Harnessing Nontraditional Credit Data to Eliminate the Blind Side of Credit Management

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Session: #33085

Agenda

1 **Who is Moody's**

2 **Nontraditional Credit Data**
- Cyber ratings
- Shell company indicator
- Credit sentiment score

3 **Why should Credit Managers know?**

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The Era of Exponential Risk - Risk^N

As business, economies, and nations become more interconnected, risk itself has evolved

Top Exponential Risks:

- → Cyberattacks
- → Fraud
- → Geopolitical Instability
- → Inflationary Pressures
- → Supply Chain Disruptions

"The old ways of managing risks — as one-offs, in silos — no longer cut it. We need a new mindset that drives growth."

- **Rob Fauber, CEO, Moody's**

"These threats mean taking risk intelligently – powered by technology and framed by growth and opportunity – is now critical to adapting and reinventing yourself in this constantly changing world both to protect and create value"

- Simon Perry, Head of Markets & Services, Risk, PwC UK

62%

of organizations seek to uncover opportunities within risks

- PwC's Global Risk Survey 2023

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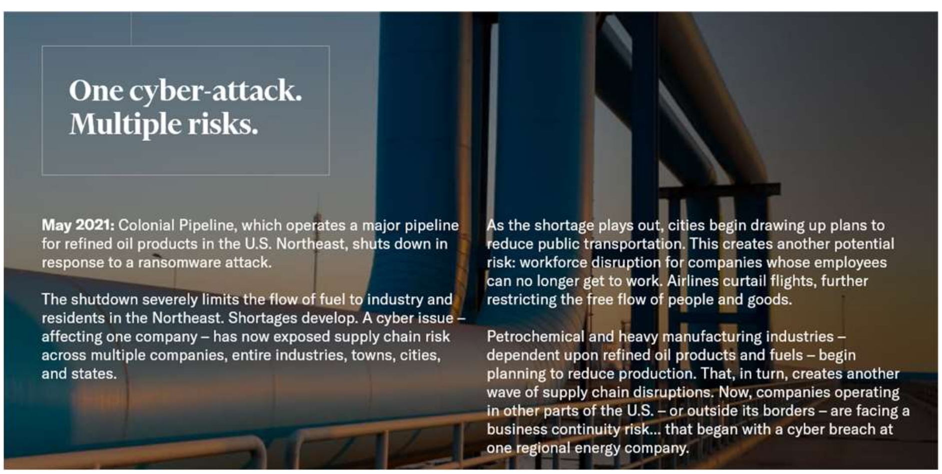
Colonial Pipeline

One cyber-attack. Multiple risks.



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Who is Moody's?

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RATINGS

MOODY'S RATINGS

We provide forward-looking opinions of the relative credit risks of financial obligations issued by non-financial corporates, financial institutions, structured finance vehicles, project finance vehicles, and public sector entities.

MOODY'S LOCAL

We provide domestic credit ratings based on methodologies that capture the risks and dynamics of each country, assigned by a team of experienced credit analysts.

ANALYTICS

MOODY'S

We provide rich data, expert analysis, robust tools supported by groundbreaking technologies, and a view of the future to enable our customers to unlock opportunity, advance their business, and act decisively.

PHILANTHROPY

MOODY'S FOUNDATION

We direct resources, tools, and services to support social and economic equality in the areas where we can make the most impact: helping entrepreneurs to scale their small businesses and restoring ecosystems in emerging markets.

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Cyber Ratings

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Bitsight Cyber Risk Data @Analytics for Corporates

Standard @Premium offerings service a multitude of use cases

INTEGRATED RISK MANAGEMENT USE CASES — STANDARD

PROCUREMENT · CREDIT · ONBOARDING · SUPPLY CHAIN · RESILIENCY · COMPLIANCE

CYBER RISK MANAGEMENT USE CASES — PREMIUM

DIGITAL SUPPLY CHAIN · SECURITY PERFORMANCE MGMT · ENRICHED DATA

Cyber Risk Signal	Measure, benchmark & assess cybersecurity performance Quantify likelihood of cybersecurity incidents like data breach & ransomware Minimize likelihood of cyber related financial losses
Business Health Indicator	Use cybersecurity performance as a **proxy for overall corporate governance**, continuously monitor management effectiveness Degradation of cybersecurity performance can indicate a degradation in business performance, leverage Bitsight data & analytics as an **early warning signal**

