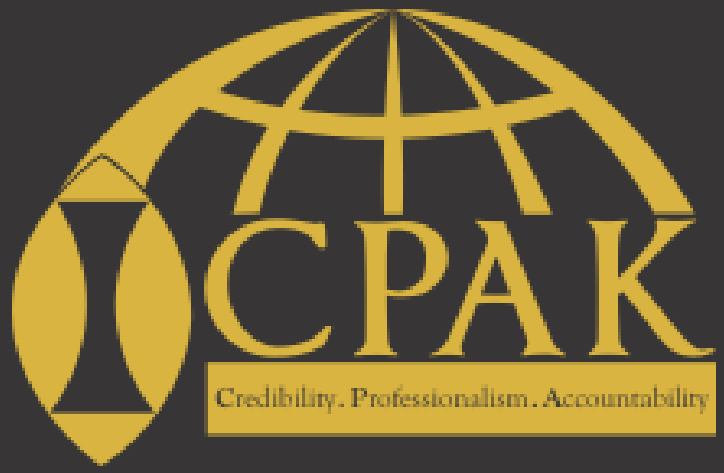


FINANCIAL SERVICES SEMINAR

DAY 1: TUESDAY 3RD NOV 2020

EZEKIEL MACHARIA

GROUP CEO & CHIEF ACTUARY, KENBRIGHT

AGENDA

- Introduction
- Risk Based Supervision Regime
- Actuarial Modelling
- Stress Testing
- Scenario Analysis
- Reserving & Capitalization

INTRODUCTION

Scope of this presentation

- Overview of the Risk Based Supervision Regime and Methodology for the Financial Services Industry
- Leveraging on stress testing, actuarial modelling, and scenario analysis to assist in decision making, regulatory compliance & reporting
- Creation of optimal reserves and adequate capitalization

RISK BASED SUPERVISION

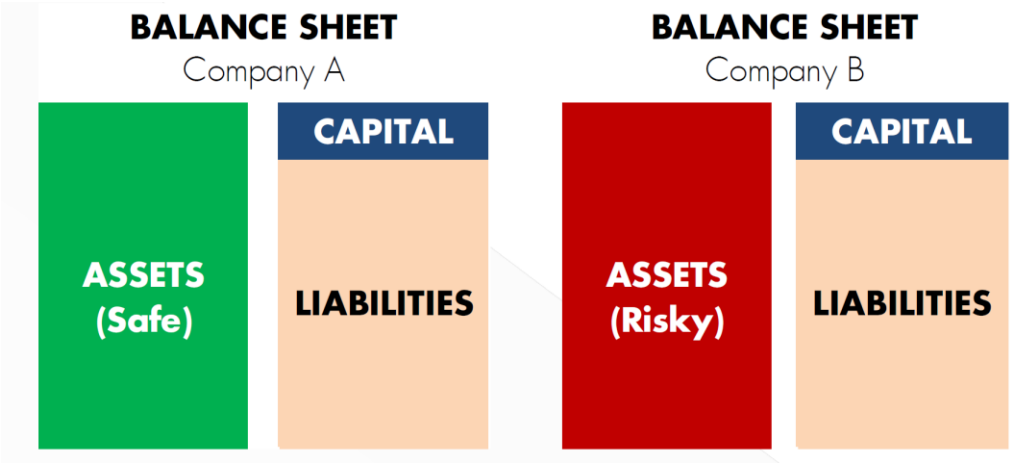
- The Kenya financial services sector has been traditionally regulated under a **compliance / rules based regulatory regime**

- The capital required was based on fixed rules that did not consider the riskiness of a company's assets or liabilities

- Risk Based Supervision is a prospective regulatory regime that considers riskiness of the company's assets and liabilities

