

# Case Study

## Reinsurance Scenarios



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# Case Study Reinsurance Scenarios

**Why do we need reinsurance?**

Think about  
microeconomic and macroeconomic  
functions of reinsurance!

# We need reinsurance, because of ...

... severe natural catastrophes, like floods:





# Reinsurer as risk carrier

## Reasons for reinsurance demand by primary insurers

- Risk of random fluctuation  
Example: Actual loss may differ from the expected loss
- Risk of error  
Example: Misjudging probability and severity of losses
- Risk of change  
Example: Probability and severity change in the course of time



# Reinsurers support for funding risk

## Expanding the scope of primary insurers

- Underwriting capacity
  - insurer can take on higher commitments with reinsurance
- Substitute equity
  - easier for insurers to complying with solvency regulation
- Balance-sheet continuity
  - reinsurance covers can stabilize annual accounts of insurers



# Reinsurers services

**Aim is to provide “added value” for the primary insurer**

- Product development  
Example: Insurer has no past experience on his own
- Training  
Example: Development of East European insurance markets
- Claims management  
Example: Infrequent and very large claims



# Global equalization of risk

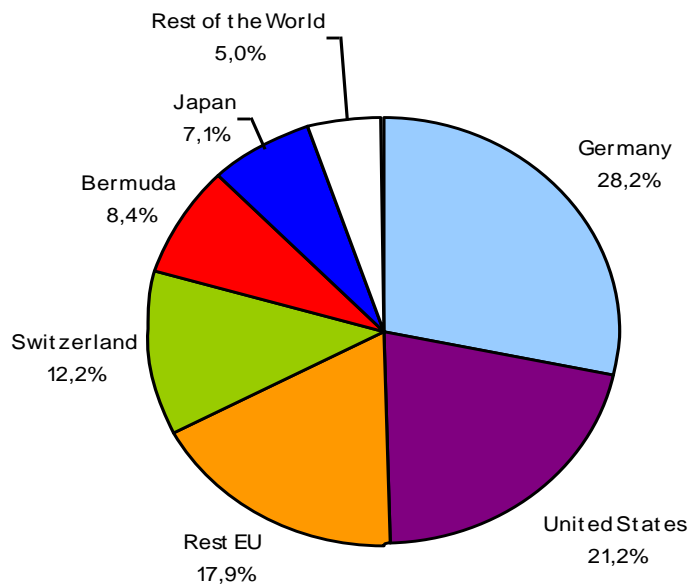
## Beneficial economic effects of insurance / reinsurance

- Greater scope for economic activity  
Example: Taking risks from innovators (e.g. pharmaceuticals)
- Better cost allocation  
Example: An insurance premium can directly be allocated
- Global spread of risks (concerning regions and time)  
Example: Hurricane Katrina hitting the coast, August 29, 2005



