Energy Trading and Risk Management
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Takeaways

• Risk management ecosystem

• Potential risk drivers in energy markets

• Financial contracts

• Risk management challenges

• Emerging trends in risk
Risk Management Ecosystem

• Governance
  • Board of Directors and CEO set the tone
    • Risk committee defines strategic risk objectives
    • CRO reports to or is part of the risk committee

• Risk takers vs. risk managers
  • Risk takers
    • Recommend risk limits and adjust exposures based on market conditions
  • Risk managers
    • Approve risk limits, monitor, measure and report risk, and communicate results

• Compliance
  • Adherence to internal and external rules and procedures
    • Government oversight and market regulation (FERC, NERC, CFTC)
    • Accounting standards (GAAP/IFRS)
    • Legal documentation and contracts (ISDA)
What do Risk Managers Spend Time Doing?

Weighted Allocation of Time in Each Domain of Practice (% of Time x Mean Importance)

- Risk Framework: 12%
- Risk Identification: 16%
- Risk Measurement and Modeling: 22%
- Risk Monitoring: 18%
- Risk Management: 16%
- Risk Reporting: 16%
Potential Risk Drivers in Energy Markets

- **Crude oil**
  - Prolonged period of low crude oil prices
    - Demand growth, supply shortages and the potential timing lag
  - Geopolitical threats on global import and export flows
  - Pricing benchmarks, transparency and liquidity
    - Potential impact of INE crude futures trading

- **North American natural gas**
  - Complicated hub network and locational basis risk
  - Weak or missing spot price data at many hubs creates valuation challenges
  - Antiquated pipeline infrastructure, nomination and transport procedures

- **LNG**
  - US natural gas exports on the rise
  - Short duration supply contracts and uptick in spot price trading
  - Transition from oil inked to gas indexed pricing
Financial Contracts

• Exchange traded
  • Futures and options
  • Standardized and highly liquid instruments
  • Little to no counterparty risk
    • Recent NASDAQ “blow-up” and the Norwegian power trader
  • Be wary of basis risk

• Over-the-counter transactions
  • Swaps and other structured transactions
  • Bi-lateral, negotiated transactions
  • Valuation can be challenging
    • Indexed based pricing
  • Counterparty credit risk must be understood
Risk Management Challenges

• Risk measurement and modeling
  • Value-at-Risk (VaR) vs. Expected Shortfall
  • Capturing proper historical data is critical for modeling

• Contract valuation
  • Price transparency and data reliability
    • Large data sets requiring extensive cleaning

• Commodity Trading and Risk Management (CTRM) systems
  • Unified trade capture systems are expensive and difficult to implement
    • Diverse market parameters make practical implementation a challenge
Emerging Trends in Energy Risk Management

• Blockchain (Distributed Ledger Technology)
  • Smart contracts could increase operational efficiencies and reduce risk
    • Consortium of global producers are researching potential
    • Practical large scale application is likely years away

• Machine learning
  • Leveraging the strength of large data sets
    • Modeling algorithms to predict or forecast likely outcomes
    • Understanding and validating models is key
    • Humans will always need to be part of the decision process

• Non-financial risks
  • Cybersecurity, breaches and business continuity
  • High frequency trading increases potential for human error
  • Reputational risk is becoming more important
Contact Me Anytime with Questions

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Thank You!