Moody's Analytics

RiskCalc Sovereign & Size-Adjusted EDF-Implied Rating

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December 2018

Agenda

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1 Introduction

Speakers

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The Use Case

RiskCalc™ generates accurate and forward-looking EDF™ (Expected Default Frequency) measures for private companies based on financial statement information.

Some business cases require users to *translate RiskCalc EDF measures to a rating comparable to an agency rating*.

The new Excel Add-in template combines RiskCalc EDF values with company size and sovereign rating to estimate ratings for large private companies, that are currently not rated by a rating agency.

Sovereign & Size-Adjusted EDF-implied ratings are within two notches of the agency ratings approximately 70% of the time.

Extending RiskCalc to Estimate Ratings

RiskCalc EDF

%

- Measures absolute level of risk
- Standalone quantitative risk assessment
- Lower weight on Size
- Calculated for any company with financials

Agency Ratings

Aaa
Aa1
Aa2

- Measure relative risk
- Incorporate qualitative factors, external support and country-related risks
- Higher weight on Size
- Calculated for large companies that want access to capital markets

The Current EDF-Implied Ratings in RiskCalc

Derived from long history of default rates for rated firms

EDF →

Rating Grade	Lower Bound	Upper Bound
Aaa	0.00%	0.02%
Aa1	0.02%	0.03%
Aa2	0.03%	0.05%
Aa3	0.05%	0.09%
...	...	...

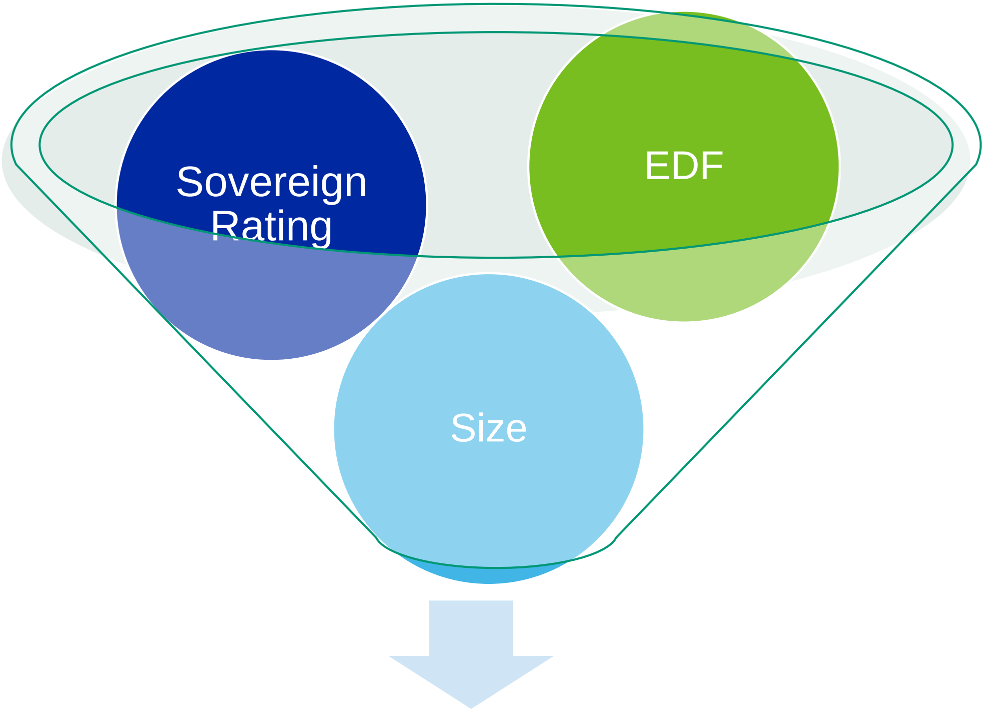
→ EDF-Implied Rating

We will continue to offer the EDF-implied ratings based on historical default rates, for clients interested on measuring the absolute level of default risk

