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Coronavirus (COVID-19): Credit Risk Impact on Commercial Real Estate Loan Portfolios

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Abstract

The Coronavirus (COVID-19) has evolved into a global outbreak. It has also thrown the world economy into a period of uncertainty. As the pandemic has rapidly changed social and economic activities, many financial institutions wonder how the credit quality of their lending portfolios will fare, as the virus has created a material negative impact on their borrowers' businesses.

The Moody's Analytics research teams have worked together to analyze a range of plausible outcomes as the events will occur beyond anyone's point forecast. This study employs all of our available datasets and analytical tools to dissect the credit risk impact on financial institutions' commercial real estate (CRE) loan portfolios under these complementary, alternative scenarios.

Under our Severe Pandemic scenario we assume economic activities recover relatively quickly, given the massive monetary and fiscal stimulus. Our research predicts two-year credit losses of 1.3% for all CRE loan portfolios held by financial institutions in the United States. If the pandemic lasts longer—and the economy fails to rebound strongly—under the Moderate Recession scenario, our research predicts two-year credit losses of 1.8%, almost 2½ times the loss estimates from a few weeks ago.

Furthermore, if the pandemic remains uncontrolled, most monetary and fiscal stimulus fails, and the US economy enters another deep recession similar to the 2008–2009 financial crisisthe credit losses would be in the order of 5.4% over a two-year horizon (a 6.1% cumulative nine-quarter loss under the Fed and OCC's severely adverse scenario for stress testing purposes).

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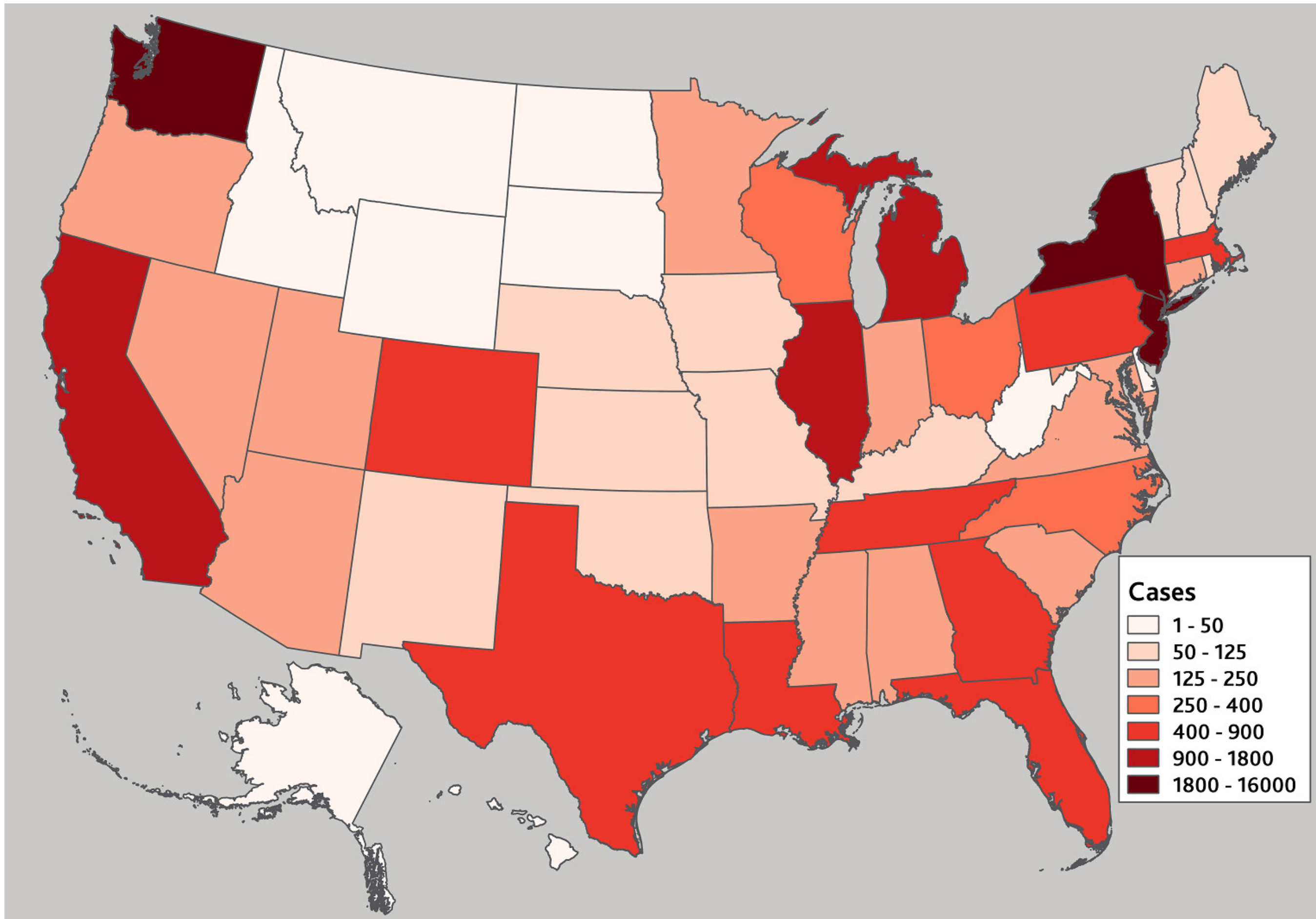
Introduction

Since the end of 2019, COVID-19 has gradually spread across the globe. It has now significantly affected the worldwide economy, as many countries pause and adopt various social and economic activities to keep the virus from spreading.

In the United States, Figure 1 shows the number of COVID-19 cases by state as of March 22, 2020. While most states reported fewer than 100 confirmed cases and zero deaths at the time of this writing, about a dozen states reported 100 or more cases, and three states (California, New York, and Washington) currently have the highest number.