# Reinsurance is a worldwide business

## Distribution of premium written (2005)

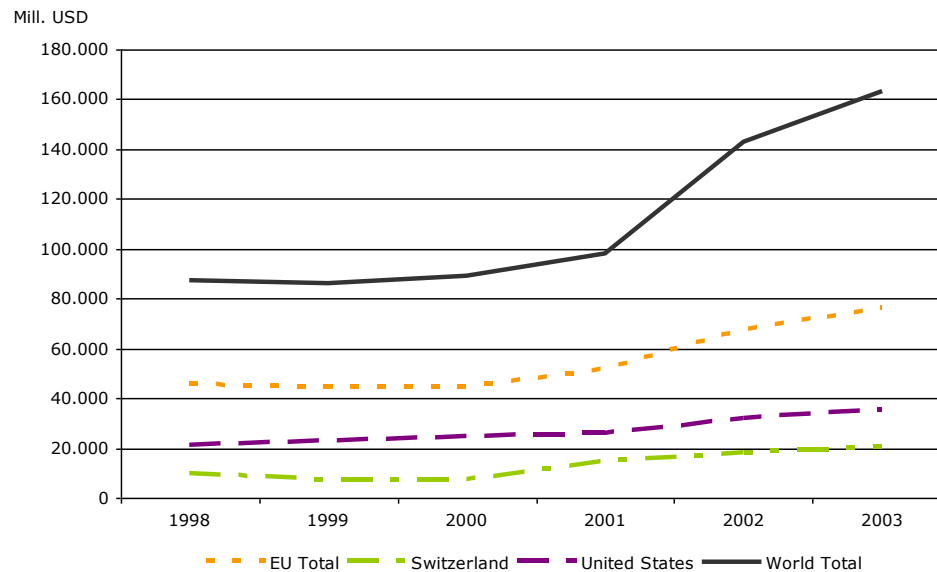


- **IAIS** Global Reinsurance Market **Report** 2006:  
→ Total premiums around US\$ 150 billion
- Largest and therefore strongest **reinsurers** are located in:  
→ Europe and the USA



# Increasing role of reinsurance products

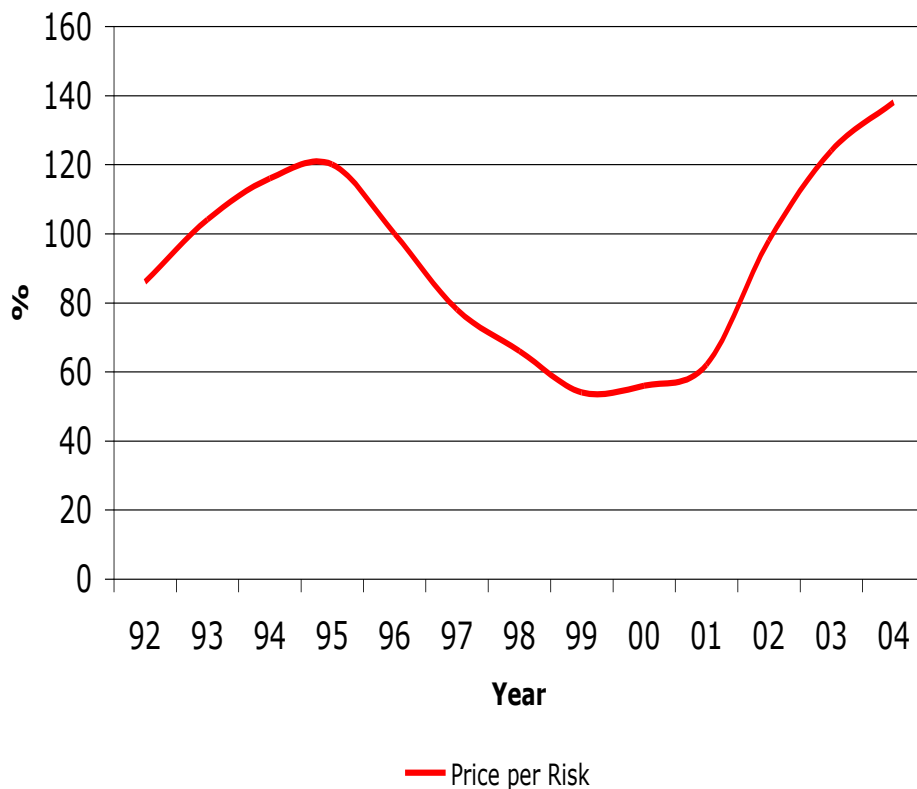
## Reinsurance premiums written (worldwide)



- **Increase** in the EU is mainly due to:  
→ Germany and UK
- **New** market players are especially from:  
→ Japan / Bermuda

# Reinsurance price cycle

## Fluctuations of the reinsurance price cycle:



**Soft markets:**

→ Lower prices and better conditions for primary insurers

**Hard markets:**

→ Higher prices and worse conditions for primary insurers



# Reinsurance supervision – Introduction I

**High Solvability Requirements** in sound (re-) insurance markets, including

- Sufficient equity capital
- Sufficient reserves for outstanding losses
- Clear rules concerning regulatory capital requirements



