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Risk Mitigation Strategies – Perspective on Dealing with Renewable Power's Revenue Uncertainty

Stephen Engler
Deloitte & Touche LLP

Jack Nirenberg
Deloitte Services LP

Agenda

Introduction

Examining the issue

Mitigation strategies

Wrap-up

Introduction

What is risk?

Neglect compliance and you may be out of business!

Avoid all risks and you will forego the reward!

Unrewarded risk

Nothing is gained from taking the risk

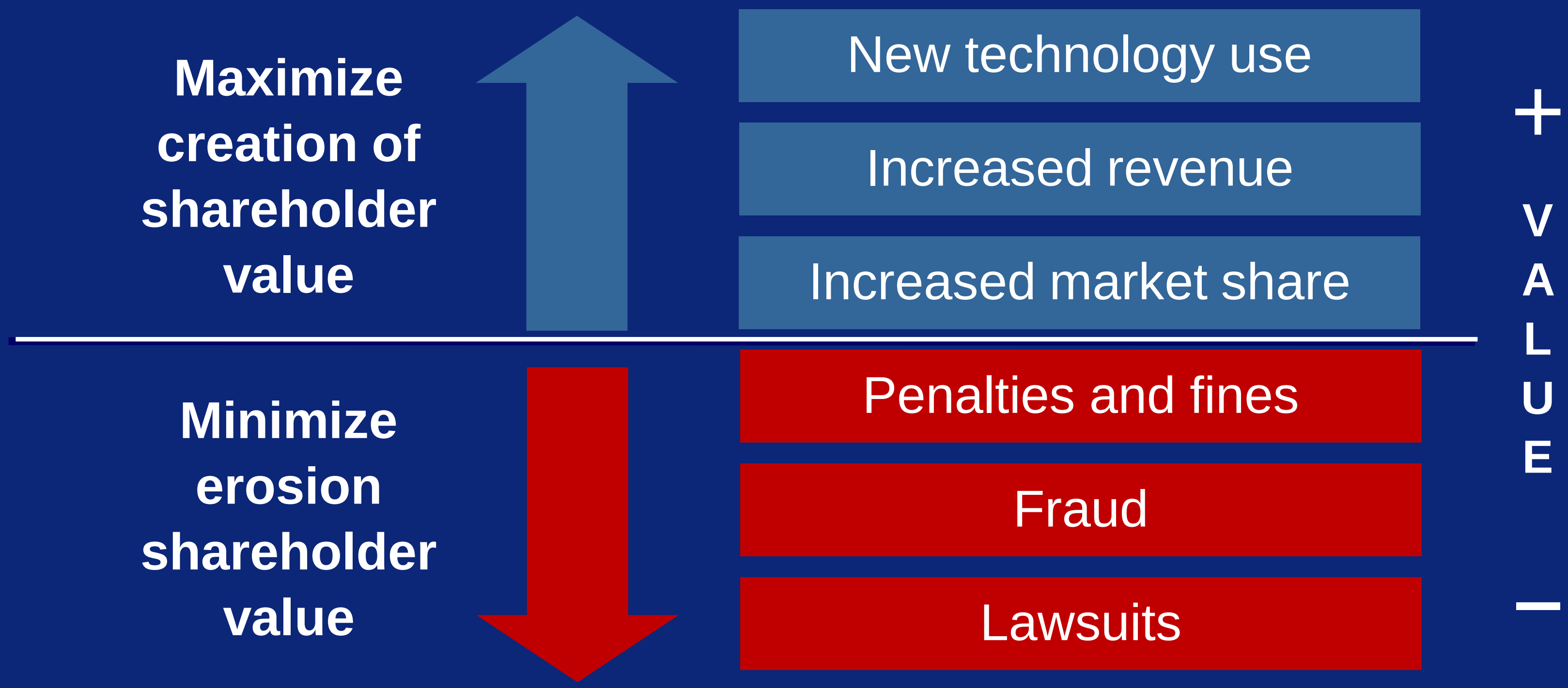
Relates to risk areas such as regulatory compliance (i.e. no upside for non-compliance)

Rewarded risk

Provides a premium if managed well

Relates to strategy and business decisions, where value is created

Risk management can help to create as well as preserve value



What is enterprise risk management (ERM)?

