Value-Driven ERM
What Boards and Senior Executives Want Most From Their Enterprise Risk Programs

Stanford Strategic Decision and Risk Management Certificate Program
Meet Today’s Speakers

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Value-Driven ERM

1. The Four Challenges of Value Driven ERM

2. Are We Truly Value Driven?

3. Are We Truly Comprehensive?

4. Are We Consistent in Evaluating Very Different Risks?

5. Are We Consistent in Applying our Risk Appetite?

6. Where Can We Learn More?
Leading organizations are applying Enterprise Risk Management (ERM) as an integral part of value creation and delivery.

- Focus on risk transfer w. insurance perspective
- Checklist-driven (reactive response to regulations)

ERM process implemented but mainly qualitative
Specific risk quantification
Transactional hedging with no view of the portfolio

Risk tolerance and appetite clearly defined
Decision-making is based on clear risk-return tradeoffs
Value-driven approach to strategy and risk management
Value-Driven ERM is a shift in focus ...

Control Focus
- Silo-driven
- Forensic
- Deterministic
- Checklist-driven
- Qualitative
- Solving a Crisis

Strategic, Value Focus
- Enterprise-wide
- Forward-looking
- Probabilistic
- Value orientation
- Quantitative
- Developing risk mitigation plans
Value-Driven ERM presents us with four challenges:

1. **Become truly value-driven from the front line to the board.** It is not about eliminating risk! Are we taking the right risks? Are we managing the level of exposure in line with shareholder value creation?

2. **Be truly comprehensive.** Have we identified the key risk exposures? Is our approach robust? Does it allow for learning and adjustments as new risks arise with changes in market structure?

3. **Evaluate all risks on a consistent basis.** Ensure economically consistent decisions on levels, costs, and benefits of specific risk treatments. Organizations tend to ignore risks that are not explicitly quantified.

4. **Apply a consistent risk appetite to the many types risk exposures.** Adjust value for the magnitude of risk exposure in a systematic way. The methods are well-founded in theory and practical, just like we calculate a net present value of cash flows.
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Value-driven ERM aligns risk management with business strategy and embeds a risk management culture in the organization.

- The objective of risk management is not to eliminate risk – that would eliminate reward.
  - The objective is to identify, quantify, and manage risk in line with shareholder value creation objectives and risk-return tradeoff preferences.

- The right approach to ERM should effectively address:
  - Strategic, financial, and operational risks (the realm of value-driven ERM)
  - Hazards and event risk (the focus of traditional ERM)
Value-driven ERM: Striking an optimal balance between value creation and value protection.

**Governance:**
- Value-focused decision-making
- Compliance – regulatory and internal requirements

**Shareholder Interests:**
- Shareholder value creation
- Alignment with shareholder risk-return expectations

**Executive Management**

**Business Units**
- Value Drivers
- Growth Opportunities

**Growth & Investment:**
- Value-focused growth
- Capturing upside opportunity and limiting the downside

**Capital:**
- Risk-based capital allocation
- Risk-based performance measurement
- Minimize risk of default
- Optimize capital structure
The primary role of the board and executive management is to shift the risk-return profile of the business portfolio towards greater upside and reduce the overall uncertainty in shareholder value.
Optimally balancing value creation and value protection becomes a source of strategic advantage, particularly in periods of high market uncertainty.

• Balancing value creation and value protection requires:
  – Rigor in identifying, quantifying, and managing risk exposures
  – Clarity on risk-return tradeoffs
  – Integrated approach to strategy and risk management – risk management is not an afterthought
  – Alignment from the board to the front lines on risk management roles and responsibilities

• The banks that best survived the crisis and are thriving today (e.g., JP Morgan and Banco Santander) have done so not because they were better regulated, but because they were better managed.
In a number of polls, we will use the familiar 5-point scale.

1. Strongly disagree
2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly agree
Our understanding of value and risk, as well as our ERM framework, processes, and roles (including the role of the board), are aligned to create and protect enterprise value.
Poll 1:
Our understanding of value and risk, as well as our ERM framework, processes and roles (including the role of the board) are aligned to create and protect enterprise value.

