Linking Risk Appetite to Decision Making

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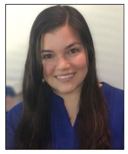

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What are Risk Appetites?

- A high level risk related multidimensional utility function for the firm
  - Like all utility functions, even seemingly "simple" phrases may be fraught with complexity (e.g., how do you comprehensively answer the question of "how do you feel today?")
  - Utility function can change over time and needs to be reassessed after major events
- A set of conditions that help boards and management determine that their strategic goals are feasible and properly sized in risk space
- Strongly held and internalized convictions/beliefs buttressed by experience about the risk profile a company is truly prepared to live with.
  - Consequences of appetite statements must be comprehensively and continually vetted, challenged and believed
  - Hard to do given that constituencies can have changing views, especially post event
  - Have to find an acceptable arrangement that meets the utility functions of multiple constituencies (next slide). We seek a high level acceptable solution – a very difficult standard to meet that requires time to create, discuss and internalize.

Kenneth Arrow's "Impossibility Theorem" Demonstrates Challenges That Can Be Faced By Aggregating the Preferences of Groups Like Boards or Senior Management Committees

- Suppose there are 3 people on a board:

- Person 1's preferences: A>B>C
- Person 2's preferences: B>C>A
- Person 3's preferences: C>A>B

- Conclusions:
- 2/3 of the board prefers A to B
- 2/3 of the board prefers B to C
- 2/3 of the board prefers C to A

a) Preferences of "rational" individuals, when aggregated, can produce seemingly intransitive collective preferences within populations like boards or committees.

b) Result: It can be hard to yield a stable consensus within groups.

c) This is why the risk appetite process must be continually updated/discussed/challenged/vetted so that when events occur, the board and management remain on the same page and not engage in destructive finger pointing, poising the firm to persevere.

Risk Appetites Are Not….

- A replacement for strategy and often give very limited insight into strategy. For example:
  - Volatility appetites give no insight into which business activities should generate the volatility.
  - Irrespective of the risk appetite, a firm which positions itself as a CAT writer (a strategic choice) should not be taking most of their risk in the product casualty space.
- A "forever thing." Firms need to continually assess if their risk appetite statements are appropriate given market conditions and past events.
  - Large losses or periods of turmoil give boards a chance to internalize the theory and assess if the risk appetites are still fit for purpose.

Principles of Risk Appetites Per the CRO Council [1]

In establishing a risk appetite framework, companies should consider the following core principles:

- Establishing a comprehensive risk appetite framework is a complex endeavor, and should be crafted via an iterative process, which requires diligence, patience, collaboration, and flexibility;
- The diverse interests of parties relevant in achieving company objectives should be considered;
- Managing within risk appetites should be realistically achievable;
- The risk appetite framework should identify and quantify risk preferences for material risks;
- Risk appetites should be reassessed after significant events and reviewed by the Board at least annually.

- [1] Quoted from: http://www.crocouncil.org/images/CROC_CROF_RA_survey_publication_final.pdf

Principles of Risk Appetites Per the CRO Council [2]

When embedding risk appetite, companies should consider the following core principles:

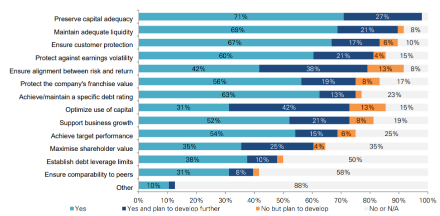
- The risk appetite framework should be cascaded to business segments to ensure decisions are consistent with enterprise objectives, tolerances and limits;
- Measurements should be used to provide evidence of risk appetite and strategy alignment at the enterprise and business segment levels;
- For risks that are inappropriate to quantify, qualitative boundaries should be developed and assessed.

Measurement produces stronger management!

