CREDIT RISK REPORT
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EDF Report December 2020 for North American Corporate Firms

North American corporates experienced a very steep credit quality decline following the global outbreak of the COVID-19 pandemic. By the end of December 2020, the median EDF™ (Expected Default Frequency) value of North American corporate firms was 1.41%, retreating from a high of 2.31% at the end of March 2020.

The elevated credit risk during the first half of 2020 is mostly attributable to substantially increased market leverage and asset volatility, following the severe drop in equity markets during the pandemic outbreak. The stock market has experienced a substantial recovery in recent months, which helped bring the market leverage to a level comparable to the historical norm. Asset volatility remains elevated relative to the historical benchmark.

We observe a similar magnitude of increasing credit risk in both bond spread and credit default swap (CDS) spread. All these credit metrics have seen pullbacks to different extents following their recent highs in March 2020.

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1. Overview

North American corporates experienced a very steep credit quality decline during the first half of 2020 following the global outbreak of COVID-19. By the end of December 2020, the median EDF value of North American corporate firms was 1.41%. The current level is noticeably lower compared to the 2.31% observed at the end of March 2020, which marked the first time the median EDF value has doubled year-over-year since September 2008. The decline in EDF from its high is attributed to the remarkable equity market recovery, while balancing out the fact that volatility remains heightened. The median EDF credit measure increased by 33% year-to-date.

We also observe a similar magnitude of declining risk in the credit markets following the high in March 2020, with both bond spreads and CDS spreads retracting from recent five-year highs. Yet again, the gap between the spreads from high-yield and investment grade remains large compared to recent history.

Observed corporate defaults of non-financial public firms still remain low compared with historical standards, but they are higher than what we saw during the previous years. The onset of the coronavirus outbreak was sudden and still relatively recent. It will take time for impacts to trickle down and become default events. However, we have started to see a handful of COVID-19–related defaults in the United States.

EDF levels for a number of risky industry sectors increased significantly during the last 12 months. Specifically, oil- and consumer-related industries made up the top of the list when ranking industries by liability-weighted EDF measures. These sectors were also among the industries that experienced the largest increases in risk during the prior year.

This report first shows overall credit trends, reflected through realized default counts, the EDF credit measure and its drivers, and credit spreads for North American non-financial firms. Subsequently, we analyze the riskiest industry sectors using a variety of metrics. We also report credit migration patterns using EDF metrics.

During the last financial crisis, we published periodic EDF reports that many clients found helpful. This report follows our previous reports[1] for North American and European corporates regarding COVID-19's impact on EDF credit risk measures. These reports are available at www.moodysanalytics.com.

[1] https://www.moodysanalytics.com/articles/2020/edf-report-march-2020-for-north-american-corporate-firms
https://www.moodysanalytics.com/articles/2020/edf-report-may-2020-for-north-american-corporate-firms
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2. Credit measure trends

This section shows EDF credit measure movements and key drivers for North American non-financial companies between January 2000 and December 2020. We report these trends in conjunction with realized default counts and credit spreads.

2.1 Realized defaults

Figure 1 shows quarterly default counts for North American public corporates, classified by whether the firm is rated at the time of default. Figure 2 presents the quarterly number of defaults, highlighting bankruptcy defaults. Default occurrences reaffirm that the most recent benign credit environment continued at least until the end of 2019. So far, we have seen a handful of defaults in the sample in 2020. However, given that the onset of the pandemic has been sudden, and we are still in the middle of it, we might still see a significant increase in defaults in the near future if the credit environment deteriorates due to uncertainties in the path of economic recovery. Figures 1 and 2 detail default counts by rating status and default type, respectively. Figure 3 reports monthly default counts occurring the previous year, during which period the default counts remained low. The 12-month default count rolling average currently stands at 8.75, up from 6.17 one year ago. As a benchmark, during the past 10 years, the average monthly default count is around 11.80.