Cyber Risk is growing quickly

Expanding digitization, increased sophistication of threat actors and a heightened regulatory environment has resulted in a world in which cyber losses are growing in frequency and severity

Expanding Digitization

Organizations have massive, **growing** digital footprints and are increasingly **interconnected**

Sophistication of Threat Actors

Threats are growing with increased monetization for bad actors

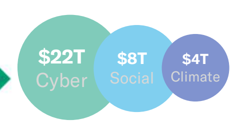
Heightened Regulatory Environment

DORA Digital Operational Resilience Act

Anti Money Laundering Act of 2020

Capital markets and regulators are paying attention

Increased Cyber Losses



Moody's Ratings found that cyber risk outweighs other credit-adjacent enterprise risk factors, and losses can be existential in nature

Cybersecurity exposure is observable

→ Impact of the invasion of Ukraine on the distribution of mobile malware

February 1-14, 2022

March 1-14, 2022

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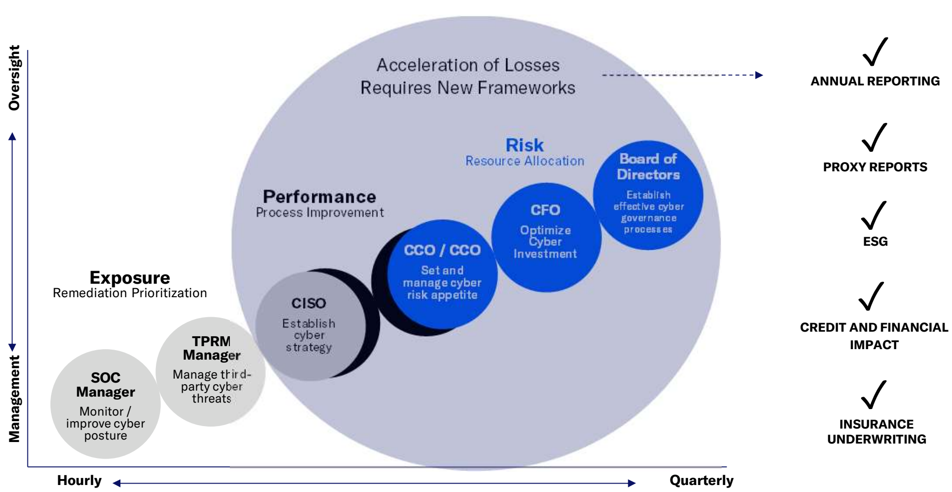
Cyber Risk is Enterprise Risk

As the cyber risk rises, it cuts across organization structure and extends to counterparty risk

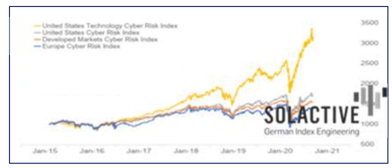


Governance is critical but difficult to quantify

In an increasingly digital world - cyber governance is increasingly indicative of corporate governance and can be used as an effective proxy

Governance Challenges

1. Lack of standardization drives quality issues
2. Data quality and availability impacts utility
3. Data driven governance standards remain opaque

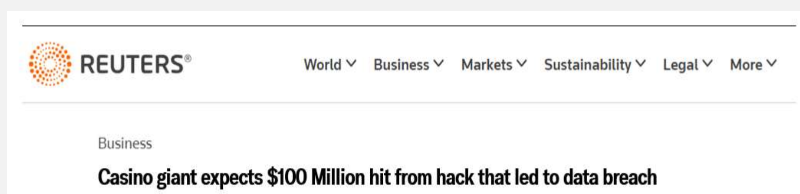


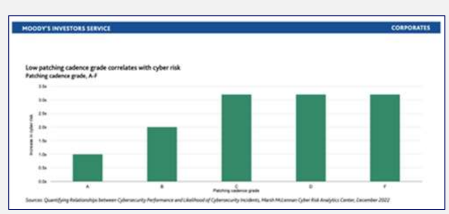
Case study 1:
Casino & Digital Availability