- [2] Quoted from: http://www.crocouncil.org/images/CROC_CROF_RA_survey_publication_final.pdf

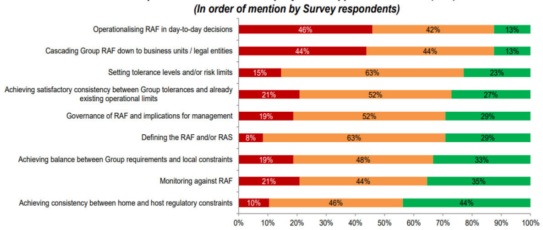
Goals of Risk Appetite Framework Per a Survey Conducted by the CRO Council [3]

Goals for Risk Appetite Framework
(In order of mention by Survey respondents)



[3] **Excerpted from: http://www.crocouncil.org/images/CROC_CROF_RA_survey_publication_final.pdf**

Improvements needed in company's Risk Appetite Framework (RAF)
(In order of mention by Survey respondents)



Excerpted from: http://www.crocouncil.org/images/CROC_CROF_RA_survey_publication_final.pdf

So What Stands in the Way of Cascading Risk Appetites?

- Disclosure issues – many firms do not disclose details of risk appetites to organizational levels below the most senior of leaders (information deemed too confidential)
- Even if disclosed, many managers are much more fluent in financial space (i.e., accounting information) than in risk space.
  - Unlike accounting data, risk is not additive
  - Intuition behind covariance relationships is often weak
- Organizational issues – absence of high functioning voluntary associations and control committees to propagate common vocabulary to business leaders
- Are risk appetites, even if shared widely, **really really** bought into by relevant parties? Will some parties change their understanding of what they deemed to be acceptable after large loss events?
  - Companies go through stop/start reactions to losses that were entirely consistent with risk appetites. These responses sow confusion and demonstrate lack of buy in of risk appetite frameworks.

Questions for Management per COSO [4]

Questions for management

Can all of management—not just the chief risk officer—articulate how risk is considered in the selection of strategy or business decisions? Can they clearly articulate the entity's risk appetite and how it might influence a specific decision? The resulting conversation may shed light on what the mindset for risk taking is really like in the organization.

[4] **Quoted from https://www.coso.org/Documents/2017-COSO-ERM-Integrating-with-Strategy-and-Performance-Executive-Summary.pdf**

Consequences of a Risk Appetite Framework

- Capacity/tolerance for risk is not unbounded – at some point too much risk or the "wrong kind of risk" produces unacceptable outcomes and so should be inconsistent with a firm's risk appetites
- Companies should budget the use of risk capacity in a manner that is consistent with strategy, all as circumscribed by the risk appetite framework
- Companies should produce risk budgets to ensure exposures are sized in a quantum consistent with risk appetites
  - Sizing is contained via the use of an approved set of limits
  - The existence of an approved set of individual limits and the aggregation of the overall portfolio of individual limits (via capital models) helps ensure that exposures reside within the risk appetite framework.
- Top of the house limits should be approved by the Board.
- Capital models should be used to test that the risk appetite framework is consistent with the full deployment of approved limits
- Once limits are approved, they should be cascaded, disaggregated and allocated to all relevant subgroups (e.g., countries, divisions, lines of business and individual underwriting centers).
  - Capital model should demonstrate that the sum of these disaggregated/cascaded limits are consistent with the top of the house limits approved by the Board

Risk Limits Should be Closely Intertwined with Strategy Which Itself is Intertwined With Risk Appetites

- Limits express strategy, they do not set it
- Limit frameworks should consider reputational risk tolerances, peer group considerations, expectations of stakeholders and insights learned from stress testing exercises, the size of commercial opportunities and the potential for seemingly separate risks to be correlated
- Limit sizing should correlate to areas where firms believe they have a strategic edge (and the converse)
- Limit sizing correlates with tolerances for volatility
  – e.g., larger limits suggest higher tolerance for volatility
- Strategic plans need to be given the risk limit capacity to operate within
- Improper sizing of individual limits and the portfolio of individual limits can cause plan/strategy to fail, and risk appetites to be pierced
- The process by which limits are set should also be (using words from a CRO Council) an iterative process, which requires diligence, patience, collaboration, and flexibility; the diverse interests of parties relevant in achieving company objectives should be considered[5].
  – This iterative process promotes fluency of risk concepts and makes cascading of limits and appetites more effective and understandable; it promotes ownership of the controls process and the outputs generated.

