



# External Data combined with Internal Data in OR Measurement

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## The confidence level

***Basel II's 99.90% can be interpreted as***

*1 out of 1000 banks, similar in size and business mix to SEB, should statistically, have a loss experience, greater than our capital requirement in a single year in the new accord*



# Quantification of Operational Risk in SEB



# Background to the SEB Operational Risk program

Quantifying Economic Capital in SEB started with  
Credit Risk and Market Risk

The sources of these risks are mainly external

But there are also internal sources of risk .....

The process in SEB to identify these risks started in  
1994



## The SEB Operational Risk program

The first step was to establish a control framework

The second step was to assess the risks in monetary terms

Economic Capital for Operational Risk is a component of the total Economic Risk Capital that underlies the capital allocation in the Group

We believe that the current methodology can be used as a base in an AMA approach



# The Operational Risk framework

Unit management receive a clear message that operational risk is important

Operational Risk Capital is affected by the control status of the unit

This gives management an incentive to invest in improved controls and avoid losses

Return on Risk Capital = Return / Risk Capital



## Definition of Operational Risk in SEB

The risk that the following conditions or events result in unexpected losses or reduced confidence in the Group:

Environmental factors:

Such as reputation problems due to slander, supplier failure, natural disasters and criminal acts

or

Internal operational problems:

Such as ineffective procedures, inadequate information systems and technology, non-compliance with regulations and legal agreements, fraud and other illegal acts committed by management and staff or other weak internal controls



## The SEB quantification method

Apart from consequences of *reputation problems* all the other causes in our definition often manifest themselves as *loss events*.

So collecting our own loss data seems a natural way to start the quantifying process.

But there is a catch .....Remember:

*A 99.90 % confidence level means that:  
On average in a one year, only 1 out of 1000 banks similar to ours should have losses greater than the capital requirement in the new accord*





## Conclusion:

We need the combined loss experience of the whole industry to assess Risk Capital for Operational Risk on high confidence levels



## Activities quantified in the model

Business Activities are:

Agency services  
Asset Management  
Commercial Banking  
Corporate Finance  
Retail Banking  
Retail Brokerage  
Trading  
Life Insurance  
and ...

General events



## Activities quantified in the model (cont.)

These Activities are:

- Mutually exclusive
- Covering all activities in the Group

“General events” are events not specific to any of the other activities mentioned above

Examples:

Fraud by senior management in an institution

Non-compliance to accounting rules



## Model philosophy

- The model should be sufficiently simple to be understood by management and staff on all levels
- Arbitrage of the model is positive, if it creates good operational risk management
- The model should include clear controls against “model gaming” - Internal Audit evaluation