# Reinsurance supervision – Introduction I

## **Regulatory reporting and disclosure**

(here: Germany as an example)

- **Corporate Sector Supervision Transparency Act (KonTraG)**
  - Requires risk management system which identifies potential risks
- **Information on a reinsurers risk management, can be found at:**
  - Auditors report  
(BaFin has to be informed before his appointment and before audit takes place)
  - Internal accounting  
(Term refers to information an insurer has to submit to the supervisory authority only)



# Reinsurance supervision – Introduction I

## **Supervisory authority typically includes**

- Conduct on-site and off-site inspections
- Entitlement to finally recall board members in severe cases
- Founding of reinsurance companies needs permission by supervisor

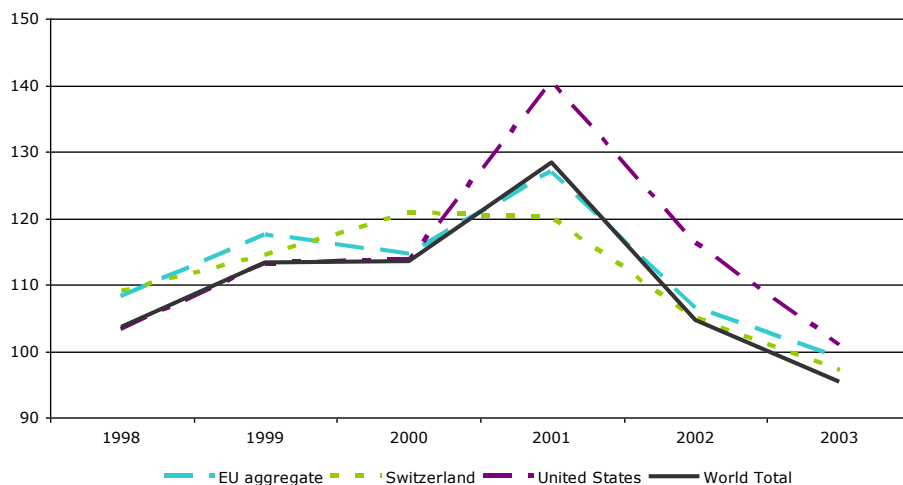


# Reinsurance supervision – Introduction II

## **Economic analysis includes various aspects**

- Check, whether sufficient equity capital and reserves are given
- Examination, whether members of the board are credible
- Analysis of different economic indicators, including
  - Combined ratio
  - Rating judgments
  - CDS spreads

## Combined ratio



- Combined ratio: important **profitability indicator**  
→ Sum of: Loss Ratio + Expense Ratio
- Loss Ratio  
→ Claims incurred as a percentage of net premium earned
- Expense Ratio  
→ Acquisition and administration expenses as a percentage of the net premiums written



# Economic analysis and judgments

## Insurer Financial Strength Ratings

- Current **opinion** of the financial security, which is based on:
  - **Characteristics of an insurance organization**
  - **Ability to pay under its insurance policy and contracts**
- Rating is **not** a guaranty of an insurer's financial strength
- For supervisors it can be **one** indicator among others

