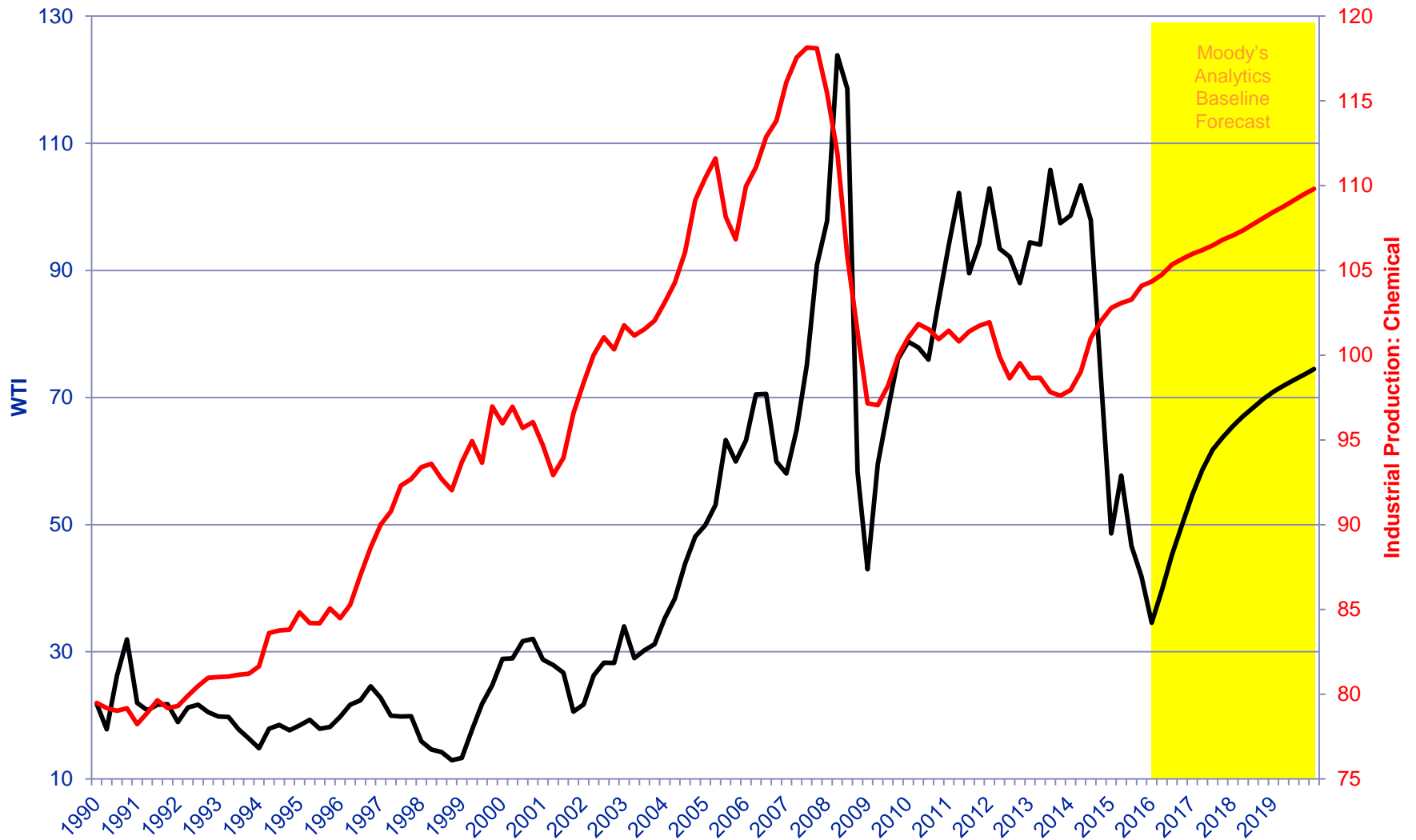# Credit Risk Scoring - Basics

Charles Dafler, Credit Risk Solutions Specialists, Moody's Analytics
Mehna Raissi, Credit Risk Product Management, Moody's Analytics
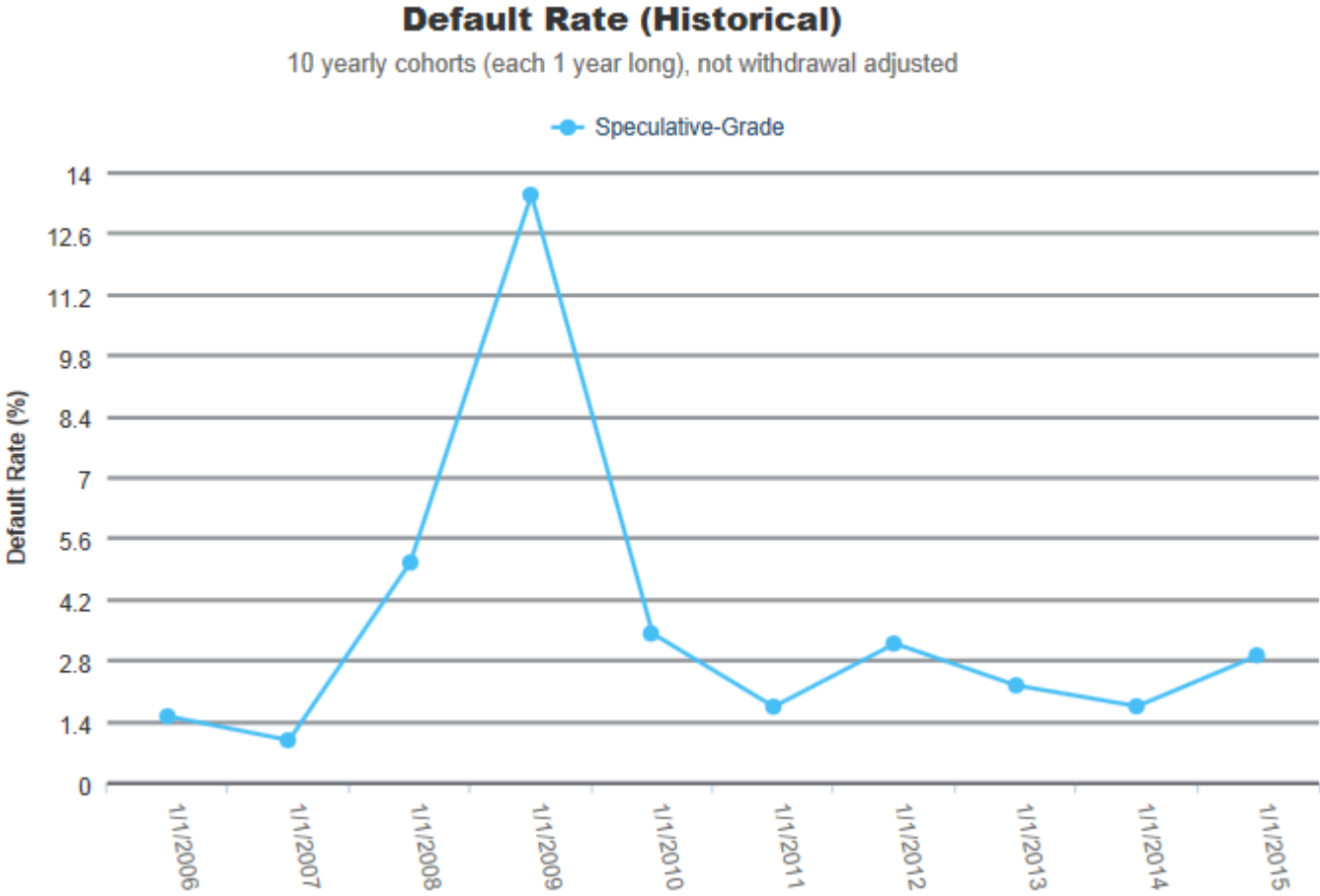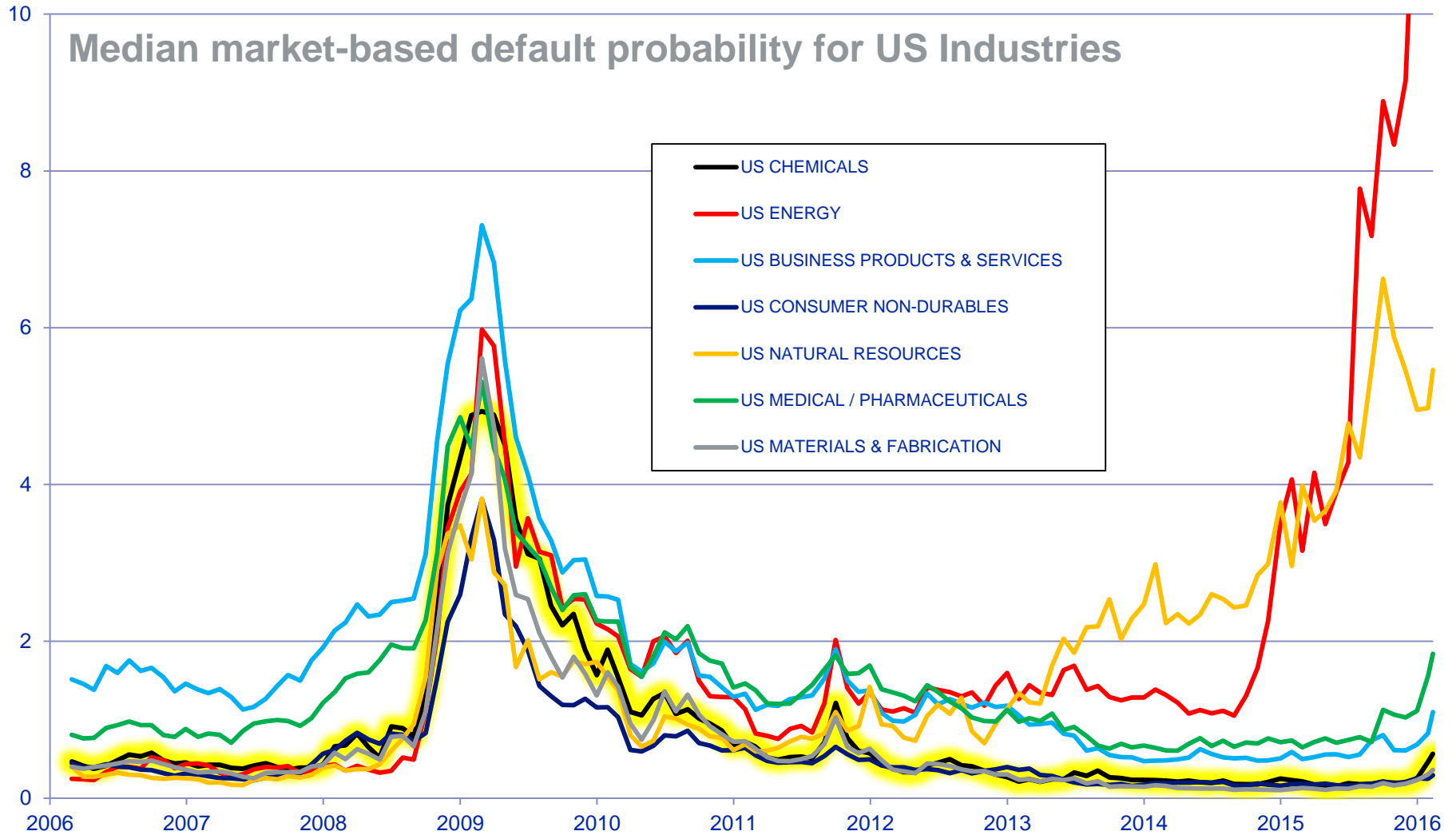
Setting the Stage