RISK BASED SUPERVISION

Compliance / Rules Based Regulatory Regime

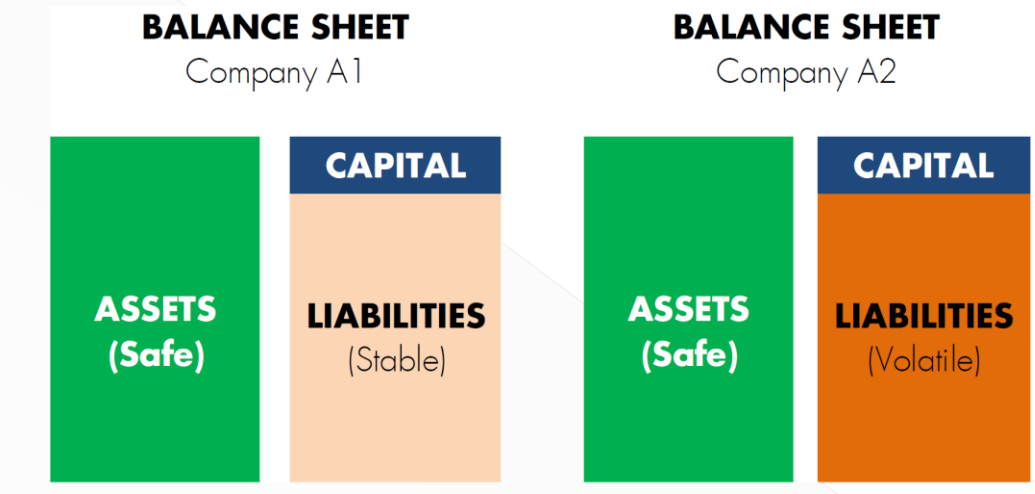


- In a compliance / rules based regulatory regime, the two companies are <u>treated equally</u>

- Company A is not rewarded for holding safer assets. Capital requirement is the same for both companies

RISK BASED SUPERVISION

Compliance / Rules Based Regulatory Regime



- Company A1 is not rewarded for holding stable liabilities.
- Capital requirement is the same for both companies

RISK BASED SUPERVISION

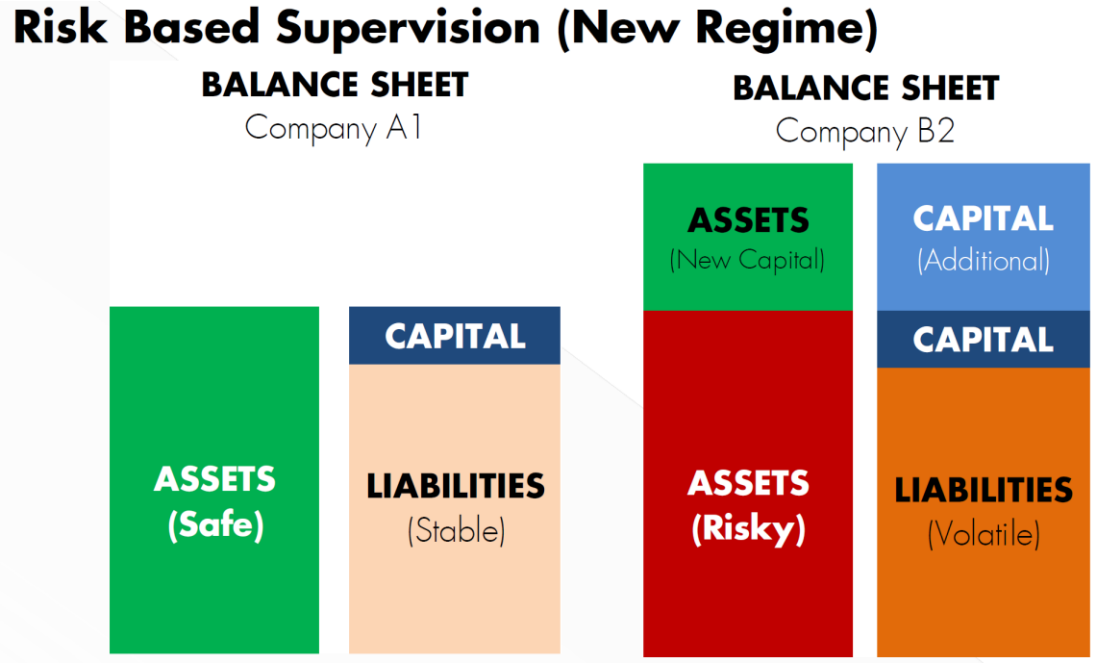
Why Risk Based Supervision Regime

- Riskier behaviour (risk assets / unstable liabilities) by the financial institution should attract higher capital requirements

- Investment in systems, processes and risk management practices that made liabilities stable and predictable should be rewarded through lower capital requirements

- Several bank & insurers have failed or currently under statutory management under compliance based regulatory regime

RISK BASED SUPERVISION



- Additional capital is required to support risky assets and volatile liabilities ; or
- Reduce risky assets and volatility in liabilities

