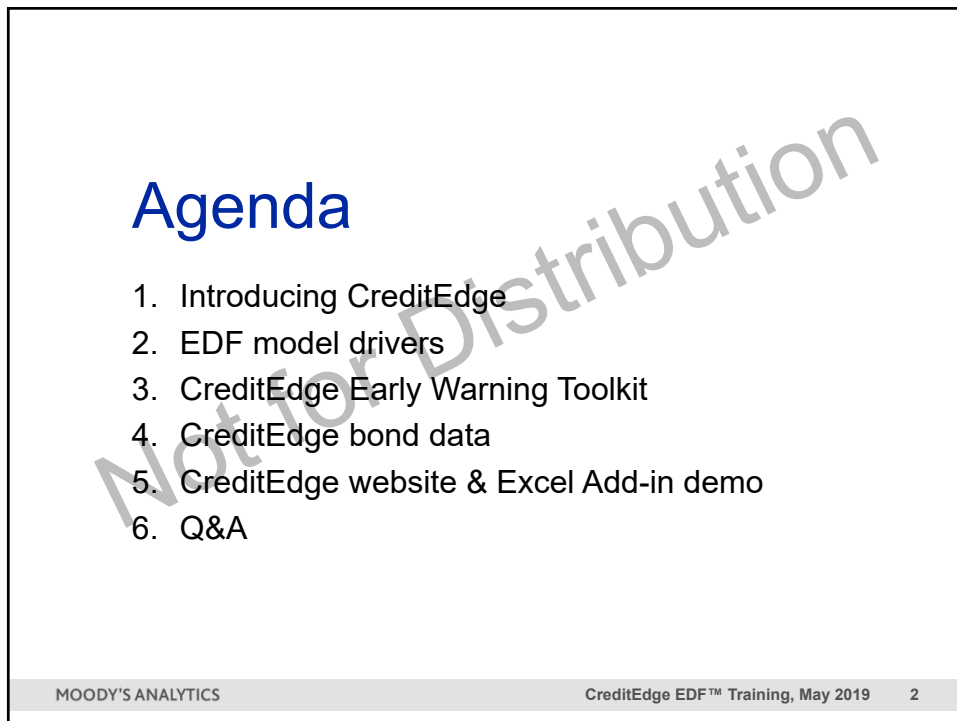




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CreditEdge: A powerful approach for managing credit risk

Market demand for:

- » More **granular measures** of risk into internal risk rating frameworks
- » Understanding **market-based signals** for proactive credit risk exposure management
- » Frameworks that synthesize the relevant information in a **predictive** and **transparent** way
- » Credit risk models that are **statistically calibrated** and validated

CreditEdge/Public Firm EDF meet market demand:

- » **Absolute probability** of default and **consistent** way to measure credit risk across rated or unrated public entities
 - Coverage: **37k+ entities** with traded equity or liquid CDS
- » Combines firm-specific fundamental information with **market-based signals** to provide **early warning** power to risk assessment
- » Provides **statistically calibrated** and validated frameworks for estimating loss

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What is an EDF?

- » **EDF = Expected Default Frequency** → Moody's Analytics brand name for probability of default measure
- » **Forward looking** measure of default risk, with a term structure **up to 10 years**, calculated **daily**
- » EDF ranges between 0.01% to 50% for corporates and 0.01% to 35% for financials

Group of 100 borrowers with 1-year EDF of 5%

→

We would expect 5 members of the group to default in the next 1 year

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CreditEdge is the ideal complement for risk managers

Individual Name Assessment

Underwriting & loss provisioning

- » 60k+ entities
- » Highly accurate probability of default & downgrade measures
- » Ratings & key financial ratios
- » Extensive bond & CDS data

Monitor Exposures

Input to internal risk rating

- » Advanced portfolio analytics
- » Robust alerts
- » At-a-glance portfolio movers
- » Timely news & research

Peer & Industry Comparison

Benchmarking & early warning

- » Peer custom peer analysis
- » Industry group percentiles
- » 7k+ industry groups
- » Multiple classification systems

Identify Creditworthiness

Counterparty assessment & limit setting

- » Interactive & exportable charts
- » Extensive reporting
- » Pre-formatted PDF reports
- » Save criteria for re-run

Regulatory Application

CCAR, CECL, IFRS9 compliant

- » PD input to impairment calculation
- » Stressed EDF measures
- » Rating to EDF converter tables
- » Macro stress testing
- » Weighted Stressed EDF

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CreditEdge metrics used by current clients for a variety of risk management purposes

Large European bank
Stressed EDF as a challenger model for CCAR regulation for independent review, benchmarking and validation purposes under stressed scenarios.

US branch of a large Asian bank
EDF for compliance stress testing C&I loan and bond portfolios; EDF metrics also used in quarterly reports sent to the home office.

Large Asian bank
EDF as an early warning tool to monitor portfolios across Southeast Asia; EDF also used for prequalification of borrowers and ongoing monitoring.

Large US Mutual Insurance Provider
EDF to provide early warning of credit deterioration of corporate bond portfolio, allowing for stress testing and VaR calculation.

Central Bank
Cites EDF metrics in its research papers, highlighting the correlation between bank's EDFs and competition, population decline and monetary easing.

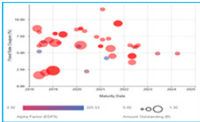
Large American Television Network
EDF & Early Warning Toolkit methodology to monitor credit worthiness of customers as a baseline to negotiate contracts for TV commercial slots.

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Data and analytics to support fund manager investment processes

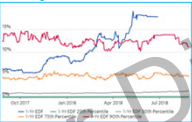
Portfolio Construction



Evaluate strategies & investment opportunities

- » Pre-screen investments
- » 241k+ bonds
- » EDF metrics in systematic trading strategies & smart beta ETF construction


Bond Level Analysis



Conduct rich/cheap analysis

- » Proprietary Fair Value & Alpha Factor measures to determine over and undervalued bonds


Complement Fundamental Process



Combine quantitative & qualitative data

- » Assess issuer-level information
- » Analyze industry and geography developments

Portfolio Surveillance



Early warning of credit deterioration

- » Input into deciding when to turnover positions & sell "fallen angels"
- » Maintain yield while mitigating downgrade & default risk

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CreditEdge metrics used by asset managers for investment ideas/bond selection and in credit trading strategies

Large European Hedge Fund

EDF in algorithms to implement systematic credit trading strategies across absolute return fund; Using Fair Value Spread & Alpha Factor in additional trading strategies.

European Specialist Asset Manager

Created an ETF based on EDF metrics and Fair Value Spreads. CreditEdge provided the key quantitative inputs to build the smart beta ETF, emphasizing low credit risk and mispriced assets.

European Asset Manager

Fair Value Spread & Alpha Factor for assessing relative value of bonds and the new Deterioration Probability metric for downgrade risk management; Using these metrics in factor-based strategies for fixed income and equity.

Large US PE & Alternative Asset Manager

Outsourced asset manager mandated to use EDF metrics for portfolio management activities.

US Hedge Fund

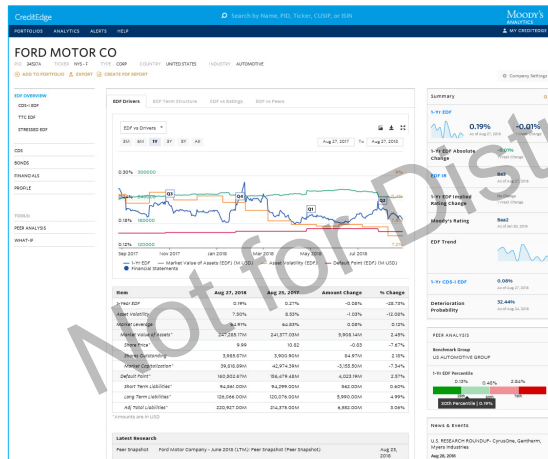
EDF in trading strategy that correlates EDF performance with fixed income and equity prices.

Large US Hedge Fund

Utilizing asset volatility and distance to default CreditEdge data points as a means to enhancing an internal model and building a new trading strategy.

