

## RISKCALC EDF CASE STUDY

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## Company AA Displayed Increasing Default Risk Starting Late-2015

Company AA, a U.S.-based transportation company, defaulted on August 13, 2018, unable to meet its debt payments. The Moody's Analytics EDF™ (Expected Default Frequency) metric and Early Warning Toolkit highlighted the company's rising default risk 33 months prior to default. This case study provides details on how the firm's EDF measure and the Early Warning Toolkit can be used to assess risk.

## Could the RiskCalc EDF Credit Measure and the Early Warning Toolkit Have Helped Flag Rising Default Risk and Avoid Credit Losses?

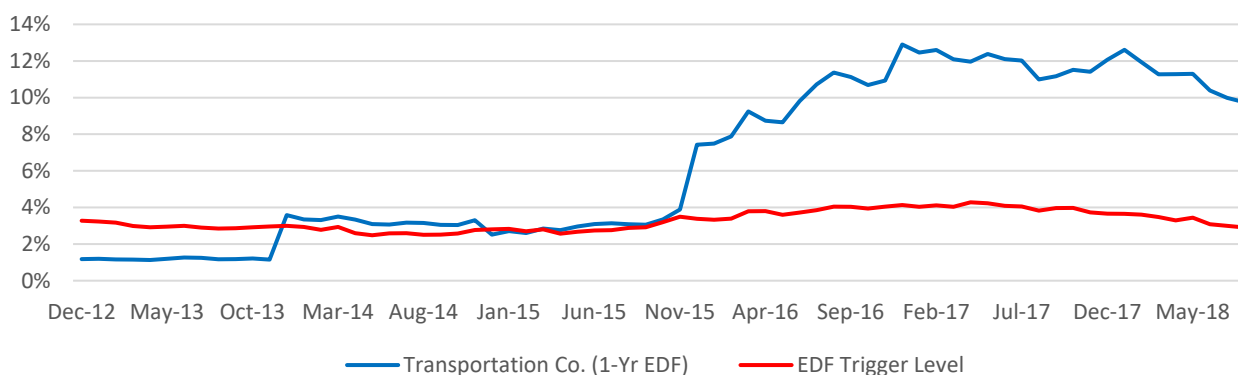
Moody's Analytics RiskCalc™ suite is a collection of geographic- or industry-specific models designed for private firm default risk measurement. RiskCalc combines financial statement information and equity market information into a standalone, forward-looking credit risk metric — the RiskCalc EDF credit measure. Our Early Warning Toolkit provides a framework used for analyzing the EDF measure and provides additional insights for when a default event may be imminent. This case study uses the RiskCalc U.S. 4.0 Corporate Model, along with the RiskCalc Early Warning Toolkit, to construct the graphs in this report. The toolkit examines default risk among five EDF-based metrics:

### 1. EDF Level

The most important of the five measures, EDF level is the starting point for credit assessment. To help guide decision-making, we produce trigger levels — calibrated by region and industry — above which firms show markedly higher default rates.

At the time of the company's default, Company AA's EDF measure was 9.75%, which mapped to an implied rating of Caa-C on Moody's rating scale — a level historically consistent with speculative-grade firms at a relatively high risk of default. Moreover, as shown in Figure 1, Company AA's EDF measure began to trend higher and was consistently above its industry trigger-level beginning in December 2013.

**Figure 1** Company AA's EDF Compared to its Industry Trigger-level



### 2. EDF Change

Firms with an increasing EDF measure show a higher risk of default.

Company AA's EDF measure increased from 1.18% in January 2016 to 7.43% in December 2015, before rising to 12.07% in December 2018. This sustained increase provided another signal of elevated default risk.

### 3. Relative EDF Level

A firm with an EDF measure above its peer group's 75<sup>th</sup> percentile should be closely watched, and a firm above its peer group's 90<sup>th</sup> percentile may be at imminent risk of default.