Figure 1 Quarterly default counts by rating status

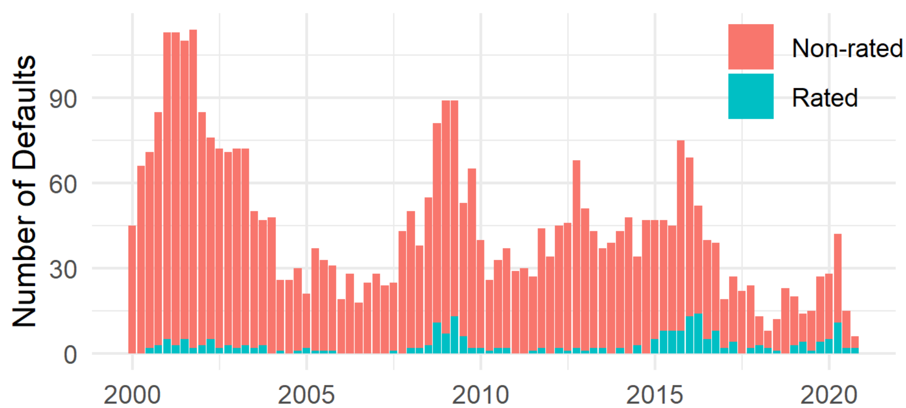


Figure 2 Quarterly default counts by default type

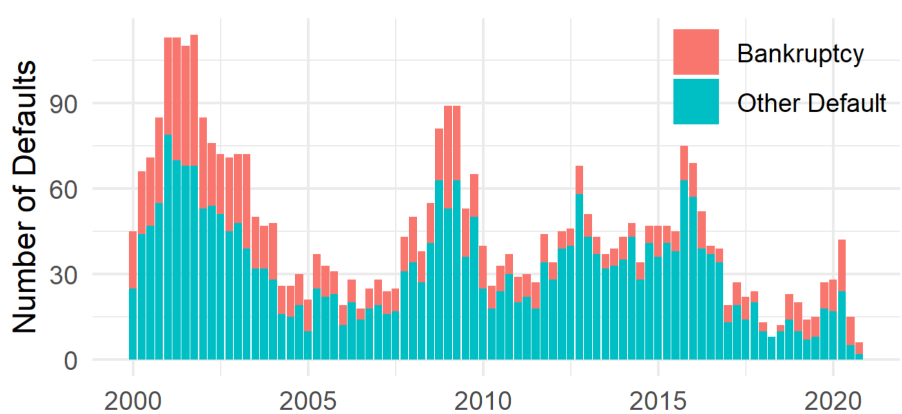
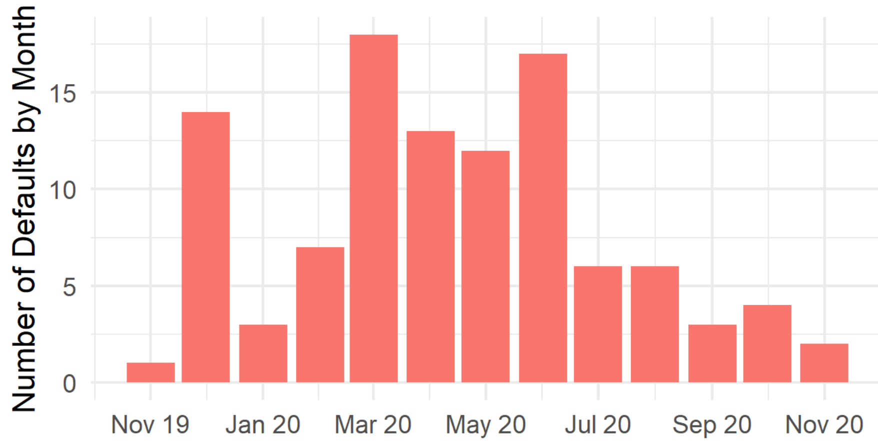


