MOODY'S



ANALYSIS 23 MARCH, 2021

Author Victor Calanog PhD Daniel P. Warcholak

Contact Us

General Questions +1.800.366.7347 info@reis.com

Sales Information +1.646.346.5400 sales@reis.com

Customer Success +1.212.901.1932 info@reis.com

Quantifying COVID-Driven Risks to Office Markets Tracing Possible Mechanisms of Distress

Introduction

There remains much uncertainty about what the post-COVID world will look like for the office sector. Last year, we speculated on just how much distress might manifest, in which geographic areas it might center, and when it might occur.¹ The general conclusion appeared to be that unlike in the hotel and retail sectors, it will take time for office performance metrics to reflect the true impact of the pandemic and associated lockdown policies.

In this paper we present our updated expectations for the office sector: What actually happened in 2020? Where will the distress be felt in 2021? What approaches can we take to think through what might happen in the intermediate term and then over the long run? Which loan portfolios (broadly defined) and geographic areas present relatively greater risk, and why?

The Office Sector in 2020: Apocalypse Cancelled?

A year ago, at the onset of the pandemic, there was much hand wringing about office space when lockdown policies compelled employers to adopt widespread remote working policies. However, overall performance metrics actually did not reflect massive distress throughout 2020—at least not at the national level. The national vacancy rate rose by 90 basis points, from 16.8% at the end of 2019 to 17.7% by the end of 2020, but national asking rents actually posted a mild increase for the year of 0.4%. This dynamic reflects lags that have historically been present in commercial real estate: landlords began offering concessions first, leading to consistent negative growth numbers starting in the second quarter, but it was not until the fourth quarter that asking rents actually declined at the national level.

¹ See for example the following papers: "COVID-19 will Force the Office Sector to Evolve (Further)" by Thadani and Calanog (May 5, 2020); and "The Future of Office will be an Odyssey, Not an Exodus, with Uneven Credit Implications" (July 9, 2020) by Fagan et. al. Both available upon request.

Longer lease terms are another factor accounting for this relative stability. According to CompStak data, the average term for office property leases in the US is 9.7 years. If we limit that to leases that are greater than 100,000 square feet, the average rises to 12.2 years. The distress one sees, particularly in effective rents, comes from the proverbial tail of new or existing space with leases that are being renewed at a time of economic dislocation. Negative effective rent growth in most market reports often do not directly reflect how in-place income at the property level might be affected, for landlords and owners who are ultimately responsible for debt payments. The availability of sublease space did spike in 2020, to record levels in many areas, reflecting how employers were trying to monetize space that they were not physically using at the time.

"In several areas we've been tracking closely, we recorded anywhere from a 10% increase in the amount of sublease space listed as available to double the pre-COVID level," observes Allen Benson, Chief Information Officer at Catylist. Cushman and Wakefield notes in a recent study that sublease space increased by 80% over the course of 2020 in the 83 markets that they track, but is quick to emphasize that the trend is "a growing factor, but far from unprecedented."²

This does not mean that the trend of remote working will not affect demand for office space in some way. Rather, that we expect it to play out over the intermediate to long run. It is not likely that office space will "die" anytime soon but we are anticipating change—in some places, significant—due to shifts in employer and employee preferences

Our current forecasts also posit a relatively large decline in effective rents at the national level—a fall of 7.5%—but not quite to the level of the distress recorded in 2009, when effective rents fell by 8.9%. Even New York City, a dense urban area that for a variety of reasons has felt the brunt of the pandemic's effects, posted only a fraction of the rent declines we expected for 2020. Asking rents fell by 1.0% where we had expected a fall of 4.4% and effective rents declined by 2.4% after we expected a slide of 8.6%.

We are still forecasting fairly large declines in rents for New York City in 2021 and continuing deterioration through 2022. But unlike multifamily, we have, as a whole, revised our expectations for the office sector towards less severity in the near-term.

However, anticipating the longer-term nature of how the office sector may evolve as a response to the COVID crisis, we have also extended the time period before the expected recovery ensues. We now expect the national vacancy rate to rise to near-record levels this year before beginning a slow decline starting in 2024, as Figure 1 shows.