Moody's
ANALYTICS

Economic Volatility

Moody's
Analytics
Baseline
Forecast

Source: Moody's DataBuffet

Annual Corporate Default Rates have Risen

Default Rate (Historical)

10 yearly cohorts (each 1 year long), not withdrawal adjusted

Speculative-Grade

Forward-looking Default Risk is Going up in Many Industries

Median market-based default probability for US Industries

Legend:
- US CHEMICALS
- US ENERGY
- US BUSINESS PRODUCTS & SERVICES
- US CONSUMER NON-DURABLES
- US NATURAL RESOURCES
- US MEDICAL / PHARMACEUTICALS
- US MATERIALS & FABRICATION

Source: Moody's CreditEdge

Banks are Pulling Back on Credit

» For the first time since 2010 banks' increased their downgrades

» Upgrades at lowest level since 2010
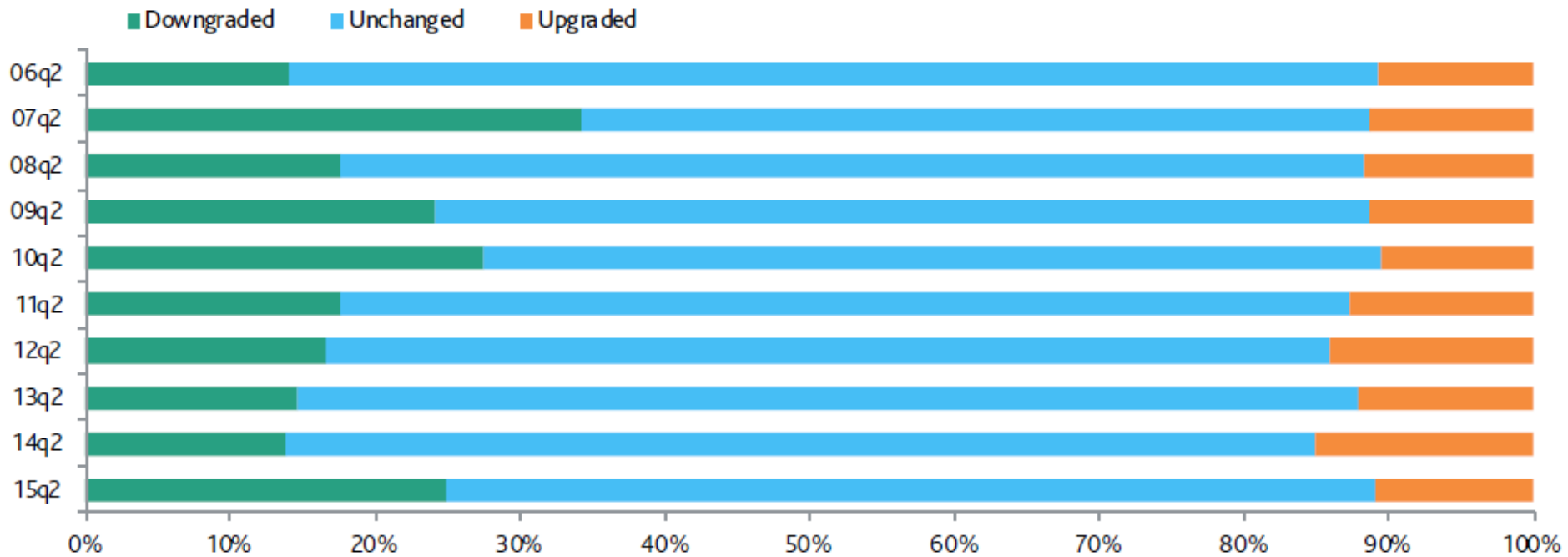
Challenges in Credit Risk Management

What credit risk challenge(s) keeps you up at night?

Data Quality & Availability

Technology

Unforeseen Issues

Systematic Framework

Different Approaches

Comprehensive Assessment

Standardized Process
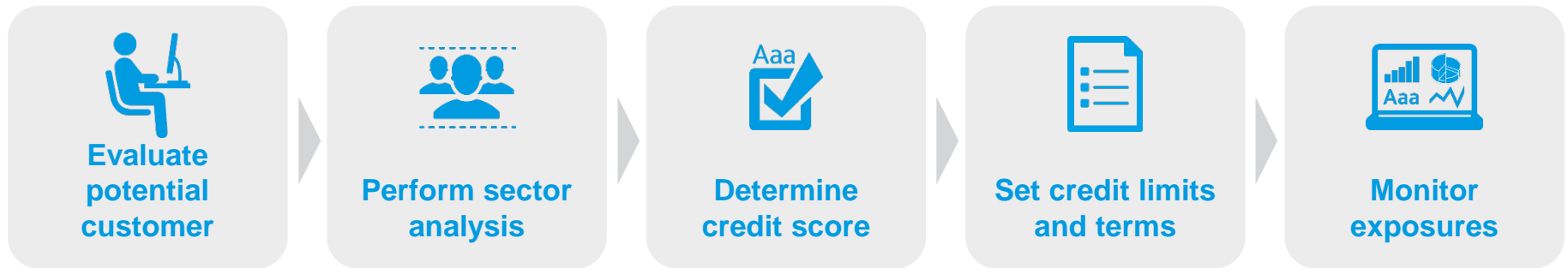
Strong Model

Organization Challenges or Changes

Ongoing Monitoring

Industry Challenges

Global Risk

Assessing Counterparty Credit Risk

Typical Analysis

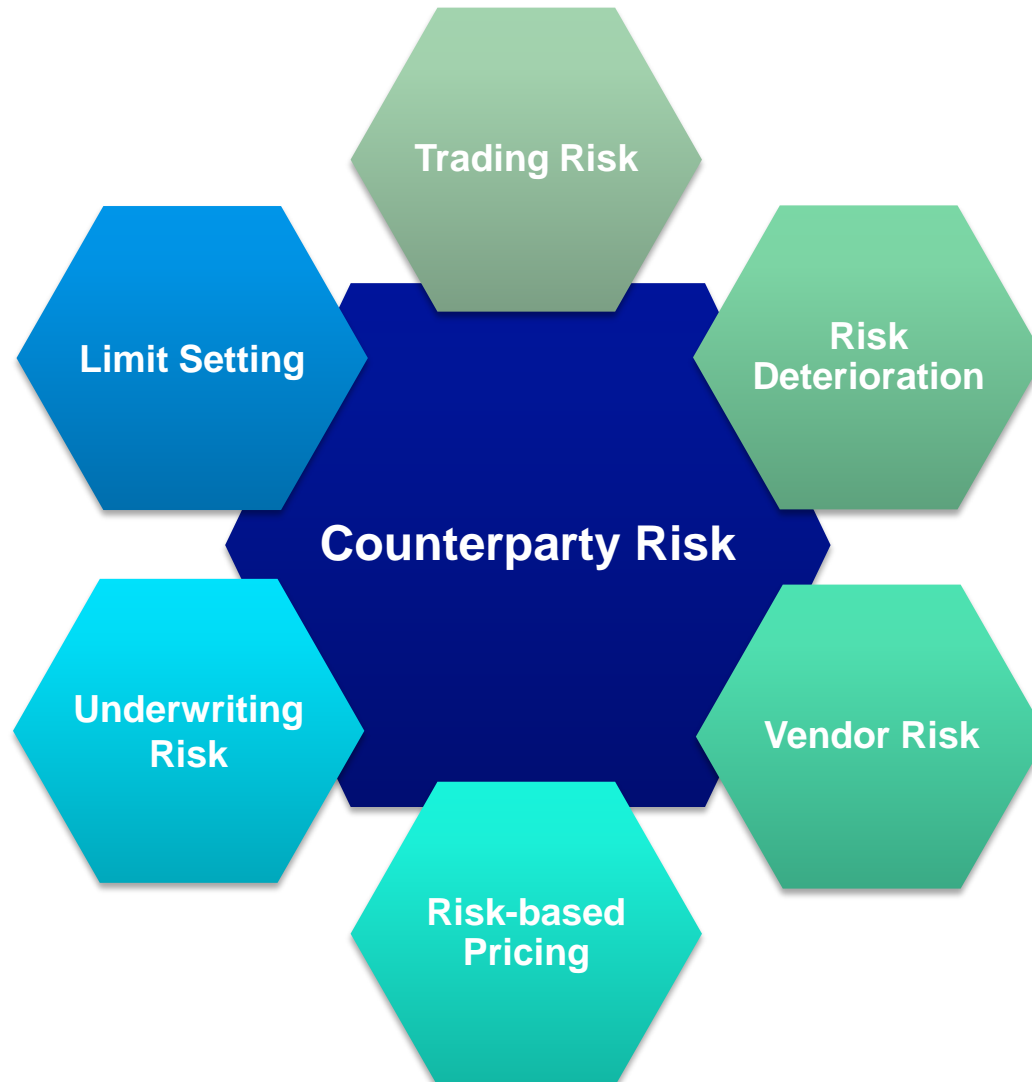| Evaluate potential customer | → | Perform sector analysis | → | Determine credit score | → | Set credit limits and terms | → | Monitor exposures |

Common Challenges

| Absence of a standardized process | Insufficient data on public & private firms | Lack of peer, industry and regional insight | Ineffective risk monitoring system |

Where are the risks associated with counterparties?

Trading Risk

Risk Deterioration

Limit Setting

Counterparty Risk

Underwriting Risk

Vendor Risk

Risk-based Pricing

What are the consequences of credit risk?

