Depths of the Covid-19 Crisis and Recovery Timing of NOI

I. Motivation

Frequent users of the Investment Performance may have noticed significant revisions to the latest Q2 2021 release of the data in the NOI and value calculations. In particular, NOI calculations for 2020 are typically lower than in previous editions, and in many cases achieves negative values. The reasoning behind these revisions stems from a close examination of the newly collected full-year profit and loss statements from the Trends® database, recently updated with approximately 6,000 properties' data from 2020. Although it came as no surprise that performance in 2020 was especially bad, the depths to which hotel performance fell to in 2020 represented not only an unprecedented departure from historical norms, but also larger by a significant multiple than the previous severe disruption in the hotel market, the Great Financial Crisis (GFC).

II. Mechanics of Investment Performance Data

CBRE Hotels does not directly observe national or market NOI; rather, it collects representative top-line performance data and individual property level profit and loss statements from a large but not exhaustive sample of hotels in the Trends® database. We infer pass-through performance from the top line with the Trends® data by estimating non-rooms revenues and expenses as functions of ADR, occupancy and RevPAR for individual properties. We apply these estimated relationships to national and market-representative ADR, occupancy and RevPAR to produce national and market NOI. To produce more relevant estimates, we also subsample our estimations by market and tier, where possible.

Because of this estimating procedure, historical data are subject to revisions from three sources:

- changes to historical top-line performance data
- changes to our sample of historical P&L statements
- changes to our estimating procedure

Normally, revisions due to restatements of the historical performance data create small changes to NOI, since the restatements are usually small. CBRE Hotels tries to limit these restatements to be as infrequent as possible, and no restatement was made in Q2 2021. On the other hand, historical P&L statements are updated once per year on a regular basis as new full-year P&L statements are collected and incorporated into the database. The 2020 data was dramatically different enough to also motivate a slight revision to the historical estimates of fixed costs, specifically to make these larger. After close examination of the data, slight revisions were made to some estimating equation specifications to avoid "over-fitting" of the data as well. That is, in some cases costs adhered too closely to RevPAR movements, understating fixed costs. Also, in some markets, adjacent tiers were combined to increase the sample depth. However, our estimating strategy remains essentially the same.

III. Comparison of 2020 to Previous Years

To provide an illustration of just how different 2020 operating performance was from previous years, as well as an indication of how this varied across chain scales, we collected a set of observations from properties that participated in all years between 2007 to 2020 which we call the "Same-Store" sample. The counts of individual properties are listed in Exhibit 1.

© 2021 CBRE, Inc. |

EXHIBIT 1: SAME-STORE SAMPLE PROPERT COUNTS

	n=
Economy	550
Midscale	70
Upper-Midscale	402
Upscale	646
Upper-Upscale	372
Luxury	74

Source: CBRE Hotels, Q3 2021.

For the purposes of data privacy, economy and midscale hotels are combined into a single category when reporting results. Also, the economy and midscale segment are weighted much more heavily to extended-stay hotels than these chain scales as a whole, and this makes these chain scales more reflective of extended stay performance.

An important measure of the relative importance of fixed versus variable cost is the variability of the EBITDA margin. Hypothetically, if all costs were variable and changed at a set ratio compared to revenues, EBITDA margin would remain constant. Alternatively, if all costs were fixed, EBITDA margin variability would attain a maximum as no variable costs would change to offset changes to revenues. These margins are presented in Exhibit 2.

EXHIBIT 2: EBITDA MARGIN BY CHAIN SCALE, SAME-STORE SAMPLE[1]

[1] In 2015, the 11th edition of the Uniform System of Accounts for the Lodging Industry created two line items below Gross Operating Profit, but before EBITD: Non-Operating Income and Non-Operating Expenses. In general, the impact of these two new line items

