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### First Quarter 2017: Status Quo Maintained

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## First Quarter 2017: Status Quo Maintained

### Abstract

Our Standardized Unexpected Price (SUP) metric indicates that the price momentum of large and small hotels continues to revert to the mean, with the cost of debt financing for hotels declining slightly. However, we expect higher hotel financing costs going forward. Our early warning indicators suggest that prices of large hotels and small hotels should rise during the second quarter of 2017. This is report number 22 of the index series.

**Supplemental File: Hotel Valuation Model (HOTVAL)** 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 <http://scholarship.sha.cornell.edu/creftools/1/>

### Keywords

Cornell Hotel Indices, commercial real estate, hotel valuation, Standardized Unexpected Price (SUP), debt financing

### Disciplines

Real Estate

### Comments

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## Cornell Hotel Indices: First Quarter 2017:

# *Status Quo Maintained*

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

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### EXECUTIVE SUMMARY

**O**ur Standardized Unexpected Price (SUP) metric indicates that the price momentum of large and small hotels continues to revert to the mean, with the cost of debt financing for hotels declining slightly. However, we expect higher hotel financing costs going forward. Our early warning indicators suggest that prices of large hotels and small hotels should rise during the second quarter of 2017. This is report number 22 of the index series.

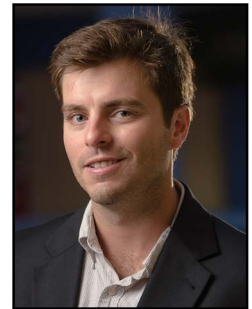
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## ABOUT THE AUTHORS

**Crocker H. Liu** is a professor of real estate at the School of Hotel Administration at Cornell where he holds the Robert A. Beck Professor of Hospitality Financial Management. He previously taught at New York University's Stern School of Business (1988-2006) and at Arizona State University's W.P. Carey School of Business (2006-2009) where he held the McCord Chair. His research interests are focused on issues in real estate finance, particularly topics related to agency, corporate governance, organizational forms, market efficiency and valuation. Liu's research has been published in 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*, *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 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 assistant 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*, *Journal of Applied Econometrics*, 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. 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, 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. 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 is also a member of numerous industry organizations and a supporter of academic studies. White is a

graduate of the McIntire School of Commerce at the University of Virginia. His research has been published in the *Journal of Real Estate Finance and Economics*.

### Acknowledgments

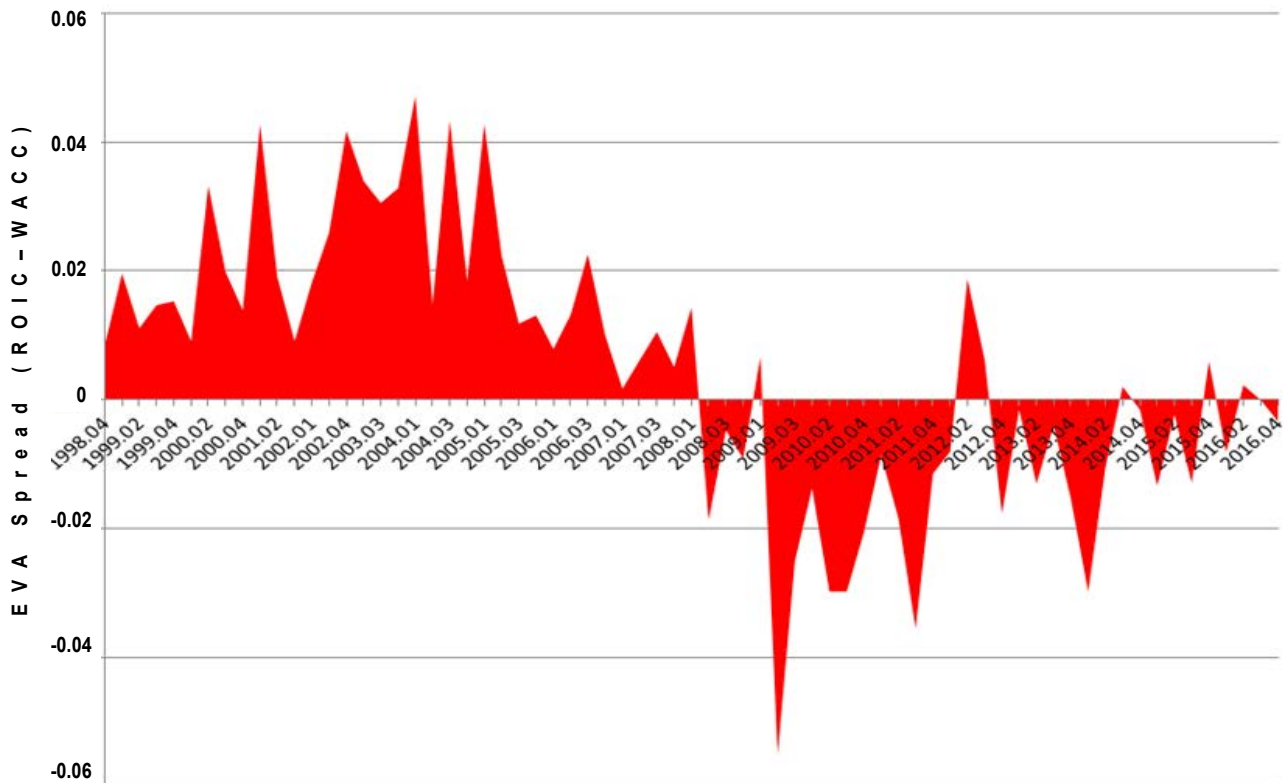
We wish to thank Glenn Withiam for copy editing this paper.

### Disclaimer

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EXHIBIT 1

Economic value added (EVA) for hotels

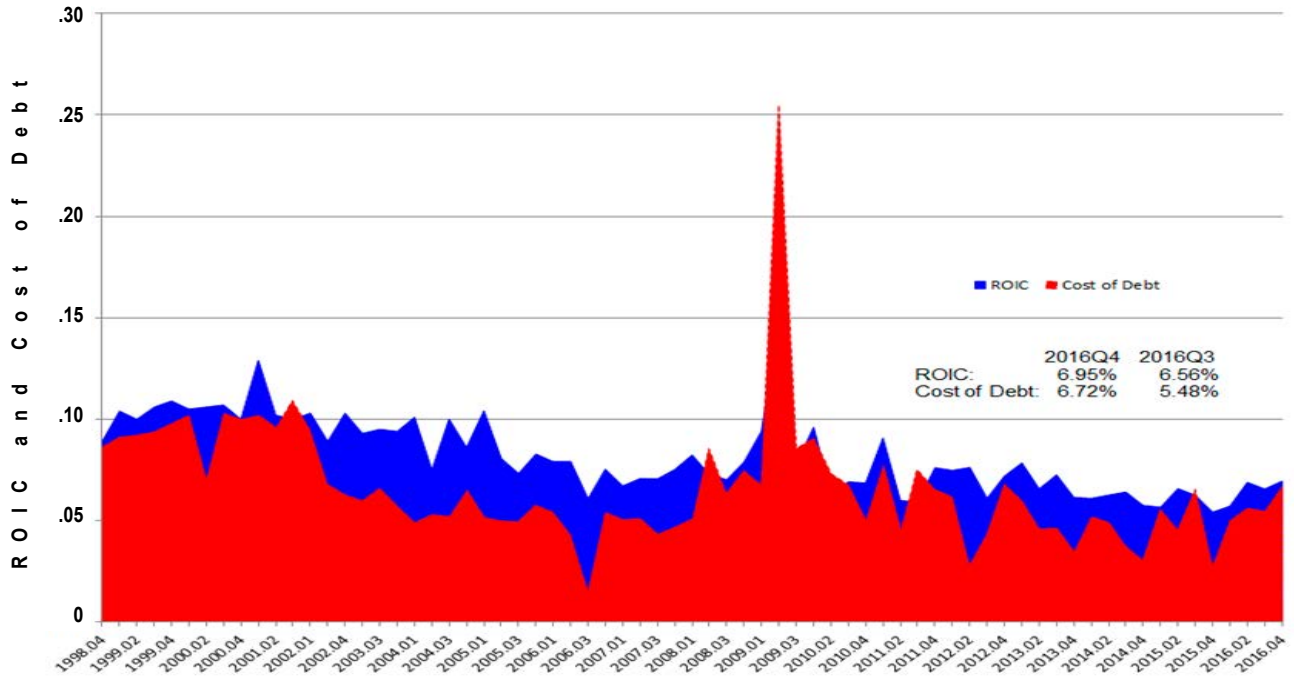


Sources: ACLI, Cornell Center for Real Estate and Finance, NAREIT, Federal Reserve

Analysis of Indices through Q1, 2017

**H**otel investment based on operating performance is still in the black (breakeven). Our Economic Value Added (EVA) indicator continues to remain in the black, at around zero (see Exhibit 1). Although the cost of debt financing has risen from 5.48 percent in 2016Q3 to 6.72 percent in 2016Q4, it is still 23 basis points lower than the hotel cap rate reported by the ACLI, which was at 6.95 percent (that compares to 108 bps lower in the prior quarter). Thus, *positive leverage* continues to be the norm for hotel deals, as suggested in Exhibit 2, although the benefits from debt financing have compressed from the prior quarter. In summary, these two exhibits signal that the market continues to head into positive territory.

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 Real Capital Analytics (RCA) commercial real estate databases. For the repeat-sale index, we compare the sales and resales of the same hotel over time. All three measures provide a more accurate representation of the current hotel real estate market conditions than does reporting 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 (CREF). In this fourth edition, we present updates and revisions to our three hotel indices along with commentary and supporting evidence from the real estate market.

Hotel transaction volume for large and small hotels declines with the median price for both types of hotels—rising year over year and also quarter over quarter. The total volume of all 256 hotel transactions (both large hotels and small hotels combined) was lower than the previous quarter (266 transactions, as reported in Exhibit 3) continuing the downward trend that started in the second quarter of 2016. The total hotel transaction volume is at the same level as the first quarter of 2015. On a year-over-year basis (2016Q1 to 2017Q1), both the volume of hotel transactions and the median price of hotels declined (transaction volume by 12.9 percent, and median price by 6 percent), continuing the trend in the previous period. While the volume of transactions also declined year over year for large (-23.3%) and small (-8.7%) hotels, the median sale price for both types of hotels rose (12.1% for large hotels versus 7.9% for small hotels).<sup>1</sup> A similar situation exists on a quarter-over-quarter basis. Exhibits 4 and 5 show these year-over-year trends in the number of transactions for large hotels and small hotels.

<sup>1</sup> The number of transactions is limited to the sales that are included in the hedonic index. As such, this should not be construed as being the total market activity.