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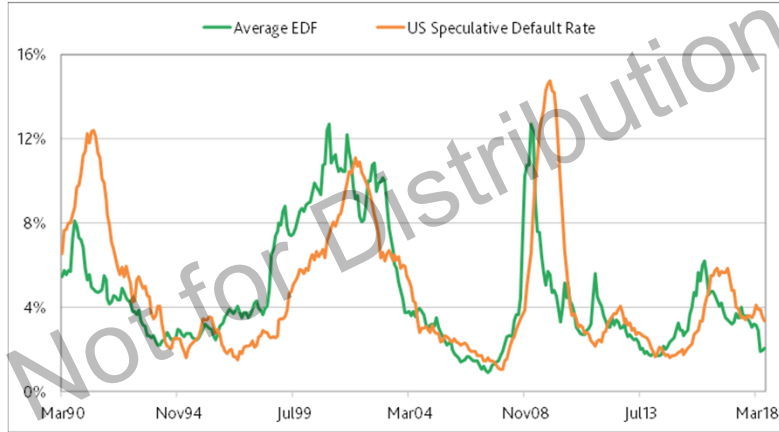
What differentiates CreditEdge?



- » 25+ years of historical data
- » Extensive global database of defaults
- » Transparent model drivers
- » Regular model validation
- » EDF term structure
- » Benchmarking for peers, industry groups & regions
- » Early Warning Toolkit & EDF Trigger
- » Scenario Analysis
- » CDS coverage for 1,800+ entities
- » Satellite models, i.e. Stressed EDF



The CreditEdge public firm EDF model predicts default with accuracy and high degree of advanced warning



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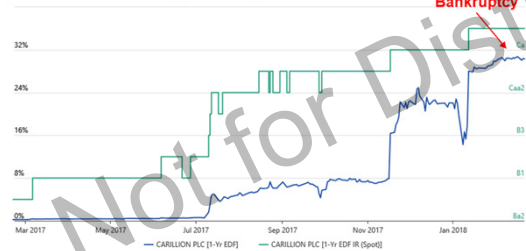
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The value of the public-firm EDF model in practice



1-Yr EDF vs. 1-Yr EDF Implied Rating



» Absolute default probabilities rather than relative rankings

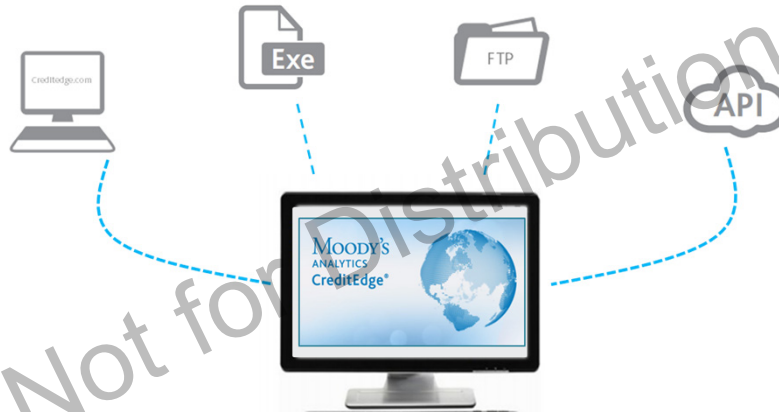
» Provides daily updates & aggregate market view

» Forward-looking signals provide early warning of changes in credit quality

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CreditEdge is a platform suite that comprises four delivery methods to satisfy any user needs



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2

EDF model drivers

The public firm EDF model and large default database differentiate CreditEdge among competitors

- Model**
 - » **Black-Scholes-Merton:** structural model with clear causal interpretation
 - » This approach allows **what-if scenarios** and **counterfactuals**: risk can be updated based on user assumptions, unlike reduced form models
- Database**
 - » **11,700+ defaults** globally since 1973
 - » Daily EDF data dating back to 1980
 - » Manual and machine learning research to expand database of default activity
- Coverage**
 - » **60,000+ public firms** (37k actively traded)
 - » Term structure 1 to 10 years; up to 30 years for rating to EDF
 - » 100 countries: America (29), APAC (18), EMEA (53)
 - » Launched in 1989

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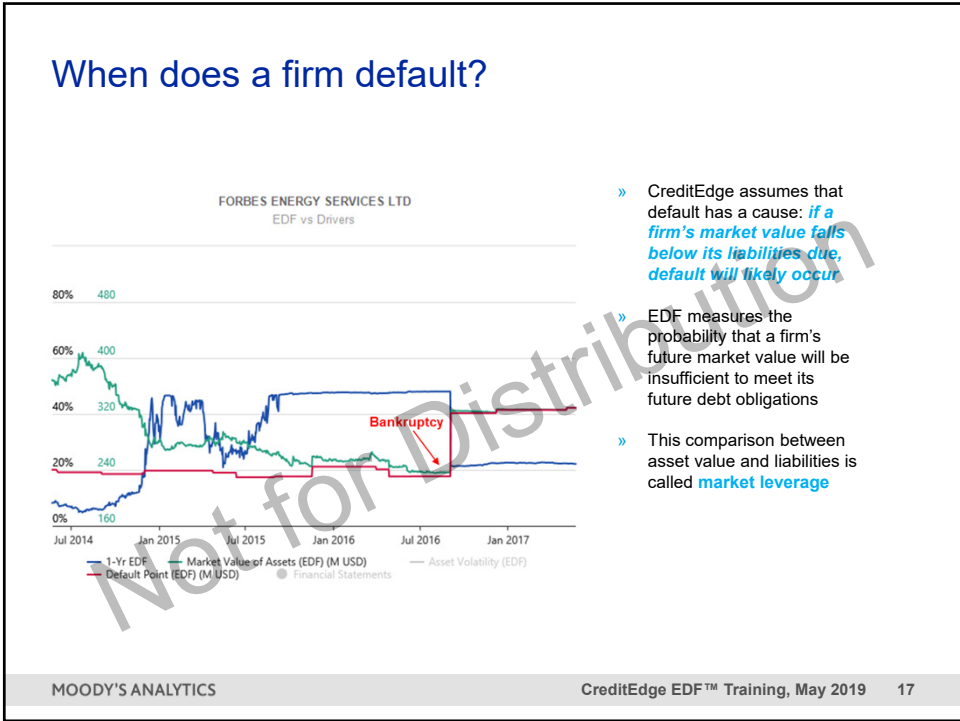
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Three key drivers of the public firm EDF model

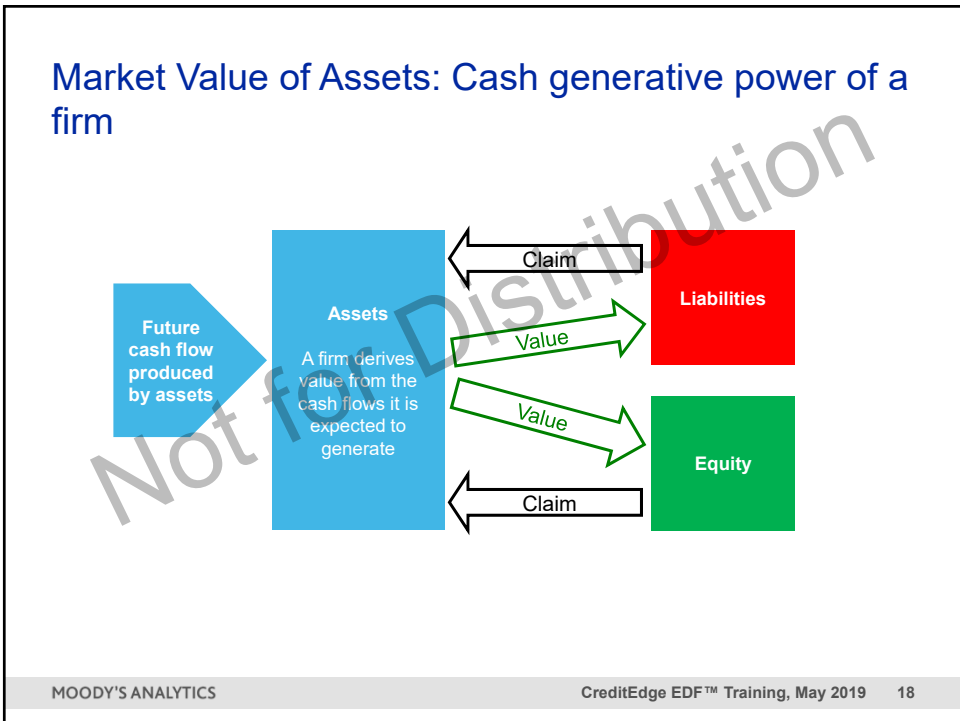
- Market Value of Assets**
Cash Generative Power
Market assessment of the present value of future cash flows of the business
- Default Point**
Liabilities Due
Liabilities due in the event of stress
- Asset Volatility**
Business Risk
The variability of the market value of assets