© 2021 CBRE, Inc. |

	Luxury	Upper Upscale	Upscale	Upper Midscale	Economy-Midscale
2007	23.9	26.3	34.8	38.2	56.7
2008	25.8	27.7	34.9	47.0	55.0
2009	16.0	22.2	33.1	49.3	46.2
2010	17.1	23.0	30.4	37.9	47.6
2011	19.1	25.0	29.3	38.3	50.9
2012	20.2	24.6	32.6	41.0	52.1
2013	21.6	25.5	33.6	40.5	52.4
2014	23.5	26.8	36.2	41.8	51.6
2015	23.4	25.2	33.1	30.4	52.4
2016	24.8	26.2	34.1	32.6	53.2
2017	24.4	25.9	32.6	29.3	53.6
2018	24.2	28.5	32.1	25.3	51.3
2019	23.3	27.3	30.6	24.5	49.5
2020	-17.0	-18.7	-0.5	-10.7	42.0
Source: CBRE Hotels, Q3 2021.					

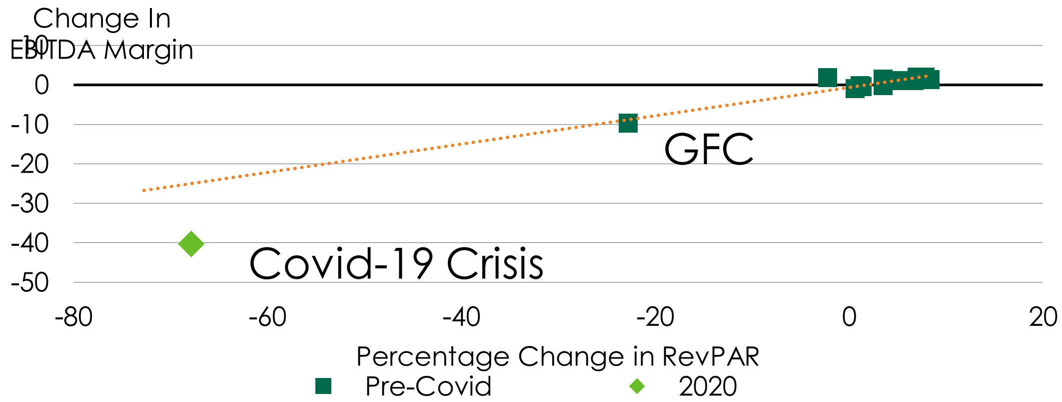
A striking feature is that only the Economy-Midscale aggregate, made up of mostly extended stay hotels, managed to have a positive EBITDA for the year 2020. Previously, the slimmest full-year margin for any chain scale aggregate had been 16% in Luxury in the immediate aftermath of the GFC. This was also the largest drop in percentage prior to 2020, at 9.8 points below the previous year. An assumption made during much of the last cycle was that the GFC represented a once-in-a-lifetime event in its severity and would not be repeated in the foreseeable future. However, the drop in margin for Luxury properties in 2020 was 40.3 percentage points, more than four times as great. The difference is more dramatic in Upper Upscale, which saw its margin drop 5.5 points during the GFC but fell 46 points in 2020, larger than eight times the difference. The Upscale and Upper Midscale groups had somewhat delayed responses to the GFC but took large dips in 2020. Only the extended stay Economy-Midscale group experienced a slightly smaller drop than in the GFC, reflecting the relative strength in extended stay properties that provided temporary housing to displaced people during the crisis.

Not only was this variability in EBITDA margin much more volatile than in previous recessions, but also the relationship of the margin to RevPAR represented a significant break from history for the top three chain scales. Exhibits 3a-3c illustrates the relationship between year-over-year percentage RevPAR change and the change to EBITDA margin in percentage points.

served to lower the EBITDA margin of the average hotel in our sample. We do not believe the impact has been material, but it does exist.

