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Dual risk rating and origination strategies: optional (until they are not)?

The benefits of a modern risk rating system in turbulent times

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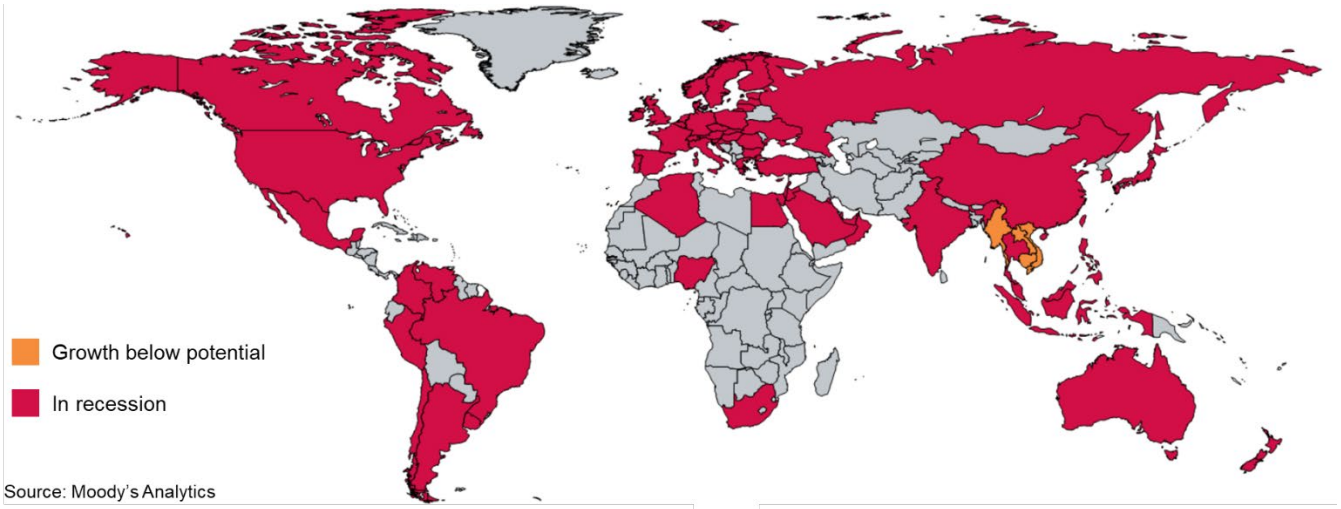
During the last financial crisis, some of the better-performing commercial credits were originated under extremely conservative origination policies. The result was very low origination volumes and the rejection of creditworthy applicants, often because the threshold for approval was set too high in an effort to inoculate against the uncertainty caused by market turmoil. Institutions that lacked efficient risk rating systems were not given enough information to differentiate between borrowers unless the applicant was so clearly creditworthy as to overcome the uncertainty. Additionally, a rating system based on expert judgment may not have provided loan officers with the necessary evidence to get approval, whereas an empirical system would have satisfied credit committees.

In this paper, we explore risk rating options and advise what you can do now to enhance your origination process. We will describe at a high-level how a dual risk rating (DRR) system makes each of these tasks easier for institutions that have relied on expert judgment systems, without focusing on specific asset classes. Our recommendations can help you improve capital allocation by using analytics to supplement expert judgment, particularly during periods of duress.

Introduction

The coronavirus (COVID-19) has caused widespread economic disruption and, combined with the drop in oil prices, pushed us much closer toward recession—if we are not already in one. Figure 1 shows probability of recession worldwide within the next reporting cycle under the Moody's Analytics forecasted COVID-19 pandemic scenario.

Figure 1 Recession status by country



Aside from ensuring that your bank has sufficient liquidity to navigate the crisis, understanding the impact of the crisis on your current portfolio is of primary importance. A secondary consideration is to plan for your next origination. Both of these tasks are made easier with a dual risk rating (DRR) system, which combines expert judgment with an empirical foundation that splits borrower and facility risk. The purpose of this paper is to describe at a high-level how a DRR system makes each of these tasks easier for institutions that have relied on expert judgment systems, without focusing on specific asset classes.

