



Approximation of the Impact of Interest Rates on Hotel Capitalization Rates: Australian Market

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This analysis attempts to apply findings from the paper *The Effect of a Rise in Interest Rates on Hotel Capitalization Rates* by Jack Corgel, Cornell Hospitality Report • November 2016 • www.chr.cornell.edu • Vol. 16, No. 26. We are currently in a period of uncertainty, and it's unknown how long interest rates will stay at this level. If they do sustain at this level or at a relatively high level as compared to the previous period post GFC, what will be the effect on cap rates for hotel properties in Australia? Given the statistical significance of the findings in the paper, here we try to apply the conclusion to the analysis from the paper i.e. the sensitivity of 0.07 to 0.25 across the average cap rates of a survey completed in 2021 across major capital cities in Australia, and estimate a range of which we expect cap expansion to lie. Of course, the caveat is that there should be differences in how U.S. 10-year treasury rates correlate with US hotel cap rates as compared to the Australian 10 Year Government bond and its correlation to the Australian hotel cap rates, but that is currently the best proxy I have at the moment (since I don't have access to a statistically significant times series data regarding Australian Cap rates for hotel markets).

The paper studies the times series over 1992-2016 period showing the sensitivity between interest rates and hotel capitalization rates. In a nutshell, any upward shift in the 10-year U.S. Treasury rate could bring an increase in hotel real estate capitalization rates. Below is a chart in the study tracking the spread between average US hotel cap rates and 10-Year US treasuries, with the average spread being 5.16%.

Historical pattern of 10-year U.S. Treasuries and hotel capitalization rates



Notes: Average of hotel capitalization rates from Real Estate Research Corporation (RERC) and Real Capital Analytics (RCA).
Sources: FRED, RERC, RCA.

Briefly, if a simple regression without other variables is taken into account, a 1% increase (in terms of percentage) in interest rates translates to a .25% increase (in terms of percentage) in hotel cap rates, more specifically, in the upper upscale tier and luxury tier. A more precise model, Corgel states, is taking into account a multi-variable regression model whereby interest rates and NOI growth rate is taken into account, with controls for industry sentiment and also credit availability. Applying these variables gives a much more accurate result, with the sensitivity decreasing from 0.25 to 0.7, translating into a 1% interest rate increase corresponds to a 0.07% increase in cap rates (again, in terms of percentages).

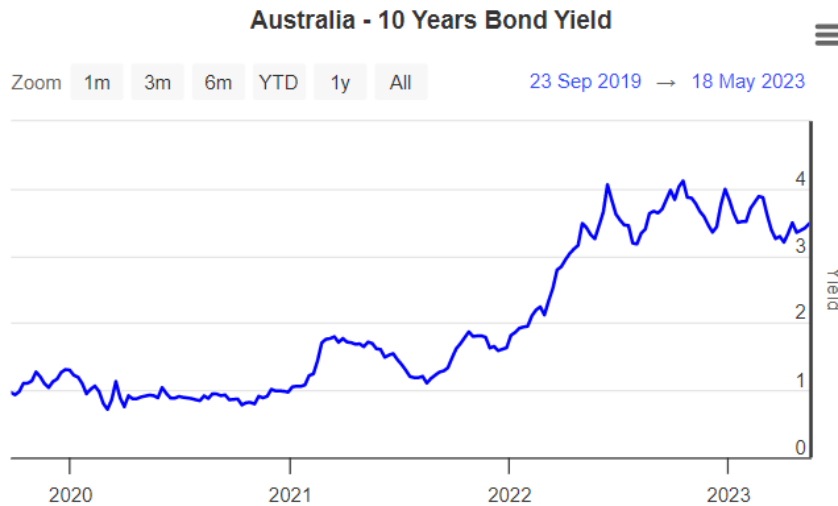
From my understanding the logic behind the multi-variable model dives into the analysis that in periods of rising interest rates, typically risk premiums compress (the study represents this with the spread from Moody's Baa Corporate Bond Index and the US 10 Year Treasury) and NOI growth increases. This combination offsets the sensitivity of interest rate fluctuations and their effect on the hotel capitalization rates.