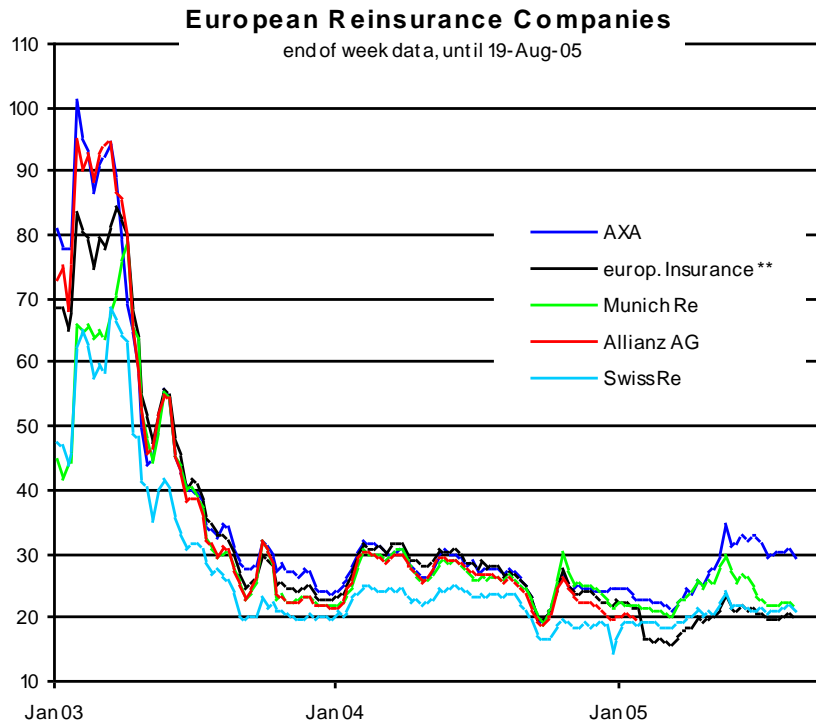


# Economic analysis and judgments

## Example (A.M. Best): Rating-judgments as risk signals

Secure	Financial Strength
A++, A+	Superior
A, A-	Excellent
B++, B+	Very Good
Vulnerable	
B, B-	Fair
C++, C+	Marginal
C, C-	Weak
D	Poor
E	Under Regulatory Supervision
F	In Liquidation

## Credit default swaps spreads



- Swap  
→ Contract: paying a defined amount at defined occurrence
- Credit default swaps (CDS)  
→ Upfront defined occurrence is the credit default
- Credit default swap spread  
→ **Spread**: span between EURIBOR European Interbank Offered Rate and the payments necessary in the case of a credit default



# Forms and types of reinsurance

## Basic principles of “traditional reinsurance”

- **Form** of reinsurance: tells us about basic nature of the contractual relationship
  - Example: acceptance of risk by reinsurer is mandatory (obligatory) *or* optional (facultative)
- **Type** of reinsurance: tells us the method by which risks are covered by the reinsurer
  - Example: whether participation of the reinsurer is proportional *or* non-proportional



# Forms I. – Obligatory reinsurance

## Both parties are bound

- **Primary insurer:** obliged to cede a share of the assumed risks
- **Reinsurer:** obliged to accept the ceded risks
- Assets and drawbacks:  
*What would you think?*
  - Advantage: simpler administration
  - Disadvantages: (for the reinsurer) blind participation



# Forms II. – Facultative reinsurance

## Decisions on a case by case basis

- Cover for an **individual risk**
- **Primary insurer:** Decides whether a risk is ceded or not
- **Reinsurer:** Evaluates all available information on the risk
  - Decides whether the offered risk should be accepted
  - Names the preferred level of participation

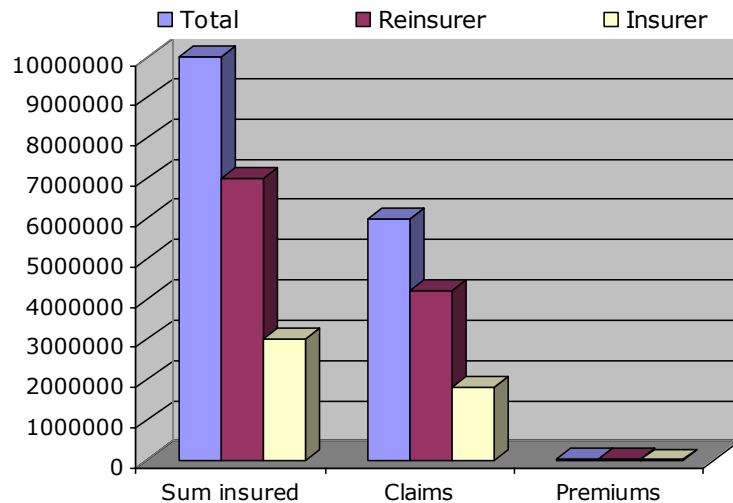
# Types I. – Proportional reinsurance

## Proportional participation

Example:

Cession 70%,

Retention 30%



- Sum insured and premium are **split proportionally**

→ between primary insurer (cedent) and reinsurer (cessionaire)

- Primary insurer

→ **passes** on a share (proportion) of risks to the reinsurer

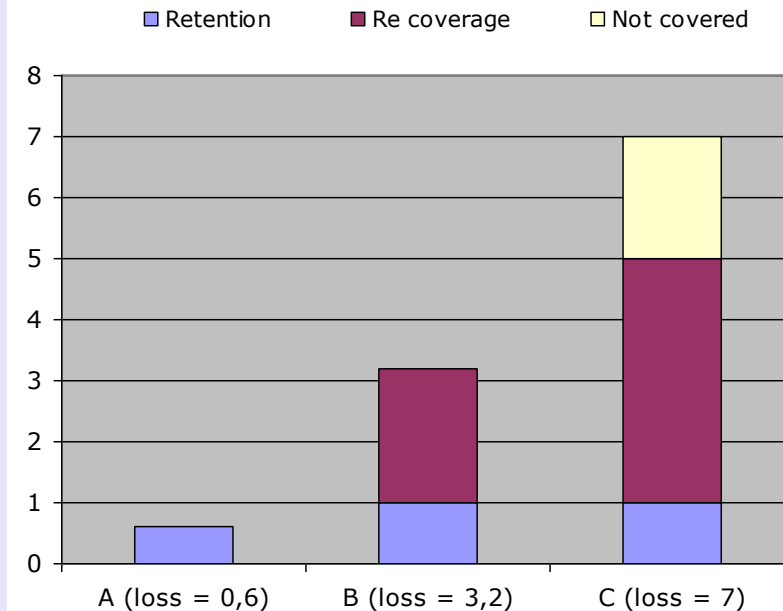
→ **pays** reinsurer the same proportion of original premium

# Types II. – Non-proportional reinsurance

## Non-proportional participation

Example:

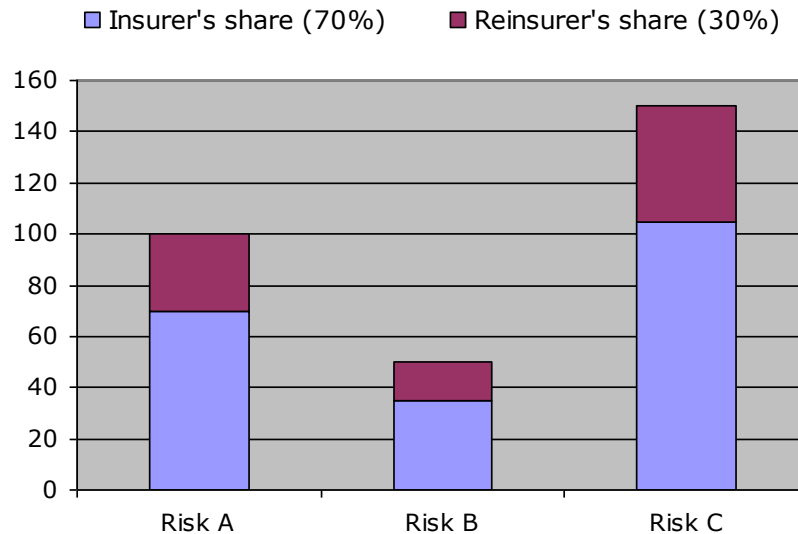
Excess of loss re - € 4m xs € 1m



- Reinsurer bears part of original loss that ...
- ... **exceeds** direct insurers deductible
- ... is **below** the ceiling