For portfolio management, separating borrower and facility risk means moving from a system based on expected loss or charge-offs to one that informs both default and recovery, preferably based on empirical methods.[1] This allows more time to react when a loan becomes stressed, as the factors that affect default can be different than those that affect recovery. Importantly, these differences are accentuated during times of stress. Liquidity issues can endanger cash flows from the borrower, which increases default risk. At the same time, the asset securing the loan may retain its value so recovery expectations should not change. Alternatively, economic turmoil could have a pronounced effect on one asset class in particular, increasing facility risk. However, current business conditions could remain strong, so the probability of default would stay the same, leading to unchanged expectations in terms of expected loss. Both situations might have a similar impact on expected loss and so would result in a similar master rating. Using a DRR system would show a more detailed picture, allowing more flexibility to mitigate risk.

For origination processes, while expert judgment-based scorecards have worked well for many firms in the past, they could fall short during times of stress. Normally in such times, a rating system based on expert judgment can result in overly short pipelines as only the safest borrowers, based on your experience, gain approval. These scorecards lack the granularity to differentiate loans from businesses that are experiencing acute stress due to the economic turmoil from those with more fundamental weaknesses. The ability to understand which firms would be affected more than others is very limited within these types of rating systems. Also, the information for mitigation strategy to focus on either collateral or borrower deficiency is lacking.

[1] In this paper, we refer to expert judgment-based risk rating systems as those based on a single rating that mostly depends on expert judgment-derived factors. Dual risk rating systems in turn are based on separate obligor and facility ratings that have a strong empirical basis. We acknowledge that some expert judgment systems are dual risk and others are empirical but define the terms as such to simplify the discussion.

Risk rating systems

Let us take a step back to understand what expert judgment and dual risk rating systems are and how they differ. Then, we will look at a typical implementation path for moving from a simple system that relies only on expert judgment to one that adds empirical rigor and separates borrower and facility risk. This new system would allow you to enjoy the benefits from an origination and portfolio management standpoint as outlined above.

Expert judgment-based risk rating systems

An expert judgment risk rating system (ERR) is not entirely based in statistical methods. These systems were developed using banks' historical charge-off experiences—with the help of credit and lending experts—to relate certain quantitative ratios and qualitative factors to the expectation of loss. These factors are typically ratios such as liquidity, sales growth, operating expense ratios, and so on. Other factors include management and industry qualifiers that have been viewed historically as influencing the probability that a credit will experience a loss. Scorecards typically comprise 10-12 ratios and/or attributes weighted based on experience by the bank's foremost credit experts. Some ratios could be derived from basic statistical measures. The scorecard usually ranks credit in a 1-10 bucket rating scale. Using expert judgment, one can map these rating buckets to an agency ratings scale that produces an average loss estimate if the bank lacks a reasonable amount of historical data by rating buckets. Ratings developed using expert judgment-based systems are less likely to provide smooth migration[2] patterns than empirically driven scorecards. In turn, in times of stress, this may lead to a limited rating migration or a large migration to downgrade across multiple ratings grades once the shock is severe enough.

Dual risk rating systems[3]

Dual risk rating systems (DRRs) are on the opposite end of the spectrum in that they are developed using statistical models to predict expected loss based on the borrower's ability to repay—the probability of default (PD)—and the value of collateral recovery in the event of default—the loss given default (LGD). The system also includes a scorecard that integrates additional considerations for both the PD and LGD that are not captured by the model.

The PD rating is usually based on financial ratios and linked to observed defaults; the default measure used by Moody's Analytics is known as an Expected Default Frequency (EDF™).[4] The analysis usually entails relating balance sheet and income statement line items to empirical default data to determine a probability of default. The LGD is also derived empirically by using the historical relationship between debt types and recovery potential.

An empirical scorecard for each obligor and facility risk is then created using a combination of the PD or LGD measure, respectively, and the judgmental factors that are deemed most important by management, typically chosen to capture aspects of obligor and facility risk that are not captured by the PD and LGD measures. Though these factors, which may include management quality, industry cycle, and so on, are not empirical in nature, we can incorporate them using empirical methods by selecting the weight of each factor in the model and then evaluating the resulting scorecard against historical decisioning and performance data. This ensures adequate accuracy and also allows for management input to ensure the scorecards are coherent and intuitive.

Overall, this method lets us use both quantitative and qualitative measures in the model and include both in a rigorous, empirical way. The quantitative PD and LGD portion of the model typically accounts for 60-70% of the final scorecard, leaving 30-40% for the qualitative portion.