[5] See http://www.crocouncil.org/images/CROC_CROF_RA_survey_publication_final.pdf

20 Principles Which Support the 5 Components of COSO's Risk Management Framework [6]

Governance & Culture
1. Exercises Board Risk Oversight
2. Establishes Operating Structures
3. Defines Desired Culture
4. Demonstrates Commitment to Core Values
5. Attracts, Develops, and Retains Capable Individuals

Strategy & Objective-Setting
6. Analyzes Business Context
7. Defines Risk Appetite
8. Evaluates Alternative Strategies
9. Formulates Business Objectives

Performance
10. Identifies Risk
11. Assesses Severity of Risk
12. Prioritizes Risks
13. Implements Risk Responses
14. Develops Portfolio View

Review & Revision
15. Assesses Substantial Change
16. Reviews Risk and Performance
17. Pursues Improvement in Enterprise Risk Management

Information, Communication, & Reporting
18. Leverages Information and Technology
19. Communicates Risk Information
20. Reports on Risk, Culture, and Performance

- **This tableau shows that risk appetites are part of a comprehensive control framework; there is an interconnectedness between each of COSO's 20 components.**
- ***There should therefore be multiple opportunities*** **for firms and their employees to discuss the implications of risk appetites and their relationship to other control activities, all of which promotes cascading of the risk appetite framework.**

[6] **Excerpted from: https://www.coso.org/Documents/2017-COSO-ERM-Integrating-with-Strategy-and-Performance-Executive-Summary.pdf**

How to Promote the Cascading of Risk Appetites

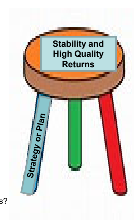
- We can draw upon the experience of financial accounting control systems. Such systems' processes and outputs are ***widely dispersed, discussed, and understood***, both internally and externally, and across multiple levels of the organization
  – All business leaders play a role in the financial planning process; the key objectives of the financial planning process are widely discussed across the firm and even in the guidance given during earnings calls.
  – The Board approves the financial plan.
  – Business leaders are responsible for preparing budgets subject to higher level guidance and are expected to justify plans to grow and shrink. Business leaders are expected to be fluent in their budgets.
  – Individual profit center financial budgets are aggregated to yield a firmwide budget, the outputs of which are reconciled to firmwide planning objectives which themselves have been heavily vetted with the Board.
  – Performance and variance reporting are routinely performed at the profit center level, divisional level, firmwide level, etc. Business leaders are held accountable for material deviations from budget.
  – Performance and variance reporting is a key output for Board level review.
- **Since Risk is the fuel source that produces all financial results, there must be a correspondence between every number in a financial plan, a financial budget and a performance/variance reporting analysis**
  – **The challenge is to produce risk system processes and outputs which cause risk information to be as widely dispersed, discussed and understood as is financial accounting information**

To Help Promote Cascading – Produce a "3 Legged Stool" to Create The Correspondence Between Financial Expectations and Results and Those in Risk Space

1. Strategy or Plan – in Financial and Risk Space (e.g., risk strategy)
2. A Risk Budget that is consistent with risk appetite framework and strategic goals
   - A budget presupposes a limit framework. Else, how would we know how much is too much?
3. Performance monitoring in risk and financial space

First Leg of the Stool: Some Basic Planning/Strategy Themes

- Which businesses do we have an edge in and why? How do we make money?
- For businesses that have degrading risk adjusted returns, what is the plan? For businesses that have high expected risk adjusted returns, what is the plan?
- What minimum return hurdle and why?
  - For businesses that meet the hurdle, how do we think about intelligent growth?
  - For businesses that do not meet the hurdle, how do we think about responsibly sizing?
- How do we size each business and portfolio of businesses?
  - Competitor considerations
  - How much would we risk on any one business, any country or region, any client, any one theme, a correlated theme (e.g., financial market stress conditions), or businesses (i.e., clash events), etc.
  - How much would we risk on any one event (e.g., one CAT) or series of events over a given period of time (e.g., annual collection of CATs)
  - How do we prepare for unusual stress events and if they occur are they consistent with business plans?
- What environment favors our strategy? What environment doesn't favor our strategy?
- What environment are we in – Favorable, Unfavorable or Neutral? Are we well positioned?
- Competitive landscape and our placement in the landscape. Are we in the right place? For example, in terms of volatility of earnings, sizing of significant loss events, etc.
- Adequacy of capitalization given M&A plans, dividend plans, stress scenarios, etc.
- Rating agency considerations
- Investor relationships and expectations (banks, debt holders, stockholders, etc.)