- ERM can enable businesses to:
  - Identify risks proactively before they impact the business
  - Create a more risk aware culture
  - Establish cross-functional communication/visibility
  - Systematically quantify risks providing an appreciation of potential impacts
  - Enhance strategic and operational planning and implementation
  - Take advantage of opportunities to increase value and manage exposure

Why are companies investing in ERM?

- Recent perceived exposures and/or significant events
- Leading practice among peers
- Questions from the board of directors
- Guidelines from regulators
- Economic environment

ERM value proposition

ERM can support a company's business growth strategy by:

- Enhancing communication across business units and across various risk categories
- Quantifying risks
- Identifying potential value reducing situations
- Identifying opportunities to target growth opportunities within risk tolerances
- Enhancing profitability and cash flow

Energy industry risks (illustrative)

Examining the Issue

Specific alternative energy risks

- Price risk – hourly prices are different than forward prices, and forward prices are different than forecasts
- Supply risk – the wind doesn't blow or the sun doesn't shine
- Other – transmission, unplanned outages, etc.

Illustrative

Perspective on financial impact

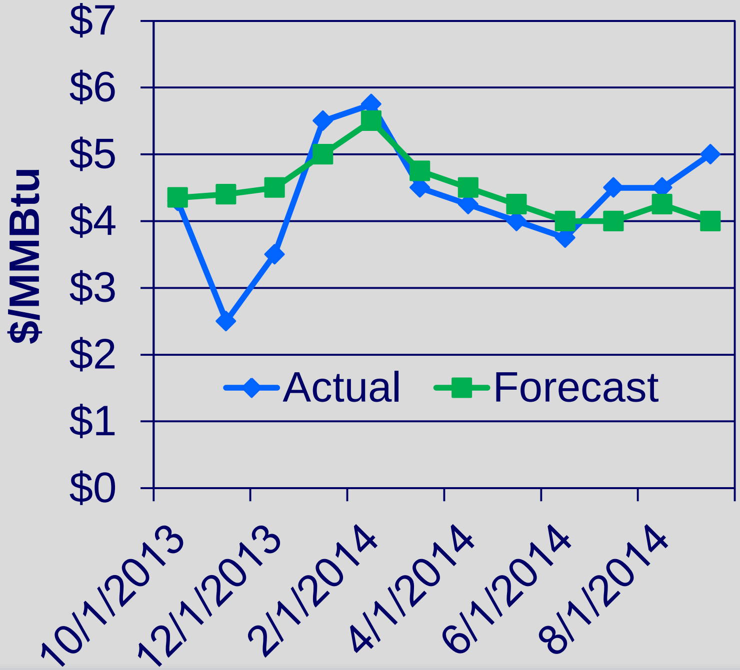
$ (millions)	**Budget - 2015**	**Budget + Risk to expiry[1] - upside**	**Budget + Risk to expiry - downside**
Revenues (capacity, energy, other)	$850	$960	$760
Expenses (direct, O&M, other)	($270)	($310)	($260)
EBITDA	$580	$650	$500
Interest expense	($210)	($210)	($210)
Depreciation	($260)	($260)	($260)
Other	($20)	($20)	($20)
Pre-tax income	$90	$160	$10

[1]Risk to expiry is defined as the risk from the current time through the end of the budget period

