

Cornell Hotel Indices: Fourth Quarter 2015:

*Large Hotels Have Lost Momentum—
Small Hotels Still Going Strong*

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

EXECUTIVE SUMMARY

Although the price of large hotels has declined, small hotels continue to experience positive momentum, based on our Standardized Unexpected Price (SUP) metric. Hotel investment based on operating performance is back in the red, with signals that investors are experiencing negative leverage, since the borrowing cost of debt now exceeds the return on invested capital. Our financing, risk, and early warning indicators all continue to suggest that hotel prices should start to level off or decline. This is report number 17 of the index series.

ABOUT THE AUTHORS

Crocker H. Liu, Ph.D., 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 and is on the editorial board of the *Journal of Property Research*. He also previously served on the editorial boards of the *Journal of Real Estate Finance and Economics* 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, Ph.D., 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 last May. 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 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*, *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 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.

Acknowledgments

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Analysis of Indices through Q4, 2015

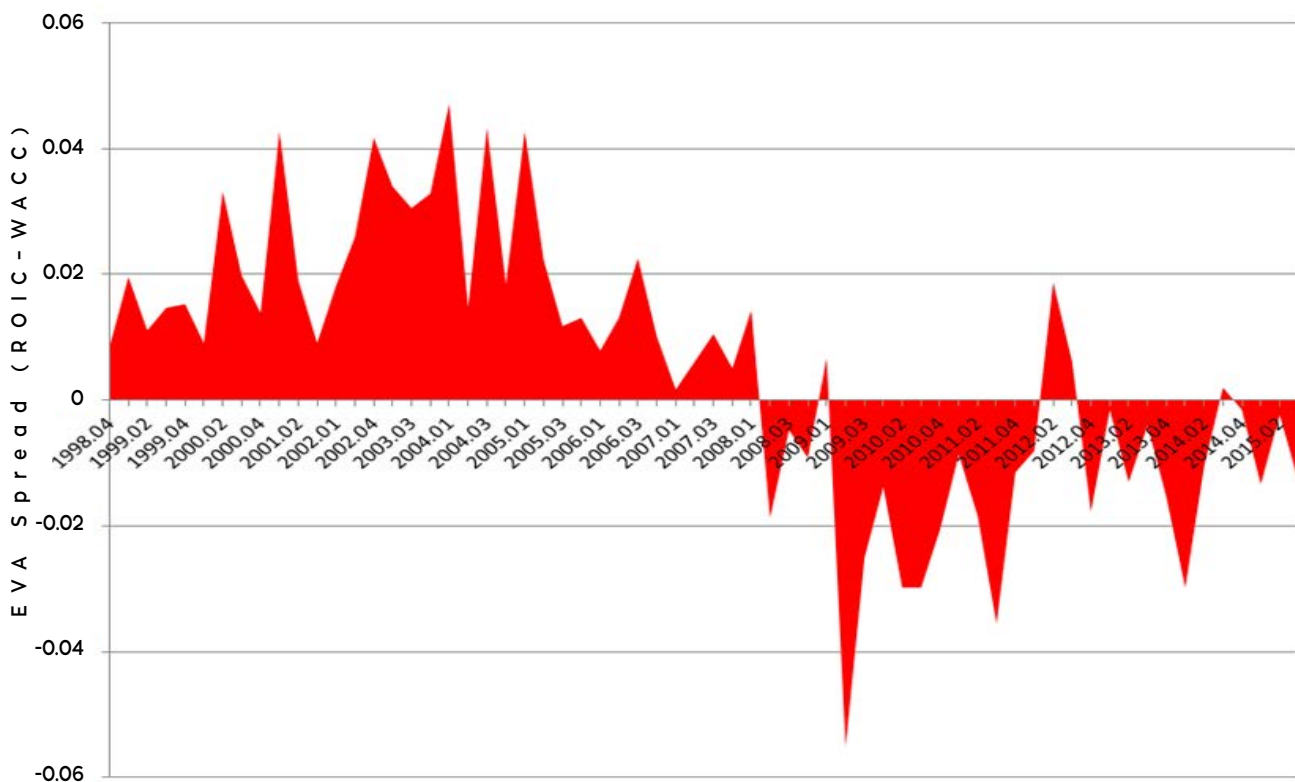
Hotel Investment Based on Operating Performance Is in the Red

Our Economic Value Added indicator (EVA) has declined and is back in negative territory (as shown in Exhibit 1), after being effectively in the black (-.002) in the previous quarter (2015Q2). At -.013, the EVA indicator is at the same level in

2015Q4 as it was back in 2008Q2. The cost of debt financing (6.53%) now exceeds the hotel cap rate (6.25%), which is one indicator of negative leverage for hotel deals. This is in contrast with the previous quarter, where the hotel cap rate (6.58%)

EXHIBIT 1

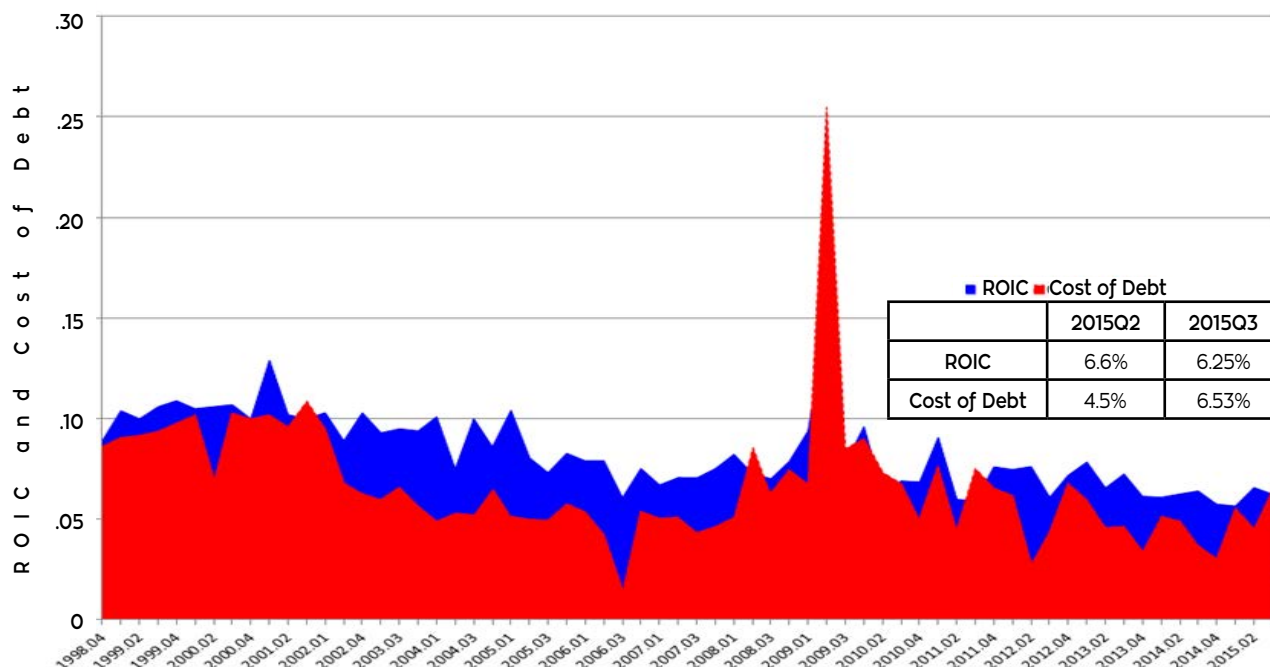
Economic value added (EVA) for hotels



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

EXHIBIT 2

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.

exceeded the cost of debt financing (4.5%) for hotels financed by large life insurance companies, as shown in Exhibit 2. The cap rate represents the return on hotel properties with the assumption of all-equity financing, and the use of debt financing magnifies the return on hotel properties. Negative leverage or loss magnification occurs when the cost of debt financing exceeds the cap rate, and the borrowing cost is greater than the return. In summary, what these two exhibits suggest is that the market is overheated. A similar situation existed in the first quarter of 2008.

Hotel Transaction Volume Continues to Decline Year over Year, but Median Prices Rise for the Full Sample.

As reported in Exhibits 3A and 3B, the total volume of all hotel transactions remained approximately at the same level in the fourth quarter (295 transactions) as the previous quarter (300 transactions). On a year-over-year basis, however, the hotel transaction volume continued to decline from the third quarter to the fourth quarter, with a drop of 5.8 percent (from 2014Q4 to 2015Q4) compared to a decline of 14.8 percent in the third quarter (that is, from 2014Q3 to 2015Q3). In contrast, the median price of hotels for the full sample rose 49 percent on a year-over-year basis and 33 percent quarter over quarter. Comparing large and small hotels, the volume of large hotel transactions rose 22.4 percent, while small hotel transaction volume declined

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

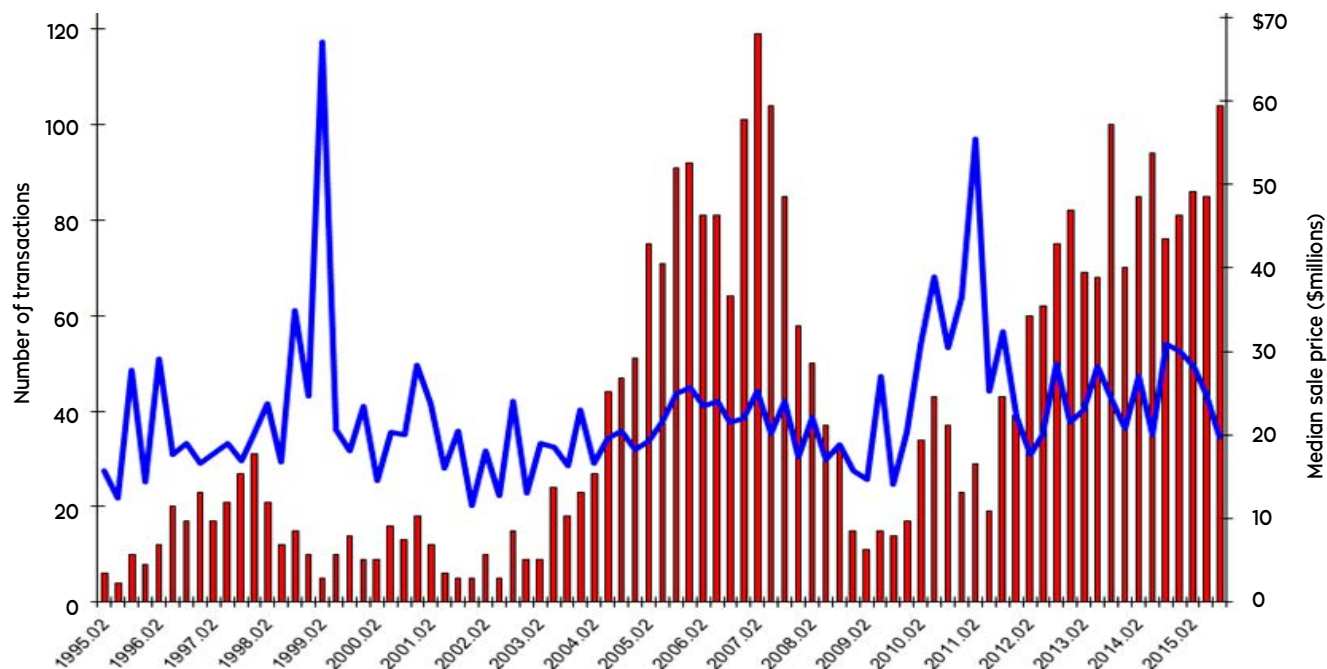
Year	Quarter	Full Sample		Big			Small		
		Median Sale Price	Obs	Median Sale Price	Obs	% Total Sales	Median Sale Price	Obs	% Total Sales
1995	1	\$2,357,500	20	.	.		\$2,357,500	20	
1995	2	\$3,150,000	29	\$15,712,500	6	20.69%	\$2,670,000	23	79.31%
1995	3	\$2,562,500	44	\$12,400,000	4	9.09%	\$2,378,000	40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