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

Year	Quarter	Full Sample			Big				Small		
		Median Sale Price	Observations		Number of Transactions (High Priced Hotels)	Median Sale Price (High Priced Hotels)	% Total Sales		Number of Transactions (Low Priced Hotels)	Median Sale Price (Low Priced Hotels)	% Total Sales
1995	1	\$2,357,500	20		-			1995.01	20	\$2,357,500	100.00%
1995	2	\$3,150,000	29	1995.02	6	\$15,712,500	20.69%	1995.02	23	\$2,670,000	79.31%
1995	3	\$2,562,500	44	1995.03	4	\$12,400,000	9.09%	1995.03	40	\$2,378,000	90.91%
1995	4	\$3,400,000	41	1995.04	10	\$27,750,000	24.39%	1995.04	31	\$2,625,000	75.61%
1996	1	\$2,500,000	39	1996.01	8	\$14,475,000	20.51%	1996.01	31	\$1,700,000	79.49%
1996	2	\$2,925,000	43	1996.02	12	\$29,150,000	27.91%	1996.02	31	\$2,500,000	72.09%
1996	3	\$6,500,000	57	1996.03	20	\$17,740,000	35.09%	1996.03	37	\$3,000,000	64.91%
1996	4	\$2,735,000	58	1996.04	17	\$19,000,000	29.31%	1996.04	41	\$2,200,000	70.69%
1997	1	\$5,053,250	74	1997.01	23	\$16,635,500	31.08%	1997.01	51	\$3,500,000	68.92%
1997	2	\$2,862,500	72	1997.02	17	\$17,750,000	23.61%	1997.02	55	\$2,150,000	76.39%
1997	3	\$3,437,500	90	1997.03	21	\$19,000,000	23.33%	1997.03	69	\$2,400,000	76.67%
1997	4	\$4,330,950	78	1997.04	27	\$17,000,000	34.62%	1997.04	51	\$2,300,000	65.38%
1998	1	\$4,698,800	92	1998.01	31	\$20,000,000	33.70%	1998.01	61	\$3,100,000	66.30%
1998	2	\$3,630,000	96	1998.02	21	\$23,765,000	21.88%	1998.02	75	\$3,000,000	78.13%
1998	3	\$2,961,059	92	1998.03	12	\$16,740,000	13.04%	1998.03	80	\$2,690,550	86.96%
1998	4	\$2,550,000	84	1998.04	15	\$35,000,000	17.86%	1998.04	69	\$2,375,000	82.14%
1999	1	\$2,425,000	88	1999.01	10	\$24,638,095	11.36%	1999.01	78	\$2,125,000	88.64%
1999	2	\$2,100,000	95	1999.02	5	\$67,000,000	5.26%	1999.02	90	\$1,950,000	94.74%
1999	3	\$2,500,000	99	1999.03	10	\$20,711,100	10.10%	1999.03	89	\$2,130,000	89.90%
1999	4	\$2,440,000	87	1999.04	14	\$18,190,000	16.09%	1999.04	73	\$2,090,000	83.91%
2000	1	\$2,400,000	110	2000.01	9	\$23,500,000	8.18%	2000.01	101	\$2,300,000	91.82%
2000	2	\$2,450,000	88	2000.02	9	\$14,500,000	10.23%	2000.02	79	\$2,275,000	89.77%
2000	3	\$2,600,000	95	2000.03	16	\$20,346,875	16.84%	2000.03	79	\$2,250,000	83.16%
2000	4	\$2,475,000	101	2000.04	13	\$20,000,000	12.87%	2000.04	88	\$2,325,000	87.13%
2001	1	\$2,970,650	104	2001.01	18	\$28,437,500	17.31%	2001.01	86	\$2,422,500	82.69%
2001	2	\$2,800,000	110	2001.02	12	\$23,795,000	10.91%	2001.02	98	\$2,687,150	89.09%
2001	3	\$2,700,000	87	2001.03	6	\$16,000,000	6.90%	2001.03	81	\$2,500,000	93.10%
2001	4	\$2,400,000	73	2001.04	5	\$20,500,000	6.85%	2001.04	68	\$2,300,000	93.15%
2002	1	\$2,125,000	70	2002.01	5	\$11,518,052	7.14%	2002.01	65	\$2,000,000	92.86%
2002	2	\$2,400,000	106	2002.02	10	\$18,125,000	9.43%	2002.02	96	\$2,287,500	90.57%
2002	3	\$2,355,400	81	2002.03	5	\$12,750,000	6.17%	2002.03	76	\$2,237,500	93.83%
2002	4	\$2,907,500	100	2002.04	15	\$24,000,000	15.00%	2002.04	85	\$2,600,000	85.00%
2003	1	\$2,530,000	94	2003.01	9	\$13,000,000	9.57%	2003.01	85	\$2,425,000	90.43%
2003	2	\$2,750,000	110	2003.02	9	\$19,000,000	8.18%	2003.02	101	\$2,519,000	91.82%
2003	3	\$3,334,000	142	2003.03	24	\$18,500,000	16.90%	2003.03	118	\$2,637,500	83.10%
2003	4	\$2,600,000	149	2003.04	18	\$16,375,000	12.08%	2003.04	131	\$2,425,000	87.92%
2004	1	\$2,925,000	166	2004.01	23	\$23,050,000	13.86%	2004.01	143	\$2,550,000	86.14%
2004	2	\$2,700,000	195	2004.02	27	\$16,700,000	13.85%	2004.02	168	\$2,475,000	86.15%
2004	3	\$3,491,122	216	2004.03	44	\$19,675,000	20.37%	2004.03	172	\$2,630,000	79.63%
2004	4	\$4,000,000	177	2004.04	47	\$20,475,000	26.55%	2004.04	130	\$3,085,500	73.45%

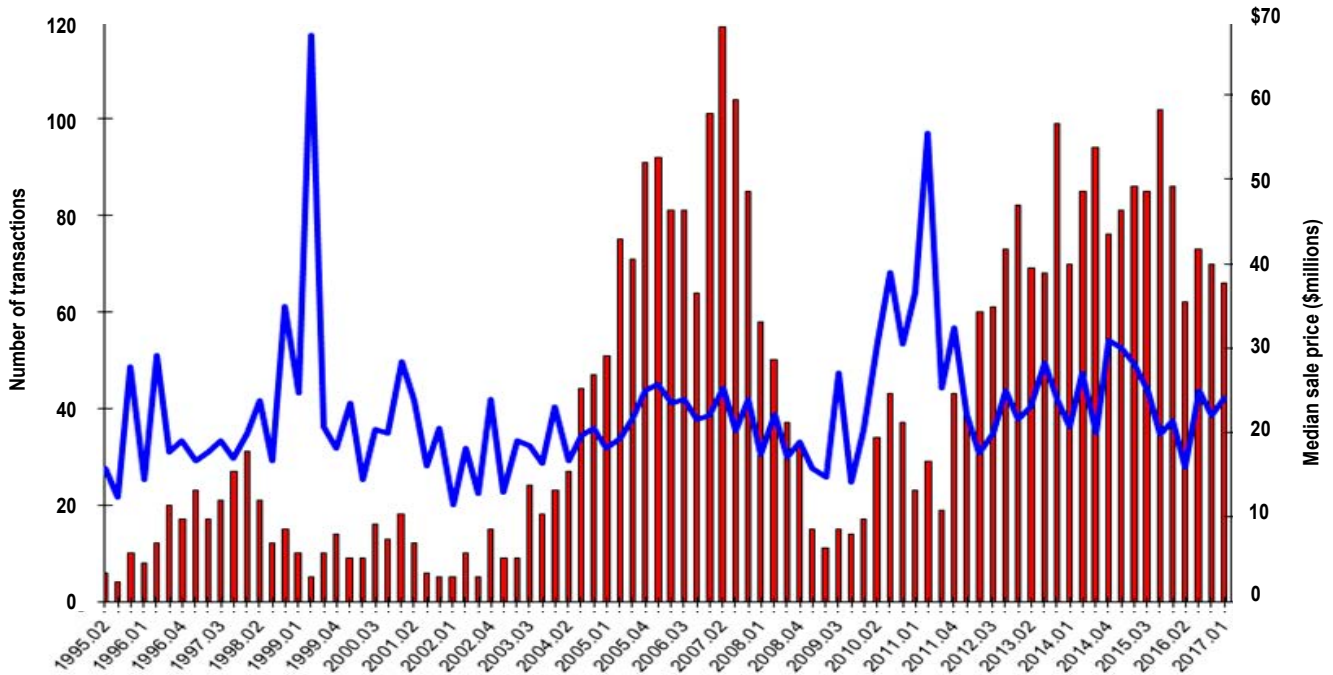
## Transaction volume (obs) and median sale price (part 2: 2005–present)

Year	Quarter	Full Sample			Big				Small		
		Median Sale Price	Observations		Number of Transactions (High Priced Hotels)	Median Sale Price (High Priced Hotels)	% Total Sales		Number of Transactions (Low Priced Hotels)	Median Sale Price (Low Priced Hotels)	% Total Sales
2005	1	\$4,330,000	231	2005.01	51	\$18,200,000	22.08%	2005.01	180	\$3,350,000	77.92%
2005	2	\$4,566,250	316	2005.02	75	\$19,316,925	23.73%	2005.02	241	\$3,300,000	76.27%
2005	3	\$4,150,000	273	2005.03	71	\$21,750,000	26.01%	2005.03	202	\$3,100,000	73.99%
2005	4	\$4,425,000	300	2005.04	91	\$25,000,000	30.33%	2005.04	209	\$3,170,000	69.67%
2006	1	\$5,227,500	302	2006.01	92	\$25,750,000	30.46%	2006.01	210	\$3,825,000	69.54%
2006	2	\$4,675,000	314	2006.02	81	\$23,500,000	25.80%	2006.02	233	\$3,500,000	74.20%
2006	3	\$5,000,000	285	2006.03	81	\$24,000,000	28.42%	2006.03	204	\$3,657,500	71.58%
2006	4	\$4,587,500	248	2006.04	64	\$21,600,000	25.81%	2006.04	184	\$3,550,000	74.19%
2007	1	\$6,155,805	286	2007.01	101	\$22,000,000	35.31%	2007.01	185	\$3,789,500	64.69%
2007	2	\$5,650,000	385	2007.02	119	\$25,250,000	30.91%	2007.02	266	\$3,760,000	69.09%
2007	3	\$5,450,000	330	2007.03	104	\$20,175,081	31.52%	2007.03	226	\$3,911,750	68.48%
2007	4	\$4,680,000	249	2007.04	85	\$24,000,000	34.14%	2007.04	164	\$3,184,000	65.86%
2008	1	\$5,000,000	255	2008.01	58	\$17,420,000	22.75%	2008.01	197	\$4,000,000	77.25%
2008	2	\$5,062,900	228	2008.02	50	\$22,150,000	21.93%	2008.02	178	\$3,890,000	78.07%
2008	3	\$4,190,500	172	2008.03	37	\$17,133,333	21.51%	2008.03	135	\$3,350,000	78.49%
2008	4	\$4,050,000	159	2008.04	32	\$18,850,000	20.13%	2008.04	127	\$3,500,000	79.87%
2009	1	\$4,150,000	81	2009.01	15	\$15,800,000	18.52%	2009.01	66	\$3,600,000	81.48%
2009	2	\$3,090,231	86	2009.02	11	\$14,722,500	12.79%	2009.02	75	\$2,864,310	87.21%
2009	3	\$3,400,000	90	2009.03	15	\$27,000,000	16.67%	2009.03	75	\$3,000,000	83.33%
2009	4	\$3,562,500	84	2009.04	14	\$14,100,000	16.67%	2009.04	70	\$3,010,250	83.33%
2010	1	\$3,900,000	89	2010.01	17	\$20,325,000	19.10%	2010.01	72	\$2,912,500	80.90%
2010	2	\$3,700,000	138	2010.02	34	\$30,833,449	24.64%	2010.02	104	\$3,000,000	75.36%
2010	3	\$4,912,500	120	2010.03	43	\$39,000,000	35.83%	2010.03	77	\$2,850,000	64.17%
2010	4	\$3,988,800	100	2010.04	37	\$30,500,000	37.00%	2010.04	63	\$2,440,000	63.00%
2011	1	\$4,200,000	85	2011.01	23	\$36,600,000	27.06%	2011.01	62	\$2,797,750	72.94%
2011	2	\$4,150,000	97	2011.02	29	\$55,500,000	29.90%	2011.02	68	\$2,250,000	70.10%
2011	3	\$3,350,000	73	2011.03	19	\$25,250,000	26.03%	2011.03	54	\$2,800,000	73.97%
2011	4	\$5,000,000	157	2011.04	43	\$32,400,000	27.39%	2011.04	114	\$3,229,250	72.61%
2012	1	\$5,216,981	132	2012.01	39	\$22,100,000	29.55%	2012.01	93	\$3,275,000	70.45%
2012	2	\$4,000,000	209	2012.02	60	\$17,600,000	28.71%	2012.02	149	\$2,809,000	71.29%
2012	3	\$7,000,000	169	2012.03	61	\$20,000,000	36.09%	2012.03	108	\$3,202,000	63.91%
2012	4	\$5,622,500	207	2012.04	73	\$24,933,226	35.27%	2012.04	134	\$3,150,000	64.73%
2013	1	\$5,999,996	240	2013.01	82	\$21,502,126	34.17%	2013.01	158	\$3,000,000	65.83%
2013	2	\$4,700,000	217	2013.02	69	\$23,000,000	31.80%	2013.02	148	\$2,525,000	68.20%
2013	3	\$5,250,000	247	2013.03	68	\$28,200,000	27.53%	2013.03	179	\$3,600,000	72.47%
2013	4	\$4,735,000	318	2013.04	99	\$24,000,000	31.13%	2013.04	219	\$2,800,000	68.87%
2014	1	\$5,600,000	229	2014.01	70	\$20,750,000	30.57%	2014.01	159	\$3,250,000	69.43%
2014	2	\$4,300,000	322	2014.02	85	\$27,000,000	26.40%	2014.02	237	\$2,850,000	73.60%
2014	3	\$5,500,000	351	2014.03	94	\$20,000,000	26.78%	2014.03	257	\$3,450,000	73.22%
2014	4	\$4,500,000	313	2014.04	76	\$30,920,684	24.28%	2014.04	237	\$3,175,000	75.72%
2015	1	\$5,752,500	256	2015.01	81	\$30,000,000	31.64%	2015.01	175	\$3,162,100	68.36%
2015	2	\$6,300,000	269	2015.02	86	\$28,250,000	31.97%	2015.02	183	\$3,525,000	68.03%
2015	3	\$5,050,000	300	2015.03	85	\$25,000,000	28.33%	2015.03	215	\$3,025,000	71.67%
2015	4	\$6,700,000	293	2015.04	102	\$19,750,000	34.81%	2015.04	191	\$3,300,000	65.19%
2016	1	\$5,608,750	294	2016.01	86	\$21,437,500	29.25%	2016.01	208	\$3,415,000	70.75%
2016	2	\$4,100,000	324	2016.02	62	\$15,950,000	19.14%	2016.02	262	\$3,250,000	80.86%
2016	3	\$4,825,000	285	2016.03	73	\$25,000,000	25.61%	2016.03	212	\$3,225,000	74.39%
2016	4	\$4,200,000	266	2016.04	70	\$22,000,000	26.32%	2016.04	196	\$2,887,500	73.68%
2017	1	\$5,275,000	256	2017.01	66	\$24,030,750	25.78%	2017.01	190	\$3,684,500	74.22%