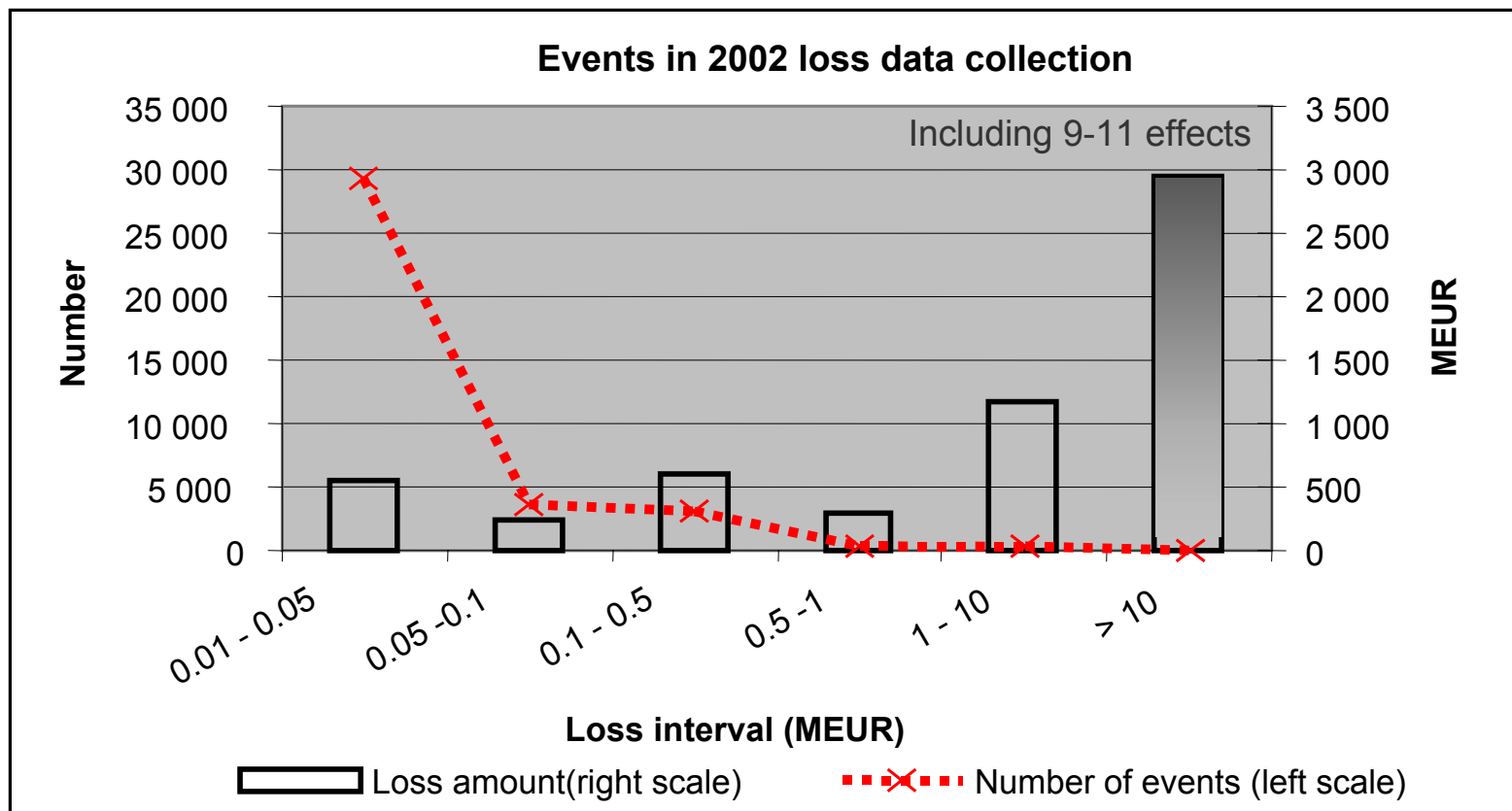
# Model assumptions

## ***Basic assumptions for the quantification model***

- Frequency of OR events in an Business Activity is proportional to the size of that Activity
- Severity of an event depends on the risk controls in place in our Business Unit



