CREDIT SUISSE | GROUP

CAPITAL ALLOCATION FOR OPERATIONAL RISKS

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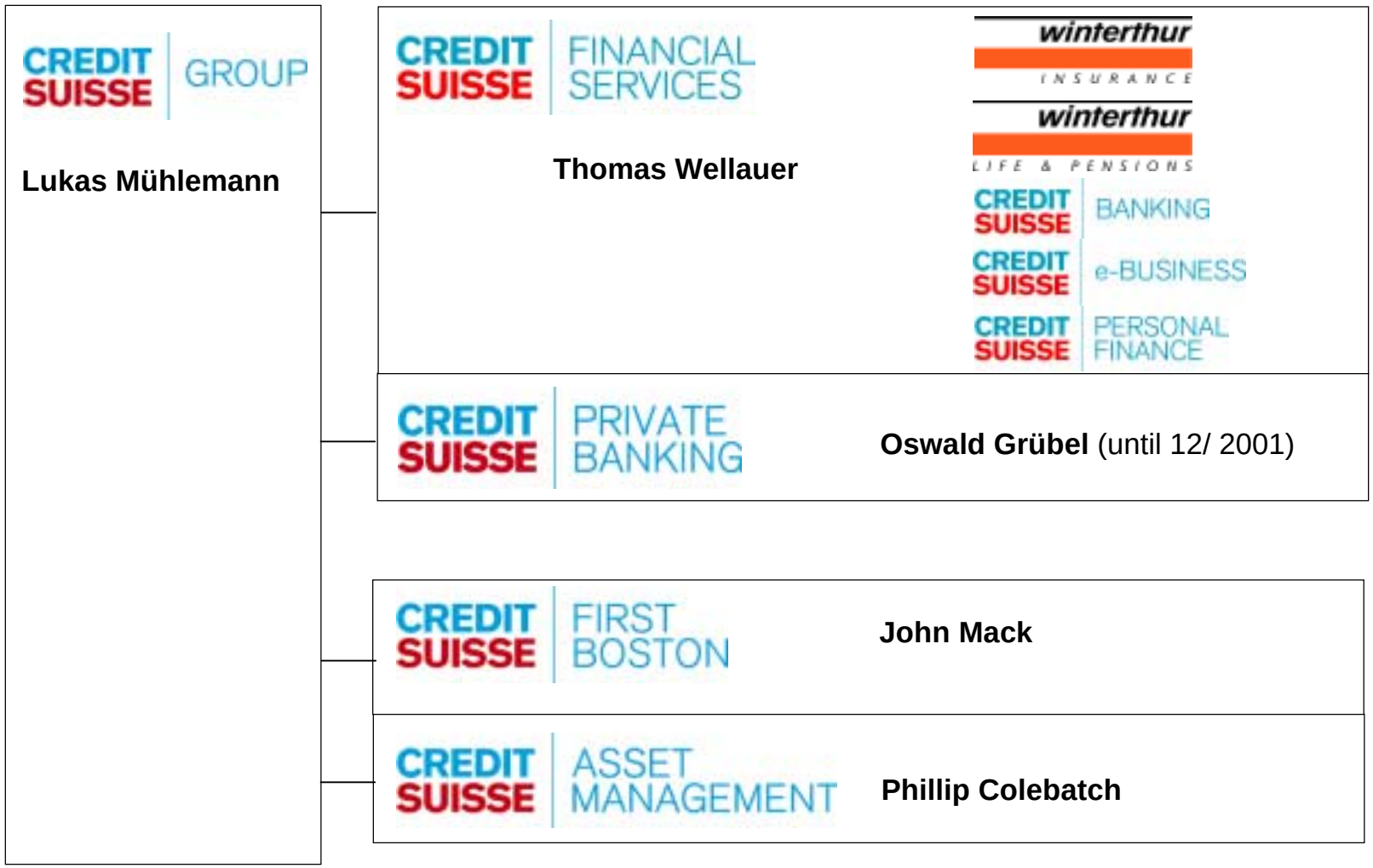


* Valid until Year-End 2001

1. INTRODUCTION: CSG AT A GLANCE

	1991	**1996**	**2000**
Balance Sheet	269	624	987
Shareholders Equity	13.8	21.0	43.6
Net Profit	1.2	(2.1)	5.8
Market Capitalization	7.5	26.7	92.5
Total AuM	n.a.	737	1,417
Total Staff, in 1000	30	43	81
of which in Switzerland	19	24	28

(all financials in CHF bn)

1. INTRODUCTION: 4 COMMON OPRISK BELIEFS

4 Common beliefs in Operational Risk

- ***Operational Risk*** **should be measured**
- ***Operational Risk*** **is like market and credit risk, it can be quantified if you try hard enough**
- **Management of *Operational Risk* is improved by imposing a capital charge**
- **Best to get started as soon as possible on developing an *Operational Risk* measurement and management infrastructure**

2. RECENT OPERATIONAL RISK DEVELOPMENTS

- **Operational Risk now identified as a separate discipline**

  Was once a collection of items;

  - Process risk, IT risk, disaster recovery, legal risk, etc.
  - Essentially “everything other than market or credit risk”
  - Is it a real class of risk, or a collection of orphans?