EXHIBIT 4

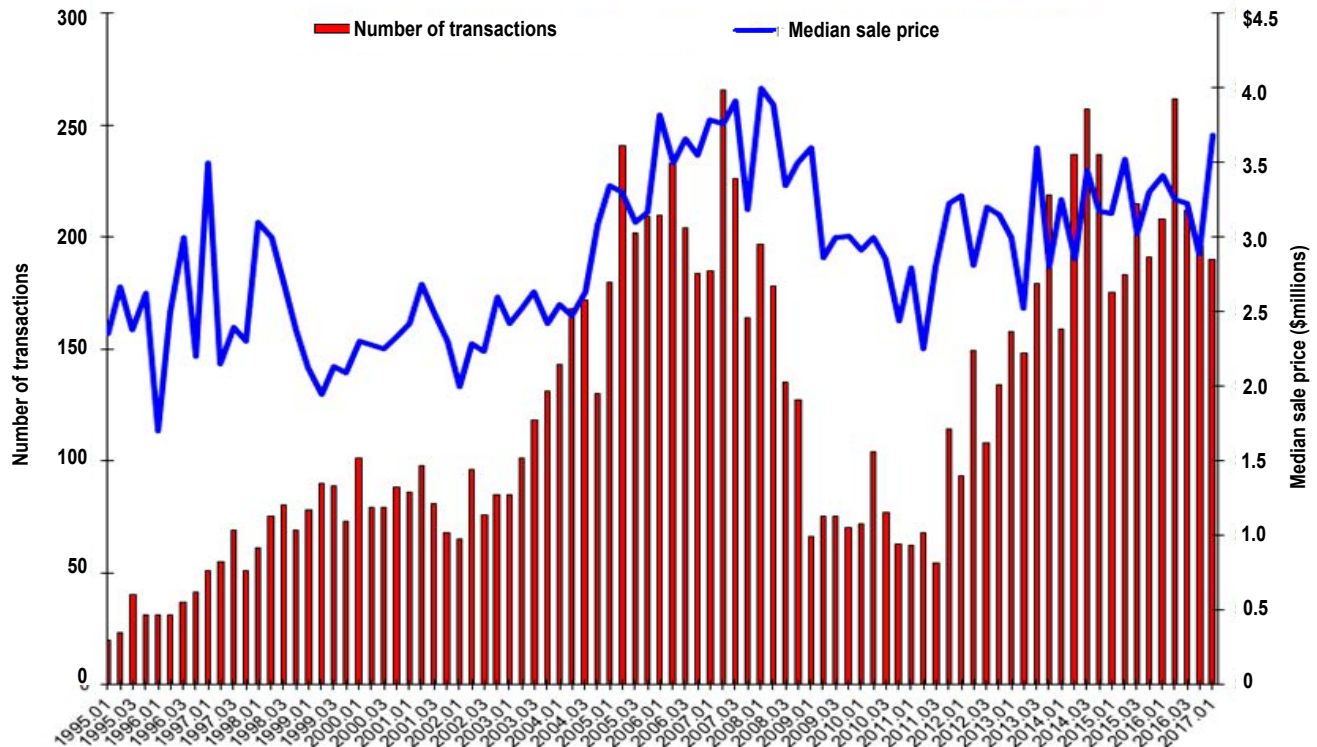
Median sale price and number of sales for high-price hotels (sale prices of \$10 million or more)



Sources: CoStar, Real Capital Analytics

EXHIBIT 5

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

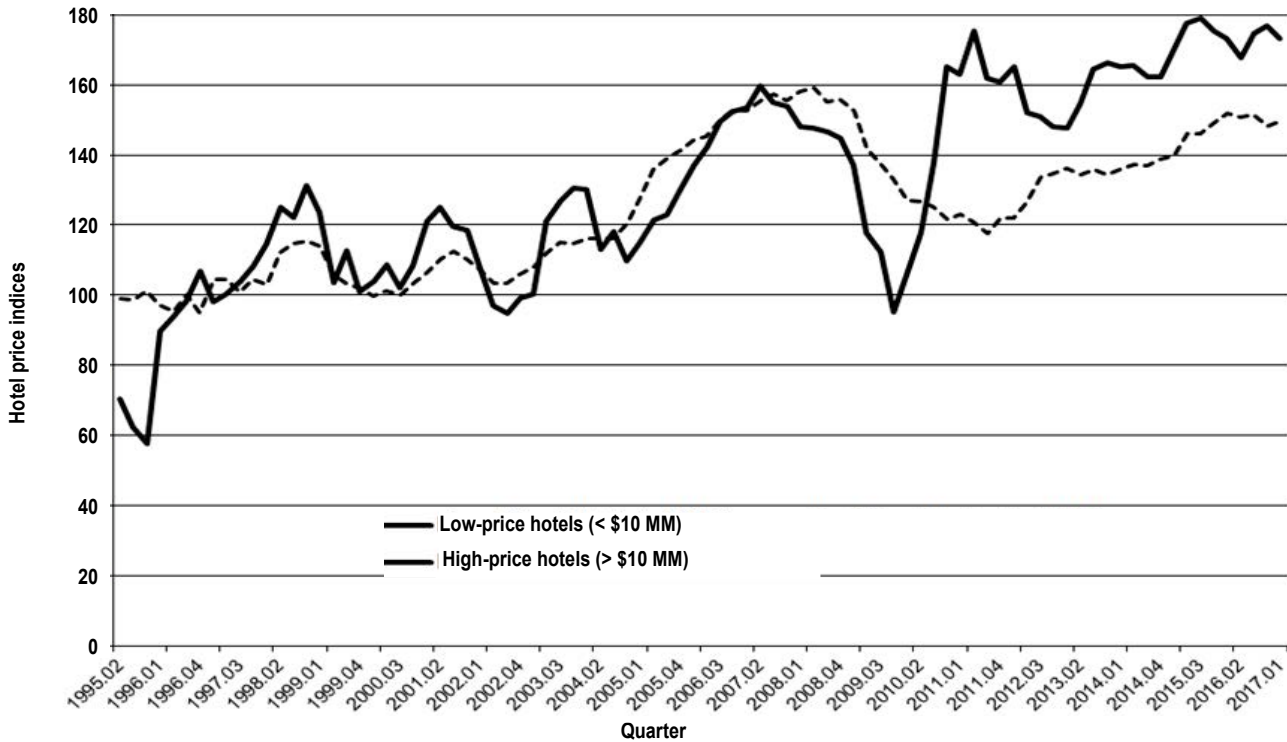


Sources: CoStar, Real Capital Analytics

## Hotel indices through 2017, quarter 1

YrQtr	Index Value				YrQtr	Index Value			
	Hedonic	Hedonic	RSI	RSI		Hedonic	Hedonic	RSI	RSI
	Low Priced Hotels (<\$10M)	High Priced Hotels (>=\$10M)	Repeat Sales Index	Index Value Repeat Sales		Low Priced Hotels (<\$10M)	High Priced Hotels (>=\$10M)	Repeat Sales Index	Index Value Repeat Sales
1995.02	98.88	70.49	65.15		2006.02	145.32	142.25	135.67	153.41
1995.03	98.67	62.45	68.45		2006.03	150.10	149.54	136.49	152.29
1995.04	101.09	57.57	69.87		2006.04	152.82	152.49	140.76	156.72
1996.01	97.12	89.66	72.06		2007.01	152.53	153.42	143.40	158.31
1996.02	95.25	93.89	75.16		2007.02	155.53	159.91	146.91	165.62
1996.03	100.25	98.28	74.64		2007.03	157.39	155.18	152.18	172.28
1996.04	95.11	106.83	74.72		2007.04	155.51	154.07	151.11	164.44
1997.01	104.65	98.00	89.28		2008.01	157.93	148.20	152.37	182.00
1997.02	104.32	100.36	91.54		2008.02	159.06	147.55	151.69	168.78
1997.03	100.79	104.00	97.64		2008.03	155.18	146.73	148.96	158.91
1997.04	104.68	108.28	103.07		2008.04	155.96	144.75	151.19	167.54
1998.01	103.11	114.59	98.85		2009.01	152.71	137.08	146.15	148.16
1998.02	112.19	125.14	104.17		2009.02	141.65	117.98	145.17	150.70
1998.03	114.78	122.12	105.62		2009.03	137.76	112.50	130.19	99.78
1998.04	115.53	131.23	102.77		2009.04	133.44	95.08	117.20	107.49
1999.01	114.00	123.70	95.53		2010.01	127.16	105.60	112.61	120.65
1999.02	105.86	103.50	90.25		2010.02	126.56	117.74	103.66	114.55
1999.03	103.45	112.87	87.96		2010.03	125.13	137.96	107.12	110.27
1999.04	101.80	100.90	90.23		2010.04	121.53	165.28	113.02	130.56
2000.01	99.83	103.86	95.70	100.00	2011.01	123.12	163.20	111.26	116.96
2000.02	101.35	108.85	98.35	104.46	2011.02	120.92	175.31	111.84	113.86
2000.03	100.28	102.19	97.85	90.62	2011.03	117.51	162.02	111.49	106.53
2000.04	103.32	108.32	95.87	96.09	2011.04	122.17	160.99	111.08	125.53
2001.01	106.35	121.05	94.70	98.62	2012.01	122.13	165.22	113.10	118.82
2001.02	110.22	125.22	94.78	103.65	2012.02	126.27	152.07	115.15	137.35
2001.03	112.45	119.60	94.63	97.58	2012.03	133.63	151.05	120.17	124.42
2001.04	110.31	118.52	95.57	98.55	2012.04	134.87	148.04	120.85	130.69
2002.01	107.39	107.52	94.18	105.94	2013.01	136.15	147.73	123.16	127.99
2002.02	103.44	97.04	91.63	87.38	2013.02	134.24	154.77	126.72	142.20
2002.03	103.40	94.71	92.78	95.41	2013.03	135.95	164.61	129.09	141.68
2002.04	106.09	99.08	91.86	100.49	2013.04	134.52	166.43	128.96	143.31
2003.01	108.24	100.38	95.42	107.39	2014.01	135.79	165.30	135.14	163.40
2003.02	112.13	120.94	98.15	110.04	2014.02	137.32	165.53	132.18	135.64
2003.03	115.16	126.91	99.80	109.63	2014.03	136.82	162.25	131.92	142.59
2003.04	114.72	130.50	102.21	113.31	2014.04	138.90	162.14	135.06	146.53
2004.01	116.06	130.07	100.19	106.91	2015.01	140.03	169.81	137.87	167.42
2004.02	116.02	112.90	100.90	111.55	2015.02	146.25	177.64	145.20	166.69
2004.03	116.33	118.30	104.96	127.89	2015.03	145.90	179.01	153.72	175.37
2004.04	120.71	109.79	105.93	112.93	2015.04	149.08	175.37	160.63	176.65
2005.01	127.88	114.78	111.19	129.19	2016.01	151.89	173.33	164.05	187.49
2005.02	135.81	121.35	115.76	131.17	2016.02	150.72	167.60	159.87	151.88
2005.03	139.01	122.80	119.33	143.86	2016.03	151.70	174.68	160.98	179.66
2005.04	141.26	129.70	125.57	140.86	2016.04	148.10	177.07	157.92	166.51
2006.01	144.42	137.14	131.04	145.60	2017.01	149.73	173.22	160.89	196.88