Transaction volume (Obs) and median sale price (part 2: 2005-2015)

Year	Quarter	Full Sample		Big			Small		
		Median Sale Price	Obs	Median Sale Price	Obs	% Total Sales	Median Sale Price	Obs	% Total Sales
2005	1	\$4,330,000	231	\$18,200,000	51	22.08%	\$3,350,000	180	77.92%
2005	2	\$4,566,250	316	\$19,316,925	75	23.73%	\$3,300,000	241	76.27%
2005	3	\$4,150,000	273	\$21,750,000	71	26.01%	\$3,100,000	202	73.99%
2005	4	\$4,425,000	300	\$25,000,000	91	30.33%	\$3,170,000	209	69.67%
2006	1	\$5,227,500	302	\$25,750,000	92	30.46%	\$3,825,000	210	69.54%
2006	2	\$4,675,000	314	\$23,500,000	81	25.80%	\$3,500,000	233	74.20%
2006	3	\$5,000,000	285	\$24,000,000	81	28.42%	\$3,657,500	204	71.58%
2006	4	\$4,587,500	248	\$21,600,000	64	25.81%	\$3,550,000	184	74.19%
2007	1	\$6,155,805	286	\$22,000,000	101	35.31%	\$3,789,500	185	64.69%
2007	2	\$5,650,000	386	\$25,250,000	119	30.83%	\$3,770,000	267	69.17%
2007	3	\$5,450,000	330	\$20,175,081	104	31.52%	\$3,911,750	226	68.48%
2007	4	\$4,680,000	249	\$24,000,000	85	34.14%	\$3,184,000	164	65.86%
2008	1	\$5,000,000	255	\$17,420,000	58	22.75%	\$4,000,000	197	77.25%
2008	2	\$5,062,900	228	\$22,150,000	50	21.93%	\$3,890,000	178	78.07%
2008	3	\$4,190,500	172	\$17,133,333	37	21.51%	\$3,350,000	135	78.49%
2008	4	\$4,050,000	159	\$18,850,000	32	20.13%	\$3,500,000	127	79.87%
2009	1	\$4,150,000	81	\$15,800,000	15	18.52%	\$3,600,000	66	81.48%
2009	2	\$3,090,231	86	\$14,722,500	11	12.79%	\$2,864,310	75	87.21%
2009	3	\$3,400,000	90	\$27,000,000	15	16.67%	\$3,000,000	75	83.33%
2009	4	\$3,562,500	84	\$14,100,000	14	16.67%	\$3,010,250	70	83.33%
2010	1	\$3,900,000	89	\$20,325,000	17	19.10%	\$2,912,500	72	80.90%
2010	2	\$3,700,000	138	\$30,833,449	34	24.64%	\$3,000,000	104	75.36%
2010	3	\$4,912,500	120	\$39,000,000	43	35.83%	\$2,850,000	77	64.17%
2010	4	\$3,988,800	100	\$30,500,000	37	37.00%	\$2,440,000	63	63.00%
2011	1	\$4,200,000	85	\$36,600,000	23	27.06%	\$2,797,750	62	72.94%
2011	2	\$4,150,000	97	\$55,500,000	29	29.90%	\$2,250,000	68	70.10%
2011	3	\$3,350,000	73	\$25,250,000	19	26.03%	\$2,800,000	54	73.97%
2011	4	\$5,000,000	157	\$32,400,000	43	27.39%	\$3,229,250	114	72.61%
2012	1	\$5,216,981	132	\$22,100,000	39	29.55%	\$3,275,000	93	70.45%
2012	2	\$4,000,000	209	\$17,600,000	60	28.71%	\$2,809,000	149	71.29%
2012	3	\$7,100,000	170	\$20,081,500	62	36.47%	\$3,202,000	108	63.53%
2012	4	\$5,825,000	210	\$28,600,000	75	35.71%	\$3,175,000	135	64.29%
2013	1	\$5,999,996	240	\$21,502,126	82	34.17%	\$3,000,000	158	65.83%
2013	2	\$4,700,000	217	\$23,000,000	69	31.80%	\$2,525,000	148	68.20%
2013	3	\$5,225,000	248	\$28,200,000	68	27.42%	\$3,600,000	180	72.58%
2013	4	\$4,777,500	319	\$24,400,000	100	31.35%	\$2,800,000	219	68.65%
2014	1	\$5,600,000	229	\$20,750,000	70	30.57%	\$3,250,000	159	69.43%
2014	2	\$4,300,000	322	\$27,000,000	85	26.40%	\$2,850,000	237	73.60%
2014	3	\$5,500,000	352	\$20,000,000	94	26.70%	\$3,475,000	258	73.30%
2014	4	\$4,500,000	313	\$30,920,684	76	24.28%	\$3,175,000	237	75.72%
2015	1	\$5,752,500	256	\$30,000,000	81	31.64%	\$3,162,100	175	68.36%
2015	2	\$6,300,000	269	\$28,250,000	86	31.97%	\$3,525,000	183	68.03%
2015	3	\$5,050,000	300	\$25,000,000	85	28.33%	\$3,025,000	215	71.67%
2015	4	\$6,700,000	295	\$19,750,000	104	35.25%	\$3,300,000	191	64.75%

EXHIBIT 4

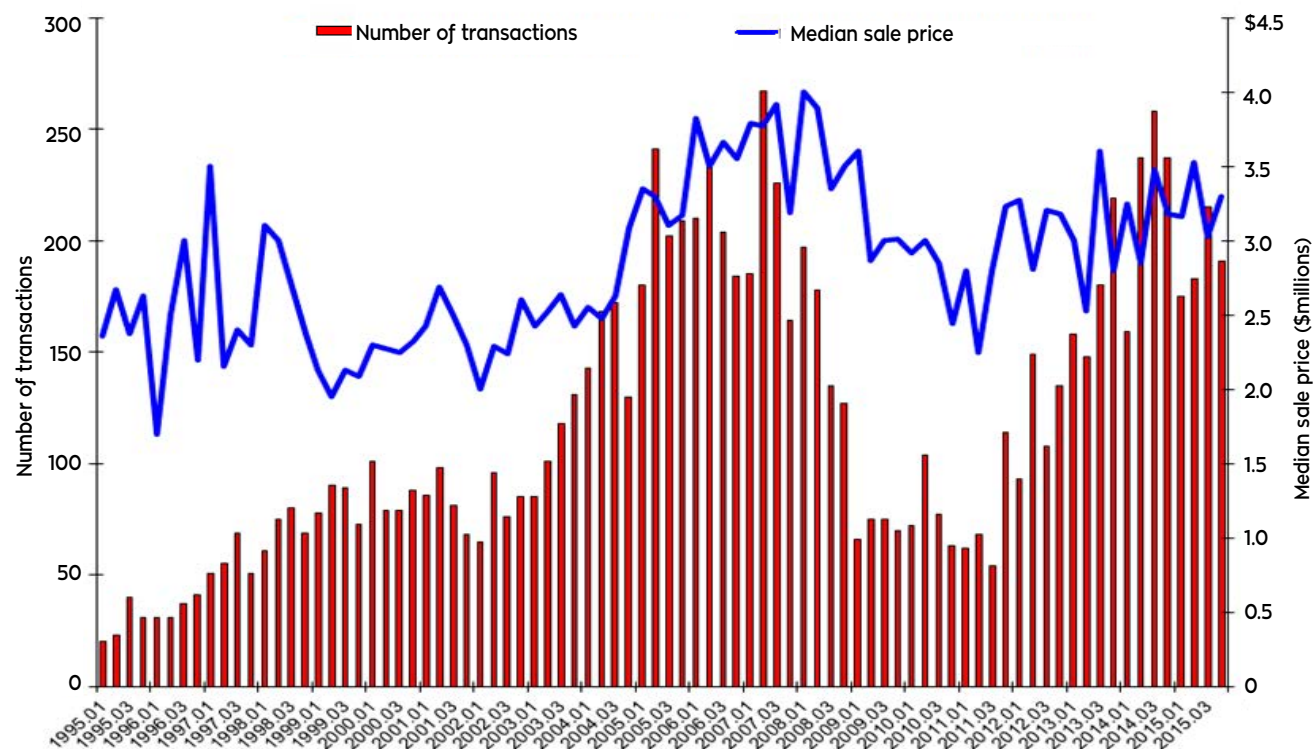
Median sale price and number of sales for high-price hotels (sale prices of \$10 million or more)



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)

