

Cornell Hotel Indices: First Quarter 2019:

Déjà Vu All Over Again: Reliving Groundhog Day

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

EXECUTIVE SUMMARY

Hotels in non-gateway cities outperformed those in gateway cities for the first time since the first quarter of 2006. That said, overall hotel financial performance still stands at breakeven, with operating profit similar to a hotel property's borrowing cost based on economic value analysis. Smaller hotels and hotels involved a repeated sale rose in price, while larger hotels continued their downward price spiral. The cost of hotel debt financing has declined, with a narrowing in the relative risk premium for hotels. A reading of our tea leaves suggests prices are expected to decline for both large and small hotels. This is report number 30 of the index series.

ABOUT THE AUTHORS

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



boards of the *Journal of Real Estate Finance and Economics*, the *Journal of Property Research*, and the *Journal of Real Estate Finance*. 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 Graaskamp, and a Ph.D. in finance and real estate from the University of Texas under Dr. Vijay Bawa.

Adam D. Nowak is an associate professor of economics at West Virginia University. He earned degrees in mathematics and economics at Indiana University–Bloomington in 2006 and a degree in near-east languages and cultures that same year. He received a Ph.D. from Arizona State University. Nowak taught an introduction to macroeconomics course and a survey of international economics at Arizona State. He was the research analyst in charge of constructing residential and commercial real estate indices for the Center for Real Estate Theory and Practice at Arizona State University. Nowak's research has been published in the *Journal of Urban Economics*, *Regional Science and Urban Economics*, *Journal of Applied Econometrics*, *Real Estate Economics*, and the *Journal of Real Estate Research*.



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



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CORNELL CENTER FOR REAL ESTATE AND FINANCE REPORT CORNELL HOTEL INDICES

Cornell Hotel Indices: First Quarter 2019:

“Déjà Vu” All Over Again: Reliving Groundhog Day

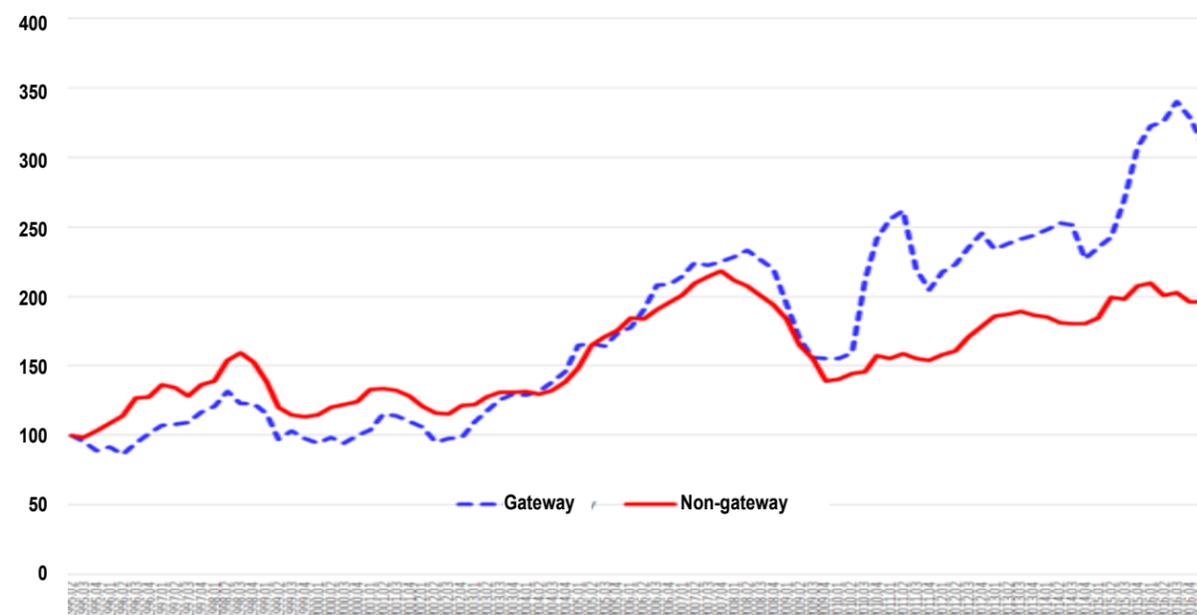
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Analysis of Indices through Q1, 2019

Hotels in non-gateway cities outperform gateway cities. Exhibit 1 shows the relative price performance for hotels sold in gateway cities versus those in non-gateway cities. Sales of hotels in non-gateway cities outperformed those of hotels in gateway cities for the first time since the first quarter of 2006, just prior to the financial crisis. Year over year, the price of hotels in gateway cities rose 4.8 percent in the first quarter of 2019 compared to a 6.3-percent increase for hotels in non-gateway cities. Hotels' prices declined 5.2 percent quarter over quarter, a 1-percent decrease compared to the fourth quarter of 2018.

EXHIBIT 1

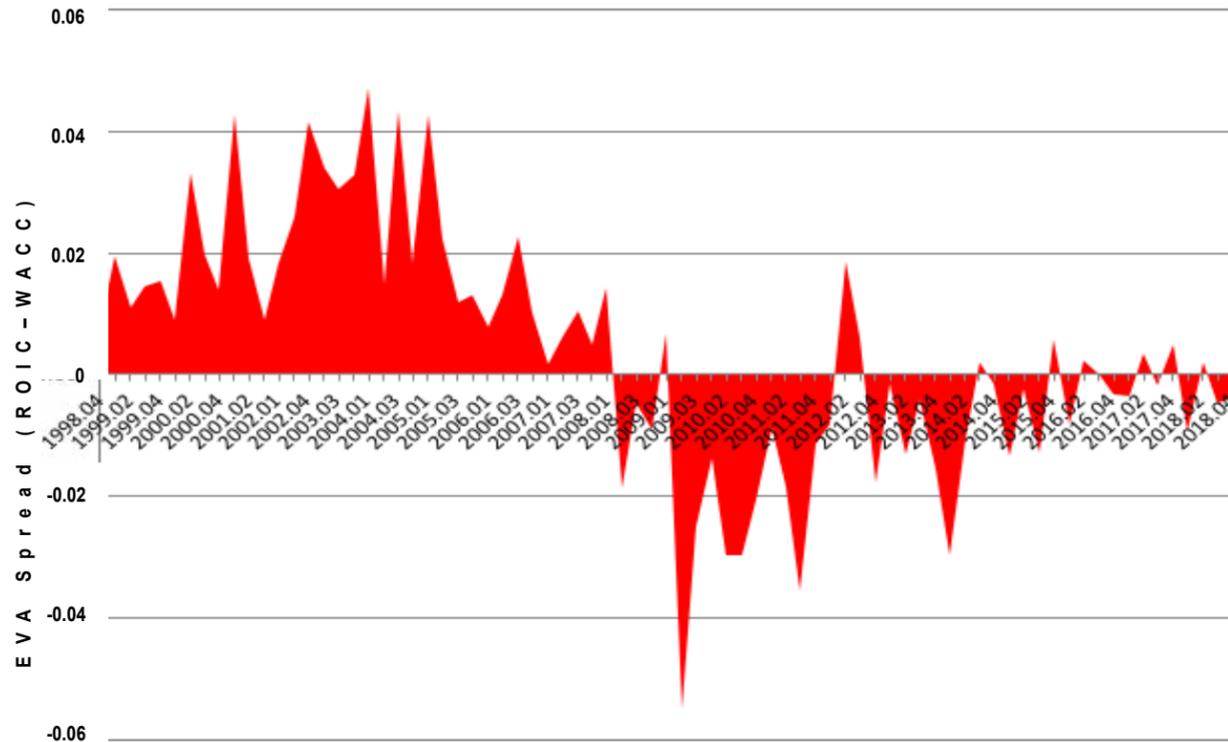
Hotel performance for gateway cities versus non-gateway cities



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

EXHIBIT 2

Economic value added (EVA) for hotels



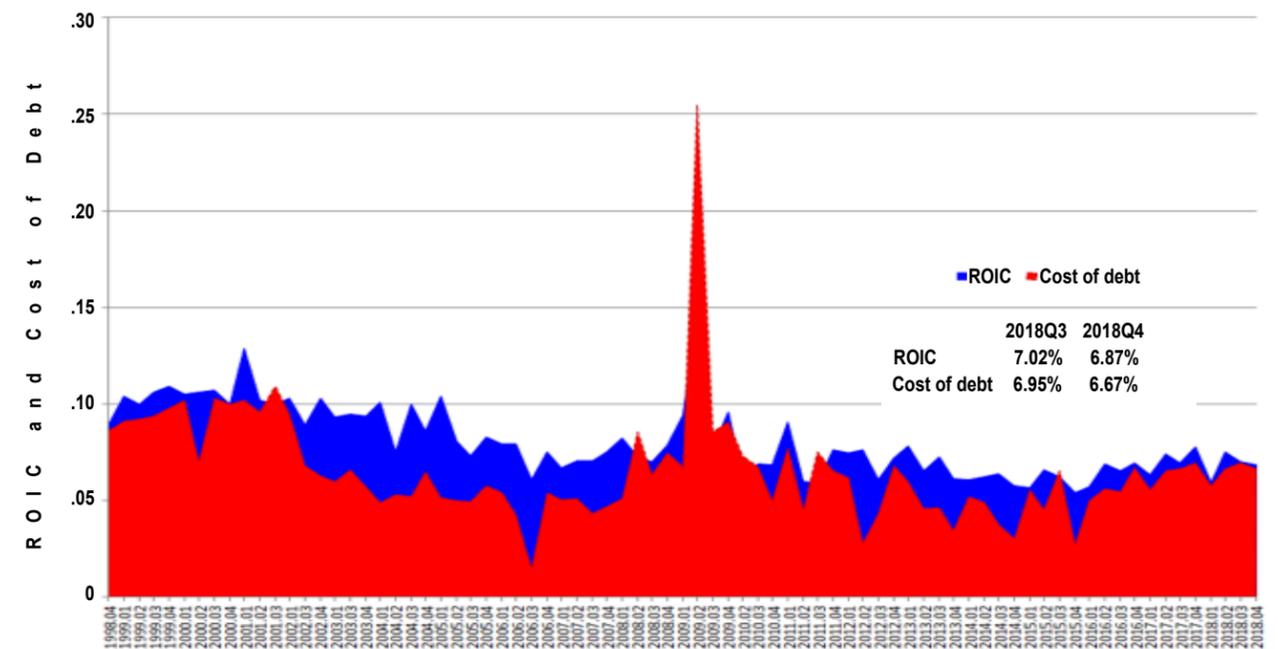
Sources: ACLI, Cornell Center for Real Estate and Finance, NAREIT, Federal Reserve

Hotel investment based on operating performance is still in the black. Although our Economic Value Added (EVA) indicator turned down slightly (-.004, as shown in Exhibit 2), hotel investment remains essentially at breakeven, as the EVA has continued to hover around zero since the second quarter of 2016. Although the ACLI hotel cap rate has fallen from 7.02 percent (2018Q3) to 6.87 percent (2018Q4), the cost of debt financing also fell, from 6.95 percent to 6.67 percent over the same period. Thus, Exhibit 3 suggests that although positive leverage continued to be the norm for hotel deals in 2018Q4 (latest quarter for which ACLI data exist), penciling feasible deals is getting harder, given the tightening of the spread between the cap rate and the cost of debt financing. Intuitively, the investor should receive a higher return than his or her borrowing cost.

The median price of hotels fell on a quarterly basis, as well as year over year. In the first quarter of 2019, the median price of hotels fell approximately 17 percent from the previous quarter (\$5.34M versus \$6.445M), even though the total volume of all hotel transactions (both large hotels and small hotels combined) increased 3.62 percent (that is, 290 transactions versus 280 transactions, as reported in Exhibit 4). Year over year (2018Q1 versus 2019Q1), the median price of hotels fell 4.6 percent on weaker volume (-6.8%). A comparison of large hotels relative to small hotels on a year-over-year basis reveals that the median price of large hotels fell almost 18 percent (compared to a drop of 26.8 percent in the prior period on weaker volume, which declined 22 percent), while in contrast the median price of smaller hotels rose imperceptibly by 0.7

EXHIBIT 3

Return on investment capital versus cost of debt financing



Sources: ACLI, Cornell Center for Real Estate and Finance

About the Cornell Hotel Indices

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

¹ For a general discussion on what constitutes a gateway city, 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. 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.

