

Risk and Reward Sharing in the Freight Value Chain

Eric Giauque
Intel Corporation



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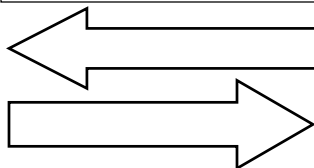
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Economics of the Freight Supply Chain

Buyers Market

- Airlines and Freight Forwarders seek certainty to cover fixed costs
- Often willing to offer lower pricing in exchange for greater certainty

Markets fluctuate between Buyer's and Seller's because supply adjustments lag demand fluctuations (Seasonality, SARS, LA Port Strike). Boom-to-Bust-to-Boom Capacity Adjustments



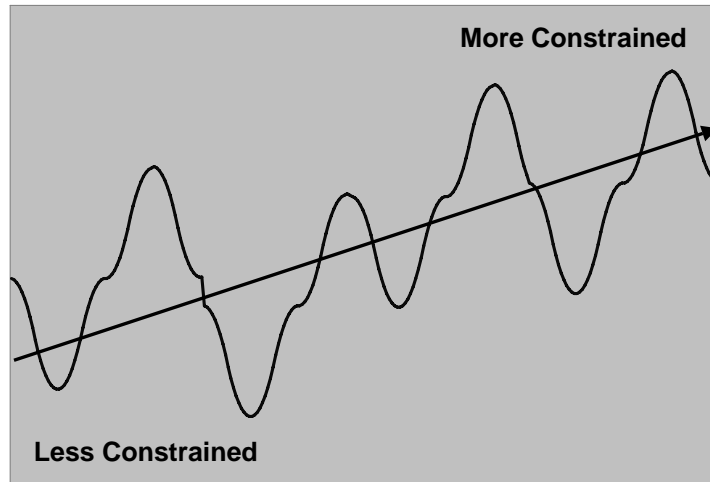
Sellers Market

- Customers knocking down suppliers' doors to get capacity
- Suppliers have greater negotiating power to sell capacity to the highest bidder

In all freight markets, *risk* flows between buyers and sellers depending on capacity fluctuations and price

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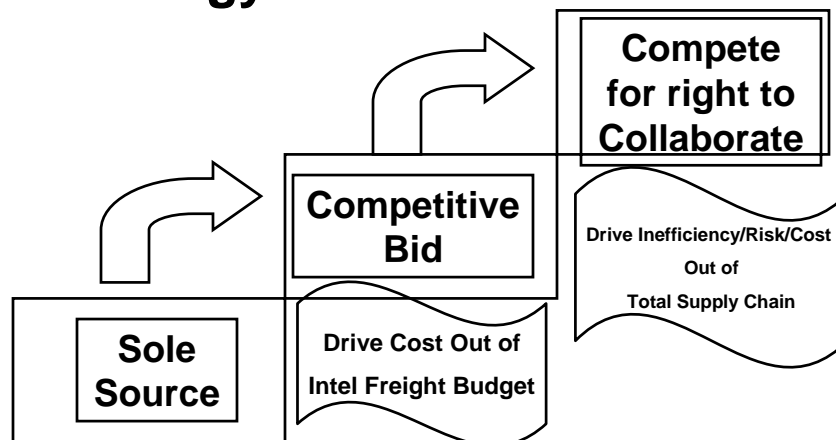
Worldwide Freight Capacity Trends



Freight capacity varied seasonally 2000-2004, but low and high seasons trending more accurately constrained in 2005 +