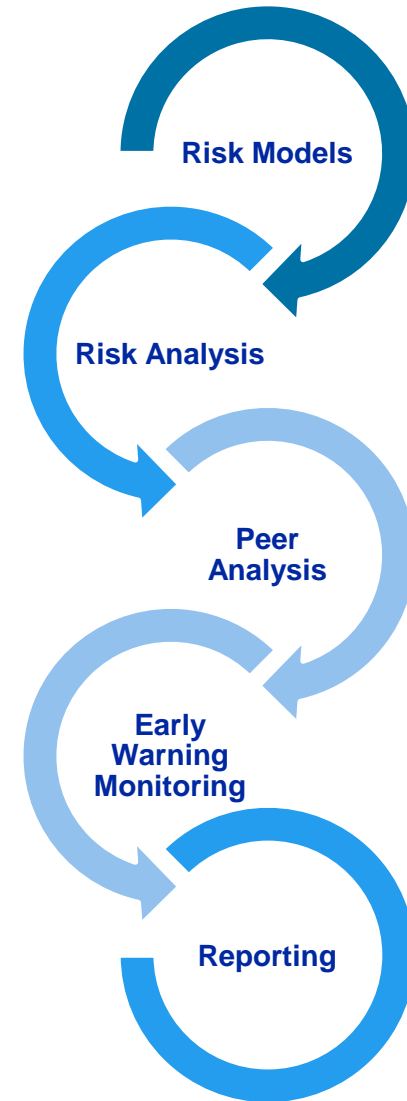**Bad Debt & Loss of Income**

Disruption to Supply Chain

Miscalculation of Capital Reserves

Unforeseen Damages

Key Requirements for an Effective Credit Risk Framework

» Consistency

» Efficiency

» Transparency

» Accuracy

Risk Models

Risk Analysis

Peer Analysis

Early Warning Monitoring

Reporting

Challenges in Corporate Credit Risk Management

Data Quality & Availability	Standardized Processes	Credit Risk Models	Ongoing Monitoring	Other Risk Drivers

What is the data quality?

- Limited up to date data and ongoing availability
- Data captured at origination may not be complete for ongoing data analysis
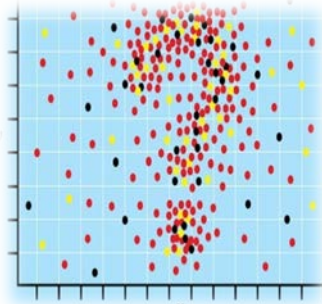- Data management is important for historical and forward looking analysis

How to minimize errors?

- Storing data in a single system of record for consistency
- Improving operational controls by standardizing credit policies
- Setting up workflow processes to ensure systematic origination processes

What are the most effective credit risk tools?

- Using the best model not just any model
- Improve credit decisions with accurate and predictive risk models
- Leveraging risk models for underwriting and ongoing monitoring of counterparty risk

How to manage counter-party risk?

- Early warning indictor of risk deteriorations
- Dashboard reports showing borrower risk migration
- Setting limits and pricing based on risk levels

What other factors should be taken into consideration?

- Understand unexpected shifts that provide additional transparency
- Incorporate qualitative factors for a comprehensive analysis

What does a comprehensive credit risk model do?

It helps measure what you stand to lose with default and recovery risk measures.
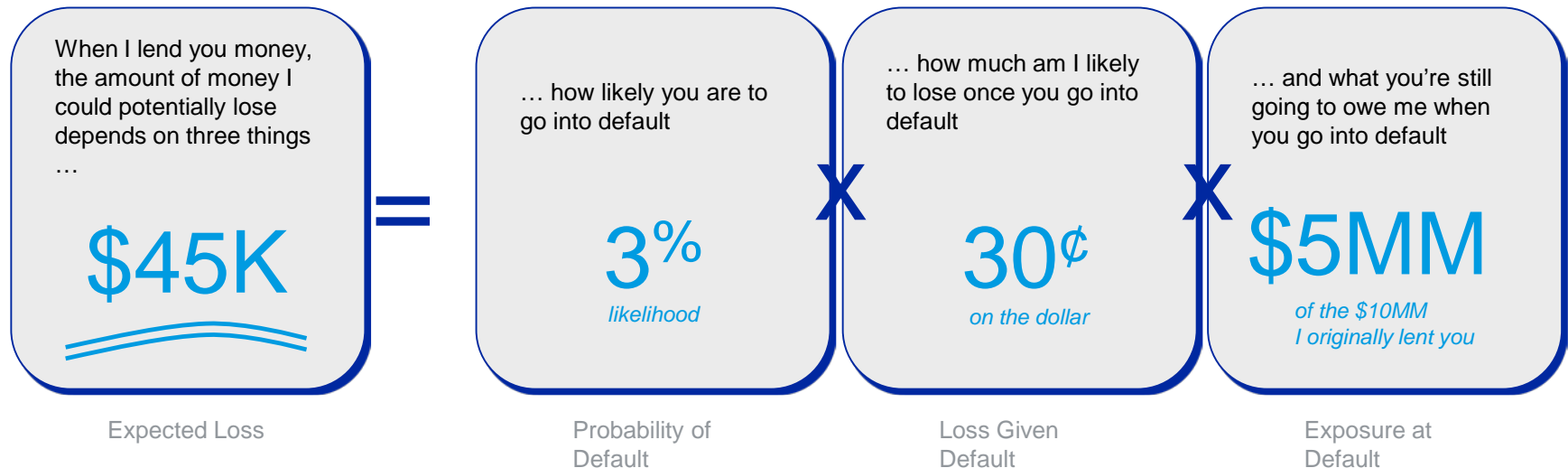
$$EL = PD \times LGD \times EAD$$
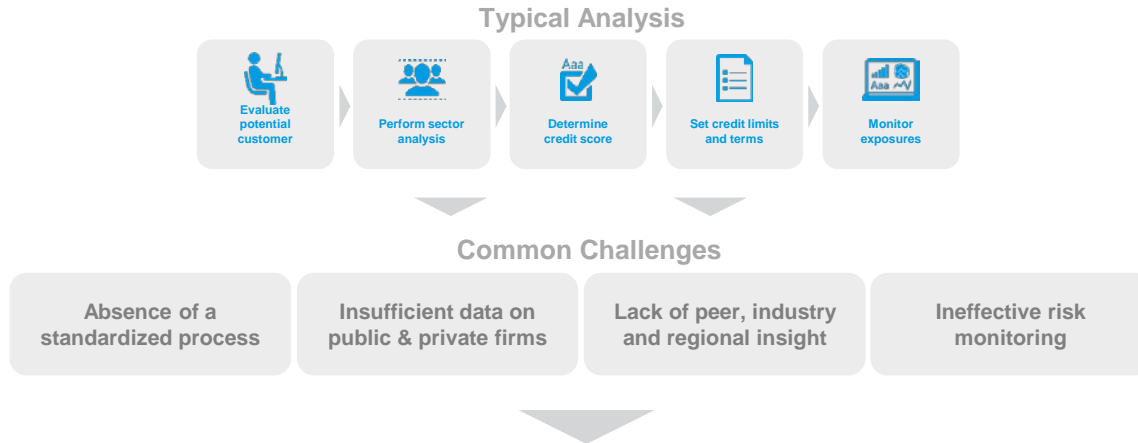
| Expected Loss | Probability of Default | Loss Given Default | Exposure at Default |

which means:

When I lend you money, the amount of money I could potentially lose depends on three things …

$45K

=

… how likely you are to go into default

3%
likelihood

X

… how much am I likely to lose once you go into default

30¢
on the dollar

X

… and what you're still going to owe me when you go into default

$5MM
of the $10MM I originally lent you

| Expected Loss | Probability of Default | Loss Given Default | Exposure at Default |

Identifying a good credit risk model

Common types of credit risk models available

Typical Analysis

Evaluate potential customer → Perform sector analysis → Determine credit score → Set credit limits and terms → Monitor exposures

Common Challenges

| Absence of a standardized process | Insufficient data on public & private firms | Lack of peer, industry and regional insight | Ineffective risk monitoring |

Counterparty Credit Risk Models

Credit Agency Ratings (through the cycle)		**Financial statement-driven**		**Market-driven (point in time)**	
PROS:	CONS:	PROS:	CONS:	PROS:	CONS:
-thorough	-lagging indicator	-transparent	-backward looking	-Forward looking	-Volatile
-widely understood	-labor intensive	-consistent	-updated only with new statements	-Very reactive	-requires external data
-long track record	-subjective	-intuitive		-Very predictive	
	-for rated firms			-Wide coverage	

MOODY'S
ANALYTICS

A good counterparty credit risk solutions utilizes the best aspects of all available approaches

Typical Analysis

Evaluate potential customer → Perform sector analysis → Determine credit score → Set credit limits and terms → Monitor exposures

Underwrite with consistent and transparent model

Common Challenge

data on ...ate firms | Lack of p... and regi...

Benchmark to third party metrics such as agency ratings
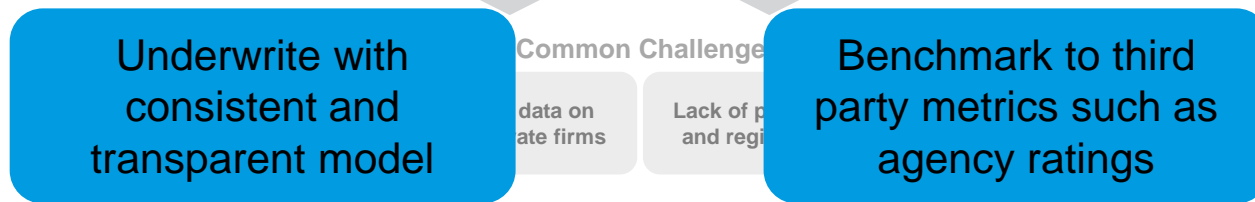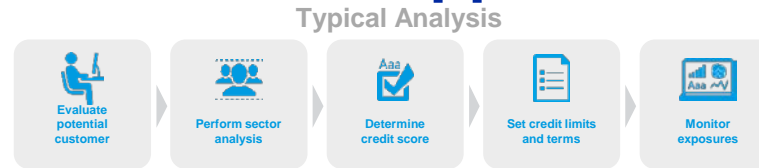
Counterparty Credit Risk Models

Credit Agency Ratings (through the cycle)

PROS:
-thorough
-widely understood
-long track record

CONS:
-lagging indicator
-labor intensive
-subjective
-for rated firms

Financial statement-driven

PROS: | CONS:

Monitor risk exposure with forward-looking market based metric

Market-driven (point in time)