RISK BASED SUPERVISION

History of Risk Based Supervision Regimes

Banking

- Basel I *(1988)*
- Basel II *(2004)*
- Basel III *(2013 - 2019)*
- Base IV *(2022 – 2027)*

Insurance

- Solvency I *(1973 – 1979)*
- Solvency II *(2016)*

RISK BASED SUPERVISION

Approach in Regulation

Banking

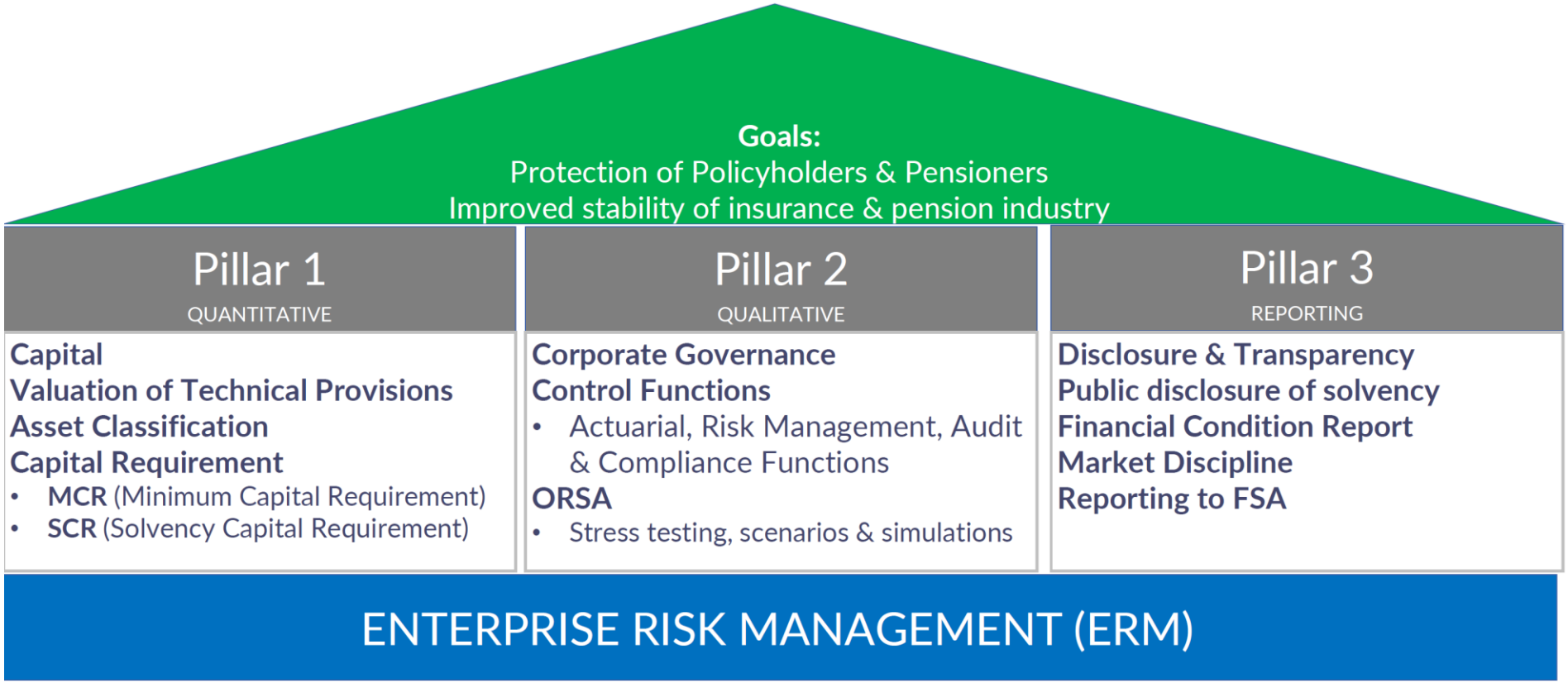
- **Pillar 1:** Minimum Capital Requirement
- **Pillar 2:** Supervisory Review Process
- **Pillar 3:** Market Discipline

Insurance

- **Pillar 1:** Quantitative Requirements
- **Pillar 2:** Governance & Risk Management
- **Pillar 3:** Disclosure & Transparency