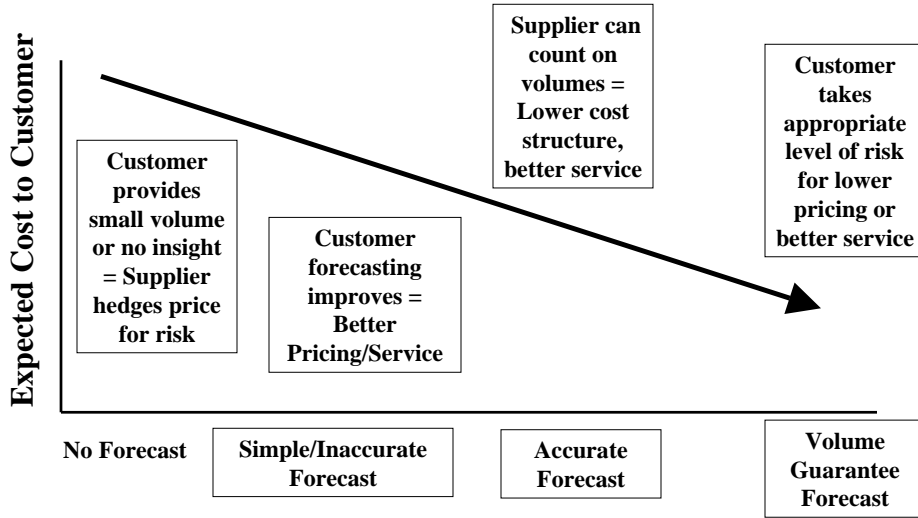
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Intel Freight Procurement Strategy Evolution



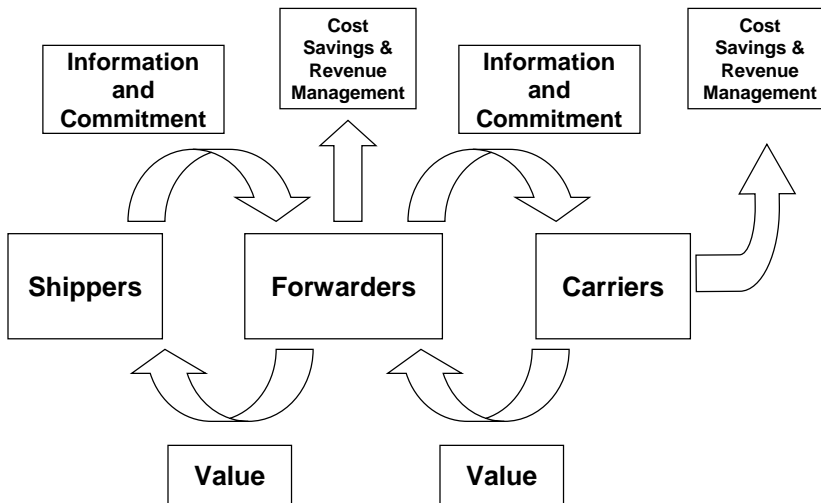
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Value of Information Sharing



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Risk-Reward Flow within the Freight Value Chain



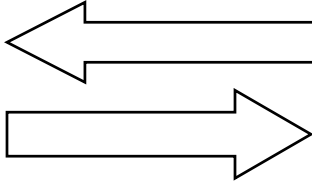
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Value Distribution of Risk Sharing

In Buyers Market

- Shippers commit to pre-purchased volumes for reduced prices
- Forwarders and Carriers secure base load – manage revenue portfolio and costs

Fluctuating market conditions push risk to different players. Negotiation power shifts from buyers to sellers and back.



In Sellers Market

- Shippers lock in capacity at reasonable prices – insurance policy
- Forwarders and carriers lock in base load – plan effectively for demand upside

Information and risk-sharing drives cost out of the system. Market players best suited to mitigate risk pull it toward themselves instead of pushing it away

Prediction Markets (PM)

Lloyd Nirenberg, Ph.D.
Shannon Bayes Venture Corp.
Enterprise Resource Management Symposium
25 APR 06

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Lloyd Nirenberg, Ph.D.

- Shannon Bayes Venture Corporation
www.shannonbayes.com
- Dr. Nirenberg is electrical engineer with innovations in communication system design, financial engineering and IP valuation. His IP valuation model applies techniques in financial engineering to managing risk and value in IP transactions, essentially a rational method that arrives at a non-arbitrary valuation of IP which correlates appropriately to its future market value over time based upon its intended use. Dr. Nirenberg currently applies his know-how in technology, economics and competition to help his clients craft strategies for growth in the face of multiple and varied opportunities and risks with particular expertise in analyzing options for the economic use of the patents in patent-dependent markets.