Sovereign & Size-Adjusted EDF-implied Rating

Mimics agency rating methodology in spirit

(does not directly replicate it)



Sovereign & Size-Adjusted EDF-Implied Rating

Case Study: Match Group Inc

- US internet company that owns and operates several online dating websites
- Total Assets are ~ $2B
- Went public on Nov. 19, 2015, rated Ba3 by Moody's Investors Service

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Sovereign & Size-Adjusted EDF-Implied Rating (For Private Firms)

Firm Information		RiskCalc Quantitative Model		Sovereign & Size-Adjusted EDF-Implied Rating		
Firm Name	Country	RC 1-Yr EDF %	RC 1-Yr EDF-Implied Rating	Sovereign Rating of Country	Total Asset Size ($USD in 000's)	Sov & Size-Adj EDF-Implied Rating
MATCH GROUP INC	United States	0.24%	Baa1	Aaa	2,130,146	Ba3

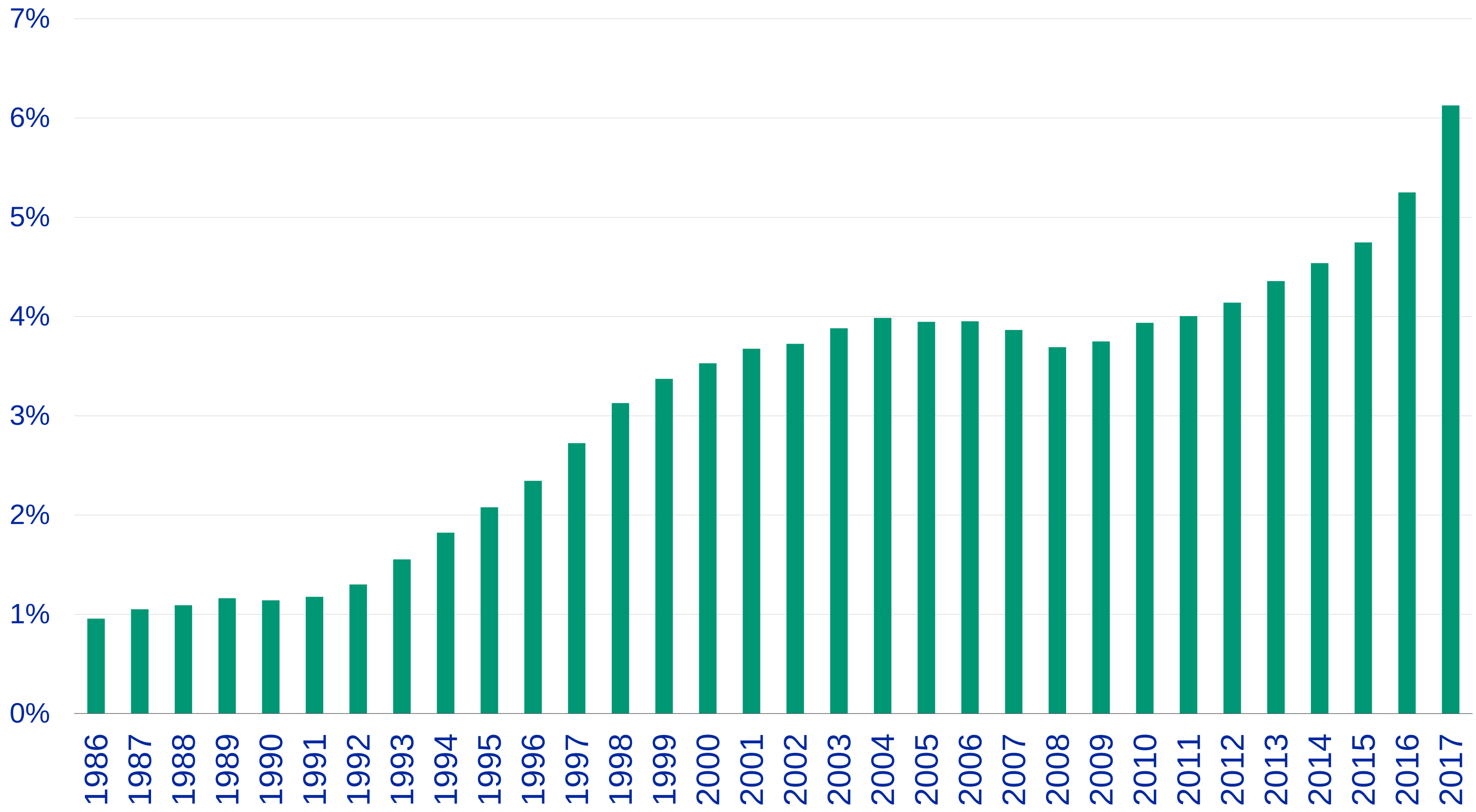
2 Methodology

Data Description

- Global Corporate and Not-for-Profit data
- Each observation was assigned to a RiskCalc model depending on the location & industry.

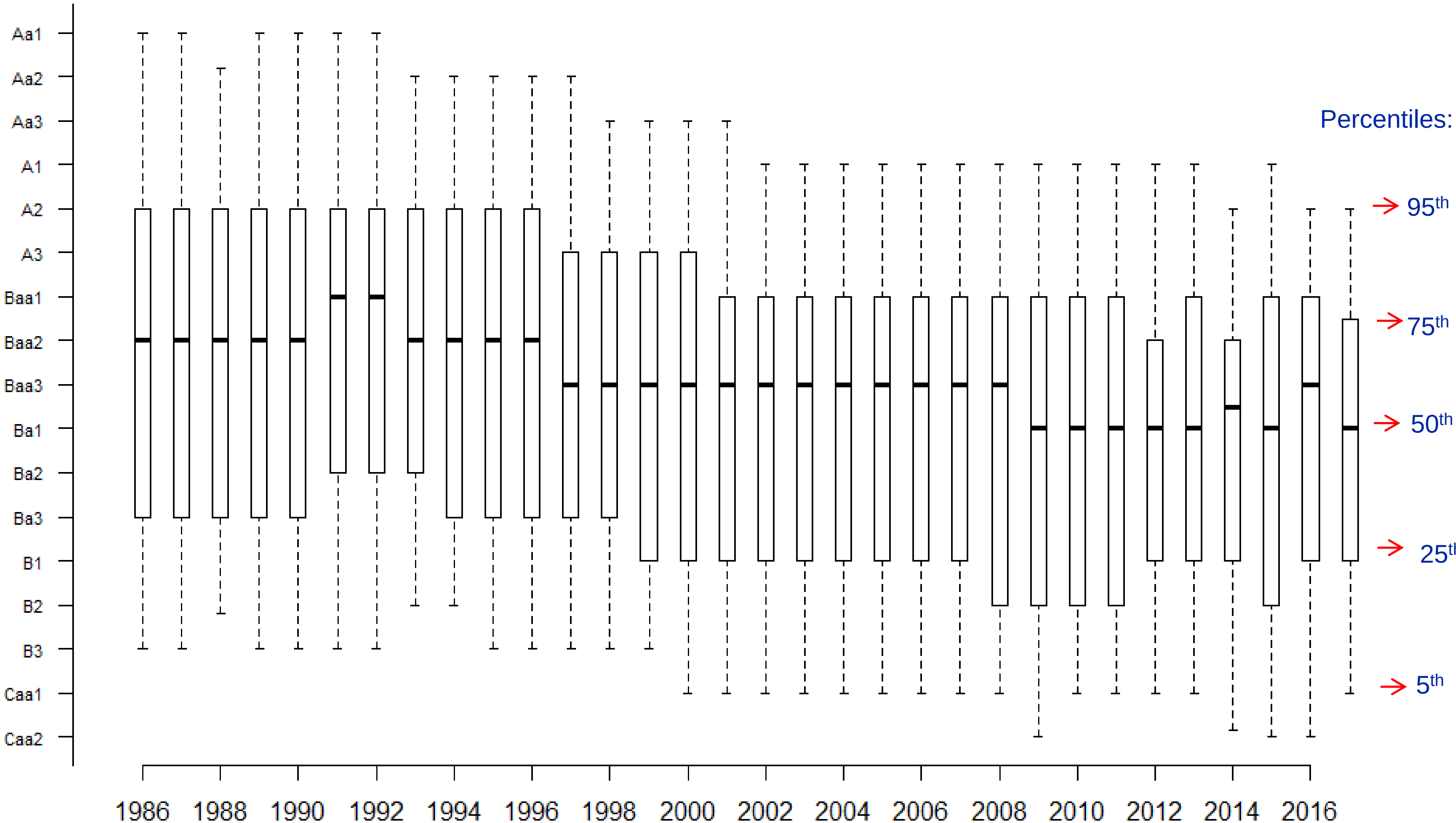
Financial Statements	Vended and Moody's Data
Rating Data	Moody's Senior Unsecured Rating
Period	1986-2017
Number of Statements	36,000+
Number of companies	3,900+