Figure 1 Number of confirmed COVID-19 cases by state as of March 22, 2020



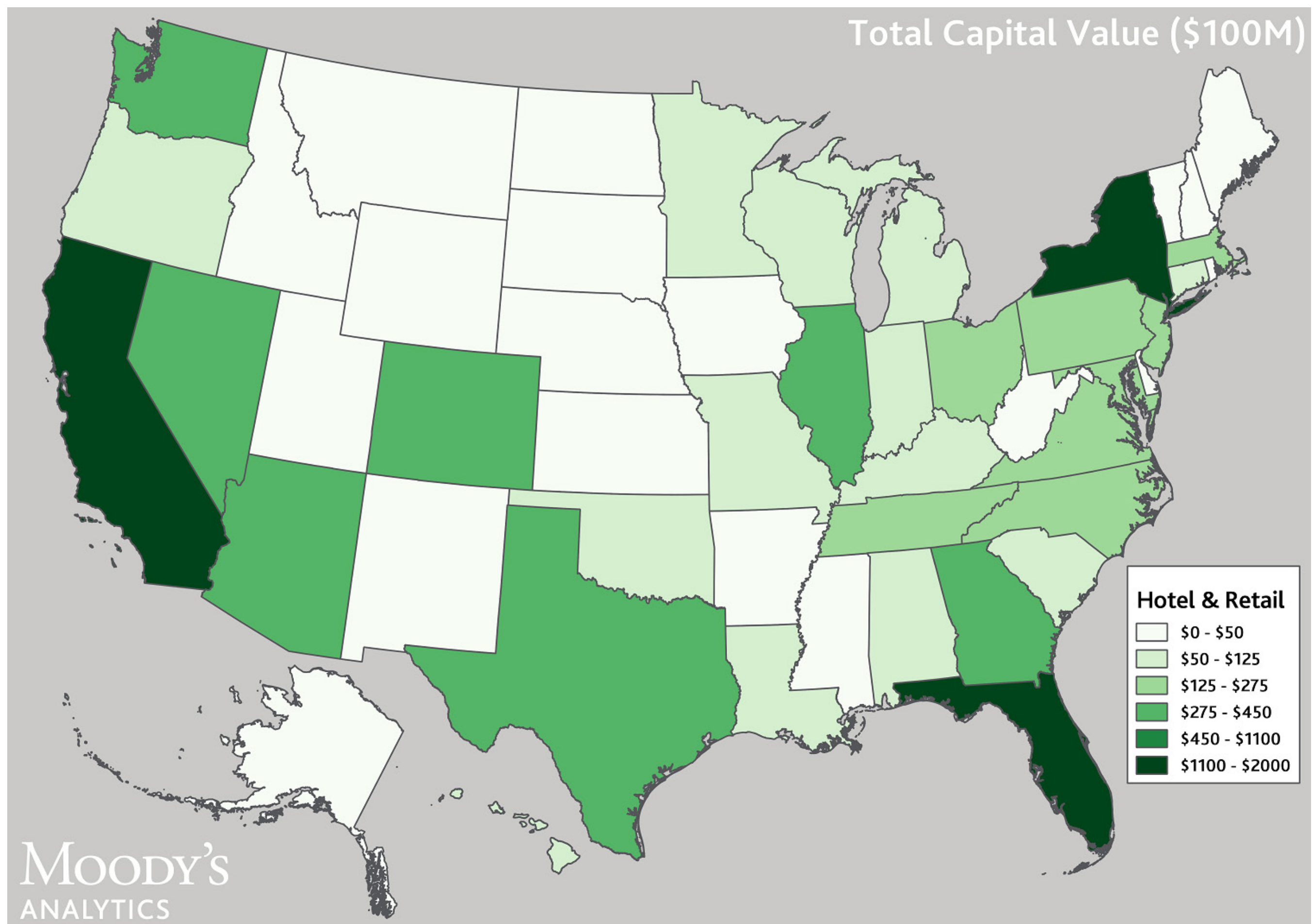
Source: Johns Hopkins University, the World Health Organization (WHO) and the US Centers for Disease Control (CDC).

Financial institutions now wonder how the credit quality of their lending portfolios will fare, as COVID-19 has created a material negative impact on the businesses of their borrowers and counterparties. For example, many companies have restricted most non-essential travel and cancelled large-scale events and conferences, which has already led to lost revenue for hotels, restaurants, and retailers. The disruption of global trade flow could potentially slow parts of the logistic/warehouse business, while the "shelter-in-place" order in California and similar measures in other places in the United States can further reduce economic activities.

COVID-19's effect on the CRE industry could hit the Hotel and Retail sectors especially hard. Figure 2 shows the transaction volume of hotel and retail properties over the past two decades, where total capital value represents the aggregate dollar amount (in millions) of all CRE sales transactions by state during the 1999–2018 period.[1]

Not surprisingly, California and New York account for the largest proportions of sales transactions for hotel and retail properties. These two states also happen to be among those hit hardest by COVID-19, with hotel occupancies plummeting statewide and retail establishments closed down in major metropolitan areas. As the situation evolves, other states with heavy concentrations of hotel and retail properties—such as Florida, Illinois, and Texas—may adopt "shelter-in-place" policies.

Figure 2 Total capital value of hotel and retail transactions (1999–2018)



To analyze financial institutions' expected credit losses in CRE loan portfolios, we used COVID-19 macroeconomic scenarios and a representative portfolio that contains well-diversified CRE loan-level data and can serve as an adequate proxy for CRE loans held by financial institutions in the United States.[2]

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1 Based on Moody's Analytics REIS database.

2 More details on our data can be found in the report "Estimating Commercial Real Estate (CRE) Stressed Loss Measures Under Federal Reserve 2020 Comprehensive Capital Analysis and Review (CCAR) Scenarios."

This report is organized as follows. We start by describing representative COVID-19 macroeconomic scenarios. We then interpret the impact of these macroeconomic scenarios on CRE market factors, most importantly net operating income (NOI) and value. We present the main research findings gleaned from analyzing the CRE dataset through a collection of statistical tools, including but not limited to time-series analysis, OLS regression, logistic model. Finally, we discuss the implication of COVID-19 scenarios on CRE loan allowance, particularly under the new Current Expected Credit Loss (CECL) guidelines.

1. Overview of COVID-19 scenarios

1.1 Context

COVID-19 has spread much faster and wider than initially anticipated, resulting in a direct hit to the global economy due to restrictions on social movement, either government-imposed or self-administered. As medical professionals work on formulating treatments, the economic strain could be relatively short-lived (several months) followed by a strong V-shaped recovery, or very long-lasting, mimicking a protracted U-shape recession.

A downturn in macroeconomic conditions will affect CRE markets as well. While the lagging data from commercial property transactions in the private market may be negligible with all of the rapid changes, the publicly traded REIT market has given us an early indicator that market participants expect CRE prices to decline at about the same rate as the broad equity market. Notably, the hotel sector is expected to be hit the hardest, as both leisure and business traveling declines. Meanwhile, the retail sector faces even greater challenges with a mass shift to online shopping, as customers are required to stay home or keep away from brick-and-mortar stores. On the other hand, given the long-term nature of most leases,[3] the Office sector might suffer minor effects in the near term but may incur further damages if the disease escalation persists. Looking for positives amid negative news, one thing that might help office landlords is that companies may be forced to rethink or even reverse the "densification" trend in recent years, as the pandemic now shows that over-densifying office space might lead to a public health concern that few envisioned previously.

