

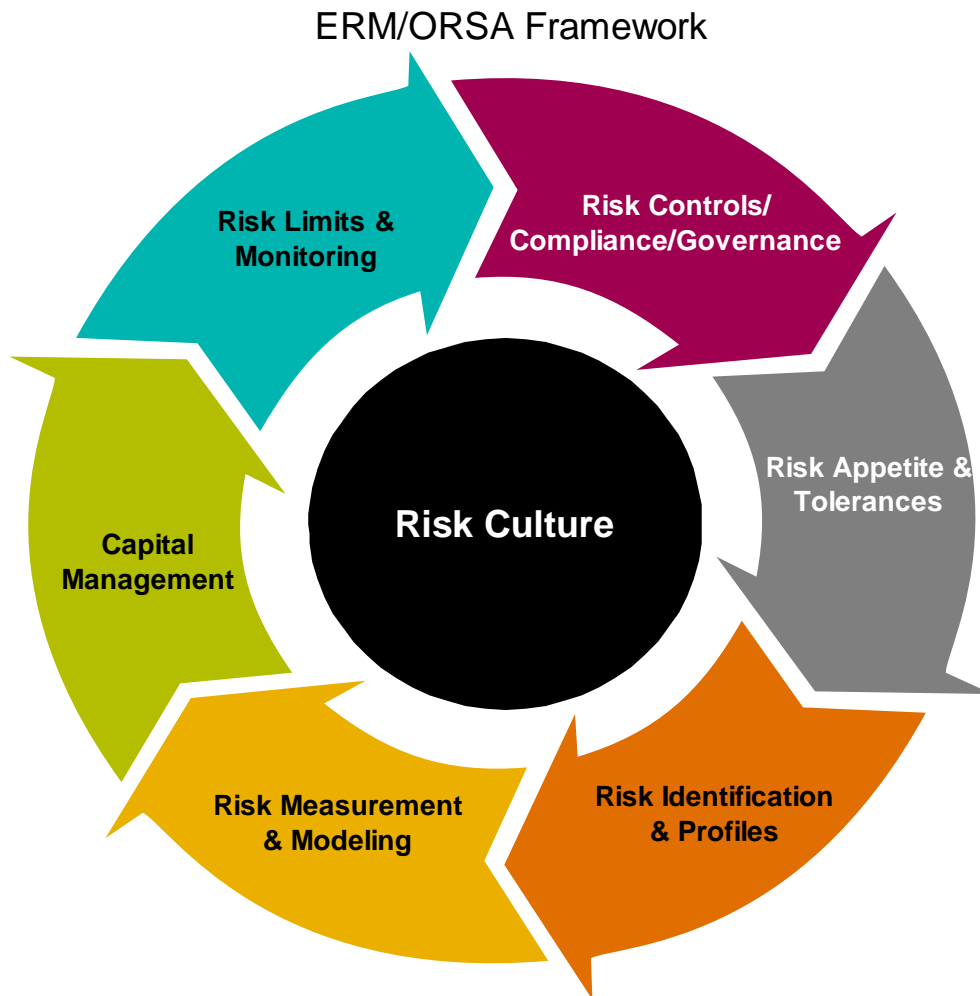
Connective Tissue: Linking Enterprise-Level Risk Appetite and Day-to-Day Risk Management

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Session C7 - ERM Symposium presentation by:
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Today's discussion introduces operational constructs for linking risk limits to risk tolerances



Objectives

- Present the concept of the risk appetite framework
- Broaden the context for strategic decision-making
- Describe an approach to link risk limits to corporate risk tolerances
- Provide an illustrative case study
- Offer time for questions and comments

Risk Appetite Revisited

- Over the course of the last few years, Willis Towers Watson published three papers under the banner Risk Appetite Revisited, which address several related aspects of how to develop and apply a risk appetite framework:
 - “Another Bite at the Apple” describes the foundational elements of a risk appetite framework
 - “Achieving Near-Real-Time Risk Monitoring” explores the concept of an enterprise risk measurement model to monitor risk tolerances and risk limits on a timely basis
 - “Setting Coherent Risk Limits” describes a practical method of tying risk limits to risk tolerances