# The risk is in the tail of the distribution

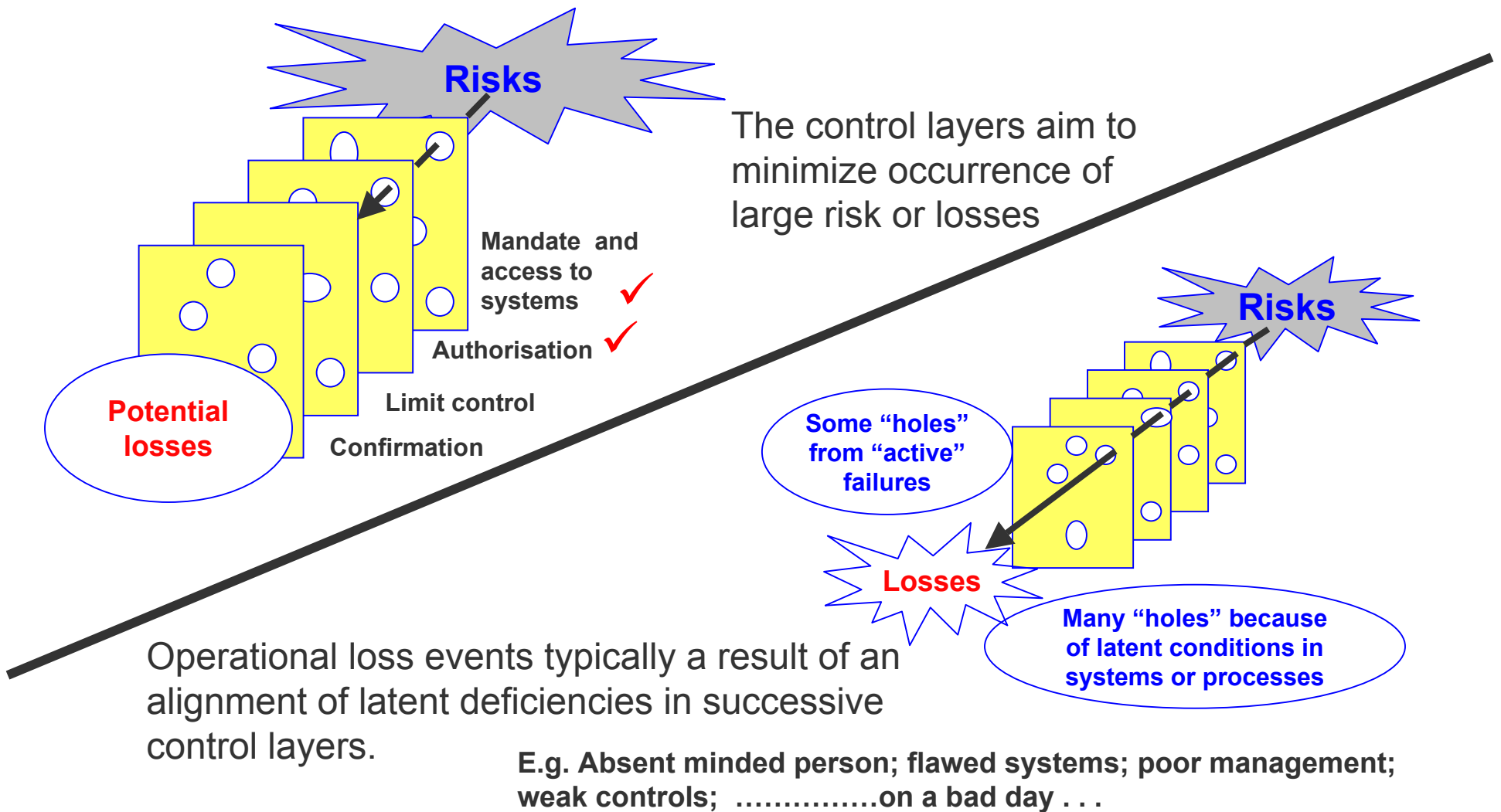


50% of total loss amount are events over 10 MEUR

Another 20% are losses between 1 and 10 MEUR

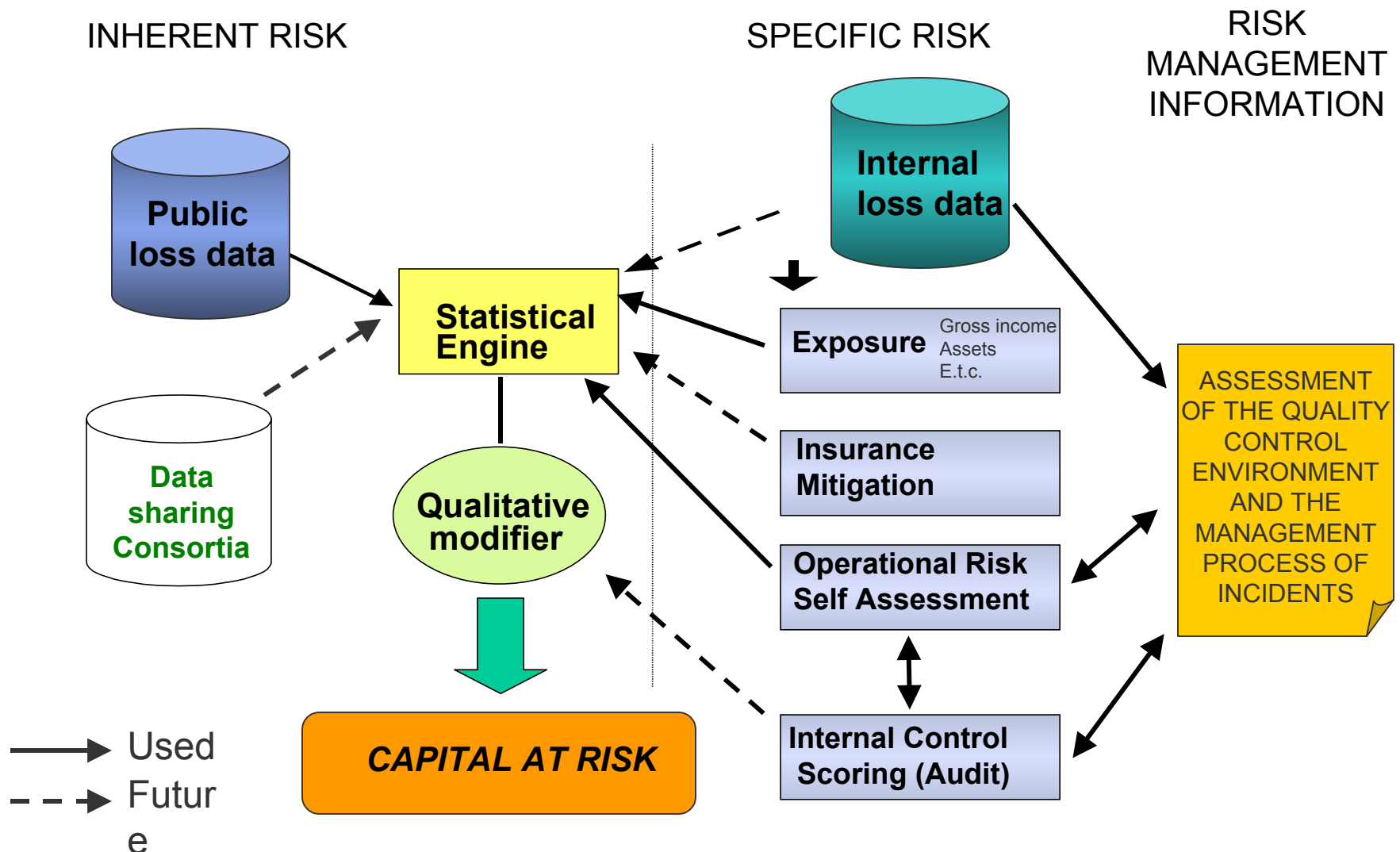


# Reasons for “the large loss syndrome”





# The SEB approach to OpRisk measurement







## Data used in the quantification

Global database of publicly known operational losses

Lower threshold in the database is 1 MUSD

Losses classified into “Business Activities”

and

“Event categories”



# SEB quantification model

## *Frequency in a Business Activity in SEB*

Number of events in that activity over a certain threshold divided by number of years in the database and multiplied with SEB “market share” in that activity



# SEB quantification model

## *Severity of operational events*

Loss amounts in the database are converted to SEK and inflated with CPI to the current year

The resulting SEK value is then *scaled* in two ways:

- Depending on the number of years it went undetected
- Depending on the control status of the SEB Business Unit



# SEB quantification model

## *Example*

Assume there are 250 loss events for the Business Activity

These are assigned an equal probability

Each loss event gets a probability of 1/250 or 0.4% divided with number of year in the database multiplied with with our market share