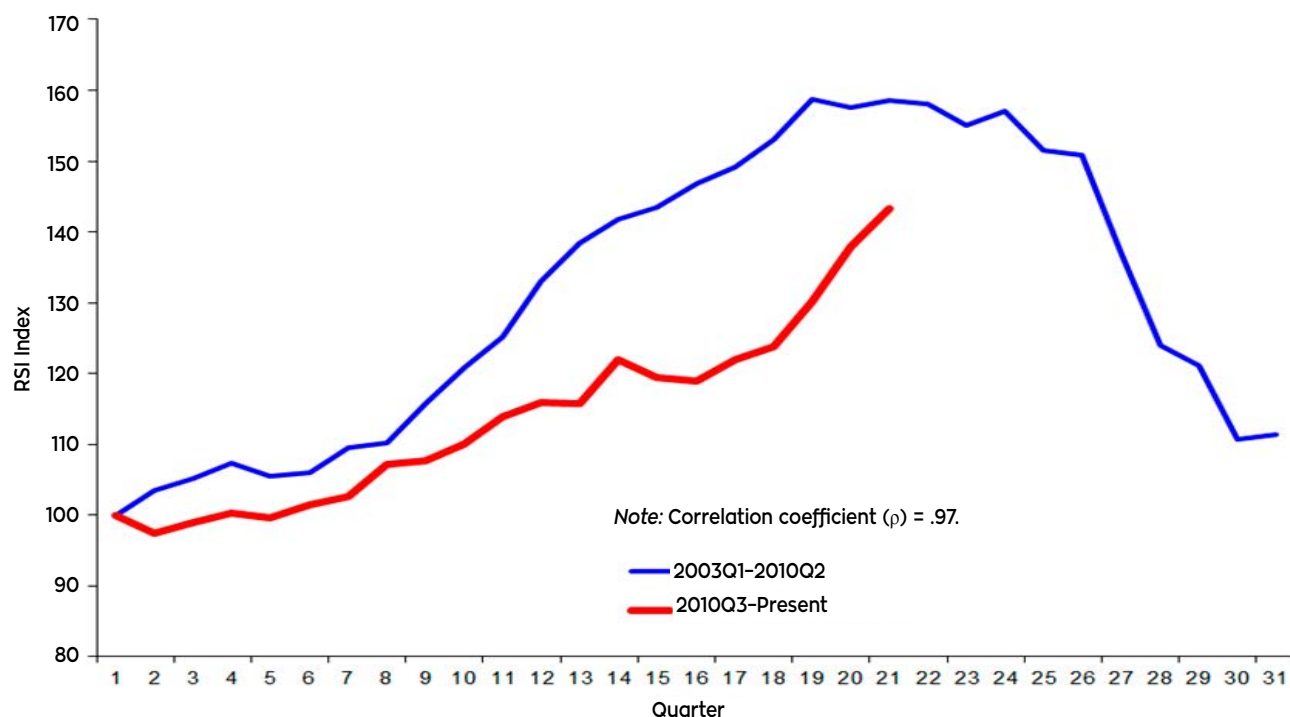


Sources: CoStar, Real Capital Analytics

EXHIBIT 6
Hotel indices through 2015, quarter 4

Index Value					Index Value				
	Hedonic	Hedonic	RSI	RSI		Hedonic	Hedonic	RSI	RSI
YrQtr	Low Priced Hotels (<\$10M)	High Priced Hotels (>=\$10M)	Repeat Sales Index	Index Value Repeat Sales	YrQtr	Low Priced Hotels (<\$10M)	High Priced Hotels (>=\$10M)	Repeat Sales Index	Index Value Repeat Sales
1995.02	99.3	70.5	63.7	.	2005.03	138.9	123.1	117.1	140.9
1995.03	99.1	62.7	67.1	.	2005.04	141.1	130.0	124.5	141.3
1995.04	101.5	57.8	68.5	.	2006.01	144.3	137.3	129.4	142.2
1996.01	97.5	90.0	70.7	.	2006.02	145.2	142.4	132.7	145.3
1996.02	95.6	94.5	73.9	.	2006.03	150.0	149.8	134.2	149.2
1996.03	100.6	99.0	72.9	.	2006.04	152.8	152.8	137.4	151.7
1996.04	95.4	107.5	72.7	.	2007.01	152.5	153.7	139.6	151.9
1997.01	105.0	98.7	87.3	.	2007.02	155.5	160.1	143.2	158.3
1997.02	104.7	100.9	89.4	.	2007.03	157.3	155.4	148.5	169.6
1997.03	101.1	104.6	96.2	.	2007.04	155.4	154.1	147.3	159.9
1997.04	104.9	108.8	100.4	.	2008.01	157.8	148.3	148.4	177.7
1998.01	103.3	115.2	96.6	.	2008.02	159.0	147.6	147.9	163.2
1998.02	112.3	125.9	101.8	.	2008.03	155.2	146.7	145.1	155.8
1998.03	114.9	122.7	102.0	.	2008.04	156.0	144.8	146.9	161.2
1998.04	115.7	131.8	100.4	.	2009.01	152.7	137.2	141.7	140.7
1999.01	114.1	124.5	92.7	.	2009.02	141.6	118.4	141.2	146.8
1999.02	105.9	104.4	87.6	.	2009.03	137.7	113.0	127.9	96.5
1999.03	103.5	114.0	86.3	.	2009.04	133.3	95.5	116.0	105.9
1999.04	101.8	101.9	88.7	.	2010.01	127.0	106.2	113.3	120.9
2000.01	99.8	104.5	94.6	100.0	2010.02	126.5	118.3	103.6	107.2
2000.02	101.3	109.0	98.0	106.7	2010.03	125.1	138.5	104.2	102.2
2000.03	100.3	102.2	97.4	88.3	2010.04	121.4	166.0	110.2	129.3
2000.04	103.3	108.4	95.3	93.1	2011.01	123.0	163.9	107.5	113.5
2001.01	106.4	121.4	93.8	96.8	2011.02	120.6	176.0	109.1	110.8
2001.02	110.2	125.7	93.3	102.7	2011.03	117.2	162.7	110.5	106.4
2001.03	112.5	120.2	92.9	93.9	2011.04	122.0	161.6	109.9	123.3
2001.04	110.3	119.2	93.9	96.1	2012.01	121.7	165.8	111.9	114.4
2002.01	107.4	108.0	92.6	106.0	2012.02	126.1	152.5	113.1	131.8
2002.02	103.5	97.5	89.8	84.0	2012.03	133.3	151.7	118.2	125.2
2002.03	103.4	95.0	91.4	93.8	2012.04	134.7	148.8	118.7	127.9
2002.04	106.2	99.4	90.5	98.3	2013.01	136.2	148.5	121.3	124.9
2003.01	108.3	100.8	93.6	102.7	2013.02	134.4	155.5	125.5	138.8
2003.02	112.2	121.3	96.7	109.5	2013.03	136.1	165.2	127.7	141.3
2003.03	115.3	127.3	98.4	108.5	2013.04	134.5	166.4	127.7	142.6
2003.04	114.8	130.9	100.4	109.1	2014.01	135.6	165.3	134.4	163.3
2004.01	116.1	130.6	98.7	104.7	2014.02	137.1	165.6	131.7	133.8
2004.02	116.1	113.4	99.2	109.9	2014.03	136.7	162.2	131.1	140.8
2004.03	116.3	118.8	102.4	122.0	2014.04	138.8	162.4	134.5	145.6
2004.04	120.7	110.2	103.1	106.9	2015.01	140.1	170.1	136.6	163.5
2005.01	127.8	115.1	108.3	126.8	2015.02	146.4	177.9	143.6	163.5
2005.02	135.7	121.6	113.0	129.7	2015.03	146.0	179.3	152.0	171.8
					2015.04	149.1	175.6	157.9	171.0

Comparison of hotel real estate cycles using repeat sales



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

11.2 percent from the previous quarter.¹ On a year-over-year basis, the transaction volume for large hotels increased 36.8 percent, but small hotel transaction volume declined 19.4 percent.

In contrast to transaction volume, the median price for large hotels declined 36 percent on a year-over-year basis, while the median price for small hotels rose 4 percent year over year. On a quarter-over-quarter basis, large hotels experienced a price decline of 21 percent, while the price of small hotels increased 9 percent on average. Exhibit 4 and Exhibit 5 show these year-over-year transaction trends.

In summary, although hotel transaction volume has increased, the median price has declined for large hotels both

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

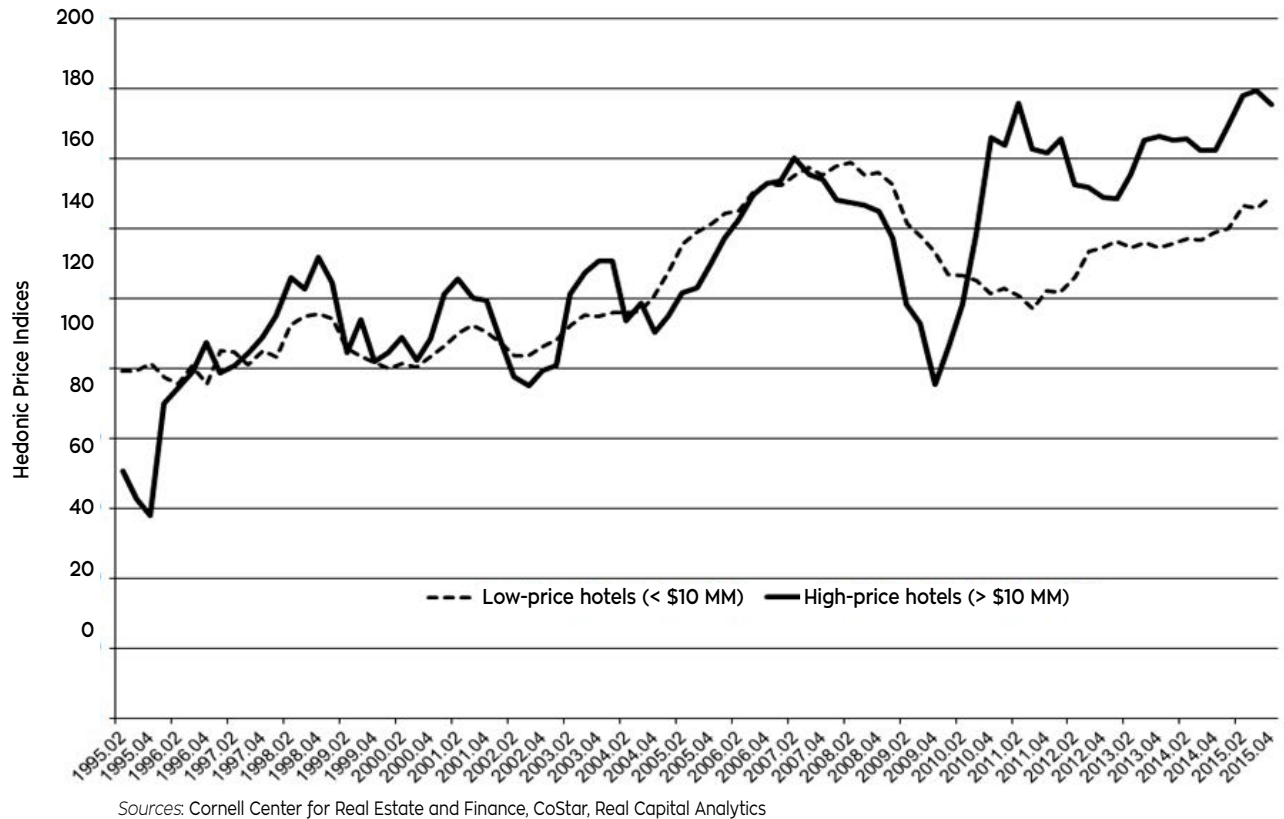
year over year and quarter over quarter. In contrast, transaction volume has declined and the median price has risen for smaller hotels on both a year-over-year and on a quarter-over-quarter basis.

Repeat-sale Repetition

Hotel prices continue to behave in a similar manner relative to the 2003Q1 to 2010Q2 cycle, based on repeat sales. Exhibit 6 provides the price index for the repeat hotel sales used to construct our RSI cycle analysis in Exhibit 7 together with the hedonic price indices for small and large hotels. The data in Exhibit 7 continue to confirm our expectations based on cycle analysis. If history continues to repeat, we should expect a leveling off of prices in the next period.

EXHIBIT 8

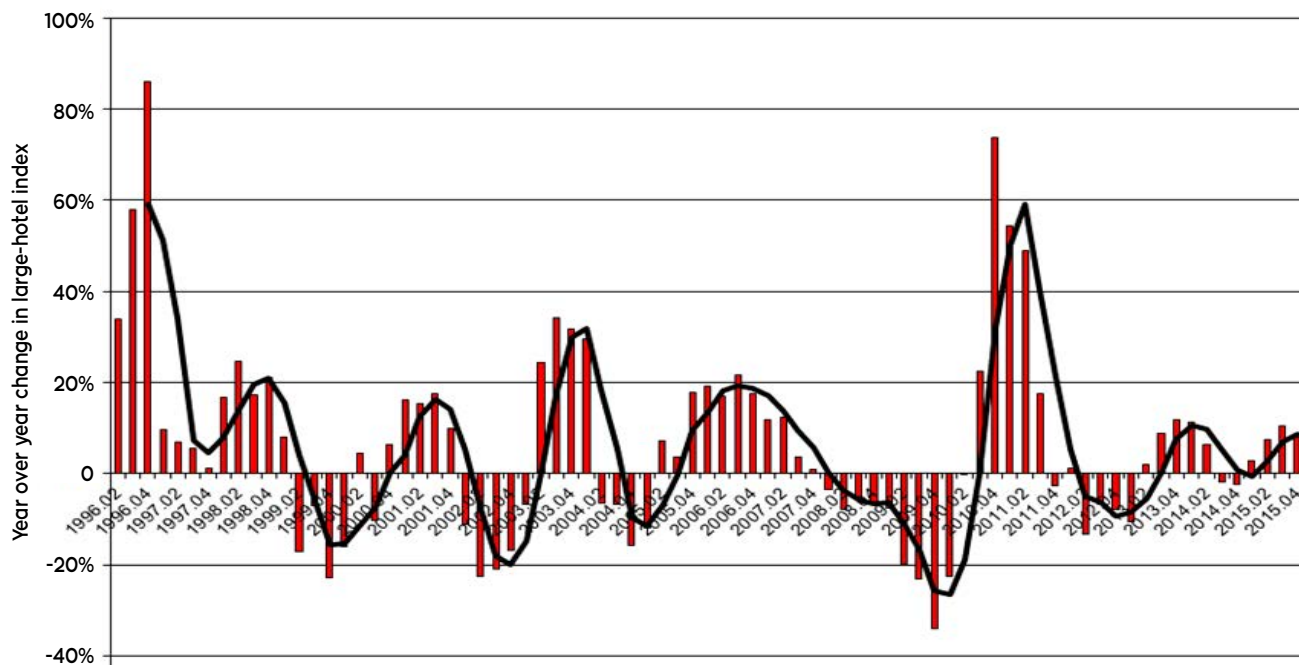
Hedonic hotel indices for high-price and low-price hotel transactions