² <u>https://www.cushmanwakefield.com/en/united-states/insights/2020-sublease-space-at-a-glance</u>

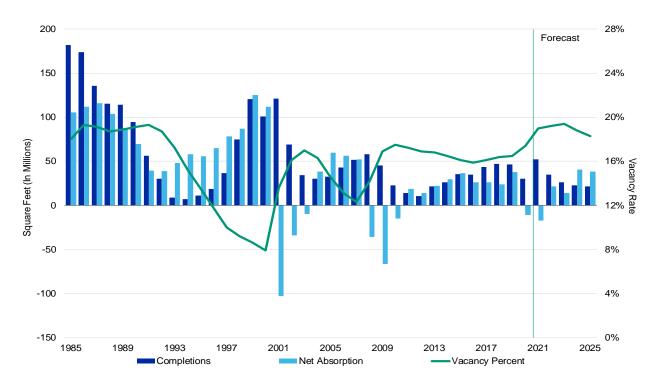


Figure 1 Construction, Absorption, and Vacancy Trends (1985 to 2025)

Source: Moody's Analytics. This aggregation represents the top 50 metropolitan markets for office, as measured by size of inventory.

If the so-called office apocalypse has indeed been cancelled (for now) this does not mean that distress is not present; neither does it mean that there was no distress throughout 2020. The distress was simply very uneven.

The Geography of Distress: Hard, Harder, Hardest Hit

Given the relatively mild national-level figures for vacancy increases and effective rent declines, it does not seem like there is much to differentiate central business districts (CBDs) versus more suburban areas.

Figure 2	CBDs and Suburba	n 2020 Performance	Metrics
----------	------------------	--------------------	---------

OFFICE MARKET GEOGRAPHY	2020 INCREASE IN VACANCIES	2020 CHANGE IN EFFECTIVE RENTS		
Central Business District	^ 105 bps	-1.28%		
Non-Central Business District	^ 93 bps	-0.17%		

Source: Moody's Analytics. These CBD and Suburban aggregations represent the top 50 metropolitan markets for office, as measured by size of inventory.

The effective rent declines in Figure 2, of course, can be viewed pessimistically as 'effective rents in central business districts declining by a factor of 7.52x relative to non-CBDs.' But the real potential source of worry, once we examine specific submarkets, is in the extremes.

Figure 3 Top 10 Effective Rent Declines for 2020

MSA	CBD / SUBURBAN	2020 CHANGE IN EFFECTIVE RENT
Orange County	Suburban	-4.48%
Syracuse	CBD	-3.69%
Syracuse	Suburban	-3.56%
Rochester	Suburban	-3.11%
Providence	CBD	-3.01%
Dayton	CBD	-2.87%
Tucson	Suburban	-2.80%
St Louis	CBD	-2.78%
Westchester	Suburban	-2.70%
New York	CBD	-2.40%

Source: Moody's Analytics

Figure 3 presents the top ten markets for effective rent declines in 2020, grouped by geographic classification as either CBD or Suburban/non-CBD. Interestingly, an equal number (five) of CBD and non-CBD markets make it to the top ten, suggesting that distress wasn't disproportionately centered in dense urban areas. With that said, a lot of these markets are relatively small with the exception of New York (our office market definition of the New York CBD encompasses Manhattan, the largest office market in the country with close to 400 million square feet of competitive space).

Syracuse offers an interesting case study, given that both its CBD and non-CBD areas sustained a relatively large decline in effective rents last year. It is not so much a supply-side issue, though 42,000 square feet of office space did come online in Syracuse in 2020. Rather, it appears to be a demand-side issue, with the city losing 9.3% of its office-using employment base throughout 2020 versus the national average of 4.5%. Only a handful of other markets like Las Vegas had office-using employment decline by close to Syracuse's figure. One recent article noted that nearly 90% of jobs in the Syracuse metro area are in service industries—the same sectors that likely took the largest hit because of the COVID crisis.³

The picture does change somewhat once we examine forecasted changes in 2021, with the top ten markets for forecasted effective rent declines presented in Figure 4.