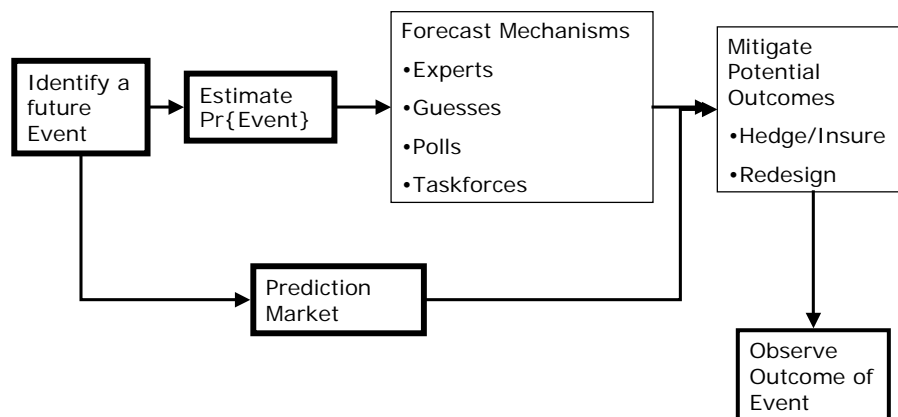
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What would you like to know?

- Sales Forecasts?
 - Market share in Q2?
 - Will product schedule be met?
 - New Product Feature Set Selection?
 - Allocation of manufacturing capacity?
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What Can We Do to Predict (Forecast) future outcomes?



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Take Away

- Use Prediction Markets to roll up information honestly from the people who know
 - Get good predictions of outcomes of important events
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PM Uses the Wise Crowd

- Uses market forces to bring together varied bits of information and aggregate them, for predictions or decisions.
 - Groups of people can very effectively solve problems
 - Special conditions for Wise Crowd
 - Diversity of knowledge or experience
 - Decentralization
 - Independence
-

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Predict the Outcome of Event

- Design a Contract to capture a payoff if various Event outcomes occur
 - Open a market to trade contracts until a time before Event will occur
 - Market_Price**(t) $\approx E_t[E]$
 - Verified in theory, lab experiments, empirical studies
-

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"Securitize" the Events

- Construct a unit contract
- Find a counterparty (possibly the market maker)

Contract: Owner is entitled to the Contingent Payoff

Contingent Payoff = $\begin{cases} \$1, & \text{if Outcome of E is } V_n \\ \$0, & \text{otherwise} \end{cases}$

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Making a Prediction Market

- Define an outcome for which you would like a reliable estimate.
 - Invite people with relevant knowledge to trade "virtual" stock based on their confidence in this outcome, thus creating a market
 - The Market Price tracks the *consensus* opinion (in contrast with the *average* opinion that a poll would yield).
 - Since the market is online, any number can play anywhere/anytime/anywhere
 - Trading price is decided by the participants themselves and the dynamics of supply and demand.
 - The price is normalized between 0-100 and can be read as a probability estimation.
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PM Example-Microsoft

- When will SW Project actually ship?
 - Create shares for likely months
 - Each online player gets \$50 to start trading
 - Highest value share-month is best prediction
 - Result: Best prediction was very different from management meetings' estimates-and more accurate
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FutureFreight™

We Deliver Predictability

ERM

April 2006

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Air Freight Characteristics

- Perishable commodity
- Traded 24-72 hours before departure
- Price depends on
 - Supply: Air Passenger capacity, Landing rights, Return trip, Political events, Weather
 - Demand: Locale, Service level, state of the economy, Exchange rates...
 - Prices have varied from \$.50/ T (US inbound) to \$10 / T (Port strike). Avg Variability 20%
- Main Cost (producer)
 - Jet Fuel, Distribution, People

2

The Players

Manufacturers

Forwarders
(Buyers)

Carriers
(Sellers)

Model	Freight as an input	Buy low, sell high (margin game)	From 'after thought' to separate P/L
Goal	Predictability (price, capacity) & lower cost	Keep margin high	Yield
Today	Lower cost through negotiations / cooperation	Homeostasis, fine tuning	Making Revenue Management work
Risks	Total costs uncertainty, starvation	Starvation, margin squeeze	Undersell, no-show

Who Can Manage Risks at Lowest Cost?

