Introducing The Deterioration Probability Metric
A New Metric for Downgrade Risk

Credit Risk Analytics Group
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Agenda

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2. Deterioration Probability Model Drivers and Output
3. Deterioration Probability in Practice: Teva Pharmaceutical
4. Demo: Accessing the Deterioration Probability through CreditEdge
5. Q&A
Introducing the Deterioration Probability
The EDF model predicts default with accuracy and high degree of early warning.
The Early Warning Toolkit helps uncover additional insight into elevated default risk.
Deterioration Probability provides early warning on downgrade risk

**Deterioration Probability** is a metric ranging from 1-70% that estimates probability of downgrade for rated firms in the next 12 months.

- **Quantitative, transparent model**
- **Early warning power**
- **Broad coverage**

- High accuracy ratios for both corporate & financial firms
- Extensive documentation and model validation
- Deterioration Probability doubles on average during 2 years prior to downgrade event and peaks 2 months before downgrade
- Use Deterioration Probability to monitor downgrade risk & EDF to monitor default risk
- 44k+ public firms globally
- Updated daily + history available
Deterioration Probability provides a strong solution for early warning of downgrade events

For an average firm, the Deterioration Probability doubles in the 2 years leading up to the downgrade event – giving risk / investment managers time to take action.
Deterioration Probability Model
Drivers and Output
Early Warning Toolkit parameters, Implied Rating gaps and Rating Outlook are Deterioration Probability’s inputs

The Deterioration Probability = CreditEdge Early Warning Toolkit + Market Implied Ratings + Rating Outlooks & History from MIS

High EDF metrics are associated with high Deterioration Probability

1. Trigger Exceedance (EDF trigger level): company’s EDF above or below its group trigger
2. 1-year EDF measure
3. Slope (EDF term structure): 5-year EDF minus its 1-year EDF
4. Industry Median EDF Growth Rate
5. Relative EDF: ratio of a firm’s EDF to its industry median EDF

Negative rating gap is associated with increased Deterioration Probability

- Implied Rating gap: the difference between the firm’s Moody’s rating and the best available Market Implied Rating

Indicators of future downgrades
- Stable, positive or negative outlook
- Recent downgrade in last 12 months
Baseline downgrade frequencies differ by initial rating category

Downgrade frequencies are higher on average for companies in the high yield (HY) universe than those with investment grade (IG) ratings.
Deterioration Probability can also be derived for unrated public firms

The Deterioration Probability for unrated firms is a metric ranging from 1-70% that estimates probability of how likely a downgrading event might be if the firm were rated by Moody’s Investors Service.

- Estimated based on patterns of downgrades observed in data for public rated firms with similar characteristics.
- CreditEdge Early Warning Toolkit inputs are the available model drivers used to calculate Deterioration Probability for unrated firms.
- If a firm becomes rated, Market Implied Ratings data and rating outlook/downgrade variables will also be applied to the firm’s Deterioration Probability calculation.
- The Deterioration Probability can be used to rank both rated and unrated firms by their risk of a downgrade-like credit event.
Deterioration Probability in Practice: Teva Pharmaceutical
Teva’s Deterioration Probability peaks two months before each downgrade occurs

- In August 2017, the Deterioration Probability peaks at roughly 35%, before it is downgraded to a Baa3 in the same month.

- Before downgrade, the EDF Implied Rating was Ba1, with an Implied Rating gap of -2.

- The Deterioration Probability reaches 43% in the two months before it is downgraded three notches to Ba3 in January 2018.

- At this time, Teva had a negative outlook, EDF Implied Rating of B1, Implied Rating gap of -4, and an EDF of 0.26%.

Based in Israel, Teva Pharmaceutical is a global pharmaceutical company engaged in the development, production and marketing of drugs, generic drugs, over-the-counter drugs, active ingredients for the pharmaceutical industry (APIs) and therapeutic products.
Teva’s downgrade risk is driven by its negative Implied Rating gap, negative outlook and downgrade over the last year.
Teva’s negative Implied Rating gaps preceded each downgrade, with a larger gap before its January 2018 downgrade.

- At the time of Teva’s August 2017 downgrade, its EDF Implied Rating was Ba1, giving it an Implied Rating gap of -2.
- By its January 2018 downgrade, its EDF Implied Rating of B1 gave it an Implied Rating gap of -4.
Teva’s negative outlook and August 2017 downgrade also indicated potential future downgrade risk

- At the time of Teva’s August 2017 downgrade, MIS analyst cited “slower deleveraging” than expected, plus high leverage and profit concentration in its leading multiple sclerosis drug, Copaxone.

- MIS analysts equate Teva’s three-notch downgrade by January 2018 in part to its high leverage and numerous impending maturities.
Demo: Accessing the Deterioration Probability through CreditEdge
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Available collateral material

- **Full methodology paper**: available on CreditEdge Help Page
- **At-a-Glance paper**: available on CreditEdge Help Page, [www.moodysanalytics.com](http://www.moodysanalytics.com) (CreditEdge page), LinkedIn page
- **Historical file**: available via ftp upon request, containing the entire CreditEdge universe and Deterioration Probability (Daily from 2017, Monthly from 2004)
Please reach out with questions

Samuel W. Malone, Ph.D.
+1.212.553.2107
Samuel.Malone@moodys.com

Paolo Persurich
+1.212.553.4767
Paolo.Persurich@moodys.com

Ryan Donahue
+1.212.553.3903
Ryan.Donahue@moodys.com

Reginald White
+1.212.553.4184
Reginald.White@moodys.com

Ryan O’Malley
+1.212.553.2798
Ryan.Omalley@moodys.com

Antoine La
+44.207.772.1201
Antoine.La@moodys.com

Mary Houston
+1.212.553.2169
Mary.Houston@moodys.com
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