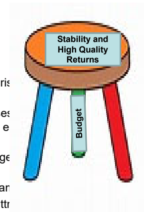


Expressing Risk Information in More Intuitive Language Promotes its Use and the Cascading Process

- Expressing risk information in more intuitive terms is fundamental to effective cascading
- For example, the chart below expresses the consequences over a 5 and a 10 year period of an appetite statement that defines acceptable probabilities of being unprofitable in any one calendar year.
  - The 5 and 10 year results might not be intuitively obvious from risk information expressed in any one year.

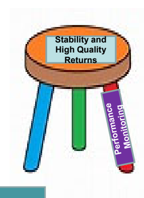
Probability of Being Unprofitable in any one Calendar Year	Probability of Having at Least One Unprofitable Year Over a 5 Year Period of Time	Probability of Having at Least One Unprofitable Year Over a 10 Year Period of Time
15%	56%	80%
10%	41%	65%

Second Leg of the Stool: Examples of Risk Budget Considerations



- Budget is a type of "skeleton" that gives shape to the plan/strategy.
  – A plan presupposes the existence of a budget and the converse.
- For each business, do ground up analysis of expected volume and related ris
  – Do further aggregations by theme, type of stress, country, clash event, etc.
- Show expected returns in financial space and risk space for each businesses basis of correlated themes, type of stress, country, clash event, etc. for the e whole.
- For sizing of loss events as well as sizing of potential exposures (clash, large consistency with business plan.
- Demonstrate consistency of budget with business plan/strategy and limit fran
- Demonstrate that largest exposures and growth plans coincide with most attr activities and those that the firm has an "edge" in.
- Budget should be shown in terms of different return periods (e.g., 1:20 return periods, 1:50, 1:100, 1:250 etc.) and at the portfolio level.
  – Ensure consistency of these budgets with risk appetites.
- Demonstrate that risk appetites are consistent with full limit deployment, allowing the firm to expand rapidly/nimbly should unusual opportunities arise.

Third Leg of the Stool: Examples of Performance Measurement and Reporting Considerations



- Risk is a scarce resource and so its use must be monitored and reported. That's why firms should budget for it.
- Just like one examines variances from financial budget, the same should be done in risk space
- Businesses should be able to explain financial and risk budget variances of size with routine variance reporting to Board. The act of communicating risk information promotes fluency. Possible venues for routine reporting include:
  – Board meetings
  – Senior management meetings
  – Risk committee meetings
  – Other voluntary associations of senior leaders

The more venues which include discussions of risk information, the better the level of risk fluency will be over time

The 3 Legged Stool Concept Can Also Be Applied at the Individual Business Level Which Further Promotes Risk Based Vocabulary and Effective Cascading

- Well run businesses in successful organizations create their own version of the 3 legged stool.
- They produce strategic plans – risk and financial based - incorporating many of the same dimensions explored at the enterprise level.
- They produce financial and risk budgets and engage in variance monitoring at those levels.

Rationale:

- Talent is Measurable. To the trained eye, great talent is relatively easy to identify, but very difficult to replicate.
- Talent is manifested by evidence of high quality processes
- If a business can demonstrate that it has a philosophy which underscores its success, and if they follow that philosophy when they put on their risks, and the firm can measure that the philosophy is being followed, and the activity makes money over time, it has produced the very definition of high quality returns – returns that derive from a process which can be replicated over time.
- Markets/Investors pay a premium for successful processes.