Attack and impact indicative of poor cybersecurity governance related to identity & access management controls

Attack details
- Social engineering attack that took less than 10 minutes
- Shut down hotel booking system, locked guests out of their hotel rooms, disrupted the technology in its slot machines
- Impact beyond Las Vegas: Maryland, Massachusetts, Michigan, Mississippi, New Jersey, New York and Ohio

Credit implications
- $110M+ lost revenue, non-financial impacts (reputational)
- Stock off ~20%
- Credit negative report from Moody's





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Case study 2:

Consumer Products MFG & Physical Supply Chains

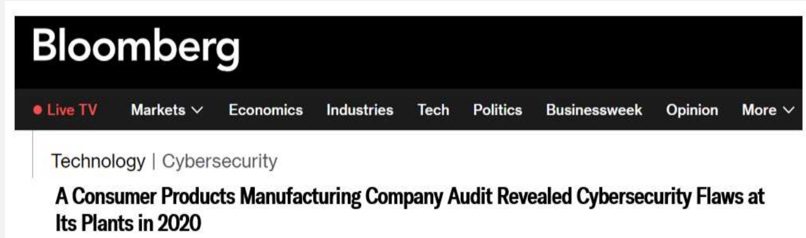
Attack and impact indicative of blurring line between digital and physical supply chains

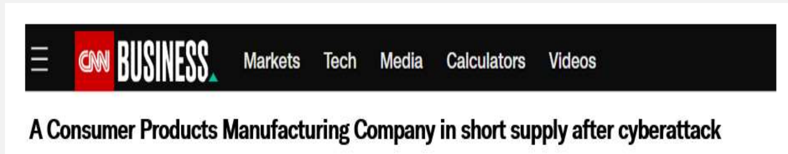
Attack details

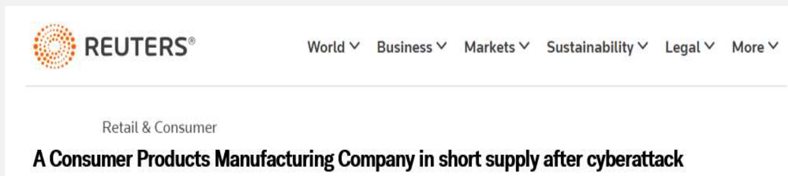
- Hack came amid a $500 million digital overhaul at the consumer products maker
- Network shutdown leads to “manual ordering and processing procedures" that have lead to an "elevated level of consumer product availability issues"
- Took over 1 month to return to normal operations

Credit implications

- Net sales to decrease by ~25% in the quarter given supply chain shocks and product shortages - ~$600M
- Stock off ~24%
- Credit negative report from Moody's







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Case study 3: Healthcare company

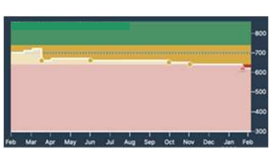
Protect your organization, utilize cyber risk data & analytics as an early warning signal to enable operational resiliency

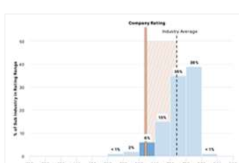
The incident

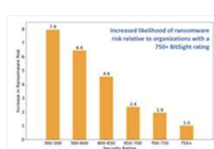
- On February 21st, a revenue and payment cycle management technology company that processes about 50%of medical claims in the U.S. began experiencing a cyber security issue and isolated its systems to prevent further impact - interrupting pharmacy services, payment platforms @ medical claims processes by doing so
- The ransomware attack disrupted crucial operations across the U.S. healthcare system for over two weeks, preventing 900k physicians, 33k pharmacies, 5.5k hospitals @600 laboratories from billing insurance programs or processing payments
- Consequently, many smaller care organizations that relied solely on the provider struggled to make payroll and were forced to furlough staff