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

Year	Quarter	Full Sample			Big			Small			Gateway			Non-Gateway					
		Median Sale Price	Observations	% Total Sales	Median Sale Price (High Priced Hotels)	Number of Transactions (High Priced Hotels)	% Total Sales	Median Sale Price (Low Priced Hotels)	Transaction s (Low Priced Hotels)	% Total Sales	Median Sale Price (Gateway Hotels)	Number of Transaction s (Gateway Hotels)	% Total Sales	Median Sale Price (Non-Gateway Hotels)	Transaction s (Non-Gateway Hotels)	% Total Sales			
1995	1	2357500	20				1995.01	2357500	20	100.00%	1995.01	3400000	7	35.00%	1995.01	2100000	13	65.00%	
1995	2	3150000	29	1995.02	15712500	6	20.68%	1995.02	2670000	23	79.31%	1995.02	3800000	12	41.37%	1995.02	2906150	17	58.62%
1995	3	2662500	44	1995.03	12400000	4	9.09%	1995.03	2378000	40	90.90%	1995.03	3500000	20	45.45%	1995.03	2000000	24	54.54%
1995	4	3400000	41	1995.04	27750000	10	24.39%	1995.04	2625000	31	75.60%	1995.04	5075000	14	34.14%	1995.04	3100000	27	65.85%
1996	1	2500000	39	1996.01	14475000	8	20.51%	1996.01	1700000	31	79.48%	1996.01	2500000	13	33.33%	1996.01	2687500	26	66.66%
1996	2	2925000	43	1996.02	29150000	12	27.90%	1996.02	2500000	31	72.09%	1996.02	3200000	15	34.88%	1996.02	2730000	28	65.11%
1996	3	6500000	57	1996.03	17740000	20	35.06%	1996.03	3000000	37	64.91%	1996.03	5500000	25	43.85%	1996.03	6990500	32	56.14%
1996	4	2735000	58	1996.04	19000000	17	29.31%	1996.04	2200000	41	70.68%	1996.04	4650000	27	46.55%	1996.04	2400000	31	53.44%
1997	1	5053250	74	1997.01	16635500	23	31.08%	1997.01	3500000	51	68.91%	1997.01	6300000	29	39.18%	1997.01	4075000	45	60.81%
1997	2	2862500	72	1997.02	17750000	17	23.61%	1997.02	2150000	55	76.38%	1997.02	2445000	24	33.33%	1997.02	3047350	48	66.66%
1997	3	3437500	90	1997.03	19000000	21	23.33%	1997.03	2400000	69	76.66%	1997.03	5140000	38	42.22%	1997.03	2550000	52	57.77%
1997	4	4330950	78	1997.04	17000000	27	34.61%	1997.04	2300000	51	65.38%	1997.04	10435445	27	34.61%	1997.04	3600000	51	65.38%
1998	1	4698800	92	1998.01	20000000	31	33.69%	1998.01	3100000	61	66.30%	1998.01	6353000	33	35.86%	1998.01	4600000	59	64.13%
1998	2	3630000	96	1998.02	23765000	21	21.87%	1998.02	3000000	75	78.12%	1998.02	3998240	28	29.16%	1998.02	3575000	68	70.83%
1998	3	2961059	92	1998.03	16740000	12	13.04%	1998.03	2690500	80	86.95%	1998.03	2255000	30	32.60%	1998.03	3365000	62	67.39%
1998	4	2550000	84	1998.04	35000000	15	17.85%	1998.04	2375000	69	82.14%	1998.04	4225000	30	35.71%	1998.04	2500000	54	64.28%
1999	1	2425000	88	1999.01	24638095	10	11.36%	1999.01	2125000	78	88.63%	1999.01	3500000	32	36.36%	1999.01	2300000	56	63.63%
1999	2	2100000	95	1999.02	67000000	5	5.26%	1999.02	1950000	90	94.73%	1999.02	2067500	28	29.47%	1999.02	2100000	67	70.52%
1999	3	2500000	99	1999.03	20711100	10	10.10%	1999.03	2130000	89	89.89%	1999.03	1800000	19	19.19%	1999.03	2522500	80	80.80%
1999	4	2440000	87	1999.04	18190000	14	16.09%	1999.04	2090000	73	83.90%	1999.04	2210000	23	26.43%	1999.04	2575000	64	73.56%
2000	1	2400000	110	2000.01	23253895	10	9.09%	2000.01	2300000	100	90.90%	2000.01	2325000	44	40.00%	2000.01	2428500	66	60.00%
2000	2	2450000	88	2000.02	14500000	9	10.22%	2000.02	2275000	79	89.77%	2000.02	2325000	24	27.27%	2000.02	2450000	64	72.72%
2000	3	2600000	95	2000.03	20346875	16	16.84%	2000.03	2250000	79	83.15%	2000.03	2925000	24	25.26%	2000.03	2525000	71	74.73%
2000	4	2475000	101	2000.04	18250000	14	13.86%	2000.04	2300000	87	86.13%	2000.04	4500000	26	25.74%	2000.04	2350000	75	74.25%
2001	1	2970650	104	2001.01	28437500	18	17.30%	2001.01	2422500	86	82.69%	2001.01	2650000	29	27.88%	2001.01	3000000	75	72.11%
2001	2	2800000	110	2001.02	23795000	12	10.90%	2001.02	2687150	98	89.09%	2001.02	5825000	25	22.72%	2001.02	2684300	85	77.27%
2001	3	2700000	87	2001.03	16000000	6	6.89%	2001.03	2500000	81	93.10%	2001.03	3150000	21	24.13%	2001.03	2600000	66	75.86%
2001	4	2400000	73	2001.04	20500000	5	6.84%	2001.04	2300000	68	93.15%	2001.04	2800000	17	23.28%	2001.04	2300000	56	76.71%
2002	1	2125000	70	2002.01	11518052	5	7.14%	2002.01	2000000	65	92.85%	2002.01	1700000	17	24.28%	2002.01	2200000	53	75.71%
2002	2	2400000	106	2002.02	18129000	10	9.43%	2002.02	2287500	96	90.56%	2002.02	3125000	33	31.13%	2002.02	2300000	73	68.86%
2002	3	2355400	81	2002.03	12750000	5	6.17%	2002.03	2237500	76	93.82%	2002.03	2197500	24	29.62%	2002.03	2470000	57	70.37%
2002	4	2907500	100	2002.04	23500000	16	16.00%	2002.04	2575000	84	84.00%	2002.04	2907500	34	34.00%	2002.04	2862500	66	66.00%
2003	1	2530000	94	2003.01	13000000	9	9.57%	2003.01	2425000	85	90.42%	2003.01	3850000	21	22.34%	2003.01	2425000	73	77.65%
2003	2	2750000	110	2003.02	18500000	10	9.09%	2003.02	2509500	100	90.90%	2003.02	3160000	31	28.18%	2003.02	2600000	79	71.81%
2003	3	3333000	141	2003.03	14359286	28	19.85%	2003.03	2600000	113	80.14%	2003.03	3660000	45	31.91%	2003.03	3032500	96	68.08%
2003	4	2600000	149	2003.04	16375000	18	12.06%	2003.04	2425000	131	87.91%	2003.04	2950000	35	23.48%	2003.04	2500000	114	76.51%
2004	1	2925000	166	2004.01	22875250	24	14.45%	2004.01	2536796	142	85.54%	2004.01	3450000	41	24.69%	2004.01	2894000	125	75.30%
2004	2	2700000	195	2004.02	16280000	28	14.36%	2004.02	2450000	167	85.64%	2004.02	4500000	39	20.00%	2004.02	2540000	196	80.00%
2004	3	3491122	216	2004.03	19350000	45	20.83%	2004.03	2610000	171	79.16%	2004.03	4600000	51	23.61%	2004.03	3306500	165	76.38%
2004	4	4000000	177	2004.04	20475000	47	26.55%	2004.04	3085500	130	73.44%	2004.04	8850000	36	20.33%	2004.04	3600000	141	79.66%

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

Year	Quarter	Full Sample			Big			Small			Gateway			Non-Gateway					
		Median Sale Price	Observations	% Total Sales	Median Sale Price (High Priced Hotels)	Number of Transactions (High Priced Hotels)	% Total Sales	Median Sale Price (Low Priced Hotels)	Transaction s (Low Priced Hotels)	% Total Sales	Median Sale Price (Gateway Hotels)	Number of Transaction s (Gateway Hotels)	% Total Sales	Median Sale Price (Non-Gateway Hotels)	Transaction s (Non-Gateway Hotels)	% Total Sales			
2005	1	4330000	231	2005.01	18100000	52	22.51%	2005.01	3300000	179	77.48%	2005.01	6687500	40	17.31%	2005.01	3800000	191	82.68%
2005	2	4566250	316	2005.02	18966812	78	24.68%	2005.02	3255150	238	75.31%	2005.02	6475000	68	21.51%	2005.02	4385000	248	78.48%
2005	3	4150000	273	2005.03	21475000	72	26.37%	2005.03	3100000	201	73.62%	2005.03	6100000	61	22.34%	2005.03	3750000	212	77.65%
2005	4	4425000	300	2005.04	25000000	93	31.00%	2005.04	3150000	207	68.99%	2005.04	11200000	65	21.66%	2005.04	4000000	235	78.33%
2006	1	5300000	301	2006.01	25750000	92	30.56%	2006.01	3800000	209	69.43%	2006.01	18000000	64	21.26%	2006.01	4943744	237	78.73%
2006	2	4750000	313	2006.02	22750000	82	26.19%	2006.02	3500000	231	73.80%	2006.02	6175000	56	17.89%	2006.02	4500000	257	82.10%
2006	3	5000000	285	2006.03	22500000	86	30.17%	2006.03	3650000	199	69.82%	2006.03	7000000	59	20.70%	2006.03	4705399	226	79.29%
2006	4	4587500	248	2006.04	21200000	65	26.20%	2006.04	3550000	183	73.79%	2006.04	8037500	56	22.58%	2006.04	4270000	192	77.41%
2007	1	6155805	286	2007.01	21225000	104	36.36%	2007.01	3700000	182	63.63%	2007.01	9500000	63	22.02%	2007.01	5700000	223	77.97%
2007	2	5650000	385	2007.02	25125000	120	31.16%	2007.02	3750000	265	68.83%	2007.02	9000000	67	17.40%	2007.02	5450000	318	82.59%
2007	3	5450000	330	2007.03	20100181	105	31.81%	2007.03	3900000	225	68.18%	2007.03	8325000	53	16.06%	2007.03	5011554	277	83.93%
2007	4	4680000	249	2007.04	23250000	86	34.53%	2007.04	3150000	163	65.46%	2007.04	9375000	36	14.45%	2007.04	4500000	213	85.54%
2008	1	5000000	255	2008.01	16000000	61	23.92%	2008.01	3985000	194	76.07%	2008.01	5900000	46	18.03%	2008.01	4650000	209	81.96%
2008	2	5062900	228	2008.02	22150000	50	21.92%	2008.02	3890000	178	78.07%	2008.02	8725000	38	16.86%	2008.02	4800000	190	83.33%
2008	3	4190500	172	2008.03	17133333	37	21.51%	2008.03	3350000	135	78.48%	2008.03	5500000	27	15.69%	2008.03	3900000	145	84.30%
2008	4	4050000	159	2008.04	18850000	32	20.12%	2008.04	3500000	127	79.87%	2008.04	4972500	27	16.98%	2008.04	3920000	132	83.01%
2009	1	4150000	81	2009.01	15800000	15	18.51%	2009.01	3600000	66	81.								

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

Year	Quarter	Full Sample		Big			Small			Gateway			Non-Gateway						
		Median Sale Price	Observations	Median Sale Price (High Priced Hotels)	Number of Transactions (High Priced Hotels)	% Total Sales	Median Sale Price (Low Priced Hotels)	Transactions (Low Priced Hotels)	% Total Sales	Median Sale Price (Gateway Hotels)	Number of Transactions (Gateway Hotels)	% Total Sales	Median Sale Price (Non-Gateway Hotels)	Transactions (Non-Gateway Hotels)	% Total Sales				
2015	1	5752500	254	2015.01	29750000	82	32.28%	2015.01	3125000	172	67.71%	2015.01	8280000	47	18.50%	2015.01	5500000	207	81.49%
2015	2	6350000	268	2015.02	24575000	92	34.32%	2015.02	3250000	176	65.67%	2015.02	18765000	46	17.16%	2015.02	5612500	222	82.83%
2015	3	5090000	299	2015.03	24800000	87	29.09%	2015.03	3012500	212	70.90%	2015.03	12100000	53	17.72%	2015.03	4275000	246	82.27%
2015	4	6700000	293	2015.04	18264737	106	36.17%	2015.04	3175000	187	63.82%	2015.04	14500000	51	17.40%	2015.04	5440000	242	82.59%
2016	1	5600000	293	2016.01	20375000	87	29.69%	2016.01	3350000	206	70.30%	2016.01	13600000	45	15.35%	2016.01	5275000	248	84.64%
2016	2	4100000	322	2016.02	16000000	61	18.94%	2016.02	3300000	261	81.05%	2016.02	11800000	48	14.90%	2016.02	3725000	274	85.09%
2016	3	4862500	284	2016.03	25000000	75	26.40%	2016.03	3200000	209	73.59%	2016.03	24500000	34	11.97%	2016.03	4362500	250	88.02%
2016	4	4050000	264	2016.04	19480000	73	27.65%	2016.04	2800000	191	72.34%	2016.04	12955200	29	10.98%	2016.04	3664706	235	89.01%
2017	1	5300000	254	2017.01	22860750	70	27.55%	2017.01	3625000	184	72.44%	2017.01	14726254	28	11.02%	2017.01	5000000	226	88.97%
2017	2	5100000	331	2017.02	22660000	91	27.49%	2017.02	3325000	240	72.50%	2017.02	16450000	37	11.17%	2017.02	4482500	294	88.82%
2017	3	5000000	324	2017.03	22250000	86	26.54%	2017.03	3403000	238	73.45%	2017.03	22250000	38	11.72%	2017.03	4500000	286	88.27%
2017	4	4500000	265	2017.04	28000000	66	24.90%	2017.04	2875000	199	75.09%	2017.04	12208000	26	9.81%	2017.04	4250000	239	90.18%
2018	1	5600000	311	2018.01	21691200	98	31.51%	2018.01	3500000	213	68.48%	2018.01	14750000	40	12.86%	2018.01	5000000	271	87.13%
2018	2	4800000	367	2018.02	19750000	82	22.34%	2018.02	3300000	285	77.65%	2018.02	17625000	40	10.89%	2018.02	4250000	327	89.10%
2018	3	5125000	334	2018.03	21265000	83	24.85%	2018.03	3710000	291	75.14%	2018.03	13342500	22	6.58%	2018.03	5000000	312	93.41%
2018	4	6445000	280	2018.04	20500000	105	37.50%	2018.04	3300000	175	62.50%	2018.04	14440000	33	11.78%	2018.04	5550000	247	88.21%
2019	1	5340000	290	2019.01	17802898	76	26.20%	2019.01	3525000	214	73.79%	2019.01	15750000	34	11.72%	2019.01	4750000	296	88.27%