DRR measures, like ERR measures, are typically through-the-cycle (TTC) measures providing good stable outcomes, as origination metrics should. However, based on their extended granularity, DRR measures tend to provide much smoother migration patterns, and therefore offer greater insights into borrower and collateral quality in times of stress.

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[2] An example of the detailed analysis of rating migration that is possible using a dual risk rating systems is presented in this paper: https://www.moodysanalytics.com/articles/2020/covid-19-impact-on-middle-market-and-large-firm-credit-risk

[3] A more detailed discussion of master rating scale and dual risk rating from our co-author Chris Henkel is available here: https://cms.rmau.org/uploadedFiles/Credit_Risk/Library/RMA_Journal/Credit_Risk_Management/Mastering%20Your%20Rating%20Scale.pdf

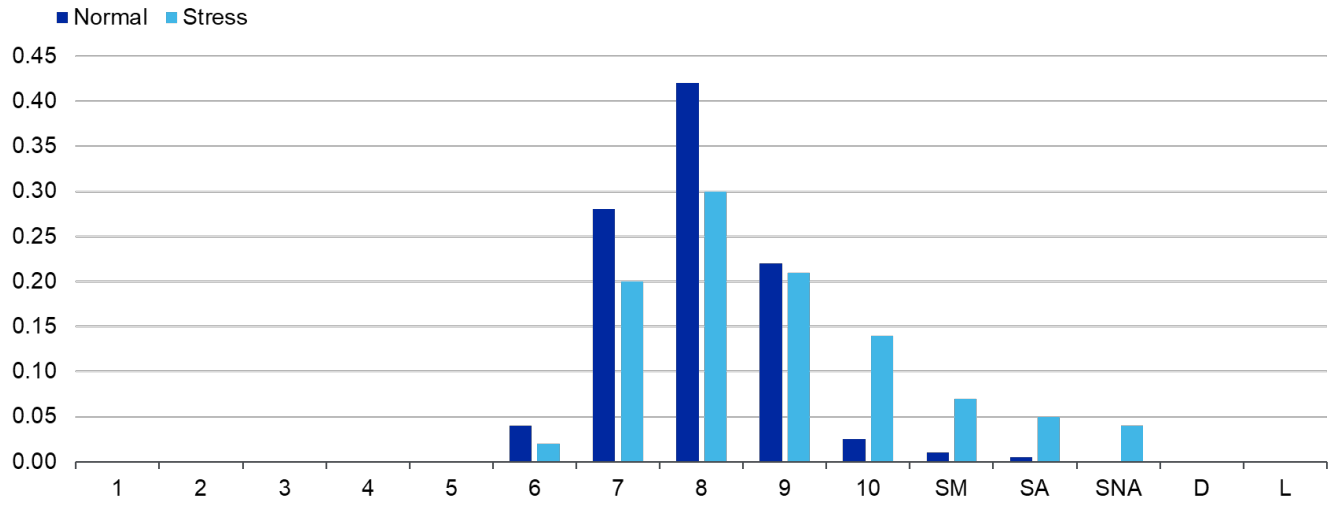
[4] https://www.moodysanalytics.com/-/media/products/edf-expected-default-frequency-overview.pdf

Granular definition of risk

The key to an effective DRR process is the ability to differentiate and rank order risk through the standard course of business. ERRs are notorious for creating clusters of risk ratings and to some extent obfuscating the risk within. The ability to identify and differentiate risk within and across clusters is one of the biggest problems with ERR systems that a DRR system can solve. Equally, the inability to rank order these same credits under stressed conditions exacerbates issues with risk rating migration and volatility. To demonstrate this, we have constructed a simple example using ratings derived from an ERR and a DRR system.