PROS:
-Forward looking
-Very reactive
-Very predictive
-Wide coverage

CONS:
-Volatile
-requires external data

Actual default rates versus rating types for test portfolio
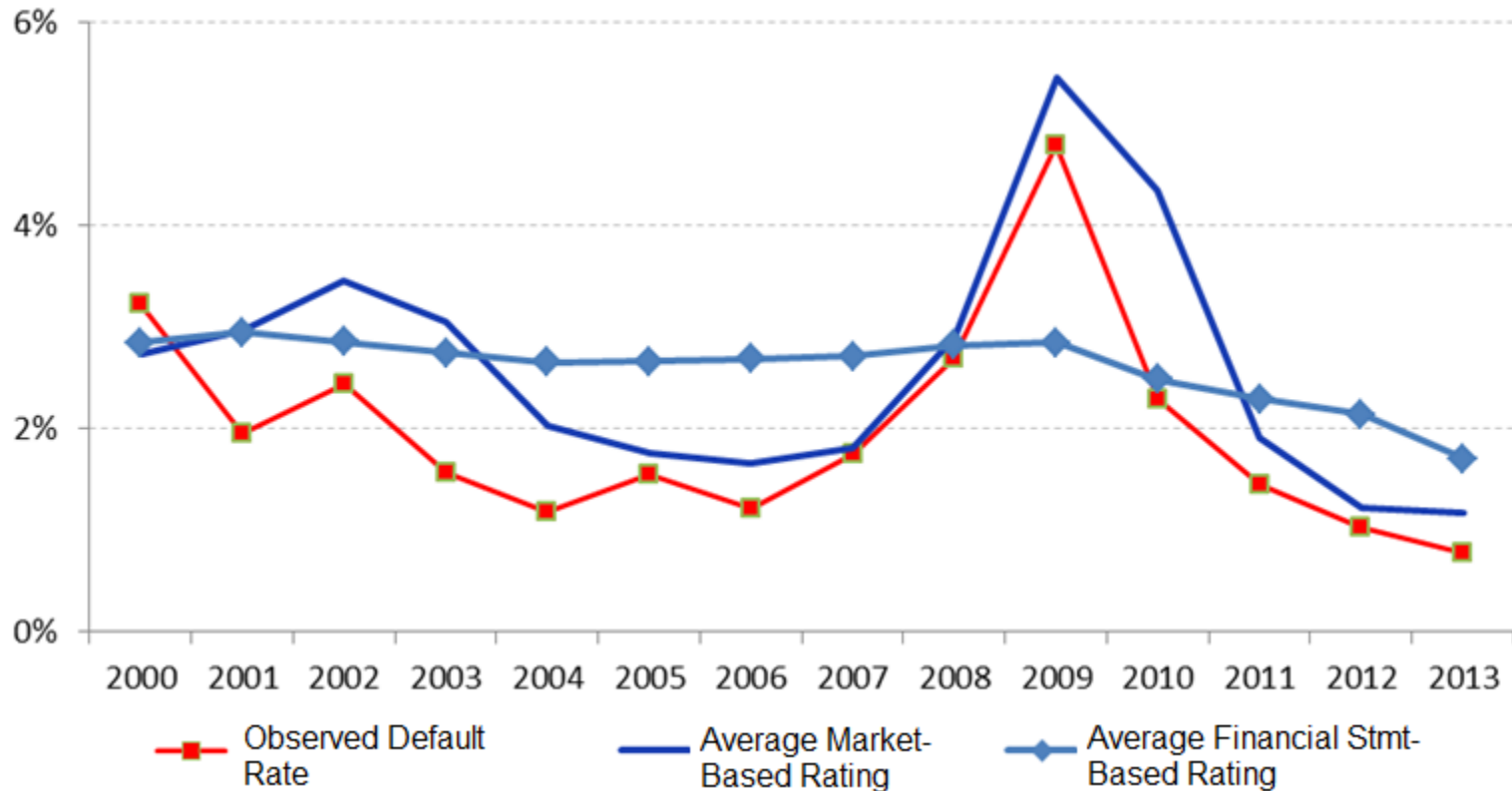
» Financial statement-based ratings offer a stable underwriting metric

» Market-based model predicts default very well

Case Study: Sabine and Forest Oil merger

THE WALL STREET JOURNAL.

BUSINESS

Sabine Oil & Gas Files for Bankruptcy

Houston-based company hopes to reach deal with its creditors on plan to restructure balance sheet

By **TOM CORRIGAN**
Updated July 15, 2015 12:44 p.m. ET

Sabine Oil & Gas Corp. filed for bankruptcy Wednesday, amid a steep drop in oil prices and missed interest payments on its debt.

What we knew in 2014…

Sabine Oil and Gas

» Privately held (market-driven model won't work)

Forest Oil

» Publically traded [NYSE:FST] (market-based model available)

Merger announced in May 2014

» New Company to be called "Sabine Oil & Gas Corporation"

» Traded under [NYSE: SABO]

Then…

Sabine Oil & Gas Corp files for bankruptcy in July 2015

Sabine Oil
financial statement assessment benchmark to agency rating

Using RiskCalc econometric model and YE2013 financials we calculate Sabine has 8.46% default probability

YE2014 financials show 11.32% default probability, implied rating in C category

SABINE OIL & GAS CORP (Sector mining)

Statement Date	12/01/2013
Current Date	03/01/2014
EDF Mode	FSO

▼ EDF

	1-Year
Expected Default Frequency (EDF)	8.46%
Bond Default Rate Mapping	Ca.dyn
Percentile	92.86%

SABINE OIL & GAS CORP (Sector mining)

Statement Date	12/01/2014
Current Date	03/01/2015
EDF Mode	FSO

▼ EDF

	1-Year
Expected Default Frequency (EDF)	11.32%
Bond Default Rate Mapping	C.dyn
Percentile	95.75%

Credit Opinion: Sabine Oil & Gas LLC

Global Credit Research - 13 May 2014

Houston, Texas, United States

Ratings

Category	Moody's Rating
Outlook	Rating(s) Under Review
Corporate Family Rating	*B3
Sr Sec Bank Credit Facility	*Caa1/LGD4
Senior Unsecured	*Caa2/LGD6
Speculative Grade Liquidity	SGL-3

* Placed under review for possible upgrade on May 6, 2014

Source: RiskCalc and Moody's.com

Forest Oil
market-based model has quick reaction to credit risk
a leading indicator of downgrades and default
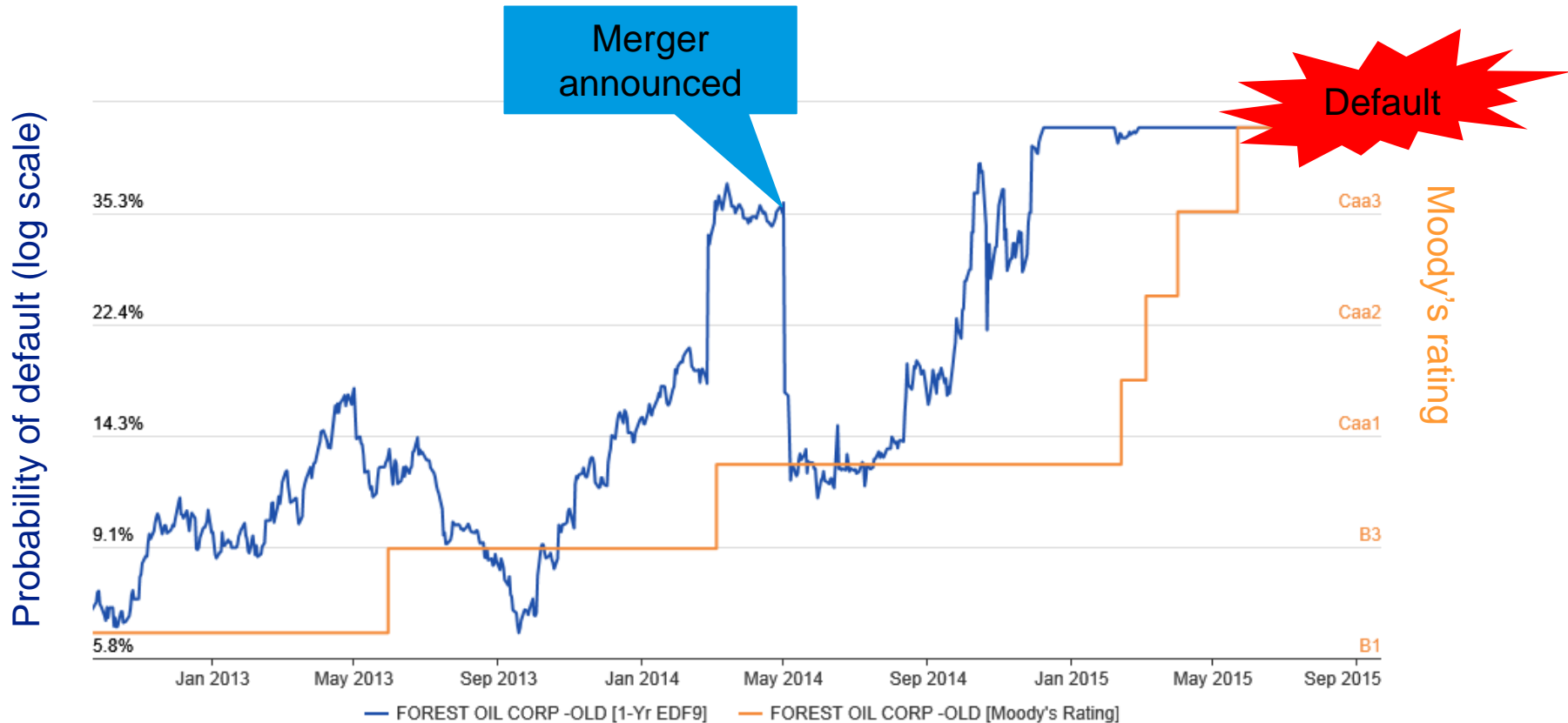
Source: CreditEdge

Checking the boxes for a good Credit Risk Model

Characteristics of Good Candidate Risk Factors

☐ Able to distinguish defaulters from non-defaulters (i.e., "action" in the underlying data sample)

☐ Clear, objective, and uniformly understood

☐ Capable of being assessed in a reasonable timeframe using accessible, consistently available data

☐ Possessing unique information value (i.e., non-duplicative, non-correlated)

☐ Supported by intuition and general business sense

☐ Measurable and verifiable (using historical data at some point in future)

Putting a credit model into practice

How are credit risk scores used?