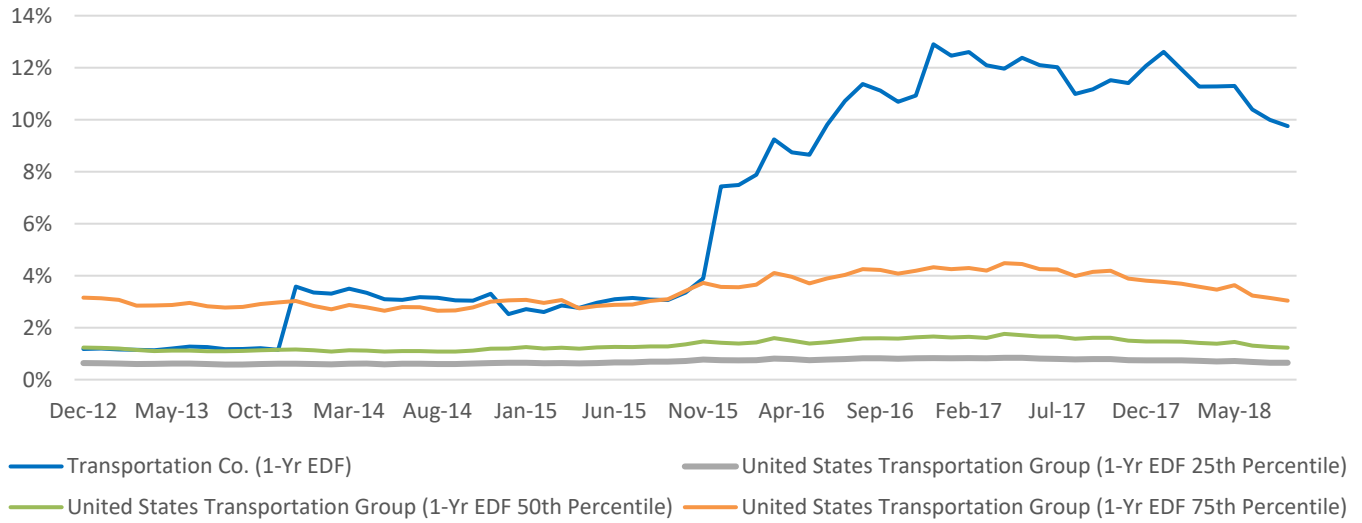
Three years prior to its default, Company AA's EDF measure was in the 75<sup>th</sup> percentile, and the EDF measure continue to rise until its default. At the time of default, Company AA's EDF measure was among the 94<sup>th</sup> percentile of the U.S. Transportation group, making it riskier than almost all of its peers (Figure 2).

### 4. Relative EDF Change

Firms whose EDF metric rises faster than its industry sector peers are at higher risk of default.

Company AA's EDF measure, shown as the blue line in Figure 2, trended among the average in its industry until December 2013. Since then, the firm's EDF measure began deteriorating, crossing the 50<sup>th</sup> percentile, and rising above the 75<sup>th</sup> percentile in November 2015. Furthermore, the increase in Company AA's EDF measure was in sharp contrast to changes in the median EDF level (green line) for the U.S. transportation group as a whole, which was essentially flat over the same period. This sharp deterioration relative to its peers, provided another warning flag.

