What Does “Moneyball” Have to Do With Surviving the Next Downturn?

Presented by

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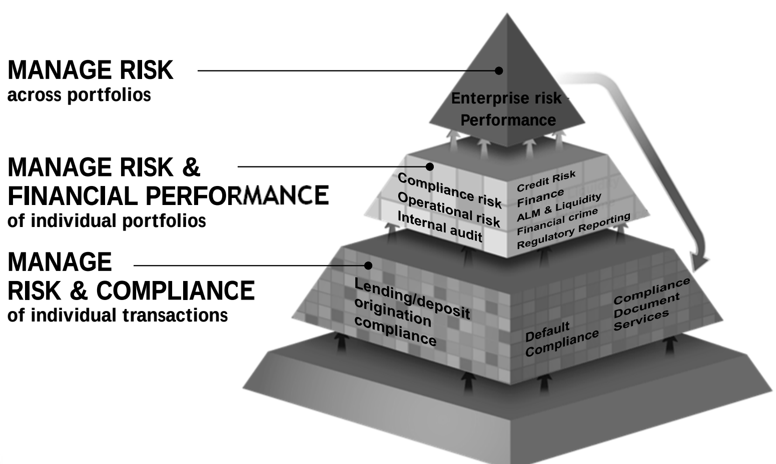
Wolters Kluwer Financial Services

Addressing enterprise-level challenges for businesses worldwide



“Moneyball” Clip on Baseball and Data Analytics

As in Baseball You Can Use Data to Win

- Improve your risk rating system using a data-centric approach.
- As in baseball, credit unions can better leverage data to improve results
- This is good business
- More profits, less risk and reduced risk to income and capital when we do see another downturn.

Your Core Competency: To Differentiate Risk!!!

- Main purpose of a financial intermediary
- What a risk rating system is all about: so make it a fundamental part of your business
  - Use it throughout your organization
  - Hold individuals accountable to do so
  - Drive your credit culture
- Use it to create a long-term competitive advantage
  - Science but also an Art; both can give you an advantage
  - Higher long term profitability
- Risk rating systems are not canned products.
  - Best systems are organic creations
  - Reflect the ratings philosophy and credit granting culture
  - Geared toward your strategic direction
  - Contain sufficient mechanisms for exceptions (but track them)
  - Evolve over time

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Risk Rating Systems: What Purpose Do They Serve?

- **Approval**: Improved loan screening and structuring at origination
- **Risk Based Pricing**: Ensure appropriate compensation for risk to earnings and capital
- **Monitoring**: Relationship management; frequency of reviews and visits
- **Capital Adequacy**: Determine allowance for loan and lease losses (ALLL)
- **Reporting**: Monitor changes and trends in risk levels, stratify and segment risk for strategic decision making.
- **Advanced Portfolio Management**: Reduce or increase exposures & concentrations; test correlations; hedge credit transactions
- **Regulatory Requirements**: Your regulators expect to see a thoughtful, systematic and consistently applied system

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What Are Financial Institutions Doing Today?

- Community
  - Mostly single factor
  - Limited granularity
  - Many use Excel or Word and are not very systematic or consistent
  - Limited observational data available
- National and regional
  - Dual dimensional systems
  - Substantially more granular
  - Large and complex systems
  - Often developed with internal IT and outside consultants
  - Many have been collecting large amounts of observational data

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Single Factor Risk Rating: Limitations

- Limited granularity (among pass credits)
  - Significant concentrations (i.e. 30% in some cases)
- Narratives too subjective and not applied consistently
- Does not adequately reflect difference in facility risk (C&I, CRE, AG, Small Biz, etc.)
- Too many exceptions and not tracked
- Too much emphasis on debt service coverage
  - Inadequate consideration to leverage, liquidity, etc.
- Few incentives for timely and accurate updates
- Limited back testing and validation
- Ordinal accuracy but limited cardinal accuracy

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Ordinal vs. Cardinal

Ordinal – Rank ordering

Which borrower is riskier A or B or C?

Cardinal – Adding value that imply the relative difference

How much riskier is borrower A compared to B or C?