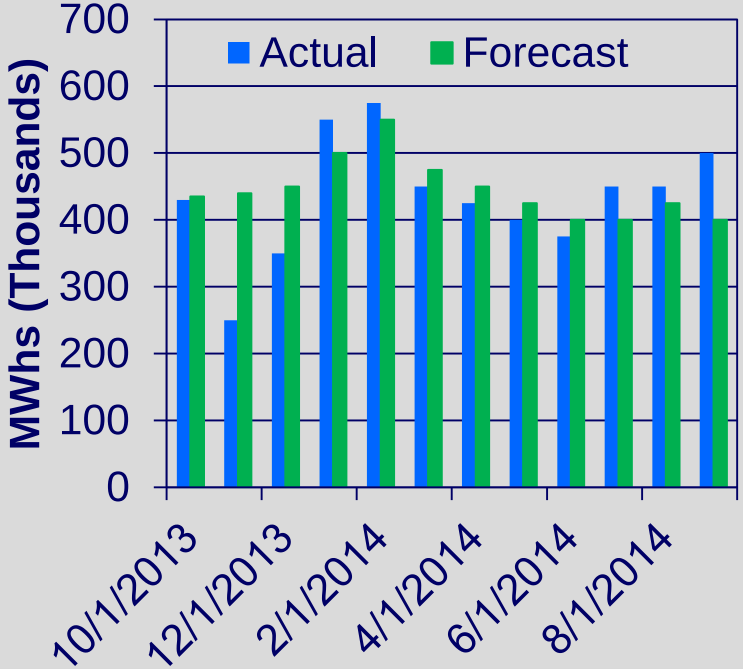
Within acceptable expectations?

Price and volume risk…What to do?

Actual prices differ from forecasts…and,



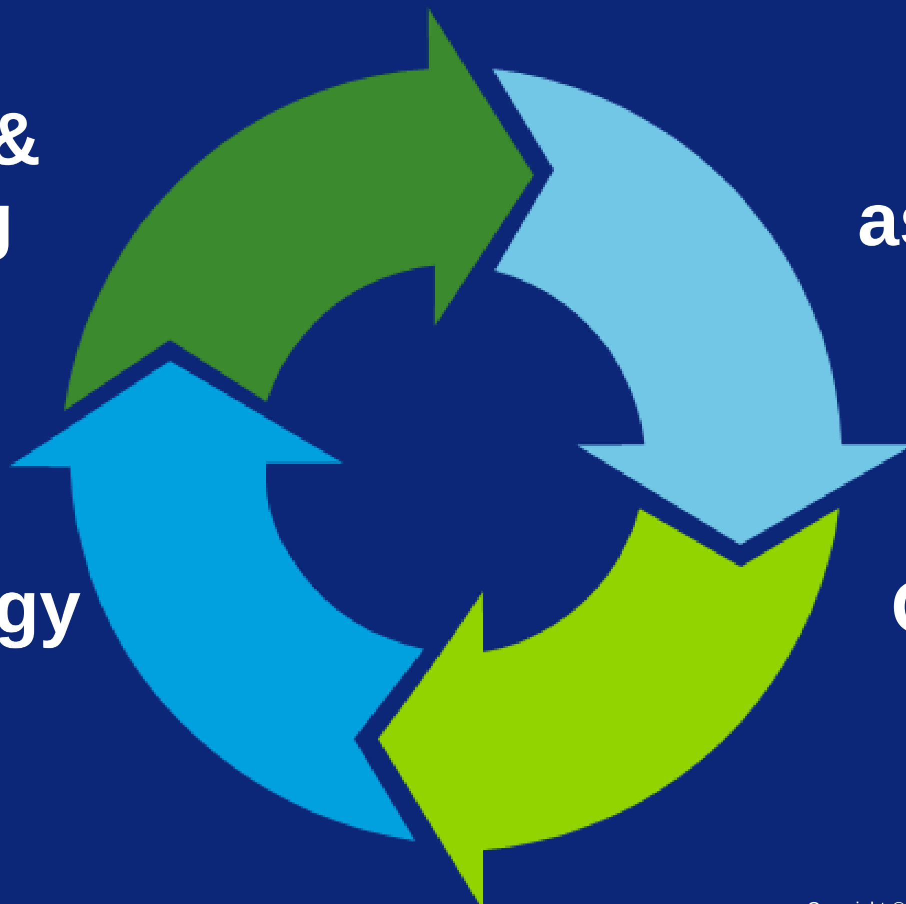
Actual generation varies from forecasts and expected loads