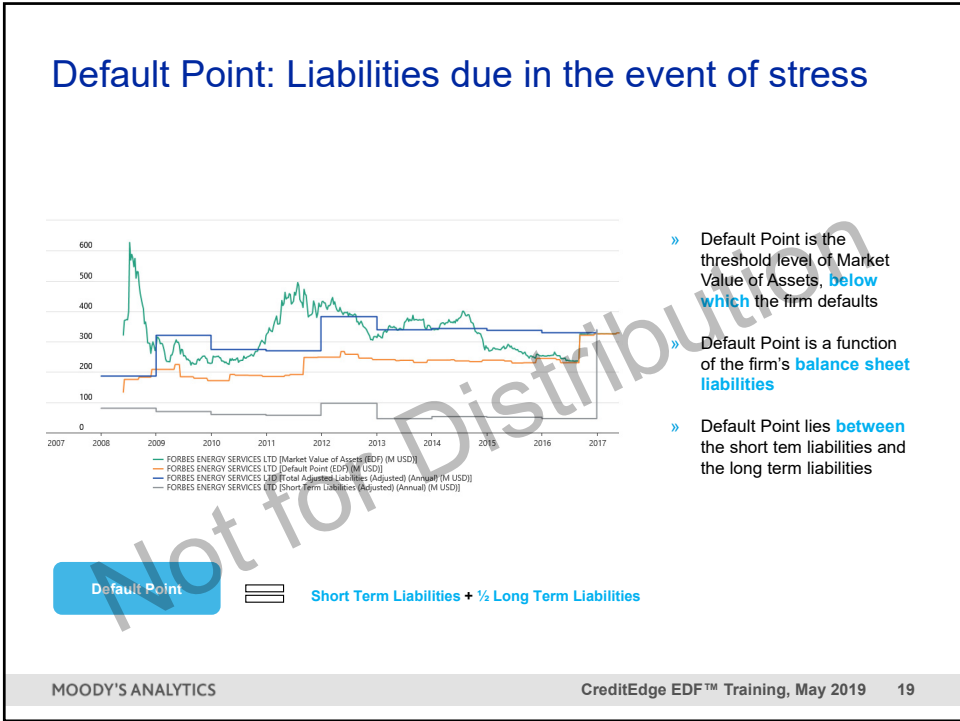
Market Leverage (Financial Risk)

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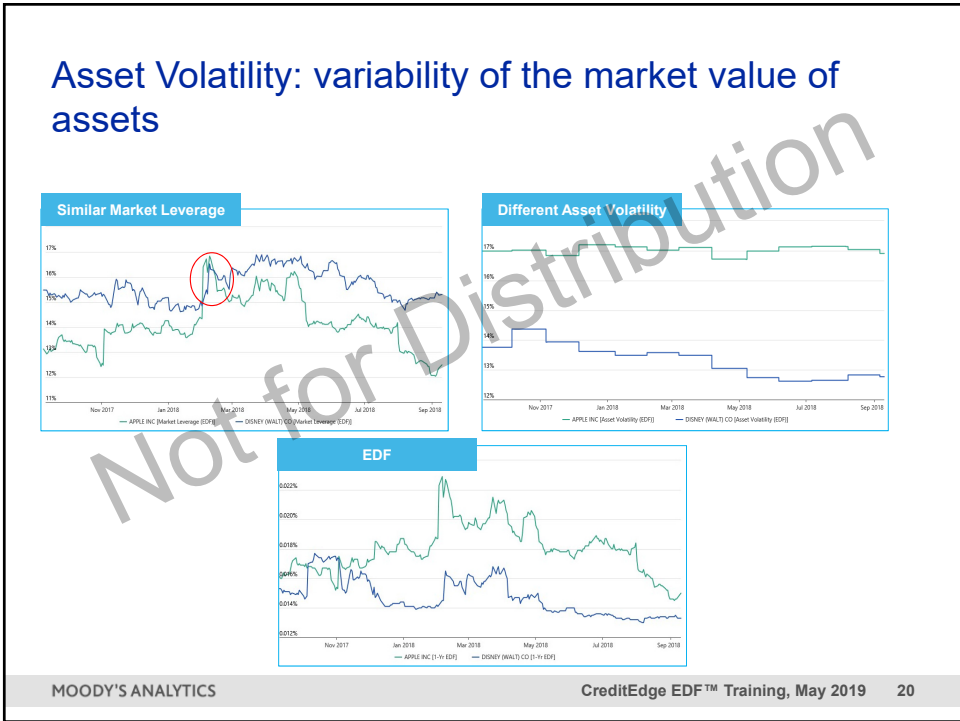


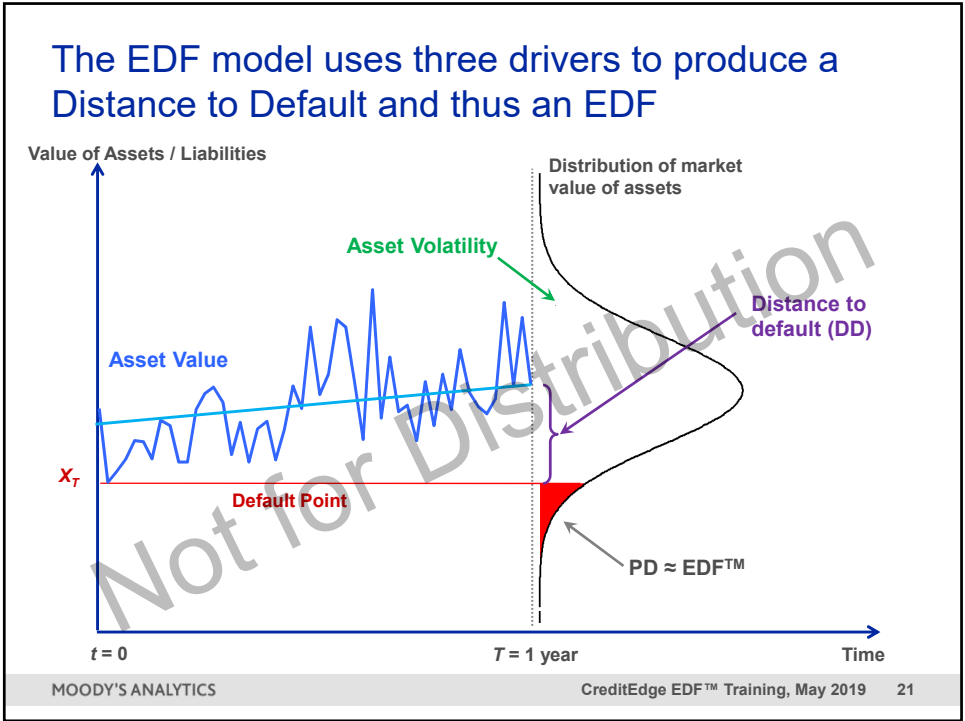
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Distance to Default (DD)