In our analysis, we use the data for the Australian 10 Year Government bond, as an equivalent to the US 10 Year treasury bond. (See Chart)

Historical Data

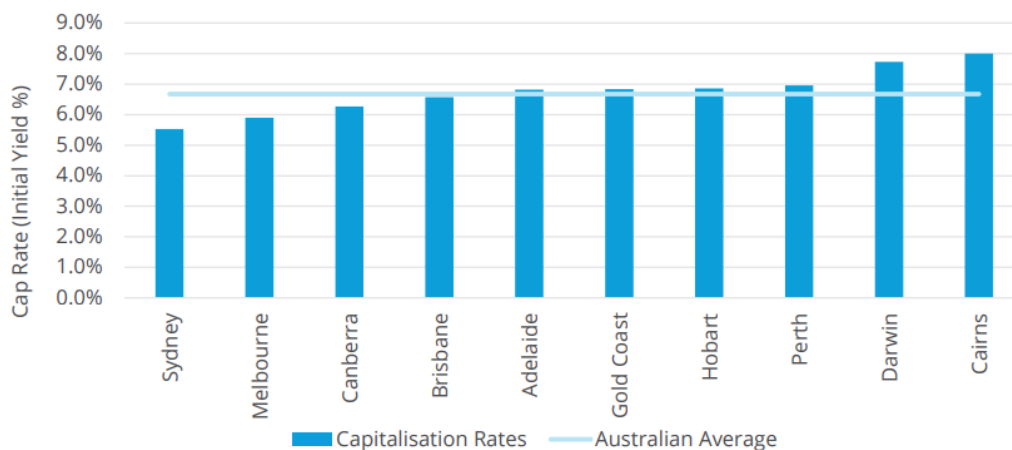
Data Source: from 30 Jan 2007 to 18 May 2023

The **Australia 10 Years Government Bond** reached a maximum yield of 6.793% (16 June 2008) and a minimum yield of 0.573% (8 March 2020).



For Australian average cap rate data across cities, fortunately we have a good study from Colliers which was a survey taken in Feb 2021 (See below). The data specifies investor cap rate expectations for an average upscale stabilized asset, which also matches Corgel’s data of using upper upscale and luxury hotels data. Since the data was taken in Feb 2021, we use the corresponding average rate of the 10 Year Australian Gov Bond in Feb 2021 – which is approximately 1.5%. (See the chart). I’d like here to briefly mention its most likely an even more accurate measurement if a time lag could be taken into account. However, there’s no precise study as to the number of months it takes for an interest rate rise to take effect in the hotel cap rate. Thus, I’ll just match February to February.