Figure 4	Top 10 Forecasted Effective Rent Declines for 2021	

MSA	CBD / SUBURBAN	2021 FORECASTED CHANGE IN EFFECTIVE RENT
San Francisco	CBD	-15.25%
San Jose	Suburban	-14.00%
San Francisco	Suburban	-13.89%
Boston	CBD	-13.37%
Westchester	CBD	-11.83%
Seattle	CBD	-11.74%
Austin	Suburban	-11.63%
Columbus	CBD	-11.15%
Chattanooga	CBD	-10.70%
Wichita	CBD	-10.69%

Source: Moody's Analytics

https://www.syracuse.com/business/2020/09/inside-cnys-job-disaster-what-industries-fell-off-a-cliff-whats-coming-back-whats-the-next-crisis.html

When we combine our data for expected supply growth, rent and vacancy performance metrics with employment, GDP, and other macroeconomic and demographic forecasts from our economics group, we expect seven out of the top ten effective rent declines to come from CBDs. Unlike 2020 actuals (presented in Figure 3), larger markets also come into focus in the forecasts, with both CBD and non-CBD forecasts in San Francisco rising close to the top. After all, San Francisco is a market where the relative mix of office-using workers are likely employed by firms that also have a relatively greater ability to equip their employees to work remotely on a semi-permanent basis (like the tech sector).

Perhaps the apocalypse has only been postponed for certain areas. Since CBDs (by definition) tend to have a large concentration of office buildings, ongoing concern therefore tends to focus on the risk posed by a secular shift in the use of space for CBD markets. In the following sections, we will share CWCapital's approach—using Moody's Analytics data and other sources—for quantifying such risks in 25 of the largest office markets (that also have a large concentration of space in CBDs, versus suburban outlier submarkets), and how that shift is impacting credit conditions in the CMBS market.

Quantifying Market and Index Sensitivities: Focus on Office

What will the post-COVID world look like for the office sector? Will workers simply return to their daily commutes and office work-week routines? With work-from-home being tested and refined for almost a year now, will workers want to go back? Will employers, realizing that workers can be productive no matter where they are, and realizing they have been carrying empty office space for a year, be willing to continue to pay rents, utilities, parking, and support infrastructure that were used only sparingly, if at all?

It is quite possible that the dual forces of employee preference for "work from anywhere" flexibility and the economic incentive for employers could result in a significant shift in demand for office space. CWCapital research and anecdotal discussions with leasing brokers indicate an actual physical occupancy rate far below what is currently leased. In some cases, brokers report it could be as low as 10%. Available sublease space is plentiful. This downshift in demand may also have a multiplier effect on retailers, restaurants, parking, and other service businesses dependent on office worker demand and commuting patterns.

CWCapital President James Shevlin commented on the company's November 2020 experience signing a new lease for 16,000 square feet in Washington DC: "We recently signed a lease for newly designed office space that will serve as a modernized hub for the firm. Reimagining the space to accommodate shifting trends in remote and office-based work, we were able to reduce space needs by approximately 30%. Rooted in real estate technology, we were able to leverage that in a big way to select a location which was both more efficient and more centralized."

It will likely take some time. As performance metrics for 2020 have shown, relative impact across geographies will be uneven in the short term as leases run out. Investors will want to know where this impact is most likely to be felt first, when, and to what extent.

CWCapital reviewed Moody's Analytics data from 25 metro areas to quantify relative strengths and risks, and the analysis is presented below. Among the variables that were considered: How much of the employment base is made up of office workers? Is one metro area more dependent on office-using workers than others? What are the current market conditions, including vacancy, capacity, and space utilization? How might all of this be impacted if work from home became permanent for a certain percentage of eligible workers?