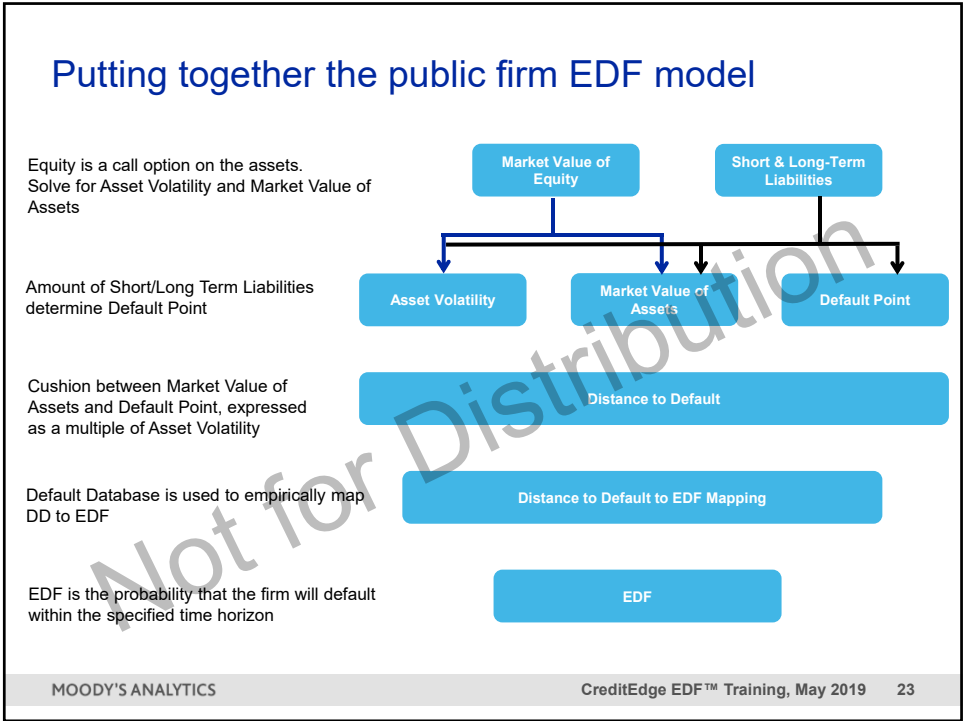
Distance to Default = The cushion between Market Value of Assets and Default Point, expressed as a multiple of Asset Volatility

The larger the DD → The larger the cushion and the **lower** the EDF

The smaller the DD → The smaller the cushion and the **higher** the EDF

- » EDF moves inversely with DD
- » DD provides a relative rank ordering of default risk
- » We must transform DD into EDF to get an absolute probability of default

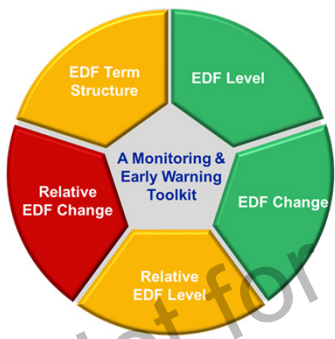
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The Early Warning Toolkit helps uncover additional insight into elevated default risk



CROSS-SECTOR

Moody's ANALYTICS

SECTOR IN-DEPTH
28 April 2016

[Rate this Research](#) 2.2

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Going Beyond EDF Level: Additional Signals of Emerging Credit Distress 7

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MD/AFAC Sales

NEWPOINTS
Using EDF Measures to Identify At-Risk Names – A Monitoring & Early Warning Toolkit

Summary
Moody's Analytics' Public Firm EDF™ (Expected Default Frequency) credit measures are forward-looking probabilities of default, available on a daily basis, for over 42,000 corporate and financial firms, globally, with publicly traded equity. Like fundamental credit analysis, the EDF model quantifies business and financial risk, but unlike fundamental credit analysis, it employs both balance sheet information and financial market data to determine default risk. The market value-based approach of the EDF model benefits from the forward-looking nature of financial markets and markets' real-time updating of companies' expected future cash flows. As a result, EDF measures provide timely warning of changes in credit risk. Regular model validation demonstrates the power of EDF measures to rank order firms by default risk, to signal credit distress well before default, and, in the aggregate, to be consistent with the level of observed default rates. In this report, we outline a practical approach for using EDF measures to effectively monitor large portfolios of firms and proactively identify at-risk names. The Early Warning Toolkit, as we call it, recommends tracking five EDF-related metrics associated with elevated default risk.

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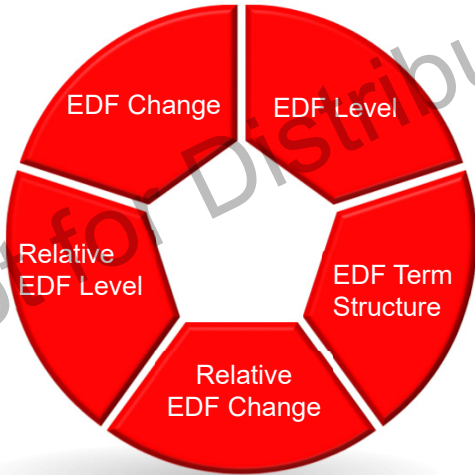
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Carillion demonstrated High Risk for all 5 Early Warning factors

Based in the UK, **Carillion** was a multinational construction company and facilities management provider. It had 43,000 employees globally and held roughly 450 governmental contracts across the UK ministries of education, justice, defense and transportation. In 2016, it had \$7.3B in sales and a market capitalization of nearly \$1.4B. In January 2018, the firm collapsed with more than \$2.1B in outstanding debt, leaving UK taxpayers, subcontractors and suppliers to bear the burden.

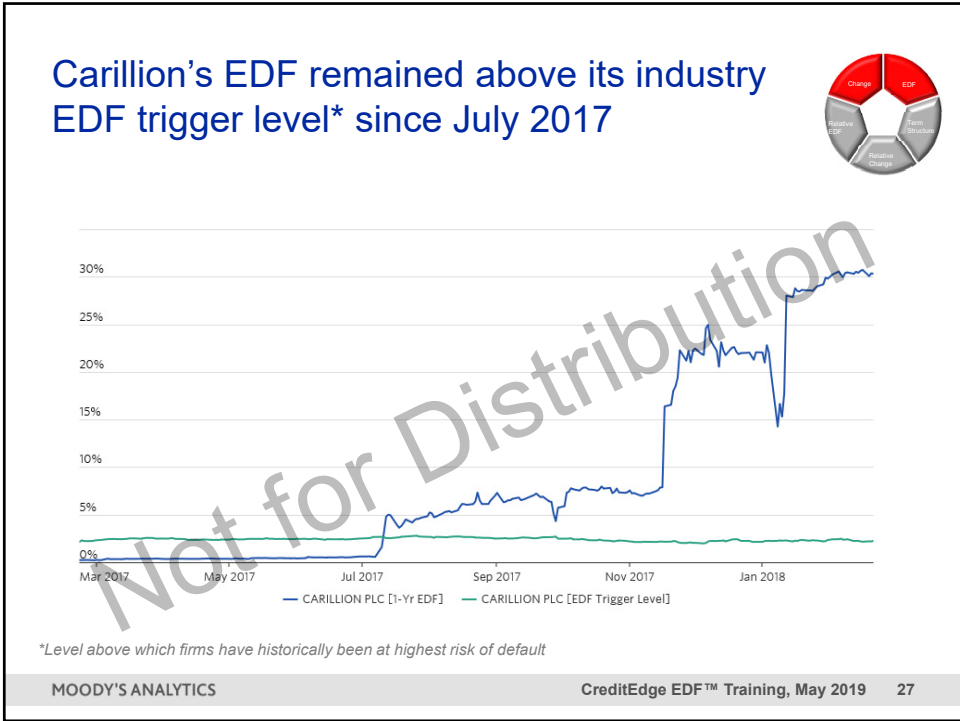


| |
|------------------|
| High Risk |
| Medium-High Risk |
| Medium-Low Risk |
| Low Risk |