A risk mitigation framework

Monitoring & responding

Risk assessment



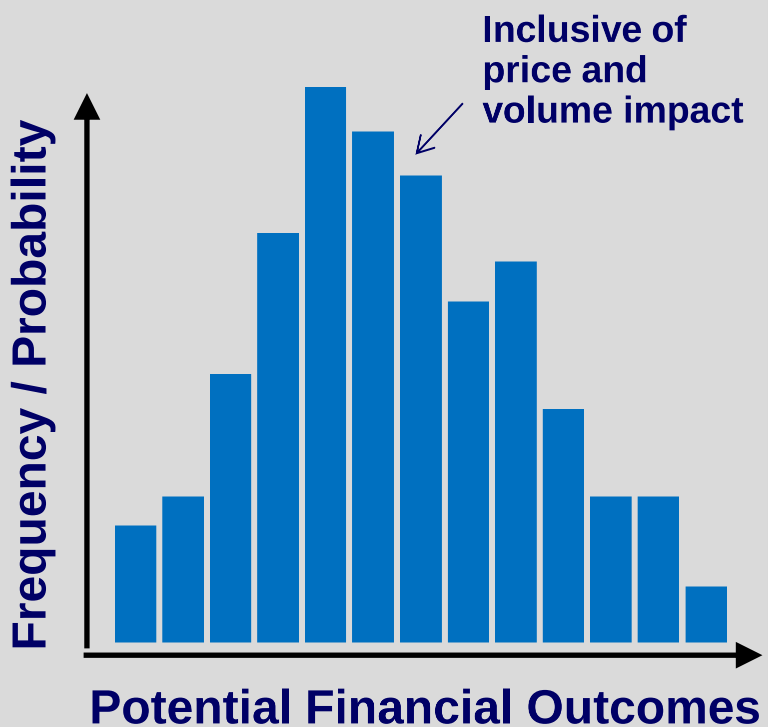
Hedge strategy design

Objective-setting

Assessing exposure