# Proportional treaties I. – Quota share

## Proportional reinsurance in its original form



- Example:

Effect of a 30% quota share reinsurance of a portfolio containing three risks

- Formula:

$$\frac{\text{Sum insured} - \text{Retention}}{\text{Sum insured}} = \text{Reinsurer's quota share participation}$$





# Non-proportional I. – Excess of loss (XL)

## **XL cover: often divided into layers**

- Premium is specifically calculated
- Apart from technical considerations, XL reinsurance costs are also affected by market forces
- XL/E (XL per event)
  - Limit the loss per event
  - Especially business with significant accumulation potential



# Reinsurance Scenarios so far ...

## Summary and preview

- Take home message:
  - Various aspects and indicators are relevant for supervisors
- Next steps today:
  - **You** have to solve a case study on your own!



# Reinsurance Scenarios ...

**... the participants are solving their case!**

**-Break-**



# Reinsurance Scenarios – Part II

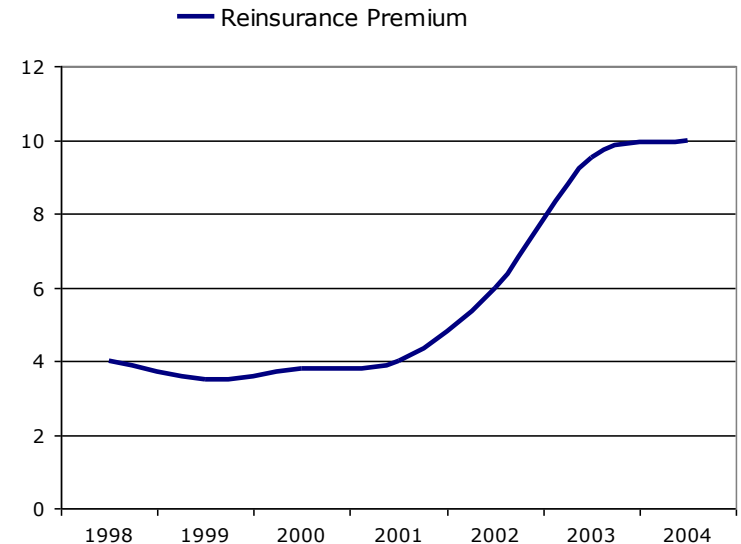
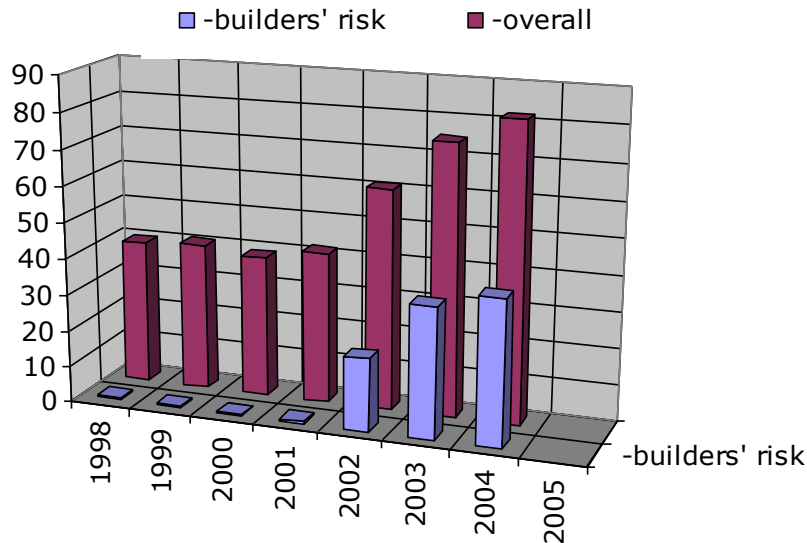
## Some solutions

- First of all: thank you very much for your participation
- Secondly, there are different ways to solve a problem
- I will now present a solution for each case
  - Brief characterization of the situation
  - Presentation of the problem and a potential solution