Hedonic hotel indices for large and small hotel transactions

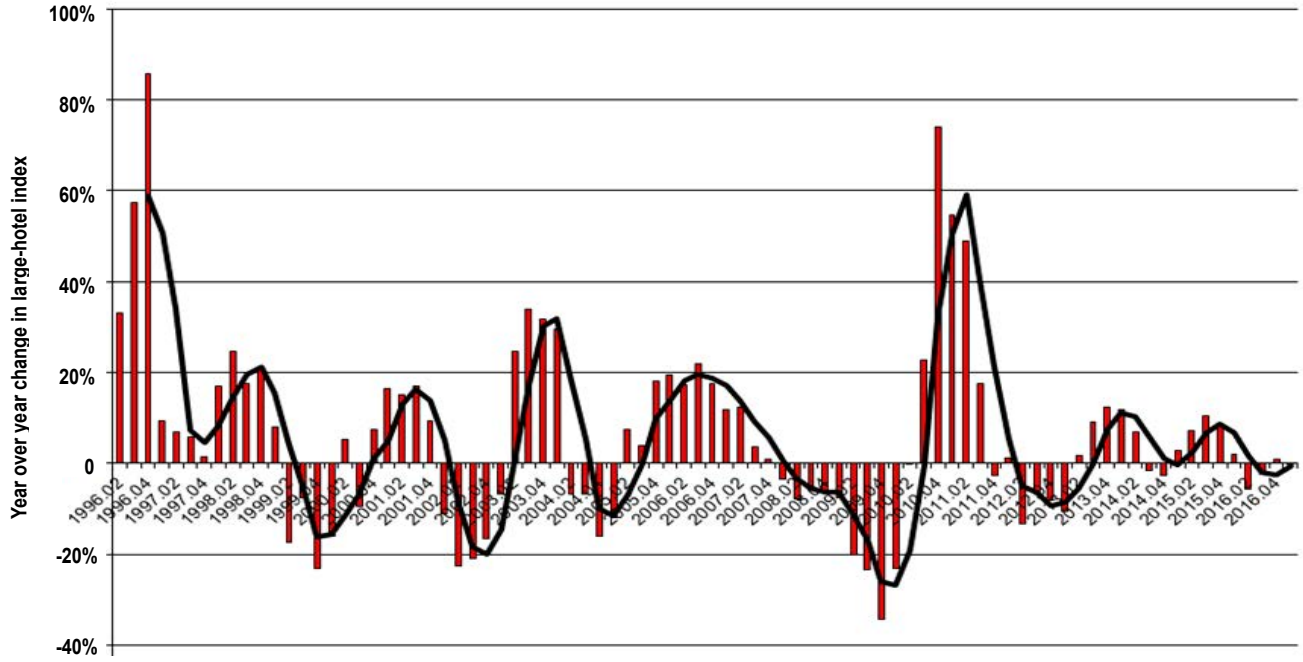


Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

**The price momentum of large and small hotels continues to revert to the mean according to our Standardized Unexpected Price metric.** As shown Exhibit 7 (graphing the prices reported in Exhibit 6), the large-hotel price index declined 2.2 percent, while the small-hotel price index rose 1.1 percent on a quarter-over-quarter basis. On a year-over-year basis, large hotels experienced no gain in price while smaller hotels lost 1.4 percent, as shown in Exhibits 8 and 9. These two exhibits also reveal that the moving average trend line for the price of large hotels has remained relatively constant, while the trend for small hotels continues to decline on a year-over-year basis.

EXHIBIT 8

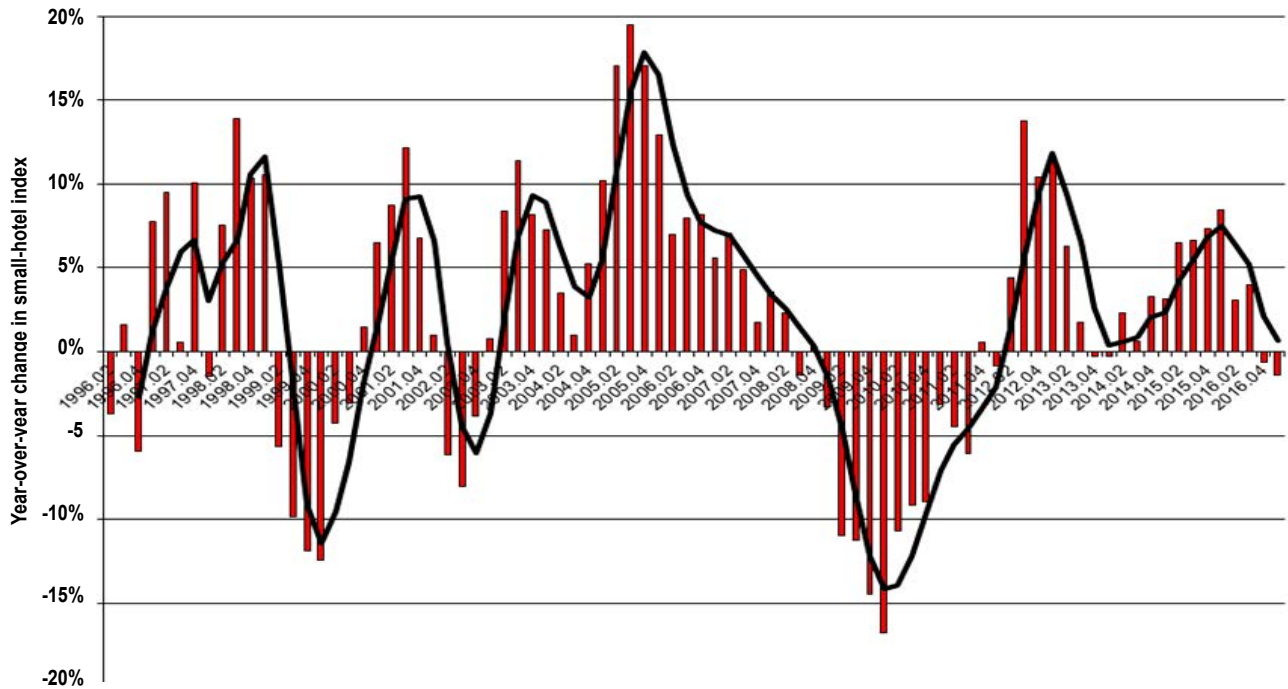
Year-over-year change in high-price (large) hotel index, with moving-average trendline