Use quantitative financial methods to generate range of price-volume pairs …

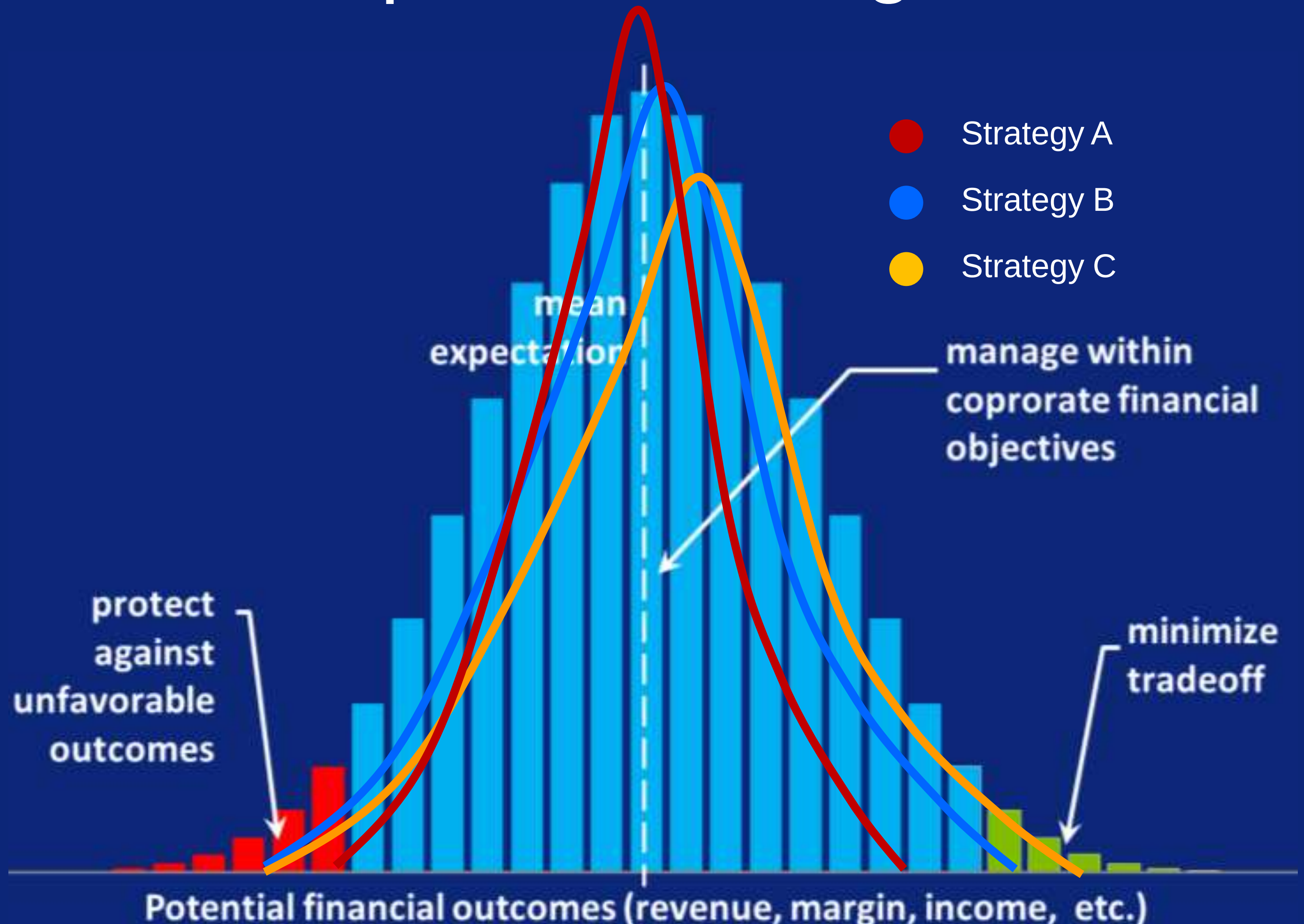
…in order to determine a probabilistic range of exposure.



