

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

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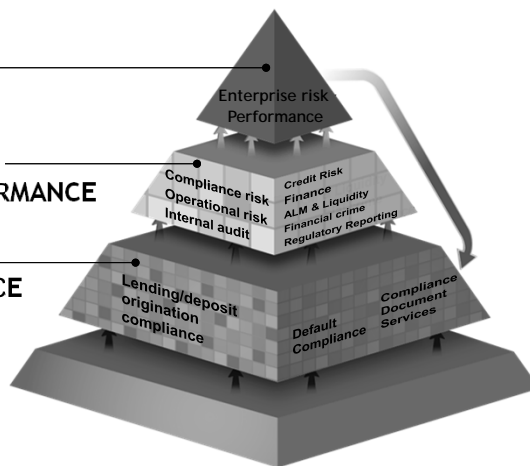


## Addressing enterprise-level challenges for businesses worldwide

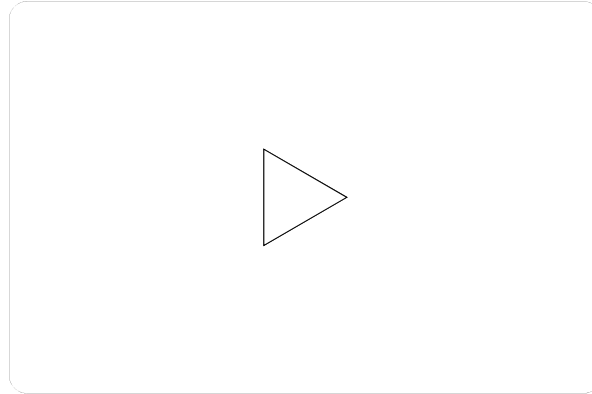
MANAGE RISK  
across portfolios

MANAGE RISK &  
FINANCIAL PERFORMANCE  
of individual portfolios

MANAGE  
RISK & COMPLIANCE  
of individual transactions



## “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



## 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



## 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



## 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



## Ordinal vs. Cardinal

**Ordinal** – Rank ordering

Which borrower is riskier A or B or C?

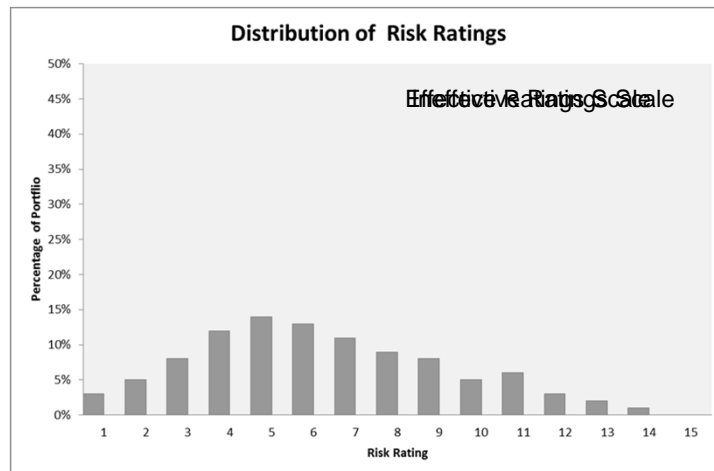


**Cardinal** – Adding value that imply the relative difference

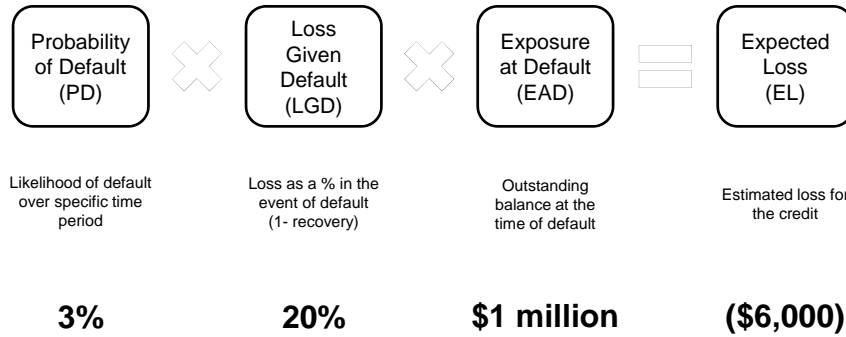
How much riskier is borrower A compared to B or C?