1.2 Scenarios

For the research in this report, we compare three macroeconomic scenarios (Figure 3) to provide a context and also a couple of plausible future outcomes:[4]

1. The Baseline scenario, which was created before the widespread outbreak of COVID-19 in Europe and the United States. This scenario mainly offers a context to compare where we were a few weeks ago. In this scenario, we expect real GDP to grow about 1.5% and unemployment rates to stay steady around 3.8% throughout 2020, after which real GDP growth is projected to continue growing between 1% to 3% annually for the next few years.
2. The Severe Pandemic scenario (a quasi-new baseline forecast) assumes widespread infections around the globe will lead to an economic recession, followed by a relatively strong recovery shortly after the pandemic passes. Under this scenario, 3 to 4 million people will be infected, with new infections peaking in April. There will be a 2% to 3% mortality rate and a 5% to 6% hospitalization rate. Infections will abate by July. The assumption of a strong V-shaped recovery is conditioned upon a timely, aggressive fiscal policy stimulus, which looks increasingly likely given the growing bipartisan support for some of these unprecedented stimulus measures.
3. The Modest Recession scenario, while not as severe as the Federal Reserve (the Fed) and OCC's Severely Adverse scenario in their CCAR/DFAST stress testing program, portrays a world affected not only by COVID-19, but also by a continued trade war and other geopolitical factors. In this scenario, real GDP declines by more than 2% and the unemployment rate rises sharply above 7% by the end of 2020. Notably, the unemployment rate stays above 5% through 2025, a sign of a U-shaped recovery.

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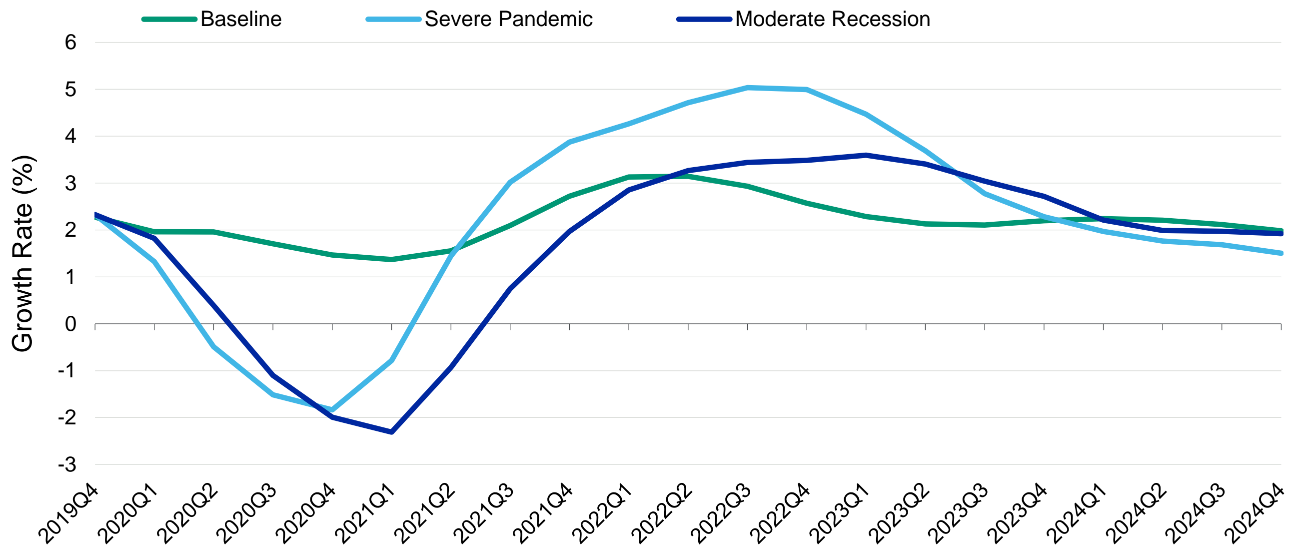
[3] The coworking concept, recently made well known by WeWork, will be signigacantly challenged in this environment. This subject deserves a separate discussion in another paper.

[4] We recently published another report discussing our reseach on the CRE credit losses undre the very stressed Severely Adverse scenario, designed by the Federal Reserve in conjunction with OCC and other regulators in their 2020 CCAR/DFAST program. Readers can reference that report if they want to understand the risks under that tail risk scenario, which is becoming more possible as the pandemic evolves.

Figure 3 Real GDP year-over-year growth rates by macroeconomic scenarios



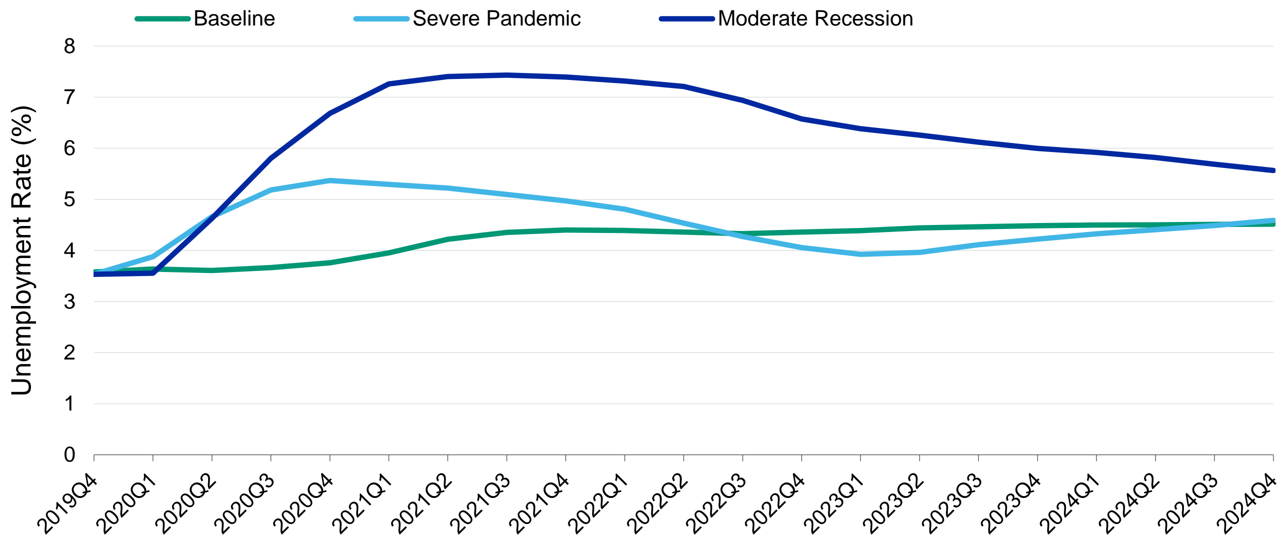
Source: Moody's Analytics.

The US economy's 10-year expansion has been shaken by COVID-19. The Severe Pandemic scenario is now edging toward our new Baseline scenario forecast. In that scenario, not only is global trade severely disrupted, but large parts of the domestic economy are shut down, once the pandemic becomes significant, as they were in China. The US economy is not immune to the worldwide impact of the pandemic and falls into a recession during the second quarter of 2020. However, after the worst phase of the crisis abates, the economy strongly rebounds for two to three years, with annual real GDP growth rate topping 5% at the highest point.

In a less optimistic view, however, the Moderate Recession scenario assumes a deeper and longer economic decline, followed by some sort of U-shaped recovery. Real GDP does not recover until the second half of 2021, and the rebound is less pronounced than under the Severe Pandemic scenario.