But more significantly relative to other approaches, CWCapital's analysis presents an attempt to quantify relative levels of indebtedness, by metro area. The idea is to calculate a "breakeven occupancy rate" as a measure of how much occupancies can decline before existing debt service obligations are put at risk, with all else equal. This is important: declines in property value do not happen in a vacuum, and even if net operating income (NOI) takes a hit from distressed tenants or an economic downturn, owners and operators may need not sell at a discount absent external pressure from, for example, fixed debt obligations. Owners who do not need to liquidate to satisfy other obligations can simply hold on to their income-generating asset and ride out downturns.

CWCapital used data from actual loans supported by office properties, sourced from the CMBX6-CMBX14 universe, to back into the breakeven occupancy rate. Other lender types like banks and life companies can substitute the specific composition of their own portfolios to tailor the analysis to their footprint.

Figure 5 Key Points and Sensitivities for 25 Metro Areas

	TOTAL	OFFICE		INVTRY (MM	OCCUPIED	SOFT PER	CURRENTBR			75% WORKEF
METRO AREA	EMPLMT (MM) E		РСТ	SQFT)	(MM SQFT)	EMPL	OCC	OCC	RETURN	RETURN
Boston	2.806	0.918	32.7%	135.9	118.5	129	87%	42%	79%	65%
Los Angeles	4.593	1.296	28.2%	203.8	174.9	135	86%	56%	77%	64%
Houston	3.179	0.966	30.4%	186.0	142.2	147	76%	57%	69%	57%
Minneapolis	2.033	0.651	32.0%	80.7	66.2	102	82%	58%	74%	61%
Miami	1.218	0.366	30.1%	45.9	38.5	105	84%	59%	76%	63%
Cleveland	1.079	0.325	30.1%	33.9	26.4	81	78%	60%	70%	58%
Suburban Virginia	1.464	0.588	40.1%	143.5	115.3	196	80%	60%	72%	60%
Atlanta	2.873	0.923	32.1%	148.0	118.2	128	80%	61%	72%	60%
Columbus	0.122	0.043	34.9%	2.1	1.8	43	86%	61%	78%	65%
Milwaukee	0.876	0.246	28.1%	30.9	24.6	100	79%	61%	71%	60%
Seattle	1.778	0.498	28.0%	92.4	82.5	166	89%	62%	80%	67%
New York Metro	4.442	1.602	36.1%	367.5	337.5	211	92%	62%	83%	69%
Baltimore	1.432	0.468	32.7%	66.2	54.6	117	82%	63%	74%	62%
Portland	1.227	0.366	29.8%	43.1	37.3	102	86%	63%	78%	65%
New Orleans	0.584	0.167	28.5%	19.6	16.7	100	86%	63%	77%	64%
Detroit	2.085	0.638	30.6%	74.3	56.9	89	77%	64%	69%	57%
San Francisco	1.308	0.469	35.9%	100.7	91.8	196	91%	66%	82%	68%
Pittsburgh	1.195	0.353	29.5%	53.1	42.7	121	80%	67%	72%	60%
Denver	1.552	0.519	33.5%	95.6	79.4	153	83%	67%	75%	62%
Chicago	4.065	1.318	32.4%	256.0	211.1	160	82%	68%	74%	62%
Dallas	2.730	0.941	34.5%	177.3	136.4	145	77%	70%	69%	58%
Philadelphia	2.619	0.807	30.8%	114.0	98.4	122	86%	71%	78%	65%
San Jose	1.152	0.328	28.5%	70.4	57.6	176	82%	73%	74%	61%
St. Louis	1.397	0.416	29.8%	46.4	38.4	92	83%	74%	74%	62%
Fairfield County	0.435	0.144	33.0%	40.8	31.1	216	76%	76%	69%	57%

Source: Moody's Analytics; CWCapital break-even rate and percentages.

Figure 5 should be read from left to right, though the key figures for this sensitivity analysis are in the three rightmost columns. The table is sorted by *break-even occupancy rates* – defined as the occupancy rate required to cover amortizing debt (and defined further below). CWCapital calculated break-even occupancy rates for the 25 metro areas based on the reported performance of loans securitized in constituent transactions of the CMBX6 to CMBX14 indexes. The CWCapital breakeven rate can then be compared to current and forecasted market occupancy levels as an indicator of relative strength. If only 90% of office workers return, and physical occupancy of existing office space maps at a 1:1 rate into economic occupancy, then the analysis above suggests that three markets—San Jose, Dallas, and Fairfield County—may run into trouble. Their occupancy rates would be at or below the breakeven occupancy rate slide even further, then the margin between actual occupancies and breakeven occupancies becomes even slimmer.