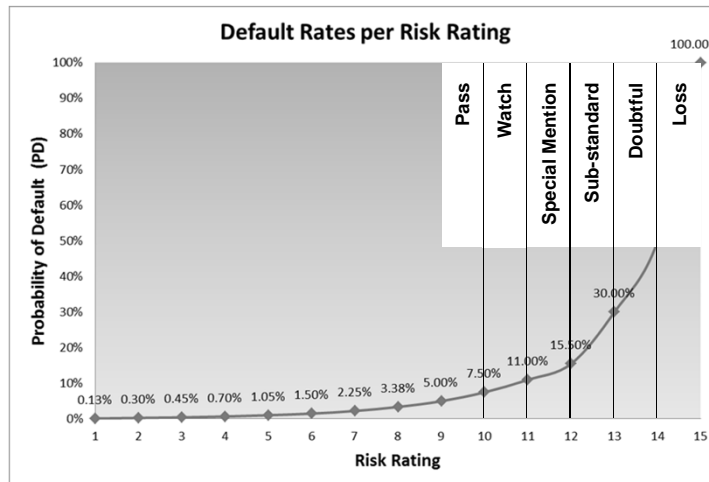
## Granularity



## Dual Dimensional System



## Probability of Default (PD)



## 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



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

		Facility Rating						
		Increasing loss given default →						
		LGD	10%	20%	30%	40%	50%	60%
Increasing Probability of Default ↓	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%



## 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



## Our Approach to Risk Ratings

**Objective data transferred automatically from spreads**

**Subjective factors selected from well articulated menu**

Description	Score	Weight
EBITDA / Debt service = 2.16	1.00	30%
Debt / Tangible worth = 1.58	2.00	25%
Net cash from ops / Cash debt service = 1.80	1.00	20%
Current ratio = 1.73	2.00	15%
Net profit before taxes / Sales = 2.3%	3.00	10%
Ratios subtotal		100%
Management	3.00	70%
Character	3.00	30%
Industry	2.00	100%
Industry total		100%



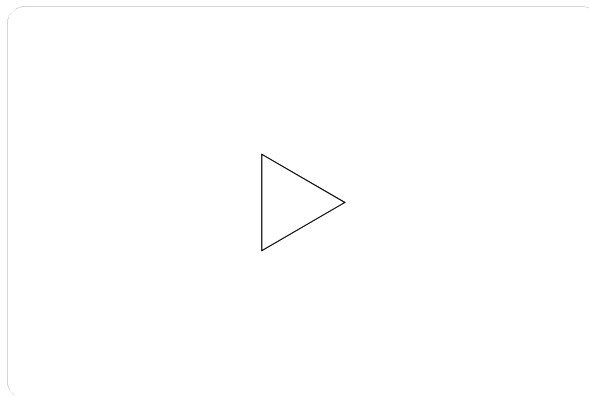
## Our Approach to Risk Ratings

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

Description	Selection	Score	Weight
<b>Borrower</b>			
Allen Plastic Supply			
Statement Date	12/31/2011		
Financials			
Ratios			
Character			
Industry	Local Market/Posit...		
Guarantor	Craig Allen		
Financials			
Trends			
Credit History			
Agency Score			
Character			
Facility			
Firm occup			
Industry			
Collateral			
Loan Purpose			
Financials			
Management			
Character			
Element Score:			
Category: Borrower		30%	25%
The greatest source of risk lies in the potential inability on the part of the borrower to generate or sustain the cash flow and financial resources necessary to service the debt and honor their commitment. Accordingly, the borrower category receives the largest weight when		20%	15%
Factor: Management		70%	30%
The quality and character of management have a greater impact on the borrower's finances than any external industry or economic factor. Ultimately, the firm's success will hinge upon management's ability to develop and execute appropriate business plans, anticipate and adapt		100%	
Element: Character		70%	30%
Management's integrity is of direct consequence, in that it will govern their conduct when dealing with the bank. Those with a history of unprincipled behavior or questionable business practices cannot be relied upon to comply with requests from the bank, provide timely and		100%	
Element Score:		100%	100%
Management is considered to be of good character. They are well regarded by clients, suppliers and other associates, and appear to have a track record of ethical business conduct. The management team has acted cooperatively when dealing with the bank, but their history as a borrower or depositor may be relatively brief.		55%	74%



## 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