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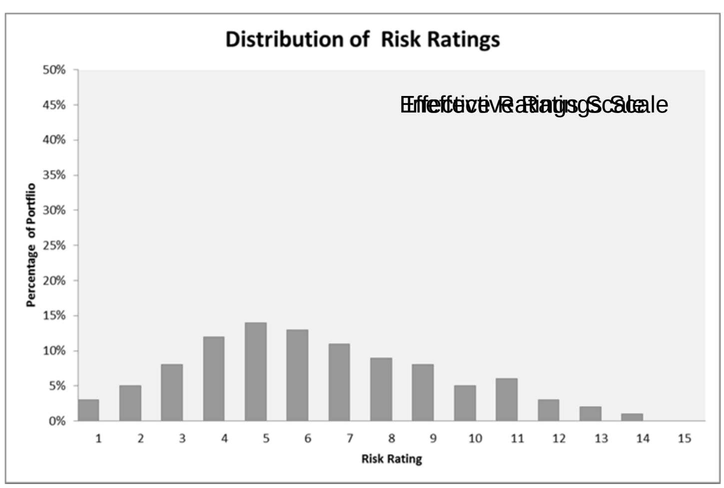
Granularity



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Dual Dimensional System

Probability of Default (PD)	×	Loss Given Default (LGD)	×	Exposure at Default (EAD)	=	Expected Loss (EL)
Likelihood of default over specific time period		Loss as a % in the event of default (1- recovery)		Outstanding balance at the time of default		Estimated loss for the credit
3%		**20%**		**$1 million**		**($6,000)**

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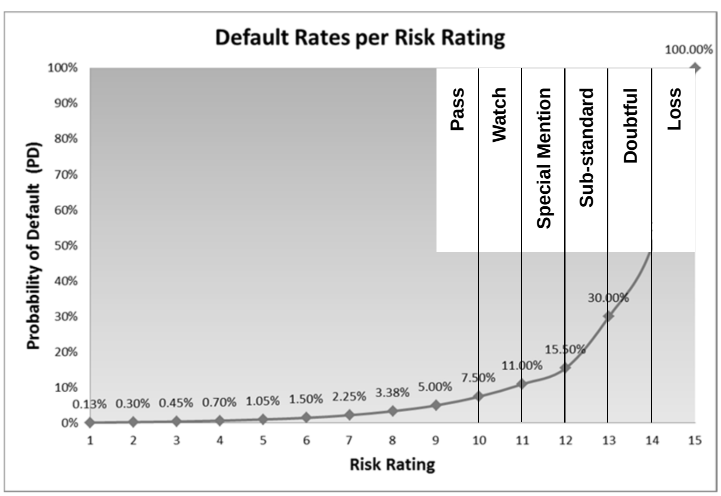
Probability of Default (PD)



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Facility Ratings - Hypothetical

Facility Rating	Loss Given Default	Description of Rating
A	10%	Cash collateral & closely monitored
B	20%	LOC supported by additional real estate collateral and strong guarantors
C	30%	Fully followed asset based LOC with strong guarantors
D	40%	Asset based LOC with marginal guarantors
E	50%	Unmonitored
F	60%	Unsecured

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Dual Dimension Expected Loss Percentages 90 Buckets (15 PD X 6 LGD)

Facility Rating

Increasing loss given default →

Increasing Probability of Default ↓

	LGD	10%	20%	30%	40%	50%	60%
PD		A	B	C	D	E	F
0.13%	1	0.01%	0.03%	0.04%	0.05%	0.06%	0.08%
0.30%	2	0.03%	0.06%	0.09%	0.12%	0.15%	0.18%
0.45%	3	0.05%	0.09%	0.14%	0.18%	0.23%	0.27%
0.70%	4	0.07%	0.14%	0.21%	0.28%	0.35%	0.42%
1.05%	5	0.11%	0.21%	0.32%	0.42%	0.53%	0.63%
1.50%	6	0.15%	0.30%	0.45%	0.60%	0.75%	0.90%
2.25%	7	0.23%	0.45%	0.68%	0.90%	1.13%	1.35%
3.38%	8	0.34%	0.68%	1.01%	1.35%	1.69%	2.03%
5.00%	9	0.50%	1.00%	1.50%	2.00%	2.50%	3.00%
7.50%	10	0.75%	1.50%	2.25%	3.00%	3.75%	4.50%
11.00%	11	1.10%	2.20%	3.30%	4.40%	5.50%	6.60%
15.50%	12	1.55%	3.10%	4.65%	6.20%	7.75%	9.30%
30.00%	13	3.00%	6.00%	9.00%	12.00%	15.00%	18.00%
50.00%	14	5.00%	10.00%	15.00%	20.00%	25.00%	30.00%
100.00%	15	10.00%	20.00%	30.00%	40.00%	50.00%	60.00%

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Dual Dimension Rating System: Benefits

- Matrix of two dimensions to quantify risk
- More precise quantification of risk (cardinal)
- More precise differentiation of borrowers (ordinal and cardinal)
- Facilitates risk-based pricing
- Better assessment of ALLL
- Helps allocate capital better across lines of business
- More sophisticated analysis of changing conditions (i.e. stress testing & risk migration)
- Facilitates more sophisticated portfolio analysis
- Full adoption builds confidence and solidifies credit culture