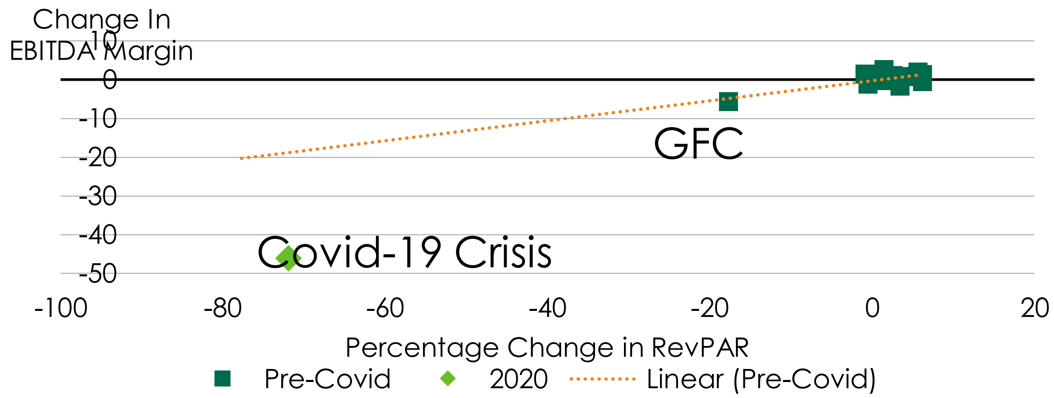
 © 2021 CBRE, Inc.

Exhibit 3a: Change in EBITDA Margin for Percentage Change in RevPAR, Luxury Hotels



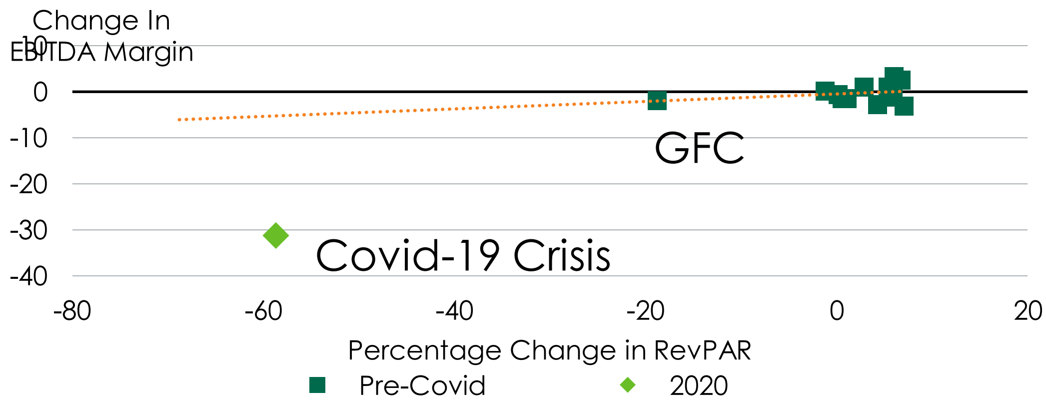
Source: CBRE Hotels, Q3 2021.

Exhibit 3b: Change in EBITDA Margin for Percentage Change in RevPAR, Upper Upscale Hotels



Source: CBRE Hotels, Q3 2021.

Exhibit 3c: Change in EBITDA Margin for Percentage Change in RevPAR, Upscale Hotels



Source: CBRE Hotels, Q3 2021.

© 2021 CBRE, Inc. |

The previous low RevPAR that occurred in 2009 had, during the previous cycle, marked the outer range of our observations, but it did not represent a meaningful break in the relationship between RevPAR and EBITDA margin. On the other hand, data from 2020 suggests that any linear estimate of the relationship will significantly over-predict margins when RevPAR reaches the low levels seen in 2020. Although the Investment Performance data models expenses and revenues rather than margins directly, the results prior to the Q1 2021 correction were the same. *I.e.* given the performance data, the model significantly over-predicted margins. After incorporating 2020 data and with slight tweaks to the estimating equations, fixed costs were found in many cases to be larger than previously estimated while non-rooms revenue varied somewhat more with rooms revenue than previously estimated.

IV. Timing of Recovery

During 2020 U.S. hotel operators did a commendable job controlling expenses. While half the properties in our Trends® sample were unable to achieve a positive cash flow from operations at the EBITDA line, 82% did realize a positive Gross Operating Profit margin. This implies that property-level management was able to control direct operating costs sufficiently to compensate for the reduced levels of revenue.