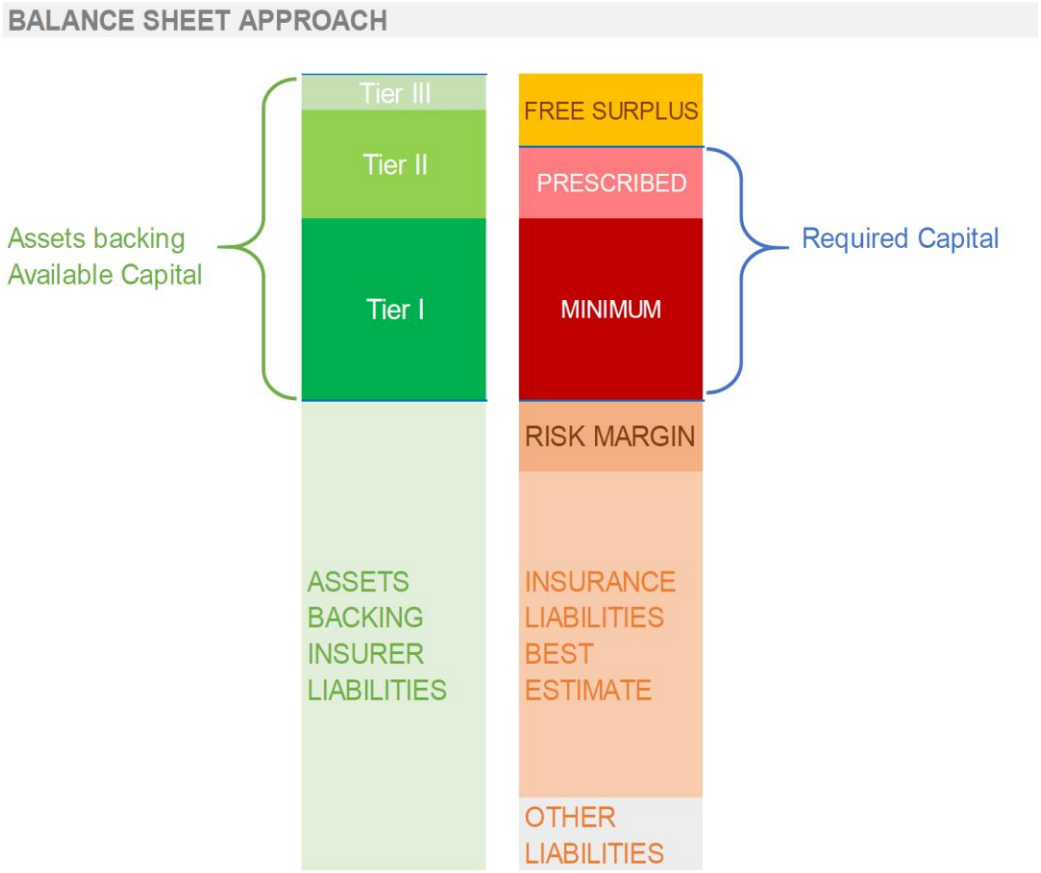
RISK BASED SUPERVISION

Example – Solvency II for insurance



RISK BASED SUPERVISION

Total Balance Sheet Approach (Insurance)



ACTUARIAL MODELLING

Role of Actuaries

- An actuary is a business professional who analyzes the financial consequences of risk.
- Actuaries use mathematics, statistics, and financial theory to study uncertain future events.
- Actuaries are used in the calculation of financial models used to derive Economic Capital / Risk Based Capital & Reserves.

ACTUARIAL MODELLING

What is an Actuarial Model

- These are equations that represent the operations of a financial institution
- Includes probabilities of risks faced by the institution and the cost to be incurred when the event happens.
- The models predict the possible amounts the insurer can pay-out and the likelihood of insolvency
- They try to replicate the *real world*