- **Current efforts now focus on 2 main areas:**

  (1) Measurement of Operational Risk and determining capital charge

  - Eg. Capital charge for Basle II, loss data, KRIs, KCIs

  (2) “Best practices” for managing Operational Risk

  - Formalized processes, procedures, tools and techniques

2. MEASURING OPERATIONAL RISKS

- **Currently many regulators and the industry seem to be working by analogy to market risk and credit risk**
  - Quantification and measurement is believed to be key to effective management
  - Approach pushed hard by the regulators and by some firms as “best practice”
- **Is operational risk “like” these risks? Market & credit risks:**
  - Are accepted knowingly as part of the business decision.
  - Have a quantifiable size - Money lent, DV01, currency size, etc.
  - Have a reasonable amount of homogeneity (can be treated as a group)
  - Have solid, long term historical data
  - Exhibit statistical properties that appear to be somewhat stable across time
    - (e.g. NYSE behavior in 1925 would be recognizable to a modern trader)
- **Is the analogy appropriate?**
  - Does operational risk exhibit any of these qualities?

2. MEASURING OPERATIONAL RISKS

- **Operational Risks exhibit numerous difficult properties**

Risks implicitly accepted as part of being in business

- Risks rarely chosen explicitly
- No inherent “size” for the op risk inherent in any transaction

Risks are diverse by nature

- It’s an all other category
- Is there a link between customer lawsuits, rogue traders and operations fails?

Risks are highly context dependent & change rapidly

- Are your business, people or processing systems similar to 10 years ago?
- Are the threats to those systems similar to 10 years ago (e.g. did you worry about internet virus attacks in 1991?)
- How do you know when risks change (other than by judgment)
- Is your estimate for Op Risk the same as pre 9/11?

2. MEASURING OPERATIONAL RISKS

- **Loss data modeling is one hope to solve the heterogeneity problem**

  Limited, "top down" type approach

  - At least provides a size dimension, but only for events *ex post*
  - Not very effective in assessing risks *ex ante*

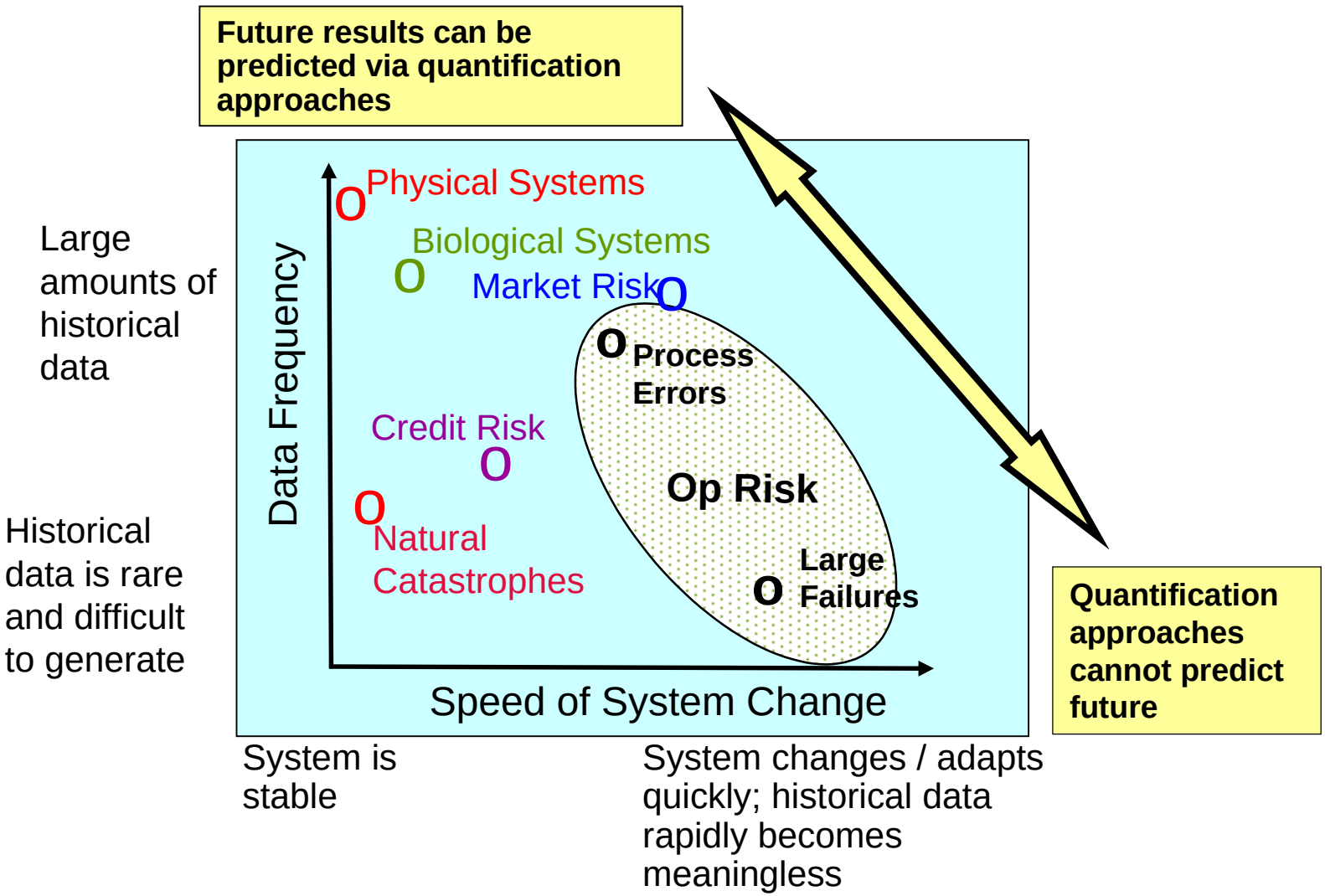
    - Therefore useless in risk trends, limit controls, etc.