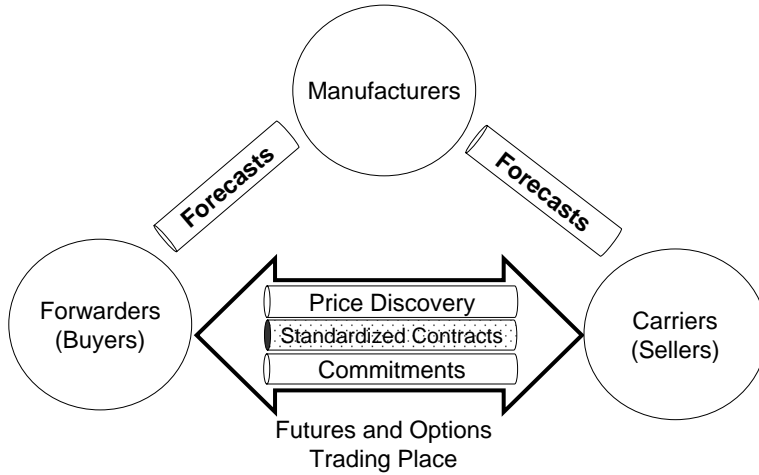
Manufacturers

Forwarders /
Market Makers

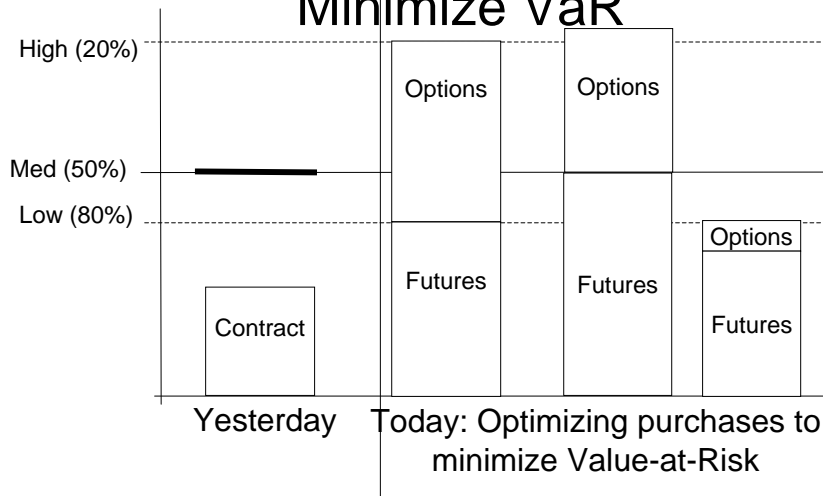
Carriers
(Sellers)

Demand	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
Supply		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Pricing		<input checked="" type="checkbox"/>	

Overview



Using Statistical Forecasts To Minimize VaR



Summary

- Transportation risks matter, best avoided with derivatives
- Logistics is in transition
 - Risk Management becoming a priority for Manufacturers, Carriers
- Manufactures will drive changes
 - Must look at cost risks through the supply chain and work to reduce overall costs (and monetize their efforts)