1. Strongly disagree
2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly agree
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We use five main categories of risks for the purpose of designing and implementing ERM:
We use five main categories of risks for the purpose of designing and implementing ERM:

- **Financial Risks**
  - Trading Risks
  - Market Risks
    - Interest Rate
    - Exchange Rate
    - Commodity Prices
  - Non-Market Risks
    - Credit
    - Trading Operations
  - Liquidity & Cash Flow

- **Strategic Risks**
  - Hostile Takeover
  - Strategic Transactions (M&A, JV...)
  - R&D
  - Intellectual Capital

- **Operational Risks**
  - Accounting Controls
  - Information Systems
  - Reporting Quality
  - Procurement
  - Supply Chain
  - Warranty Claims
  - Human Capital / HR Risks

- **Hazard Risks**
  - Public Access
  - Employees
  - Properties
  - Products & Services

- **Internally Driven**
  - Policies & Regulations
  - Culture
  - Legal, Regulatory, and Compliance

- **Externally Driven**
  - Reputation
  - Competition
  - Economic Cycles
  - Industry Changes
  - Customer Demand
  - Changing Demographics
  - Government Fiscal Policy
  - Consumer Behavior Changes
  - Contracts
  - Natural Events
  - Suppliers
  - Environment
  - (Earthquake, Hurricane, fire, flood, pollution...)
  - Political Instability
  - Acts of War

**We use five main categories of risks for the purpose of designing and implementing ERM:**
There are many sources of risk – and the easy ones to identify and quantify are usually not the most important!

- **Business Model Risks**: Affect the value proposition or viability of the enterprise
  - Examples: economic shifts, disruptive innovation

- **Strategic Risks**: Affect the overall profitability of the enterprise
  - Examples: competitor actions, market conditions

- **Operational Risks**: Affect the results at particular units
  - Examples: input prices, most event risks
Heat maps do a good job at capturing low-probability, high-consequence *uncorrelated* risks.
Risks driving the value of the business are harder to identify and quantify and need different methods.

**Generation Business Value—NPV 2003–2012 ($M)**

- **Gas Price**
  - Low: 2,000
  - High: 4,500

- **Demand Growth**
  - Low: 2,000
  - High: 4,500

- **Transmission Pricing**
  - High: 4,500

- **Rainfall/Hydro**
  - High: 4,500

- **Future Cost of Capital**
  - High: 4,500

- **Coal Cost**
  - Low: 2,000

- **Regional Structure**
  - Low: 2,000

- **Nuclear Plant Outage**
  - Low: 2,000

- **CO₂ Scenario**
  - Low: 2,000

- **Forced Outage Rate**
  - High: 2,000

*Base Value: $3,300 million*
We don’t miss important risk exposures. We are comprehensive in identifying our risk exposures and the uncertainties that we face in our business.

1. Strongly disagree
2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly agree
Poll 2:
We don’t miss important risk exposures. We are comprehensive in identifying our risk exposures and the uncertainties that we face in our business.

1. Strongly disagree
2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly Agree
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Consistency of Evaluation: All significant risks, regardless of category, are quantified and the traditional bias for seemingly easy-to-model risk is avoided.

- Uncertainty in NPV, Profits, Cash Flows and Debt Service Coverage
- Mitigation Measures
We use quantitative models and data when appropriate to quantify some risks while using well-established expert assessment techniques for others.

**Quantitative Models:**
- Powerful tools for pricing and insight, but be aware of serious limitations
- Models are not reality (the map is not the territory)
- Back-test, benchmark to markets, and use only for applications where validity has been proven

**Expert Assessments:**
- Apply formal interview techniques that avoid anchoring, availability, and framing biases to extract actionable probability assessments
- Comparable in form and quality to quantitative model results

**Risk Instrument Pricing:**
- We never transact in derivatives or enter into insurance structures that we don’t know how to price ourselves
Case Study: Credit-Default Swaps (CDS)

The structure of risk (adverse interaction of dependent factors) is as important as magnitude.

Decisions:
- Pricing of CDS Premium
- Offer CDS?
- Size of Portfolio
- Hedging Policy

AIG Liabilities
AIG Assets
Shareholder Value

Value of Debt Securities* | No Default
Premium Collected on CDS
Value of CDS Portfolio
Collateral Call by CDS Counterparties

* Not analyzed by AIG Modelers

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We quantify uncertainty and risk exposures systematically with a consistent, sound, and forward-looking methodology.
Poll 3: We quantify uncertainty and risk exposures systematically with a consistent, sound, and forward-looking methodology.

- Strongly Disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly Agree
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A project will produce either a positive or a negative return.

### Decision Uncertainty

- **Good Outcome**
  - Invest: 0.5
  - Don't Invest: 0.5

- **Bad Outcome**
  - Invest: 0.5
  - Don't Invest: 0.5

### Project Value

- **100% Return**
  - Project Present Value
  - Project NPV

- **50% Loss**
  - Project Present Value
  - Project NPV

- **0%, Status quo**
As head of a business unit, what is the biggest investment you would take?

Decisions: Invest / Don’t Invest

Uncertainty:
- Good Outcome
  - 0.5
- Bad Outcome
  - 0.5

Possible Outcomes of Investment:
- Good Outcome (5% - 500%)
- Bad Outcome (-2.5% - -250%)

Return (above or below the cost of capital) on Capital and Development Budget:
- 5% / 25%
- 10% / 50%
- 25% / 100%
- 50% / 200%
- 100% / 500%
- Or Below: -2.5% / -100%
- Or Above: 1% / 250%

0%, Status quo
Taking a CEO perspective, what is the biggest investment you would make?