Elements of Risk Appetite Framework



Defining an enterprise's risk appetite is a strong foundation upon which to build broader risk management activities

- While many insurers have developed risk appetite statements, there remains strong dissatisfaction with the value of the statements in making business decisions
- Companies are embarking in related efforts to build stochastic risk models in order to profile the variability created by their key risks; however, many of these models are relegated to use by the actuaries
- Risk appetite should begin by stating the linkage to an organization's mission and business strategy, yet many statements miss this link
 - In turn risk models should assist in understanding how the company's risk profiles are connected to business strategy
- The link to business strategy leads to an enhanced approach to understanding the company's willingness to accept the adverse consequences of uncertainty, i.e. risk

In the context of an insurer, we define risk as the possibility of mission failure

Risk in the context of mission

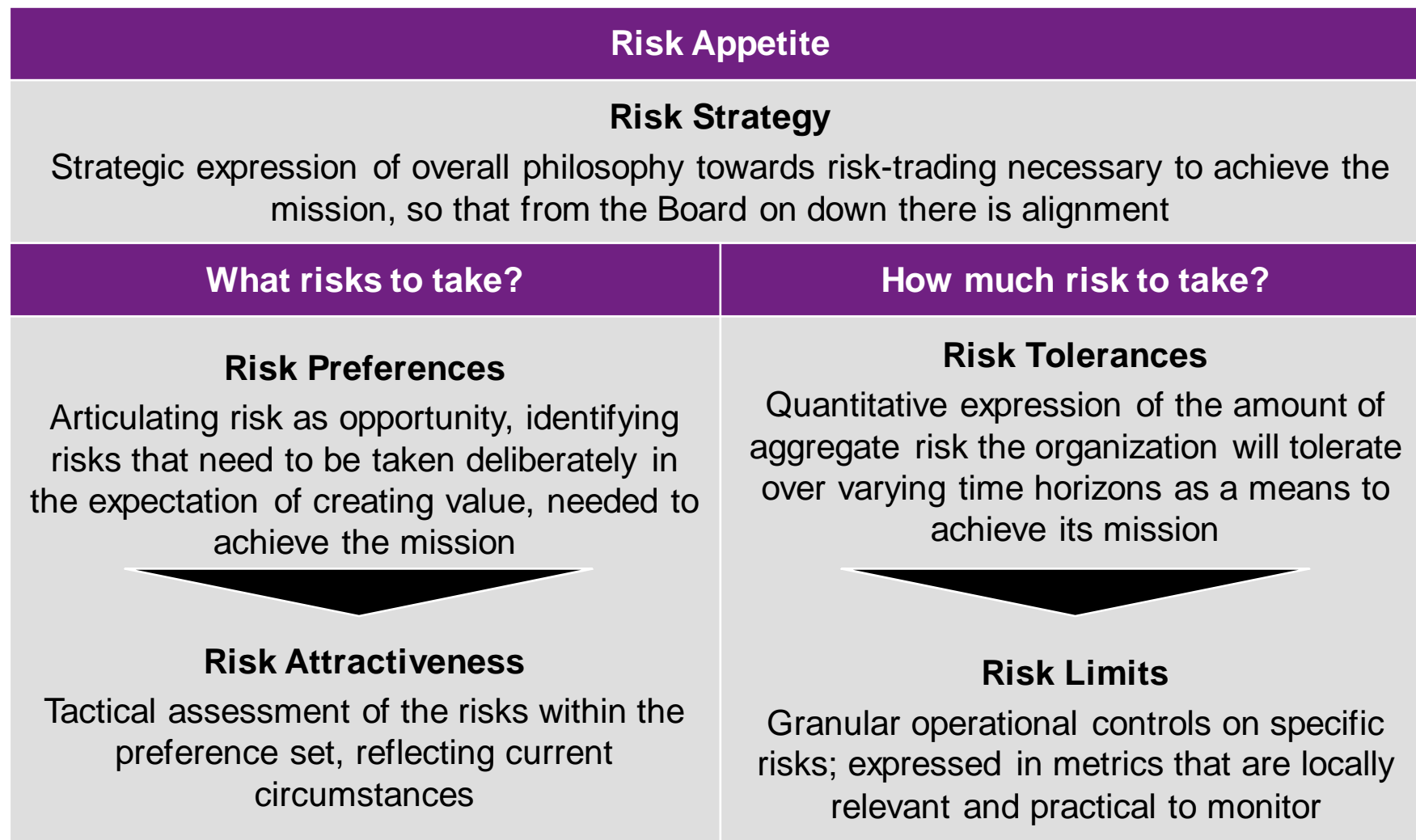
- Fully articulated mission statements

Purpose	Responsibilities	Mission Time Horizon
<ul style="list-style-type: none">▪ Delivering value to shareholders▪ Fulfilling the social purpose of insurance	<ul style="list-style-type: none">▪ Good security and service to policyholders▪ Rewarding careers for employees▪ Responsible conduct for regulators	<ul style="list-style-type: none">▪ Contracts make long-term promises▪ Business, investment and insurance cycles

Mission success depends on creating value

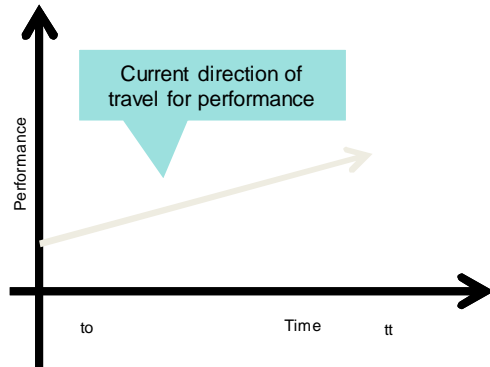
- Developing and maintaining a comparative advantage

Elements of the risk appetite framework

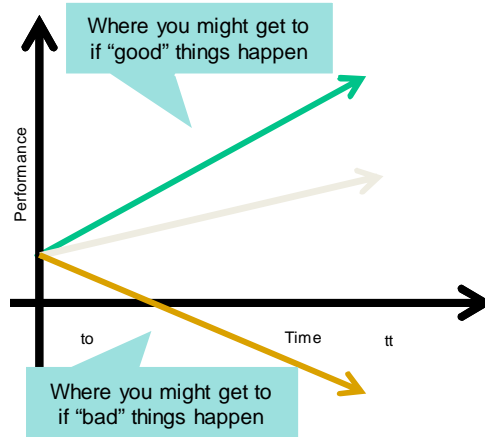


Risk preference is “proactive” — Risk tolerance is “defensive”

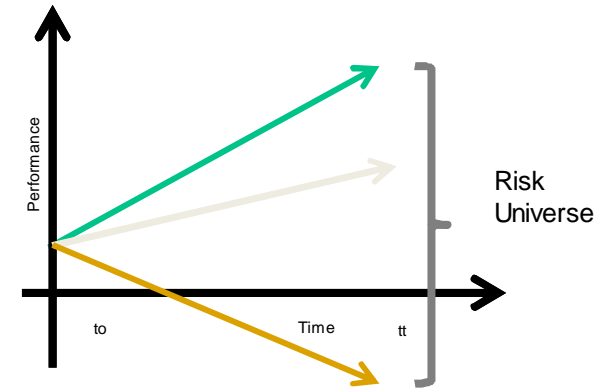
Each company has a positive performance expectation over time



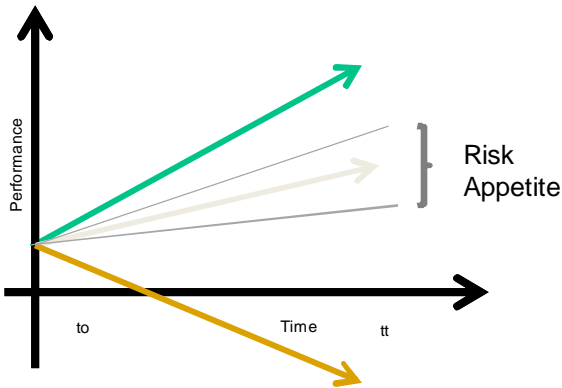
Depending on what happens (internal and external) it ends up in a “good” or “bad” position