More long-term impacts will be felt in the labor market. The unemployment rate is expected to rise above 5% under the Severe Pandemic scenario, but slowly returns to normal through 2021–2022 as businesses recover from the COVID-19 aftermath. The increase in unemployment is even sharper under the Moderate Recession scenario, with the unemployment rate surging past 7% at the beginning of 2021. The high unemployment rate will persist for the next few years and stay above 5% over the next five years (Figure 4).

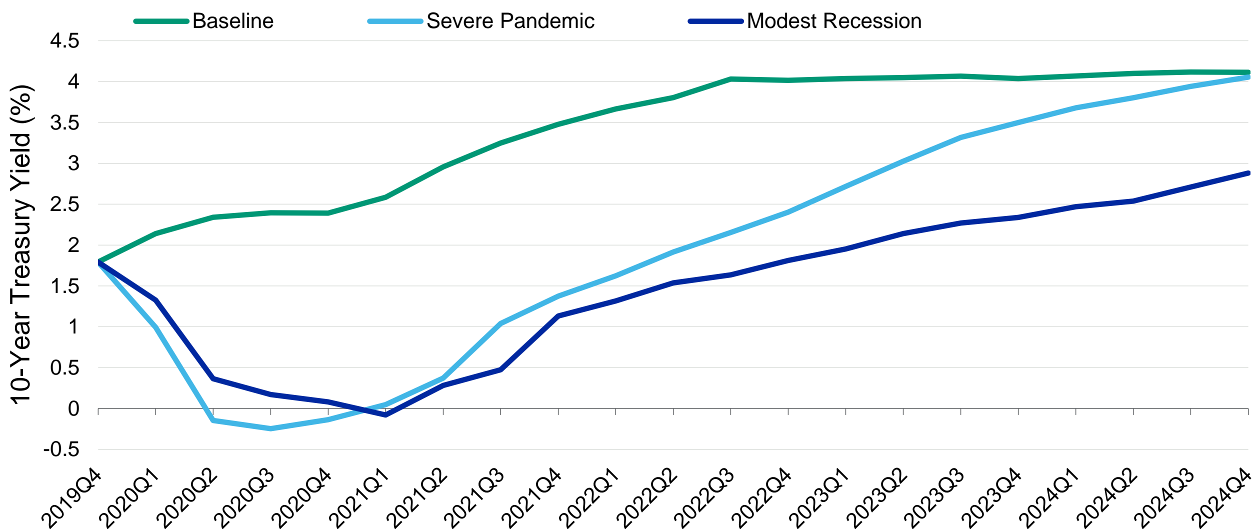
Figure 4 Unemployment rates by macroeconomic scenarios



Source: Moody's Analytics.

In its latest move to support the economy, the Fed has cut its benchmark interest rate to nearly zero. This is an extraordinary move that no one expected before the pandemic. Interest rates were already at a fairly low level, and we project a gradual climb over the next three years under the previous Baseline scenario. Given the current circumstances, even further rate cuts are probable as the Fed responds aggressively to the economic recession under the Severe Pandemic scenario, where the 10-year Treasury yield temporarily goes negative. Once economic recovery starts in 2021, however, the Fed may raise interest rates just as aggressively and restore its projected level at the end of 2024. Under the Moderate Recession scenario, interest rates also fall below zero temporarily and stay low for a longer period of time. As this scenario assumes a much slower economic recovery, the subsequent increase in interest rates is relatively muted (Figure 5).

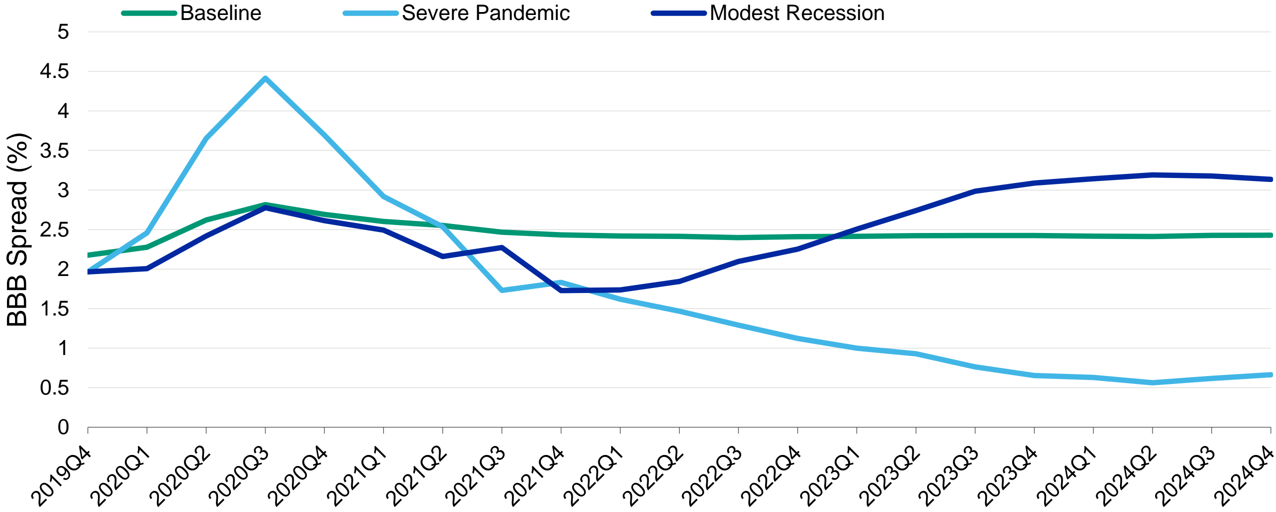
Figure 5 10-year Treasury yield by macroeconomic scenario



Source: Moody's Analytics.

Meanwhile, credit spreads are expected to widen as investors flee to the safety of risk-free assets under the Severe Pandemic scenario. In particular, the spread between the BBB corporate yield and 10-year Treasury yield will soar above 3%. Once again, the strong economic rebound in this scenario resonates in the financial markets as the BBB spread shrinks to 50 bps toward the end of 2024. Under the Moderate Recession scenario, however, investors will continue to stay away from risky assets for a prolonged period with BBB spread widening further in the medium term (Figure 6).