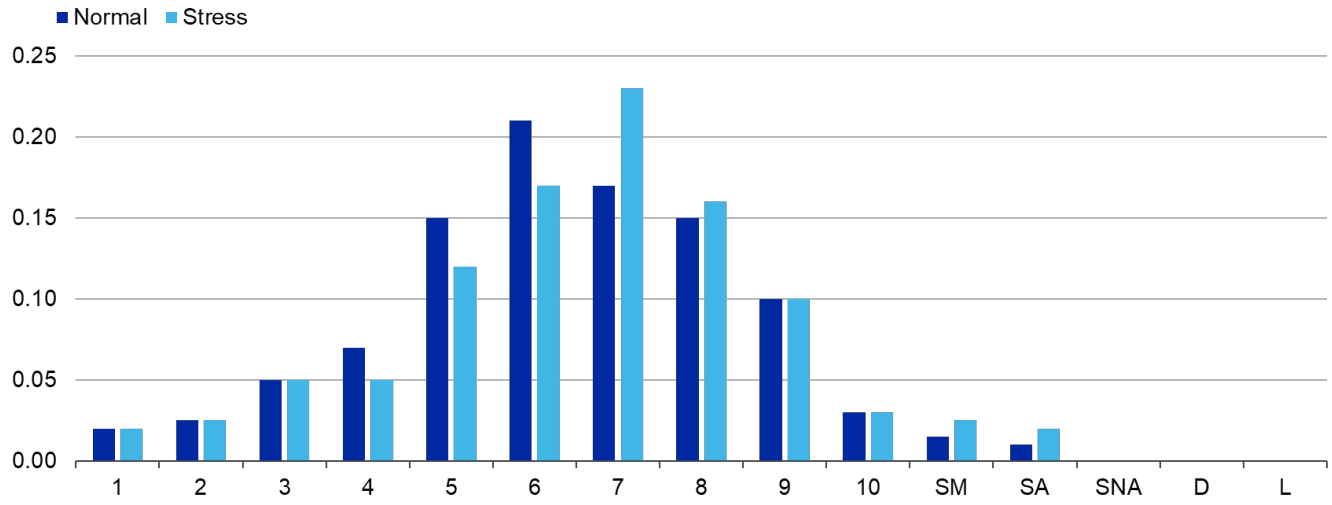
In Figure 2, the dark blue bars represent the frequency of ratings generated using an ERR system during a normal economic environment and the light blue lines represent the frequency of ratings generated using the same system during a stressed period. The ratings are clustered in risk grades 7 and 8 before stress, which leaves little room to downgrade before the credits become "non-pass" rated. This results in a large number of credits rated 10 when the concentration of ratings migrate to lower-rated buckets en masse.

Figure 2 ERR-based ratings in a normal and stressed economic environment



Note: SM – Special Mention, SA – Substandard Accrual, SNA – Substandard Non-Accrual, D – Doubtful, L – Loss

Figure 3 DRR-based ratings in a normal and stressed economic environment



Note: SM – Special Mention, SA – Substandard Accrual, SNA – Substandard Non-Accrual, D – Doubtful, L – Loss

Figure 3 shows the same portfolio of loans when rated using a DRR system. Again, the ratings during a normal economic environment are in dark blue while those during stress are in light blue. In contrast with the ERR ratings, using a DRR system in a period of stress results in a much smoother migration of credits. This is in part because the DRR system can disperse the same credits into more risk grades, using the full range of the scorecard. This effectively means that the DRR scorecard is more granular, despite the scorecards having the same number of grades. During steady economic environments this would have little effect on originations as both systems result in the same number of approvals, though it would be more difficult to manage the portfolio using ERR even in such an environment.

In normal conditions, an ERR system produces a stable ratings distribution, though it may be clustered. However, once the business cycle turns, these benign metrics tend to produce volatility based on clusters of obligors migrating to worse rating categories. This can be hard to predict or mitigate if you are relying on an ERR system. The value that a DRR system adds is clear in times of stress: using more rigorous analytics to generate borrower and collateral risk estimates results in a more granular ratings scale that captures sensitivity to stress at a much earlier point in the business cycle.

Implementation

A DRR system does not need to be overly complicated; in fact, it can be beneficial for institutions to transition gradually from expert judgment-based risk rating systems to DRR systems. The most important aspect to successfully implementing a DRR system is the way you get the institution to understand the paradigm shift that enhancing the process represents. For institutions where management has relied on the judgment of their foremost experts for credit decisions, we are not suggesting replacing but complementing their expertise with powerful analytical tools to help navigate uncharted waters.

In our experience during times of stress, the transition to a DRR system must be gradual, starting with (1) the introduction of a DRR benchmark, generating a borrower score to help differentiate risk across borrowers in a way that supplements the existing rating system. This kind of benchmark gives management and the lines of business time to become accustomed to the new metrics, and helps differentiate between borrowers within the same rating grade. Next, we propose (2) replacing the ERR system with a standard DRR system (which could run in parallel with the existing system) with an out-of-the-box framework composed of a quantitative and qualitative scorecard for both PD and LGD. In the later stage of adoption, we typically see (3) customization of the DRR system by adjusting the empirical qualitative scorecards to reflect specific judgmental attributes that management wants to integrate into the process.