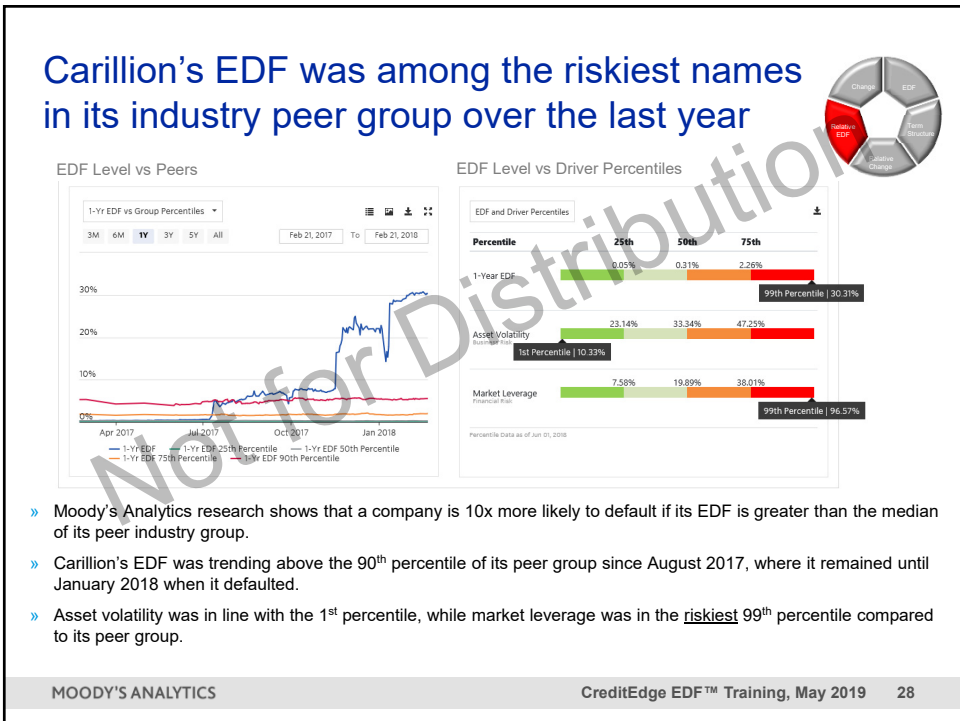
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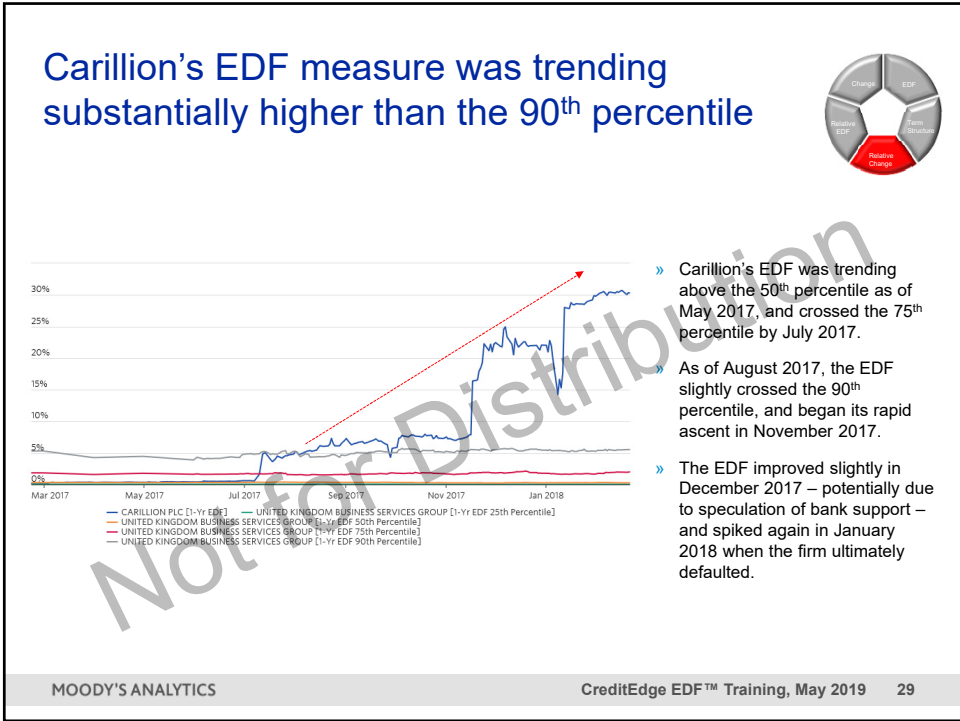
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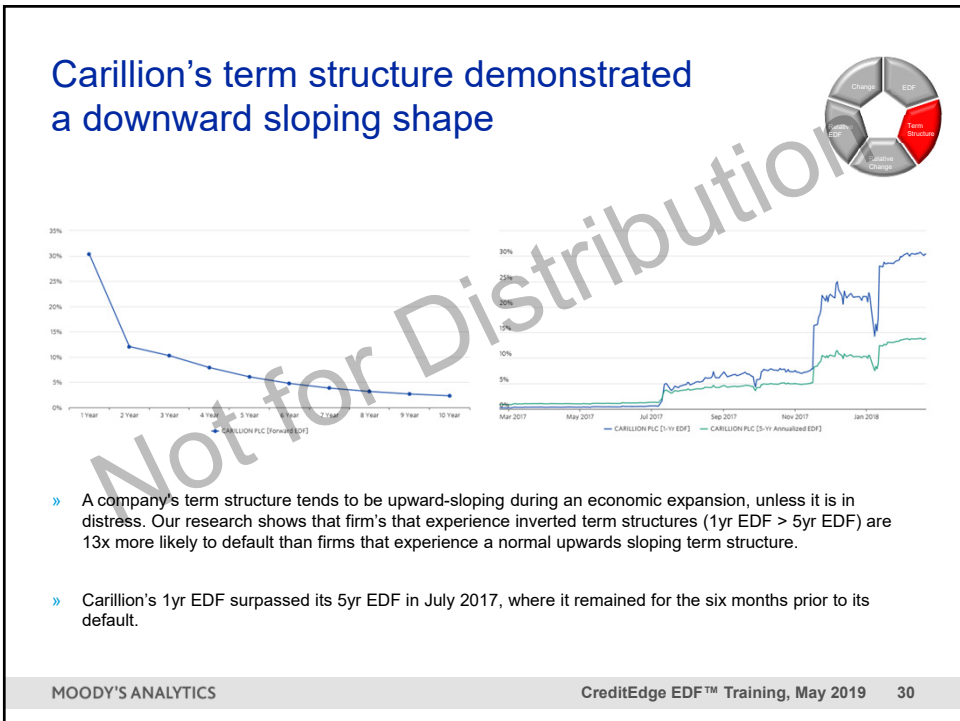


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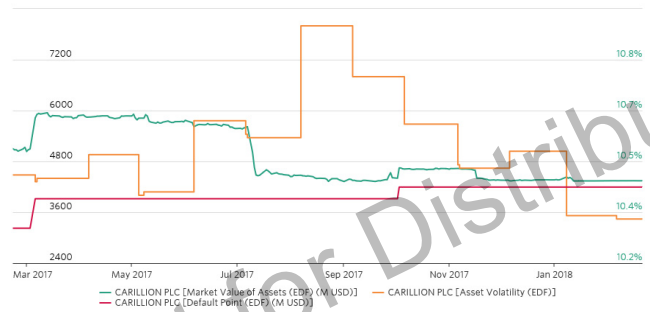




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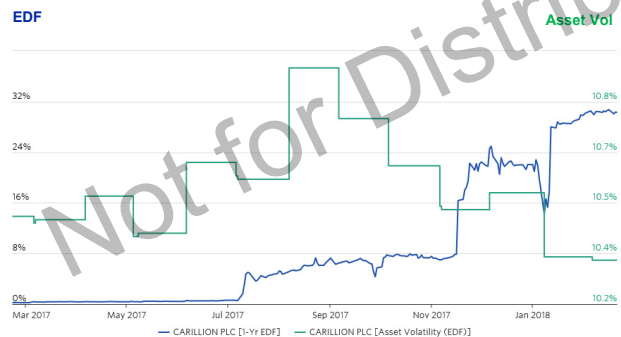
Carillion's high default risk was reflected by its debt levels outpacing its cash flow...



- » Over the last year, Carillion's market leverage worsened by 53%.
- » The main reason for this was added short term and long term liabilities to its books, coupled with a market value of assets lessened by 15%.
- » Over the last year, Carillion lost money on large contracts and accumulated substantial amounts of debt to offset its losses – due primarily to taking on too many high risk projects.

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...while its slight improvement in business risk was not enough to improve the EDF

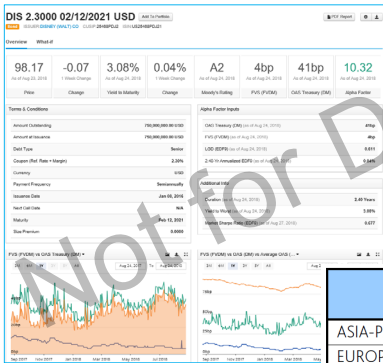


- » A company's business risk can be measured by the volatility of its assets. Higher volatility reflects greater uncertainty about a firm's future cash flows.
- » Over the last year, Carillion's asset volatility improved by nearly 2%, and was trending downward since its high point in September 2017.