They are used in a common and consistent language across the firm – a Master Rating Scale (MRS)
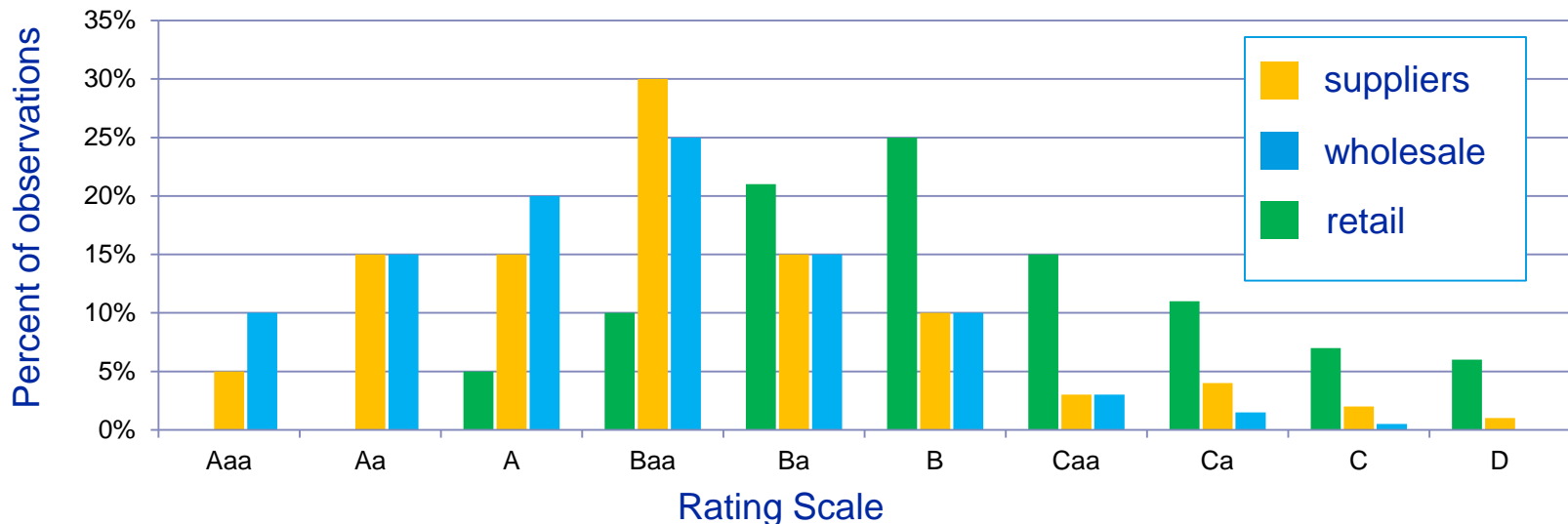
A Master Rating Scale helps ensure the interpretation of risk is consistent
- » **Across the firm (front to back office) globally**
- » **Across segments (portfolios)**
- » **Over time as underwriters and analysts change**
- » **Provides a good distribution for credit risk**

Credit Scores have many uses

» Pre-qualification

» Deal approval

» Exposure loss estimation

» Risk-based pricing

» Limit Setting

» Reserve estimation

» Risk monitoring

» Peer Comparison

Score | **Underwriting** | **Pricing** | **Limit Setting**

D

C

Ca

Caa

B

Ba

Baa

A

Aa

Aaa

Zero Limits

Low Limits

Medium Limits

High Limits
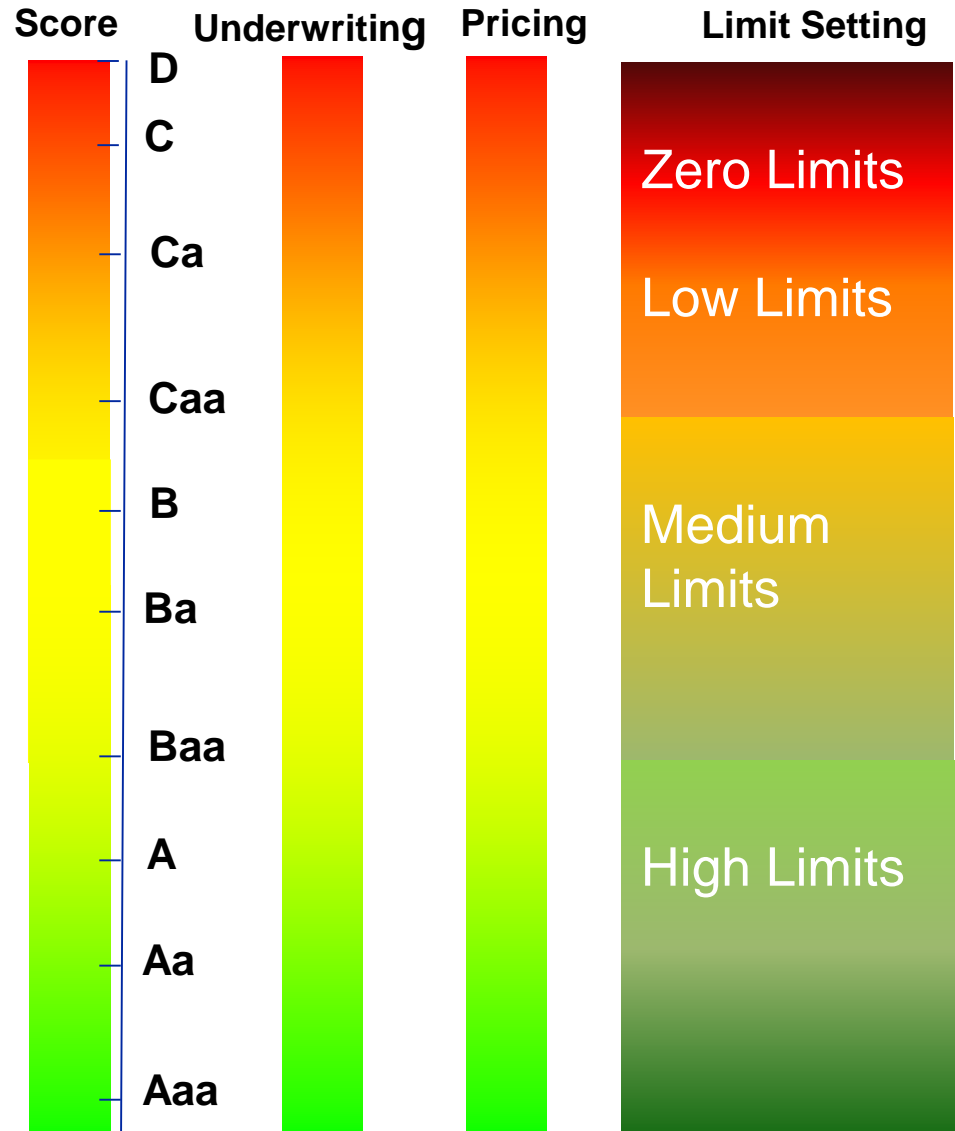
Credit Risk Management Best Practices

▸ **Granularity**
Increases the power to diversify the risk between similar credits

▸ **Ongoing Monitoring & Early Warning Signal**
Detects credit deterioration by combining relevant data and rank orders risk well

▸ **Assessment of Risk Drivers**
Relative contributions and sensitivity measures provide an understanding of the risk drivers by providing transparency

▸ **Benchmarking**
Benchmark an obligor to the sample pool and/or other firms in the portfolio or peer groups by industry and asset size

▸ **Comprehensiveness**
All encompassing qualitative, probability of default, recovery analytics solution that can be accessed across your organization

▸ **Extensive sample pool of data**
Comprehensive asset class data including financial statements and defaults from Moody's Analytics Credit Research Database

▸ **Transparency**
Documented approach, clear methodology, consistent inputs and outputs

▸ **Empirically Validated**
Sufficient data to separate development, validation samples and ongoing model performance

▸ **Accuracy Importance**
Model has good "power", high quality of credit ratings differentiation

▸ **Forward Looking**
Accounts for effects of Credit Cycle by Industry and Market Performance

MOODY'S
ANALYTICS

Building a scorecard from scratch

Desired end-state: a scorecard which blends empirically-derived risk measures with expert judgment

Example Quantitative Factors
Liquidity
Profitability
Debt Service Coverage
Leverage
………

Quantitative Model

Qualitative Overlay

Example Qualitative Factors
Market Share
Diversification
Mgmt Experience
Supplier Pressure
……..

Quantitative PD%

Qualitative Score (0-100)

Total Score

Final Output

Borrower Rating

Rating-Implied PD

Rating Grade	PD
1	0.08%
2	0.30%
3	0.67%
4	0.98%
5	1.58%
…	…

MOODY'S
ANALYTICS

First step: appropriately segment your portfolios for risk measurement purposes

General considerations for segmentation include:

» Sector

» Size (i.e., total assets or net sales)

» Ownership type (private vs. public ownership)

» Geography (country)

» Segment materiality

» Data availability

The portfolio should be divided into segments that share common risk characteristics
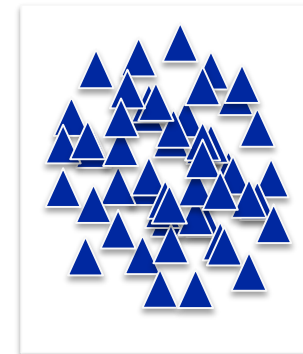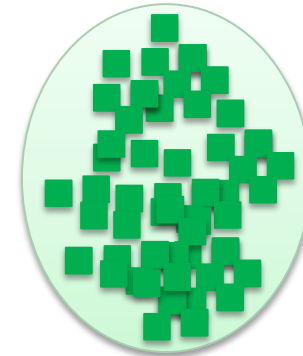
Once the portfolio has been segmented, there are fundamental decisions to be made about the scorecards

1. How many scorecards?

MORE ———————————————————————————— **LESS**

Accuracy, Stability and Consistency

Efficiency/ Maintenance

Flexible, Easy to Manage, Cost Effective

---

2. How customized?

High

Degree of Customization

Low

Cost Effective, Quick Delivery, Easy to Deploy

Standardized, Off the Shelf ← | **Leveraged and Tailored** | **Fully Customized** →

---

3. Modeling Approach

Statistically driven Expert opinion input

Purely Judgmental

Purely Empirical

EXPERT ← **HYBRID** **QUANTITATIVE** →

MOODY'S
ANALYTICS

Once you have decided on the approach: you must identify quantitative and qualitative factors to evaluate

Subject Matter Experts

» Lenders

» Underwriters

» Investors

» Credit Administrators

» Loan Reviewers

» Equity Analysts

Existing Precedents

» Vended models

» Documented academic models, frameworks, checklists, policies, etc.

» Existing model override reasons

Rating Agency Methodologies

» Sector-focused methodologies and ratings criteria

Brainstorming

» White-boarding sessions

» Surveys

» Loan file reviews

» Workshops

Moody's follows a well-established process when developing a risk rating scorecard

Quantitative Component

Data Preparation → Single Factor Analysis → Multi-Factor Analysis → Financial Model Selection

Qualitative Component

Identify Candidate Qualitative Factors → Gather Expert Feedback → Collect Qualitative Factor Data → Analysis and Selection of Qualitative Factors