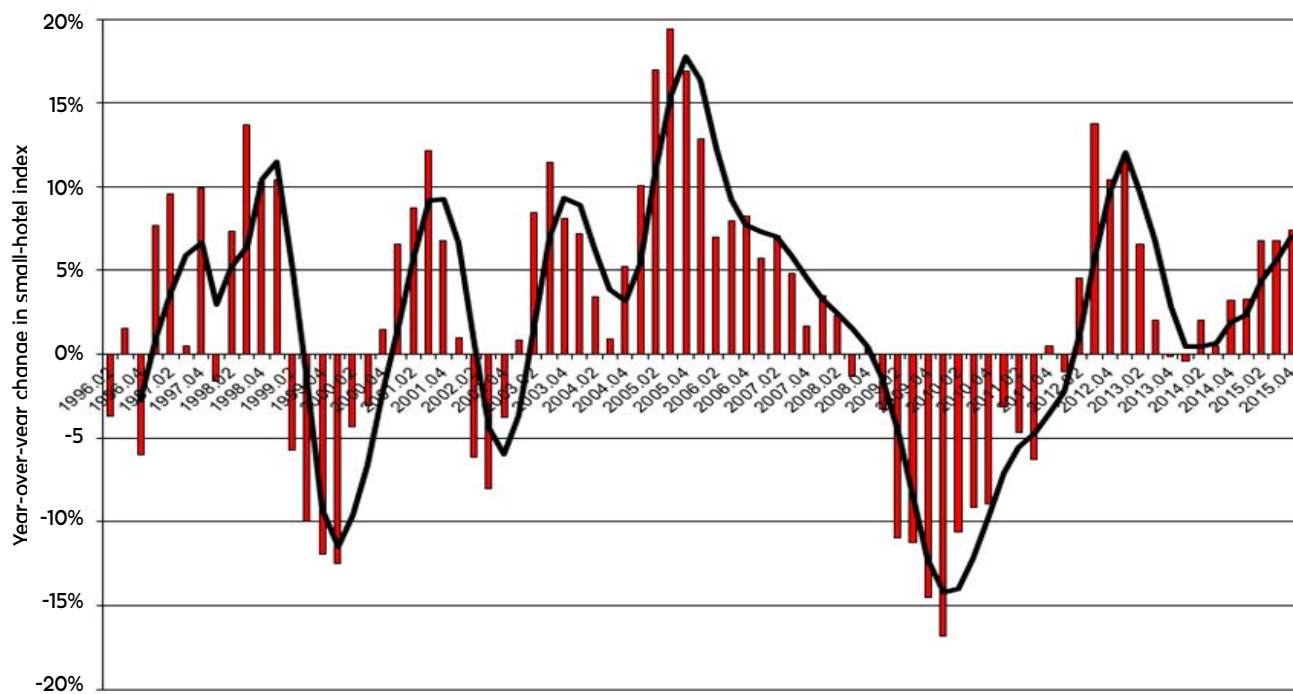
Prices of Large Hotels Are Now Reverting to the Mean, but Small Hotels Are Still Experiencing Positive Price Momentum, According to our Standardized Unexpected Price Metric (SUP).

Exhibit 8 shows that prices for the large-hotel and small-hotel indices have continued to rise on a year-over-year basis. However, on a quarter-over-quarter basis prices have increased only

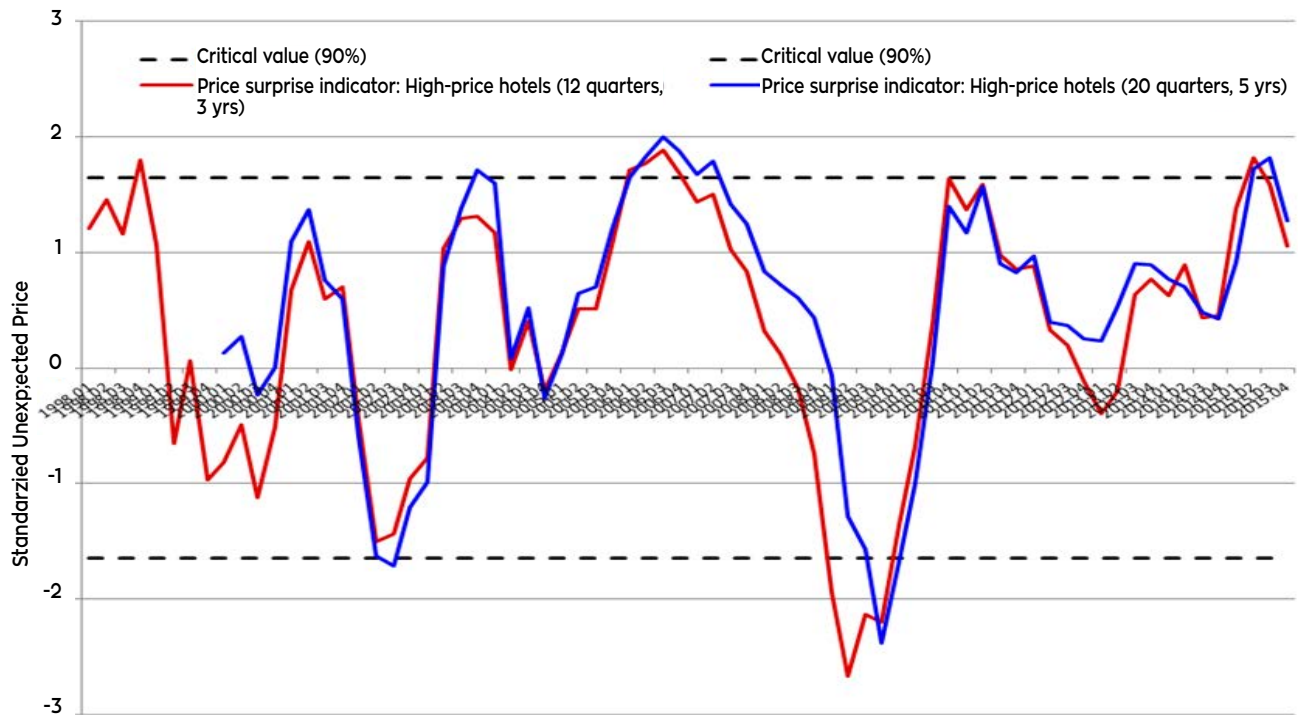
for small hotels, while large property prices have fallen. These price changes and moving averages are shown in Exhibits 9 and 10, showing that on a year-over-year basis, large hotels experienced an 8.1-percent increase in prices, while smaller hotels have gained 7.4 percent. Quarter over quarter, prices have declined 2.1 percent for larger hotels, while prices have risen 2.2 percent for smaller hotels.

EXHIBIT 9**Year-over-year change in high-price hotel index, with moving-average trendline**

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 trendline**

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

EXHIBIT 11**Standardized unexpected price (SUP) for high-price hotel index**

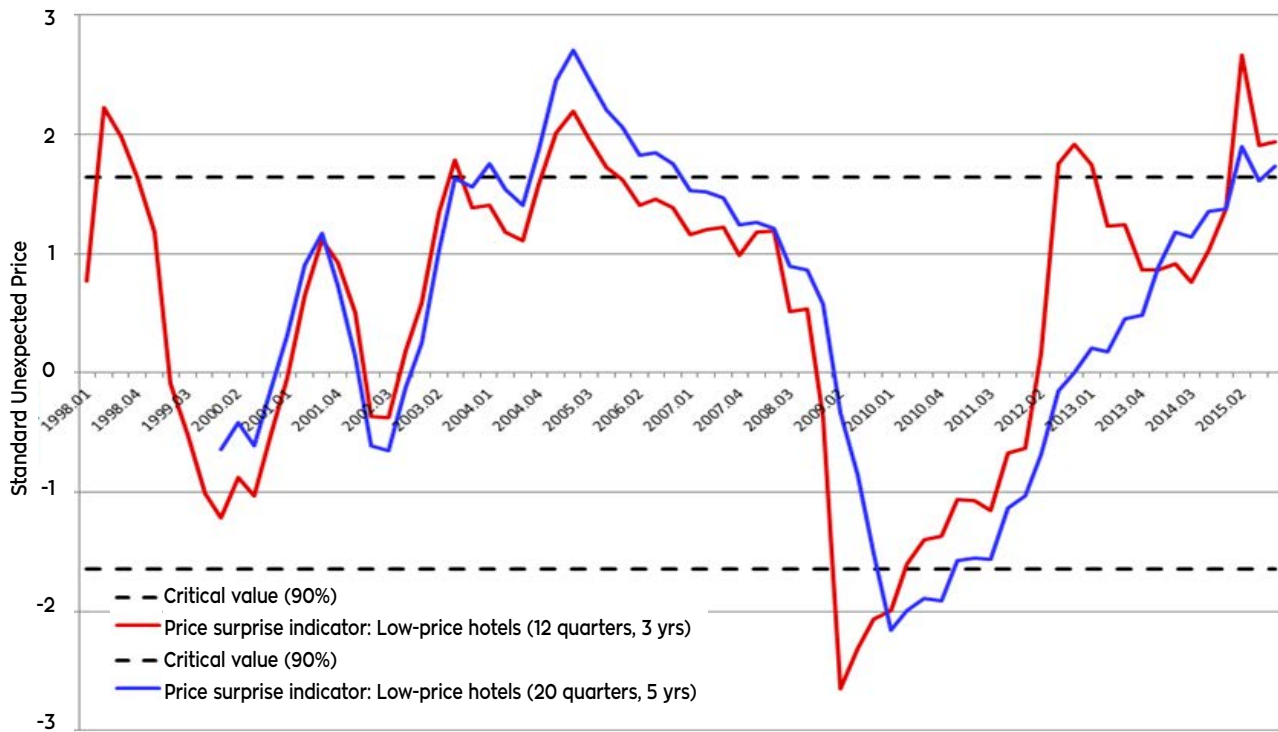
Sources: Cornell Center for Real Estate and Finance, CoStar, Real Capital Analytics

Our Standardized Unexpected Price (SUP) metric displayed in Exhibit 11 shows that the price of large hotels peaked in the third quarter of 2013, and is now reverting to the mean. In contrast to large hotels, Exhibit 12 shows that the price for smaller hotels continues to remain above the upper SUP band.

We cannot determine how long this trend will continue, but we do know that having prices remain above the upper band is not sustainable. Eventually we should expect those prices also to revert to the mean.

