

ASTIN / AFIR Colloquium Madrid 2011

**The financial crisis –  
risk transfer, insurance layers and  
(no?) reinsurance culture**

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# Entre dos tierras

## Two worlds apart?

The markets for credit derivatives and reinsurance have much in common, however, there are essential differences.

The reinsurance industry has survived for many decades, having learned some (partly very expensive) lessons.

Some old-fashioned insurance rules could now experience a revival in other areas.

# Locuras

## Risk transfer chains: design

Basic idea:

- diversify by pooling
- reduce probabilities by layering

Insurance:

Property → Insurer → Reinsurer → Retrocessionnaire  
→ 2nd Retrocessionnaire → ...

Banking:

Mortgage → ABS → CDO → CDO<sup>2</sup> → CDO<sup>3</sup> → ...

# Contamíname

## Risk transfer chains: some problems

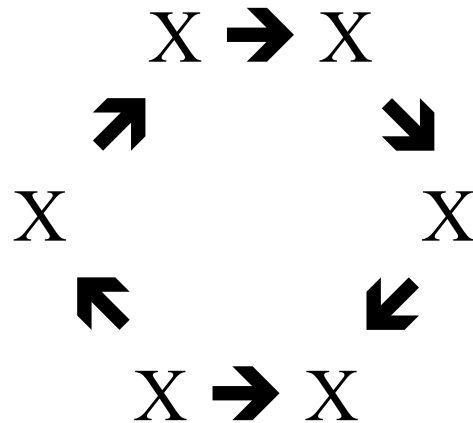
$X \rightarrow X \rightarrow X \rightarrow X \rightarrow X \rightarrow X \rightarrow X \rightarrow X \rightarrow X \rightarrow X \rightarrow \dots$

Problem 1:

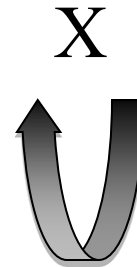
What if that one  goes bankrupt?

Problem 2:

Once it  
was called  
**LMX spiral**



Very short spiral:



# De alguna manera

## Risk transfer chains: consequences

XL on XL is dangerous, due to the geometry of loss distributions:

- Reduction of loss probabilities might be small
- Model uncertainty: huge estimation errors possible
  - and far more likely than  $25\sigma$  events

How reinsurers deal with excess business:

- Standard exclusion in reinsurance layers
- If included, total transparency required (bordereau)

# Cien años de soledad

## Skewed distributions: management challenge

Once in 50 years you have a very bad year.

- If you choose among two strategies to reduce your risk, bear in mind that the better strategy will be more expensive in 49 out of 50 years.
- Risk management means to think in extremely long time horizons – luckily this is an integral part of reinsurance culture.

# Causas y azares

## Skewed distributions: interpretation challenge

Once in 50 years you have a very bad year, but you only have data from ten years available.

- If the bad year is not in your data, everyone claims the data is representative.
- If the bad year is in your data, everyone claims it was a 500-year-event.

# La desilusión

## Skewed distributions: calibration challenge

You only have data from ten years available, but you need to calculate the 100-year event.

You start your powerful statistics software.

Tool output: best fit **Weibull**, VaR = **100** million \$

You get new data (some run-off).

Tool output: best fit **LogNor**, VaR = **50** million \$

You get new data (correction of a typing error).

Tool output: best fit **Pareto**, VaR = **150** million \$

# Entre tinieblas

How certain uncertain deals come about

For a very uncertain deal there is always ...

- not enough time to do it well,
- hectic activism,
- a market player (inadvertently) offering it at a too cheap price,
- others who hope that he/she is right and take a share in the deal.

# La ley del deseo

## Wrong incentives

- People go with the crowd.
- Admitting uncertainty is uncool.
- If you take it into account this may affect your bonus or, even worse, the bonus of your boss / your colleagues.
- If you don't take it into account everyone around you will be happy.

You almost certainly will get away with being very optimistic – if bad things occur everyone will agree it was unforeseeable.

# Laberinto de pasiones

## How prevent gambling?

Old insurance rule:

- The insurance only pays if you can prove an **insurable interest**, i.e. you have suffered a loss.
- Transfer to capital market possible?  
(maybe for Credit Default Swaps)

Risk transfer in reinsurance: almost never 100%  
(not even 100% of the tail risk)

# La mala educación

## What to learn from the crisis

Let us overcome things we thought to know well:

- We have to learn statistics anew, develop intuition far beyond normally distributed i.i.d. risks.
- We need to learn from history.
- We should acknowledge that this world is far more uncertain than we (want to) believe.

And we should learn to live happily in spite of all these uncertainties around.

Y nada mas  
The End

Thanks for joining this talk.

Feedback welcome.

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<b>Title</b>	<b>Translation</b>	<b>Author</b>	<b>Category</b>
Entre dos tierras	Between two worlds	Héroes del silencio	Song
Locuras	Follies	Silvio Rodríguez	Song
Contamíname	Contaminate me	Ana Belén	Song
De alguna manera	Somehow	Luis Eduardo Aute	Song
Cien años de soledad	One hundred years of solitude	Gabriel García Márquez	Novel
Causas y azares	Causes and hazards	Silvio Rodríguez	Song
La desilusión	Disillusion	Silvio Rodríguez	Song
Entre tinieblas	In darkness	Pedro Almodóvar	Movie
La ley del deseo	Law of desire	Pedro Almodóvar	Movie
Laberinto de pasiones	Labyrinth of passions	Pedro Almodóvar	Movie
La mala educación	Bad education	Pedro Almodóvar	Movie
Y nada mas	And nothing else	Silvio Rodríguez	Song