If only 75% of the pre-pandemic workforce returns, then over half of the markets (see the ones highlighted in red in the rightmost column) are at risk of having occupancies fall below breakeven levels.

But What About Rents and Rollover Risk?

CWCapital then focused the analysis even further, to examine loan portfolios that may present greater risk. Specifically, the universe was narrowed to the approximately 600 non-defeased CBD Office property loans (or components) contained within the CMBX6 to CMBX14 constituent transactions. The analysis was also limited to CBD Office as these highly concentrated settings may be more sensitive to new preferences for social distance. As many investors either own underlying positions within an index or may have a position in the CMBX index itself, this narrowing should make the assessment more relevant to investors' actual exposure.

CWCapital took a look at each office property and calculated two additional measures of risk for the loans:

- » Break-Even Occupancy: Given the current revenue and expense structure per unit of occupancy, what occupancy level would result in the office building generating only enough NOI to cover amortizing debt service at a 1.0x multiple? This is the same definition used to calculate the break-even occupancy rate presented in Figure 5.
- » Max Rent Drop: Given current occupancy and an assumed 50% renewal rate on square footage expiring over the next two years, what is the maximum decline in rents that can be absorbed before property operations and NOI can no longer cover amortizing loan debt service at a 1.0x multiple?

The results of stress testing the underlying office properties in the CMBX6 to CMBX14 indices are presented in Figure 6 below:

		CBD										50% OF	
		OFFICE	LOAN								YEAR 2020	LEASE EXP	
	LOAN	SQFT	BALANCE		W	TD DEBT			BREAK	MOST REC	- OCC	IN NEXT	MAX RENT
INDEX	COUNT	(MM)	\$MM	WAM	FULL IO %	YIELD12	19 DSCR	12/19 OCC	EVEN OCC	MKT OCC	CHANGE	2YR	DROP
CMBX6	47	20.5	2,548.7	17	13%	11%	1.93	89%	67%	86%	-2.2%	-2.3%	18.3%
CMBX7	37	14.4	1,556.7	31	22%	11%	2.15	85%	65%	86%	-1.5%	-0.5%	22.9%
CMBX8	64	27.4	2,682.4	41	28%	10%	1.88	89%	69%	85%	-2.7%	-2.5%	19.5%
CMBX9	59	39.5	2,585.3	55	34%	10%	1.95	87%	60%	87%	-1.0%	-0.7%	23.5%
CMBX10	74	56.0	3,105.6	64	54%	11%	2.93	90%	58%	87%	-1.4%	-0.1%	33.7%
CMBX11	91	54.4	3,657.0	74	66%	10%	2.40	93%	60%	88%	-0.6%	-7.6%	25.4%
CMBX12	70	36.1	2,318.7	76	61%	9%	1.89	94%	70%	87%	-1.2%	-0.7%	25.1%
CMBX13	67	37.4	2,978.4	97	82%	9%	2.22	94%	62%	88%	-0.5%	-2.0%	29.9%
CMBX14	72	53.4	3,045.6	108	83%	8%	2.48	94%	62%	89%	-0.2%	-0.3%	32.7%

Figure 6 CMBX6 to CMBX14 Stress Testing Results

Source: CWCapital

We examine, (from left to right in the table) leverage in the forms of Debt Yield, DSCR, and occupancy as of December 2019. These factors allow us to calculate the first risk measure, breakeven occupancy. This figure represents the occupancy necessary (assuming current conditions) to support amortizing debt service on the associated loans. Any level below that can indicate potential default in that borrowers may be required to fund operations and debt service on an out-of-pocket basis.