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

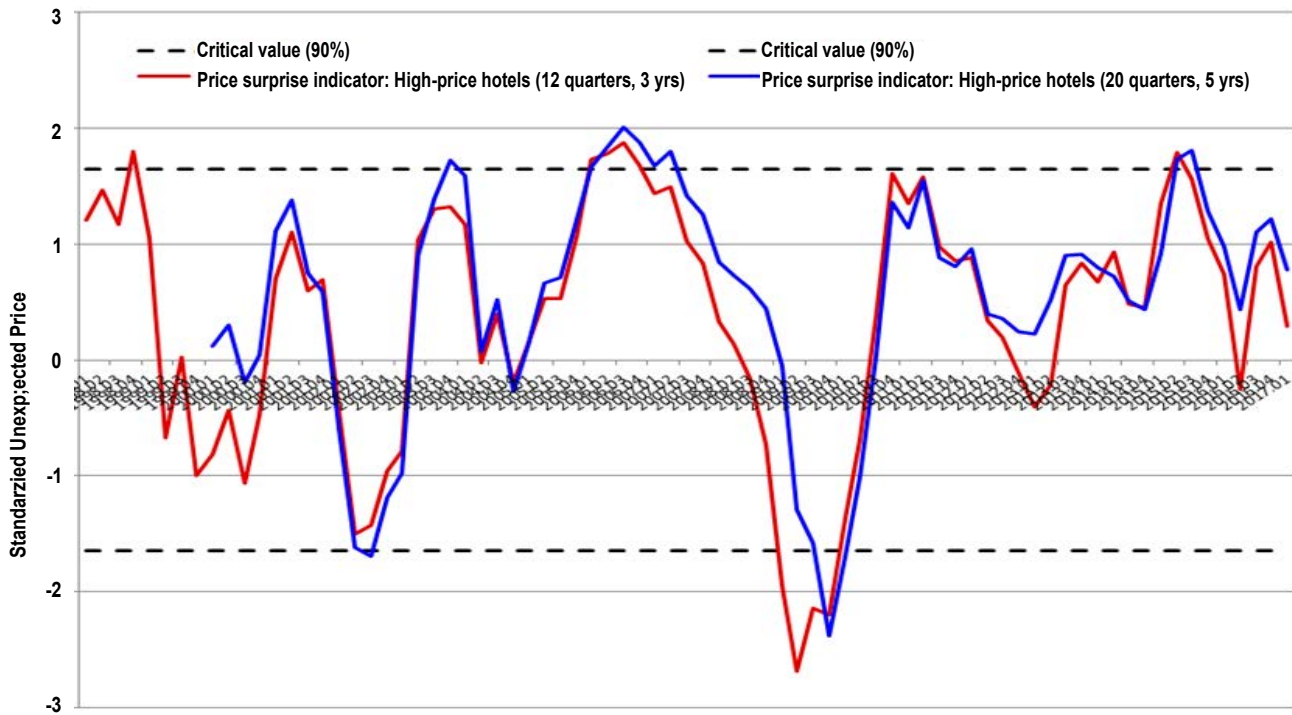
EXHIBIT 9

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



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

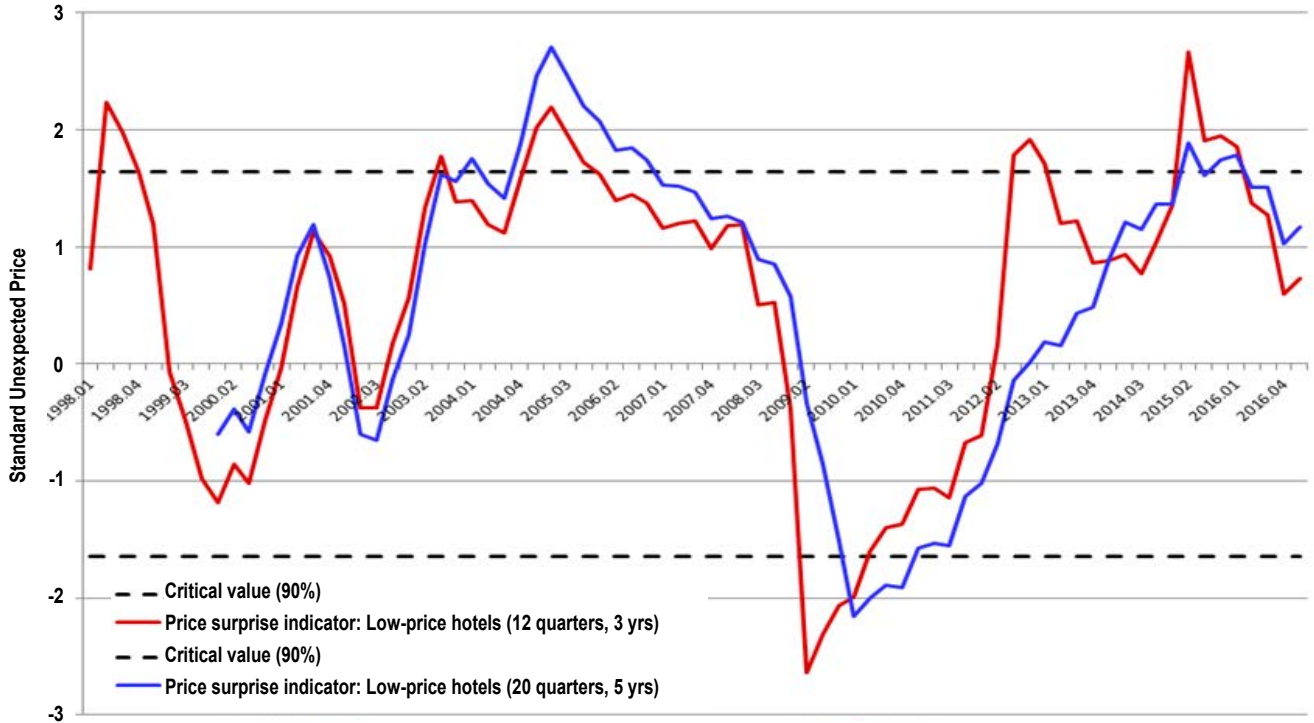
**Standardized unexpected price (SUP) for high-price hotel index**



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

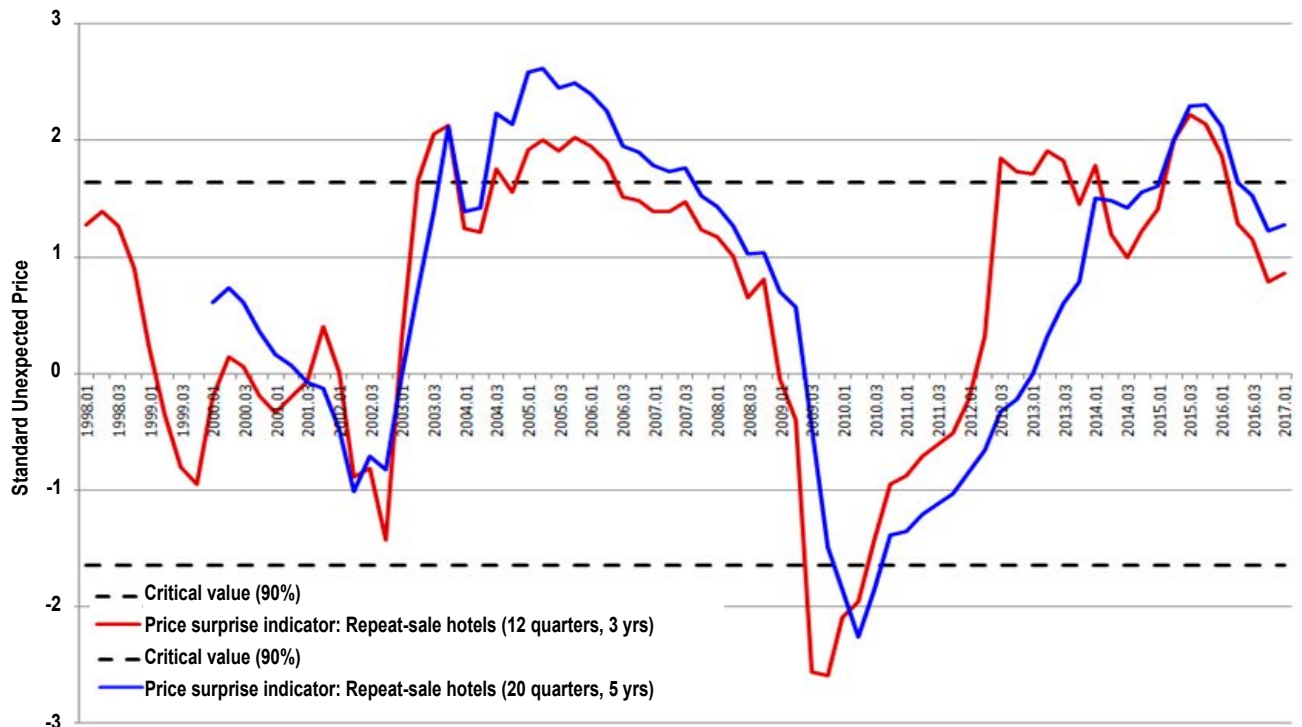
Our Standardized Unexpected Price (SUP) metric displayed in Exhibit 10 shows that the price of large hotels continued its decline, reverting to the standardized mean of zero, while Exhibit 11 shows that the price for smaller hotels moved sideways.

**Standardized unexpected price (SUP) for small-hotel index**



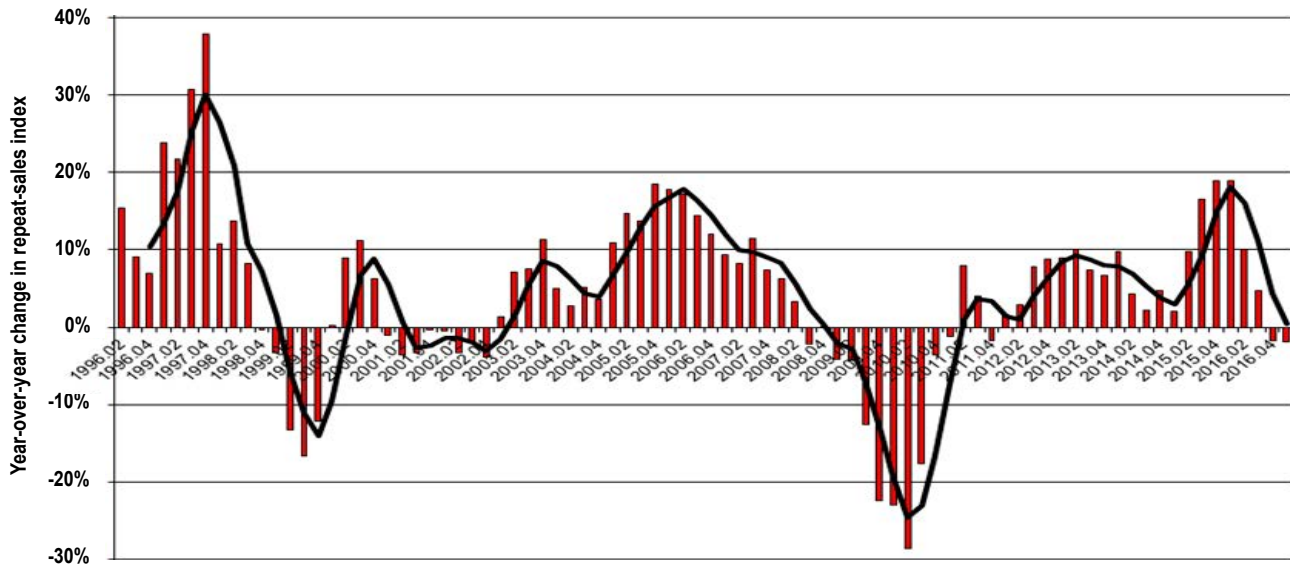
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

**Standardized unexpected price (SUP) for repeat-sale hotels**



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

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



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

**Repeat sales have declined on a year-over-year basis.**

Similar to the smaller hotels, both the 3-year and 5-year SUP indicators for repeat hotel sales moved sideways for the quarter (Exhibit 12).<sup>2</sup> Exhibit 13 shows that the moving average price trend line for repeat sales continues to decline on a year-over-year basis. The 1.9-percent year-over-year decrease in this quarter (2017Q1 to 2016Q1) was roughly the same as the 1.7-percent year-over-year decrease in the previous period (2015Q4 to 2016Q4).

**Mortgage financing volume continues to decline year over year, but has risen on a quarter-over-quarter**

<sup>2</sup> 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.

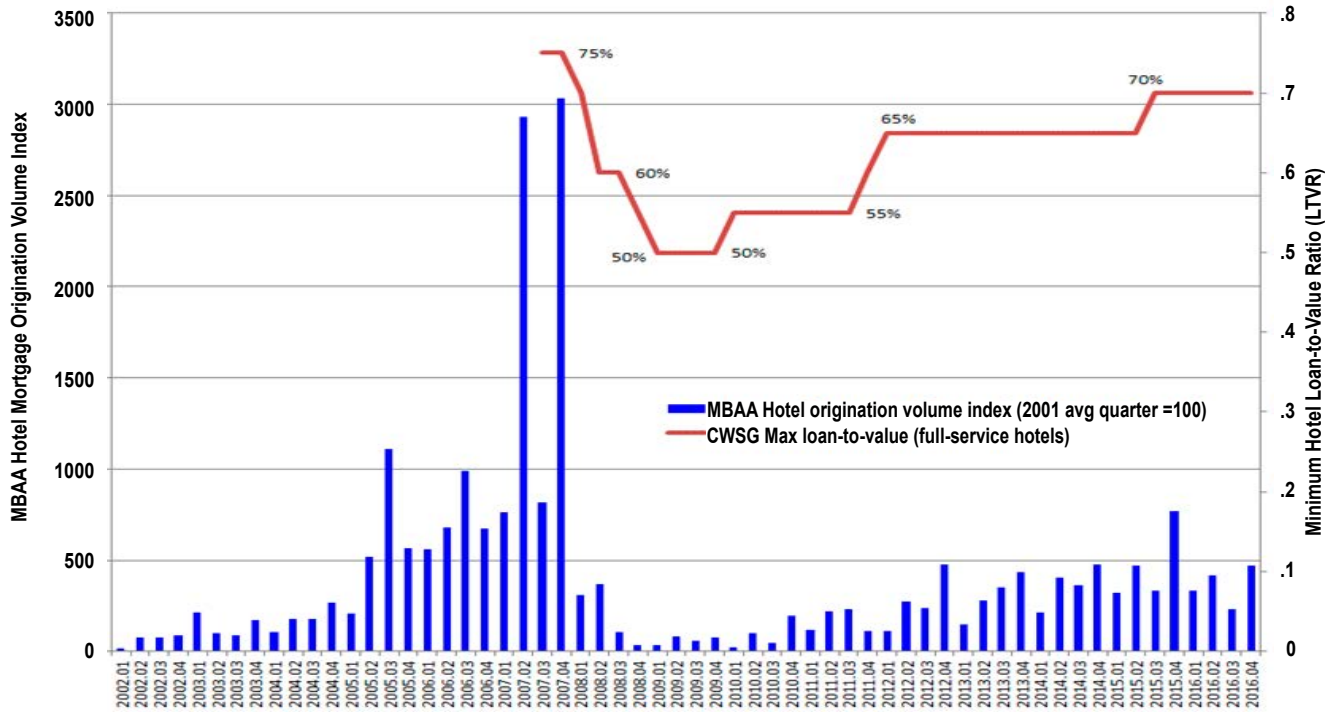
**basis.** The mortgage origination volume for hotels as reported for 2016Q4 is about 39-percent lower than in the previous year (2015Q4, see Exhibit 14).<sup>3</sup> This compares to a 30-percent year-over-year decrease in the previous period (2016Q3 relative to 2015Q3). However, hotel loan originations were up 103.5 percent on a quarter-over-quarter basis (2016Q4 compared to 2016Q3). The loan to value (LTV) ratio for hotels remained at 70 percent.