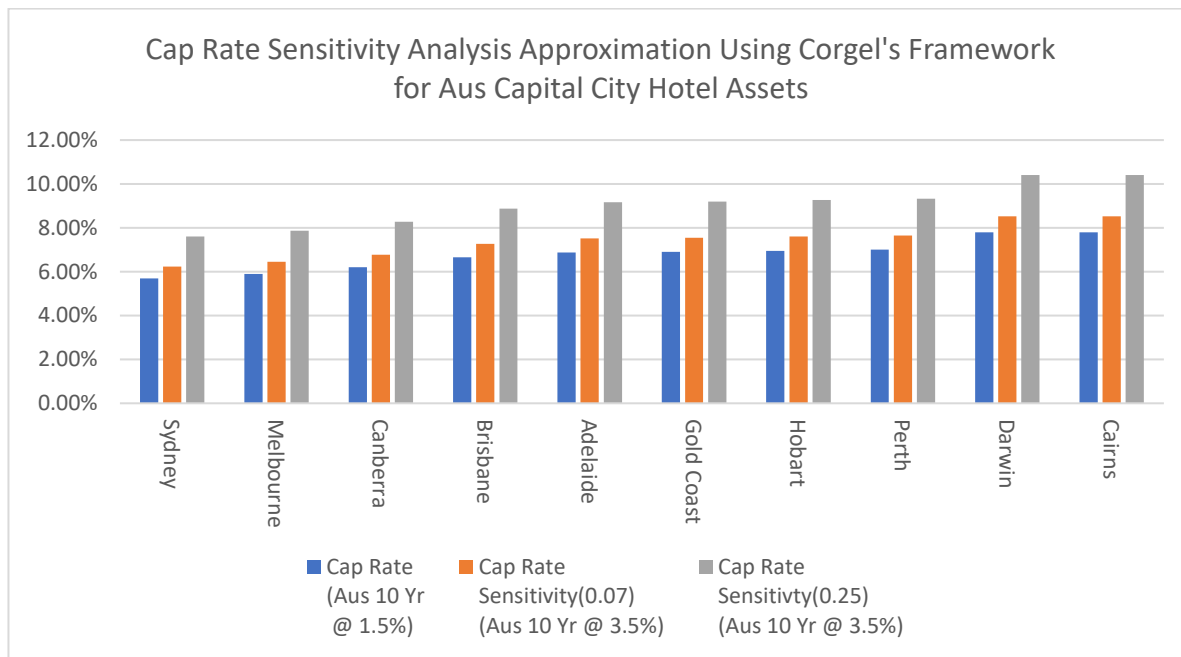
Investor Expectations for Cap Rates (Initial Yield) for a New Acquisition as at February 2021



*Note: Australian average is weighted by the number of responses, Source: Colliers Australian Hotel Investor Sentiment Survey

(Source: Australian average weighted number of responses, Colliers Australian Hotel Investor Sentiment Survey, Feb 2021)

By applying the study of the conclusion of interest rate changes to hotel cap rate sensitivity (single factor model – 0.25 and multivariate regression model accounting for NOI growth and risk premiums – 0.07), we can get a range of the average cap rates across the cities in Australia for the hotel market:



Cap Rate Sensitivity Analysis Approximation Using Corgel's U.S Framework for Aus Capital City Hotel Assets

	Cap Rate (Aus 10 Yr @ 1.5%)	Cap Rate Sensitivity(0.07) (Aus 10 Yr @ 3.5%)	Cap Rate Sensitivity(0.25) (Aus 10 Yr @ 3.5%)
Sydney	5.70%	6.23%	7.60%
Melbourne	5.90%	6.45%	7.87%
Canberra	6.20%	6.78%	8.27%
Brisbane	6.65%	7.27%	8.87%
Adelaide	6.88%	7.52%	9.17%
Gold Coast	6.90%	7.54%	9.20%
Hobart	6.95%	7.60%	9.27%
Perth	7.00%	7.65%	9.33%
Darwin	7.80%	8.53%	10.40%
Cairns	7.80%	8.53%	10.40%

Explaining the findings: The cap rate survey was done in Feb2021. The 10 Year Gov bond was 1.5% then. Currently, the 10 Year Government bond is at 3.5 i.e. a 133% increase in interest rates. Given the case we see that the range of Sydney cap rates would increase from 5.7% to 6.23% - 7.6%. With 6.23% being possibly more accurate as it takes into account NOI growth, risk premium compression and controlling for credit availability and sentiment. Using this model we see Brisbane's cap from 6.65% average to 7.27% using the multivariate model, with a more extreme estimation at 8.87%, correspondingly, Adelaide increasing from 6.88% to 7.52%, Hobart from 6.95% to 7.6%.

Furthermore here is a sensitivity matrix given different (sustained) period of change in 10 Yr Aus Gov Bond rates, using the multivariate model with sensitivity of 0.07. From anecdotally looking at the current market, it seems the approximation done in this study for Aussie Hotel market also correlates to actual market transactions.