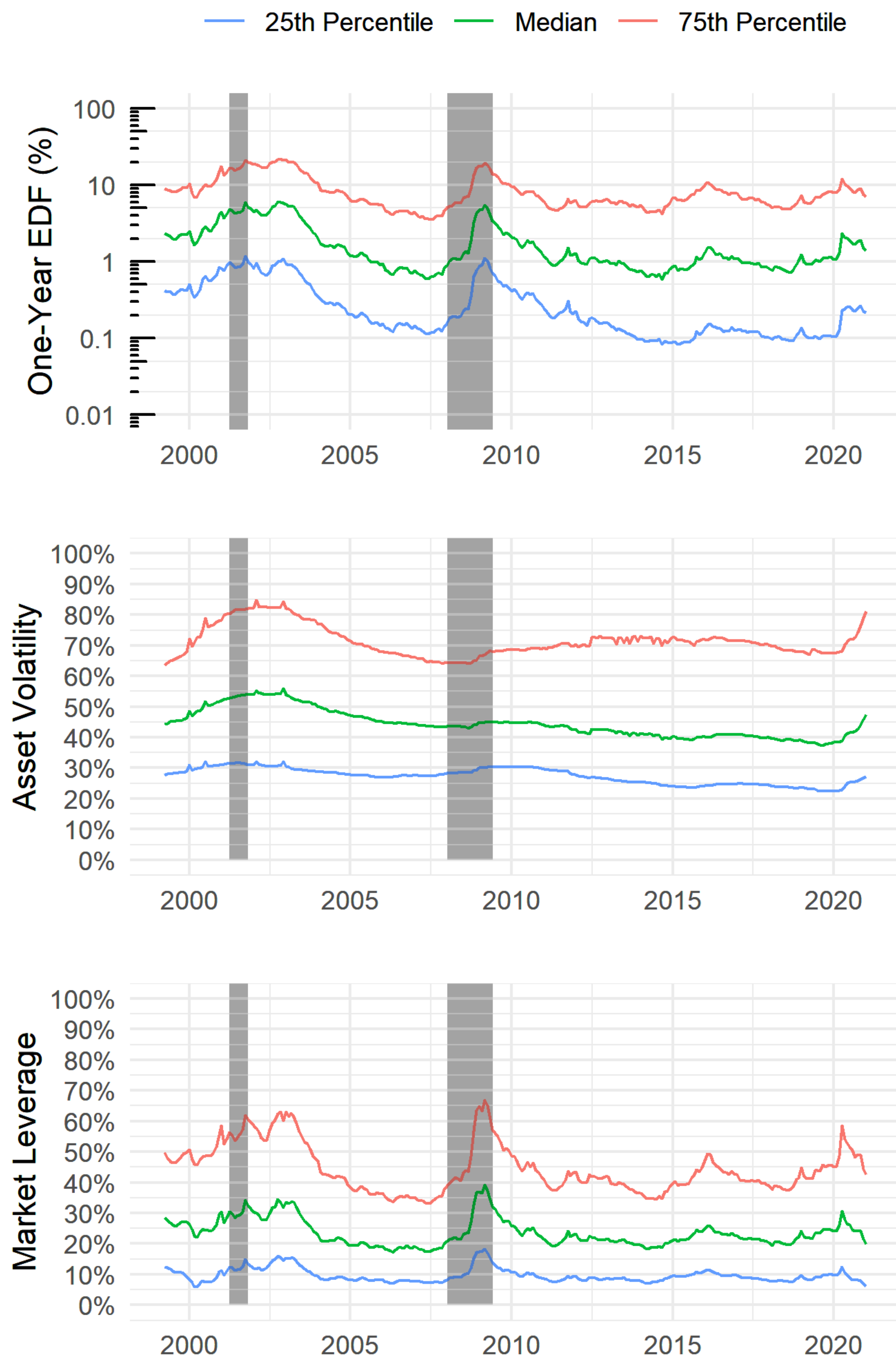
Figure 3 Monthly default counts during the past year



2.2 EDF credit measures and drivers

Figure 4 reports quartiles of the EDF credit measure and its drivers, including underlying asset volatility and market leverage, from January 2000 through December 2020. For a significant part of 2020, we have seen a substantial rise in EDF values as a result of significant market leverage increases. The level of EDF has retreated from its high in March. Still, compared to a year ago, the median EDF value rose about 30%, from 1.05% to 1.41%. At the same time, median leverage decreased from 24.10% to 19.88%, potentially due to the recent equity market recovery. Median asset volatility increased from 38.41% to 47.44%.