Figure 6 BBB spread by macroeconomic scenario



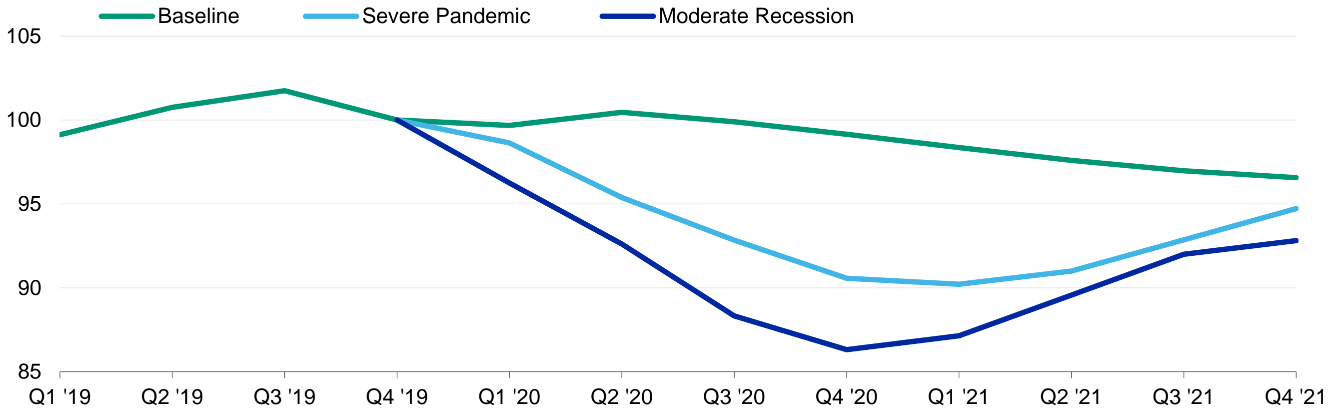
Source: Moody's Analytics.

The macroeconomic narratives driving different scenarios serve as direct inputs into our asset class-specific models, including those for commercial real estate. Indeed, our previous research has shown a very strong causal relationship between key macroeconomic factors above and CRE market performance.

2. Translating COVID-19 scenarios into specific CRE scenarios

When we translate macroeconomic scenarios into market factors specific to the CRE industry[5] using well-tested analytical models, we expect commercial property values to stay flat during 2020 and then to gradually decline during the following year under our Baseline scenario before the pandemic, mostly driven by a previously expected rise in interest rates. Commercial property values are projected to drop by 9.8% and 13.7% during the next two years under the Severe Pandemic and Moderate Recession scenarios, respectively.

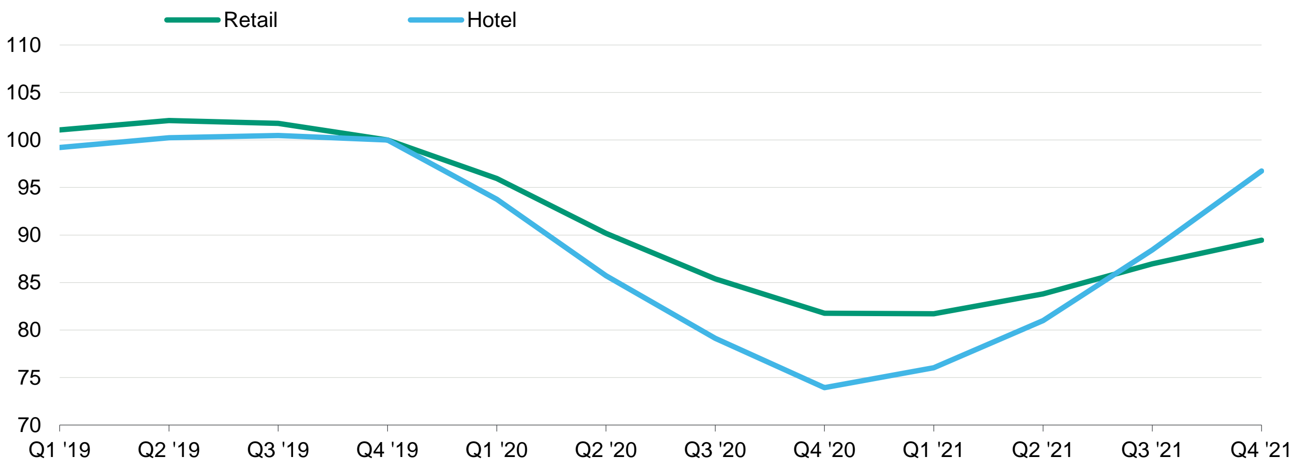
Figure 7 CRE value index by macroeconomic scenario



Source: Moody's Analytics.

The hotel industry is feeling the effects of travel pullbacks, and hotel property value is projected to decrease by more than 25% under the Severe Pandemic scenario. The retail industry is also struggling with store closings or shortened hours. According to our model, retail property values will fall by nearly 20% due to the big drop in retail sales (Figure 8).

Figure 8 Value indexes of hotel and retail properties under the Severe Pandemic scenario



Source: Moody's Analytics.

[5] See Chen and Cai (2011), "Stress Testing Commercial Real Estate Loan Credit Risk: A Scenario Based Approach" and Chen, Cai and Watugala (2013), "Stress Testing Commercial Real Estate Loan Credit Risk: Translating Macroeconomic Scenarios Into CRE Market Factors – Detailed Methodology."

Similarly, while property NOIs were still expected to grow by approximately 1.5% annually under the Baseline scenario, they are projected to decline by 2.5% and then slowly recover under the Severe Pandemic scenario. If the economy goes into the Moderate Recession scenario, NOI will keep declining by around 10% through the end of 2021 (Figure 9).

Figure 9 NOI index by macroeconomic scenarios

Source: Moody's Analytics.

Although cap rate spread was expected to keep declining before COVID-19, the spread will surge immediately and reach a peak of almost 5% under both the Severe Pandemic and Moderate Recession scenarios, due to elevated risks from a much-weakened global economy. The magnitude of cap rate spread surge is comparable to, but even higher than, the previous two recessions, partially thanks to the low-to-negative Treasury rates in these scenarios (Figure 10).

Figure 10 Cap rate spreads by macroeconomic scenarios

Source: Moody's Analytics.

Once we have completed translation of macroeconomic scenarios into commercial real estate market factors, we can now focus our analysis on the credit risk aspect of the CRE loan portfolios held by various financial institutions.