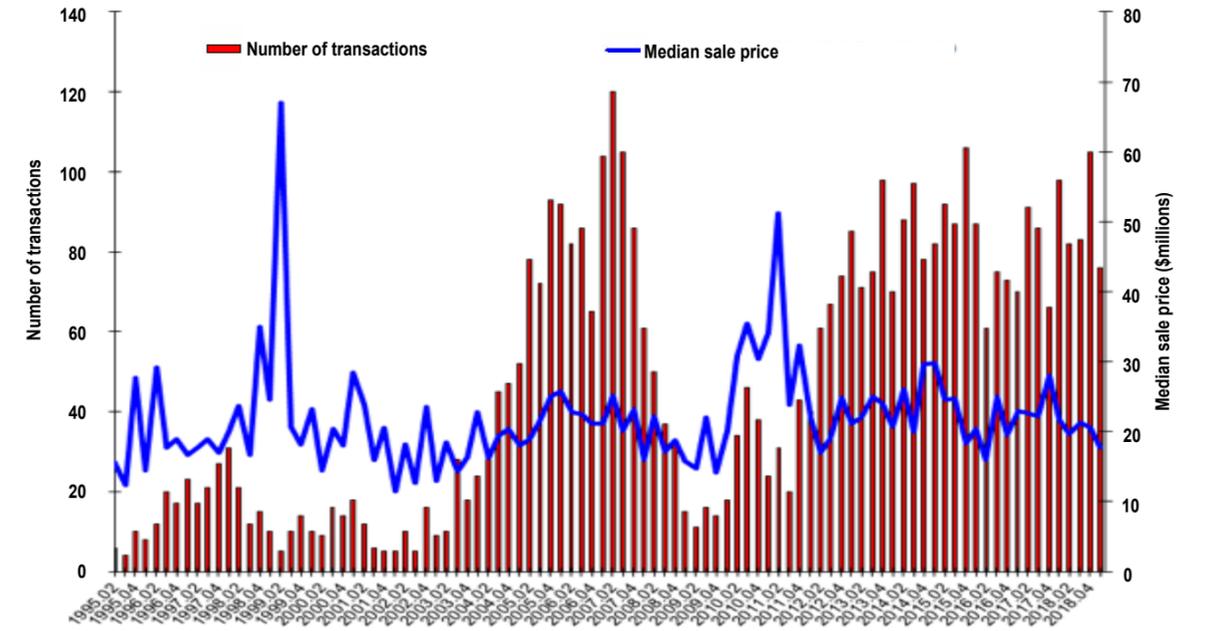
percent (albeit on low volume, which increased 0.5%).¹ A similar situation exists on a quarter-over-quarter basis for large hotels, with the median sale price of large hotels falling 13 percent on weaker transaction volume (-27%), while the median sale price of smaller

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

hotels rose almost 7 percent on stronger volume (22%). Exhibits 5 and 6 show this year-over-year trend in the number of transactions for large hotels and small hotels.

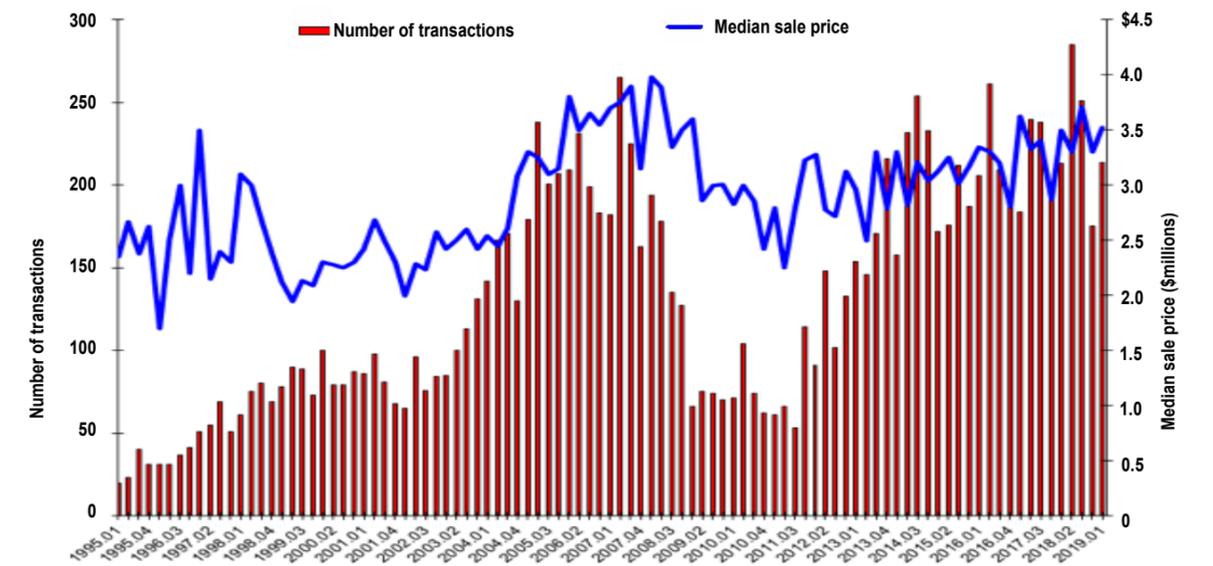
Our moving average trendlines and our standardized unexpected price (SUP) performance metrics both point to negative price momentum for large hotels, with small hotels continuing to experi-

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



Sources: CoStar, Real Capital Analytics

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

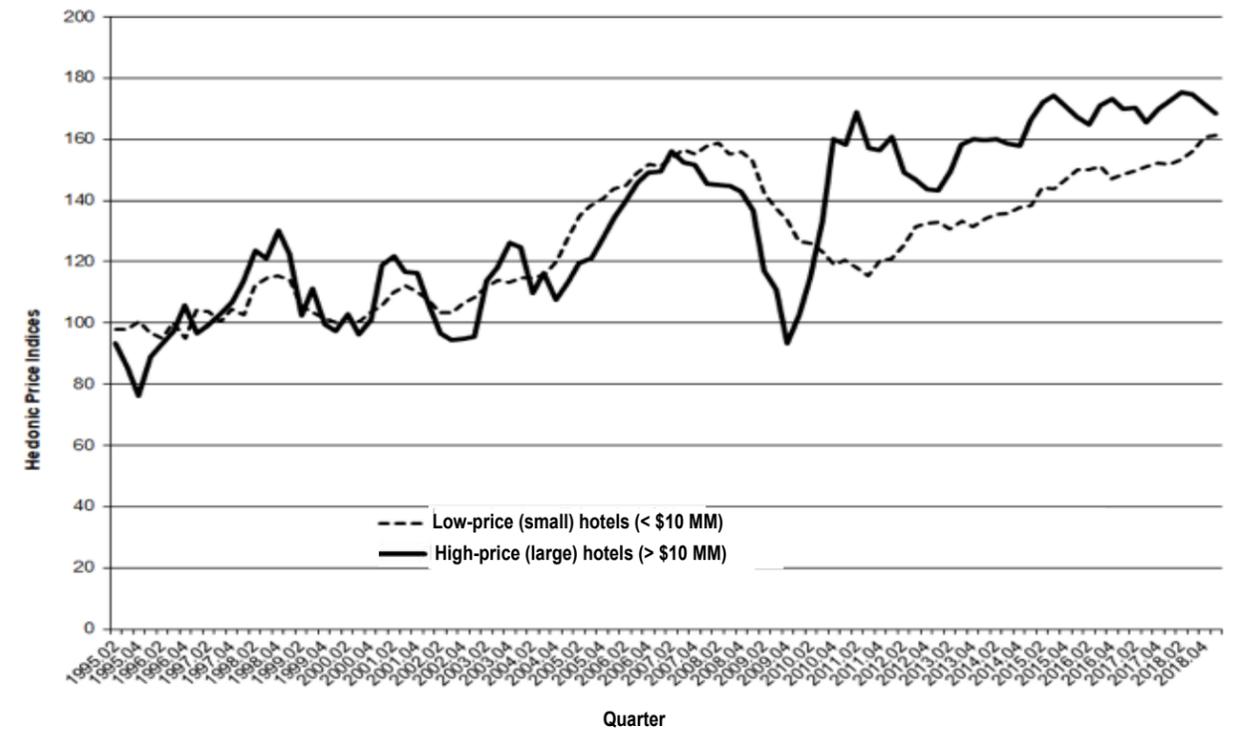


Sources: CoStar, Real Capital Analytics

Hotel indices through 2019, quarter 1

YrQtr	Index Value						YrQtr	Index Value					
	Hedonic		RSI		Repeat	RSI		Hedonic		RSI		Repeat	RSI
	Low Priced Hotels (<\$10M)	High Priced Hotels (>=\$10M)	Non Gateway Index	Gateway Index				Sales Index	Index Value	Low Priced Hotels (<\$10M)	High Priced Hotels (>=\$10M)		
1995.02	98.051866	93.521887	82.6015	101.912	63.043064	NA	2007.01	151.136	149.41715	165.868	218.541	145.95	146.72071
1995.03	98.026819	85.224865	81.5796	97.8412	66.365435	NA	2007.02	154.19058	156.08361	173.318	228.616	150.21	151.06908
1995.04	100.61254	76.142577	85.4681	91.0298	68.545196	NA	2007.03	156.80123	152.60086	177.014	226.749	155.77	158.21238
1996.01	96.839352	89.029685	89.9433	93.5439	70.302414	NA	2007.04	155.06706	151.72798	180.603	229.139	156.57	160.15775
1996.02	95.051324	92.991113	94.3656	88.2789	74.583894	NA	2008.01	157.58642	145.60734	174.992	232.831	158.22	166.00954
1996.03	100.06765	97.37262	104.993	96.3839	73.454151	NA	2008.02	158.785	145.18577	171.584	237.627	157.88	166.17459
1996.04	94.858149	105.67623	105.295	103.421	74.582678	NA	2008.03	155.12124	144.66504	165.67	230.719	155.23	160.78668
1997.01	104.29458	96.648866	112.872	109.547	86.938298	NA	2008.04	156.0557	143.08245	160.187	224.141	157.74	165.03074
1997.02	103.88818	99.162947	111.03	110.337	89.258933	NA	2009.01	152.97914	136.5999	152.067	198.431	153.39	160.63079
1997.03	100.42932	102.69894	105.934	111.523	95.600217	NA	2009.02	141.98235	117.15781	135.936	173.066	150.78	155.53545
1997.04	104.42053	107.04284	112.823	118.941	101.95434	NA	2009.03	137.67428	110.80524	128.401	159.351	138.54	143.96747
1998.01	102.85049	113.38066	115.099	123.395	98.830821	NA	2009.04	133.37984	93.446101	114.988	158.3	123.49	128.67526
1998.02	112.19289	123.7735	127.404	133.961	103.50562	NA	2010.01	126.61258	102.82215	115.826	158.262	116.61	122.95118
1998.03	114.85386	121.12004	131.462	125.245	106.1056	NA	2010.02	125.9521	114.97919	119.24	162.326	108.22	115.84959
1998.04	115.60586	130.05983	126.085	125.376	103.1597	NA	2010.03	123.35775	133.62252	120.482	216.378	108.36	115.90386
1999.01	114.07379	122.59751	114.587	117.573	96.916491	NA	2010.04	118.96167	160.18155	129.838	246.056	112.55	118.47803
1999.02	105.75792	102.42859	99.0347	99.3204	92.46382	NA	2011.01	120.52757	158.15805	128.5	260.232	112.93	114.27568
1999.03	103.37334	111.09358	94.8898	105.102	90.235614	NA	2011.02	117.9282	168.92657	130.955	266.874	113.39	113.3607
1999.04	101.72386	99.414961	93.5837	100.028	91.33941	NA	2011.03	115.32384	157.04993	128.533	223.895	112.95	112.88136
2000.01	100.14543	97.240667	94.8937	96.3501	96.028778	97.883826	2011.04	120.65593	156.28566	127.12	208.989	113.06	113.06239
2000.02	101.64902	102.77217	99.2307	100.536	98.850035	97.883826	2012.01	120.90922	160.69723	130.396	221.799	112.75	111.8492
2000.03	100.62426	96.247617	100.682	96.1091	98.042962	93.53617	2012.02	125.33941	149.00034	132.966	227.114	115.46	116.77256
2000.04	103.36063	101.19432	102.347	101.909	98.399375	94.926485	2012.03	131.59703	146.87849	141.233	239.866	119.98	121.20628
2001.01	106.09307	118.76228	109.708	105.726	97.669211	93.661236	2012.04	132.57848	143.53539	147.096	249.946	121.50	122.32145
2001.02	110.02865	121.71378	110.334	117.814	97.827073	92.697752	2013.01	133.1131	143.32254	153.779	238.563	124.20	127.03808
2001.03	112.22354	116.54664	109.381	116.392	98.583976	95.988569	2013.02	130.83818	149.49467	154.703	242.199	126.85	130.42431
2001.04	110.39964	116.51567	106.18	111.948	97.882601	91.771688	2013.03	133.16918	158.24429	156.157	245.738	128.23	132.63687
2002.01	107.46286	106.50535	99.5967	107.717	97.895949	93.807149	2013.04	131.65572	159.93562	153.896	248.772	129.93	135.36906
2002.02	103.52791	96.809978	95.8491	97.1832	95.740179	92.090644	2014.01	133.94519	159.58279	152.738	252.667	134.33	138.84888
2002.03	103.44647	94.582718	95.1424	99.7225	96.394978	90.452022	2014.02	135.39399	159.93693	149.371	257.531	132.34	135.27995
2002.04	106.21422	94.817008	100.257	100.617	96.565744	95.234322	2014.03	135.76429	158.60297	149.31	256.586	133.96	136.46149
2003.01	108.33704	95.427643	101.128	111.917	98.120531	95.275822	2014.04	137.74904	157.94927	149.208	231.227	134.86	136.53951
2003.02	111.8289	113.77352	105.476	120.028	99.97282	98.342193	2015.01	138.5631	166.20647	152.245	239.745	138.86	139.73031
2003.03	113.84757	118.19301	108.434	127.977	101.19169	101.88752	2015.02	144.18508	172.19094	164.544	247.58	145.13	146.11772
2003.04	113.32569	126.12346	107.983	132.24	103.03417	104.70289	2015.03	143.88525	174.26093	163.624	274.666	152.86	154.92411
2004.01	114.56789	124.82316	108.535	131.435	102.64175	105.94173	2015.04	146.92637	170.70318	171.229	312.565	161.83	164.54495
2004.02	114.68332	109.96699	107.16	133.959	103.5285	107.3019	2016.01	149.92069	167.50981	173.047	328.936	165.25	168.68004
2004.03	115.94342	116.27263	109.558	141.443	107.36455	111.41531	2016.02	150.03996	164.73599	165.67	332.315	163.09	167.1466
2004.04	120.27961	107.64634	114.26	148.964	108.27293	110.99444	2016.03	151.01446	170.96528	167.504	347.032	164.63	166.95971
2005.01	127.44232	113.32028	122.853	167.71	112.57157	114.39285	2016.04	147.23215	173.2607	162.108	334.781	160.91	164.18843
2005.02	135.20315	119.49822	135.951	169.277	117.99485	121.28028	2017.01	148.51665	170.00732	161.854	315.409	165.35	168.97592
2005.03	138.48311	121.06539	141.346	167.297	122.65397	126.01236	2017.02	149.65218	170.49712	168.042	319.154	175.65	179.39308
2005.04	140.57868	127.2474	145.205	176.757	128.38412	132.41518	2017.03	151.00425	165.68509	169.336	306.891	175.93	180.95486
2006.01	143.89126	134.64478	152.21	181.236	133.32281	137.85062	2017.04	152.39241	169.99468	170.115	306.705	179.84	183.56981
2006.02	145.07835	139.81712	152.063	194.396	136.96765	141.00673	2018.01	152.01891	172.43667	171.333	346.431	178.84	183.22655
2006.03	149.09004	145.9977	157.482	212.246	138.32881	142.12677	2018.02	153.52262	175.42339	170.847	354.656	179.15	182.77785
2006.04	151.7803	149.31116	161.843	213.179	142.76785	144.57107	2018.03	156.2418	174.77192	173.361	356.463	183.66	186.93591
							2018.04	160.74333	171.46632	183.911	383.069	185.45	188.22598
							2019.01	161.3087	168.35419	182.093	363.102	188.69	190.54071