Figure 4 Trends of one-year EDF credit measures and drivers



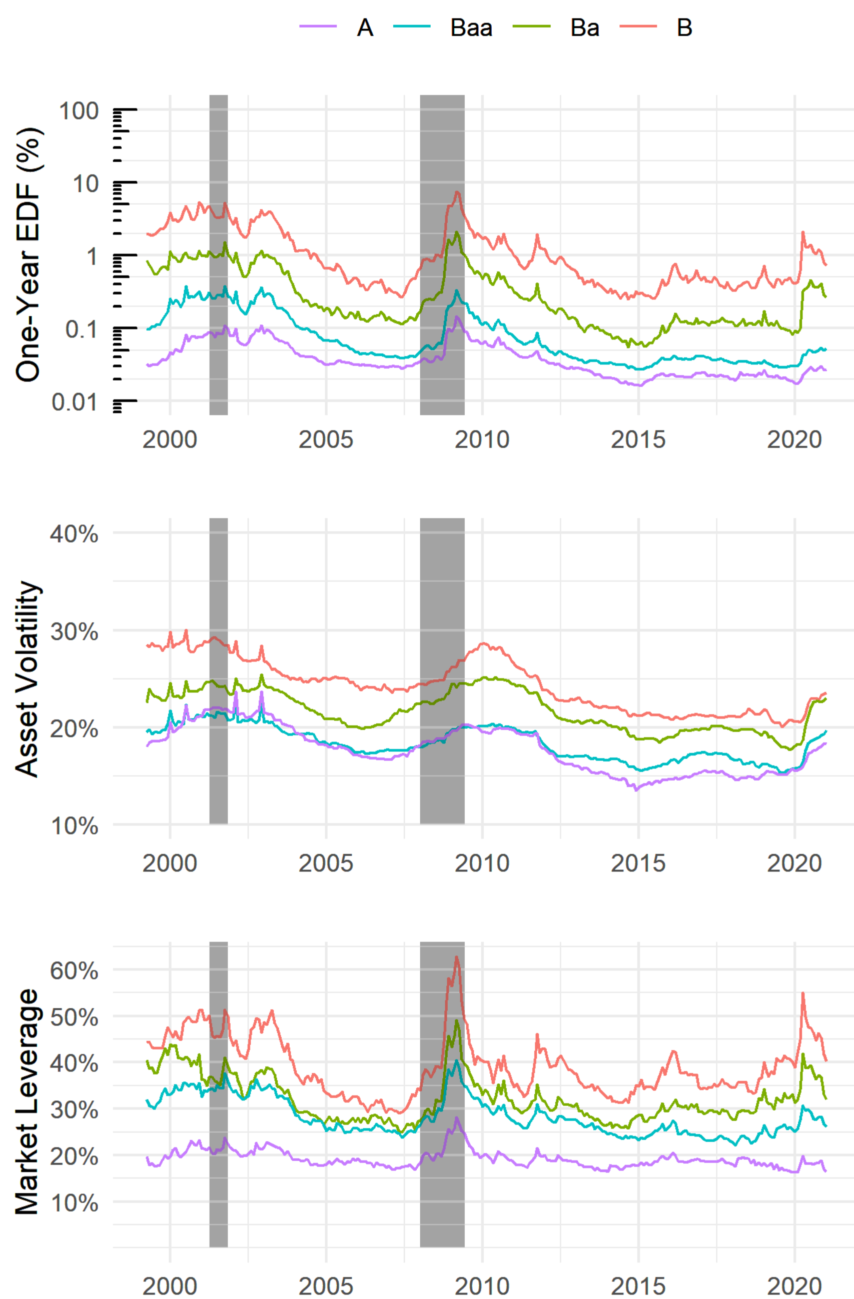
2.3 EDF credit measures and drivers: rated firms

Figure 5 presents EDF measures and drivers for firms holding an agency rating assignment by Moody's Investors Service. To ensure each rating group has a sufficiently large number of firms, we analyze only groups rated A through B. In the cross-section, the median EDF values for these rating groups are consistent with the risk order indicated by agency ratings. For EDF value drivers, B-rated firms are riskiest in terms of both business risk (that is, asset volatility) and financial risk (that is, leverage). The EDF value difference between Baa-rated and Ba-rated firms is primarily driven by asset volatilities, while leverage is the main driver for the EDF value difference between Baa-rated and A-rated firms.

Currently, Ba and B-rated firm EDF credit measures are still at levels close to the historical highs seen during 2008–2009. These levels show a stark contrast with the much more benign credit environment observed during the past few years. For example, a Ba-rated firm is now almost as risky as a B-rated firm in early 2019. However, despite the recent volatility, the EDF credit measures for investment-grade firms still remain relatively moderate.

We observed a moderate increase in median asset volatilities across all rating groups, up from historic lows at the second half of 2019. The bottom panel of Figure 5 shows that the market leverage—the ratio of the default point over the market value of assets—presented a sharp increase from their historic lows and a recent pullback. The magnitude of the increase in leverage from the first half of 2020 is almost as steep as the one observed during October and November 2008. The recent pullback in market leverage reflected the recovery of market capitalization for North American corporates across all rating groups. Yet a heightened level in market leverage, especially for the speculative grade firms, still points to the deteriorated debt service capacity of North American corporates in 2020.

Figure 5 Trends of one-year EDF credit measures and drivers: rated firms



2.4 Credit spreads

Figure 6 presents the time series of median values for the EDF credit measure, the five-year CDS spread, and the option-adjusted spread (OAS) of investment-grade and high-yield North American public firms from January 2014 to December 2020. Median bond option-adjusted spreads are derived from the sample of bonds in coverage by the Moody's Analytics EDF-based bond valuation model. Generally, all three measures have been moving in tandem during the longer history. The recent dramatic change is readily apparent for all three measures, especially for the high-yield space. Figure 7 shows the median credit metrics by broad rating group as of the end of December 2020 and one year ago. As oil and gas-related firms account for a large portion of high-yield bonds, we see the high-yield space was essentially hit concurrently by both the COVID-19 pandemic and the recent oil price shock, causing significant distress to speculative-grade debt.

Similar to the pattern observed for EDF credit measures, both OAS and five-year CDS spreads present a substantially steeper credit risk increase in the high-yield space than in the investment-grade space, suggested by the widened gap between the two broad rating classes, shown as the dashed blue line in Figure 6.