RISKS

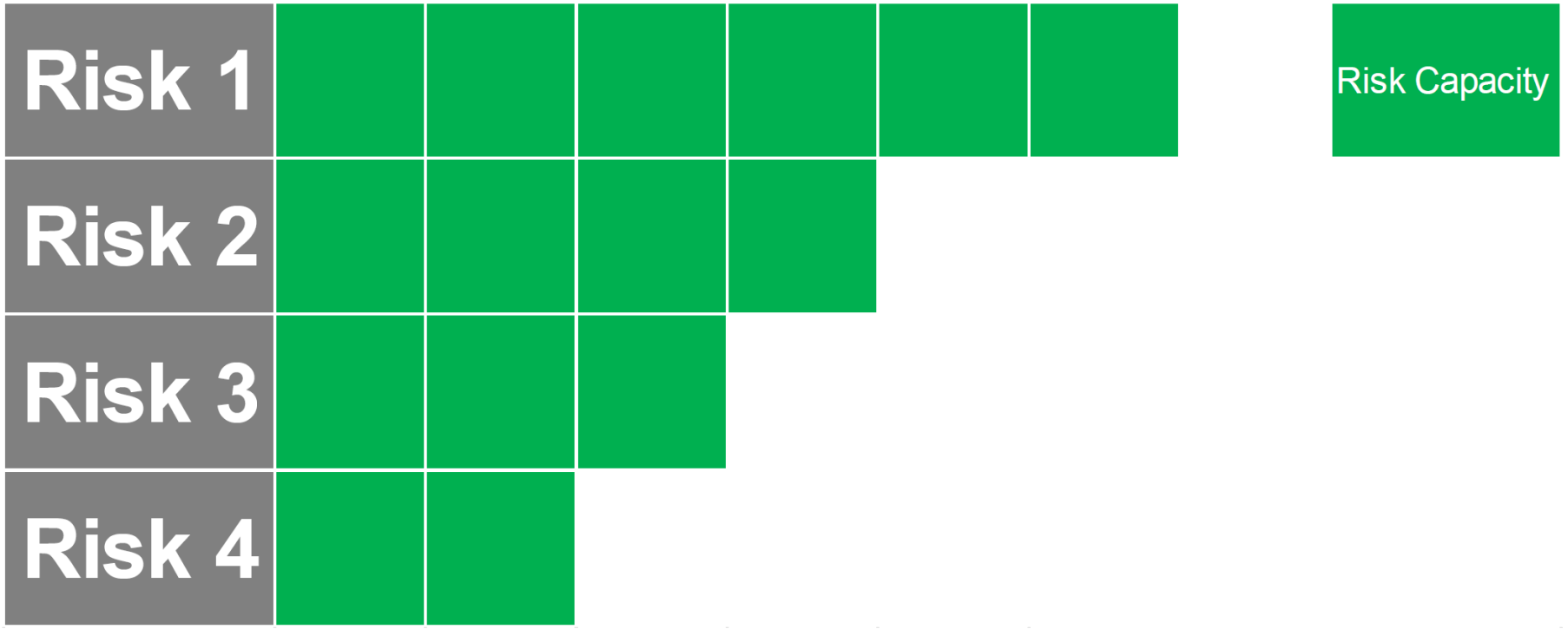
Risks Faced by Financial Institutions

No	Risk
1	Market Risk
2	Asset/Liability Mismatch Risk
3	Liquidity Risk
4	Trading Risk
5	Interest Rate Risk
6	Currency Risk
7	Equity Risk
8	Commodity Risk
9	Credit Risk
10	Pricing Risk
11	Underwriting Risk
12	Reserving Risk

No	Risk
13	Operational Risk
14	Legal Risk
15	Business Risk
16	Regulatory Risk
17	Project Risk
18	Crime Risk
19	System/Technology Risk
20	People/HR Risk
21	Process Risk
22	Strategic Risk
23	Reputation Risk
24	Economic Risk

No	Risk
25	Basis Risk
26	Political Risk
27	Agency Risk
28	Reputation Risk
29	Strategic Risk
30	Moral Hazard
31	Environment Risk
32	Social Risk
33	Systematic Risk
34	Contagion Risk
35	Concentration Risk
36	Emerging Risks

RISK APPETITE



Risk Capacity – Set by regulator or restricted by financial institution's own funds