Talent is Measurable and Reflects Process – An Example from the World of Fine Arts [7]

…what were the chances that an important decorative art drawing, executed by perhaps the most important artist of the Italian Renaissance, would be discovered in the collection of the Cooper-Hewitt, National Design Museum? Well, as it turned out, pretty likely. It was no accident that in the spring of 2002, Sir Timothy Clifford, then Director of the National Museum of Scotland, began a two month project to survey the substantial collection of Italian drawings here at the museum. …

Every day for weeks "Sir Tim" (as we fondly called him) examined hundreds of drawings. Finally, as he examined the contents of a box that contained drawings for lighting fixtures, he stood up and waved me over excitedly. "Do you know what you have here?" … "This is a drawing by Michelangelo." **Later in an interview with the New York Times he remarked that he knew instantly that it was by Michelangelo as soon as he laid eyes on it. As he described his reaction, "It was just as I recognize a friend in the street or my wife across the breakfast table."**

[7] Source: quoted from https://www.cooperhewitt.org/2013/03/24/hidden-treasure/

Another Example of Measuring Talent and Process - The World of Sports[8]

BASEBALL; The Art and Science of a Master Pitcher
By JACK CURRY MARCH 30, 2003

Tuck your left shoulder in closer to your chest. Slide your left foot toward third base. Keep your right hand near your glove. Lower your chin. Adjust your line of sight so you see the catcher and the batter, not the fans behind the plate or the players in the third base dugout. Envision where you want the pitch to land. Wait. Stop.

Greg Maddux was enumerating everything he does to feel comfortable before throwing a baseball, but then he suddenly stopped. His words shifted from warp speed to no speed. Did Maddux regret disclosing something secretive about his preparation? Hardly. He was bored with repeating a list that clogs his mind so readily that it is habitual.

"There's like a hundred more, dude," Maddux said.

…. Maddux is an artist when he ascends a mound, a robotic right-hander for the Atlanta Braves who the pitching coach Leo Mazzone said "takes the word pitcher to the highest level."

[8] quoted from https://www.nytimes.com/2003/03/30/sports/baseball-the-art-and-science-of-a-master-pitcher.html

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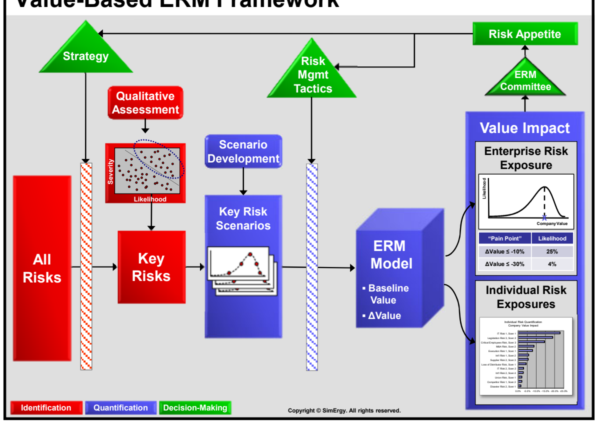
Common risk appetite statement challenges

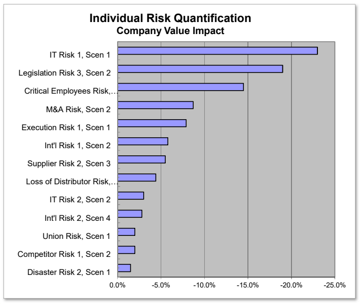
1) Unclear → unactionable
   – Lack of clear quantitative definition
   – Inability to use in risk governance and routine decision making
2) Incomplete
   – Quantitative info only for financial and insurance risks
   – Operational risks expressed qualitatively or with arbitrary metrics
   – Strategic risks expressed qualitatively or, more often, ignored

Value-Based ERM Framework



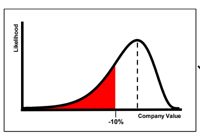
Modified Case Study

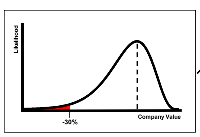
Quantifying individual risk exposures



ILLUSTRATIVE EXAMPLE

Enterprise risk exposure as "pain points"

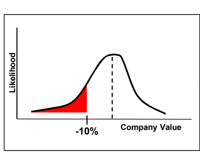


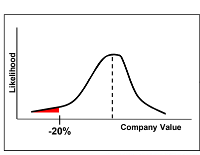


	What is it now?
"Pain Point"	Likelihood
ΔValue ≤ -10%	25%
ΔValue ≤ -30%	4%

ILLUSTRATIVE EXAMPLE

1) Clear quantitative definition of risk appetite





	What is it now?	What should be the max?
"Pain Point"	Likelihood	Likelihood
ΔValue ≤ -10%	15%	?
ΔValue ≤ -20%	3%	?