Figure 6 Medians of credit measures: investment grade vs. high yield

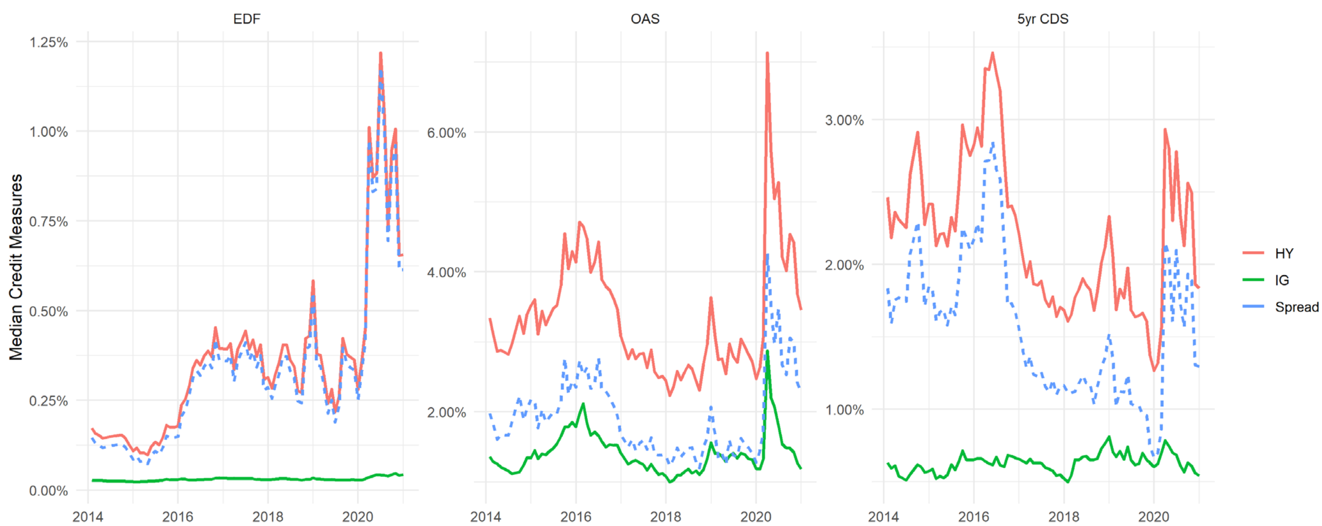


Figure 7 Median credit measures as of December 30, 2019 and December 30, 2020

2019-12				2020-12			
Rating	EDF	5yr CDS	OAS	Rating	EDF	5yr CDS	OAS
Aa	0.01%	0.37%	0.53%	Aa	0.01%	0.32%	0.58%
A	0.02%	0.43%	0.82%	A	0.03%	0.43%	0.81%
Baa	0.03%	0.66%	1.31%	Baa	0.06%	0.63%	1.28%
Ba	0.09%	1.02%	2.09%	Ba	0.32%	1.59%	2.75%
B	0.80%	1.85%	2.94%	B	1.48%	2.81%	4.28%
<B	8.40%	11.70%	9.00%	<B	2.13%	5.79%	6.95%

As the current elevated level of credit spreads potentially reflects both the anticipated increase in default risk and investors' increased risk aversion, we analyze market Sharpe ratios, estimated using a Moody's Analytics EDF-based bond valuation model shown in Figure 8. It is apparent that the estimated market price of credit risk has fallen back dramatically from the height during March 2020 and is approaching its level at the beginning of the year.

Figure 8 Market prices of credit risk estimated from bond option-adjusted spreads and EDF value data