With a sense of breakeven occupancy in hand, CWCapital can assess the significance of what changed during 2020, and what the future may hold. To stress future occupancy, we examined lease expiration dates for the top five tenants at each underlying property over the next two years. Making a simplifying assumption that 50% of the expiring space is renewed or re-leased, we can also develop a pro-forma occupancy to compare with breakeven occupancy.

Turning to the revenue and expense side of each underlying property, CWCapital also calculated a second risk measure: the Max Rent Drop. This measure represents the sustained revenue drop, assuming our pro-forma occupancy and a stable expense structure, that could occur before amortizing debt service is jeopardized. This measure is instantly useful in that we can quickly compare the Max Rent Drop to Moody's Analytics forecasts for Effective Rent Declines in the top metro areas (see Figure 4).

By comparing current break-even occupancy, pro-forma occupancy, or the Max Rent Drop figures with Moody's Analytics data, , "at risk" properties should quickly identify themselves for further review and assessment by investors.

The CWCapital analysis could be reframed to present the areas that could be classified as having relatively greater risk, given the CMBX6-CMBX14 portfolio's composition and geographic footprint. Specifically, which areas are likely to have less capacity to sustain rent declines while maintaining the ability to service current debt requirements? Based on the properties in the population study, Figure 7 shows those in the Dallas, St. Louis, Chicago, Denver, and Fairfield County metro area markets (5 out of 25) with the least ability to sustain rent declines. The table is sorted based on Max Rent Drop, presented at the far right, to indicate how a place like Boston could sustain a relatively large (45.5%) decline in rents and a big drop in occupancy (from a current occupancy rate of 89% to 42%) before it would be at risk of not meeting existing debt obligations. The markets at the bottom, on the other hand, have much lower capacity for absorbing shocks on either the rent or occupancy side.

		CBD										50% OF	
METRO AREA /	LOAN	OFFICE SQFT	LOAN BALANCE		,	WTD DEBT	12/19		BREAK	MOST REC	YEAR 2020 - OCC	LEASE EXP	MAX REN
STRENGTH TIER	COUNT	(MM)	\$MM	MAW	M FULL IO %	YIELD				MKT OCC		2YR	DRO
Boston	11	8.3	697.6	63	82%	13%	3.96	99%	42%	89%	0.0%	0.0%	45.5%
Minneapolis	7	4.1	175.1	97	86%	12%	2.89	90%	58%	82%	1.1%	0.0%	35.8%
San Francisco	46	15.0	1,846.8	85	78%	9%	2.39	98%	66%	91%	-1.3%	-1.4%	33.7%
Los Angeles	46	35.0	2,125.8	62	74%	11%	2.51	91%	56%	87%	-1.0%	-2.0%	32.6%
San Jose	13	5.6	551.7	90	62%	8%	1.72	100%	73%	84%	0.0%	0.0%	30.6%
Seattle	24	8.5	1,008.6	73	79%	10%	2.68	98%	62%	90%	-2.9%	-3.1%	30.3%
Atlanta	9	3.6	310.0	76	11%	12%	2.30	90%	61%	82%	-1.4%	-1.3%	28.1%
Baltimore	3	1.1	177.7	26	0%	13%	1.91	87%	63%	83%	-1.3%	-1.6%	27.8%
Columbus	4	2.8	149.2	72	0%	12%	2.18	86%	61%	82%	1.0%	0.0%	27.4%
Portland	7	1.0	170.3	77	43%	11%	2.36	95%	63%	85%	-0.9%	-8.4%	26.5%
New York Metro	175	139.8	9,455.1	69	81%	9%	2.29	94%	62%	91%	-1.1%	-3.3%	25.7%
Cleveland	5	2.3	130.7	48	40%	9%	2.14	82%	60%	81%	-0.3%	0.0%	25.4%
Houston	16	5.3	504.7	35	25%	11%	2.18	82%	57%	75%	-1.2%	-1.1%	24.9%
Detroit	8	3.1	193.7	82	13%	12%	2.14	91%	64%	81%	-0.2%	-1.5%	24.2%
New Orleans	7	4.7	277.5	46	0%	12%	1.93	87%	63%	87%	-0.9%	-1.0%	23.8%
Pittsburgh	5	3.3	230.9	94	40%	8%	1.66	84%	67%	83%	3.1%	-0.7%	23.6%
Washington	17	7.4	799.3	44	71%	10%	2.08	88%	60%	82%	-4.7%	0.0%	23.5%
Philadelphia	16	6.1	639.4	44	6%	10%	1.74	89%	71%	88%	-0.7%	-0.3%	20.5%
Miami	9	2.3	248.7	36	11%	11%	1.79	76%	59%	83%	-1.1%	-0.6%	20.1%
Milwaukee	8	2.8	195.2	68	13%	11%	1.88	82%	61%	81%	-3.1%	-3.5%	20.0%
Dallas	12	3.6	309.3	68	17%	10%	2.11	88%	70%	79%	-5.1%	-1.3%	18.9%
St. Louis	5	1.9	181.8	53	0%	10%	1.65	90%	74%	85%	-1.2%	0.0%	17.8%
Chicago	41	42.4	1,979.1	51	22%	9%	1.75	85%	68%	84%	-0.9%	0.0%	16.9%
Denver	5	2.5	186.9	36	40%	11%	2.10	92%	67%	84%	-7.5%	-1.2%	15.2%
Fairfield County	7	4.8	344.6	60	29%	7%	1.35	82%	76%	74%	-0.3%	0.0%	13.8%
Source: CWCapital													