Risk Management at Constellation Energy
Group

2006 Enterprise Risk Management
Bowles Symposium, April 23-25
Chicago

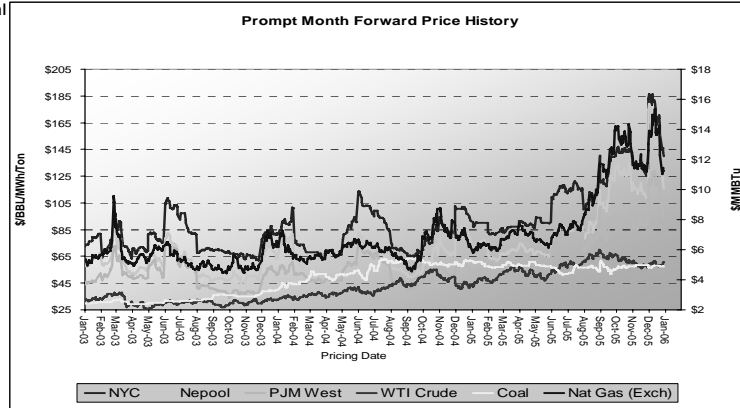
Aram G. Sogomonian
Senior Vice President
Constellation Energy Commodities Group



*Overview of
Energy Price Volatility*

Energy Commodity Price - Update

Oil/Power/Coal



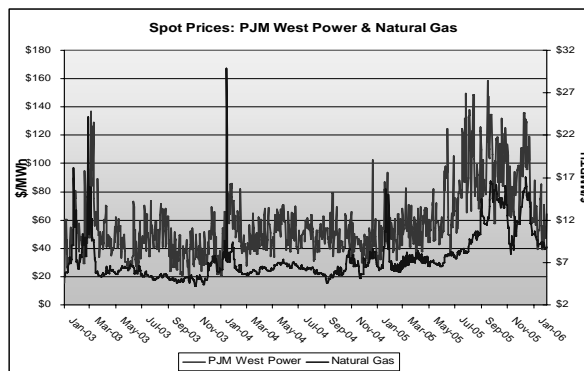
Natural Gas

Electricity forward prices respond to trends in fuel prices. After reaching record high levels in December 2005, power prices leveled off and even declined slightly due to mild winter weather

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Spot Prices for Power & Natural Gas

Power



Natural Gas

Spot prices remain volatile and are driven by both weather and a robust economy. Spot prices have declined recently due to milder than expected winter weather

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Constellation Energy's Approach to Risk Management

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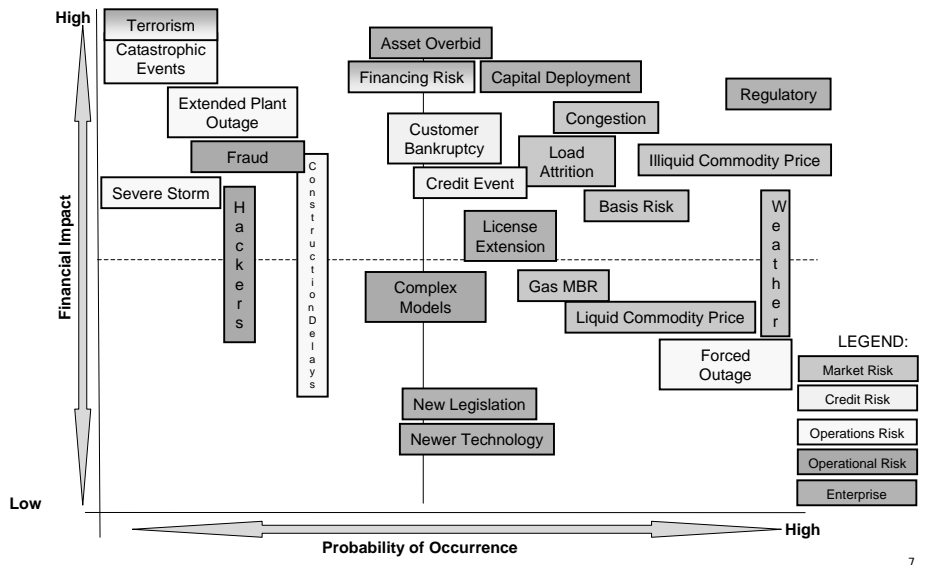
Constellation Uses An Enterprise-Wide Approach