Hedonic hotel indices for large and small hotel transactions



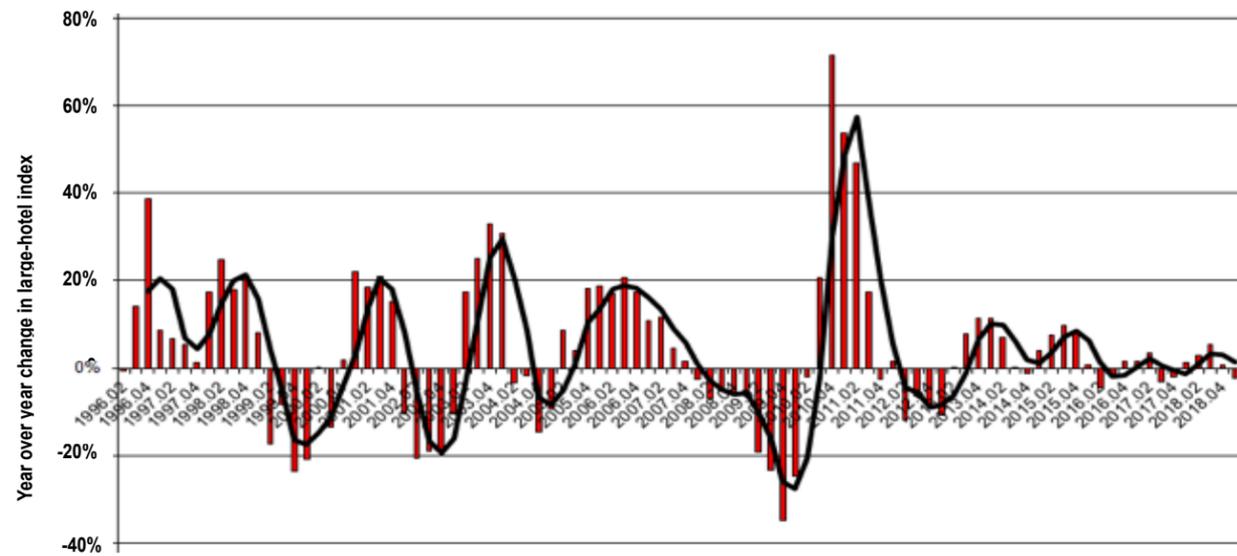
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

ence positive price performance in general. Exhibit 8, which graphs the prices reported in Exhibit 7, shows that the prices of large hotels continue their downward trend, falling another 2 percent this quarter following a similar drop of 2 percent in the previous quarter. Smaller hotels' prices rose imperceptibly, by 0.35 percent, this quarter compared to a 2.88 percent

increase last quarter. Exhibit 9 shows that on a year-over-year basis, large hotels' prices also fell, dropping 2.37 percent from 2018Q1 to 2019Q1, down from a gain of 0.87 percent in the prior year-over-year period (2017Q4-2018Q4). Exhibit 10 shows that smaller hotels rose 6.11 percent from 2018Q1 to 2019Q1, up from 5.5 percent in the prior period (2017Q4-2018Q4).

EXHIBIT 9

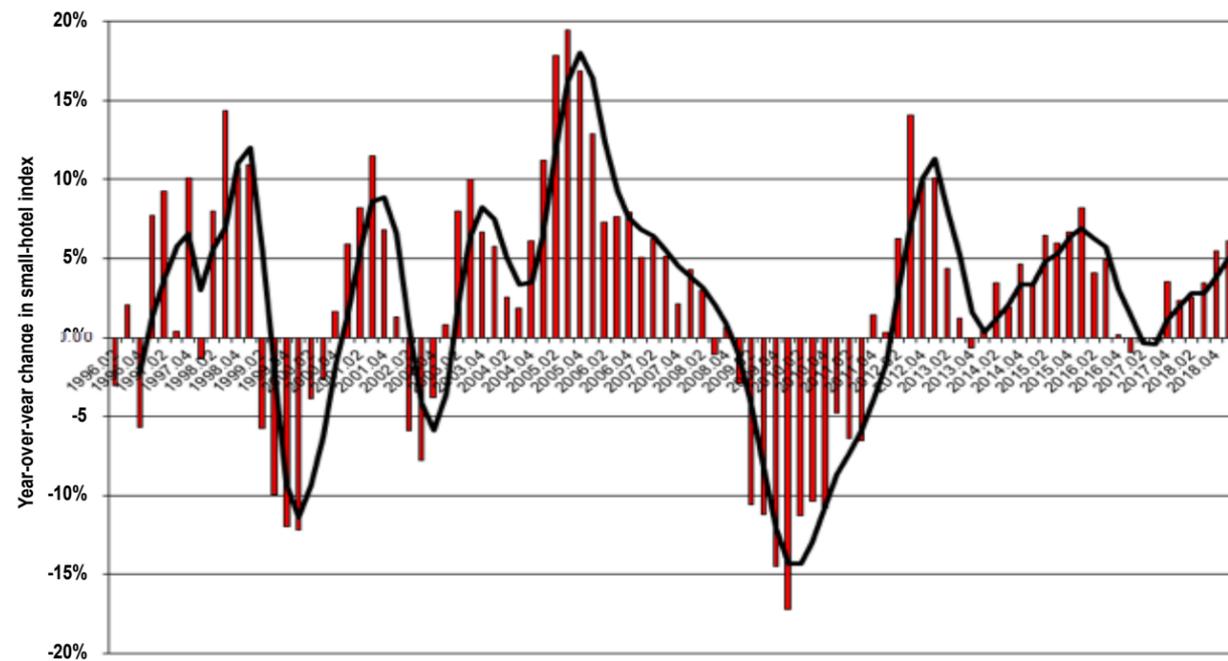
Year-over-year change in high-price (large) hotel index, with moving-average trend line



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

EXHIBIT 10

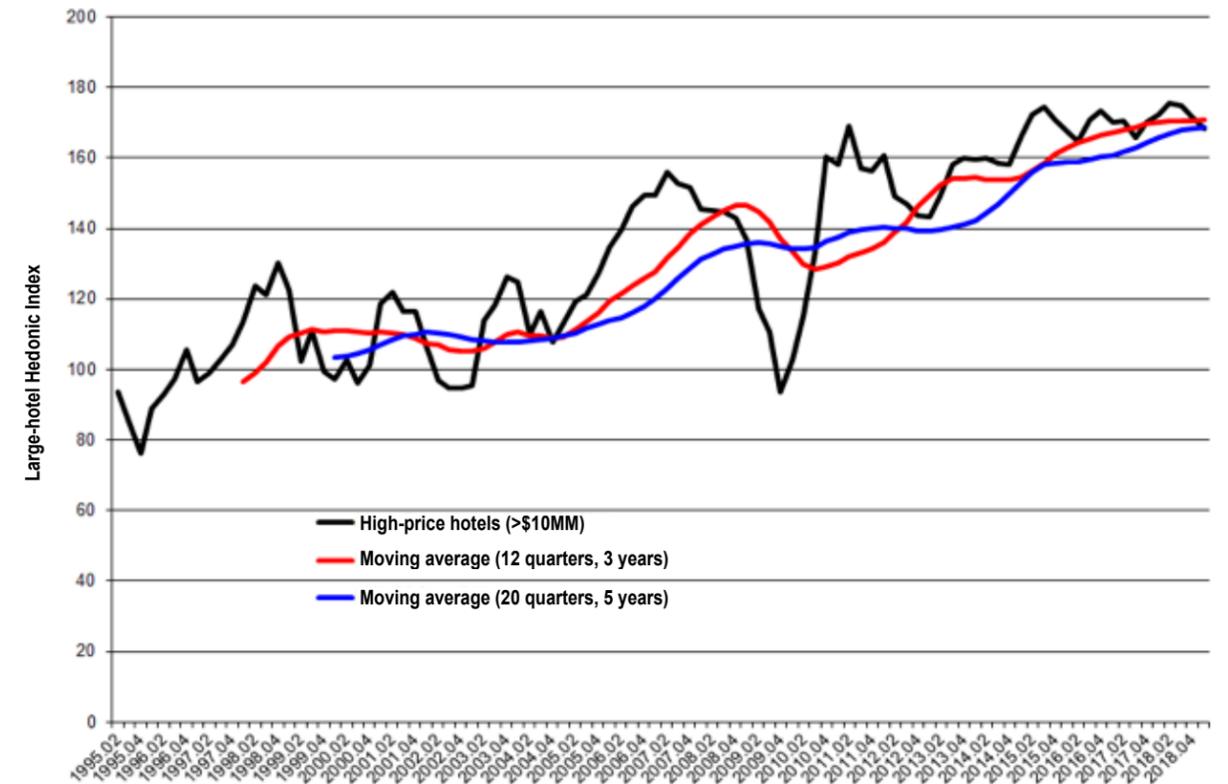
Year-over-year change in small-hotel index, with moving-average trend line