In periods of stress, here are some suggested implementation steps in the process:[5]

1. **Adopt a DRR system as a benchmark:** This initial step could be useful in times of stress when current rating systems fail to adapt to unknown or unseen conditions. The process consists of adding a PD score to enhance current decisioning systems, which allows further differentiation within your current risk rating system.
2. **Implement a standard DRR system approach:** Implement a DRR process based on industry quantitative and qualitative scorecards to help separate expected loss into a PD and an LGD. This system produces a quantitative PD as in the benchmark approach, and then evaluates the collateral-based LGD with specific industry-based characteristics and a set of haircuts. This

CECL's impact on risk rating at origination

In July 2016, the FASB released a new accounting standard for the estimation of allowance for credit loss at origination, based on the consideration of historical experience, current conditions, and reasonable and supportable forecasts. This new metric will offer a view of the lifetime expected credit loss for each credit in a loan portfolio.

Institutions should be aware that increased risk rating scrutiny will occur to ensure that the lifetime loss estimate of different loans at origination are reflected by the risk rating used to evaluate these credits. For example, two credits rated as 6 with drastically different CECL allowances will raise questions on whether the risk rating is appropriate. The inability to provide consistent risk measurement across both systems will raise red flags during ongoing supervisory examinations over time.

The use of a DRR system that can span origination and serve as a starting point for CECL ensures that credits are originated using a consistent risk metrics framework and lessens scrutiny during regulatory

[5] In times of stress, an institution may not have the ability and capacity to undergo a change to its rating system. We offer this option as a rapid way to gain additional insights to understand which credit may represent the larger risk within a rating cluster. In benign times, for most projects, we would forego this step.

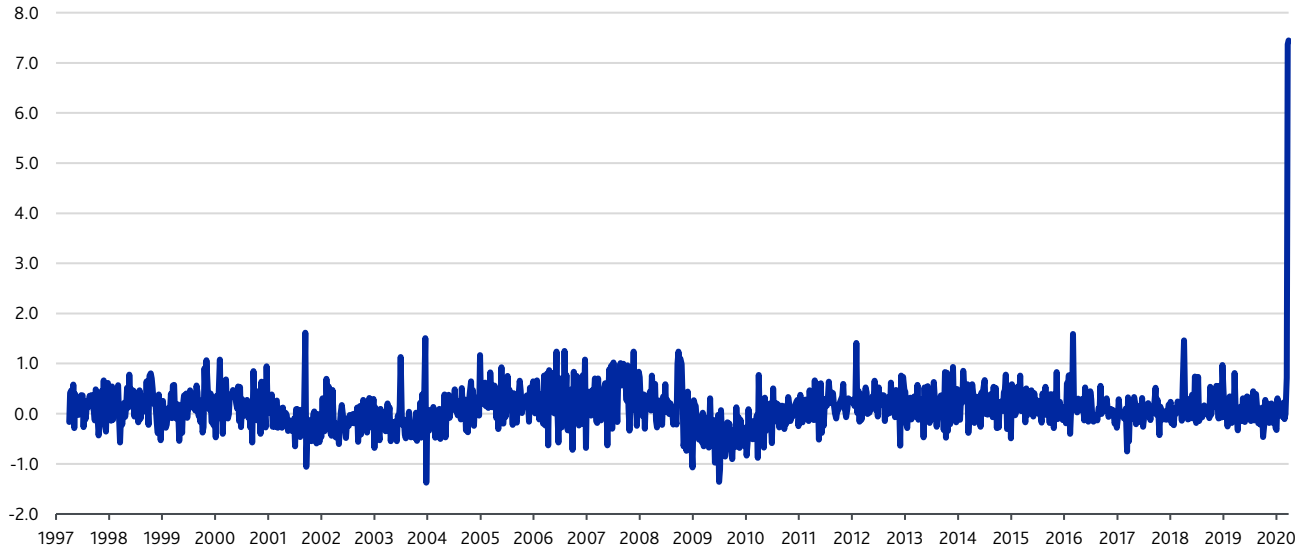
approach also uses industry-standard expert judgment scorecards to enhance the PD score based on knowledge of the credit under consideration. It can offer additional expert judgment-based influence for the collateral-based LGD. The master rating scale can then be derived to match your internal rating scale.