Current exposure (calculated)

Target exposure (defined by ERM Committee)

RISK APPETITE

MODIFIED CASE STUDY

Ability to use in risk governance process

PAIN POINTS		LIKELIHOOD	RISK APPETITE
ΔValue			
Increase of at least	0%	32.5%	
Decrease of at least	-10%	36.3%	
Decrease of at least	-20%	13.8%	**20%**
Decrease of at least	-30%	2.0%	
ΔCapital (5-Yr Calls on Parent, $M)			
Not more than	0	55.2%	
Equal to or greater than	50	24.5%	
Equal to or greater than	100	13.3%	**20%**
Equal to or greater than	150	2.9%	

SimErgy THE ERM SPECIALISTS

Ability to use in routine decision making

- Risk-priority decisions
  - When exposures exceed risk appetite soft limit (unacceptably low likelihood of achieving strategic plan)
    - ➔ Reduce risk via mitigation
  - When exposures far too below risk appetite (too conservative; opportunity losses)
    - ➔ Take more business risk
    - ➔ Reduce unnecessary mitigation
- Reward-priority decisions
  - Evaluate business decisions in terms of risk-reward tradeoff and maintaining exposures within risk appetite
    - ΔBaseline company value (return)
    - ΔValue volatility (risk)

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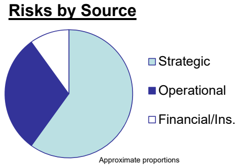
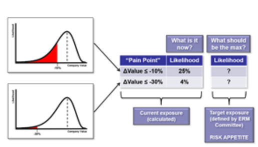
2) Complete: All risk sources reflected in risk exposure and risk appetite

Risks by Source





RESEARCH STUDIES:

1) 1-Year Globe & Mail study: Strategic: 65% / Operational 22% / Financial 13% (Source: "Front-Page Risks", Joint Risk Management Section)
2) 1-year WSJ study: Strategic: 64% / Operational 35% / Financial 1% (Source: "IMPACT Study," Watson Wyatt)
3) 18-year 50% market cap decline study: Strategic: 65% / Operational 20% / Financial 15% (<15% / most "financial" were mis-categorized operational) (Source: CFO Executive Board, Audit Director Roundtable research)
4) 6-year largest 1-month value decline study: Strategic: 61% / Operational 33% / Financial 6% (Source: Mercer Management Consulting)
5) Director survey of biggest threats: Strategic outnumbered financial by margin of >3-to-1 overall, and >2-to-1 in financial services sector (Source: The Conference Board, The Role of U.S. Corporate Boards in ERM)

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ILLUSTRATIVE EXAMPLE

Deterministic scenario development

1) Identify interviewees
- Those closest to the risk
- Usually 1 or 2 risk experts

2) Develop risk scenario
- Begin with credible worst case
- Select specific scenario and think it through

3) Assign likelihood

4) Quantify
- Determine impacts on distributable cash flows

Individual Risk Scenario Quantification (IRSQ) Detailed Report

Risk #	12
Scenario #	A

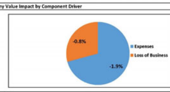
Risk Scenario Description

Internal Data Breach: xxxxxx x xxxxx xx xxx x xxxxx xxxxx xxxxxxx …

Risk Category	Operational
Risk Sub-Category	IT - Data Breach
Subject Matter Expert	Xxxxx Xxxxxxx

Key Metric	Impact
Company Value Shock (%)	-2.7%
Company Value Shock ($)	-54.6 M
Likelihood	5.0%

Company Value Impact by Component Driver



Impacts

Expenses: xxxxx xxxxx xxxxxxx …

Loss of Business: xxxxx xxxxx xxxxxxx …

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