Preliminary Scorecard → Validation → Calibration → Final Scorecard
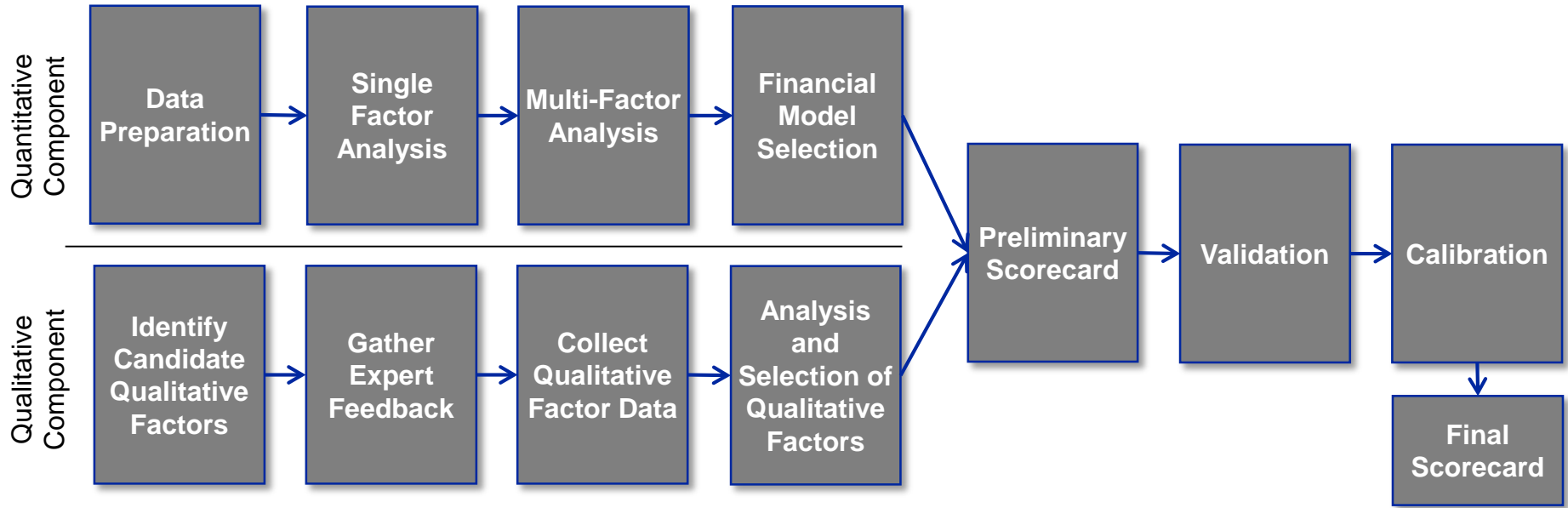
Example of Single Factor Analysis – Probability of Default
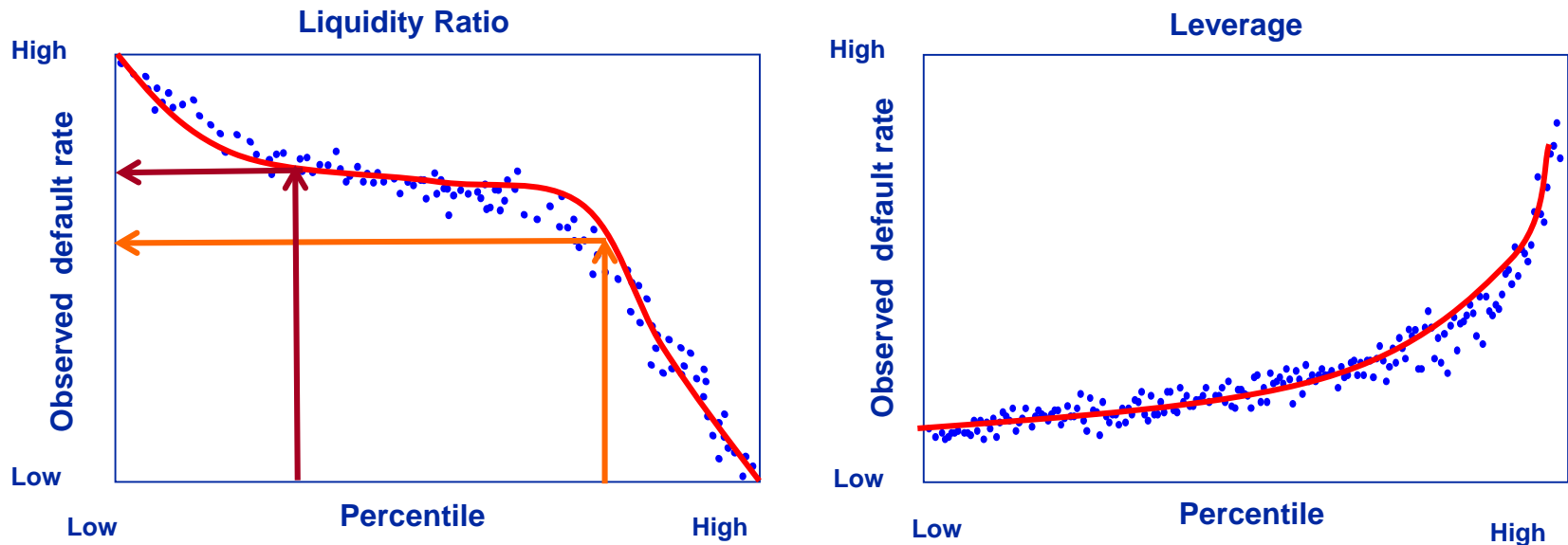
Each level of a ratio is associated with a different default rate, and their weights are chosen to maximize the fit between predicted default rate and observed default rate in the database

Example: If the Liquidity ratio for a firm is in the 70th percentile that means that 70% of the sample had a lower Liquidity ratio than that firm

Once a scorecard is developed, it is important to test its accuracy and stability through validation

What does validation involve?

» Validation is the process of rendering a statistically derived conclusion about the usefulness and reliability of a scorecard

» Validation makes use of historical data to determine whether or not the scorecard is robust

» Validation answers important questions about the accuracy and stability of the scorecard as a decision making tool

Why is validation important?

» Validation ensures that the scorecards are at least as good as an industry benchmark

» Regulators increasingly expect it – this trend is expected to continue and expand to more and more industries

» Validation can also help ensure that strong borrowers are not turned away – and weak borrowers are not extended credit

MOODY'S
ANALYTICS

Use the most accurate model, not a model that is "good enough"

1. **Accuracy** - Measures the likelihood of an expected outcome

2. **Power-** A accurate model should rank order risk correctly by using meaningful and predictive inputs

3. **Validation** - Measuring Model Performance

Assume 100 companies were rated one year ago and ten of those companies defaulted.

How good is your model? How much did you or could you lose?

Measuring Power – A Good Model
Companies That Defaulted
Highest — Lowest
Companies in Rank Order

Measuring Power – A Random Model (bad)
Companies That Defaulted
Highest — Lowest
Companies in Rank Order
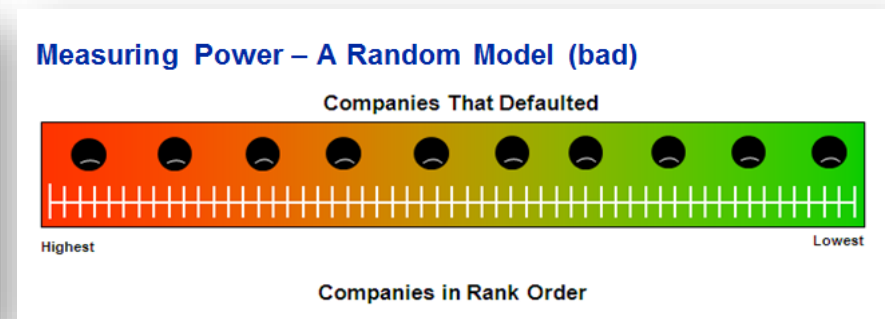
Measuring Power - a "Power Curve"
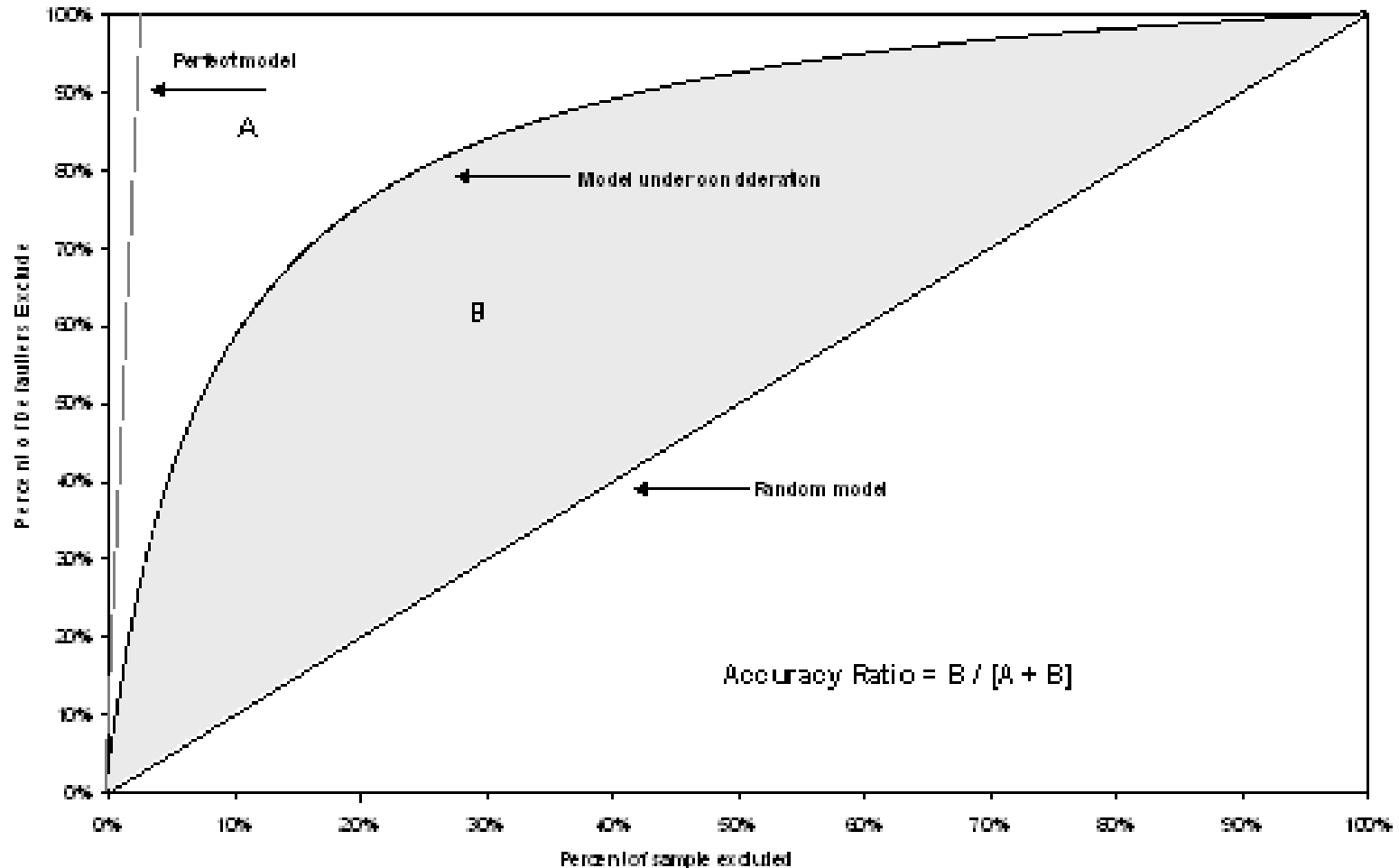
There is no "one-size-fits-all" approach for effective ratings, but there are common attributes

Attributes of Deficient Ratings

» Too few risk grades and / or **excessive concentration** in just a few risk grades

» **Lack of consistent risk grading** approach across portfolios (e.g., a "4" in CRE does not present the same risk as a "4" in C&I)

» Inconsistent interpretation or **unclear definition** across internal risk grades