3. Industry analysis

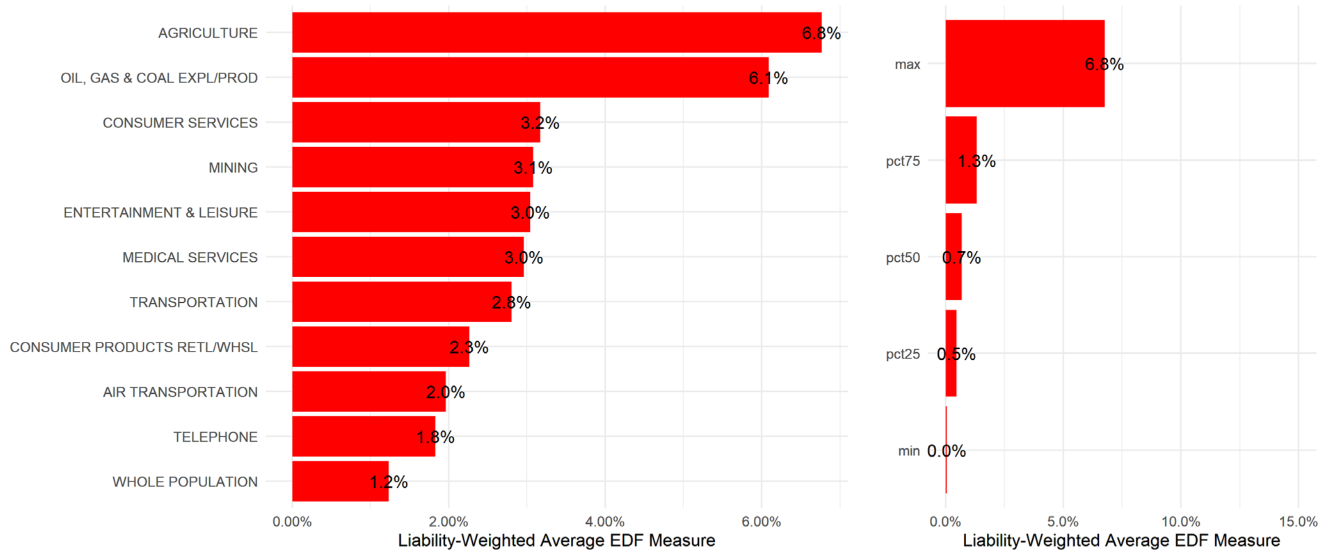
This section applies two measures that capture different aspects of industry risk. The first measure is based on the average EDF value weighted by total liabilities of each company in a given industry. Therefore, this measure is dominated by the risks of firms with large liability amounts. The second measure is the percentage of firms with EDF values greater than the 90th percentile of the entire population of North American non-financial companies. Consequently, this measure tends to be more represented by the risks of smaller companies, which are more likely riskier in most industries. With both measures, the analysis in this section helps paint a relatively complete picture of industry-level credit risk for North American corporates. To avoid small sample bias, we examine only industries with more than 20 firms as of December 31, 2020.

3.1 Riskiest industries

The entire North American corporate population has a 1.24% liability-weighted EDF credit measure, down from 1.28% last year. Figure 9 shows the riskiest industries and the distribution of liability-weighted EDF credit measures across all industries. The chart on the left side displays the top-ten riskiest industries and their EDF measures; the chart on the right side displays the EDF measure distribution of all industries.

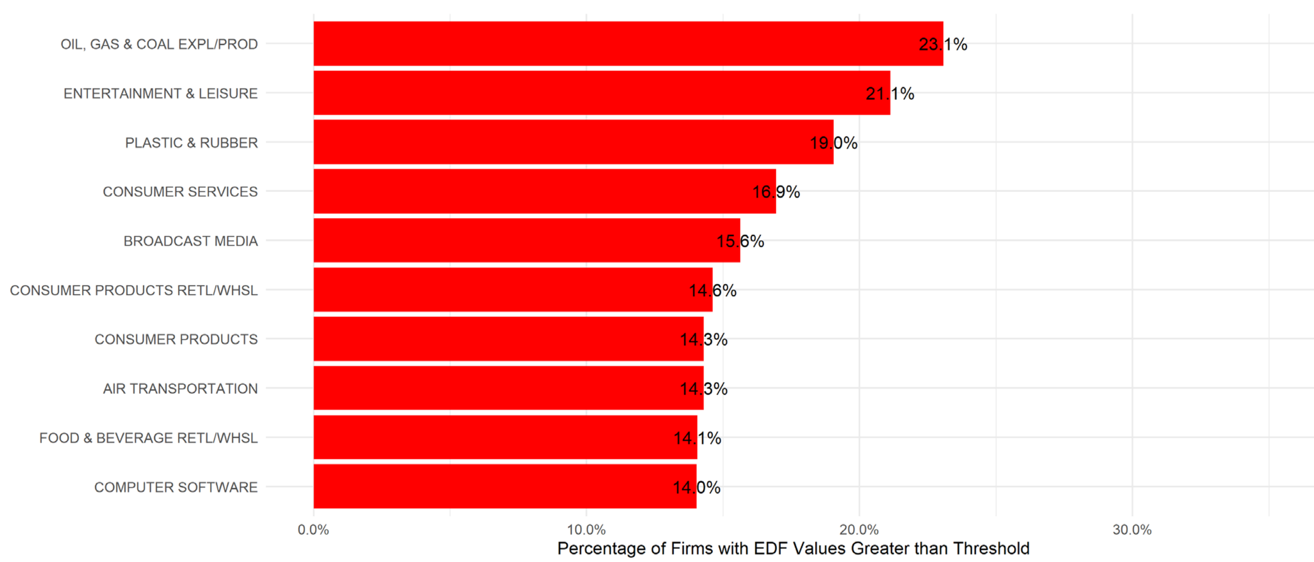
Among the riskiest industries is Oil, Gas & Coal Exploration/Production, probably not surprisingly. This industry was hit twice in rapid succession—decreased demand due to the coronavirus pandemic and a massive equity price drop due to the fall in oil prices. In particular, the liability-weighted EDF value for the Oil, Gas & Coal Exploration/Production industry is 6.1%, presenting alarming levels of default risk. Other industries topping the list tend to be non-essentials, including Consumer Services, as well as Consumer Products Retailers and Wholesalers. Compared to the levels in March, all of the 10 most risky industries experienced a decline in the liability-weighted EDF measure.