4 | CreditEdge bond data

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CreditEdge contains over 252,000 bond issues denominated in 51 currencies



- » Coverage continues to grow globally
- » In 2015, floating rate, discount zero and variable rate coupon bonds were added to CreditEdge
- » Bonds can be **screened** by multiple filters including **Alpha Factor**, plotted on **charts**, displayed in **reports**, and **monitored** via the **movers tool**

| Region | Bond | |
|-------------------------------|--------|--------|
| | Active | Total |
| ASIA-PACIFIC | 15072 | 63912 |
| EUROPE MIDDLE EAST AND AFRICA | 20318 | 74873 |
| NORTH AMERICA | 1152 | 3601 |
| LATIN AMERICA | 31104 | 110131 |
| Total | 67646 | 252517 |

CreditEdge proprietary Fair Value Spread (FVS) and Alpha Factor (AF) measures can help asset managers select underpriced bonds

Fair Value Spread (FVS)

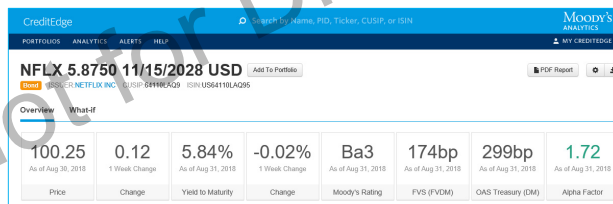


$$(PD \times LGD) + MPR \pm \text{issuer size factor}$$

Alpha Factor (AF)

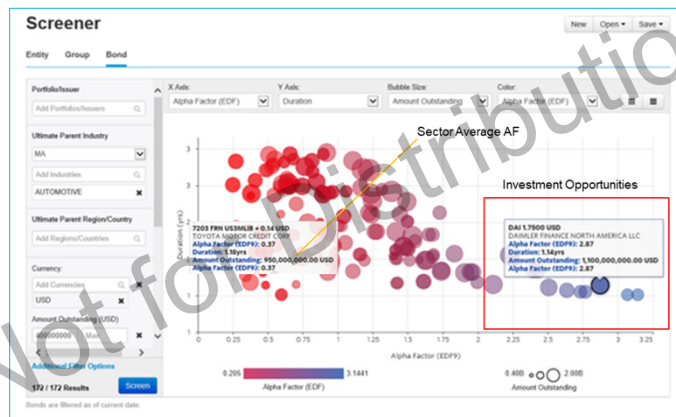


$$\text{Option Adjusted Spread (OAS)} / \text{FVS}$$



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Are you getting paid for the risks you take?



- » Our research shows that portfolios of issues with high Alpha Factors have stronger returns and better credit risk characteristics than bonds with low Alpha Factors
- » Although on aggregate, the automotive sector in this example shows bond over-pricing, there are still several investment opportunities to explore

5 CreditEdge website & Excel Add-in demo

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The Company Overview page offers a clear, customizable snapshot of company data

Find entities, groups and bonds using the "Type Ahead" Search

Customize and export charts for easy inclusion into your reports

Get a snapshot of the most relevant information

Check how the company performs compared to peers

| Item | Sep 30, 2018 | Sep 08, 2017 | Amount Change | % Change |
|-------------------------|--------------|--------------|---------------|----------|
| 1-Year EDF | 0.03% | 0.07% | -0.04% | -57.32% |
| Asset Volatility | 28.23% | 32.20% | -3.97% | -12.33% |
| Market leverage | 7.22% | 10.24% | -3.02% | -29.50% |
| Market Value of Assets* | 176,147.13M | 91,604.34M | 84,542.79M | 92.29% |
| Share Price | 348.68 | 176.42 | 172.26 | 97.64% |
| Share Outstanding | 499.45M | 423.05M | 76.40M | 18.06% |
| Annual Capitalization | 151,712.95M | 74,189.28M | 77,523.67M | 104.63% |
| Default Rate† | 12.718.84M | 9,383.31M | 3,335.53M | 35.55% |
| Short Term Liabilities* | 4,079.84M | 5,122.84M | -1,043.00M | -20.36% |
| Long Term Liabilities* | 12,087.30M | 8,261.75M | 3,825.55M | 46.30% |
| All Total Liabilities* | 16,167.14M | 13,384.59M | 2,782.55M | 20.82% |

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Compare peers, groups and portfolios utilizing the Peer Analysis tool for additional insight

Select an industry group or portfolio to compare the selected entity

Compare a company's 1-yr EDF and its drivers to the selected group or portfolio

Analyze a company's 1-yr EDF versus the EDF trigger level of its industry group

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The Bond Portfolio Overview page offers a clear, customizable snapshot of portfolio performance

Get a snapshot of the most relevant aggregate information

Customize and export charts for easy inclusion into your reports

Access individual bond pages from the scatter plot chart by clicking on any data point

High level overview of individual bonds in the portfolio

| ISIN | CUSIP | Am't Outstanding | Price | Coupon (Ref. Rate) | Maturity | YTM | Duration (Yrs) | Alpha Factor (GDEI) | Deterioration Probability |
|--------------|-----------|------------------|-------|--------------------|--------------|--------|----------------|---------------------|---------------------------|
| US701081AY70 | 701081AY7 | 225.00 M USD | 88.50 | 7.50% | Aug 01, 2020 | 14.61% | 1.79 | 0.50 | 87.41% |
| US701081AX97 | 701081AX9 | 380.00 M USD | 79.00 | 6.75% | Jul 15, 2022 | 13.99% | 3.37 | 0.09 | 87.41% |

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The Bond Page provides in-depth insight for an individual bond

BXE 8.5000 05/15/2020 USD

Issuer: BELLATRIX EXPLORATION LTD. CUSIP: 078314AG5 ISIN: US078314AC52

Price: 61.75 (As of Aug 30, 2018) **Change:** -5.75 (1 Week Change) **Yield to Maturity:** 42.19% (As of Aug 31, 2018) **Change:** 7.08% (1 Week Change) **Moody's Rating:** Caa3 (As of Aug 31, 2018) **FVS (FVDM):** 2,033bp (As of Aug 31, 2018) **OAS Treasury (DM):** 3,965bp (As of Aug 31, 2018) **Alpha Factor:** 1.95 (As of Aug 31, 2018)

Terms & Conditions:
 Amount Outstanding: 233,920,000.00 USD
 Amount at Issuance: 250,000,000.00 USD
 Debt Type: Senior
 Coupon (Ref. Rate + Margin): 8.50%
 Currency: USD
 Payment Frequency: Semiannually
 Issuance Date: May 21, 2016
 Next Call Date: May 18, 2019
 Maturity: May 15, 2020
 Size Premium: 0.0110

Alpha Factor Inputs:
 OAS Treasury (DM) (as of Aug 31, 2018): 3,965bp
 FVS (FVDM) (as of Aug 31, 2018): 2,033bp
 LDC (EDF9) (as of Aug 31, 2018): 0.456
 1-5Y Annualized EDF9 (as of Aug 31, 2018):

Additional Info:
 Duration (as of Aug 31, 2018):
 Yield to Worst (as of Aug 31, 2018):
 Market Sharpe Ratio (EDF9) (as of Sep 03, 2018):

FVS (FVDM) vs OAS Treasury (DM)
 Line chart showing FVS (FVDM) (blue), Fair Value Spread (Fair Value Discount Margin) (orange), and OAS Treasury (DM) (green) from Sep 2017 to Aug 2018.

Bond data updated daily

Determine if the bond is over or undervalued

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Email alerts are easy to create

Settings

Create Basic Alert

Entity: Select Entity... Select an entity or portfolio.

Date: 1-Yr EDF9 Select EDF, CDS-I EDF, TTC EDF or Moody's Implied Rating.

Comparison: Absolute Value Select Absolute Value, Absolute Change, Point Change or % Change for comparison.

Operator: Greater than or equal to Select the operator to use for comparison.

Value: 0 Enter a value to set the alert threshold or increase/decrease by the trigger.