» **Lack of clear written policies** describing what each risk grade actually means

» **Failure to decompose risk** into key drivers – separating borrower risk from facility risk

» **Lack of independence** across those who assign ratings and those who use ratings

Attributes of "Best Practice" Ratings

» Universal, consistent and **uniformly applied risk grades** serving as common language across institution (e.g., EL)

» Risk grades **mapped** to quantified absolute risk parameters (e.g., PD)

» **Sufficient granularity** across the master rating scale

» **Calibrated** to observed or benchmarked experience

» Grades assigned based on **objective (measurable)** versus subjective criteria

» **Actionable** and applicable to other credit-related activities

Q&A

Charles Dafler
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Mehna Raissi
Senior Director, Product Management
Mehna.Raissi@moodys.com

APPENDIX
Examples of Risk Rating Models

RiskCalc – Financial Statement Driven Model with Forward Looking Credit Cycle Adjustment
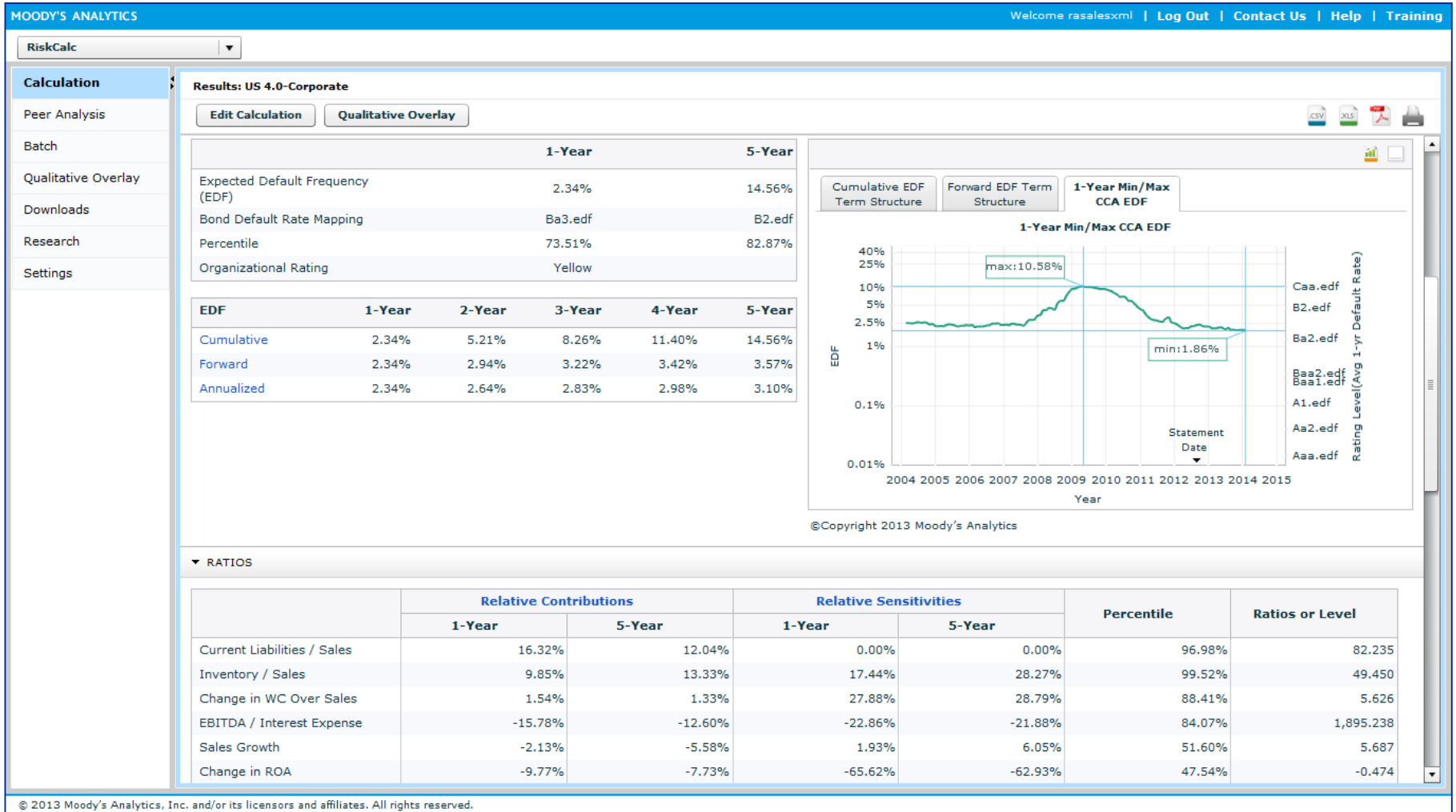
RiskCalc data source: the Credit Research Database

Country	Last Updated	Borrowers	Defaults	Default Range	Statements	Range	Range
South Africa	9-2015	111,949	5,749	1989-2014	375,144	1983-2015	1989-2015
Africa		111,949	5,749		375,144		
Australia	4-2006	31,577	2,715	1987-2002	102,276	1980-2002	1986-2002
China	7-2015	889,151	4,852	2003-2015	2,452,213	2000-2014	2003-2014
India	12-2014	20,390	-	-	65,315	1990-2013	-
Japan	4-2013	320,164	25,503	1990-2012	1,762,130	1982-2012	1983-2012
Malaysia	6-2012	16,666	222	2002-2011	58,262	1930-2014	1999-2010
Singapore	9-2015	5,844	127	2003-2015	37,616	1992-2014	1998-2014
South Korea	2-2007	145,237	25,883	1982-2005	541,388	1994-2005	1994-2005
Asia Pacific		1,429,029	59,302		5,019,200		
Austria	4-2015	75,945	10,025	1980-2014	292,509	1989-2014	1989-2014
Belgium	6-2015	568,067	91,096	1942-2015	5,275,625	1991-2015	1991-2014
Denmark	1-2015	318,705	88,797	1971-2014	1,836,168	1996-2014	1996-2014
Estonia	1-2015	113,488	7,240	2006-2014	463,217	2001-2014	2006-2014
Finland	1-2015	196,499	30,569	1994-2015	1,010,128	1996-2014	1996-2014
France	11-2015	2,315,034	229,666	1986-2015	13,854,858	1989-2015	1990-2015
Germany	12-2015	346,774	22,468	1995-2015	1,267,057	1987-2015	1987-2014
Iceland	1-2015	29,579	1,624	2011-2014	111,137	2004-2013	2007-2013
Italy	9-2015	1,296,840	212,017	1951-2015	6,300,954	1990-2014	1990-2014
Latvia	4-2015	109,129	6,803	2011-2015	316,099	1997-2014	1998-2014
Lithuania	1-2015	14,696	1,071	2010-2014	43,763	2002-2014	2004-2013
Netherlands	11-2015	1,164,242	61,109	1901-2015	6,773,207	1990-2015	1990-2015
Norway	1-2015	357,770	96,799	1920-2014	2,317,770	1994-2014	1994-2014
Poland	12-2014	146,109	-	-	611,967	1994-2013	-
Portugal	10-2015	637,525	134,483	1990-2015	3,485,375	1993-2014	1993-2014
Russia	7-2015	2,250,468	199,882	2001-2015	6,984,817	1999-2014	1999-2014
Spain	10-2015	2,104,044	203,609	1953-2015	13,350,565	1987-2014	1987-2014
Sweden	12-2014	493,203	108,477	1988-2014	3,220,963	1992-2014	1992-2014
Switzerland	4-2009	37,845	4,495	1996-2008	227,737	1996-2008	1996-2008
Ukraine	5-2015	563,396	33,836	1997-2014	2,489,553	1999-2013	1999-2013
United Kingdom	12-2015	2,448,284	139,261	1959-2015	7,427,198	1980-2015	1980-2015
Europe		15,587,642	1,683,327		77,660,667		
Brazil	3-2014	22,997	-	-	60,749	1993-2012	-
Canada	8-2015	61,270	4,950	1993-2015	399,096	1986-2015	1991-2015
Mexico	6-2008	5,686	1,869	1994-2005	16,993	1980-2007	1980-2007
United States	8-2015	345,516	59,265	1980-2015	1,995,515	1980-2015	1980-2015
Americas		435,469	66,084		2,472,353		
World		17,564,089	1,814,462		85,527,364		

Includes all records found in the "core CRD database" as of 12/01/15. The defaults counts are based on the most inclusive definition of default.
The full range of statement and default years is presented above. Only the last 10 years of history are presented in the "Statements & Defaults by Year" graphs below.

Moody's
ANALYTICS

RiskCalc Determines PD from Credit Ratios and Credit Cycle

Ratio drivers point out many weaknesses in firm's financials
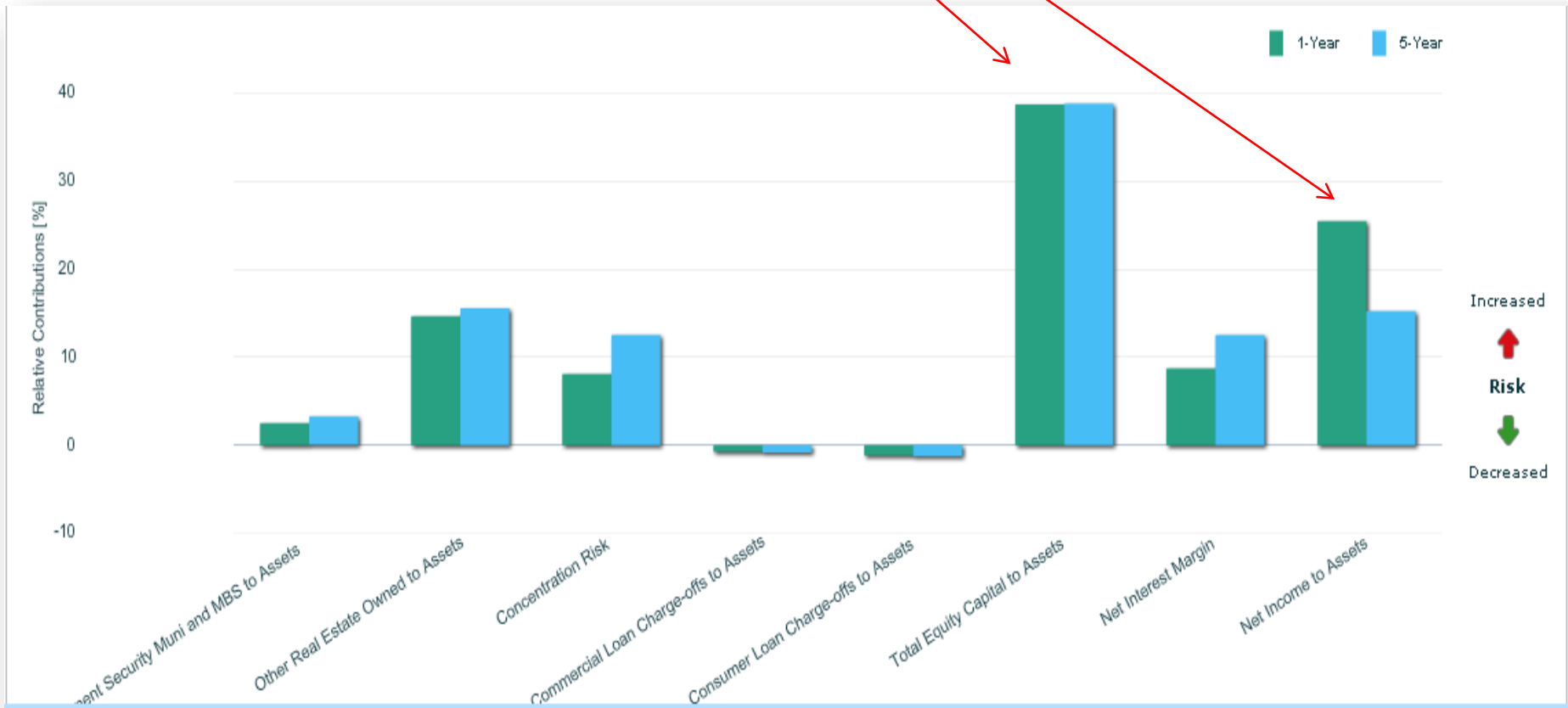
Compares borrowers against peer group for additional transparency

