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# The Practical Use of Operational Risk Capital

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# Disclaimer

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- ◆ The views expressed herein are those of the presenter and author. They do not represent the views, policies or official standards of HSBC Holdings Plc, HSBC North America Holdings, Inc. or any of their affiliates.

# Agenda

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- ◆ Two approaches to quantifying operational risk capital
- ◆ The Scenario Approach as a management tool
- ◆ Tail events: What should we do about them?
- ◆ Operational risk capital: Who “owns” it?

# Two Approaches to OR Quantification

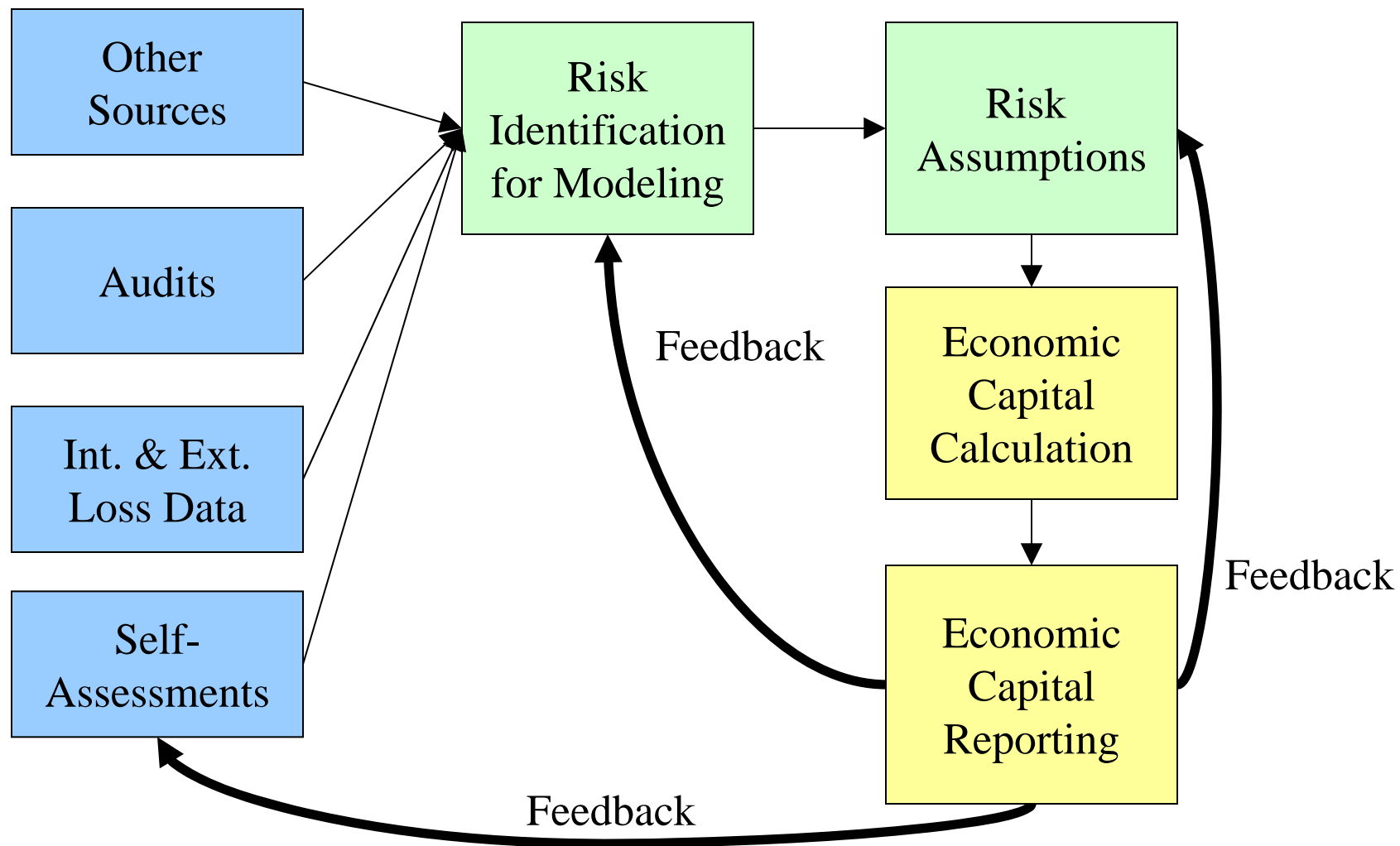
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- ◆ HSBC in North America is an AMA bank, but we have done things differently from other such banks.
  - We built an OR simulation model based on *ex-ante* scenarios first, working in partnership with our businesses and functions.
  - Our Loss Distribution Approach (LDA) model, based on *ex-post* historical data, came second and is a separate simulation model.
  - “Units of Measure” are very different.
    - ◆ In the Scenario Approach (SA), these units are individual risks identified by the businesses.
    - ◆ In the LDA, they are what the data say they are (e.g., Basel Event Types).