  Can loss data modeling work? Is there enough data?

  - Pretty good for some, small loss areas (e.g. Ops processing), but unfortunately very sparse for large events (the ones that drive capital and impact the bank)
  - No reason to think that loss data will ever be good for large events
  - No reason to think that the high data areas (e.g. Ops) can be used to provide reliable insight to sparse data areas (e.g. Legal)

    - No way to test links given sparse data
    - Changing context means that relevance of history is questionable at best.
  - Problem shown conceptually on next page

2. MEASURING OPERATIONAL RISKS



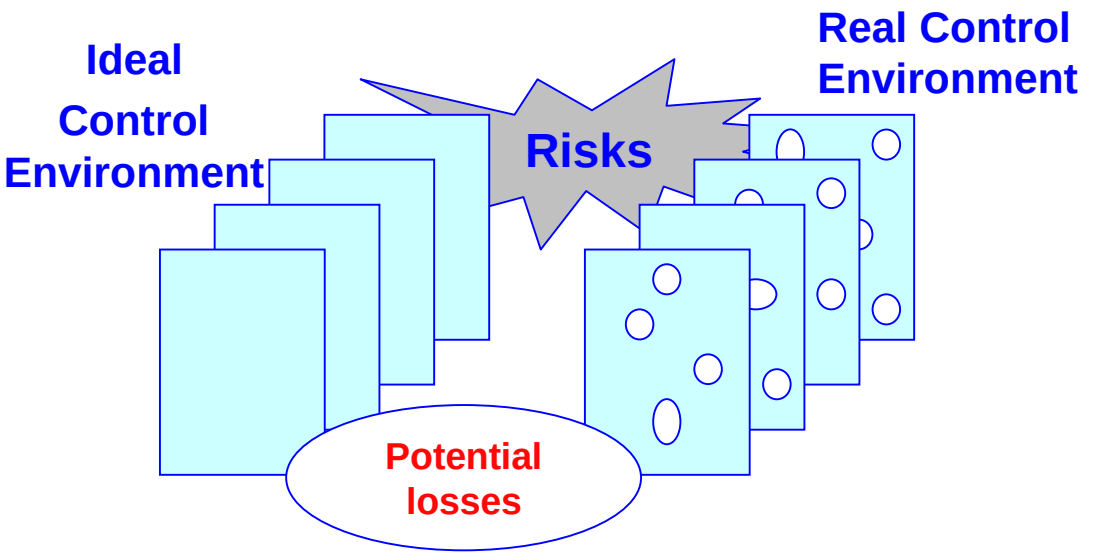
2. OPERATIONAL RISK CAPITAL CHARGE

- **Some seem to argue that we can solve the problem if industry is pushed harder (e.g. more resources, more loss data sharing, etc.)**
  - Basle II dialogue continues: fractious debate, short deadlines
  - Simply pushing the industry harder unlikely to create insight if problem is fundamentally difficult or intractable
  - Ignores fundamental issues in quality of data and rate of system change
- **Our Concerns:**
  - Usefulness of loss data modeling is likely to be modest at best, especially for those events that will drive capital charge
  - Focus on quantification will divert important resources
  - Managing by analogy can be misleading and dangerous