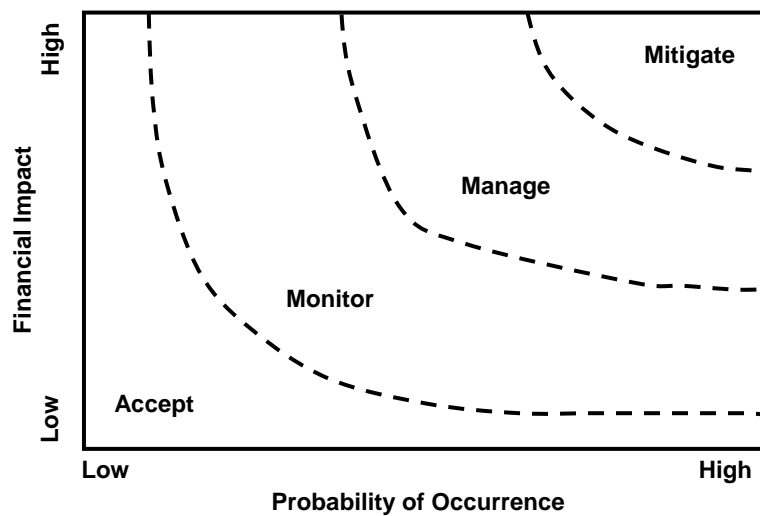
- ERM is a disciplined and integrated approach that:
 - Supports the alignment of strategy, process, people and technology with Constellation's risk appetite
 - Allows Constellation to identify, prioritize, and effectively manage critical risks
 - Focuses on enhancing visibility of corporate risks that contribute to earnings volatility, cash flow, market valuation and significant long-term business risks
 - Protects and prevents against catastrophes

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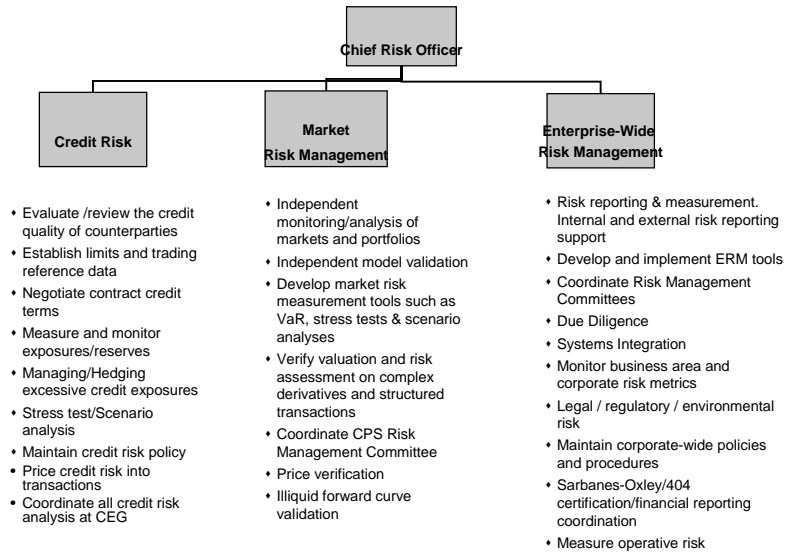
The Spectrum of Risks