EXHIBIT 12

Standardized unexpected price (SUP) for small-hotel index



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

EXHIBIT 13

Standardized unexpected price (SUP) for repeat-sale hotels

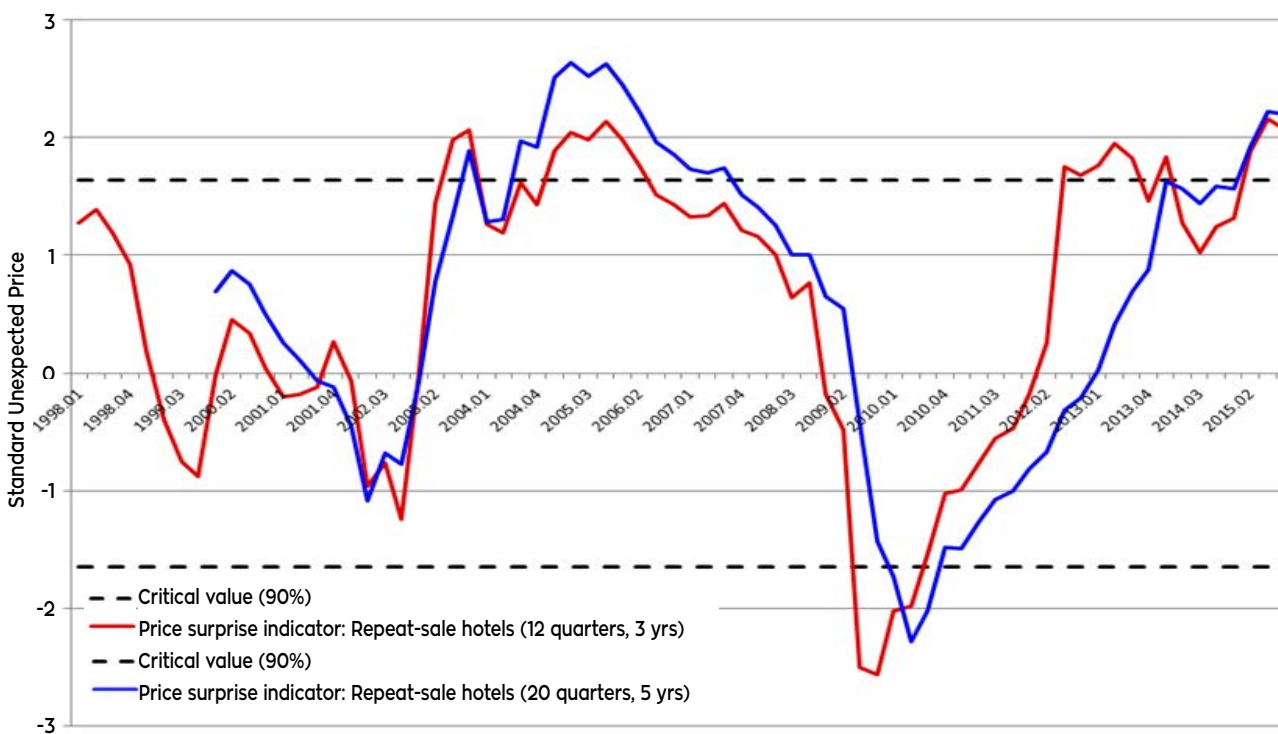
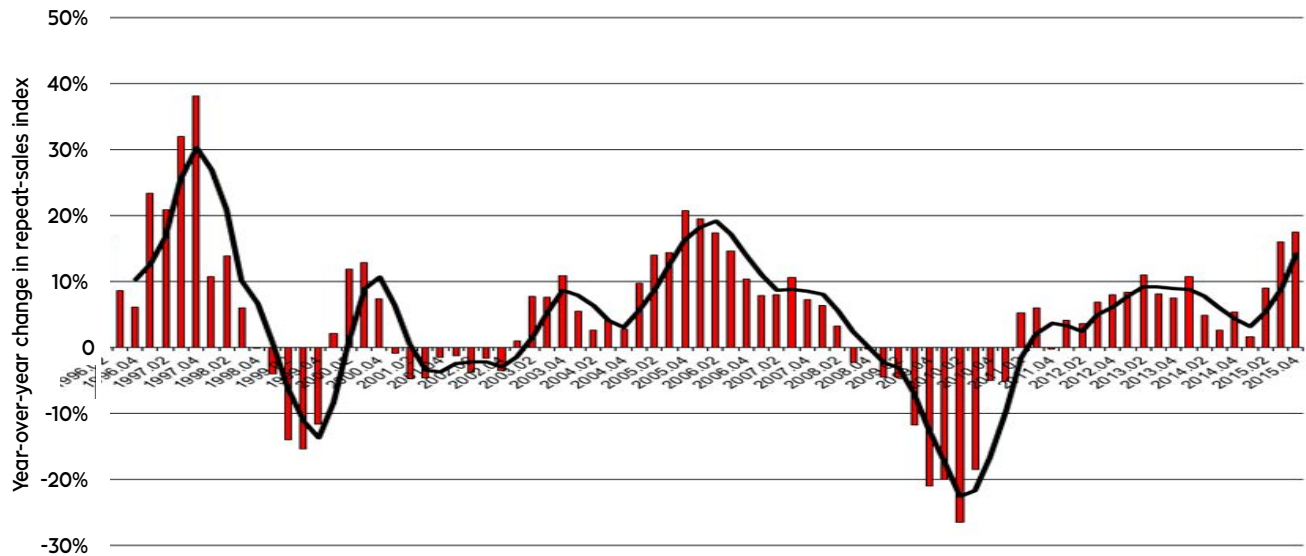


EXHIBIT 14

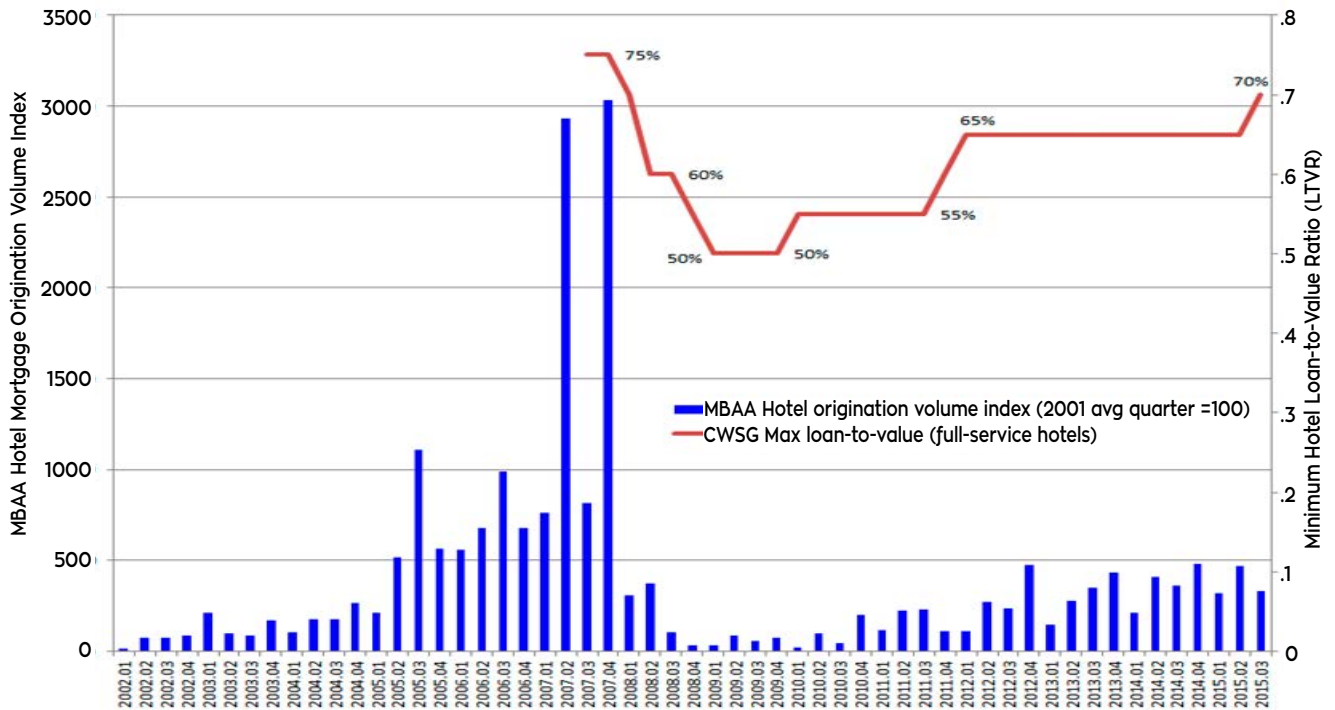
Year-over-year change in repeat-sale index, with moving-average trendline



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

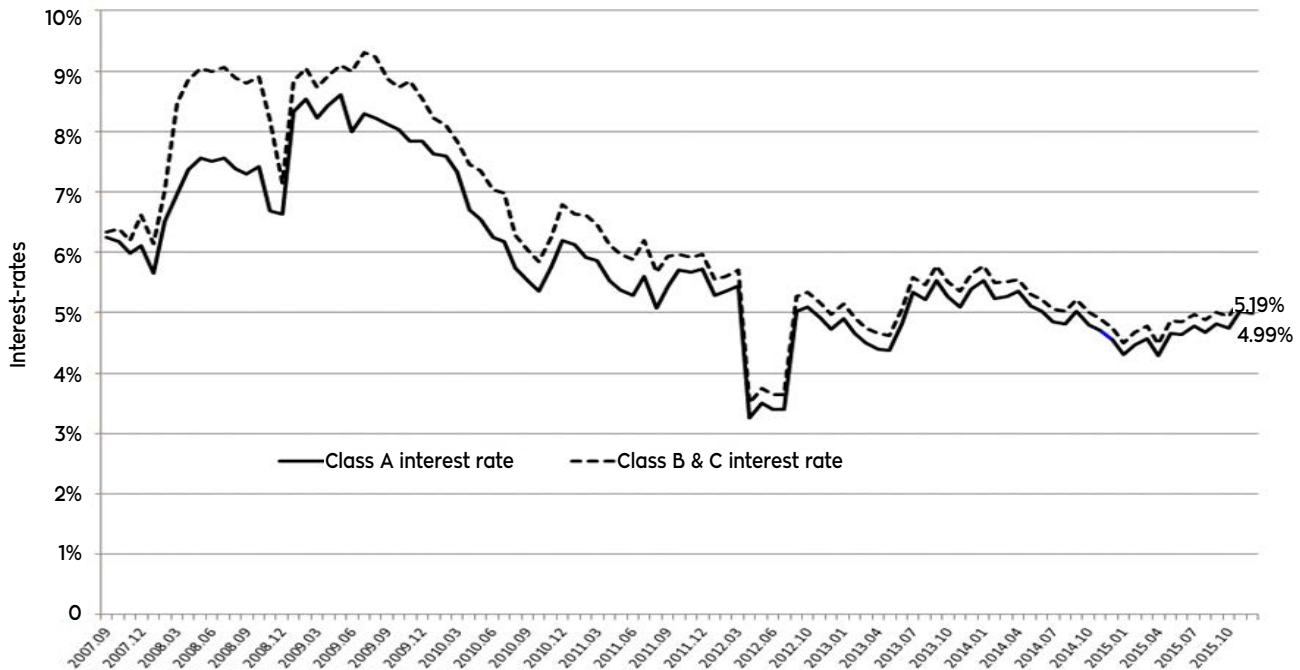
EXHIBIT 15

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



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

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



Sources: Cushman Wakefield Sonnenblick Goldman

Repeat Sales Continue to Remain above Historical Averages, with Positive Price Momentum on a Year-over-year Basis

The SUP indicator for repeat hotel sales, shown in Exhibit 13, also rose, and both the 3-year and 5-year SUP indicators are above the SUP upper band.² Exhibit 14 provides an alternative perspective of the price momentum in the repeat sales. The index shows that the repeat sale prices rose on a year-over-year basis with the increase of 17.4 percent, which is larger than the price increase of 16.6 percent in the prior year-over-year period.