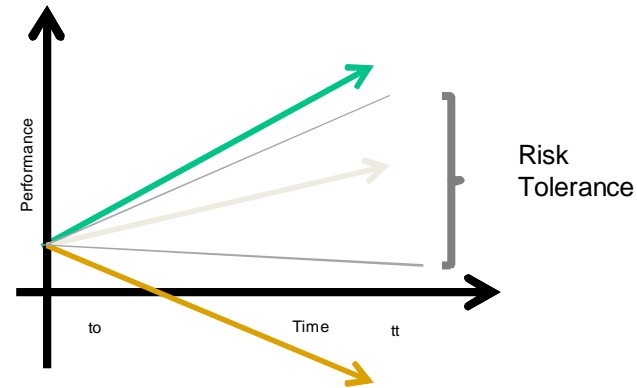
We call the set of possible outcomes the “risk universe”



“Preference” is PROACTIVE statement of the risk a firm will take to achieve its performance expectation



“Tolerance” is a DEFENSIVE “line in the sand” beyond which the firm will not go in pursuit of its objectives



*Adapted from Risk Appetite and Tolerance Guidance Paper. The Institute of Risk Management.

Organizations manage risk by creating and holding adaptive buffers

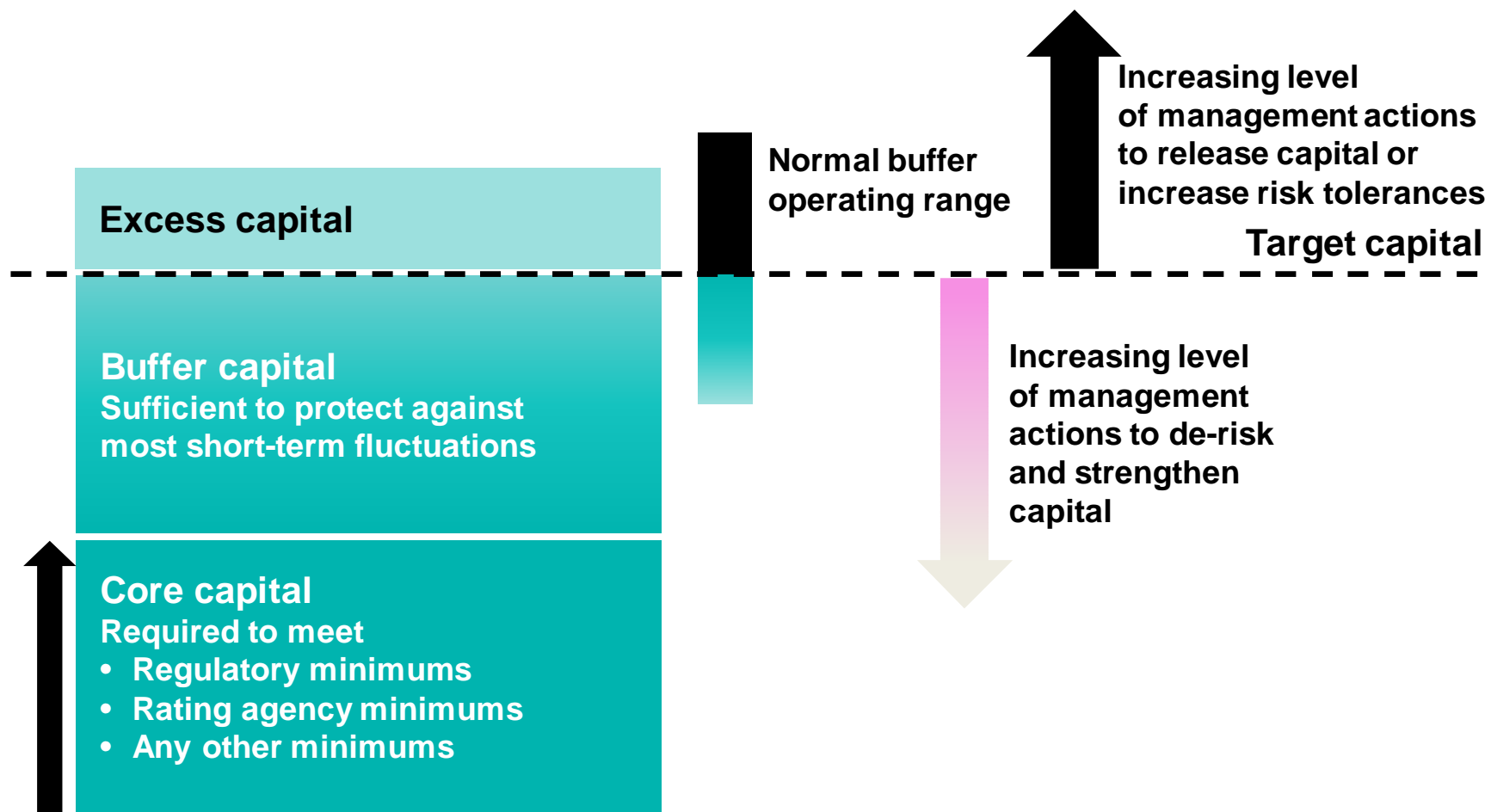
- Adaptive buffers are resources that allow a company to manage through “the bumps in the road”
 - Financial resources
 - Non-financial capital — human, brand, intellectual, relationship or system capital
- The buffers provide management with time to develop and implement adaptive actions
 - Ladder of responses, depending on depth of buffer erosion
- Developing and maintaining buffers is not costless, so one can't have them all in unlimited quantity