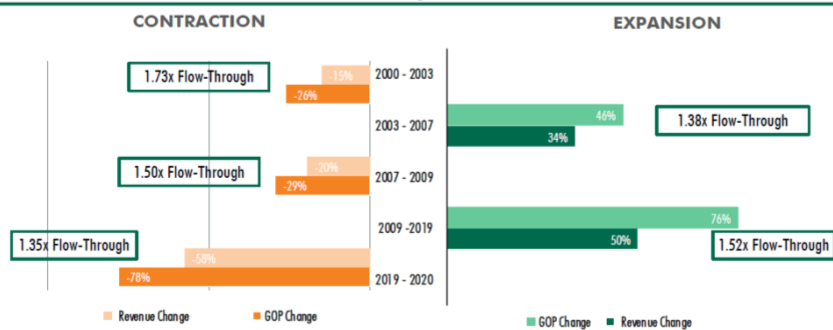
Multiple factors contributed to the direct operating efficiencies observed in 2020:

- Reduced levels of business volume required fewer employees. The combined costs of salaries, wages, and employee benefits declined by 48% from 2019 to 2020.
- To relieve the financial pain suffered by hotel owners and conform to local health regulations, the franchise companies reduced the need for properties to offer the same level of historical services and amenities previously required by the brand. Reduced levels of complimentary food and beverage offerings and housekeeping services are examples of the leniency granted to owners regarding "brand standards."
- Cuts were made to what were historically believed to have been "fixed costs". Reductions in salaried personnel, the closure of food and beverage and recreational outlets, and the outsourcing of administrative functions are examples of actions that management took to reduce fixed costs.

Based on our analysis of hotel performance after the two most recent industry recessions (2001 and 2009), the operating efficiencies implemented during the downturns were retained during the ensuing years. This leads us to believe that the cost control measures put in place during 2020 will contribute to more efficient hotel operations in the years to come. This influences our thoughts regarding the pace of the recovery for revenues and profits coming out of 2020. For this analysis, recovery is defined as a return to pre-recession nominal performance levels. A summary of the pattern of these efficiencies is illustrated in Exhibit 4.

Exhibit 4: Recessions and Operating Efficiencies

Operators have Become More Efficient With Each Cycle



Source: CBRE Hotels, Q3 2021.

Prior to 2001, U.S. hotel profit recovery from industry recessions typically lagged the recovery in revenue. However, as noted before, due largely to enhanced operating efficiencies, profit recovery occurred concurrent

© 2021 CBRE, Inc. |

with revenue recovery after the 2001 and 2009 industry downturns. We expect the same to occur coming out of the 2020 recession.

Based on our first quarter 2021 *Hotel Horizons®* forecasts, RevPAR, total revenue, and NOI levels for U.S. hotels should return to 2019 nominal values by 2025. Properties in the higher-priced chain scales that are more dependent on food and beverage revenue and other sources of income beside guestroom rentals, might see a slight delay in the return of total revenue and profits. On the other hand, more moderate-priced limited-service properties will see total revenue and profit recovery occur almost simultaneously with RevPAR recovery, if not a little sooner.

V. Conclusion

The data stemming from the 2020 Covid-19 crisis illustrated a dramatic and unprecedented downturn in performance. Although Investment Performance has included data from previous downturns including the 2001-2002 downturn and the Great Financial Crisis, the extremity of the most recent downturn revealed some deficiencies in our models' ability to fully capture expense and revenue dynamics at very low levels of occupancy.

When confronted with the actual difficulties seen by our data partners in 2020, we have generally moved our NOI estimates downward in 2020, and estimates may have been changed in other periods as well as the new data improved our understanding of revenues and expenses. Not all the discoveries were negative. Amid all the financial devastation, we were still able to tease out significant operating efficiencies, extending a trend we have observed in past downturns. This speaks to the continued sophistication of hotel management and provides a basis for our expectations of profit recovery alongside revenue.

THIS DOCUMENT WAS WRITTEN BY:

© 2021 CBRE, Inc. |

Bram Gallagher, Ph.D.
Sr. Economist, CBRE Econometric Advisors
Bram.Gallagher@cbre.com

Robert Mandelbaum
Director of Research Information Services
Robert.Mandelbaum@cbre.com

© 2021 CBRE, Inc. |