Figure 9   Riskiest industries by liability-weighted average EDF credit measures



Examining an alternative measure of industry risk, we compile the percentage of firms within an industry that have EDF values greater than the 90th percentile of the EDF value distribution for the entire population. At the end of December 2020, for the population of North American non-financial firms, this threshold value was 24.09%. Figure 10 lists the riskiest industries using this measure. The list is largely consistent with the list obtained using the other measure. Again, the Oil, Gas & Coal Exploration/Production industry is ranked as the riskiest, with almost 25% of firms above the threshold. Consumer Products, Consumer Services, and Consumer Products Retail and Wholesale appear on this list, consistent with a substantial drop in demand.

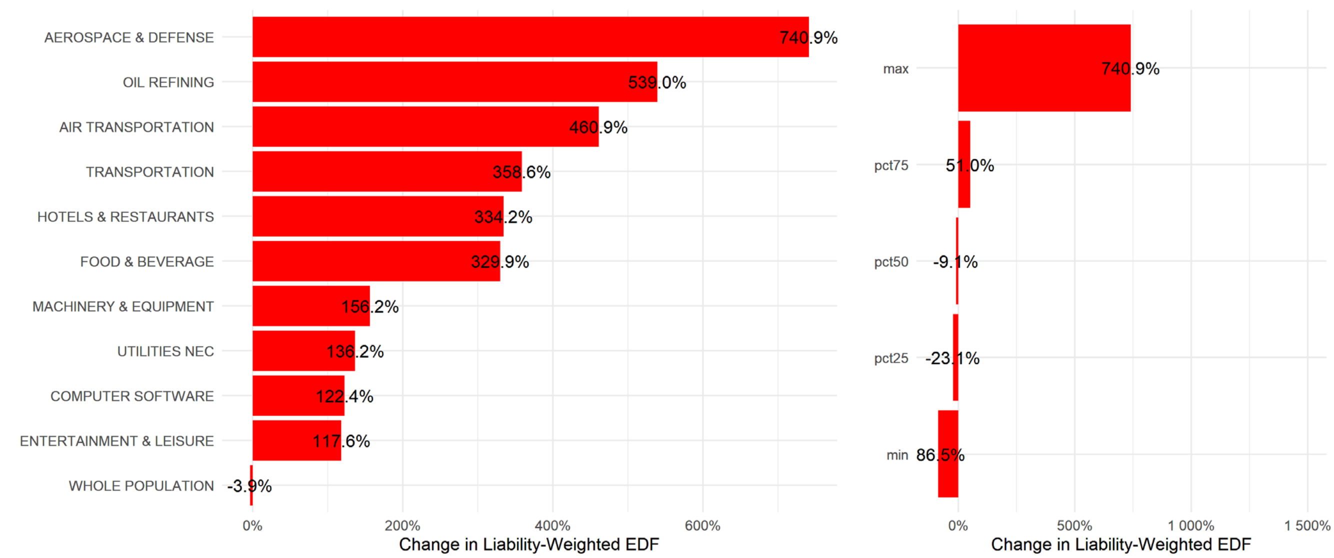
Figure 10   Riskiest industries by percentage of firms with EDF values greater than threshold



3.2 Industries with the largest credit risk increase

The sharp elevation in credit risk is more apparent when we look at year-over-year increases in EDF values within each industry. From December 2019 through December 2020, many industries in the North American corporate space experienced substantial increases in credit risk. The industries with the largest percentage increases are reported on the chart to the left in Figure 11, where we find industries related to oil refining, as well as industries that heavily engaged in travel and leisure, such as Transportation and Hotels & Restaurants. The chart on the right side of Figure 11 presents the distribution of changes across all industries, which is quite skewed.

Figure 11 Industries with the largest increases in liability-weighted EDF credit measures



4. Credit migration

This section analyzes credit quality shift from both the change in agency rating and the change in EDF-implied rating (EIR). The agency rating is more latent, reflecting the credit risk ranking of a firm over a long period of time and is thus more stable. On the other hand, the EIR is calibrated monthly, and is, therefore, more point-in-time but also more volatile.