Figure 7 Stress Testing Geographic Markets in CMBX6-CMBX14

Source: CWCapital

Conclusion

Analyzing where there may be a secular shift in office space because of the pandemic will depend on many factors: the pace and distribution of vaccinations and resulting economic recovery; how preferences of employees and employers for physical office locations may or may not change; and a multitude of other variables that are difficult to forecast accurately at this point. Several working groups have been formed by companies across various industries to determine "the future of hybrid work" but most of the announcements over the past 12 months around large companies choosing to forgo a significant part of their office footprint were merely statements of intent. For example, in late February, HSBC declared that it sees a future where the firm uses 40% less office space—but that future has yet to materialize.⁴

CWCapital's Shevlin notes, "We will return to the office, but it will be with a more efficient physical footprint and in a flexible form that works for everyone. The pandemic has really reinforced the importance and impact of technology across all sectors. It is a differentiator. For example, retailers who were well-positioned with an online presence early in the pandemic did well. Those who didn't adapt struggled, and many are still playing catch up today. For our situation, technology allowed us to not only manage unprecedented volume, but to also grow our appointed book by 50%, all while having our employees shift to nearly full remote."

⁴ <u>https://www.bloomberg.com/news/articles/2021-02-23/hsbc-says-it-could-eventually-cut-real-estate-footprint-by-40</u>

At present, however, one can use loan- and property-specific information to test the relative capacity of certain portfolios to withstand distress, which CWCapital has done using Moody's Analytics data and their own proprietary methods. This analysis rests on several assumptions: in the real world; the ultimate test of distress will be in realized losses, which will only come about through one among several hypothetical chains of causality:

- 1. Distress from existing tenants either: not paying rent, vacating existing space, or renewing at much lower rent levels, with all leading to lower income.
- 2. Lower income levels prompt owners and operators with debt obligations to seek relief; creditor can either work with the borrower (as many have done through the COVID crisis)—or press for liquidation.
- 3. Owners and operators have a greater incentive to liquidate properties if the asset is no longer providing enough income to meet debt service obligations, and if existing loan balances exceed estimated property value.
- 4. Liquidation occurs at a relative discount on a systematic basis, not just one-offs, and the market uses these as comparables for future sales.
- 5. The fire sale continues and a downward spiral for commercial property prices ensues. Property owners and lenders recognize losses, marking down their portfolios' value. This systemic cycle leads to even more fire sales until prices hit a bottom and then recover.