**The cost of hotel debt financing has declined slightly, with the relative risk premium for hotels remaining constant.** As reported by Cushman Wakefield Sonnen-

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

EXHIBIT 14

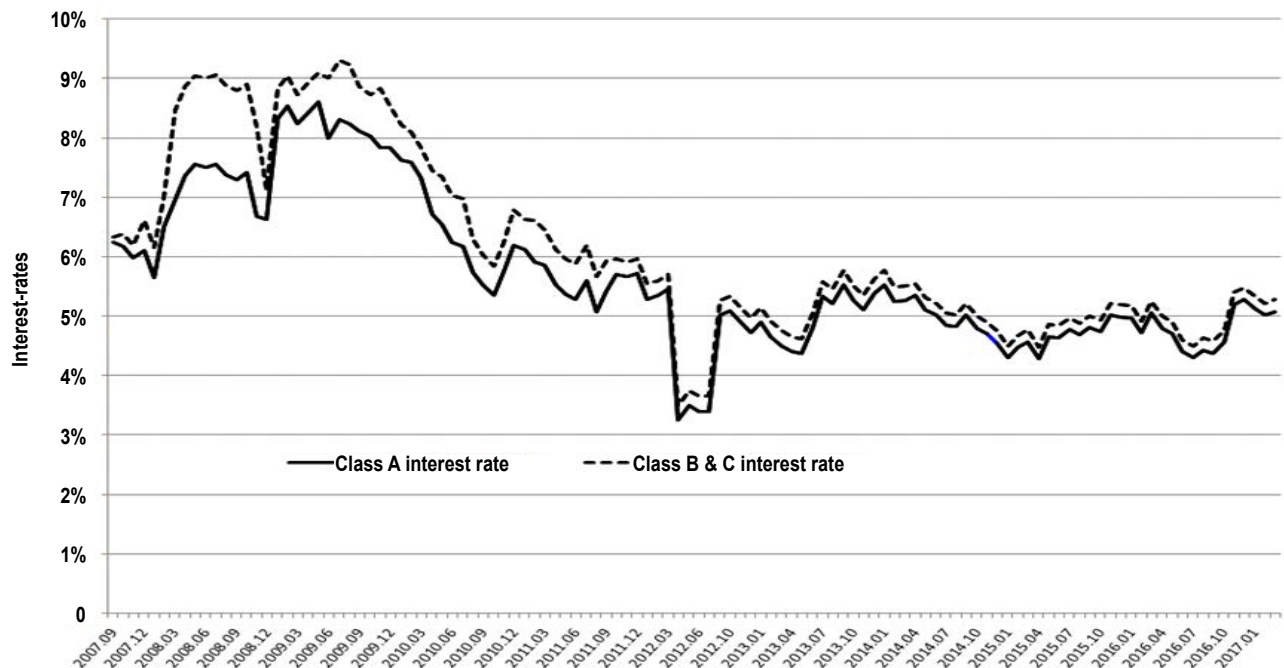
Mortgage origination volume versus loan-to-value ratio for hotels



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

EXHIBIT 15

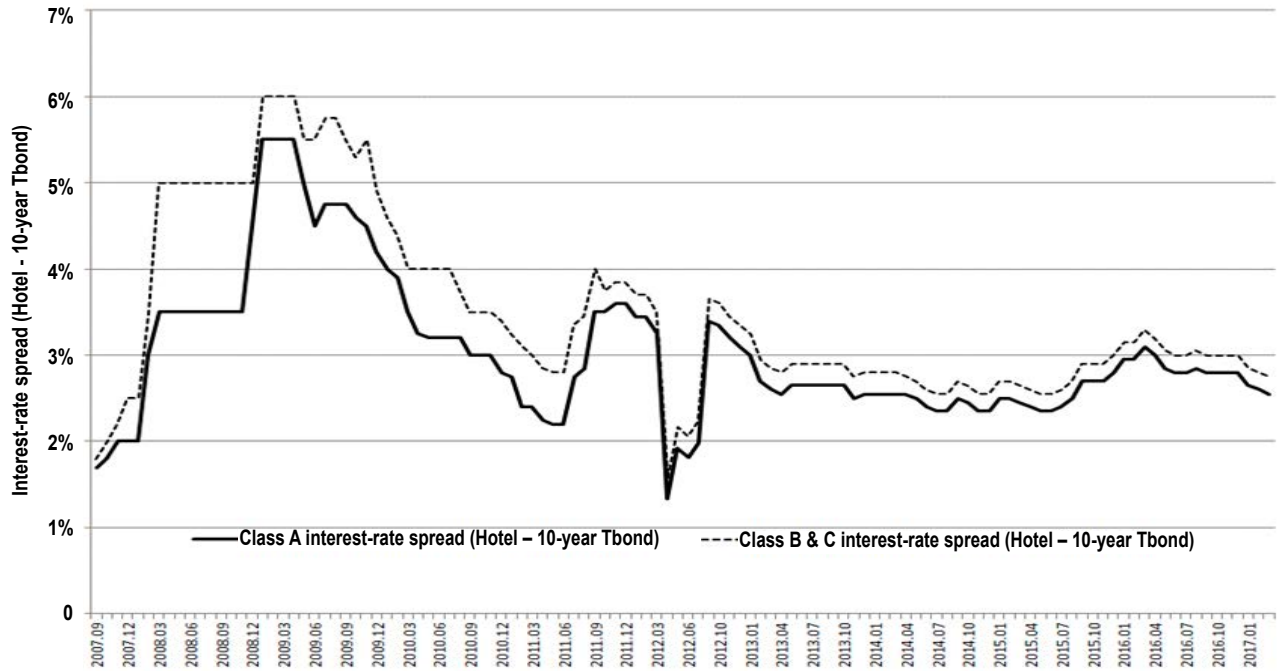
Interest rates on Class A hotels versus Class B & C properties



Sources: Cushman Wakefield Sonnenblick Goldman



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



Source: Cushman Wakefield Sonnenblick Goldman

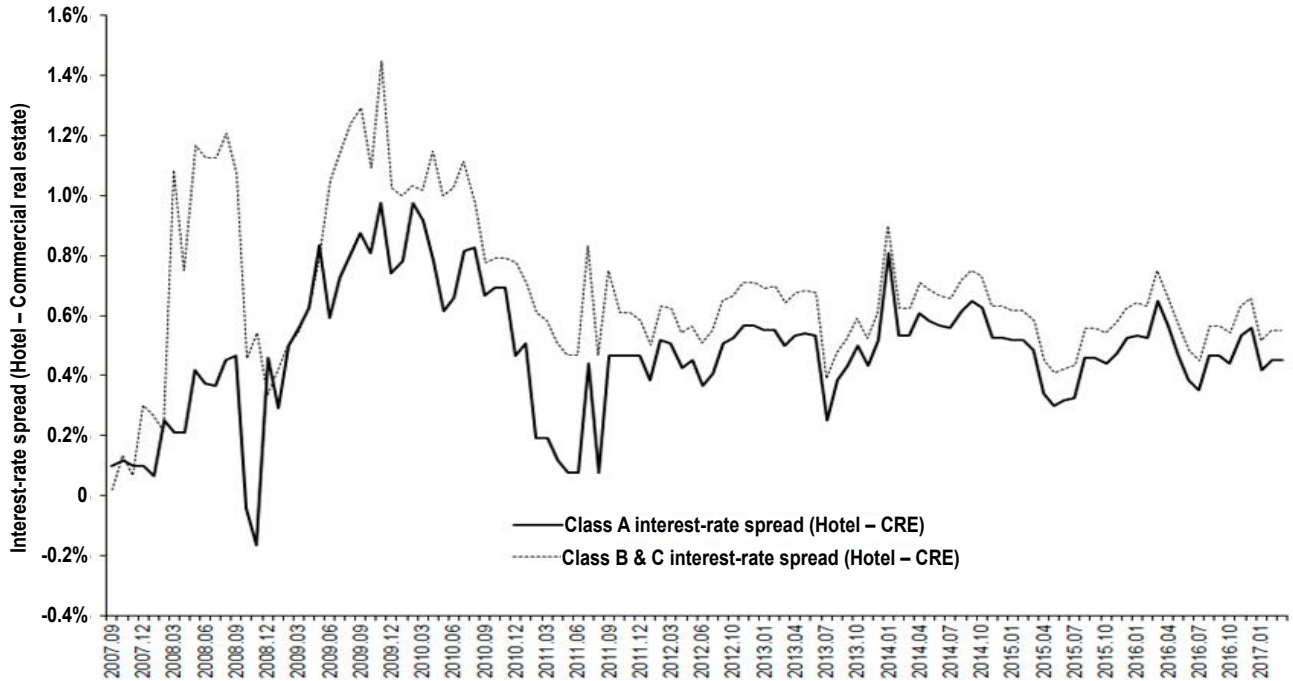
blick Goldman, the cost of obtaining hotel financing was down slightly for Class A and for Class B&C hotels over the quarter, but has trended upwards in general since July 2016, when interest rates on Class A hotels were at 4.3 percent (B&C hotels, 4.5%).<sup>4</sup> In December 2016, interest

rates were 5.28 percent for Class A properties and 5.48 percent for Class B&C hotels, compared to interest rates in March 2017 of 5.08 percent for Class A hotels (5.28 percent for B&C properties, see Exhibit 15). Interest rate spreads relative to different benchmarks are shown in Exhibits 16 and 17. Exhibit 16 shows the spread between interest rates on full-service Class A and Class B&C hotels over the ten-year Treasury bond. On this metric, interest rate spreads declined slightly and are now at the same level as August 2015.

Broadly speaking, however, lenders' compensation for risk associated with hotel loans has remained virtually unchanged since around February 2013. This is depicted

<sup>4</sup> The interest rate reported by Cushman Wakefield Sonnenblick Goldman (CWSG) differs from the interest rate used to calculate our EVA metric which is based on the interest rate reported by the American Council of Life Insurers (ACLI). The ACLI interest rate reflects what life insurers are charging for institutional sized hotel deals. Our EVA calculation is based on property specific cap rates and the associated financing terms. The CWSG interest rate is based on deals that CWSG has brokered as well as their survey of rates on hotel deals. The deals are not necessarily similar to deals that are reported by ACLI.

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



Source: Cushman Wakefield Sonnenblick Goldman

in Exhibit 17, which shows the hotel real estate premium, calculated as the spread between the interest rate on full-service hotels over the interest rate corresponding to non-hotel commercial real estate.<sup>5</sup> The monthly hotel real estate premiums for both higher quality (Class A) and lower quality (Class B&C) hotels have moved sideways over the quarter. The hotel real estate premium was .42 percent in January for Class A hotels, .45 percent in February, and .45 percent in March. For Class B hotels, those corresponding percentages are .52 percent in January, .55 percent in February, and .55 percent in March. The March 2017 hotel risk premiums are similar to those recorded in May 2016, .47 percent for Class A hotels, at that time, and .57 percent for Class B&C properties. The relatively stable