Alerts Dashboard

| Entity Name | Alert Threshold | Change | Trigger Status | Triggered On | Alert Valid | Active All |
|--------------------------------------|-------------------|-----------|----------------|--------------|-------------|------------|
| ACACIA MINERS PLC | 1-1Y EDF9 == 0.0% | +0.038% | 0.31% | 0/20/2018 | - | - |
| BANCO ESPRITO SAO SA | 1-1Y EDF9 == 0.0% | No Change | 0.00% | 0/20/2018 | - | - |
| BAUSCH HEALTH COMPANIES INC | 1-1Y EDF9 == 0.0% | -0.037% | 0.43% | 0/20/2018 | - | - |
| CAMPOR - CAMBOS DE PORTUGAL, SGPS SA | 1-1Y EDF9 == 0.0% | -0.002% | 12.71% | 0/20/2018 | - | - |
| ELIO MOTORS INC | 1-1Y EDF9 == 0.0% | +0.224% | 10.08% | 0/20/2018 | - | - |
| EMAY HOLDINGS INC | 1-1Y EDF9 == 0.0% | +0.000% | 47.12% | 0/20/2018 | - | - |
| EMRAC GROUP S.A. | 1-1Y EDF9 == 0.0% | +0.078% | 0.48% | 0/20/2018 | - | - |
| FRED. OLSEN ENERGY ASA | 1-1Y EDF9 == 0.0% | +0.008% | 28.47% | 0/20/2018 | - | - |
| LORMIN PLC | 1-1Y EDF9 == 0.0% | +0.002% | 21.20% | 0/20/2018 | - | - |
| POSTVITEC CORP | 1-1Y EDF9 == 0.0% | -0.194% | 30.67% | 0/20/2018 | - | - |
| ROYAL/BIOTECH NV | 1-1Y EDF9 == 0.0% | +0.034% | 37.39% | 0/20/2018 | - | - |
| STEN MART INC | 1-1Y EDF9 == 0.0% | -0.043% | 0.20% | 0/20/2018 | - | - |
| ZAF | 1-1Y EDF9 == 0.0% | +0.001% | 21.54% | 0/20/2018 | - | - |

Set up a Basic Alert (specific for a company), or a Benchmark Alert (for a company compared to its peers)

Monitor your alerts on the website or by checking emails

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Monitor a portfolio by watching the biggest movers

Biggest Movers

Show: EDF For: All Entity Portfolios Previous: Three Months

| Improving Movers | | | | | Deteriorating Movers | | | | |
|-----------------------------|---------|----------|---------|----------|-----------------------------|---------|----------|--------|----------|
| Name | Current | Previous | Change | % Change | Name | Current | Previous | Change | % Change |
| BROOKFLD DTLA OFFICE TR INV | 0.03% | 35.00% | -34.97% | -99.90% | JAGUAR ANIMAL HEALTH INC | 26.01% | 1.00% | 24.95% | 2368.28% |
| VITRO DIAGNOSTICS INC | 13.53% | 46.45% | -32.92% | -70.87% | OLD | 32.07% | 11.81% | 20.27% | 171.67% |
| EVEGATE PHARMACEUTICALS INC | 5.53% | 15.51% | -9.98% | -64.34% | METASYS INC | 30.83% | 13.23% | 17.60% | 133.04% |
| EDGE THERAPEUTICS INC | 8.41% | 17.09% | -8.68% | -50.78% | BIORECH PRODS SVCS RESEARCH | 30.83% | 13.23% | 17.60% | 133.04% |
| HORNBECK OFFSHORE SVCS INC | 16.13% | 23.51% | -7.38% | -31.42% | DS HEALTHCARE GROUP INC | 44.80% | 28.11% | 16.68% | 59.35% |
| MUSCLEPHARM CORP | 11.42% | 18.80% | -7.38% | -39.25% | LANNETT CO INC | 22.55% | 6.12% | 16.44% | 268.81% |
| ONCOBIOLOGICS INC | 6.30% | 13.05% | -6.74% | -51.21% | CYTORI THERAPEUTICS INC | 25.51% | 12.50% | 13.02% | 104.15% |
| ONCOMED PHARMACEUTICALS | 3.32% | 10.19% | -6.87% | -67.42% | MABVAX THERAPEUTICS HLDGS | 24.19% | 11.42% | 12.77% | 111.89% |
| RESVERLOX COOP | 2.30% | 8.95% | -6.65% | -74.18% | GEMPHIRE THERAPEUTICS INC | 14.42% | 2.57% | 11.84% | 460.23% |
| MEDICURE INC | 0.25% | 6.37% | -6.12% | -96.05% | REGULUS THERAPEUTICS INC | 22.77% | 12.01% | 10.76% | 89.61% |
| GLDSEMMUNE INC | 28.34% | 34.28% | -5.92% | -17.28% | ACURA PHARMACEUTICALS INC | 18.54% | 7.88% | 10.68% | 135.79% |
| AVANT DIAGNOSTICS INC | 14.64% | 20.15% | -5.51% | -27.34% | VIVUS INC | 20.93% | 10.38% | 10.55% | 101.57% |

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Powerful screening and benchmarking functionalities at company, group and bond level

Screener

Entity: Group Bond

Portfolio: Add Portfolios

Industry: MA

Region/Country: UNITED STATES & CANADA

1-Yr EDF As of Date: [Dropdown]

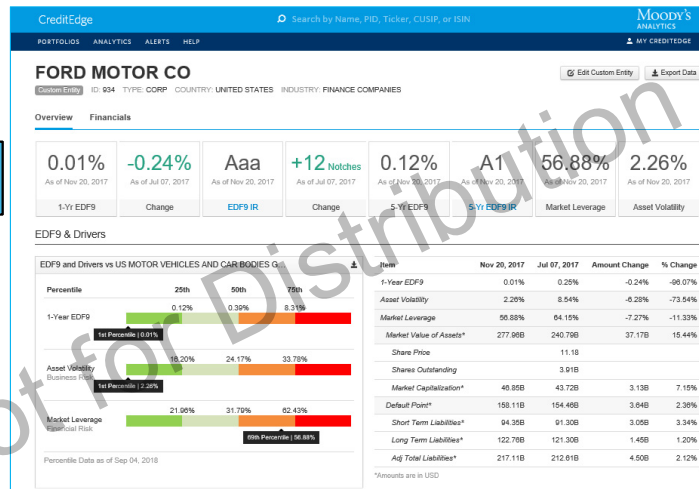
409 / 409 Results

Asset Volatility (EDF) (%) vs Market Leverage (EDF) (%)

0.0117% 50% 0.00M USD 34,018,00M USD

Easily create a Custom Entity by inputting market and financial data to produce an EDF value

Use to conduct in-depth pro forma and M&A analyses

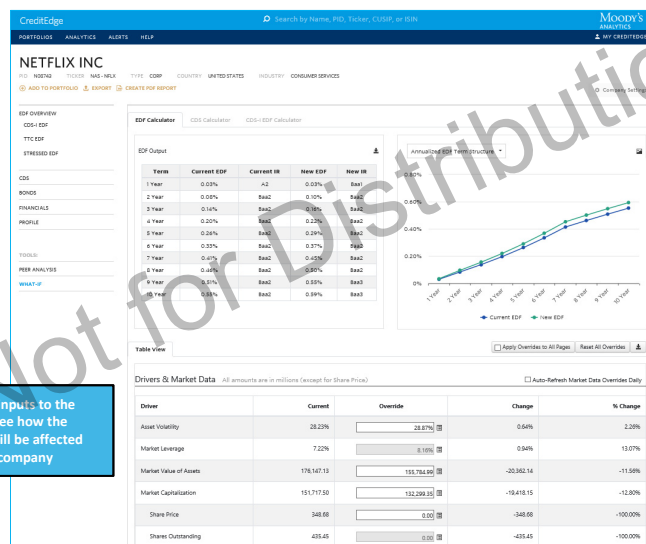


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Conduct "What-If" calculations for scenario analysis

Change the inputs to the model and see how the credit risk will be affected for a public company

Compare current and new EDF term structures



Best-in-class charting and reporting functionalities

The image displays two screenshots from the Moody's Analytics software. The top screenshot shows the 'Report Builder' interface with a table of selected entities and their EDF data. The bottom screenshot shows the 'Chart Builder' interface with a line chart of EDF data over time.

| PID | Name | EDF Date | 1-Yr EDF (%) | Asset Volatility (EDF) (%) | TTC EDF Data |
|--------|--|------------|--------------|----------------------------|--------------|
| G10227 | VOLKSWAGEN AG | 2018-09-03 | 0.1629 | 8.9000 | 2018-09-03 |
| G13317 | TOYOTA MOTOR CORPORATION | 2018-09-03 | 0.0822 | 11.0500 | 2018-09-03 |
| G13284 | NISSAN MOTOR CO LTD | 2018-09-03 | 0.0007 | 8.1900 | 2018-09-03 |
| G10010 | BIAYERISCHE MOTOREN WERKE AKTIENGESELLSCHAFT | 2018-09-03 | 0.1205 | 0.1500 | 2018-09-03 |
| 34537A | FORD MOTOR CO | 2018-09-03 | 0.2081 | 0.0000 | 2018-09-03 |

Create your report for entities, bonds and groups (aggregate data)

Plot your data & customize your chart by changing color, style, scale, legend, etc.