Polar nature of market price risk

Developing market-compatible strategies

Illustrative



Other risk factors affecting financial plans

- Volumetric
- Counterparty/credit
- Liquidity
- Strategic risk

Implications to business planning

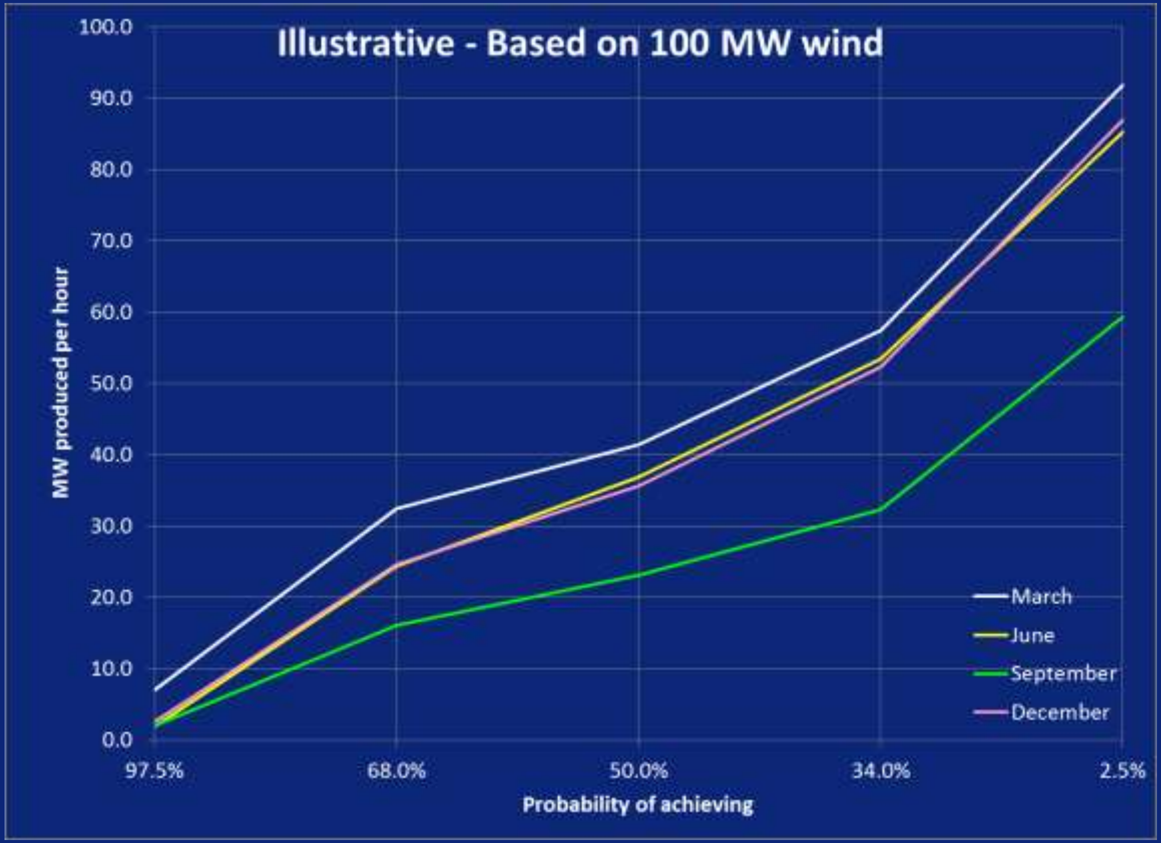
- Need to deploy robust quantification techniques to develop a better understanding of outlier events
- Discussion of what is tolerable and intolerable
- A process for designing effective risk mitigation strategies
- A means to represent portfolio risk in financial plans
- A framework for evaluating the outcomes of different hedge strategies
- A means for measuring, monitoring and responding to risks

Mitigation Strategies

Intermittent supply risk

- What is Intermittent supply risk?
- How does it impact your business?
- What options do you have to manage it?

Intermittent supply risk



Some considerations:

- Revenue protection vs. MtM risk
- Credit capacity
- Time periods
- Baseload vs. peak vs. off peak
- Liquidity?