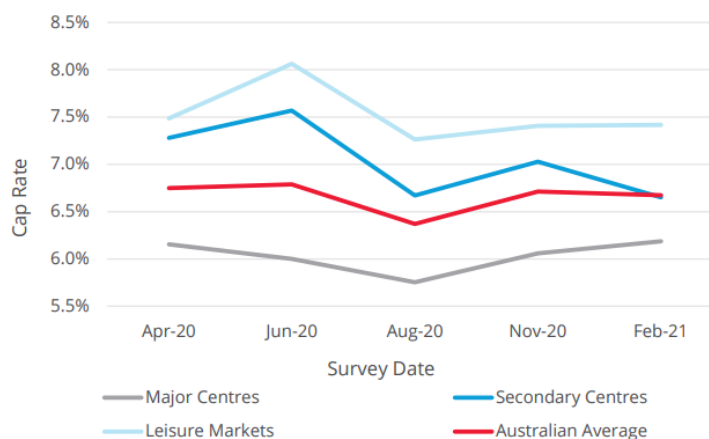
Interest Rate and Effect of Hotel Cap Rates across Aus Major Cities (Multivariate model, sensitivity = 0.07)

	Cap Rate (Aus10Yr @ 1.5%)	Cap Rate Sensitivity(0.07) (Aus10Yr @ 2.0%)	Cap Rate Sensitivity(0.07) (Aus10Yr @ 2.5%)	Cap Rate Sensitivity(0.07) (Aus10Yr @ 3.0%)	Cap Rate Sensitivity(0.07) (Aus10Yr @ 3.5%)	Cap Rate Sensitivity(0.07) (Aus10Yr @ 4.0%)
Sydney	5.70%	5.83%	5.97%	6.10%	6.23%	6.37%
Melbourne	5.90%	6.04%	6.18%	6.31%	6.45%	6.59%
Canberra	6.20%	6.34%	6.49%	6.63%	6.78%	6.92%
Brisbane	6.65%	6.81%	6.96%	7.12%	7.27%	7.43%
Adelaide	6.88%	7.04%	7.20%	7.36%	7.52%	7.68%
Gold Coast	6.90%	7.06%	7.22%	7.38%	7.54%	7.71%
Hobart	6.95%	7.11%	7.27%	7.44%	7.60%	7.76%
Perth	7.00%	7.16%	7.33%	7.49%	7.65%	7.82%
Darwin	7.80%	7.98%	8.16%	8.35%	8.53%	8.71%
Cairns	7.80%	7.98%	8.16%	8.35%	8.53%	8.71%

A brief summary on findings. With the 10-Year Aus Gov Bond increasing from 1.5 to 2%, that signifies a nominal .13% increase (Sydney) to .18% (Cairns, Darwin) increase in the actual cap rate, which is quite insignificant. At the other end of the spectrum, if rates were to stay at 4% from 1.5%, that would suggest cap rates for Sydney from 5.7% to 6.37%, a 67 basis points increase. For Melbourne it would correspond to a jump from 5.9% cap rate to 6.59%, a 69 basis points increase and for Brisbane it would translate to 6.65% to 7.43% cap rate, a 78 basis points increase, all using the multivariate model sensitivity of 0.07.

In conclusion there is possibility to further explore how this applies to the mid-tier and economy hotel market segments (or limited vs full service). In the study, Corgel mentions that there is a spread of 146 basis points with a correlation coefficient of 0.91 between limited and full-service cap rates. From the table below, (from Colliers International AHIS Report February 2021) we see a similar trend between Major Centres cap rates vs Secondary Centres. One could theoretically get a rough approximation on the cap rate forecast of different interest rate environment scenarios for the limited service hotel segment by accounting the 146 basis points spread to the table above (rough proxy).

Cap Rate Trend to February 2021



*Note: Weighted by the number of responses, Source: Colliers Australian Hotel Investor Sentiment Survey



Thank You

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