Figure 2 Company AA's EDF Measure Compared to its Peer Group

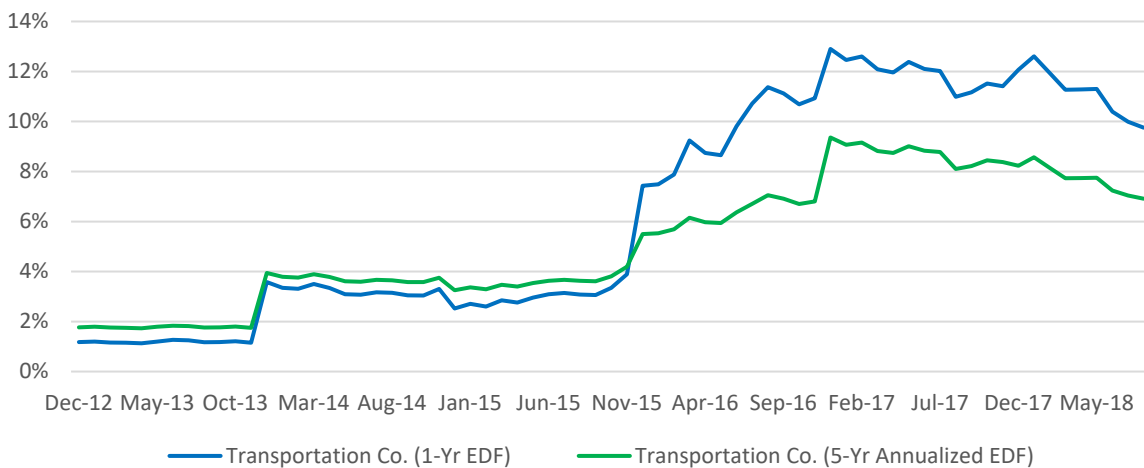


5. EDF Term Structure

When a firm's EDF term structure is inverted (i.e. the five-year EDF measure sits below the one-year EDF measure), our research suggests it is more likely to default than a firm with an upward sloping term structure.

Figure 5 shows Company AA's one-year EDF measure and its five-year, annualized EDF measure. We observe that the PD curve inverted in December 2015, with the gap between the one- and five-year EDF measures widening over the next three years, providing yet another signal of near-term default risk.