Incorporates qualitative factors in credit assessment

Qualitative factors focused on industry/market (customer power), management (experience in industry), company (years in relationship) and balance sheet factors (audit method)

MOODY'S
ANALYTICS

CreditEdge – Public Firm PD Model

CreditEdge determines PD Based on Forward-Looking Market Valuations

One-Year Expected Default Frequency (EDF™) Measures
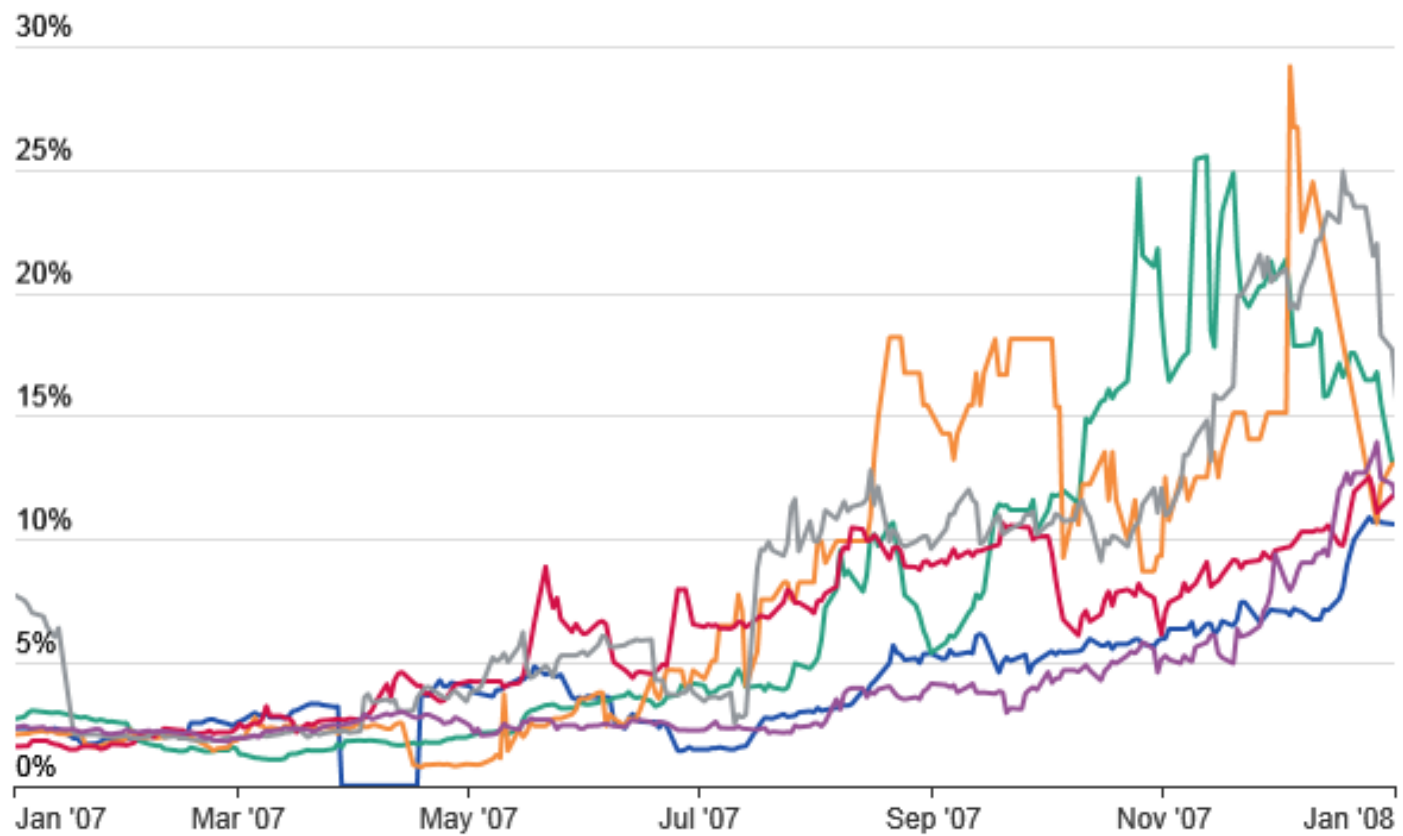
CreditEdge Excel Add-in – Risk Dashboard

Moody's ANALYTICS | **CreditEdge**

Calculate the change in value for the "EDF - 1 Year (Annualized)" data point and compare the company "EDF - 1 Year (Annualized)" to industry group statistics.
1. Enter up to 500 company identifers in cells B14 to B514.
2. Enter a date for which to view current values in cell B8.
3. Enter a prior date to compare current values to in cell B9.

| | | Current Date: | 7/9/2014 | | | | |
| | | Previous Date | 6/9/2014 | | | **Month** | <- choose previous period |

Enter Identifiers Below:	Company Name	Current EDF		EDF Change		CreditEdge Primary Industry	CURRENT RANK	RANK MOMENTUM
		EDF	Implied Rating	Prev EDF	ΔEDF (bps)			since last period
	company_name	ann_edf_1yr	edf_1yr_ir_mdy	ann_edf_1yr		ce_primary_industry		
ma_id-346091	FOREST OIL CORP	24.56%	Ca	24.44%	13	OIL, GAS & COAL EXPL/PROD	4TH QRTL	Improvement
ma_id-89614J	DYNEGY INC	7.52%	Ca	8.65%	-113	OIL, GAS & COAL EXPL/PROD	4TH QRTL	no change
ma_id-N05717	QUICKSILVER RESOURCES INC	21.92%	Ca	19.69%	223	OIL, GAS & COAL EXPL/PROD	4TH QRTL	no change
ma_id-985515	YRC WORLDWIDE INC	0.40%	B3	1.12%	-72	TRUCKING	3RD QRTL	Improvement
ma_id-579489	MCCLATCHY CO -CL A	7.97%	Ca	8.29%	-32	PUBLISHING	4TH QRTL	no change
ma_id-09776J	BON-TON STORES INC	9.21%	Ca	7.24%	197	CONSUMER PRODUCTS RETL/WHSL	90TH PCTL	no change
ma_id-708160	PENNEY (J C) CO	4.77%	Caa3	5.36%	-59	CONSUMER PRODUCTS RETL/WHSL	4TH QRTL	no change
ma_id-N01561	CENVEO INC	8.83%	Ca	10.66%	-183	PRINTING	90TH PCTL	no change
ma_id-875382	RADIOSHACK CORP	26.18%	Ca	16.35%	983	CONSUMER DURABLES RETL/WHSL	90TH PCTL	no change
ma_id-868035	SUPERVALU INC	2.10%	Caa2	2.39%	-28	FOOD & BEVERAGE RETL/WHSL	4TH QRTL	no change
ma_id-482584	SEARS HOLDINGS CORP	6.54%	Ca	5.69%	85	CONSUMER PRODUCTS RETL/WHSL	90TH PCTL	Deterioration
ma_id-253003	ALLIANCE ONE INTL INC	6.45%	Ca	5.58%	87	BUSINESS PRODUCTS WHSL	4TH QRTL	no change
ma_id-N08494	ACCURIDE CORP	5.50%	Ca	4.75%	75	AUTOMOTIVE	90TH PCTL	Deterioration
ma_id-171870	CINCINNATI BELL INC	3.52%	Caa3	3.41%	10	TELEPHONE	4TH QRTL	no change
ma_id-103304	BOYD GAMING CORP	3.79%	Caa3	4.26%	-47	ENTERTAINMENT & LEISURE	4TH QRTL	no change
ma_id-N00101	BEAZER HOMES USA INC	3.85%	Caa3	3.74%	11	CONSTRUCTION	4TH QRTL	no change
ma_id-147575	ISLE OF CAPRI CASINOS INC	1.60%	Caa2	3.50%	-190	ENTERTAINMENT & LEISURE	3RD QRTL	Improvement
ma_id-18605								
ma_id-90337T	UNITED STATES STEEL CORP	0.75%	Caa1	1.05%	-30	STEEL & METAL PRODUCTS	3RD QRTL	no change
ma_id-N03907	MERITOR INC	1.01%	Caa1	0.74%	28	AUTOMOTIVE	3RD QRTL	no change
ma_id-N07384	PEABODY ENERGY CORP	1.92%	Caa2	1.74%	18	OIL, GAS & COAL EXPL/PROD	3RD QRTL	no change
ma_id-442487	HOVNANIAN ENTRPRS INC -CL A	3.13%	Caa3	3.12%	1	CONSTRUCTION	3RD QRTL	no change
ma_id-N11286	ACCO BRANDS CORP	1.01%	Caa1	1.13%	-11	PRINTING	3RD QRTL	no change
ma_id-63890A	NAVISTAR INTERNATIONAL CORP	1.23%	Caa1	1.16%	7	AUTOMOTIVE	4TH QRTL	Deterioration
ma_id-N13900	SANDRIDGE ENERGY INC	0.45%	B3	0.73%	-28	OIL, GAS & COAL EXPL/PROD	2ND QRTL	Improvement
ma_id-466313	JABIL CIRCUIT INC	0.54%	B3	0.61%	-7	ELECTRONIC EQUIPMENT	3RD QRTL	no change
ma_id-N10790	BILL BARRETT CORP	0.93%	Caa1	0.78%	15	OIL, GAS & COAL EXPL/PROD	3RD QRTL	no change
ma_id-651290	NEWFIELD EXPLORATION CO	0.20%	B1	0.26%	-6	OIL, GAS & COAL EXPL/PROD	2ND QRTL	no change

Portfolio | Global EDF distribution | aux

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