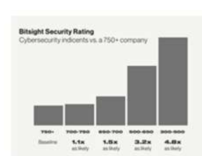
Early warning signs

- Over the 12 months preceding the attack, the provider’s **Bitsight Security Rating dropped 80 points** - a clear indication of a decline in cybersecurity performance
- As of the announcement of the attack, the organization had a **640 Bitsight rating** putting it in the **bottom 10%** of its industry peer group, indicating that it was 4.6x more likely to experience a ransomware event and 3.2x more likely to experience a cyber security incident
- According to Bitsight data, for the past 3 years the provider has only had Ds and Fs in Patching Cadence (3.2x more likely to have a cybersecurity incident)



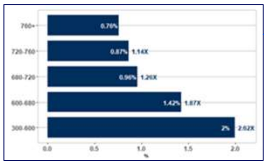






Recent Moody's Study ties Cyber to Credit

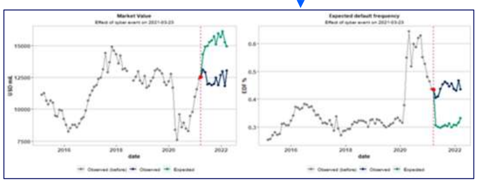
Recent study ties cyber performance to probability and default and credit quality via the economic and non-economic costs of data breaches and business interruption



Bitsight analytics correlation to cyber events

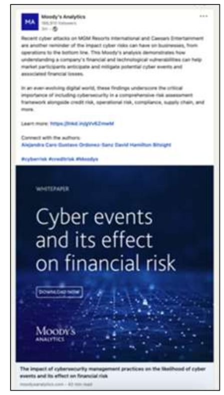
2,500 companies 2015-2023 show decline in cyber performance and frequency of reported incitents.

Company that experienced ransomeware attach in 2021 exposing personal data on 75,000 individuals.



Impact of cyber events on market value and expected default frequency (EDF) – lower market value and higher EDF after the attack.

Moody's study in 2023:
- Strong correlation to cyber posture and probability of reported event
- Finance, Healthcare, Tech
- Large Company targets
- Severe negative events lead to negative equity returns over 12 mo. (sales, stock price, reputation)
- 60% of small companies don't survive



Summary

1 **Cyber risk is building in an increasingly digital world**

2 **Cyber performance is observable at scale**

3 **Corporate governance is observable, difficult to quantify and increasingly digital**

4 **Research shows an increasing relevance to this relationship**

5 **Non-technical risk managers can leverage cyber performance analytics to better manage the financial risk of third parties**

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Cyber Ratings

Why is this important to Credit Managers?

Data breaches

→ Understanding the risk of their customers or suppliers encountering data breaches is critical, particularly when sensitive and proprietary data is shared, including financial and pricing data

Fraudulent Activities

→ Cybersecurity threats can result in fraudulent activities, such as identity theft, phishing scams, or invoice fraud. Often these events are due to compromised business emails.

Business Disruption

→ Cybersecurity incidents, like ransomware attacks, can cause significant disruptions to business operations.

→ Incorporating cyber risk into credit analysis is possible and offers new ways to account for this critical risk area

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Shell Company Indicator

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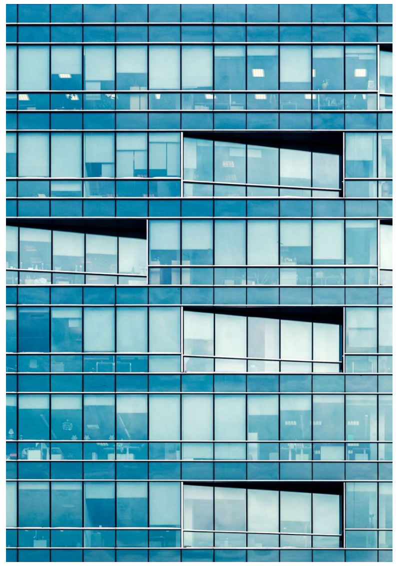
The Problem



Even the most sophisticated organizations do not have the in-house data analytics, engineering resources, and subject matter expertise to know where and how to identify shell companies and investigate the risk of doing business with them.