# The Scenario Approach

## Process Overview



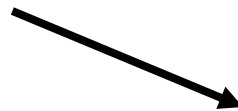
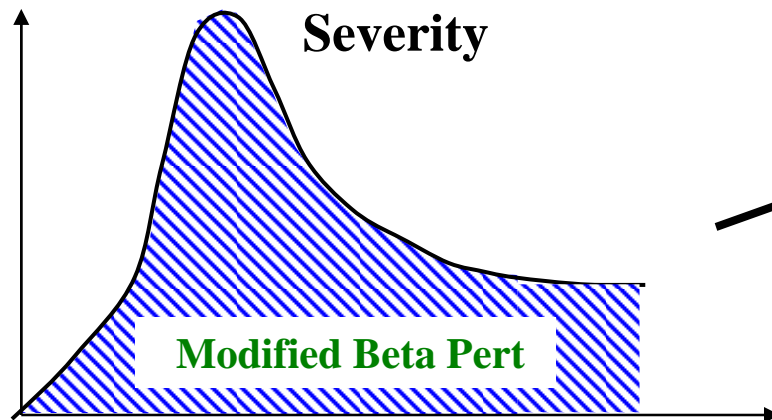
# The Scenario Approach

## Overview of Simulation

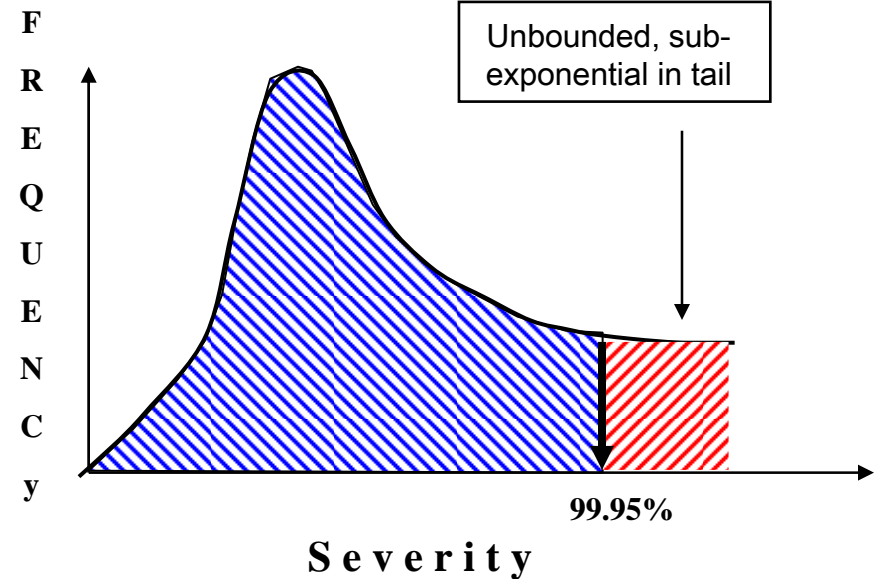
### Modeling of Risks - Monte Carlo Simulation

Frequency

**% per Annum**  
**Poisson**



Simulated Loss Distribution



◆ Modified Beta Pert requires you to make a decision on worst case loss.