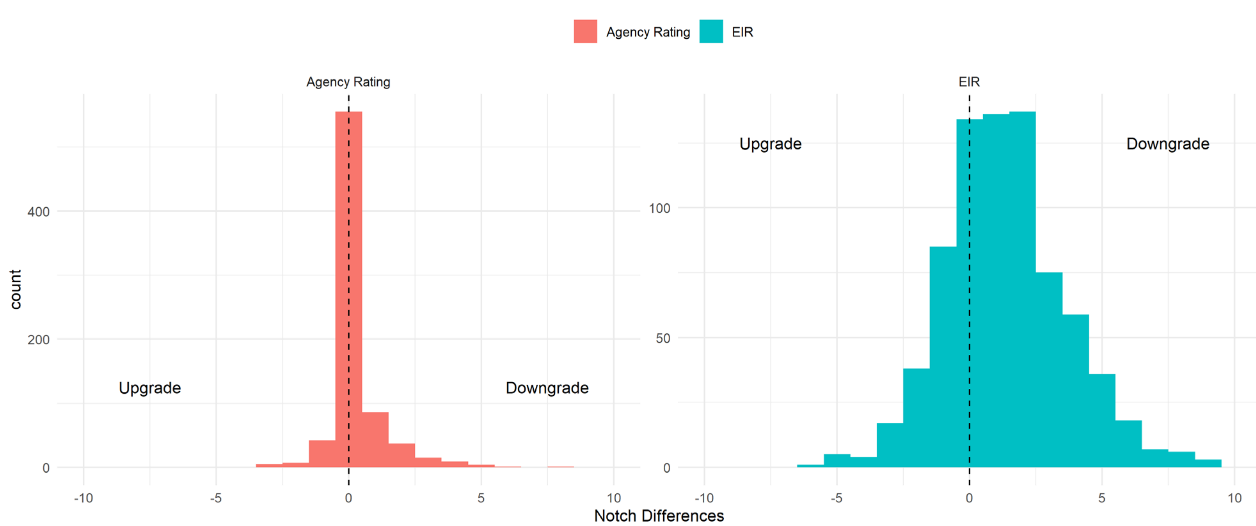
Figure 12 shows the mapping between EDF values and the corresponding implied ratings for North American non-financials as of December 2020. EDF values within the lower bound and upper bound are mapped to the corresponding rating class. The resulting EIRs are then compared to their counterparts in December 2019. Figure 11 shows the differences, along with the differences in agency ratings.

Figure 12 EDF-implied rating mapping for North American non-financials

Investment-Grade				High-Yield			
Rating	Median	Lower Bound	Upper Bound	Rating	Median	Lower Bound	Upper Bound
Aaa	0.0100%	0.0100%	0.0126%	Ba1	0.1672%	0.1294%	0.2161%
Aa1	0.0159%	0.0126%	0.0178%	Ba2	0.2793%	0.2161%	0.3265%
Aa2	0.0200%	0.0178%	0.0214%	Ba3	0.3816%	0.3265%	0.4460%
Aa3	0.0229%	0.0214%	0.0245%	B1	0.5214%	0.4460%	0.6094%
A1	0.0262%	0.0245%	0.0280%	B2	0.7123%	0.6094%	0.8838%
A2	0.0300%	0.0280%	0.0337%	B3	1.0965%	0.8838%	1.3604%
A3	0.0378%	0.0337%	0.0424%	Caa1	1.6878%	1.3604%	2.0940%
Baa1	0.0476%	0.0424%	0.0534%	Caa2	2.5981%	2.0940%	3.3241%
Baa2	0.0599%	0.0534%	0.0775%	Caa3	4.2531%	3.3241%	6.9624%
Baa3	0.1001%	0.0775%	0.1294%	Ca	11.3975%	6.9624%	23.8721%

Looking at the histogram of differences in ratings between December 2019 and December 2020 (Figure 13), even though the agency ratings suggest that the longer-term credit risk for the majority of the firms have changed little, we see a positive skewness for the EIR, suggesting clear, immediate credit deterioration, in line with other credit metrics.

Figure 13 Change in agency rating and EDF-implied rating (EIR): December 2020 vs. December 2019



5. Summary

The EDF levels for North American corporates saw a moderate retreat in December 2020 from their recent multi-year high. This retreat coincided with the recovery in equity markets as well as other credit metrics such as five-year credit default swap (CDS) spreads and option-adjusted spreads (OAS). Nevertheless, with volatility still relatively heightened, EDFs levels remained elevated compared to its norm in recent years. Substantial risk is still apparent in oil and consumer-related industries, which ranked high on the list by either the magnitude of EDF level increases compared to a year before or the liability-weighted EDF measure.

As the impact from the pandemic continues to unfold and the path to recovery becomes to shape, the EDF remains an accurate and responsive measure of credit risk. We will continue to monitor the changes in credit risk profiles for North American corporate firms and industries and publish relevant reports accordingly.

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