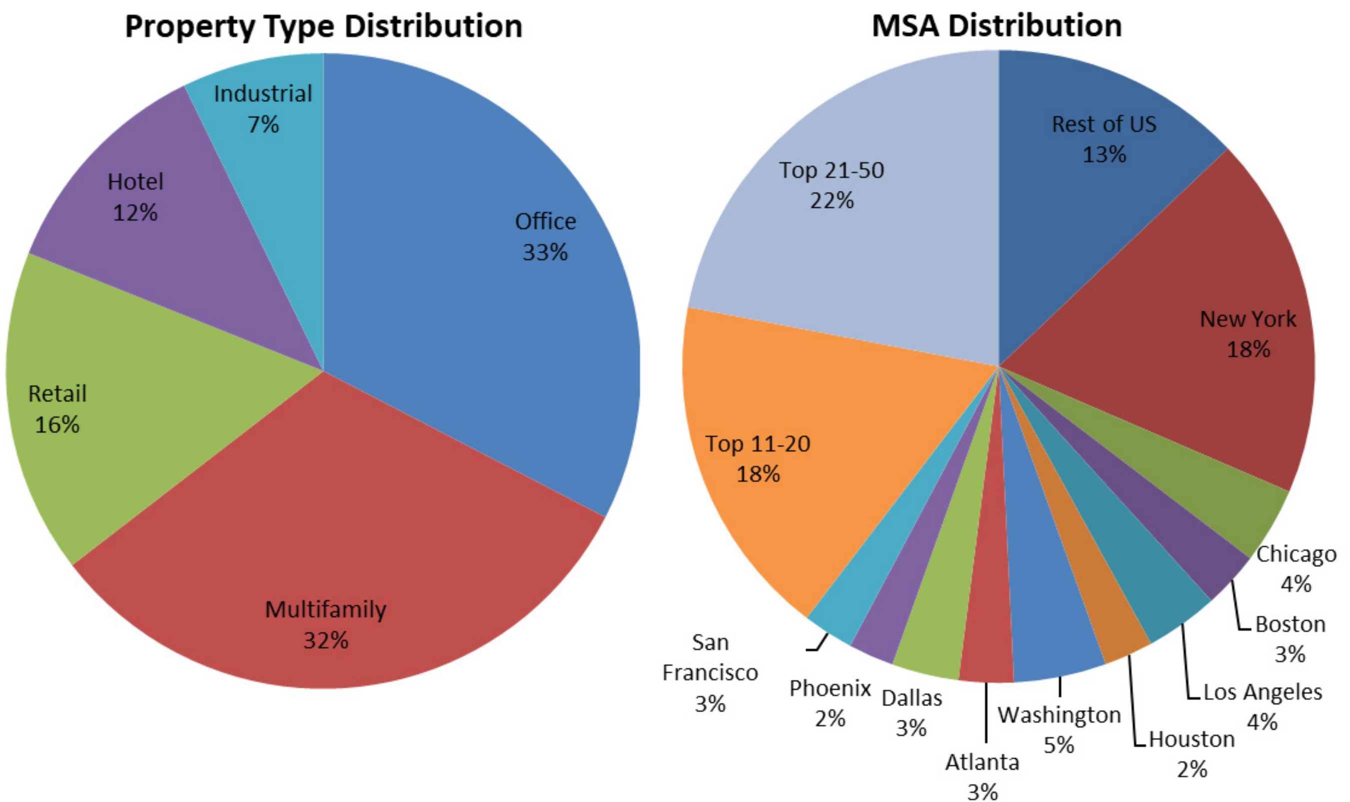
3. Estimating CRE portfolio credit losses

This section describes our findings for estimating credit losses by using available loan-level datasets and our existing analytical tools. We discuss and explore the different dimensions of these findings.

3.2 Dataset

We used loan-level details as of 2019Q4 of approximately 20,000 active loans from commercial banks and insurance companies with a total outstanding balance of more than $170 billion, among which approximately 16% are construction loans. Figure 11 shows the property types and MSA distributions of the CRE sample portfolio, based on outstanding balance. This CRE data portfolio has healthy loan-to-value (LTV) and debt service coverage ratio (DSCR), with a median LTV of 46.6% and a median DSCR of 1.75. Within the portfolio, 58% of the loans originated during the last three years, and 47% of loans mature within three years.

Figure 11 Property type and MSA distributions



Source: Moody's Analytics CRE Data Alliance portfolios.

3.2 Total expected losses

We explored the total expected losses (EL) in this section under three scenarios:[6]

» The Baseline scenario that was published before the COVID-19 epidemic.

» The Severe Pandemic scenario that was published in March 2020 when the epidemic was upgraded to pandemic. As stated earlier, this scenario is now increasingly edging toward a new baseline forecast.

» The Moderate Recession scenario that was published in March 2020 and forecasts a recession after the pandemic. The scenario includes the effect from COVID-19, but predicts a longer recession due to other complicating factors.

We analyzed the total EL results by different dimensions including property status, property type, and rate type. Table 1 shows the term structure of total EL over the next three years as well.

Table 1 Total cumulative expected loss by property status

Loan Types	Portfolio Composition %	Baseline (Total Expected Loss)			COVID-19 Severe Pandemic (Total Expected Loss)			Moderate Recession (Total Expected Loss)		
		1 year (20Q4)	2 year (21Q4)	3 year (22Q4)	1 year (20Q4)	2 year (21Q4)	3 year (22Q4)	1 year (20Q4)	2 year (21Q4)	3 year (22Q4)
Permanent	79.7%	0.20%	0.45%	0.62%	0.57%	0.96%	1.07%	0.80%	1.39%	1.65%
Construction	20.3%	0.87%	2.05%	2.75%	1.36%	2.74%	3.12%	1.85%	3.62%	4.37%
CRE Total	100.0%	**0.32%**	**0.73%**	**1.00%**	**0.71%**	**1.28%**	**1.43%**	**0.98%**	**1.78%**	**2.13%**

Source: Moody's Analytics.

The total one-year EL for the overall CRE portfolio under the Severe Pandemic scenario increases sharply to 0.71% from 0.32%, the baseline estimate before the global pandemic outbreak. Even with an expected economic rebound, the cumulative two-year loss rate still climbs to 1.28%, compared to the 0.73% prior estimate. Loss rates are expected to be much higher in the Moderate Recession scenario, where the cumulative two-year EL reaches 1.78%, almost 2½ times the loss estimates just a few weeks ago (Table 2).

Table 2 Total cumulative expected loss rates by property types

CRE Type	Baseline (Total Expected Loss)			COVID-19 Severe Pandemic (Total Expected Loss)			Moderate Recession (Total Expected Loss)		
	1 year (20Q4)	2 year (21Q4)	3 year (22Q4)	1 year (20Q4)	2 year (21Q4)	3 year (22Q4)	1 year (20Q4)	2 year (21Q4)	3 year (22Q4)
Multifamily	0.39%	0.98%	1.41%	0.58%	1.28%	1.52%	0.90%	1.79%	2.27%
Office	0.26%	0.51%	0.69%	0.33%	0.55%	0.65%	0.51%	0.81%	1.05%
Retail	0.22%	0.44%	0.60%	0.88%	1.39%	1.52%	0.80%	1.24%	1.47%
Industrial	0.47%	1.56%	1.87%	0.82%	2.32%	2.55%	0.94%	2.61%	3.11%
Hotel	0.34%	0.59%	0.76%	1.82%	2.47%	2.57%	2.80%	4.69%	5.08%
CRE Total	**0.32%**	**0.73%**	**1.00%**	**0.71%**	**1.28%**	**1.43%**	**0.98%**	**1.78%**	**2.13%**

Source: Moody's Analytics.

[6] Source: Moody's Analytics.

Looking at the property type dimension, we expect Hotels to be hit hardest. Since our loss estimates are also conditional upon the loan-level characteristics that may make certain property types look better or worse because of mitigating loan-level attributes, it is also important to focus on the changes across scenarios. Alongside Hotels, Retail EL jumps more than other property types in terms of relative changes.