Figure 3 Company AA's One- and Five-Year EDF Measures

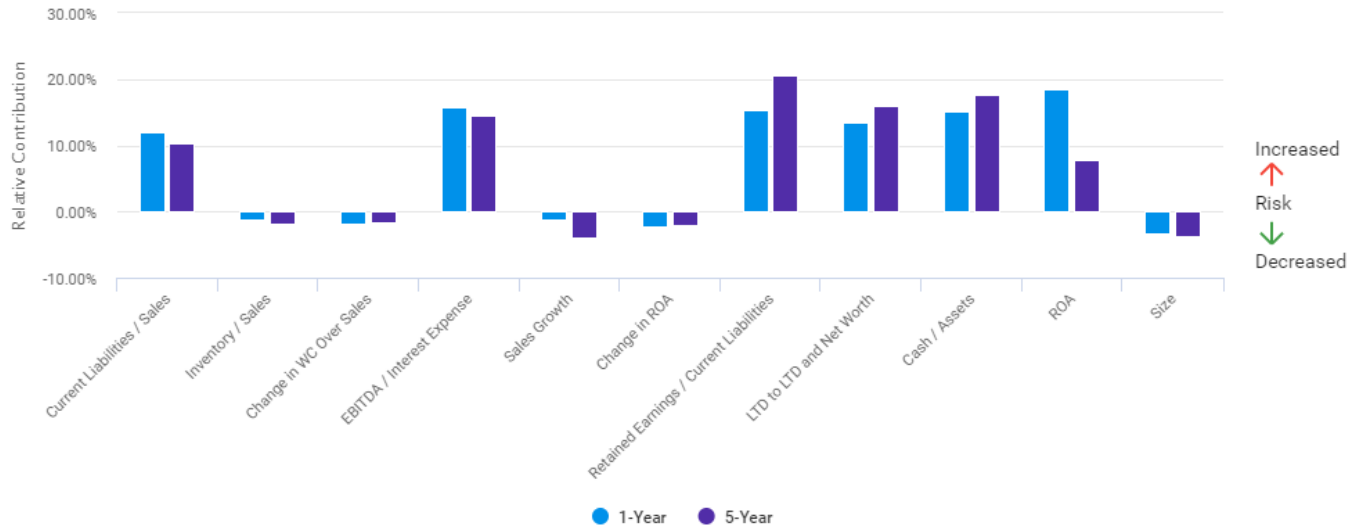


Deeper Dive: Understanding the Drivers of Company AA's EDF Measure

**Relative contribution**, as shown in Figure 4, quantifies how much each ratio contributes to the one-year and five-year EDF values, respectively. A positive contribution value means the ratio increases the firm's EDF value and its risk relative to the average default rate observed in a country. A negative contribution value means that the ratio decreases the firm's EDF value and its risk relative to the average default rate observed in a country.

A closer look at the factors reveals a few biggest drivers of risk. One of those was EBITDA/Interest Payable at 15.82%, indicating low debt coverage for the company. Another driver was a low profitability ratio, measured by the Return on Assets at 18.53%.

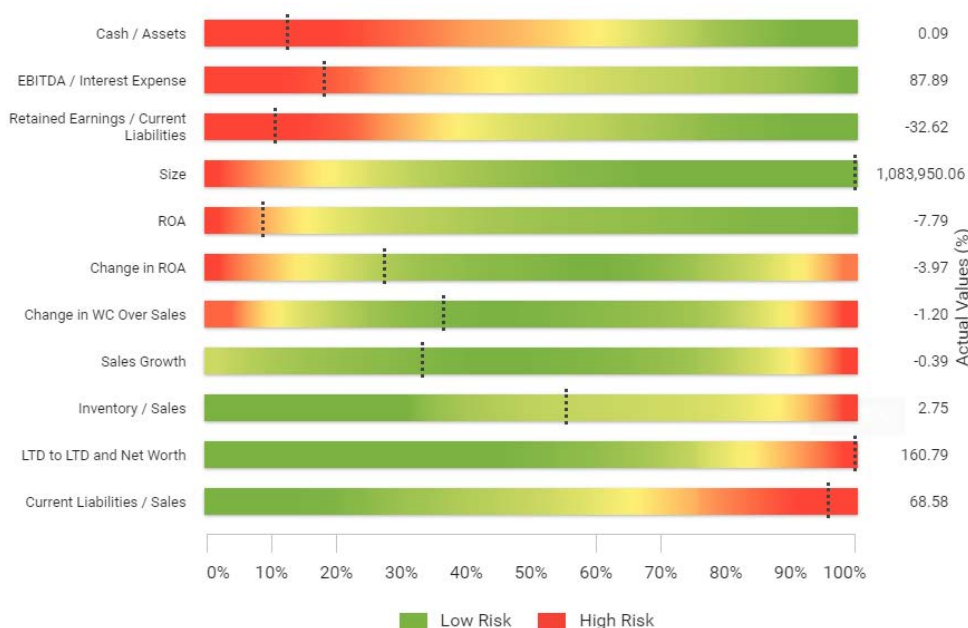
Figure 4 Company AA's Relative Contribution



In addition to relative contribution, the **percentile graph** (Figure 5) shows the company's ratios relative to those of its peers within the country model development database. The percentile shows the percentage of companies that have a ratio level less than or equal to the given company's ratio level. Graphically, the green portion of the percentile spectrum has a decreasing effect on the EDF value. Similarly, percentiles falling in the red portion of the spectrum have an increasing effect on the EDF value.

In the case of Company AA, percentile values for these same factors over the same time horizon also indicate these factors did not compare well relative to other firms. Among the factors are EBITDA/interest payable, Return on Assets, Cash/Assets, and leverage.

Figure 5 Company AA's Percentile Graph



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## Conclusion

Company AA began showing signs of credit deterioration beginning November 2015, with all five Early Warning Toolkit indicators confirming elevated risk. The company's collapse on August 13, 2018 was flagged at least 33 months in advance. A prudent early warning framework can provide advance warning of credit events and allow users to take appropriate action to mitigate losses.

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