Mortgage Financing Volume Continues to Rise on a Year-over-year Basis

Exhibit 15 shows that the mortgage origination volume for hotels as reported for 2015Q3 is about 8.8-percent lower than the third quarter of 2014.³ This compares to a 15.5-percent

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. Thus, 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 latter repeat sale index.

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

year-over-year increase recorded in the second quarter of 2015 (2015Q2 relative to 2014Q2). The loan-to-value (LTV) ratio for hotels, which has remained at 65 percent since the first quarter of 2012, increased to 70 percent. The last time the LTV was at that 70-percent level was just prior to the commercial real estate market crash in 2008Q1.

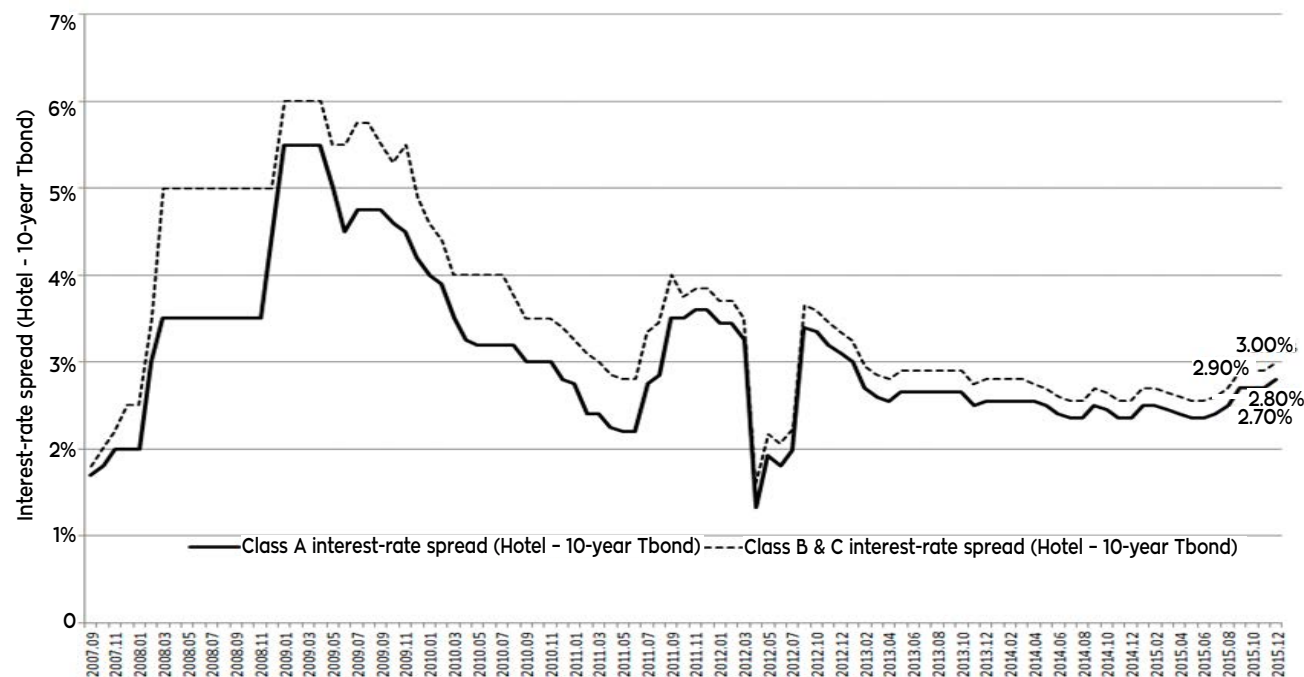
Cost of Debt Financing Continues to Increase with a Widening of the Relative Risk Premium for Hotels

The cost of obtaining hotel financing, as reported by Cushman Wakefield Sonnenblick Goldman, has continued to rise since the end of 2014, when the interest rate was 4.55 percent for Class A hotels and 4.75 percent for B&C properties.⁴ As shown in Exhibit 16, as of the end of 2015, interest rates were at about 5 percent for Class A properties and 5.2 percent for B&C hotels—both increased from the previous quarter, when Class A rates were 4.8 percent and B&C hotel rates were 5.0

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 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.

EXHIBIT 17

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



Source: Cushman Wakefield Sonnenblick Goldman

percent. Exhibit 17 shows the spread of Class A and of B&C interest rates for full-service hotels over the ten-year Treasury bond. On this metric, interest rate spreads have risen over the last four quarters, indicating that lenders continue to demand additional compensation for risk associated with lending on hotels. Exhibit 18 shows the hotel real estate premium, which is the spread between the interest rate on Class A or on Class B&C full-service hotels over the interest rate corresponding to non-hotel commercial real estate.⁵ The hotel real estate premiums for both hotel classes have continued to rise since May 2015. As of 2015Q4, we calculate the hotel real estate premium for Class A hotels at .53 percent, and at .63 percent for Class B&C properties, up from a corresponding premiums of .46 percent and .56 percent in 2015Q3. The rise in the premium in the most recent quarter in Exhibit 18 is a signal that the perceived default risk for hotel properties continues to widen relative to other commercial real estate.

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.

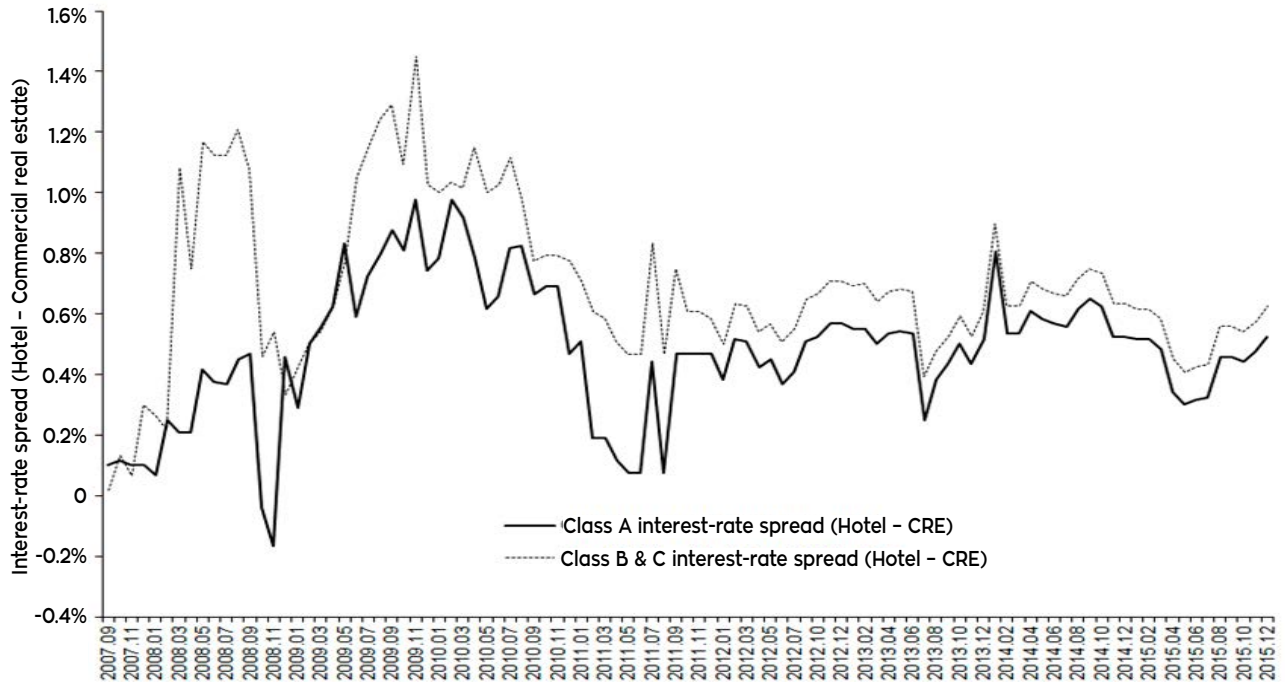
Cost of Equity Financing Continues to Remain Affordable; Expect to See Higher Interest Rates for Hotel Financing Relative to Other Commercial Real Estate in the Near Future

The cost of using equity financing for hotels, as measured using the Capital Asset Pricing Model (CAPM) on Hotel REIT returns (shown in Exhibit 19), remains in a narrow range of 9.6 to 9.9 percent. The cost of using equity funds is currently at 9.8 percent for 2015Q3, up from 9.6 percent in 2015Q2 but down from 11.2 percent in quarter three of 2014. This lower cost is due to a reduction in the systematic risk (beta) of hotel REITs. Currently, the beta for lodging REITs is at 1.5, a figure that has remained relatively constant since the first quarter of 2015. In terms of total risk (systematic risk + risk that is specific to hotel REITs),⁶ Exhibit 20 depicts that the total risk of hotel REITs is lower than the total risk of equity REITs even though, as previously mentioned, the perceived default risk for hotels has risen relative to other types of commercial real estate. This suggests that the unsystematic risk associated with hotels—that is, the risk that is specific to lodging REITs—has increased.

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

EXHIBIT 18

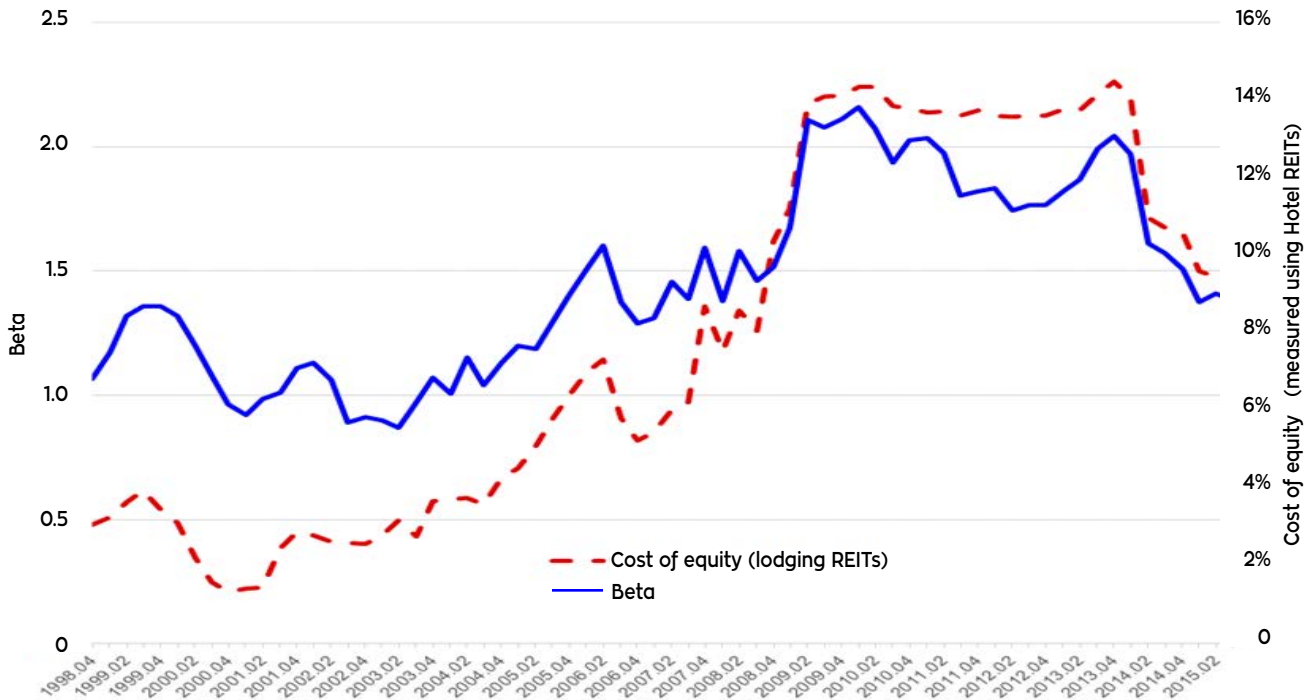
Interest-rate spreads of hotels versus non-hotel commercial real estate