Risks to mission can be organized around four quadrants



Capital adequacy framework with buffer capital

Risk tolerance describes willingness to risk depletion of buffer



Tying Risk Limits to Risk Tolerances



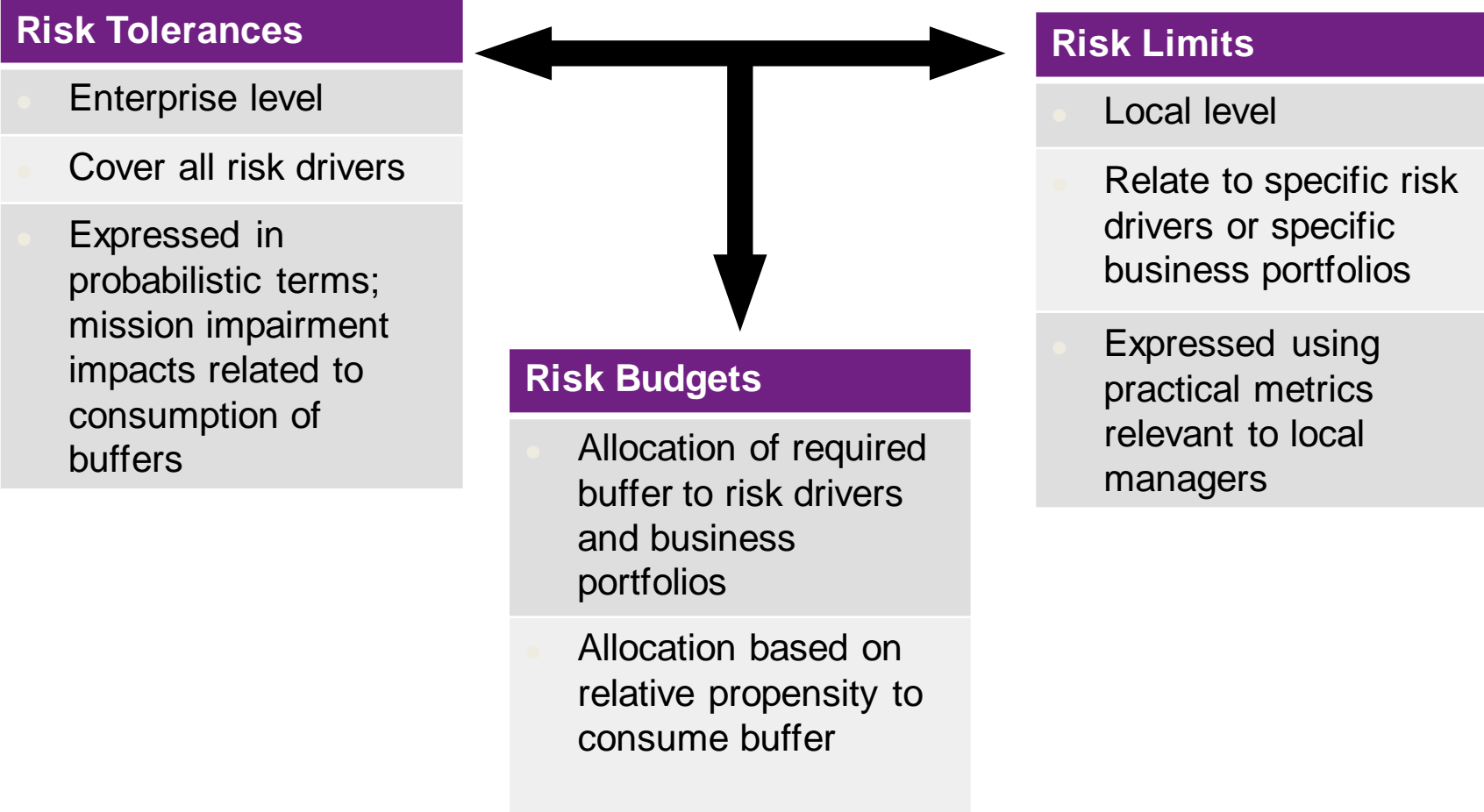
Link between risk tolerances and risk limits