# Insurance company “A”

## Characterization

- Strong **increase** in sold insurance coverage, especially ...  
→ builders’ risk, which each **could** result in very **large losses**
- Premium income of and reinsurance premium paid by “A”:





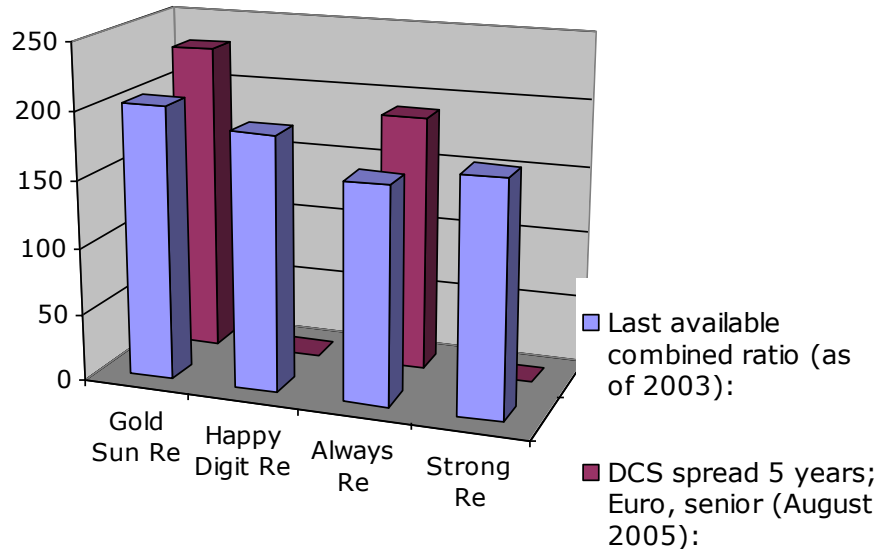
# Insurance company “A”

## Problem and possible solution

- **Situation:** No other reinsurance protection than quota-share
- Potential **Challenge:** There is no limit of liability for insurer “A”  
→ since quota-share offers no cap  
(takes “only” a certain percentage away)
- Potential **Resolution:** In addition to the existing reinsurance  
→ excess of loss or stop loss protection  
(could limit the overall risk for “A”)

# Insurance company “B”

## Characterization



- Insurer “B” implemented cost reduction measures, including a 85% staff decrease in its reinsurance department;
- “B” now relies heavily on an **external reinsurance broker “BBX”** → selection of new reinsurance companies;
- All available economic indicators (CDS spread, rating, and combined ratio) signal that the **new reinsurers are very weak;**



# Insurance company “B”

## Problem and possible solution

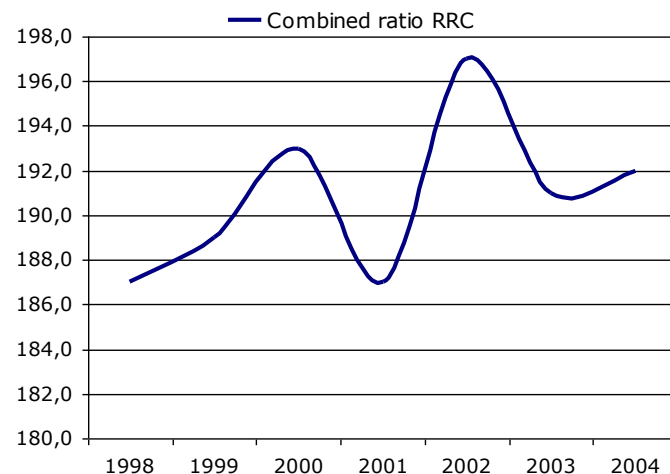
- **Situation:** Weak reinsurer and some dependence on “BBX”
- **Potential Challenges:**
  - a) Weak reinsurers might be unable to cover large losses
  - b) Conflict of interest at “BBX”? (solely paid by reinsurers)
- **Potential Resolution:**
  - a) Exchange at least some of the four weak reinsurers
  - b) Hire a new broker, which is *not* solely paid by reinsurer