One critical assumption in this analysis—and many others we have conducted—is that distress in Step 1 above will manifest when office workers do not return, and that hybrid work in the post-COVID world will mean permanently lowered levels of both physical and economic occupancy. That is still decidedly uncertain, and will likely vary by geography and industry.

As economic conditions shift and the fate of specific office markets become more clear, it is critical that collaborative and innovative approaches to quantifying and measuring distress (and recovery) continue to be explored.

© 2021 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

CREDIT RATINGS ISSUED BY MOODY'S CREDIT RATINGS AFFILIATES ARE THEIR CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND MATERIALS, PRODUCTS, SERVICES AND INFORMATION PUBLISHED BY MOODY'S (COLLECTIVELY, "PUBLICATIONS") MAY INCLUDE SUCH CURRENT OPINIONS. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT OR IMPAIRMENT. SEE APPLICABLE MOODY'S CREDIT RATINGS YMBOLS AND DEFINITIONS PUBLICATION FOR INFORMATION ON THE TYPES OF CONTRACTUAL FINANCIAL OBLIGATIONS ADDRESSED BY MOODY'S CREDIT RATINGS. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS, NON-CREDIT ASSESSMENTS ("ASSESSMENTS"), AND OTHER OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OF COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. AND/OR ITS AFFILIATES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS AND PUBLICATIONS ARE NOT SOFT OF URRENT ON TO CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS AND PUBLICATIONS ARE NOT AND DO NOT POVIDE INVESTMENT OR FINANCIAL ADVICE, AND MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS AND PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS AND PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. MOODY'S CREDIT RATINGS, ASSESSMENTS, ASSESSMENTS, AND OTHER OPINIONS AND PUBLICATIONS WITH THE SUTTOR ANILY ASSESSMENTS, AND OTHER OPINIONS AND PUBLICATIONS WITH THE SUTADING, ASSESSMENTS, ASSESSMENT

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS, AND PUBLICATIONS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS OR PUBLICATIONS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER.

ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS ARE NOT INTENDED FOR USE BY ANY PERSON AS A BENCHMARK AS THAT TERM IS DEFINED FOR REGULATORY PURPOSES AND MUST NOT BE USED IN ANY WAY THAT COULD RESULT IN THEM BEING CONSIDERED A BENCHMARK.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the rating process or in preparing its Publications.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY CREDIT RATING, ASSESSMENT, OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any credit rating, agreed to pay to Moody's Investors Service, Inc. for credit ratings opinions and services rendered by it fees ranging from \$1,000 to approximately \$5,000,000. MCO and Moody's Investors Service also maintain policies and procedures to address the independence of Moody's Investors Service credit ratings and credit rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold credit ratings from Moody's Investors Service also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at www.moodys.com under the heading "Investor Relations — Corporate Governance — Director and Shareholder Affiliation Policy."

Additional terms for Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail investors.

Additional terms for Japan only: Moody's Japan K.K. ("MJKK") is a wholly-owned credit rating agency subsidiary of Moody's Group Japan G.K., which is wholly-owned by Moody's Overseas Holdings Inc., a wholly-owned subsidiary of MCO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MZO. Moody's Overseas Holdings Inc., a wholly-owned subsidiary of MZO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MZO. Moody's Overseas Holdings Inc., a wholly-owned subsidiary of MZO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MZO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MZO. Notice a Nationally Recognized Statistical Rating Organization ("NRSRO"). Therefore, credit ratings assigned by MSFJ are Non-NRSRO Credit Ratings. Non-NRSRO Credit Ratings are assigned by an entity that is not a NRSRO and, consequently, the rated obligation will not qualify for certain types of treatment under U.S. laws. MJKK and MSFJ are credit rating agencies registered with the Japan Financial Services Agency and their registration numbers are FSA Commissioner (Ratings) No. 2 and 3 respectively.

MJKK or MSFJ (as applicable) hereby disclose that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MJKK or MSFJ (as applicable) have, prior to assignment of any credit rating, agreed to pay to MJKK or MSFJ (as applicable) for credit ratings opinions and services rendered by it fees ranging from JPY125,000 to approximately JPY550,000,000.

MJKK and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.