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

EXHIBIT 11

Moving average trend line for large-hotel index

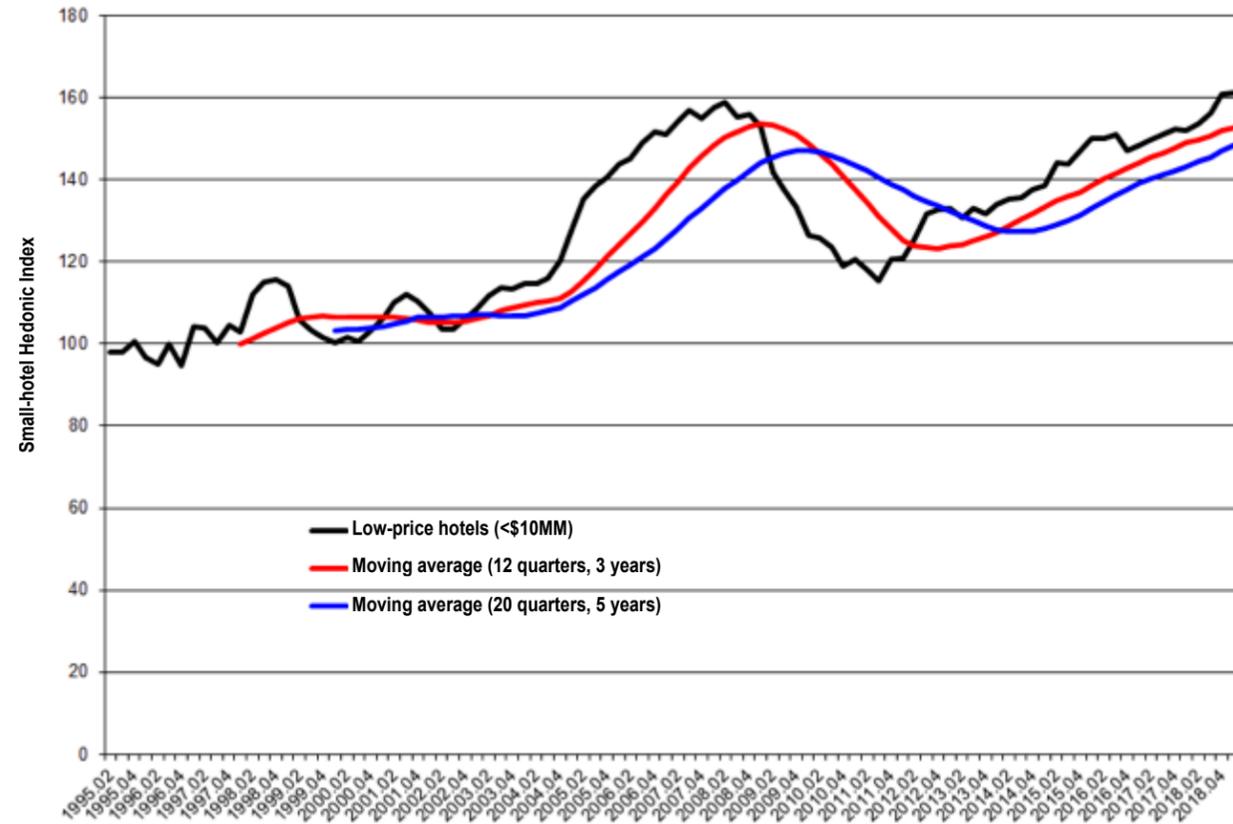


Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

Consistent with our analysis thus far, our moving average trend lines for large hotels, in Exhibit 11, show that the price for large hotels has now fallen below both its short-term and long-term moving average trend lines—indicating the extent to which large hotels have continued to lose price momentum. In contrast to this, Exhibit 12 shows that the price for smaller hotels not only continues to exceed both its

short-term and long-term moving average trend lines, but it also shows that the spread between the price and these trend lines is widening from the prior period. Thus we see that positive price momentum continues to persist for small hotels this quarter. This indicates a continued signal that small hotels are still a *buy and hold*, with a *sell* signal indicated for larger hotels.

Moving average trend line for small-hotel index

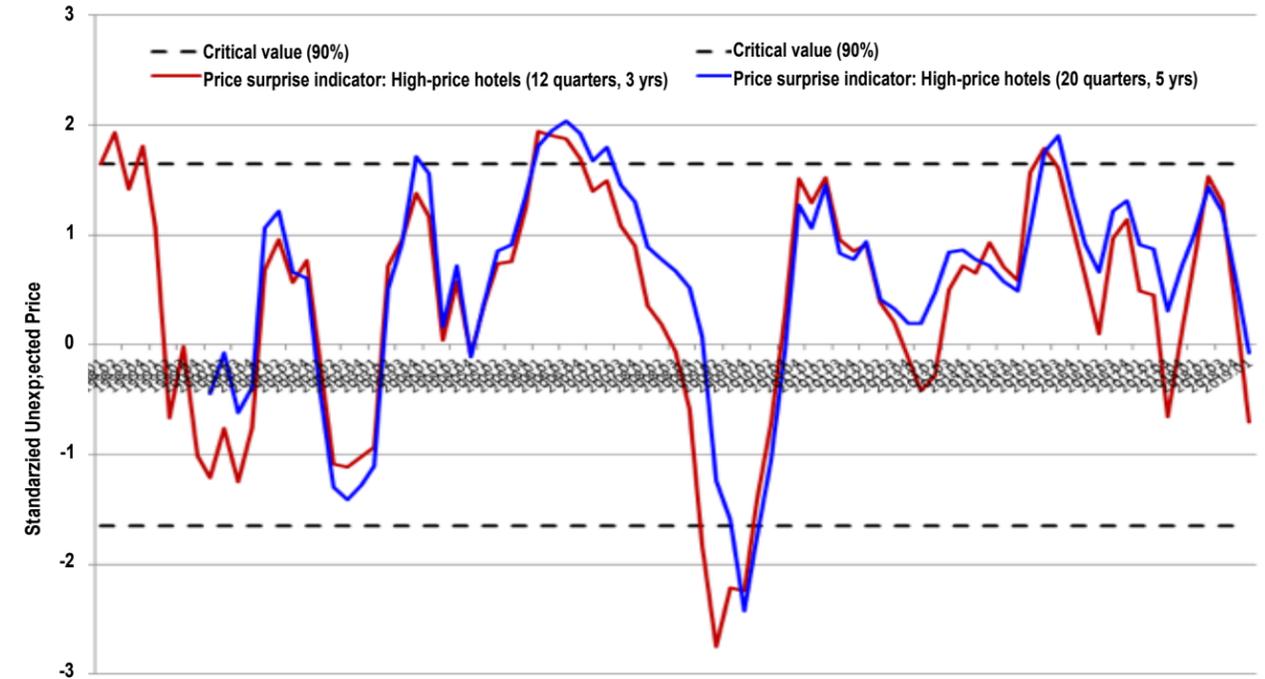


Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

Our Standardized Unexpected Price (SUP) metrics in Exhibit 13 show that the price of large hotels continued its descent this quarter. Although the standardized price of small hotels remained above

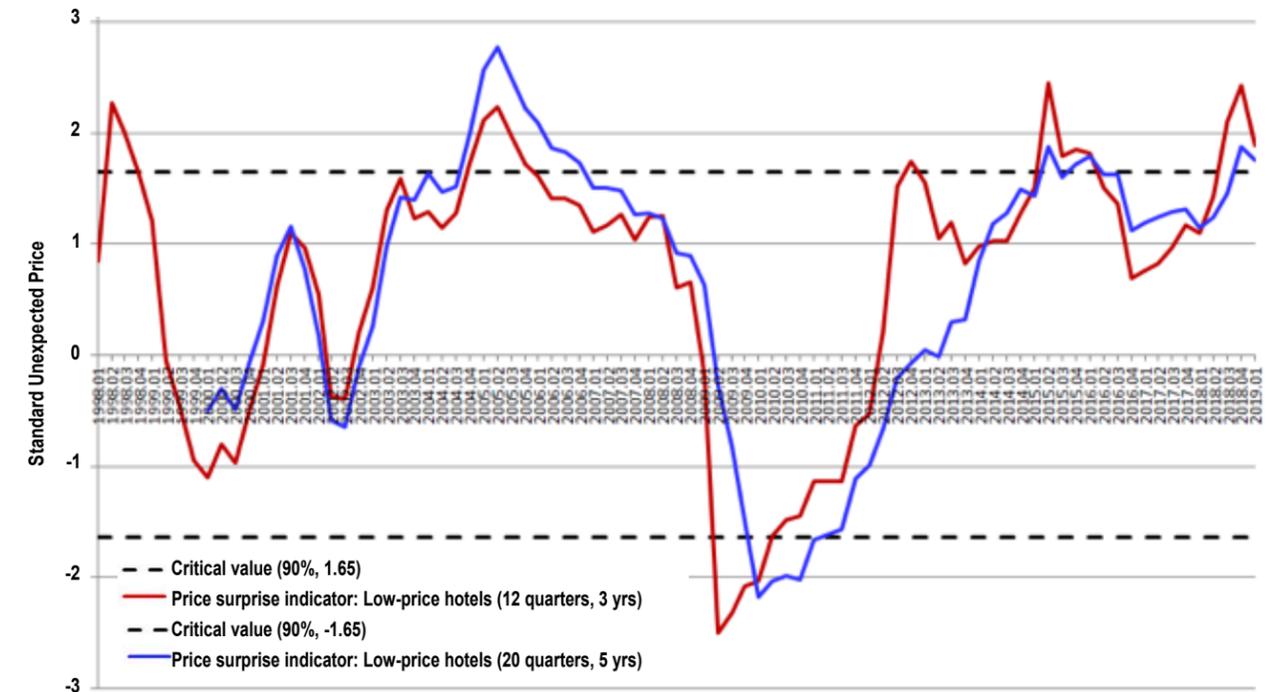
the upper significance band as depicted in Exhibit 14 indicating continued statistically significant positive price momentum, the standardized price was somewhat lower relative to the prior period.

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



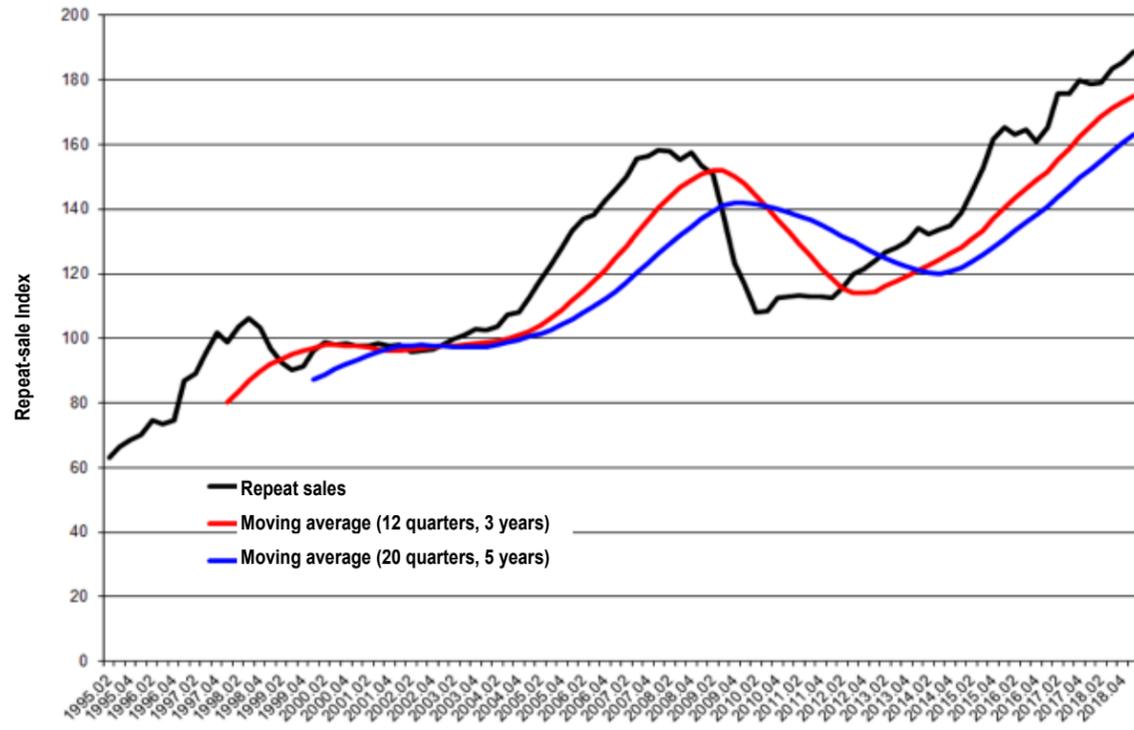
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

Standardized unexpected price (SUP) for small-hotel index



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

Moving average trend line for repeat sale-hotel index



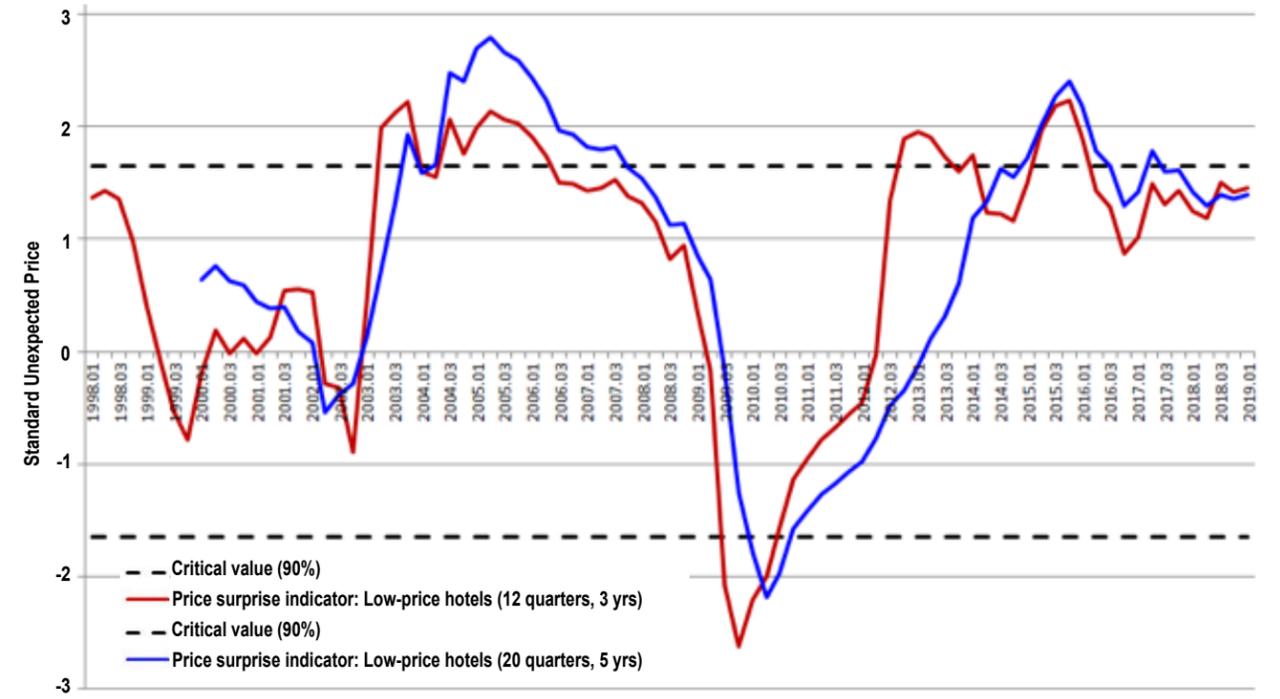
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

Repeat sales metrics: prices continue to rise. Similar to smaller hotels, our repeat-sale indicator for the moving average trendline in Exhibit 15 indicates a continuation of the positive price momentum.² The price of hotels that have sold more than once (repeat sales) is still higher than either its short-term or long-

² We report two repeat sale indices. The repeat sale full sample index uses all repeat sale pairs whereas the repeat sale index with a base of 100 at 2000Q1 uses only those sales that occurred on or after the first quarter of 2000. In other words, the latter repeat sale index thus doesn't use information on sales prior to the first quarter of 2000. As such, if a hotel sold in 1995 and then sold again in 2012, it would be included in the first repeat sale index (that is, the repeat sale full sample index), but it would not be included in the repeat sale index that comprises older properties.