- Risk tolerances are enterprise-level metrics that quantify the amount of aggregate risk that a company is willing to accept
 - Usually it is expressed in probabilistic terms, time horizons and mission impairment impacts
- In contrast risk limits are more granular and help to implement the risk tolerances
 - They are often expressed employing practical metrics that are measurable and relevant to managers based on authority levels, like underwriting or claim settlement authority
- Effective risk limits help management execute its plan while staying within chosen risk tolerances
- Several practical issues become apparent
 - How to move down from the enterprise all-risk-driver view to specific individual risk drivers
 - How one tests if the risk limit metrics have the right linkage to the enterprise risk tolerances?

How risk budgets can help

- Risk budgets are essentially a top-down exercise in which senior management actively deploys the total risk-taking capacity of the enterprise to the various risk drivers/business units
 - When the capacity has been allocated, actual levels of deployment can then be actively monitored to assure they stay within agreed upon targets
- In essence risk budgets are the highest-level set of risk limits imposed on each business portfolio
 - They can focus on either specific risk drivers that are problematic, or
 - They can focus on the total risk budget for a business unit, without specifying budgets by risk factor

Risk budgeting can help create the linkages between enterprise risk tolerances and local risk limits



Implementing risk tolerances may require an alternative implementation of enterprise risk models

- A risk measurement model is a system that measures the financial impact of risk drivers on a business portfolio
 - The enterprise model is the special case
- First-generation models were built at the business unit level first and then aggregated to the enterprise level
 - This approach produces accurate results, yet it is cumbersome to maintain and run
- For a risk model to be useful it should produce results near real-time and be transparent, and flexible
- Enterprise models could leverage the business unit models through the use of loss functions to proxy the business results
 - The loss functions are capable of being updated as the business and environment changes