Distribution of Statements by year



Distribution of Statements by size

Agency ratings seem to become more conservative through time



Functional Form

Linear Model:

Rating = EDF + Sovereign Rating + Size

Agency Rating

Normal Inverse of RiskCalc FSO EDF

MIS Sovereign Rating of the Country the Company is Located

Log of Total Assets in Thousand USD

**All the ratings are rating numbers from 1 to 19 corresponding to Aaa to Caa3. The model also include dummies corresponding to each RiskCalc model used.*

3 Performance

More than 70% of the estimated ratings are within 2 notches of the Agency Rating between 2015 and 2017

	Within 0 notches	Within 1 notch	Within 2 notches	Within 3 notches	Within 4 notches	Within 5 notches
Sovereign & Size Adjusted EDF-Implied Rating	19.6%	52.2%	73.8%	87.4%	94.5%	97.6%
EDF-Implied Rating (static)	8.6%	25.7%	42.4%	57.1%	69.3%	79.4%

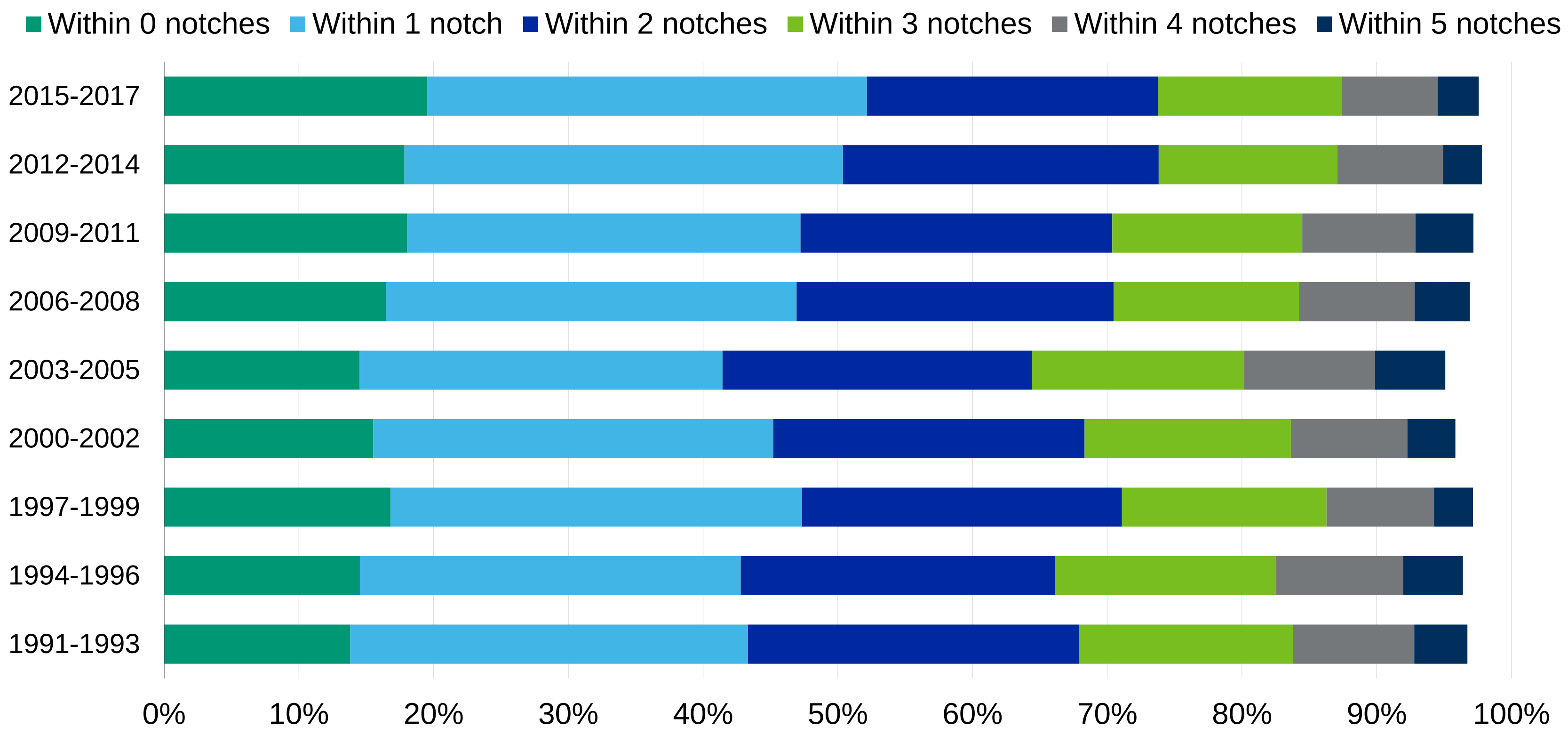
The performance is consistent across locations

	Within 0 notches	Within 1 notch	Within 2 notches	Within 3 notches	Within 4 notches	Within 5 notches
China	21.9%	50.7%	72.6%	90.4%	98.6%	98.6%
Emerging Markets	20.0%	58.9%	75.1%	87.4%	93.1%	96.1%
Japan	11.9%	45.9%	78.9%	87.2%	87.2%	89.9%
Europe	21.0%	52.3%	74.0%	88.0%	94.6%	97.1%
