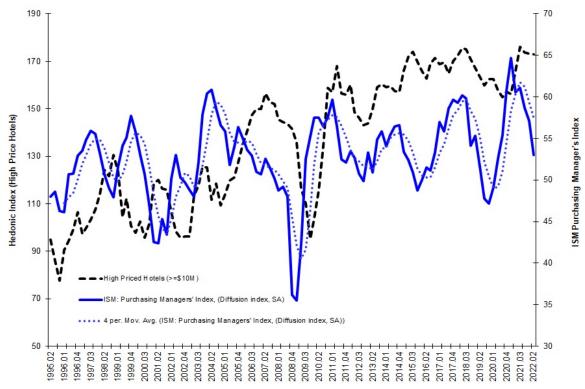
<sup>&</sup>lt;sup>6</sup> The ISM: Purchasing Managers' Index, (Diffusion index, SA) also known as the National Association of Purchasing Managers (NAPM) index is based on a survey of over 250 companies within twenty-one industries covering all 50 states. It not only measures the health of the manufacturing 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.

	ROIC	WACC	EVA	ROE	Cost of Equity	SVA
December 2021	8.12%	7.6%	.53%	10.5%	9%	1.5%
March 2022	8.05%	8.44%	38%	8.54%	9.64%	-1.1%
April 2022	8.02%	8.84%	83%	7.34%	9.7%	-2.4%

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

<sup>&</sup>lt;sup>5</sup> www.aia.org/practicing/economics/aias076265

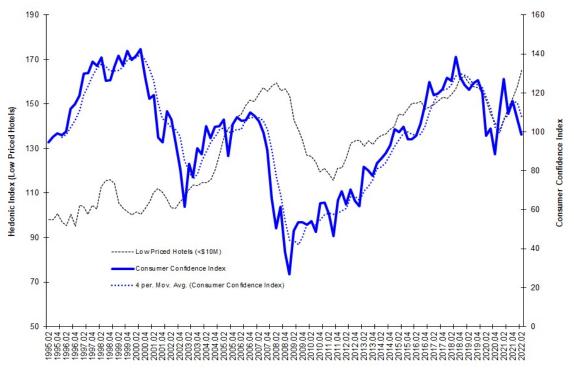
# Business confidence and high-price hotels index



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

### **EXHIBIT 28**

# Consumer confidence and low-price hotels



Sources: Conference Board, Cornell Center for Real Estate and Finance

# **EXHIBIT 29**

# Analysts' forecasts of hotel REIT earnings

<b>Earnings Growth</b>					
E(QEPS)	Median	Mean	StDev	Min	Max
2020Q2	-158.0%	-162.2%	26.9%	-226.2%	-116.3%
2020Q3	-163.0%	-305.3%	529.9%	-2214.3%	-91.1%
2020Q4	-153.3%	-239.9%	229.9%	-866.7%	-90.6%
2021Q1	-241.2%	-389.5%	352.1%	-1400.0%	-76.5%
2021Q2	97.8%	101.6%	52.0%	59.7%	272.7%
2021Q3	136.4%	191.1%	137.4%	99.6%	625.0%
2021Q4	162.5%	381.5%	669.0%	97.1%	2700.0%
2022Q1	150.0%	313.3%	568.6%	-30.0%	2300.0%
2022Q2	393.8%	933.1%	1474.1%	-271.4%	5566.7%
E(AEPS)	Median	Mean	StDev	Min	Max
2020Q2	-112.3%	-79.3%	107.6%	-222.2%	175.0%
2020Q3	-147.8%	-93.5%	187.6%	-307.9%	290.6%
2020Q4	-163.1%	-106.0%	196.6%	-325.4%	366.7%
2021Q1	90.2%	96.5%	24.6%	70.9%	170.1%
2021Q2	97.7%	103.8%	25.4%	76.1%	184.4%
2021Q3	104.6%	112.5%	29.1%	87.7%	203.9%
2021Q4	107.1%	114.2%	32.8%	88.1%	220.8%
2022Q1	185.5%	714.8%	1438.0%	108.9%	5650.0%
2022Q2	207.1%	580.2%	899.1%	114.6%	3350.0%
Revenue Growth					
E(QRev)	Median	Mean	StDev	Min	Max
2020Q2	-73.4%	-72.1%	15.6%	-92.7%	-46.1%
2020Q3	-73.7%	-71.9%	7.5%	-81.6%	-59.5%
2020Q4	-65.4%	-66.0%	11.4%	-79.6%	-45.1%
2021Q1	-58.7%	-57.3%	10.9%	-74.2%	-36.2%
2021Q2	379.3%	444.1%	249.3%	157.2%	1047.7%
2021Q3	157.6%	176.8%	87.0%	67.5%	368.9%
2021Q4	151.3%	173.0%	73.5%	77.2%	361.1%
2022Q1	123.6%	136.0%	69.3%	57.6%	318.2%
2022Q2	69.2%	70.5%	29.1%	14.0%	127.4%
E(ARev)	Median	Mean	StDev	Min	Max
2020Q2	-43.7%	-45.1%	10.2%	-66.1%	-28.2%
2020Q3	-63.1%	-61.8%	5.5%	-69.2%	-53.2%
2020Q4	-66.4%	-63.3%	7.4%	-73.7%	-50.6%
2021Q1	45.0%	47.7%	10.7%	32.7%	66.0%
2021Q2	49.9%	47.7%	7.7%	35.0%	60.6%
2021Q3	57.4%	56.4%	10.1%	40.2%	73.5%
2021Q4	66.1%	64.8%	12.5%	43.4%	89.4%
2022Q1	47.8%	49.6%	13.1%	26.4%	69.3%
2022Q2	50.2%	51.4%	15.0%	26.4%	76.0%