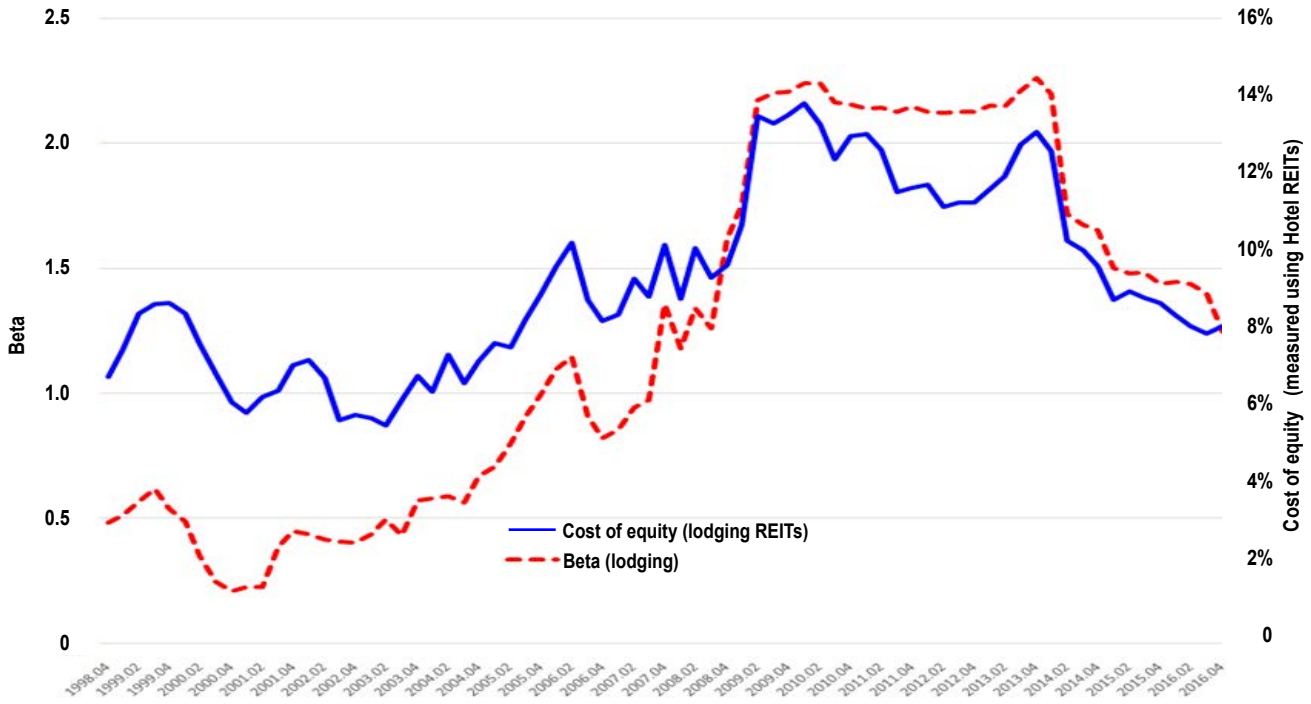
<sup>5</sup> The interest rate on hotel properties is generally higher than that for apartment, industrial, office, and retail properties in part because hotels' cash flow is commonly more volatile than that of other commercial properties.

premium for the first three months of 2017 is a signal that the perceived default risk for hotel properties remains constant relative other commercial real estate. That is, lenders view the relative riskiness of hotel properties as about the same as that of other commercial real estate (i.e., office, retail, industrial, and apartments). Stated more simply, hotels are not getting relatively more risky.

**Cost of equity financing has remained stable; expect to see higher interest rates and tighter lending standards for hotel financing relative to other commercial real estate in the near future.** The cost of using equity financing for hotels as measured using the Capital Asset Pricing Model (CAPM) on hotel REIT returns has remained relatively constant, as shown in Exhibit 18. The cost of using equity funds is currently at 8.1 percent for 2016Q4 compared to 7.9 percent for 2016Q3 and 8.1 percent for 2016Q2. In terms of *total* risk (systematic risk + risk that is unique to hotel REITs), Exhibit 19 depicts that the total risk of hotel REITs continues to be greater than the total

EXHIBIT 18

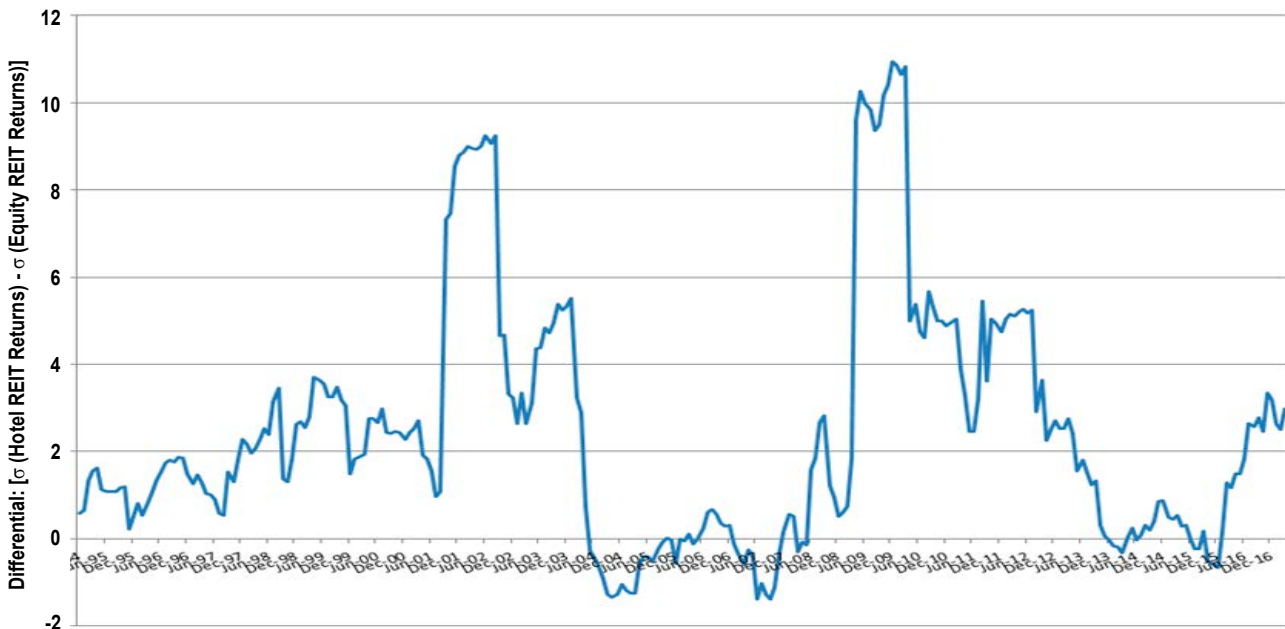
Cost of equity financing using the Capital Asset Pricing Model and hotel REITs



Source: Cornell Center for Real Estate and Finance, NAREIT

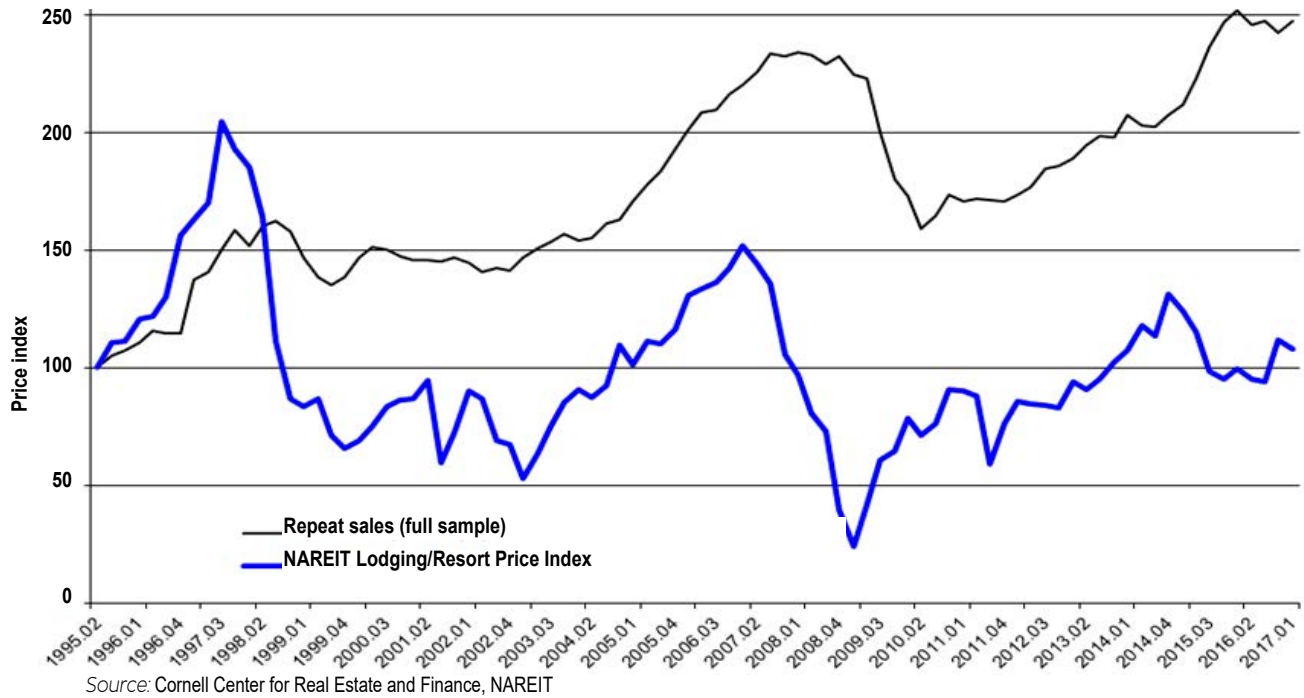
EXHIBIT 19

Risk differential between hotel REITs and equity REITs



Source: Cornell Center for Real Estate and Finance, NAREIT

## Hotel repeat sales index versus NAREIT lodging/resort price index



risk of equity REITs as a whole.<sup>6</sup> This is at odds with the percentages shown in Exhibit 17, which indicate that the perceived default risk for hotels has not increased relative to other types of commercial real estate. This situation suggests that lenders will eventually start to tighten hotel lending standards given that the volatility of stocks is a useful predictor of perceived default risk for hotels.

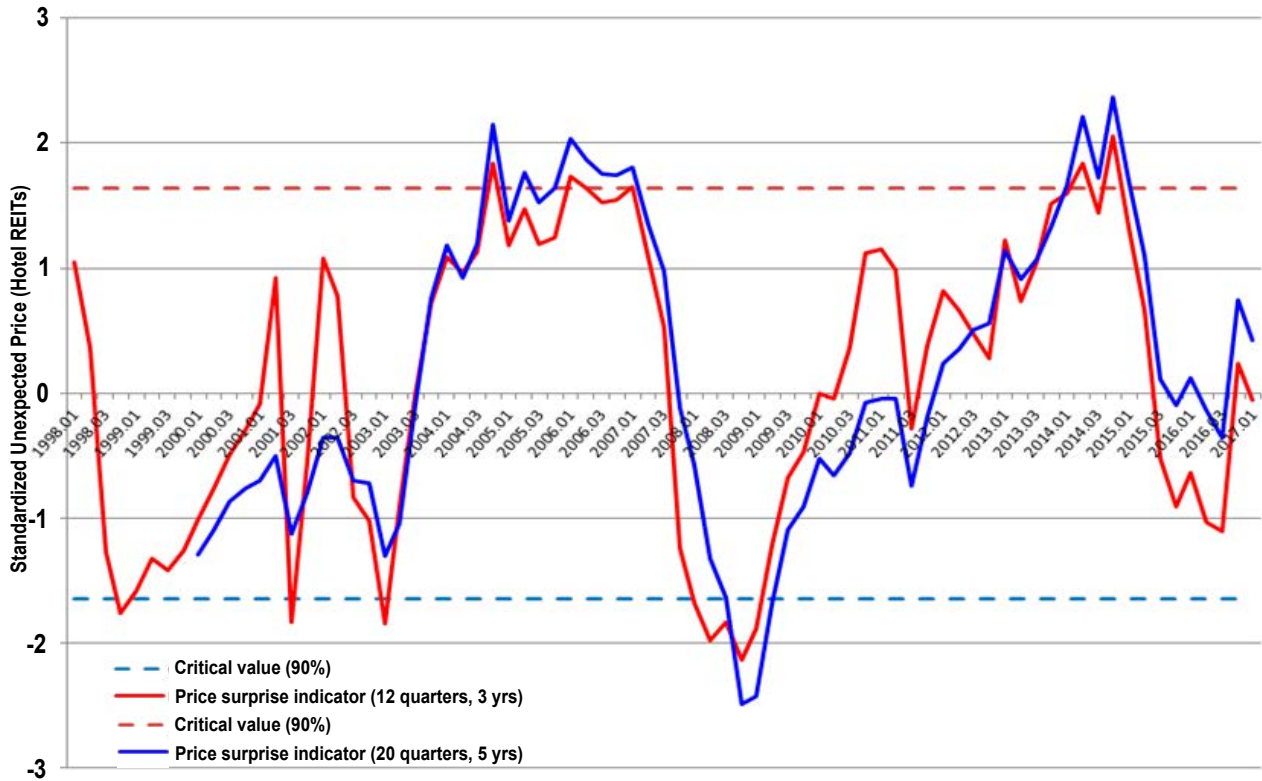
**Expect the price of large hotels and small hotels to rise, per the tea leaves.** Exhibit 20 compares the performance of the repeat sales index relative to the NAREIT