North America	18.8%	49.2%	70.7%	85.9%	94.2%	97.7%
US Not-For-Profit	20.7%	56.5%	78.3%	89.7%	95.9%	98.6%
US Real Estate Operators	17.2%	50.7%	77.0%	87.1%	94.3%	98.6%

The performance is consistent across size

	Within 0 notches	Within 1 notch	Within 2 notches	Within 3 notches	Within 4 notches	Within 5 notches
<500M	19.28%	49.63%	70.10%	85.50%	94.02%	97.91%
500M-1B	26.03%	64.77%	82.78%	92.56%	98.04%	99.41%
1B-2B	20.34%	56.27%	78.07%	92.07%	96.83%	98.55%
2B-5B	16.54%	45.82%	71.46%	86.27%	94.87%	98.18%
5B-10B	17.95%	47.65%	69.55%	82.59%	92.09%	96.69%
>10B	20.31%	54.33%	74.49%	87.92%	93.82%	96.59%

The performance is consistent across time



4 Conclusions

Conclusions

RiskCalc EDF measures a company's standalone credit risk based on financial statement information, while an agency rating considers additional factors such as external support and country-related risks.

The Sovereign and Size-Adjusted EDF-Implied Rating Template combines *RiskCalc EDF* values with *company size* and *sovereign rating* to estimate ratings *comparable* to agency ratings.

Estimated ratings are within two notches of agency ratings approximately 70% of the time.

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Demo

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