Event probability =  $1/(250 * 10 \text{ years}) * \text{SEB mkt. share}$

We illustrate this in chart 1 combined with the event data



# SEB quantification model

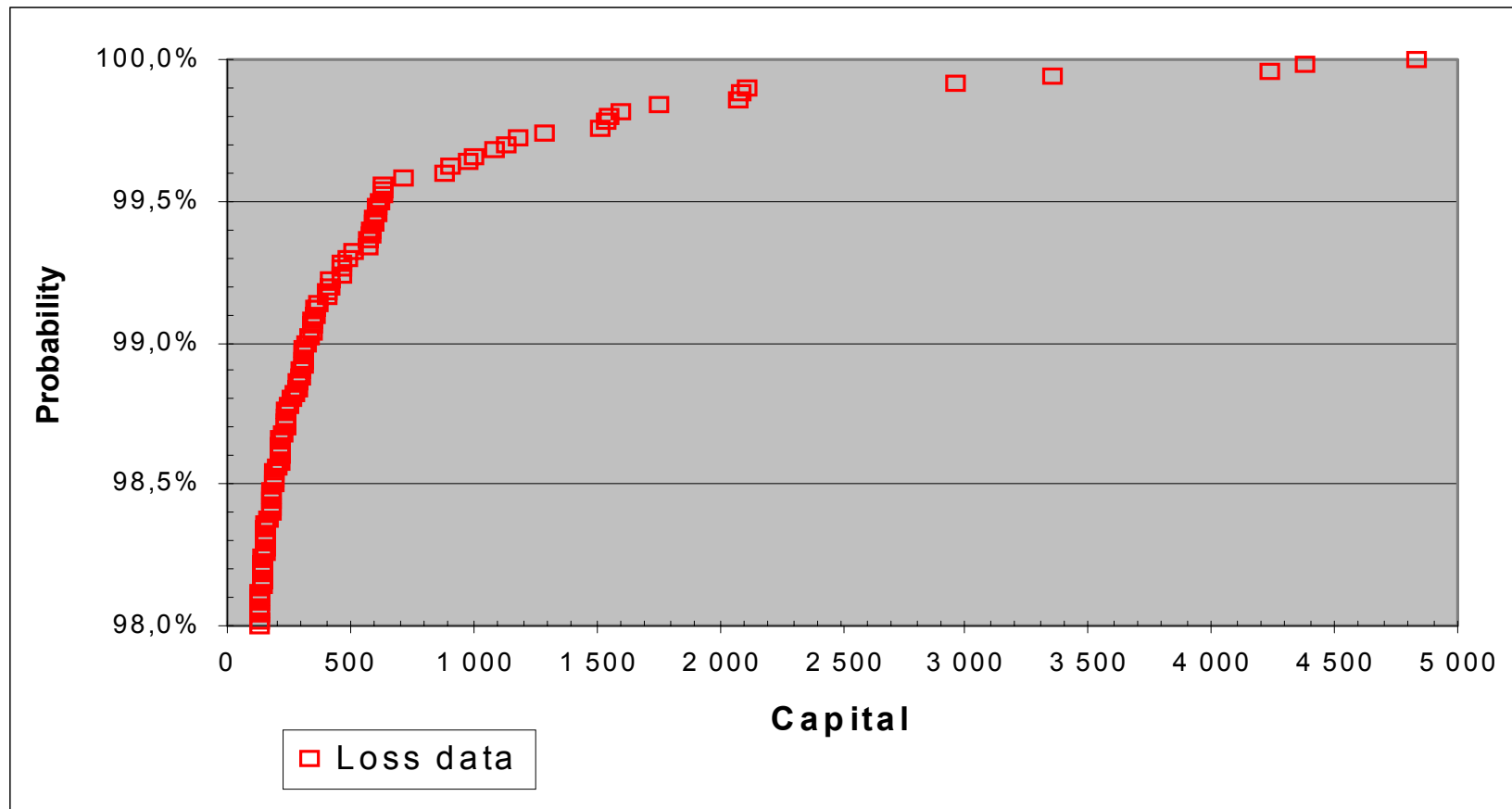


Chart 1



# SEB quantification model

*In actual calculations*

- We use a threshold of 100 MSEK
- We fit a continuous distribution to the loss data
- A high threshold gives a better fit to the crucial loss data (the large losses) for the capital calculation (see chart 2)