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PDF reports available for portfolios, companies and bonds

The image displays two screenshots of PDF reports generated by Moody's Analytics. The left report is for Ford Motor Co, showing key financial metrics and a line chart of 1-Yr EDF. The right report is for a bond (F 4.2000 09/20/2025 USD), showing terms and conditions, alpha factor, and a line chart of FVS (FVDM) vs OAS (DM).

Fully customizable Company PDF reports, including EDF measures, Moody's Rating, Financial data, peer analysis

Easy to export Bond PDF reports, including terms and conditions, Alpha Factor, Fair Value Spread vs Option Adjusted Spread, issuer details

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Easily integrate CreditEdge data into your workflow through Excel Add-In

Easy to use template with extensive filtering options for customized analysis

Portfolio view of top default risks and downgrade risks for public and private names

| Filter Type | 1Y EDF Above Trig... | 1Y EDF Change | Relative 1Y EDF Co... | Region | Industry | Exposure Amt | 1Y EDF | 1Y EDF % Change | Deteriorates Probability | 1Y EDF % Change | 1Y EDF Change | Term Structure Investment | Relative 1Y EDF % Change | Relative 1Y EDF Change | COV | 1Y EDF % |
|-------------|----------------------|---------------|-----------------------|--------|----------------|--------------|-------------|-----------------|--------------------------|-----------------|---------------|---------------------------|--------------------------|------------------------|--------|----------|
| Private | Yes | Deteriorating | Deteriorating | Japan | Australia & NZ | Canada | 25,922.00 | 22.51% | 64.55% | 19.09% | Deteriorating | Yes | Above 90th Pct | Deteriorating | 37.8% | 13.11% |
| Public | No | Improving | Improving | China | France | Germany | 18,414.00 | 12.89% | 21.35% | 1.41% | Deteriorating | Yes | Above 90th Pct | No Change | 45.00% | 5.85% |
| Private | Yes | No Change | No Change | China | France | Germany | 20,886.00 | 12.89% | 20.88% | 46.68% | Deteriorating | No | Above 90th Pct | No Change | 45.00% | 5.23% |
| Public | No | No Change | No Change | China | France | Germany | 10,188.00 | 10.18% | 22.67% | -53.88% | Improving | Yes | 75th Pct <- 90th Pct | No Change | 45.00% | 3.47% |
| Public | No | No Change | No Change | China | France | Germany | 7,144.00 | 7.14% | 20.55% | 29.35% | Deteriorating | Yes | 75th Pct <- 90th Pct | No Change | 45.00% | 3.21% |
| Public | No | No Change | No Change | China | France | Germany | 6,104.00 | 6.10% | 19.57% | 0.00% | No Change | Yes | 50th Pct <- 75th Pct | No Change | 45.00% | 2.75% |
| Public | No | No Change | No Change | China | France | Germany | 6,104.00 | 6.10% | 19.57% | 0.00% | No Change | Yes | 75th Pct <- 90th Pct | No Change | 45.00% | 2.75% |
| Public | No | No Change | No Change | China | France | Germany | 6,104.00 | 6.10% | 19.57% | 0.00% | No Change | Yes | 50th Pct <- 75th Pct | No Change | 45.00% | 2.75% |
| Public | No | No Change | No Change | China | France | Germany | 5,500.00 | 5.50% | 18.02% | -2.03% | Improving | Yes | 50th Pct <- 75th Pct | No Change | 45.00% | 2.39% |
| Public | No | No Change | No Change | China | France | Germany | 4,444.00 | 4.44% | 21.13% | 19.75% | Deteriorating | Yes | Above 90th Pct | No Change | 45.00% | 3.07% |
| Public | No | No Change | No Change | China | France | Germany | 3,934.00 | 3.93% | 18.65% | 15.93% | Deteriorating | Yes | 75th Pct <- 90th Pct | No Change | 45.00% | 1.77% |
| Public | No | No Change | No Change | China | France | Germany | 3,844.00 | 3.84% | 16.99% | 0.00% | No Change | Yes | 50th Pct <- 75th Pct | No Change | 45.00% | 1.73% |
| Public | No | No Change | No Change | China | France | Germany | 3,644.00 | 3.64% | 18.16% | 26.93% | Deteriorating | Yes | 50th Pct <- 75th Pct | No Change | 45.00% | 1.64% |
| Public | No | No Change | No Change | China | France | Germany | 3,624.00 | 3.62% | 17.86% | 0.00% | No Change | Yes | 50th Pct <- 75th Pct | No Change | 45.00% | 1.63% |
| Public | No | No Change | No Change | China | France | Germany | 3,494.00 | 3.49% | 17.86% | -17.86% | Improving | Yes | 75th Pct <- 90th Pct | No Change | 45.00% | 1.57% |
| Public | No | No Change | No Change | China | France | Germany | 3,454.00 | 3.45% | 16.11% | -2.62% | Improving | No | 50th Pct <- 75th Pct | No Change | 45.00% | 1.50% |
| Public | No | No Change | No Change | China | France | Germany | 3,210.00 | 3.21% | 26.25% | -4.63% | Improving | No | 50th Pct <- 75th Pct | Improving | 56.97% | 1.73% |
| Public | No | No Change | No Change | China | France | Germany | 2,924.00 | 2.92% | 16.26% | 0.00% | Deteriorating | No | 50th Pct <- 75th Pct | No Change | 45.00% | 1.38% |
| Public | No | No Change | No Change | China | France | Germany | 2,964.00 | 2.96% | 16.55% | 27.64% | Deteriorating | No | 50th Pct <- 75th Pct | Deteriorating | 45.00% | 1.33% |
| Public | No | No Change | No Change | China | France | Germany | 2,944.00 | 2.94% | 17.05% | 0.00% | No Change | Yes | 75th Pct <- 90th Pct | No Change | 45.00% | 1.32% |
| Public | No | No Change | No Change | China | France | Germany | 2,884.00 | 2.88% | 17.86% | 0.00% | No Change | No | 75th Pct <- 90th Pct | No Change | 45.00% | 1.30% |
| Public | No | No Change | No Change | China | France | Germany | 2,734.00 | 2.73% | 17.86% | 0.00% | No Change | Yes | 50th Pct <- 75th Pct | No Change | 45.00% | 1.24% |
| Public | No | No Change | No Change | China | France | Germany | 2,744.00 | 2.74% | 25.47% | -25.46% | Improving | Yes | 50th Pct <- 75th Pct | No Change | 45.00% | 1.23% |
| Public | No | No Change | No Change | China | France | Germany | 2,494.00 | 2.49% | 17.61% | -24.50% | Deteriorating | Yes | 50th Pct <- 75th Pct | No Change | 45.00% | 1.12% |
| Public | No | No Change | No Change | China | France | Germany | 1,76,127.00 | 1.76% | 33.32% | -31.64% | Improving | No | 50th Pct <- 75th Pct | Improving | 57.66% | 1.39% |

Color and qualitative coding helps users spot important names quickly

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6 Q&A

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CreditEdge by the numbers

| | | |
|---|---|--|
| 50 <i>Years of default data</i> | 1989 <i>When the first EDF measure was calculated</i> | 60,000+ <i>EDF measure for publicly traded firms</i> |
| 250+ <i>Data fields</i> | 11,700+ <i>Defaults in our global data base</i> | 76,000+ <i>Active CUSIPs in our database</i> |

Thank You!

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