A focus on hedge program design

Clearly defined, quantifiable, and market compatible objectives…

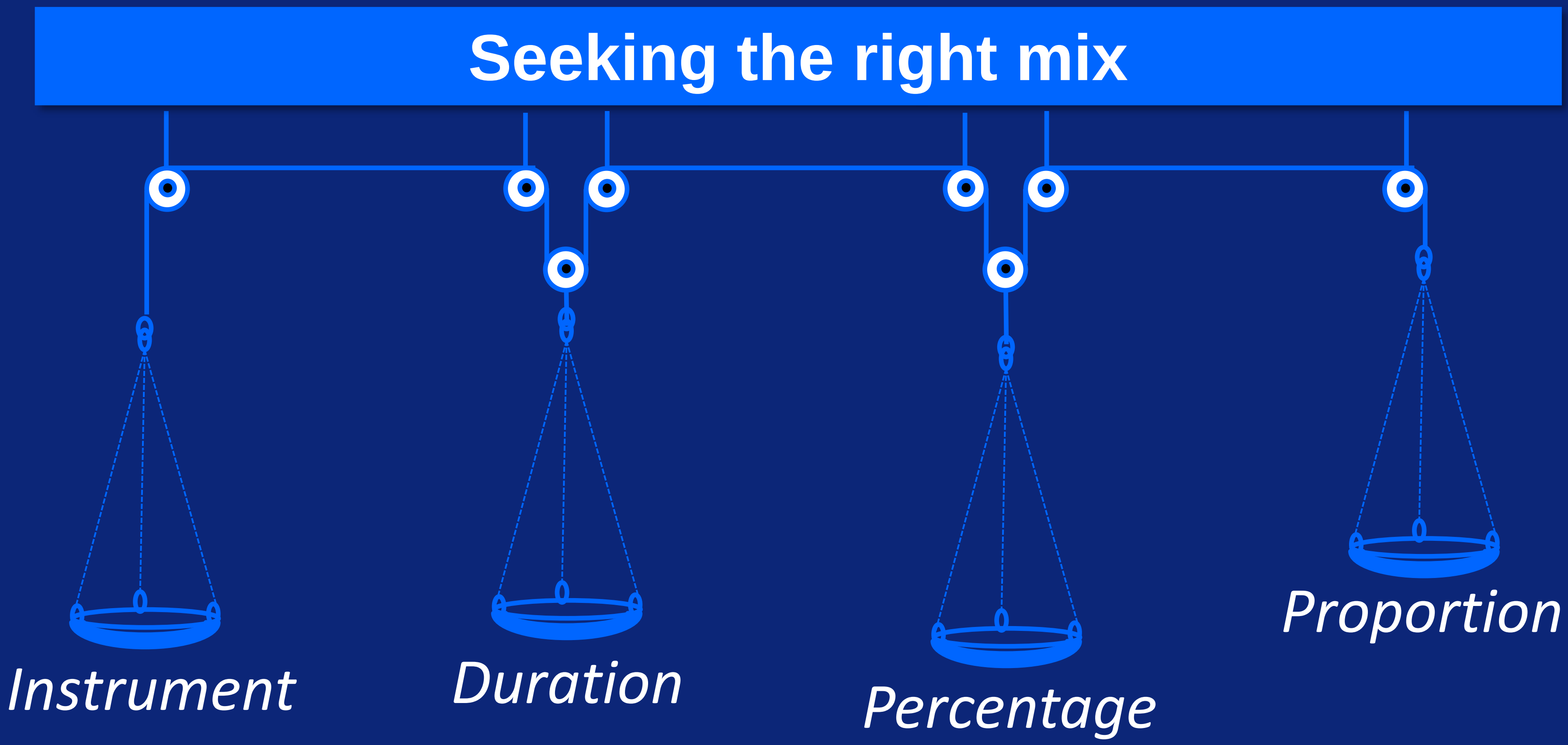
Revenue/ Earnings	• Manage the price risk so that the revenues are at least $X million at a certain statistical confidence interval
Hedge Losses	• Manage hedges so hedge losses do not exceed $X million at a certain statistical confidence interval
Options Budget	• Set aside $X million in an options budget

The objective of a hedge program is NOT to make money (i.e., profit/loss) – or to be speculative (i.e. "I think prices are going down, so I'm not going to hedge")

Different categories of hedges

- **Reduce volatility - dollar-cost average hedges**
  - Small increments, long-dated maturities
- **Protect financial requirements - responsive**
  - To intolerable price and volatility impacts
- **Mitigate losses**
  - As hedge positions have the potential for large, negative mark-to-markets
- **Management directed**
  - Based on fundamental or technical analysis