Under the Moderate Recession scenario, all sectors are significantly affected, and the impact lingers for the Hotel, Industrial, and Multifamily sectors during the next three years. Office is a relatively more resilient sector in both the Severe Pandemic and Moderate Recession scenarios (Table 3).

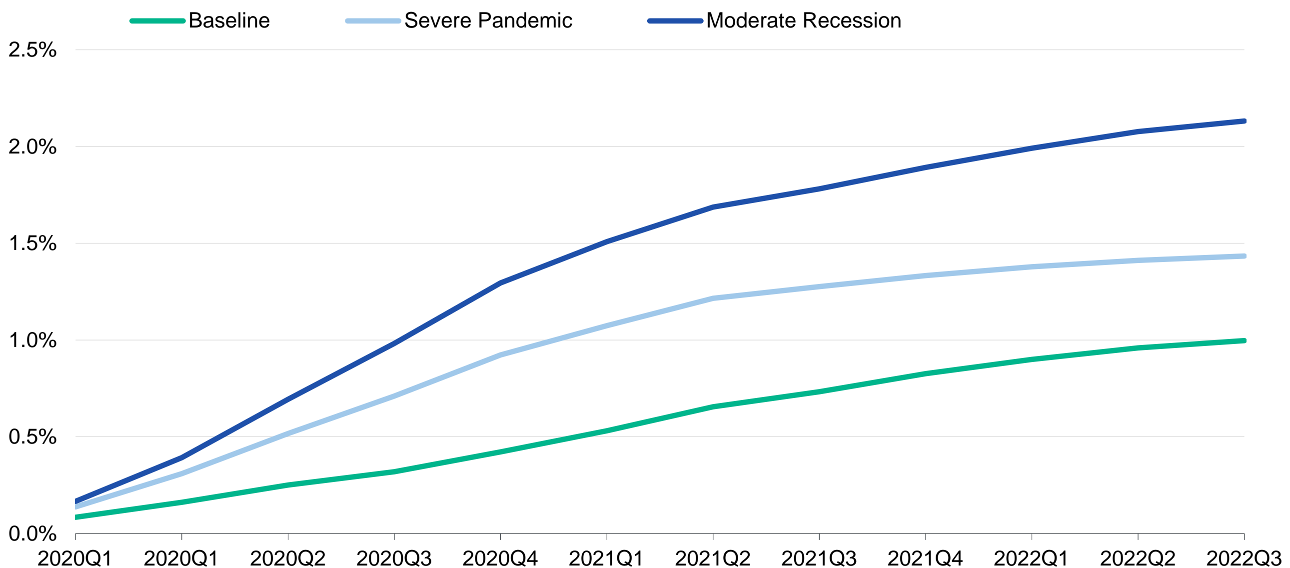
Table 3 Total expected loss by rate type from the Data Alliance portfolio

Rate Type	Portfolio Composition %	Baseline (Total Expected Loss)			COVID-19 Severe Pandemic (Total Expected Loss)			Moderate Recession (Total Expected Loss)		
		1 year (20Q4)	2 year (21Q4)	3 year (22Q4)	1 year (20Q4)	2 year (21Q4)	3 year (22Q4)	1 year (20Q4)	2 year (21Q4)	3 year (22Q4)
Fixed	45.7%	0.18%	0.51%	0.69%	0.54%	1.07%	1.20%	0.70%	1.42%	1.71%
Floating	54.3%	0.44%	0.92%	1.25%	0.86%	1.45%	1.63%	1.22%	2.09%	2.48%
CRE Total	100.0%	0.32%	0.73%	1.00%	0.71%	1.28%	1.43%	0.98%	1.78%	2.13%

Source: Moody's Analytics.

Although fixed rate loans are generally considered lower risk compared to floating rate loans, they are more sensitive under stressed scenarios, likely due to limited mortgage payment reduction benefits from historical low interest rates described in the scenarios. While one-year EL of the floating rate loans approximately doubles (from 0.44% to 0.86%) under the Severe Pandemic scenario, one-year EL almost triples (from 0.18% to 0.54%) for the fixed rate loans under the same scenario (Figure 12).

Figure 12 Term structure of cumulative expected loss rates



Source: Moody's Analytics.

Examining the cumulative EL term structure across the three scenarios, we can clearly observe the differences increase quickly in the first five quarters between the Baseline and Severe Pandemic scenarios. The increase under the Severe Pandemic scenario will plateau after two years, while the total EL still gradually increases during the third year.

4. Impact on allowance estimate for credit losses

This section describes our process of estimating loss allowance on commercial mortgage portfolios under the COVID-19 scenarios. Compared with the near-term focus of the previous section, there are a few important differences in allowance estimation under CECL guidelines:

» The CECL standard requires institutions to estimate credit losses over the entire lifetime of each instrument.

» The CECL standard also requires a reasonable and supportable period over which credit losses can be estimated using appropriate economic forecasts, while mean reversion is applied after this period.

The model we used in this report is compliant with the first requirement because it produces lifetime expected losses for each loan in a CRE portfolio. For the second requirement, we adopt a two-year reasonable and supportable period, over which we estimate expected losses under the COVID-19 scenarios and mean-reverting the probability of default (PD)/loss-given default (LGD) outputs linearly over the next one-year horizon until both PD and LGD reach their long-term means starting from Year 4. We determined the long-run PD/LGD values based on historical non-accrual rates and net charge-off rates for all banks recorded in the FDIC database. Given the markedly different credit histories of permanent and construction loans, we calibrated the long-run values for these two sectors separately. The long-run PD and LGD values are listed in Table 4.

Table 4

Long-run PD and LGD values

	CONSTRUCTION	PERMANENT
Long-Run PD	3.54%	1.15%
Long-Run LGD	30.5%	23.8%

Source: Moody's Analytics.

Using the mean reversion settings above, we estimated CECL loss allowances for the sample CRE portfolio under the three macroeconomic scenarios shown in Table 5.

Table 5

CECL loss allowance by property status

LOAN TYPES	OUTSTANDING BALANCE	BASELINE	COVID-19 SEVERE PANDEMIC	MODERATE RECESSION
Construction	17.9%	3.03%	3.67%	4.55%
Permanent	82.1%	1.28%	1.82%	2.25%
CRE Total	100.00%	1.59%	2.15%	2.66%

Source: Moody's Analytics.

As we can see from the allowance estimates, the loss rate levels are in line with the severity of the three scenarios. Compared with the Baseline scenario estimates, the Severe Pandemic scenario estimates are significantly higher, due to a temporary drop in real GDP, a higher unemployment rate, and a decline in commercial property prices during the short term. The Moderate Recession scenario estimates are even higher because of a prolonged recession in the US economy, with a bigger setback on real GDP and sustained high unemployment rates for several years to come.