<table>
<thead>
<tr>
<th>Decision</th>
<th>Uncertainty</th>
<th>Change in Intrinsic Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invest</td>
<td>Good Outcome</td>
<td>2% 5% 10% 25% 50% 100% 200%</td>
</tr>
<tr>
<td></td>
<td>.5</td>
<td>Or Below</td>
</tr>
<tr>
<td>Don’t Invest</td>
<td>Bad Outcome</td>
<td>-1% -2.5% -5% -12.5% -25% -50% -100%</td>
</tr>
<tr>
<td></td>
<td>.5</td>
<td>Or Above</td>
</tr>
</tbody>
</table>

* Longer-term value of the company, around which the market capitalization fluctuates.
Our experience and the reports of various studies show similar results.

Shareholders (Institutional Investors)

- Board
- Corporate / CEO
- BU Head
- Department Head

Risk Tolerance (Fraction of Intrinsic Value)

- .001%
- .01%
- .1%
- 1%
- 10%
- 100%
- 1000%
These results differ greatly from most corporate finance literature.
Risk aversion at lower levels leads to rejecting value-creating projects...

* Maximum Loss, as a fraction of intrinsic value for a 50-50 chance at doubling intrinsic value
... creating a value gap.
We have a quantified corporate risk appetite that we use to calculate the certain equivalent value and apply consistently throughout our enterprise.
Poll 4: We have a quantified corporate risk appetite that we use to calculate the certain equivalent value and apply consistently throughout our enterprise.

1. Strongly Disagree
2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly Agree
Upcoming Webinars


• There is a rich analytical foundation for Risk Appetite and Risk Tolerance in the field of Decision Science, but only recently – in light of spectacular failures – has the topic gained the attention of chief risk officers and corporate risk committees.

• How much risk is right for you? How do CEOs and boards answer that question, and how do their answers differ from those given at the business unit level? We barely scratched the surface in today’s ERM overview. Attend this webinar for a better understanding.

From the Brink of Bankruptcy – Date TBA

• Featuring Norman Chambers, CEO of NCI Building Systems and his lessons learned.

• This Fortune 1000 CEO couldn’t avoid the misfortunes of the past 18 months. But the company avoided bankruptcy with strategic risk management that attracted private equity investors who provided the necessary cash infusion to get on the road to recovery.
We are pleased to announce the Stanford SDRAM ERM Index and Assessment.

• On this index, 100% means having achieved the full vision of Value Driven ERM.

• With this 40-question survey, respondents can mark their progress toward achieving the Value-Driven ERM vision.

• By the end of May, invitations will be sent to all participants in today’s webinar.

• Results will be confidential but will be compiled by industry and shared with survey participants.

• Results will provide a specific benchmark of how your organization compares to others, including industry leaders.
Poll 5:
Would you like to receive an invitation to participate in the Stanford ERM Assessment?

• Yes

• No thank you.
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6. Where Can We Learn More?
Stanford Center for Professional Development

Stanford University
Curriculum and Research

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Graduate Areas of Study

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Electrical Engineering
Management Science and Engineering
Materials Science and Engineering
Mechanical Engineering
Statistics
Professional/Executive Programs

- Strategic Decision & Risk Management
- Advanced Project Management
- Global Entrepreneurial Leadership
- Accelerating Technology Leadership
- Leading Corporate Entrepreneurship
- Financial Engineering
- Advanced Computer Security
Unique University/Industry Collaboration

- Directed by Professor Ron Howard, Management Science and Engineering
- Developed in partnership between SCPD and Strategic Decisions Group
- Available online, at Stanford, and at work
- Meets the career-long education needs of professionals, managers, and executives
Strategic Decision and Risk Management (SDRM) Program

Complete six courses (2 required, 4 elective) to earn a certificate.
Flexible Delivery

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Come to Stanford to engage with faculty and network with professionals from around the world.

Online
Self-paced, online courses may be accessed anytime, anywhere.

At Work
Courses can be offered at your workplace for your entire team and customized to your company.

For more information: strategicdecisions.stanford.edu
1-866-234-3380
SDRM_reg@scpdinfo.stanford.edu
2010 At Stanford Schedule

Pricing for on-campus courses (per course)

- Regular price: $2,600
- Early registration price: $2,340
  Early registration for September courses ends August 1

For more information, please contact:
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Poll 6: What is your level of interest in the SDRM certificate program?

- I am ready to sign up for on-campus and/or online courses.
- I am interested primarily in on-campus courses but can’t make the September dates.
- It’s not right for me – but I’ll recommend it to others.
- I’m not interested.
- I have already signed up for on-campus and/or online courses.
To contact one of today’s speakers:

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