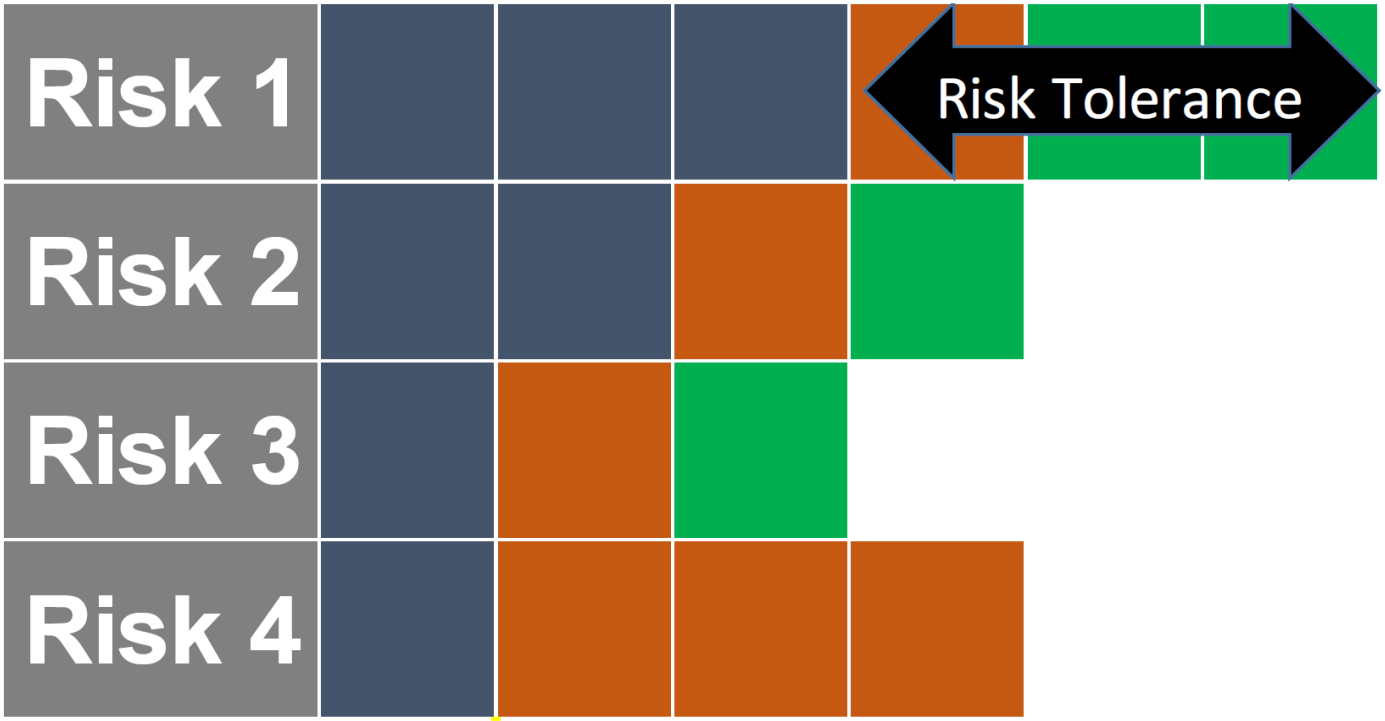
RISK APPETITE

Risk Capacity – Set by regulator or restricted by financial institution's own funds
Risk Profile – Current or future exposure affecting the company

RISK APPETITE

Risk Capacity – Set by regulator or restricted by financial institution's own funds
Risk Profile – Current or future exposure affecting the company
Risk Target – Desire Risk Profile

RISK APPETITE



Risk Capacity
Risk Profile
Risk Target

Risk Capacity – Set by regulator or restricted by financial institution's own funds
Risk Profile – Current or future exposure affecting the company
Risk Target – Desire Risk Profile
Risk Tolerance – Detailed statement on upper bound & risk targets