Source: Cushman Wakefield Sonnenblick Goldman

EXHIBIT 19

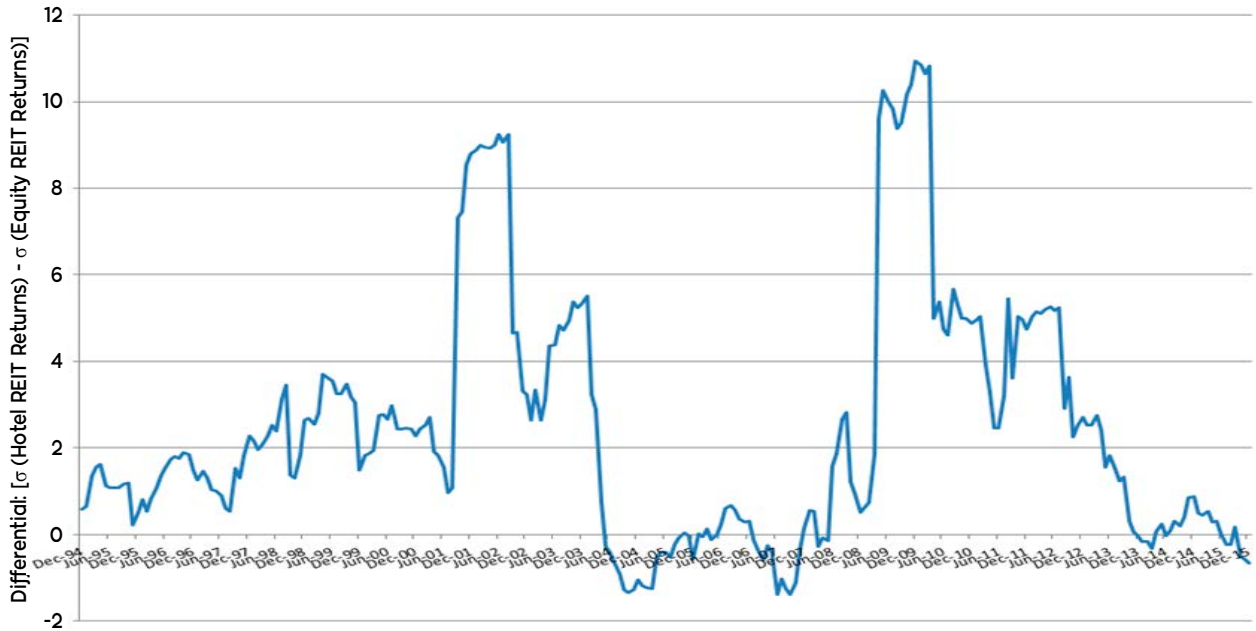
Cost of equity financing using the Capital Asset Pricing Model and hotel REITs



Source: Cornell Center for Real Estate and Finance, NAREIT

EXHIBIT 20

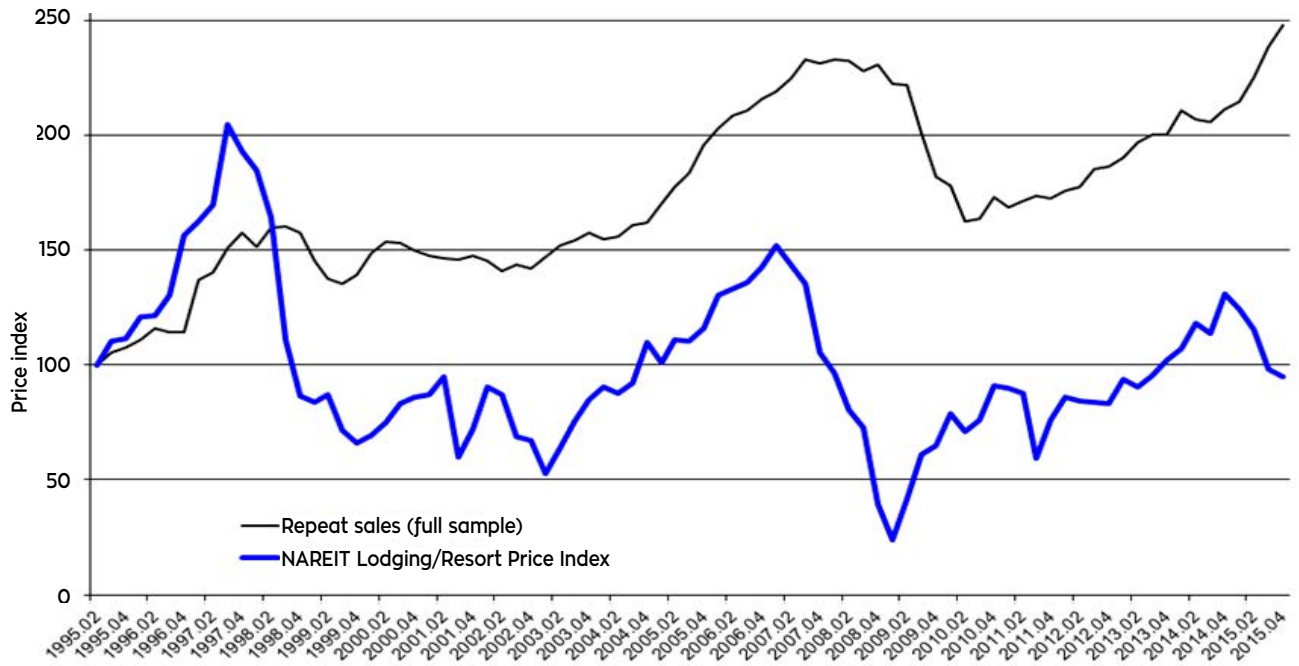
Risk differential between hotel REITs and equity REITs



Source: Cornell Center for Real Estate and Finance, NAREIT

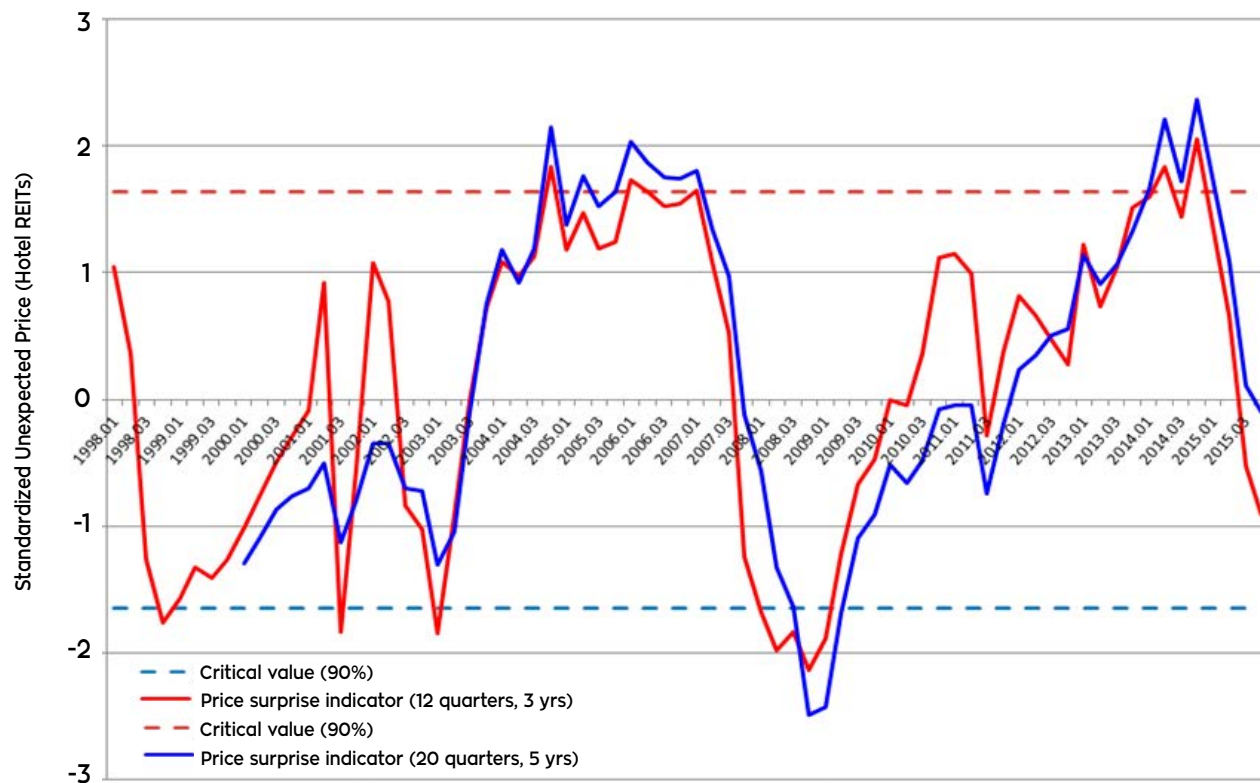
EXHIBIT 21

Hotel repeat sales index versus NAREIT lodging/resort price index



Source: Cornell Center for Real Estate and Finance, NAREIT

Standardized unexpected price (SUP) for NAREIT Lodging/Resort Index



Source: Cornell Center for Real Estate and Finance, NAREIT

Negative Signals Exist on the Future Direction in the Price of Large Hotels and also Small Hotels, According to the Tea Leaves

Exhibit 21 compares the performance of the repeat sales index relative to the NAREIT Lodging/Resort Price Index. The repeat sales index tends to lag the NAREIT index by at least one quarter (or more). This is consistent with academic studies which find that securitized real estate is a leading indicator of underlying real estate performance, since the stock market is generally forward looking or efficient. Looking ahead, the NAREIT lodging index continues to lose momentum, falling 3.4 percent this quarter after declining 14.6 percent in the third quarter of 2015 and 7.1 percent in quarter two. Year over year, the NAREIT lodging index is down 27.5 percent (2014Q4 to 2015Q4), while in the third quarter, it was down 13.2 percent (2014Q3 to 2015Q3). In terms of the SUP for the NAREIT Hotel Index, which provides a complementary perspective, the Hotel REIT index continued to trend downwards (see Exhibit 22). As we noted in our previous report, this decline started in June 2015. At this point we must expect hotel prices to fall in the future, and the question has become one not of whether hotel prices will fall but rather when they will start doing so. Since the

Federal Reserve raised interest rates on December 16 for the first time in nearly a decade, citing the ongoing U.S. recovery, we expect a decline in hotel prices to occur in the next period, together with a softening of hotel construction activity.