declined 12.5 percent year over year, down from the 11.7-percent year-over-year decrease in the prior period. Expect high-price hotels to decline 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 declined 7.9 percent this quarter and decreased 22.5 percent year over year. Expect low-price hotels to decline near term.

Finally, we also looked at the expected growth rate in Wall Street analysts' earnings (revenue) estimates for hotel REITs both in terms of next-quarter earnings per share (EPS) and projected annual EPS.<sup>7</sup> Exhibit 29 indicates that analysts are expecting the quarterly EPS growth rate to rise between 394 percent (median) to 933 percent (mean) and the annual EPS growth rate to rise between 207 percent (median) to 580 percent (mean) on average. Since analysts' estimates reflect the earnings guidance from management, this suggests that we should expect prices to rise, reflecting continued positive guidance regarding the EPS. This is converse to other indica-

<sup>&</sup>lt;sup>7</sup> We obtain the growth rate in earnings and revenue estimates from <a href="https://www.earningswhispers.com">https://www.earningswhispers.com</a>

# **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:

$$SUE_o = (A_o - m_o)/s_o$$

where SUE<sub>Q</sub> = quarter Q standardized unexpected earnings,

 $A_0$  = quarter Q actual earnings per share reported by the firm,

m<sub>o</sub> = quarter Q consensus earnings per share forecasted by analysts in quarter Q-1, and

 $s_0$  = quarter Q standard deviation of earnings estimates.

From statistics, the SUE $_{\rm Q}$  is normally distributed with a mean of zero and a standard deviation of one ( $\sim$ N(0,1)). This calculation shows an earnings surprise when earnings are statistically significant, when SUE $_{\rm Q}$  exceeds either ±1.645 (90% significant) or ±1.96 (95% significant). The earnings surprise is positive when SUE $_{\rm Q}$  > 1.645, which is statistically significant at the 90% level assuming a two-tailed distribution. Similarly, if SUE $_{\rm Q}$  < -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 $\sigma$ 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 ( $\mu$ ). 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  $\mu$ , 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  $\mu$  and the rolling three- or five-year standard deviation as our measure of  $\sigma$ . Following is an example of how to calculate the SUP metric using high price hotels with regard to their three-year moving average. To calculate the three-year moving average from quarterly data we sum 12 quarters of data then divide by 12:

Average (
$$\mu$$
) =  $(70.6+63.11+58.11+90.54+95.24+99.70+108.38+99.66+101.62+105.34+109.53+115.78)$  = 93.13 Standard Deviation ( $\sigma$ ) = 18.99 

Standardized Unexp Price (SUP) =  $(115.78-93.13)$  = 1.19

# Hotel Valuation Model (HOTVAL) Has Been Updated

e 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).

### **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.¹ 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.

<sup>&</sup>lt;sup>1</sup> 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.

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