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Overview

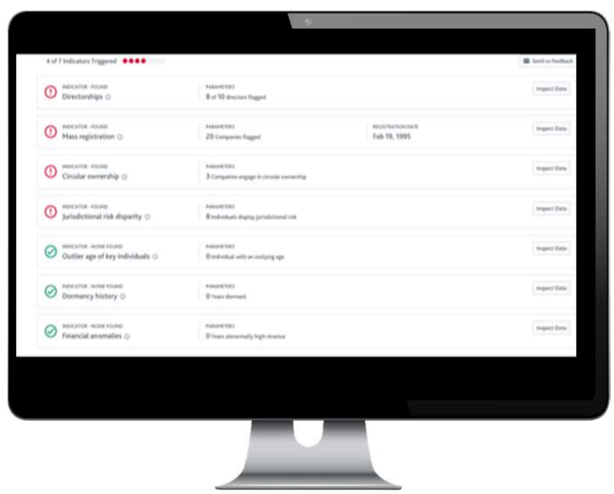
Moody's **Shell Company Indicator** uncovers shell company risk within complex **corporate structures** of potential customers/third parties during onboarding and investigations.

Using our data insights and **typology-based rules engine**, this tool can be used for screening shell companies during customer due diligence (CDD) and further investigation as part of enhanced due diligence (EDD).

Rules-based Engine

7 Themes of Risk

Powered by Moody's Orbis

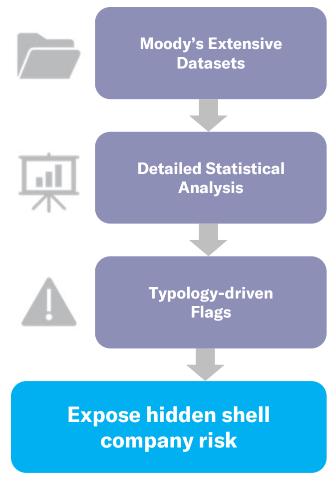


Methodology | Shell Company Indicator

These typology-driven flags were constructed by leading subject matter experts and engineered by our top-level data scientists on our innovation team at Moody's.

It harnesses **detailed statistical analysis** performed in a systematic and scalable way, using thresholds based on jurisdictional and industry sector segmentation that are routinely validated by subject matter experts.

Shell Company Indicator does this by **contextualizing Moody's data through typology-driven flags** and **exposing hidden shell company risk by identifying the outlier in Moody's data.** This helps companies understand patterns that may otherwise be deliberately obscured.



The 7 Indicators

There are **seven indicators** to detect shell company risk, and some contain additional **sub-indicators**:

- **Directorships**: When directorship outlier patterns is observed based on counts for current directorships, previous directorships, and associations with inactive companies.
- **Circular ownership**: When instances of circular ownership in the network is observed.
- **Jurisdictional risk disparity**: When the 'jurisdiction' of the individual director or BO is different from the company, and at least one of these jurisdictions is defined as high risk.
- **Mass registration**: When registration patterns indicate mass or bulk creation, as they share similar attributes within the registration date window of nine days.
- **Outlier age of key individuals**: When individuals that are implausibly young or old.
- **Dormancy**: When the company has been dormant for more than five years within its history.
- **Financial anomalies**: When operating revenue is higher than normal, based on the number of employees.

Indicators are pre-processed and color-coded into three categories:

- ✓ No shell company risk detected.
- ! Shell company risk was detected.
- ! Data was inconclusive to determine shell company risk*.

Case Study #1: UK firm raises 5 of 7 flags

1. **$1.5 million abnormally high revenue per employee**
2. **340+ total mass directorships. 5 of 5 directors flagged for mass directorships**
3. **8 companies in the group flagged for mass registration**
4. **5 years since the company has been dormant**
5. **1 individual listed has jurisdictional risk disparity**

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Case Study #2: Singapore Money-Laundering Ring's Global Connection

→ Reporting by the Singapore Straits Times alleges that several of the firms linked to the suspects listed a Singapore resident, "J.J.," as a key individual — and that the individual was director, secretary or shareholder of 185 firms.