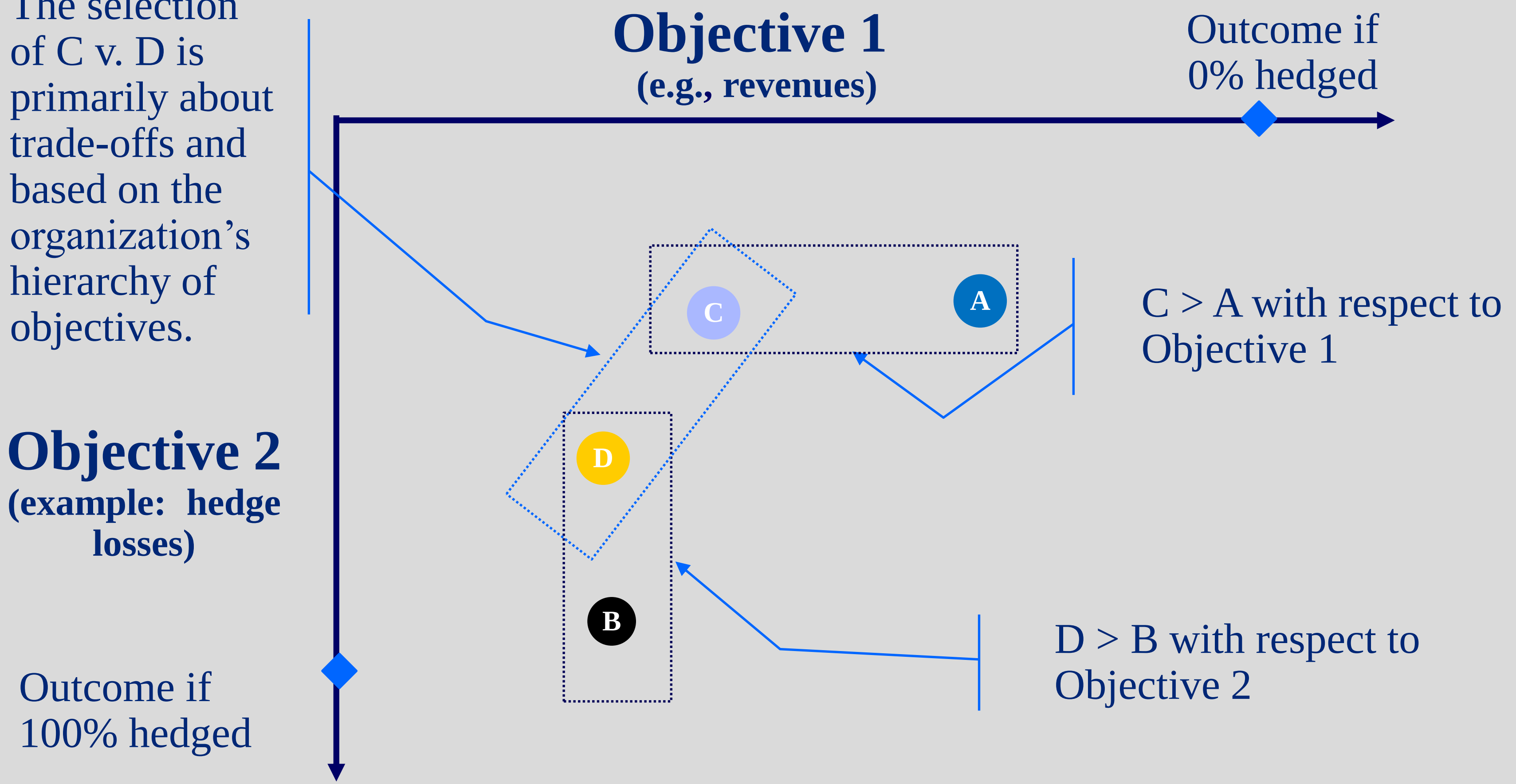
Implications to portfolio design



Testing hedge strategies and interpreting results

Outcome if 0% hedged

The selection of C v. D is primarily about trade-offs and based on the organization's hierarchy of objectives.



Wrap-up

A path forward

Questions?

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