# The Scenario Approach

## Clear Line of Sight

Bank-wide  
EC

**HBUS**  
\$600

Line of  
Business EC

**PFS**  
\$160

**CMB**

**CF**

**CIBM**

**PB**

Individual  
Model EC

**INSURANCE**  
\$7

**MORTGAGE**

**REGIONAL  
BANKING**

**CARDS**

**PERSONAL  
FINANCIAL  
SERVICES**

Individual  
Risk EC

**R002031**  
\$3

Insurance  
Risk #2

Insurance  
Risk #3

Insurance  
Risk #4

Insurance  
Risk #5

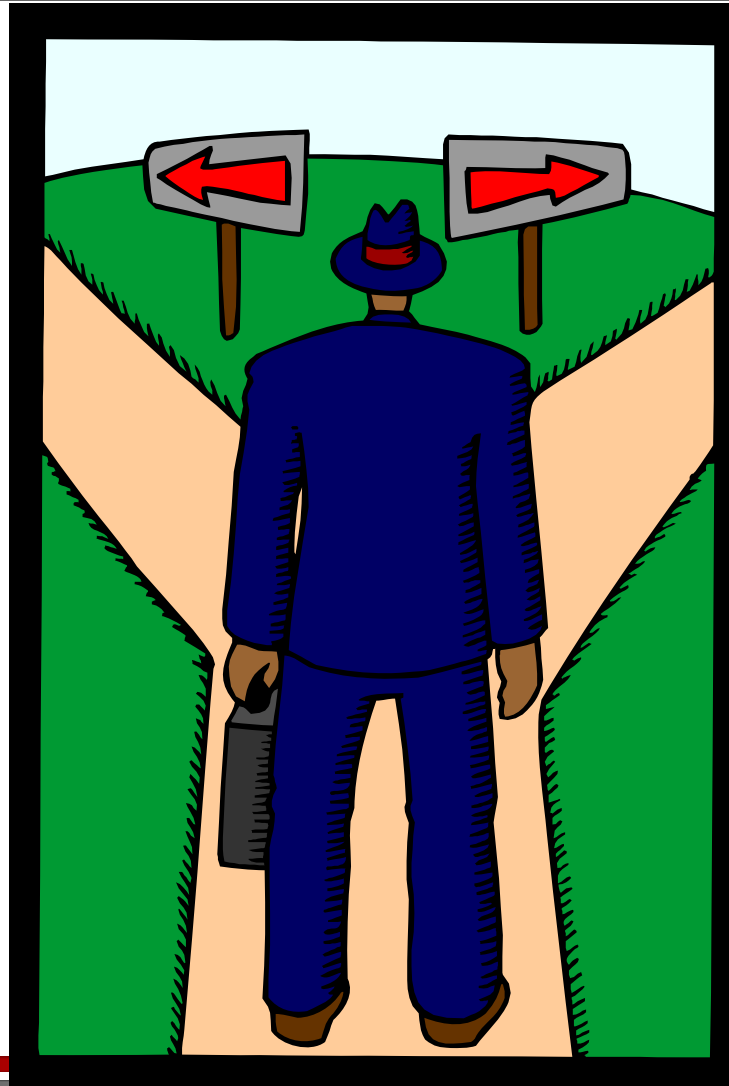
Illustrative

# The Scenario Approach as a Management Tool

## Risk Management

The SA allows us to have meaningful conversations with our businesses about important risks, the capital they attract and the mitigation that can occur.

These conversations are much more difficult under the LDA since most of our business people are not statisticians and they cannot “see” the LDA result.



## Risk Measurement

Our LDA is a “conventional” EVT POT model using HSBC’s historical data and that of our peers. Capital is estimated for the holding company and legal entities.

Our SA is an “unconventional” simulation of anticipated events. Capital is estimated for individual risks, individual businesses, legal entities and the holding company. Capital should reside in the businesses.



# The Scenario Approach

## Evaluation of Original Objectives

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◆ Build on HSBC's qualitative approach to OR management



◆ Overcome a shortage of available internal data



◆ Assist in the risk management process and align quantification with risk management



◆ Form the basis of future Pillar 1 capital requirement for HSBC North America, Inc.



# Tail Events: What Should We Do?

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- ◆ As at other banks, capital for operational risk at HSBC is driven by large, rare tail events.
  - In the LDA, these events have already occurred.
    - ◆ Will they occur again?
    - ◆ What if there are events haven't happened but might happen?
    - ◆ Sensitivity of LDA result to tail and scale parameters of GPD (too much? model risk?).
  - In the SA, these events are those that we expect to occur.
    - ◆ We ask the businesses to tell us how bad they will be.
    - ◆ Explicit discussion on maximum potential loss.
  
- ◆ Stress testing under Pillar 2 ICAAP.
  - We wish to understand the drivers of risk.
  - What happens if a “mega” rogue trading event happens at HSBC?
  - The SA is uniquely suited to answer this question (though we may not like the answer).
  - We are struggling to make the LDA work for us under the capital management elements of Pillar II.

# OR Capital: Who “Owns” It?

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- ◆ In principle, we would like our businesses to “own” their share of OR capital.
  - Create sensible incentives, such as shareholder value creation.
  - How to allocate capital to businesses, under the LDA, is not clear.
  - The SA allows us to build upward from the individual risks.
  - HSBC’s framework for Basel II Pillar 2 ICAAP.
  
- ◆ What happens if a risk is too big for a business?
  - Examples: rogue trading, natural disaster, terrorism.
  - Fungibility of capital: it can move vertically, but not horizontally.
  - Is passive management of OR “tail risk” sufficient?