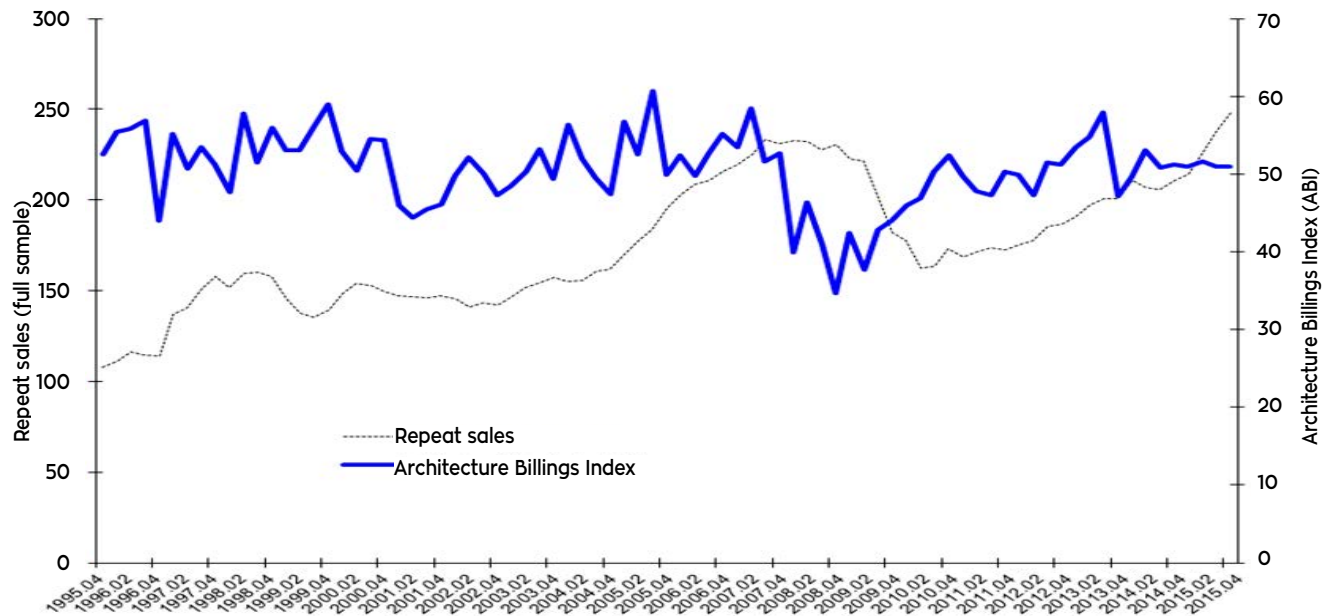
The architecture billings index (ABI) for commercial and industrial property, which represents another forward looking metric, remained relatively flat this quarter.⁷ It was also relatively flat in the third quarter, as shown in Exhibit 23.⁸ According to AIA Chief Economist Kermit Baker, this “could reflect the uncertainty of moving ahead with projects given the continued tightness in construction financing and the growing labor shortage problem gripping the entire design and construc-

⁷ www.aia.org/practicing/economics/aia076265

⁸ In the previous edition, we had reported that the index increased slightly based on our use of the most current ABI index that was available. However, since the last report was written, the index for March 2015 has been published and as such we report the indices that are now available. The ABI anticipates non-residential construction activity by approximately 9 to 12 months. According to material posted on their website, “The indexes are developed from the monthly Work-on-the-Boards survey panel where participants are asked whether their billings increased, decreased, or stayed the same in the month that just ended. According to the proportion of respondents choosing each option, a score is generated, which represents an index value for each month.”

EXHIBIT 23

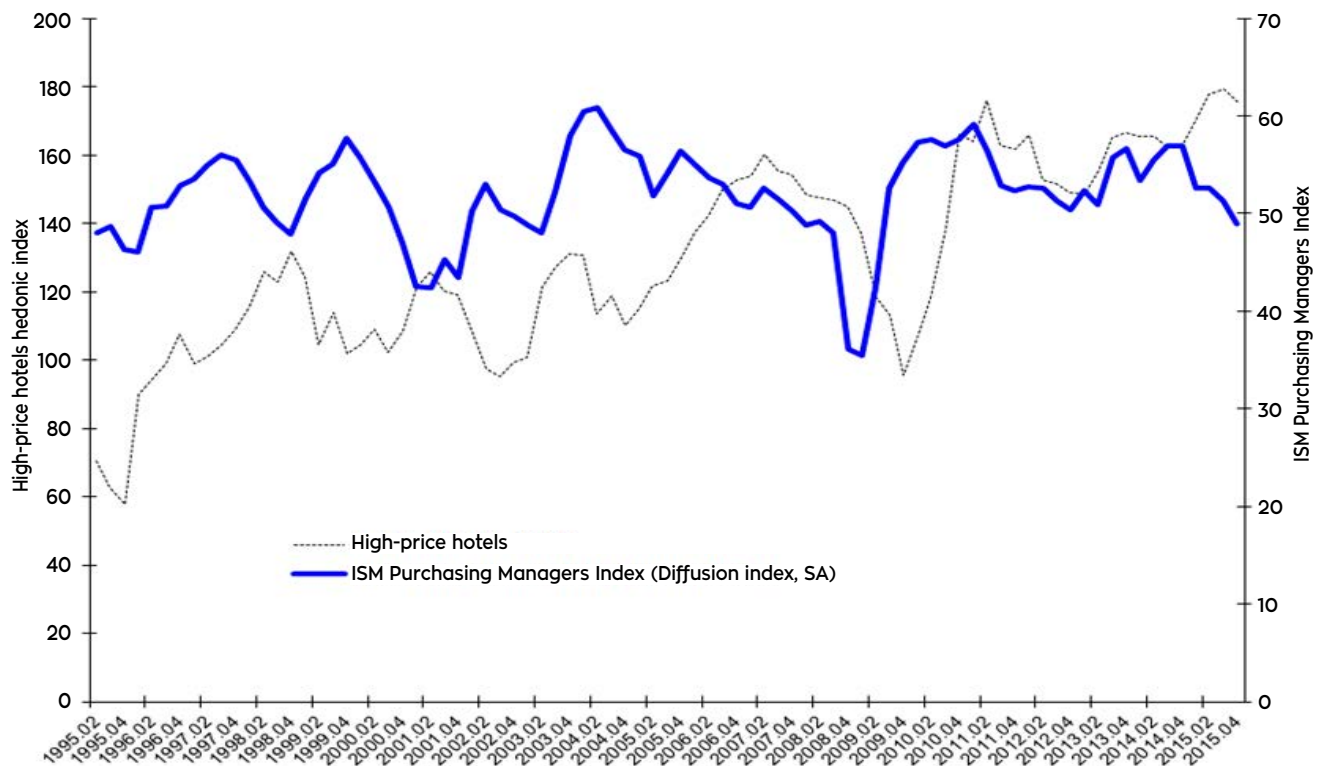
Hotel repeat sales index versus architecture billings index



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

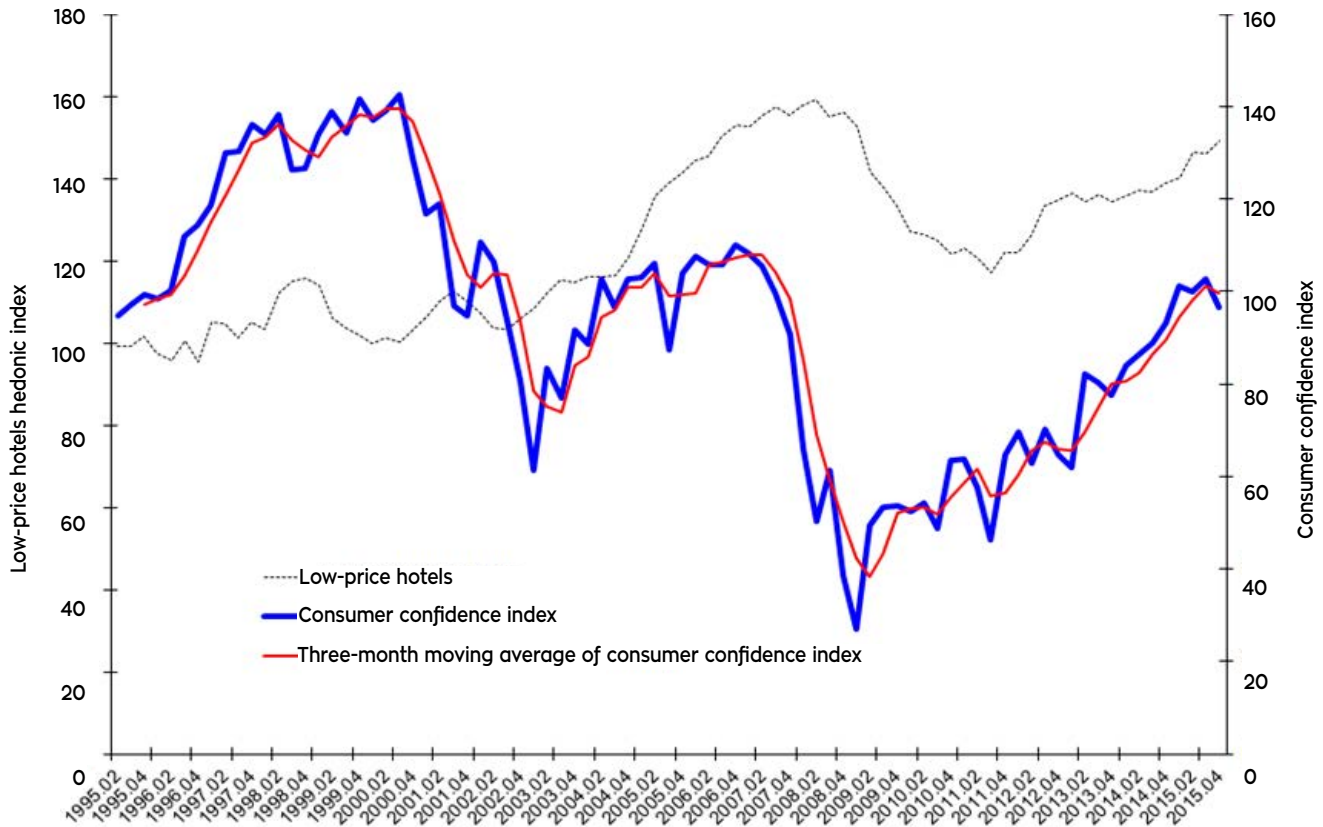
EXHIBIT 24

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

tion industries.”⁹ Consistent with these indicators, the National Association of Purchasing Managers (NAPM) index, shown in Exhibit 24, which is an indicator of anticipated business confidence and thus business traveler demand, continued to decline in this quarter both on a quarter-over-quarter basis (-4.6%) and also on a year-over-year basis (-14%).¹⁰ Our large hotel price index also declined as well. We had expected this decline to occur given that the NAPM is a leading index of the behavior of the price of large hotels. The absolute level of the NAPM index fell below 50, indicating a contraction in the manufacturing sector. The manufacturing sector has been losing momentum since the

fourth quarter of 2014, with the index falling from 56.87 in that quarter to 48.97 in the fourth quarter of 2015.

The Consumer Confidence Index from the Conference Board graphed in Exhibit 25, 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, fell in December (blue line) to 96.5, a 6-percent decrease on a quarter-over-quarter basis. Year over year, however, the index rose 3.7 percent. Expect the price of small hotels to follow large hotels in reverting downward to their historical moving average next quarter. ■

⁹ www.aiaa.org/press/AIAB107771

¹⁰ 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 percent indicates that manufacturing is growing, while a reading below 50 percent means it is shrinking.

HOTVAL Updated

The 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](http://www.cref.com).

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:

$$SUE_Q = (A_Q - \mu_Q) / s_Q$$

where SUE_Q = quarter Q standardized unexpected earnings,

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

μ_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)				
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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