→ Forensic analysis based on Moody's Shell Company Indicator shows that companies linked to the arrested suspects and "J.J." raised 140 suspect directorship flags, 108 flags for high-risk jurisdictions, and 4 flags for mass registration.

→ Among the 108 high-risk jurisdiction flags, China stands out with 93 flagged firms connected to Singapore, followed by Malaysia with 12 and Canada with three. But the connections also reach nations as diverse as Iceland and Vanuatu, a Y-shaped archipelago in the South Pacific Ocean.

Why is this important to Credit Managers?

Increasing country-level regulations	→	To curb corruption, create and enforce sanctioned regimes, and detect money laundering, fraud, and criminal network activity through vehicles where shell companies are used.
Increasing manual work for compliance departments	→	To keep up with the growing regulatory workload to include identifying and reporting on shell companies and the investigation required to manage shell company-related risk.
Increasing expectation for an advanced risk-based approach	→	To risk management using analytics to extract data insights on whether an entity could be a shell company hiding higher-risk individuals and their illicit transactions.

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Credit Sentiment Score

The Problem

- Credit analysts have always used news to help understand and monitor their borrowers. But news volume has exploded in recent years, leaving many organizations complaining of information overload
- Monitoring news is costly. Recent advances in applying AI techniques have enabled automation of many tasks—but bringing this technology to bear introduces new challenges:

Finding, or creating a well-labelled data source

Machine learning algorithms require a large training set on which to learn language patterns and groupings. The model must know which of the training set articles are examples of bad news.

Investing in data science knowledge

Using the latest techniques to build machine learning models requires access to skills that are not traditionally found in corporates.

Understanding credit

Spotting credit-relevant stories is a different skill than simply noting the general sentiment of a company. Organizations must capture credit expertise to ensure the creation of a credit-relevant model.

The Credit Sentiment Score

Rates the negative credit sentiment about companies in a news article. A high score indicates the presence of negative credit sentiment, while a low score means that no negative sentiment was found.

We source news stories from a range of newswires and news aggregators and then apply machine learning to create a score based on negative news.

The analysis includes terms such as bankruptcy, covenant default, debt restructuring, rating downgrades, lawsuits, downsizing, and fraud events.

Suggestions of financial loss, liquidity concerns, industry and sector-wide strains, trade tensions, weak demand, competitive implications, and criminal investigations are also considered.

On average, the credit sentiment score increases six to eight months before major credit events and so can serve as a valuable early warning indicator.

The Credit Sentiment Score

Identifies five credit relevant categories:

ARTICLE SENTENCE	CREDIT RISK CATEGORY
US retail giant, files for bankruptcy.	Bankruptcy / Insolvency
In December 2012, the company stopped making payments and defaulted on all its loans.	Default / Missed Payment
The company fell into junk in May after Moody's downgraded the unsecured debt rating	Credit Rating Downgrade
The automaker's profit has plummeted, and questions are growing about the future of its alliance with French partner Renault.	Profit Warning
The lawsuit filed in Clark County, Nevada, claimed, based on press reports, that a board representative was notified of an alleged misconduct in 2009.	Compliance Issue

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Methodology

Collect Articles
- We use NewsEdge as our news provider to collect and process all available news articles

Filter Articles
- We filter articles that are not relevant from a financial and credit perspective using a domain relevance model built using our credit risk expertise

Label Articles
- Each article is labeled using our risk category model that recognizes the previous five credit risk categories

Identify Companies in Articles
- We use a custom-built sentiment model developed specifically for recognizing company level sentiment at the sentence level
- This identifies companies in news articles, as well as the sentiment (positive, negative, and neutral) associated with the mentions

Calculate Daily Company Score
- Each company is scored using credit adverse news articles for the company, as tagged by the risk categories model.
- Since each credit risk category has its own severity, it also has its own weight in the entity scoring formula, as shown in the table on the next slide

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Methodology Interpretation

Bankruptcy / Insolvency	100
Default / Missed Payments	75
Credit Rating Downgrade	30
Profit Warning	20
Compliance Issue	2.5

- » It provides a daily score that is calculated based on historic news. It is reactive to new news and weights recent news more highly than older news.
- » It reflects the credit events that the company has, each one with its own severity. But it also considers the volume of news for each credit risk event.