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 fell 3.2 percent this quarter, compared to a rise of 18.7 percent in the prior quarter (2016Q4). Year-over-year, however, the NAREIT lodging index increased 8.7 percent this period (2016Q4 to 2017Q1) continuing the positive momentum from the 17.4-percent year-over-year rise in the prior period (2015Q4 to 2016Q4). In terms of the SUP for the NAREIT Hotel Index, shown in Exhibit 21, the hotel REIT

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

EXHIBIT 21

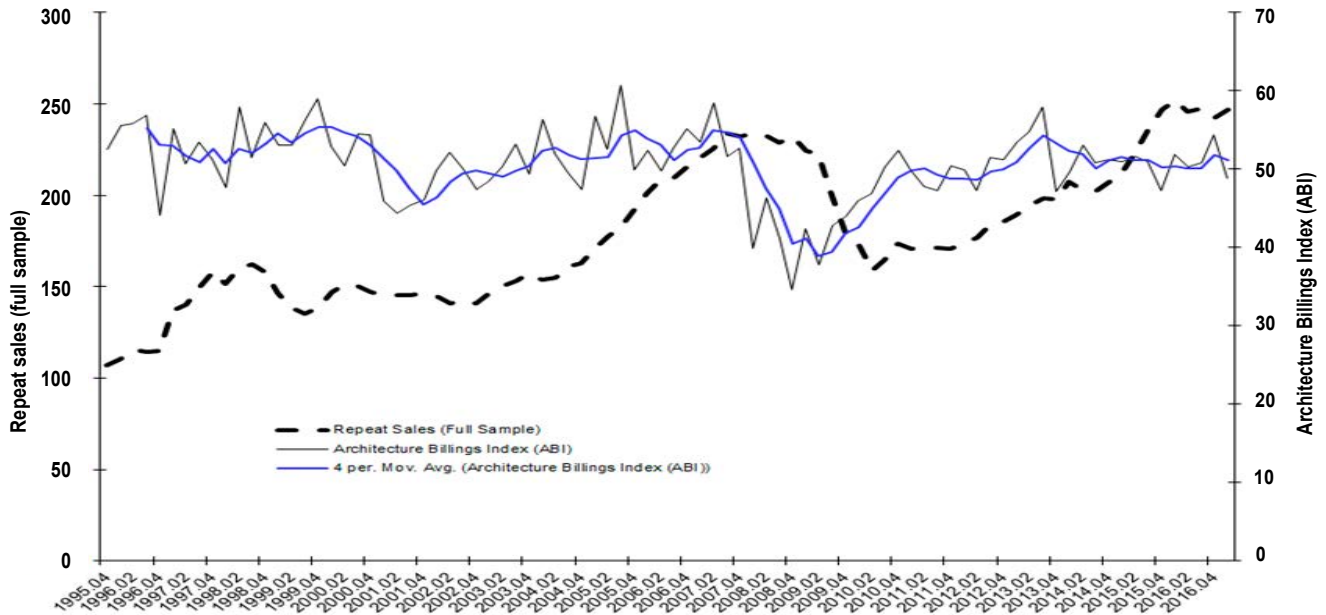
Standardized unexpected price (SUP) for NAREIT lodging/resort index



Source: Cornell Center for Real Estate and Finance, NAREIT

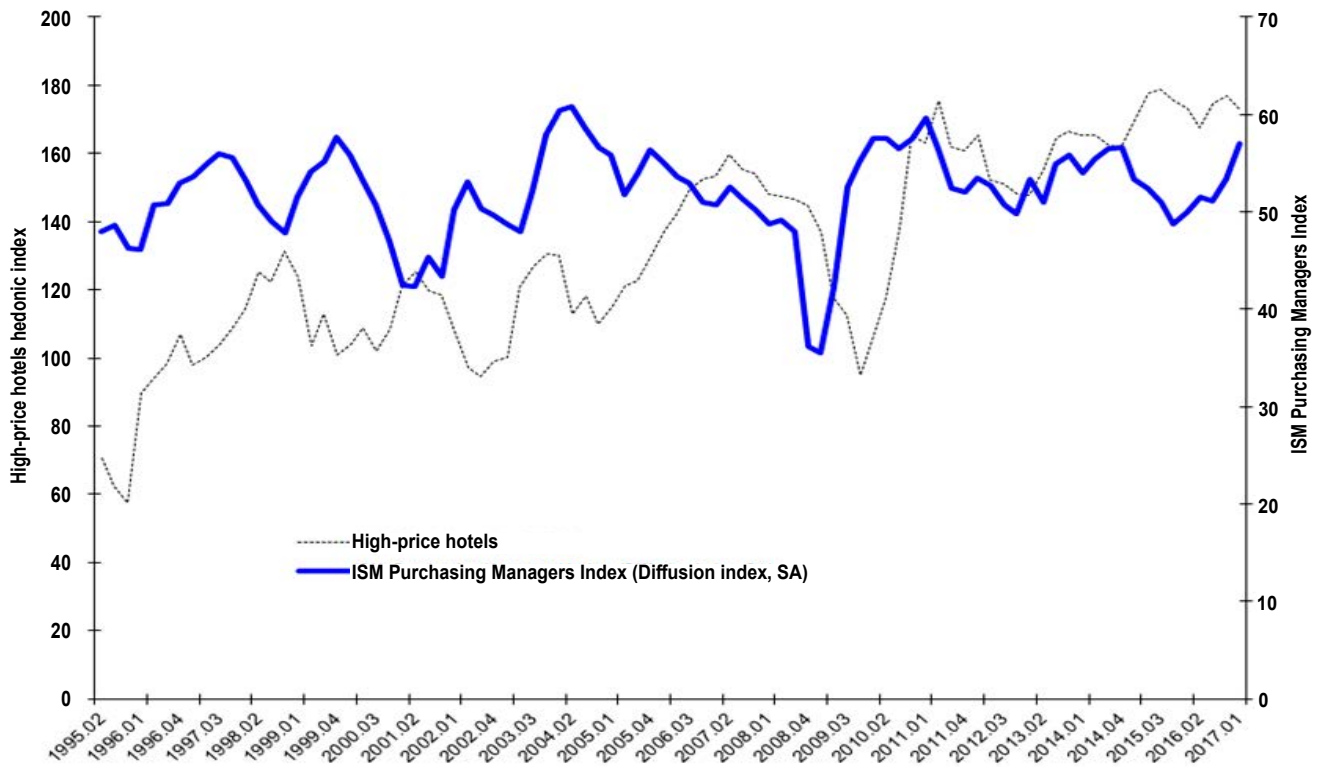
EXHIBIT 22

Hotel repeat sales index versus architecture billings index



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

**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)

index reversed directions moving towards its standardized mean of zero. *Expect hotel prices to fall near term based on this indicator.* Other expectations metrics suggest that hotel prices should rise based on the following indicators.

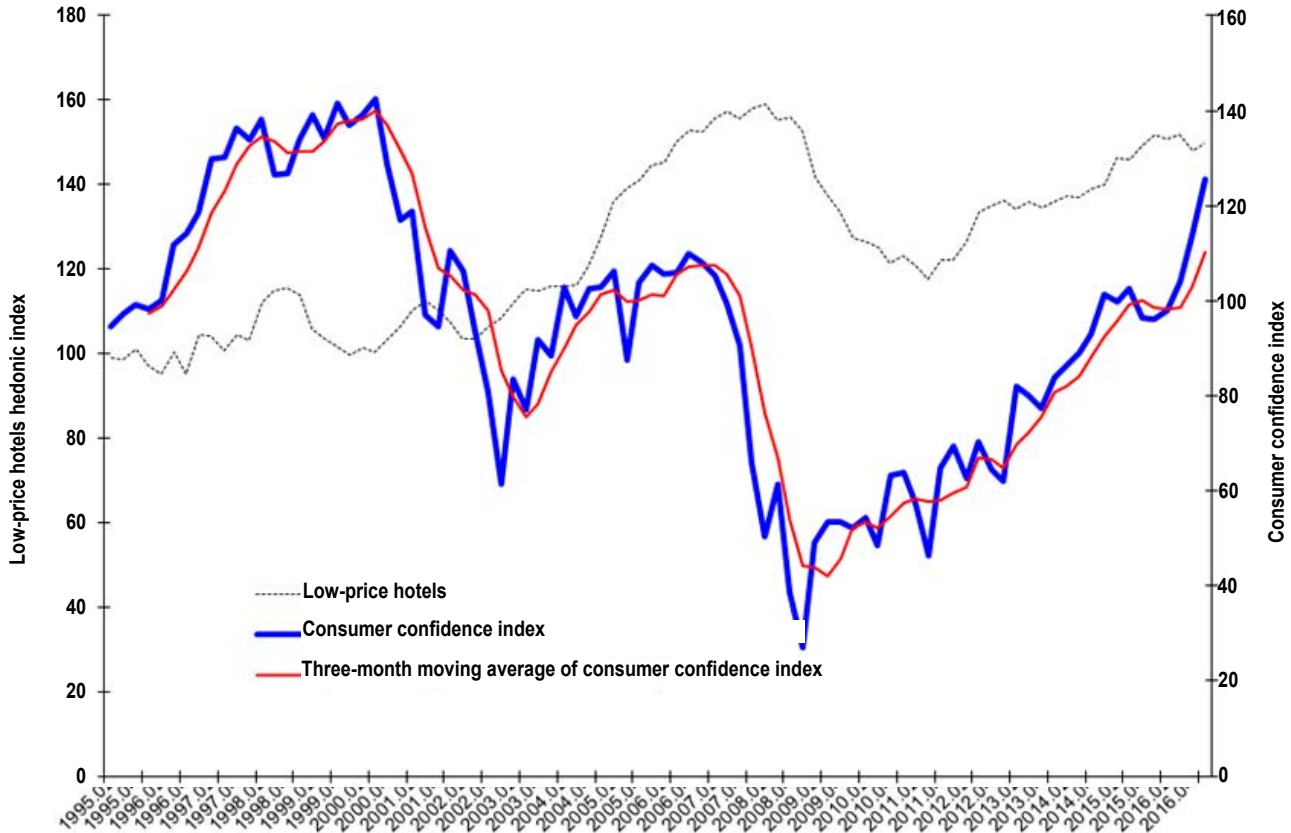
The architecture billings index (ABI) for commercial and industrial property, which represents another forward-looking metric, declined this quarter from the previous quarter, as shown in Exhibit 22 (48.9 versus 54.3).<sup>7</sup> In contrast, the National Association of Purchasing Managers (NAPM) index, which is an indicator of anticipated business confidence and thus business traveler

demand, continued its upward rise increasing in March from the prior quarter (57 vs 53.3, see Exhibit 23).<sup>8</sup> Based on the NAPM index, we expect the price of large hotels to rise over the next quarter.

<sup>8</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.

<sup>7</sup> [www.aia.org/practicing/economics/aiaas076265](http://www.aia.org/practicing/economics/aiaas076265)

Consumer confidence index and low-price hotel index



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

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 price hotels, rose about 10.5 percent in March (2017Q1) quarter-over-quarter (graphed in Exhibit 24). It also rose approximately 30.5 percent on a year-over-year basis. We expect the price of small hotels to rise based on the 4-quarter moving average of the consumer confidence index. ■

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

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## 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  $\pm 1.645$  (90% significant) or  $\pm 1.96$  (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 ( $\mu$ ). 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:

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

Standard Deviation ( $\sigma$ ) = 18.99

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

SUP data and $\sigma$ calculation for high-price hotels (12 quarters/3 years)				
Quarter	High-price hotels $\mu$	Moving average	$\sigma$	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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