3. MANAGING OPERATIONAL RISKS

- **Control accidents can be separated into two types;**
  (1) Individual, relative high frequency, low loss incidents (e.g. settlement errors)
  (2) Organizational, low frequency, high loss accidents (e.g. trader fraud)
- **Individual, high frequency events can be better understood and controlled through more quantitative techniques**
  - Relatively high frequency; can develop fairly robust statistics
  - Quantification and measurement can provide some valuable management tools
    - However, associated capital charges will be relatively small
- **Organizational accidents are difficult events to understand and control**
  - Occur infrequently & are hard to predict or foresee
  - Normally variety of contributing factors combine to cause the loss
  - Each has its own individual pattern of cause and effect
- **We need to understand the development of control accidents (esp. the high-impact ones) in order to be able to manage against them**

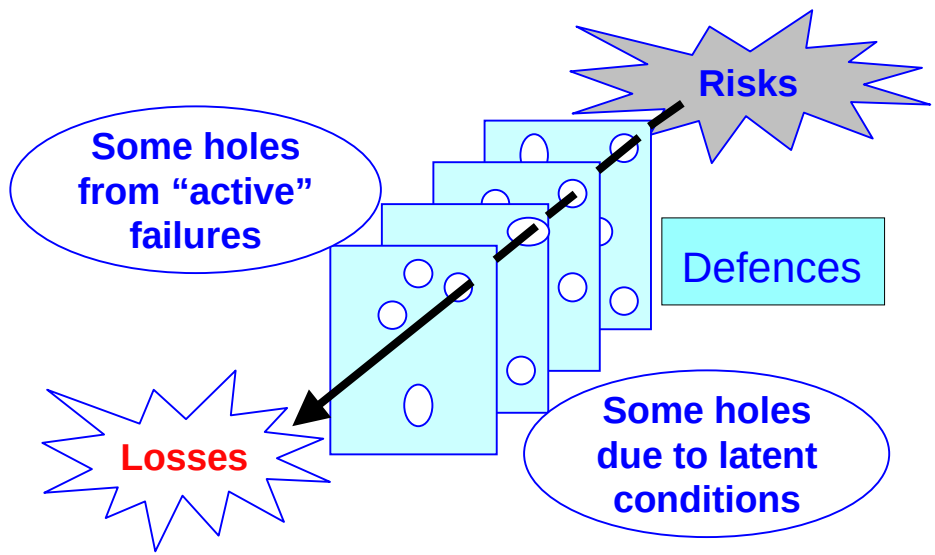
3. MANAGING OPERATIONAL RISKS



Defensive control layers try to minimize occurrence of large organizational accidents

Operational events more unlikely as they require alignment of holes in successive control layers

- e.g. bad person; flawed systems; poor management; weak controls, on a bad day . . .



3. CSG APPROACH

- **In spite of challenges, we should assign some capital for Op Risk**
  - Why? - Sole purpose is to prevent excessive risk taking in discretionary areas
  - Allocating full capital to market & credit risk would clearly be imprudent
- **Quantification Strategy**
  - Adopt simplest solution that gives reasonable top line result (KISS principle).
  - Use broadest surveys of industry Operational Risk losses (adjusted for inflation) to provide a guidepost.
    - "Scenarios" & "thought experiments" developed with senior managers also used as a cross check and as a prioritisation tool.
    - Update figures only at long intervals or after big events
- **CSG Approach – Focus resources on shrinking those "holes"**
  - Devote OpRisk resources into improving management, rather than quantification.
  - Quantification and measurement of OpRisk may provide helpful tools to better manage the high frequency, low impact risks.
  - Most areas will use blend of tools - no silver bullet - lots of old fashioned management of people, MIS, systems, controls, et.

CONCLUSIONS

- **Operational Risk is a different animal and has to be treated differently**
  - Many years of data history don't help to assess the future
  - Statistical models may create a wrong impression of "having it under control"

- **Through the Basle II process, regulators will define the focus areas for the industry**
  - Critical to get this right
  - Move away from a one-dimensional quantification approach

- **Managing Operational Risks is much more than quantifying it**
  - Capital charge as such is the wrong stick for the industry to force them to quantify operational risks and make real progress in managing it
  - A more sophisticated capital charge will lead to more sophisticated measures to minimize the charge