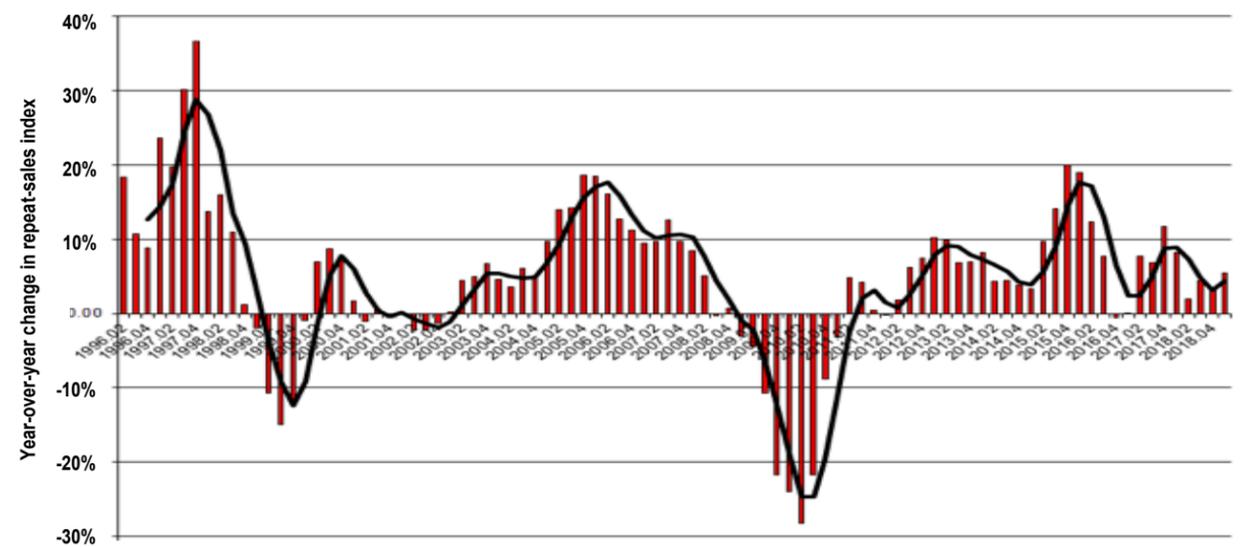
term moving average. Our SUP performance metric in Exhibit 16 indicates that although standardized prices continue to demonstrate positive strength this quarter they have moved sideways and remain just below the upper significance line, in contrast to the situation with small hotels (shown in Exhibit 14). Exhibit 17 shows that the repeat sale price index has turned upwards rising 5.5 percent year over year (2018Q1 to 2019Q1), up from 3 percent year over year in the previous period (2017Q4 to 2018Q4). It also increased about 1.74 percent quarter over quarter (2018Q4-2019Q1), up from 1 percent in the previous quarter (2018Q3 to 2018Q4).

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



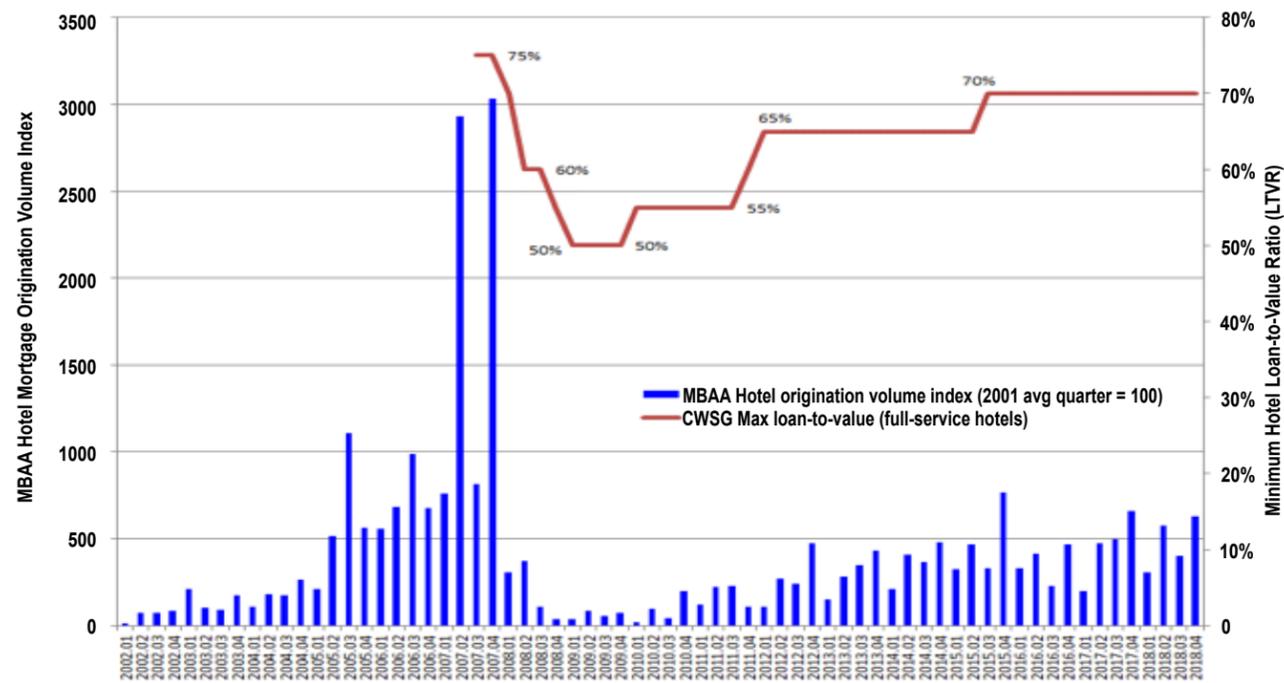
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

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



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

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



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

Mortgage financing volume for hotels declined year over year, but rose quarter over quarter. Exhibit 18 shows that mortgage origination volume for hotels as reported for 2018Q4 is 4 percent lower on a year-over-year basis (2017Q4-2018Q4), continuing a downward trend from the previous period (which saw a 19-percent decline).³ However, the mortgage origination volume for hotel was higher (56%) on a quarter-over-quarter basis (2018Q4 compared to 2018Q3). The maximum loan-to-value (LTV) ratio for hotels once again stood at 70 percent.

The cost of hotel debt financing has declined, with a narrowing in the relative risk premium for hotels. The cost of obtaining hotel debt financing, as reported for this quarter by Cushman Wakefield Sonnenblick Goldman, declined 9.5 percent for Class A hotels, and dropped 10 percent for Class B&C hotels.⁴ Exhibit 19 shows that interest rates on Class A

hotel deals (as well as Class B and C properties) also declined on a year-over-year basis, by approximately 13 percent. Interest rates stood at 4.58 percent for Class A hotels and 4.73 percent for Class B and C hotels in the first quarter of 2019 (i.e., March 2019) compared to 5.09 percent for Class A properties and 5.29 percent for Class B and C hotels in the fourth quarter of 2018 (that is, December 2018). Year over year, interest rates fell from 5.25 percent to 4.58 percent for Class A hotels, and from 5.45 percent to 4.73 percent for Class B and C properties. This downward trend in interest rates started in November 2018.

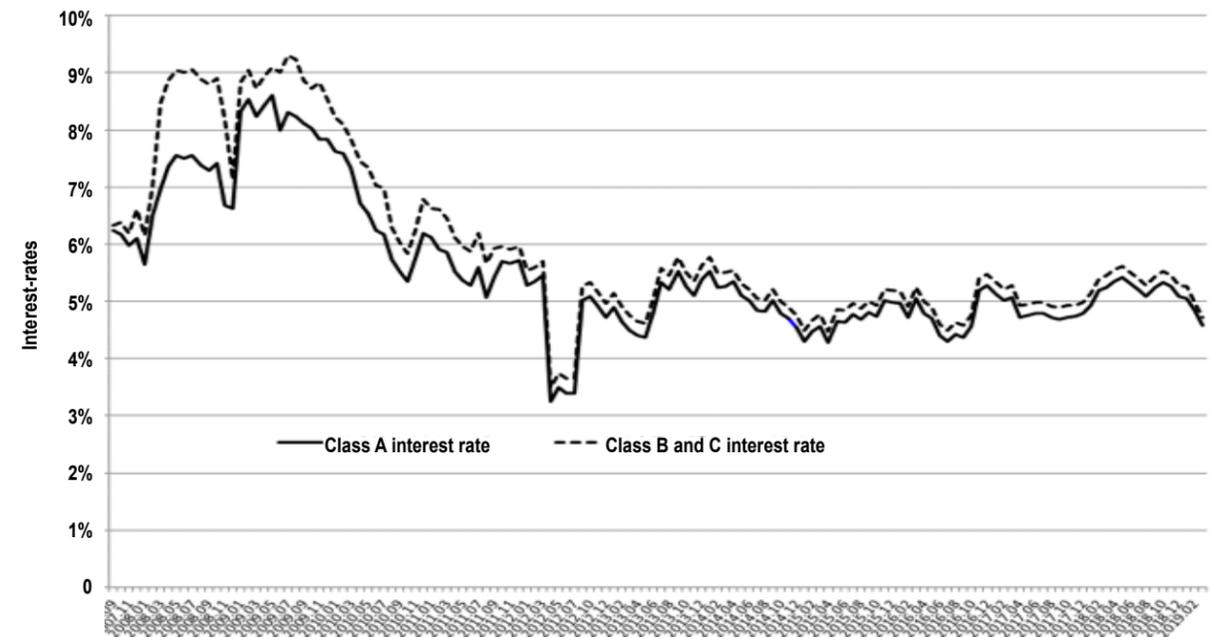
Exhibit 20 and Exhibit 21 depict interest-rate spreads relative to different benchmarks. Exhibit 20 shows the spread between Class A interest rates on full-service hotels (as well as Class B and C rates) over the ten-year Treasury bond. On this metric, interest

the American Council of Life Insurers (ACLI). The ACLI interest rate reflects what life insurers are charging for institutional sized hotel deals. Our EVA calculation is based on property specific cap rates and the associated financing terms. The CWSG interest rate is based on deals that CWSG has brokered as well as their survey of rates on hotel deals. The deals are not necessarily similar to deals that are reported by ACLI.