# SEB quantification model

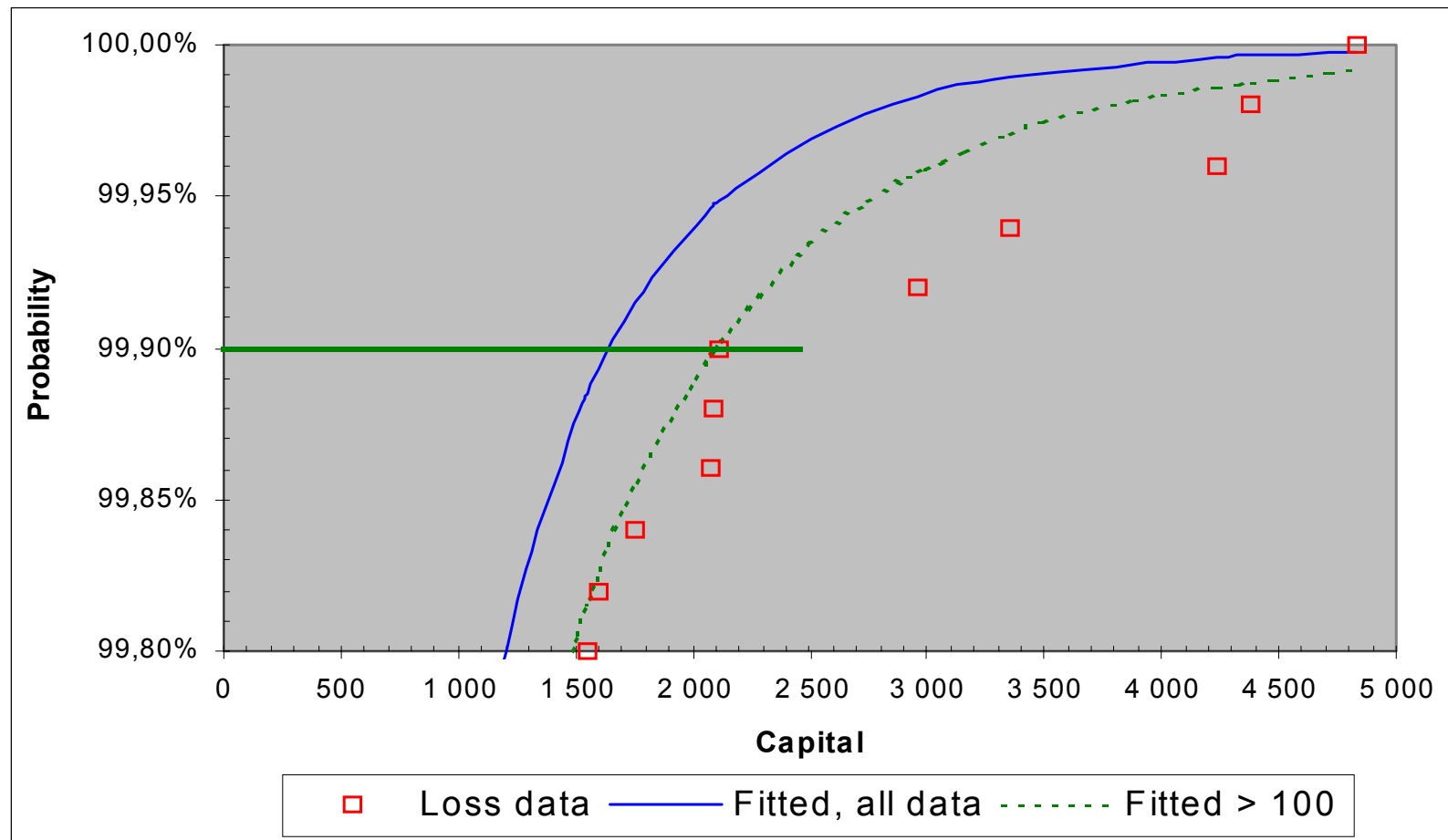


Chart 2



## SEB quantification model

*Calculation of capital for a Business Unit with more than one Business Activity*