Risk Management Strategy

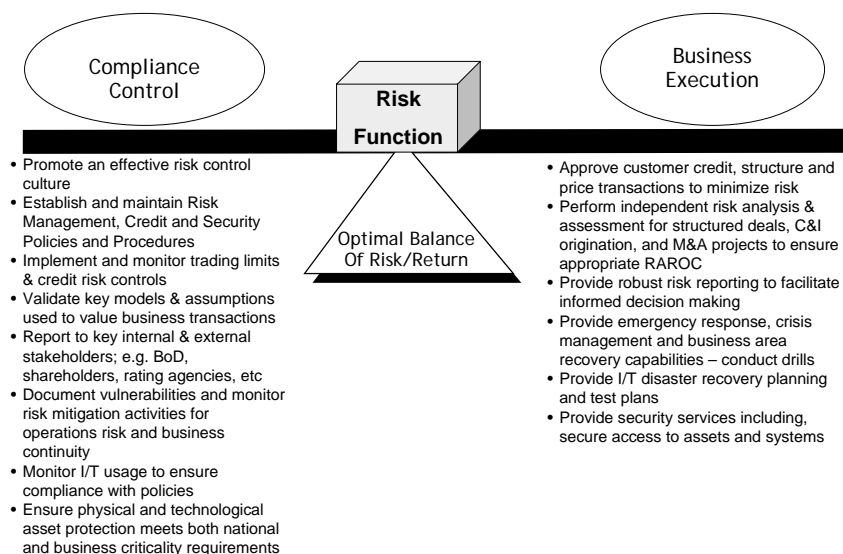


CEG Market, Credit and Enterprise Risk Management Organization



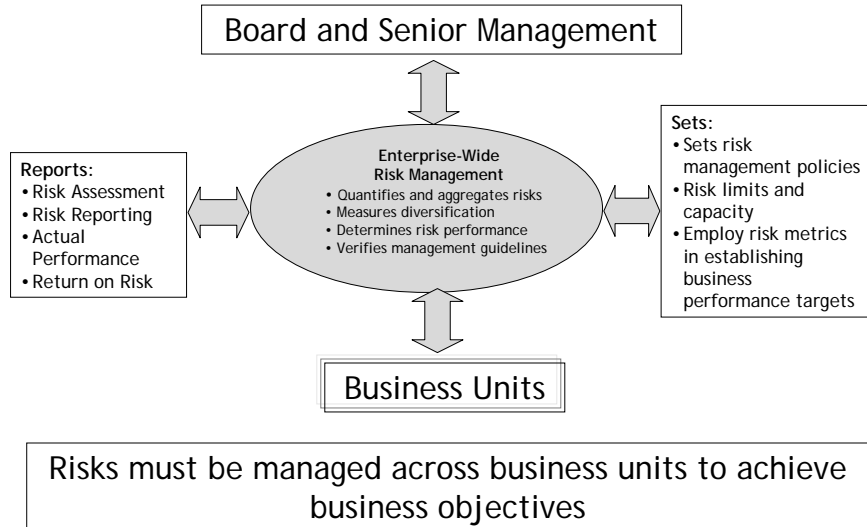
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Products and Services



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Constellation's Approach To Risk Management



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Addressing the Challenges

Conceptual Framework	Management of Earnings Volatility	Risk Reporting & Awareness	Senior Management/ Board Involvement	Controlled Environment
<ul style="list-style-type: none"> • Developing common framework to examine various risks • Define appropriate risk measures to identify portfolio effects 	<ul style="list-style-type: none"> • Clear management responsibilities • Shareholder disclosure requirements • Rigorous analysis using: <ul style="list-style-type: none"> • Value at Risk • Earnings at Risk • Stress testing/ scenario analysis performed • RAROC used in capital decisions • Validate all valuation models and continue to improve back-testing of models 	<ul style="list-style-type: none"> • Current exception reporting process for limit violations • Aggregate risks enterprise-wide and provide summary reporting and risk performance measurement • System investments are continuously required to support improved analysis and reporting 	<ul style="list-style-type: none"> • Risk Management Committees at subsidiaries • Weekly Corporate Risk Management meeting • Oversight by CEG Board Audit Committee with risk updates at Committee meetings • Risk update to full Board of Directors at least quarterly 	<ul style="list-style-type: none"> • Independent oversight by CRO organization and Audit/Management consulting team • Ongoing risk methodology development and maintenance • Positions and values independently verified by Risk Management • Limits set and monitored by Risk Management • Risk management has an active role in new projects, and investments and completes RAROC analysis

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