3. **Customize your DRR process:** After using the standard DRR approach for a while, some institutions recognize the need to customize their expert judgment scorecard in a way that enhances both PD and LGD for specific behavior observed within the borrower population or their collateral. At this point, the institution is already accustomed to a DRR system. This stage represents an adjustment of the origination scores.

Take advantage of a DRR system during market turbulence to guide your origination and portfolio management strategies

These unprecedented times also present a unique opportunity for your business. You have two choices: cut off lending except for the most creditworthy borrowers and risk losing market share, or continue lending and finding new opportunities while clearly understanding downside risk to increase market share. It is worth noting that recently, the amount of draws on commercial and industrial lines of credit has reached unseen levels as shown in Figure 4.

Figure 4 Commercial and industrial loans, all commercial banks, percent change, weekly, seasonally adjusted



Source: Federal Reserve Bank of St. Louis

This recent development means that your ability to differentiate your existing relationships based on credit draws that represent the most risk for your portfolios is even more critical. Typically, these lines of credit may not be readily cancellable unless a covenant has been breached; hence, you need to be prepared to manage these credit lines in a much tighter fashion and decide where your attention is best spent and what mitigating actions you want to focus on. Having an analytical metric to supplement your judgment will make this portfolio management exercise much more efficient.

Moody's Investors Service recently released the graphic on the left showing the types of firms that would be affected by the COVID-19 pandemic as a starting point to differentiate risk in a more granular way. For example, with a DRR system, instead of limiting origination to firms operating in low-risk sectors, understanding which firms within each sector, including high risk, would represent the most worthy credits could create a potential advantage over your competition. This may allow you to increase market share without compromising your balance sheet.

Source: Moody's Investors Service

In periods of stress, we can offer the following guidance:

- Understand where your portfolio concentration hotspots are, based on your current book, and map out a chart for diversification within and across industries.
- Know your areas of origination expertise and supplement your TTC scorecards with DRR metrics that are sensitive to the current conditions, and add a factor for high-risk COVID-19 sectors.
- Review and understand how your CECL estimates and your origination risk rating metrics are consistent. If they are not, be prepared to say why.
- Review the downside risks and whether they fall within your risk appetite and/or add to your portfolio diversification.
- Increase collateral and covenants so that borrower risk is enhanced through mitigation.
- Evaluate the potential government support from which your borrowers may benefit, and be aware of additional recourses you may have in times of stress.
- Ask yourself: Does this credit offer a constructive return to my balance sheet and enhance my competitive position in my market?

Conclusion

In times where uncertainty and stress prevail, having an empirical framework to serve as an anchor and complement to your knowledge and expertise can prove invaluable, especially when not all experts are familiar with such times. Such a system will enhance your current origination framework and allow you to capture risk-return-worthy credits, which can be a difficult prospect during turbulent periods. The process of complementing expert judgment with empirically derived, quantitative metrics provides a way to separate the risk that exists within typical ERR rating clusters, which becomes critical when entering a downturn. Understanding your portfolio risk in times of stress is paramount to generating adequate risk return.

The DRR benchmark process can very quickly give you the risk management information you need to consider credits that you may not have considered in other circumstances. Importantly, it also offers you the ability to accurately price credits with elevated risk. Using a practical, well-thought-out approach, you can gain and enhance your competitive advantage today and lay the foundation toward a full-fledged DRR system to support tomorrow's portfolio growth.

Contact us for more information on the journey to enhancing returns and reducing risk with a DRR system.

Additional resources from Moody's and Moody's Analytics

- Moody's Topic Page on COVID-19
  https://www.moodys.com/Coronavirus
- Moody's Analytics – COVID-19: Darkening Outlook
  https://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_1219964
- Moody's Analytics – Coronavirus (COVID-19): Looming Threats to US Multifamily and Commercial Real Estate
  https://vimeo.com/397013363
- Moody's Investors Service – February 2020 Default Report
  https://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_1199582
- Moody's Investors Service – Default scenarios as coronavirus-induced economic turmoil intensifies
  https://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_1220019