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

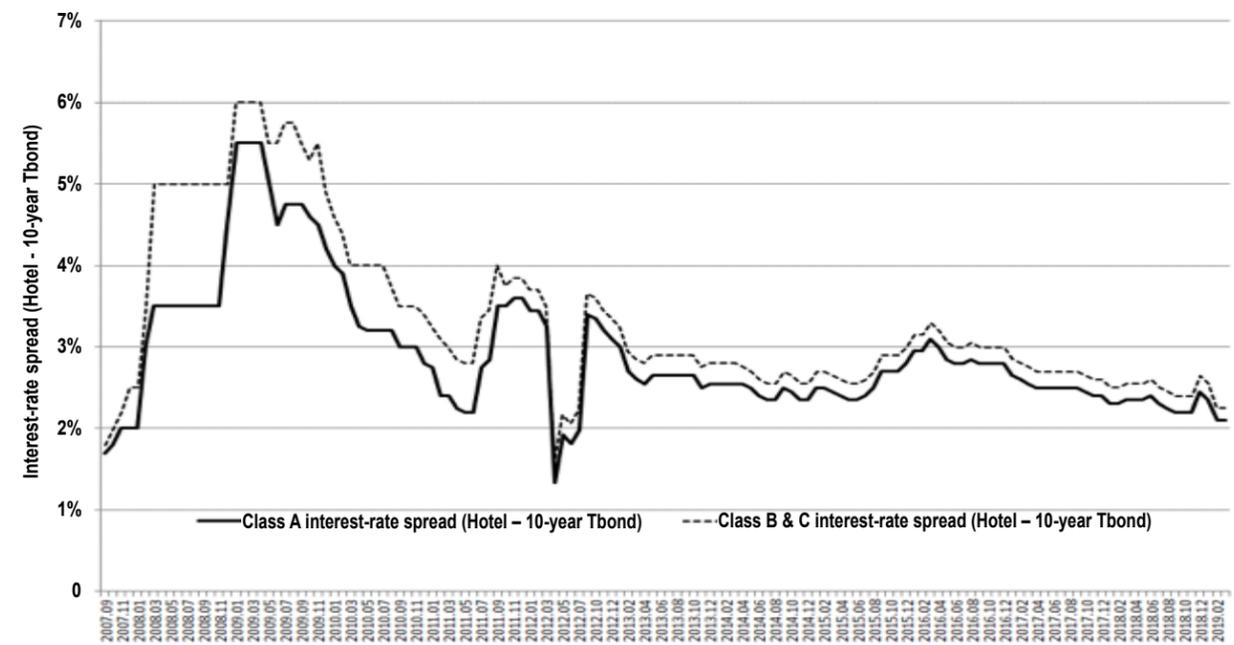
⁴ The interest rate reported by Cushman Wakefield Sonnenblick Goldman (CWSG) differs from the interest rate used to calculate our EVA metric which is based on the interest rate reported by

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



Source: Cushman Wakefield Sonnenblick Goldman

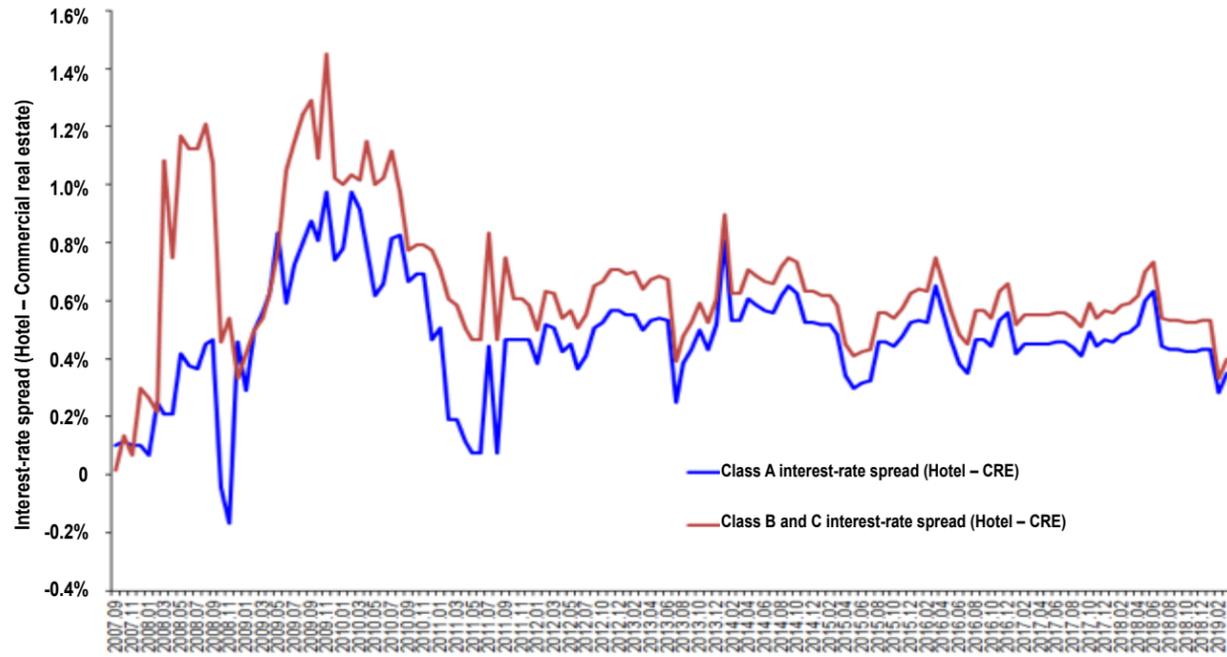
Interest-rate spreads of hotels versus U.S. Treasury ten-year bonds



Source: Cushman Wakefield Sonnenblick Goldman

EXHIBIT 21

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



Source: Cushman Wakefield Sonnenblick Goldman

rate spreads fell 35 basis points for Class A hotels and also dropped 40 bps for Class B and C hotels in the current quarter, relative to the prior quarter (Class A: 2.10 percent versus a 2.45-percent spread; Class B: 2.25 percent versus a 2.65-percent spread). The fall in interest rate spreads signals that lenders view hotels as relatively less risky in comparison to our last report. As such, lenders' compensation for risk associated with hotel loans has decreased. Exhibit 21 shows the spread between the interest rate on full-service Class A hotels (and B and C properties) over the interest rate corresponding to non-hotel commercial real estate. These differential interest rates represent the hotel real estate premium.⁵ The monthly hotel real estate premiums for both higher quality (Class A) and lower quality (Class B and C) hotels have dipped slightly relative to the prior quarter. For Class A properties,

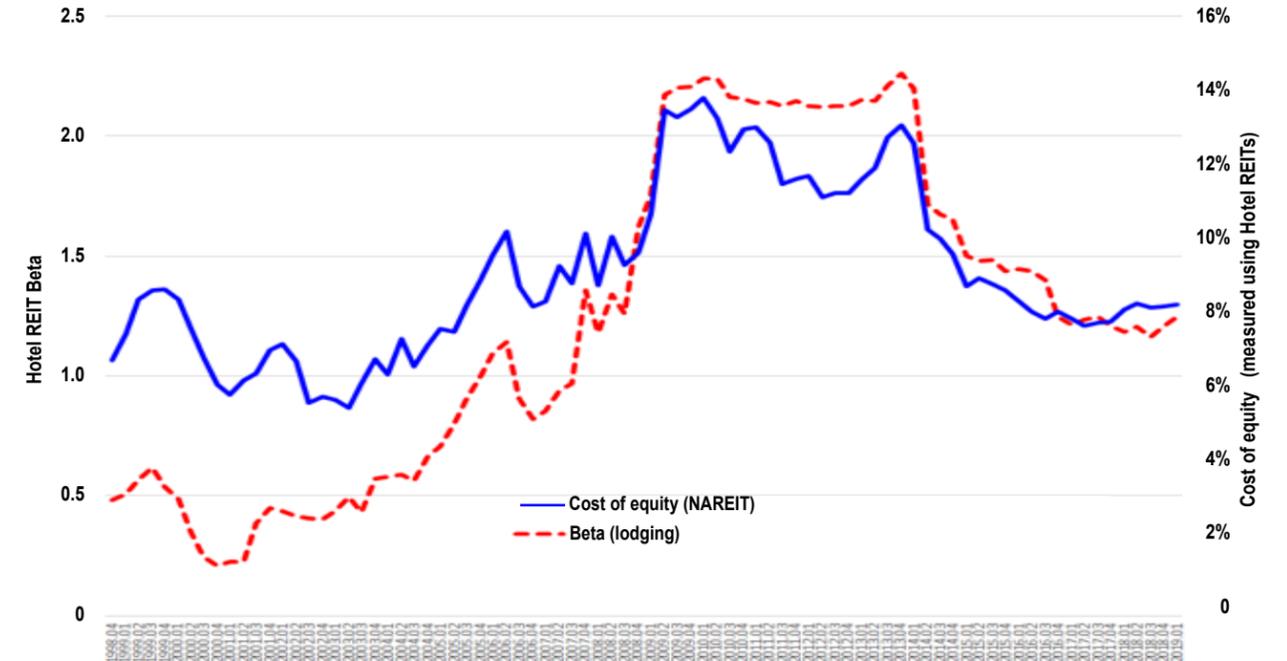
⁵ The interest rate on hotel properties is generally higher than that for apartment, industrial, office, and retail properties in part because hotels' cash flow is commonly more volatile than that of other commercial properties, namely office, retail, industrial and apartments.

the hotel real estate premium averaged 0.35 percent in the current quarter (2019Q1) compared to 0.43 percent in the previous quarter (2018Q4). For Class B hotels the premium dipped from 53 percent to 40 percent in that time period. This is a signal that the perceived default risk for hotel properties relative to other commercial real estate has declined imperceptibly this quarter compared to the previous quarter (that is, a drop of 8 bps for Class A hotels and a reduction of 13 bps for Class B properties).

Cost of equity financing remained relatively constant, albeit with a slight, imperceptible increase, although the riskiness of hotels relative to other types of commercial real estate has fallen. The cost of using equity financing for hotels as measured using the Capital Asset Pricing Model (CAPM) on hotel REIT returns, as shown in Exhibit 22, increased imperceptibly this quarter. The cost of using equity funds stood at 8.32 percent for 2019Q1 compared to 8.26 percent in the previous quarter. The cost of borrowing equity capital has thus remained relatively stable. In terms of total risk (systematic risk + risk that is unique to hotel

EXHIBIT 22

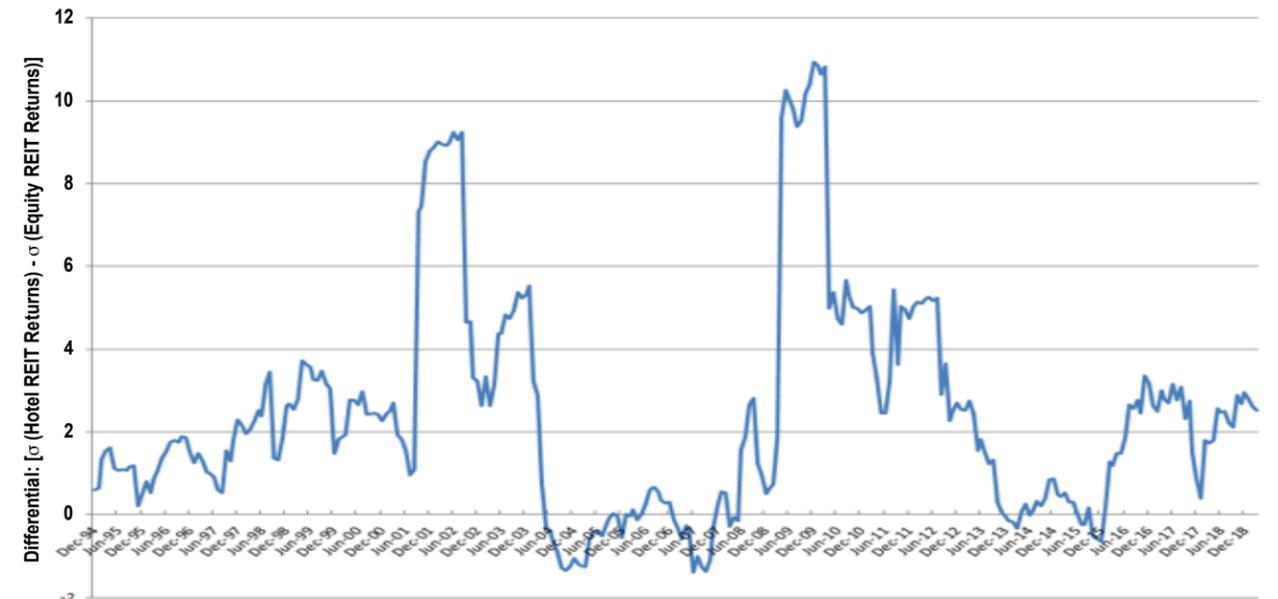
Cost of equity financing using the Capital Asset Pricing Model and hotel REITs



Sources: Cornell Center for Real Estate and Finance, NAREIT

EXHIBIT 23

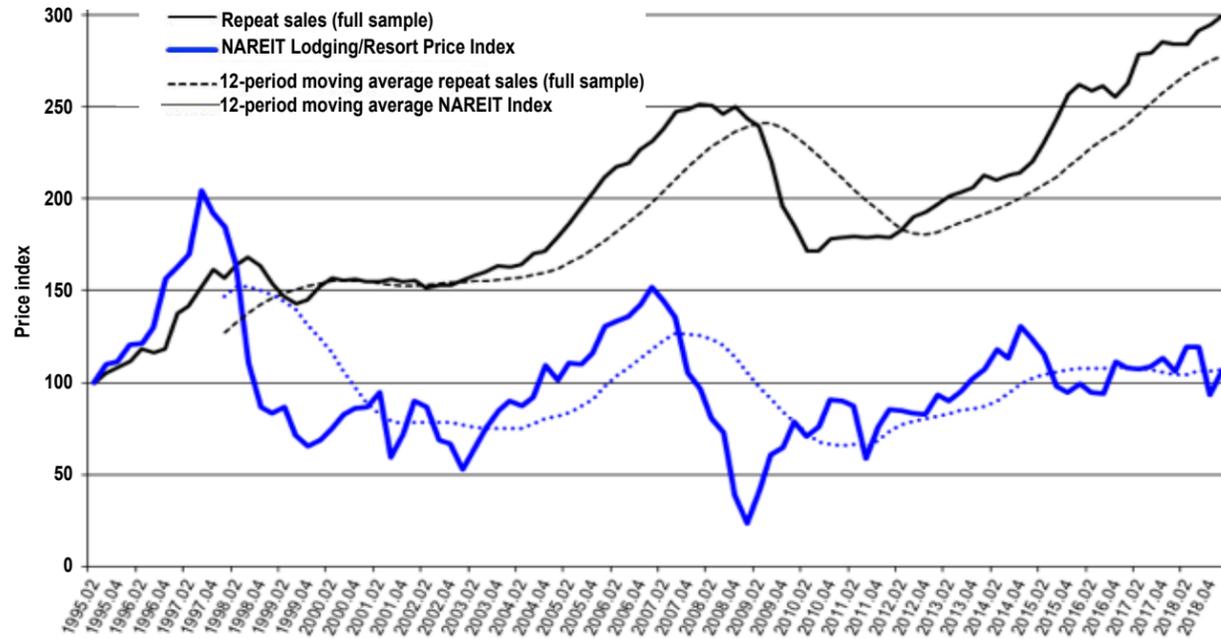
Risk differential between hotel REITs and equity REITs



Sources: Cornell Center for Real Estate and Finance, NAREIT

EXHIBIT 24

Hotel repeat sales index versus NAREIT lodging/resort price index



Sources: Cornell Center for Real Estate and Finance, NAREIT

REITs), Exhibit 23 shows that the total risk of hotel REITs fell this past quarter relative to the total risk of equity REITs as a whole.⁶ This is consistent with the slight reduction of perceived risk with regard to hotels shown in Exhibit 21. Expect lower borrowing costs for hotel loans to ensue given these metrics.