# Insurance company “C”

## Characterization

- Preferred field of business of “C”  
→ protection for large construction projects (e.g. airports, oil)
- All reinsurance coverage is bought at reinsurer “RRC”
- Reinsurer “RRC” has almost the same business focus as “C”
- Reinsurer “RRC” is relatively weak: concerning combined ratio and rating



	Financial Strength Rating	
	AM Best	S&P
1999	D	CC
2000	C-	CC
2001	D	CC
2002	C-	CCC
2003	C	CCC
2004	C+	CC
2005	C	CC



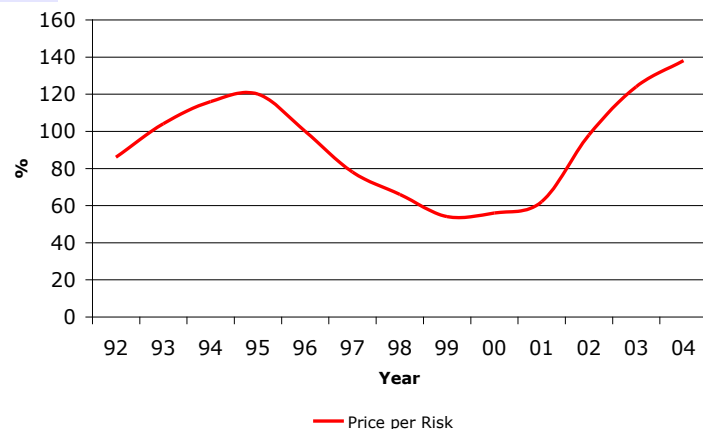
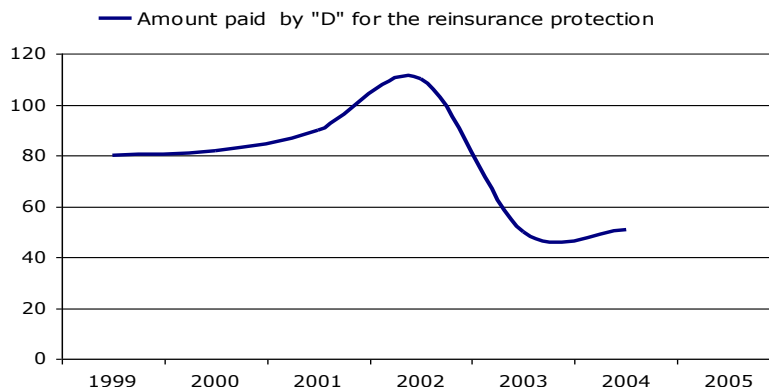
# Insurance company “C”

## Problem and possible solution

- **Situation:** Only *one* reinsurer “RRC”, which is relatively weak
- **Potential Challenges:**  
Double accumulation / not enough diversification:
  - Only one reinsurer (and on top of it a weak one)
  - Insurer and reinsurer business: Same region + products
- **Potential Resolution:**  
“Don’t put all eggs into one basket”

# Insurance company “D”

## Characterization



- A guiding element of the corporate culture of “D” is **trust**
- After an economic downturn “D” recovered due to the activity of Mr. Juan Miller and his team
- First year: Mr. Miller was not successful and came “in the line of fire”, he then changed the situation by  
 → buying reinsurance coverage at **significantly lower rates**



# Insurance company “D”

## Problem and possible solution

- **Situation:** Insurer “D” relays on the external manager Miller
- **Potential Challenges:**

Juan Miller and his team could have had an incentive to present fraudulent reinsurance coverage, since

  - they “came into the line of fire” at the beginning
  - corporate culture of trust at “D” may have made fraud easier
- **Potential Resolution:**

Double check all contracts and ask how cheaper reinsurance coverage is available in a hardening reinsurance market



# Reinsurance Szenarios