Case Study

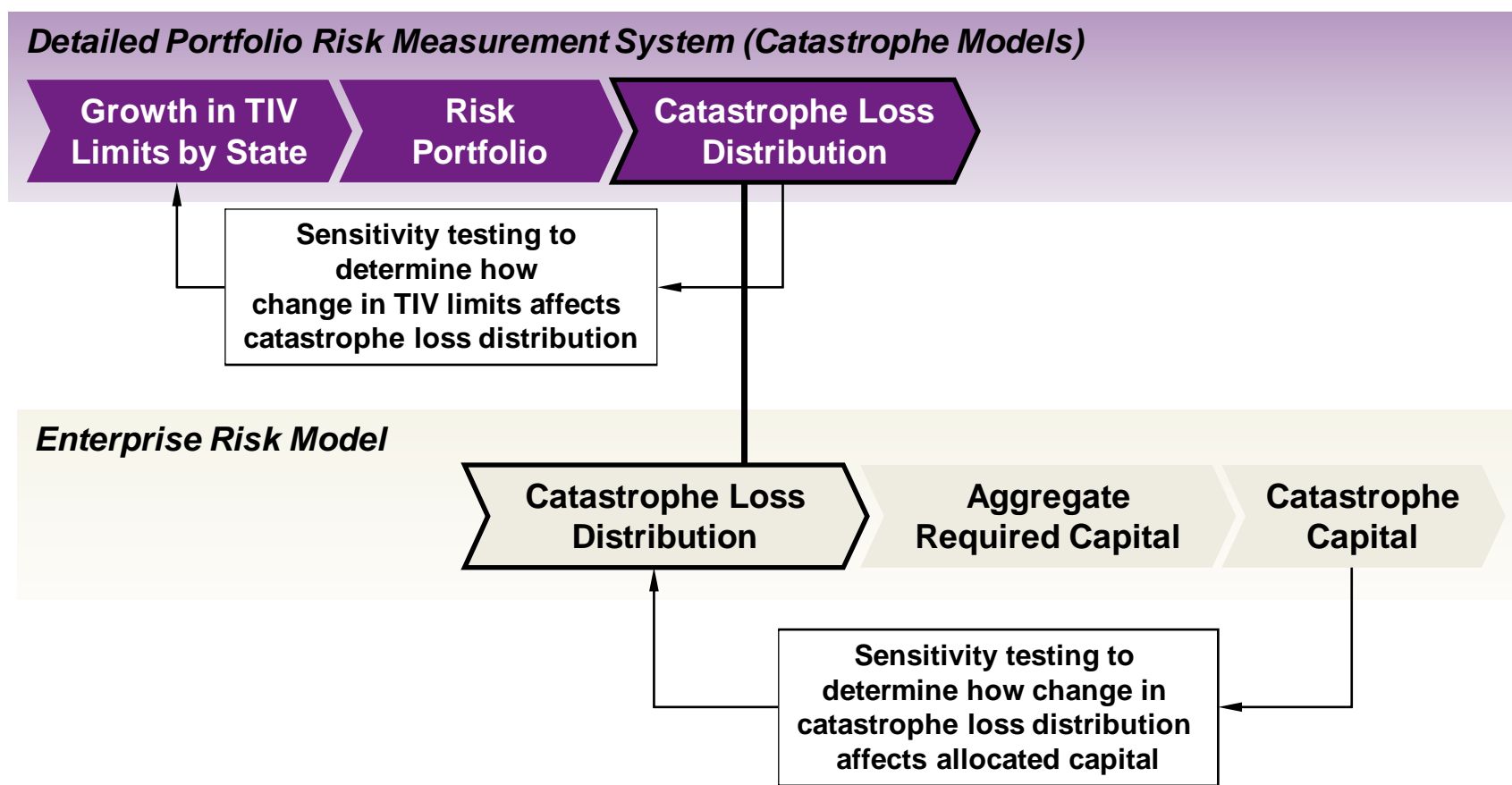


Risk tolerances and risk limits linked through a real time risk monitoring tool

- Company was a mutual insurer
- They sought to understand how growth in total insured value by state for their property book affects their risk appetite/limits
 - Willis Towers Watson built a near-real-time risk monitoring tool to identify whether a given growth strategy falls within the bounds of their risk appetite
- Several challenges needed to be addressed
 - Running CAT models with alternative exposure assumptions can take days
 - Running a capital model can take hours
- The solution entailed achieving near-real-time risk monitoring through mathematical functions, which assisted the company with its decision making
 - Local risk limits were linked to global risk budgets using a cat loss distribution which was consistent between models

Multiple runs of the risk measurement and enterprise risk model

- Risk driver = CATS
- Risk budget = CAT risk at 40% of the total risk
- Risk limits = TIV
- Risk tolerance = Buffer against capital loss



Questions / Thoughts



Please contact if you have further questions

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