Given the lifetime nature of these estimates, the increases in the allowance under the Severe Pandemic scenario are less pronounced compared to the differences in the short-term loss estimates in the previous section. While the economic fundamentals deteriorate rapidly under the Severe Pandemic scenario, the economy bounces back just as quickly, with most key macroeconomic variables returning to a steady state within two to three years. Since the allowance estimates are expected losses over the entire lifetime of the loans, it is not surprising that the short-term volatilities in the economic forecast are partially offset by the long-term reverting to means.

While we expect the crisis to hit all major property types, some may be able to survive better than others. Table 6 shows the estimated loss allowance by property type for the CRE sample portfolio. Not surprisingly, the Hotel and Retail sectors are likely the biggest victims of a severe global pandemic, as their estimated loss allowances soar above 3% under that scenario. While some logistics properties may receive a short-term boost from increased online shopping activities, manufacturing activities have been disrupted as in many other industries, causing loss allowances to rise for the Industrial sector. On the other hand, the Office sector fares better, with relatively minor increases in loss allowance as the severity of the pandemic intensifies. Since most office leases have multi-year terms, we expect office market performance to be relatively stable if the economy rebounds after a near-term standstill. By contrast, apartment rental leases typically have much shorter terms. However, most tenants will likely stay put and avoid moving during these uncertain times. As a result, the Multifamily property type sees some modest increases in loss allowance across the three scenarios. Furthermore, loss allowance generally increases even further for all property types under the Moderate Recession scenario given the longer, deeper economic downturn.

Table 6

CECL loss allowance by property types and macroeconomic scenarios

PROPERTY TYPES	OUTSTANDING BALANCE	BASELINE	COVID-19 SEVERE PANDEMIC	MODERATE RECESSION
Multifamily	30.4%	1.62%	1.92%	2.47%
Office	33.5%	1.12%	1.14%	1.41%
Retail	17.6%	2.42%	3.54%	3.38%
Industrial	7.5%	2.08%	2.78%	3.11%
Hotel	10.9%	1.27%	3.20%	5.57%
CRE Total	**100.0%**	**1.59%**	**2.15%**	**2.67%**

Source: Moody's Analytics.

One major risk driver for CRE loans is the DSCR. DSCR depends both on the NOI of the collateral and on the borrower's debt obligation. While CRE properties are generally expected to perform poorly in the current market environment, default risk may be mitigated to some extent by sustained low interest rates, particularly if the economy continues to slide into further instabilty. Table 7 shows estimated loss allowance by interest rate type. Interestingly, both fixed- and floating-rate loans are equally vulnerable to the escalating pandemic. Although low interest rates may reduce credit risk for floating-rate loans in the short run, this effect dissipates over the long run, as interest rates return to normal levels.

Table 7

Loss allowance by interest rate type by macroeconomic scenario

RATE TYPES	OUTSTANDING BALANCE	BASELINE	COVID-19 SEVERE PANDEMIC	MODERATE RECESSION
Fixed	46.6%	1.30%	1.92%	2.25%
Floating	53.4%	1.54%	2.35%	3.02%
CRE Total	**100.0%**	**1.59%**	**2.15%**	**2.66%**

Source: Moody's Analytics.

5. Conclusion

COVID-19 has quickly changed our ways of living and working—at least temporarily—across all major economies globally. The progression, outcome, and repercussions of the pandemic to the US economy falls into the "unknown unknowns" category. Given such high uncertainty, we find the best way to grasp the sensitivities and credit impacts of the situation is to conduct meaningful scenario analyses based on a range of plausible scenarios.

In this report, we use available datasets and well-tested analytical tools and models to conduct such scenario analysis. The advantage of using a bottom-up model is to also carefully incorporate a variety of nuanced factors, such as lowered mortgage payments thanks to the historical low benchmark interest rates from the central banks. In the current situation, these factors can be sometimes beneficial if the loans are floating rate and indexed to short-term Treasury rates—which is exactly what the central banks are hoping for. By comparing the credit loss estimates from the baseline forecast before the pandemic, we find that the one-year credit losses from our representative CRE portfolio are projected to increase from 0.32% to 0.71% in 2020 in the Severe Pandemic scenario, and the losses are further projected to increase to 0.98% under the more prolonged Moderate Recession scenario, in which the economy continues to be affected by factors such as trade wars and a less effective fiscal stimulus, leading to a longer recession.

Over a two-year horizon, our research predicts a credit loss rate of 1.3% in the Severe Pandemic scenario. If the pandemic lasts longer and the economy fails to rebound strongly, in the Moderate Recession scenario our research predicts a two-year credit loss rate increase to 1.8%, almost 2½ times the loss estimates from just a few weeks ago. Furthermore, if the pandemic is not fully controlled, most fiscal stimulus fails, and the US economy enters another deep recession, similar to the one during the 2008–2009 financial crisis, as previously discussed in our annual 2020 CCAR/DFAST report, the credit losses would be in the order of 5.4% over a two-year horizon. An easier way is to extrapolate it from the 6.1% cumulative nine-quarter loss estimate under the Fed and OCC's severely adverse scenario for stress testing purposes.

Given recent market volatility, many users may want to stress their portfolios in a variety of different scenarios or even regional variations. To fulfill that need, we highlight that our model can efficiently quantify credit loss impact from numerous scenarios of model users' choice, which is critically important given the uncertain nature of the pandemic. However, remember that during this time of instability, our scenarios—and their results—will change. We highly recommend that model users test additional plausible yet divergent scenarios to gain a comprehensive insight of the credit risk sensitivities inherent in their CRE loan portfolios.

Additional resources from Moody’s and Moody’s Analytics:

- Moody’s Knowledge Portal on COVID-19
  https://www.moodys.com/Coronavirus
- Moody’s Analytics – COVID-19 Alternative Scenarios
  https://www.moodysanalytics.com/-/media/article/2020/global-convid19-scenario-narratives.pdf
- Moody's Investors Service – Global insurers to feel coronavirus impact through financial market volatility
  https://www.moodys.com/research/Moodys-Global-insurers-to-feel-coronavirus-impact-through-financial-market--PBC_1216059
- Moody’s Analytics Economic Scenario Generator for Property and Causality Businesses
  https://www.moodysanalytics.com/product-list/property-casualty-economic-scenario-generator
- Moody’s Analytics – Structured Finance solutions help improve portfolio insight and risk analysis
  https://www.moodysanalytics.com/microsites/structured-finance-solutions
- Moody’s Analytics - Coronavirus (COVID-19): Looming Threats to US Multifamily and Commercial Real Estate
  https://vimeo.com/397013363
- Moody’s Analytics – Stress Testing Commercial Real Estate Loan Credit Risk: A Scenario-Based Approach
  https://www.moodysanalytics.com/-/media/whitepaper/2011/2011-16-12-st-cre-credit-risk-scenario-approach.pdf
- Moody’s Analytics - Estimating Commercial Real Estate (CRE) Stressed Loss Measures Under Federal Reserve 2020 Comprehensive Capital Analysis and Review (CCAR) Scenarios (March 2020)

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