Take Steps Toward a Data-centric or Even a Dual Dimension System

- Deploy a well-designed single factor system
  - Use consistently applied and weighted objective and subjective factors
  - Well-articulated criteria for subjective factors
  - Use a menu-driven system with the options and definitions
- Process to review credits with changed ratings: automatic triggers
- Collect default and loss data; ratings changes; benchmark
- Together these move toward cardinal accuracy where you can assign probability of default
- Test and validate the model

Organizational Approach: Move to Dual Rating System

- Working team including executive management, credit, lenders, loan review & information technology
- Consensus on key components of the system
  - Granularity
  - Subjective factors; Objective factors
  - Loan categories to cover separately (industry, product, etc.)
- Use a third party tool or develop the model with internal IT resources
- Create an internal program of continuous improvement

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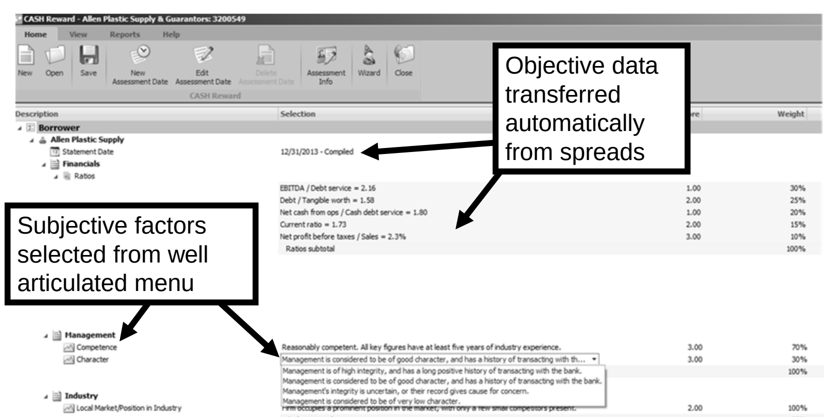
Our Approach to Risk Ratings



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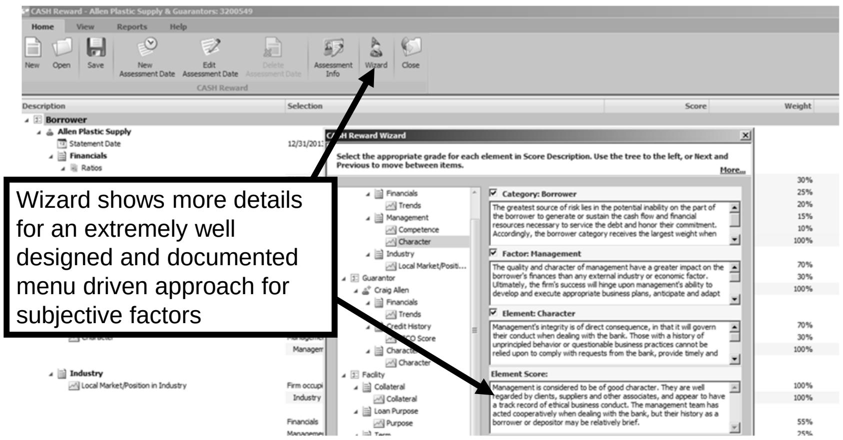
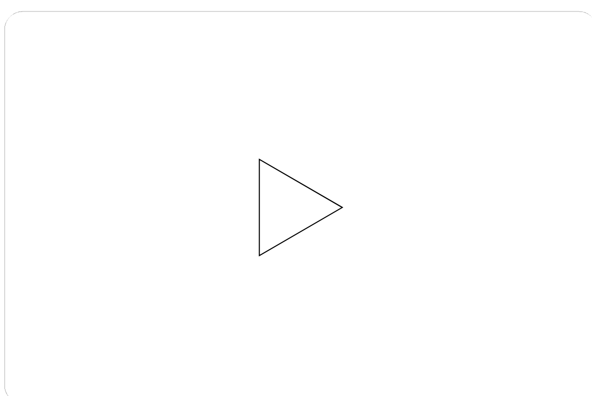


Wizard shows more details for an extremely well designed and documented menu driven approach for subjective factors

Baseball Video



Conclusions

- Improve your Single Dimension System
  - Collect data (observed defaults and losses)
  - More granularity
  - Deploy and use throughout and train, train and train
  - Reuse and consume all your data – spreading, core, etc.
  - Deploy a solution with straight thru processing
- Develop a long-term plan for a Dual Dimension System
  - Gain consensus
  - Build your data and benchmark
  - Reuse and consume all your data – spreading, core, etc.
  - Deploy a solution with straight-thru processing

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