Expect the price of large hotels and small hotels to fall, based on our reading of the tea leaves. Exhibit 24 compares the performance of the repeat sales index relative to the NAREIT Lodging/Resort Price Index. The repeat sales index tends to lag the NAREIT index by at least one quarter or more. This is consistent with studies which find that securitized real estate is leading indicator of underlying real estate performance, since the stock market is forward looking or efficient. Looking ahead, the NAREIT lodging index rose 14 percent this quarter compared to a drop of 22 percent in the prior quarter, while it also increased 5.5 percent year-over-year. The moving average NAREIT Lodging/Resort trendline has started to trend up, signaling a positive price momentum.

⁶ We calculate the total risk for hotel REITs using a 12 month rolling window of monthly return on hotel REITs.

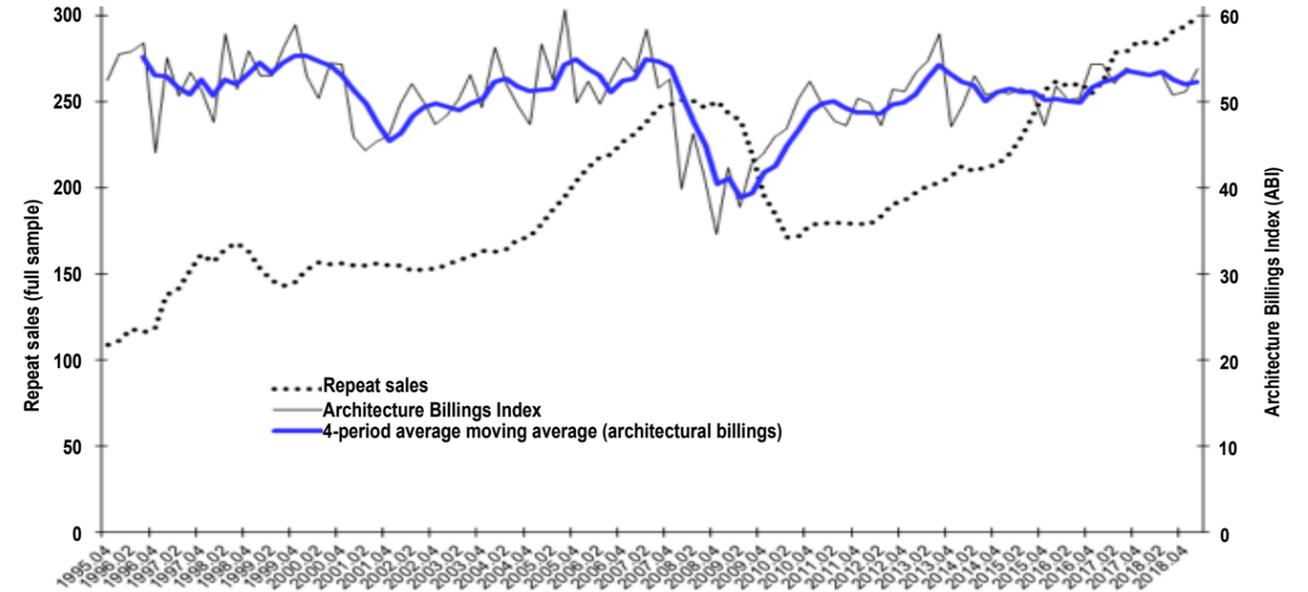
The architecture billings index (ABI) for commercial and industrial property, which represents another forward-looking metric, increased this quarter from the previous quarter, as shown in Exhibit 25 (53.9 versus 51.2).⁷ The ABI metric provides confirmatory evidence that we should expect increasing price momentum. The National Association of Purchasing Managers (NAPM) index shown in Exhibit 26, which is an indicator of anticipated business confidence and thus business traveler demand, decreased to 6.7 percent year over year (with a 2.2 percent rise on a quarter-over-quarter basis), compared to a 9.4-percent drop in the prior year-over-year period (2017Q4-2018Q4).⁸

⁷ As of the time of this writing, only the February 2019 AIA Billings Index has been reported. See: www.aia.org/practicing/economics/aia076265

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

EXHIBIT 25

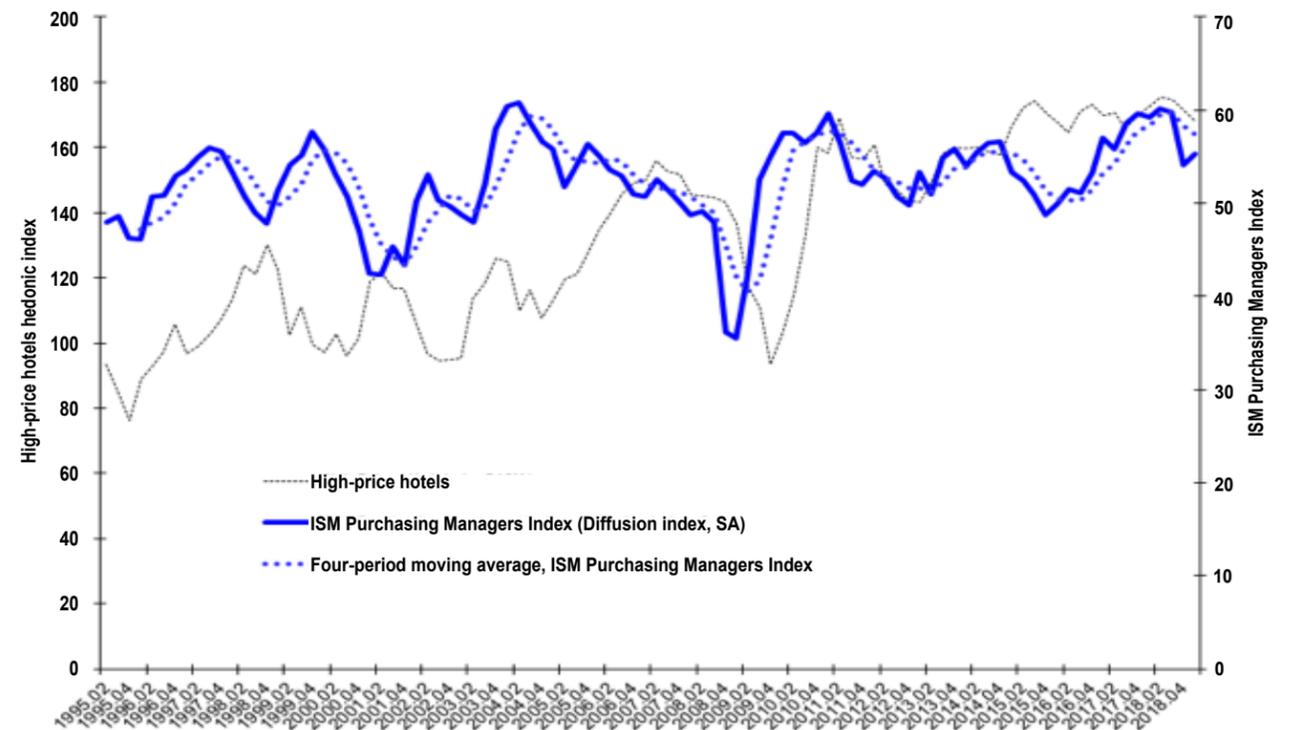
Hotel repeat sales index versus architecture billings index



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

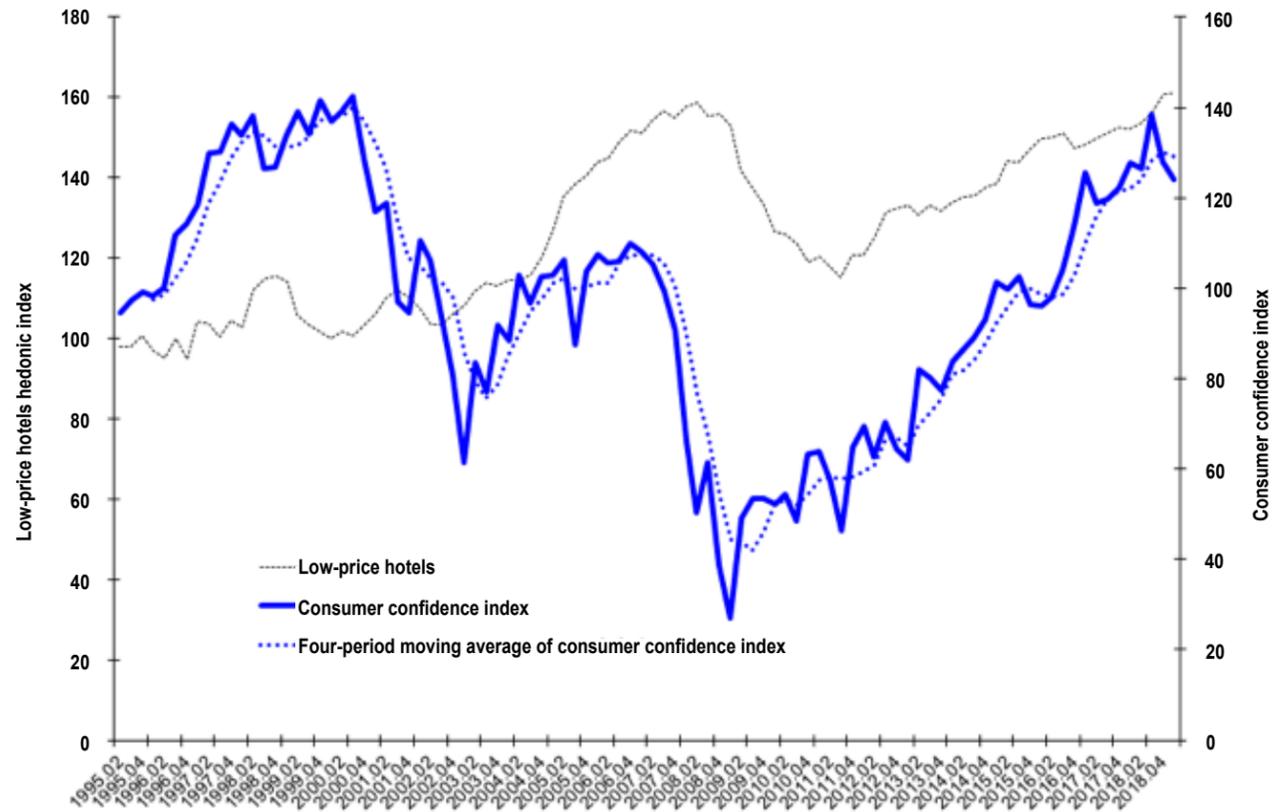
EXHIBIT 26

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



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

Consumer confidence index and low-price hotel index



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

Based on the moving average trendline for NAPM index, we expect the price of large hotels to continue to decline on a year-over-year basis. The Consumer Confidence Index from the Conference Board, which we use as a proxy for anticipated consumer demand for leisure travel and a leading indicator of the hedonic index for low priced hotels, graphed in Exhibit 27, fell almost 3 percent year over year (and 3 percent quarter over quarter), reversing the positive trend from the previous period (which saw a 5-percent increase). We expect the price momentum for small hotels to decline in the next quarter. ■

HOTEL VALUATION MODEL (HOTVAL) HAS BEEN UPDATED

We have updated our hotel valuation regression model to include the transaction data used to generate this report. We provide this user friendly hotel valuation model in an Excel spreadsheet entitled HOTVAL Toolkit as a complement to this report which is available for download from our [CREF website](#).

Appendix

SUP: The Standardized Unexpected Price Metric

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

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

where SUE_Q = quarter Q standardized unexpected earnings,

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

m_Q = quarter Q consensus earnings per share forecasted by analysts in quarter Q-1, and

s_Q = quarter Q standard deviation of earnings estimates.

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

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

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

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

$$\text{Standard Deviation } (\sigma) = 18.99$$

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

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

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Daniel Quan, Arthur Adler '78 and Karen Newman Adler '78 Academic Director

Cristina Carter, Assistant Program Manager

Glenn Withiam, Contributing Editor

Kate Walsh, Dean, E.M. Statler Professor, School of Hotel Administration

Center for Real Estate and Finance
Cornell University

[Cornell SC Johnson College of Business](#)

School of Hotel Administration

Statler Hall

Ithaca, NY 14853

607-255-6025

www.cref.cornell.edu

Robert Springer '99

Executive Vice President, Chief Investment Officer
Sunstone Hotel Investors

Alan Tantleff '87

Senior Managing Director—Corporate Finance/Restructuring Practice Leader, Hospitality Gaming and Leisure
FTI Consulting

Dan Unger '97

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