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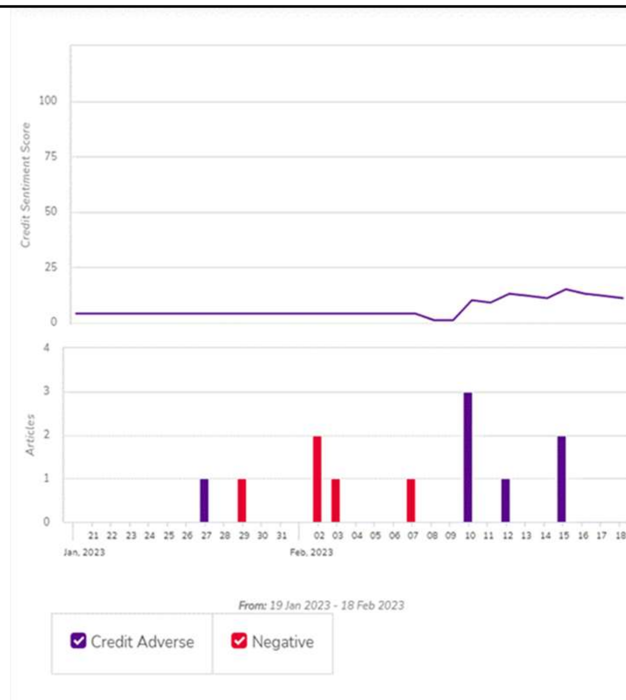
Case Study: Transportation Company

Credit sentiment score picked up early warning signs of deterioration as early in February



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Why is Credit Sentiment Score important to Credit Managers?

Identify credit-relevant news

→ Identify credit-relevant news

Reduce time spent on company research and monitoring activities

→ The credit sentiment model helps filter out 75-99% of articles on a company from an initial search.

Get an early warning

→ On average, the score is more than three times higher than normal and continues to rise six to eight months before a major credit event

Understand a company's credit sentiment in simple terms

→ The credit sentiment score assesses negative credit sentiment of news stories – read these news articles to understand their impact on the company in question

Comprehensive view

→ Using the Credit Sentiment Score alongside other quantitative metrics, such as probability of default, gives additional context for why changes in credit quality may occur

Analyse individual companies as well as portfolios

→ When onboarding new counterparties and monitoring existing ones.

In Summary..

These risks are here to stay -

→ **Cyber attacks are increasing and measuring a company's cyber hygiene is critical**

→ **Shell Companies are a common place for fraudulent activities**

» The total number of sanctions alerts sent to Moody's clients rose from about 3 million in 2017 to more than 58 million in 2023, while money laundering risk alerts rose to more than 56 million in 2023, across more than 220 countries and territories worldwide.

→ **Knowing the warning signs can mitigate risk in these scenarios.**

» The volume of news and media (social and other) is ever-growing and using AI will sift through the vast amount of data, so you know what is predicting negative outcomes on your customers

Traditional payment experience and financial data are still good indicators of a company's creditworthiness and propensity to pay slowly and/or default, but there are many other indicators beyond these types that are necessary to protect your bottom line

These new nontraditional data points are now available and can be utilized in your credit assessments.

Why Moody's?

489M
Companies and entities covered in our database

Our company reference data can help you find, analyze, and compare companies across the globe for better decision making.

170+
Different data sources in our database

Our database captures and blends data from different data sources and treats it so it's standardized and comparable.

450M+
Companies with credit risk scores

Our time-tested credit risk models assess the financial resilience of companies globally, from small businesses to conglomerates.

97%
Of the Fortune 100 are Moody's customers

We provide comprehensive perspectives on risk to our diverse base of more than 15,000 customers, including 97% of the Fortune 100.

6M+
Entities with cybersecurity ratings

Cybersecurity ratings assess the level of risk posed by your key third parties, with security incident history covering over seven years.

1.2B
Ownership links

Our beneficial ownership solutions enable you to establish corporate transparency and assess third-party risks.

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Thank you

Bill Weiss

PK Patel