The method is best illustrated in a chart

Plot the fitted distributions for the two activities in the same chart

Then take the sum of these two curves

The intersection of the sum curve with the 99.90% level gives the capital value





# SEB quantification model

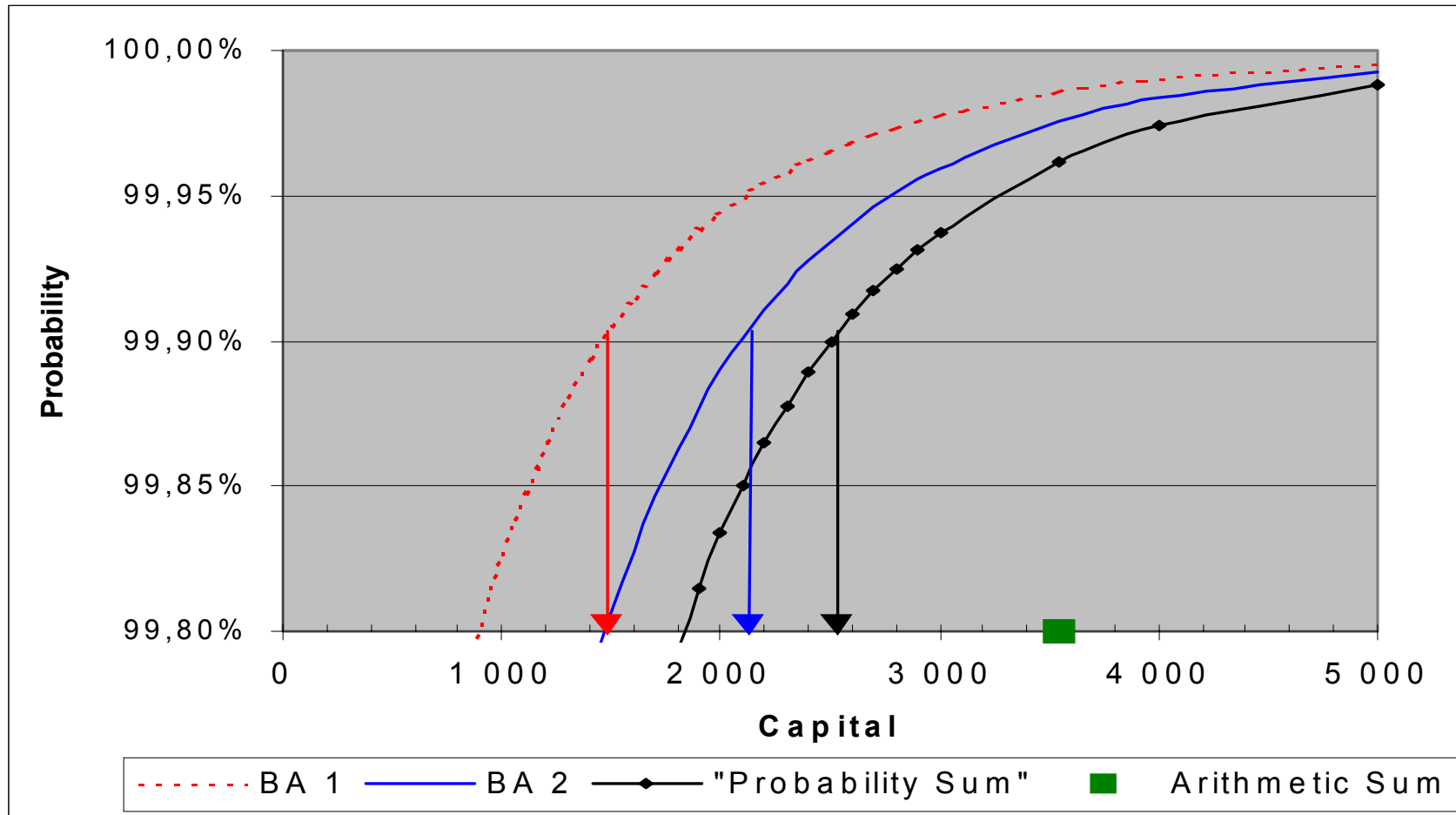


Chart 3



## Conclusions

- Using external data is unavoidable if capital on higher confidence levels are to be calculated. (E.g. 98 % or higher)
- The use of external data gives us the opportunity to assess the capital need for operational risk in high percentiles with the data available today.
- The methodology for calculating the inherent risk is transparent and so is the reward mechanism  
(The qualitative adjustments)
- This makes the capital allocation an integrated part in the management process for operational risk



## A road forward regarding the understanding of exposure

- The commercially available databases give limited support for analysis of exposure in regard of frequency and severity.
- The only hard facts on which analysis can be performed is the data from the LDCE exercise.
- Gathering the same volume of data will take years for data consortia
- If information on the frequency of events with specific severity could be distributed on business line level, it would enable the discipline to take a giant leap forward.



## A humble request

**We believe that the important work of the RMG needs to be continued concerning the calibration of alpha and beta factors**

The Basle committee is the sole institution which can provide the industry with industry loss data with well defined measures of exposure

If the Committee decides to continue with the Loss Data Collection Exercise, the data will not only enhance the quality of the new accord, it will also shorten the industry's learning process by several years