RISK APPETITE

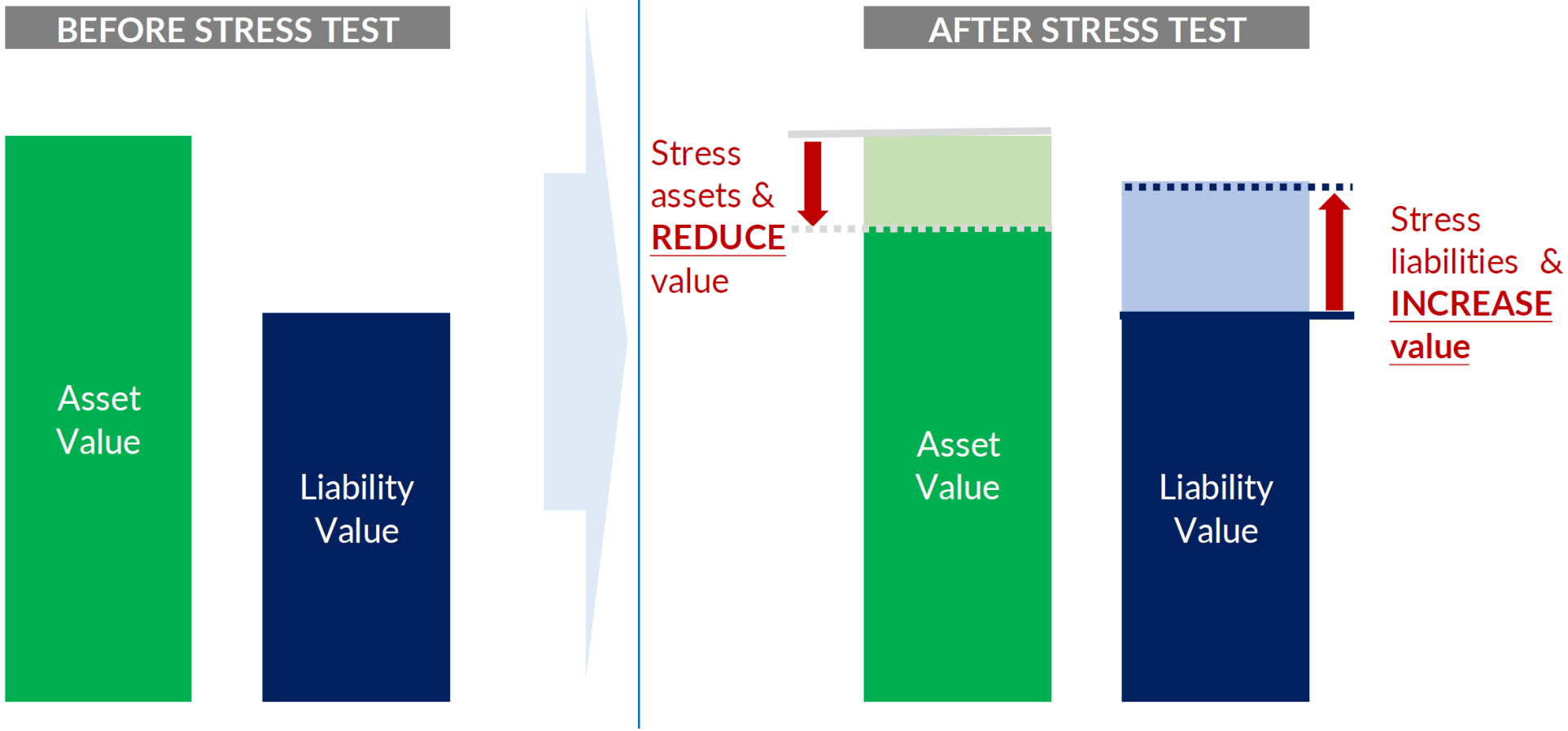
STRESS TESTING

- Stress Tests ask *"What-if?"* to unlikely but not impossible events.

- They enable regulators to know that the financial institution has sufficient capital / liquidity to meet liabilities when they fall due.

- *For example,*
  - What if the defaults in a loan portfolio doubles?
  - What if the number of motor accidents in an insured portfolio increases by 50%?
  - What if the interest rates for the bonds backing a pension scheme fail to reach the guarantee interest rate?
  - What if the credit rate spread increases by a certain amount?

STRESS TESTING



SCENARIO ANALYSIS

- Scenario analysis tests a wide range of parameters **simultaneously.**
- Scenarios can be derived from historical events or hypothetical events
- These are useful tools in the overall risk management framework of the financial institution

DECISION MAKING

- Actuarial models are useful for stress testing and scenarios analysis because they provide flexibility and can provide a variety of outcomes.

- Better decisions are made when the Board & Management understand the impact of various events that enable them to take appropriate action.

- Part of risk-based capital is derived from stress testing some of the key risks identified by the regulator.

RESERVING & CAPITALIZATION

- Reserves are usually set aside to cater for specific risks in a financial institution
- For example, in the insurance sector, reserves are set aside to cater for liabilities that the insurers may face due to claims or premiums
- Reserves are considered optimal when they are *'best estimate'*. This means that the likelihood of being optimistic is the same as the likelihood of being pessimistic
- Reserves can reduce / increase Profit Before Tax (PBT) and can be challenged by the taxman

RESERVING & CAPITALIZATION

- Capital is set aside to cater for a variety of risks.
  - The additional assets required to cover unexpected events that are specific to a risk tolerance / risk measure over a specific period of time

- Risk based capital only considers risks that the regulator considers important. Usually calculated with models issued by the regulator.

- Economic capital considers risks that the company considers important and the list usually considers more risks than those considered by the regulator. They are calculated using internal models / proprietary models.

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