Agricultural Risks

WRMA meeting

Berlin, November 2008

Agenda

1. **Worldwide agri insurance market**
2. **Hail vs Rain**
3. **Examples**

1. Worldwide agriculture insurance market

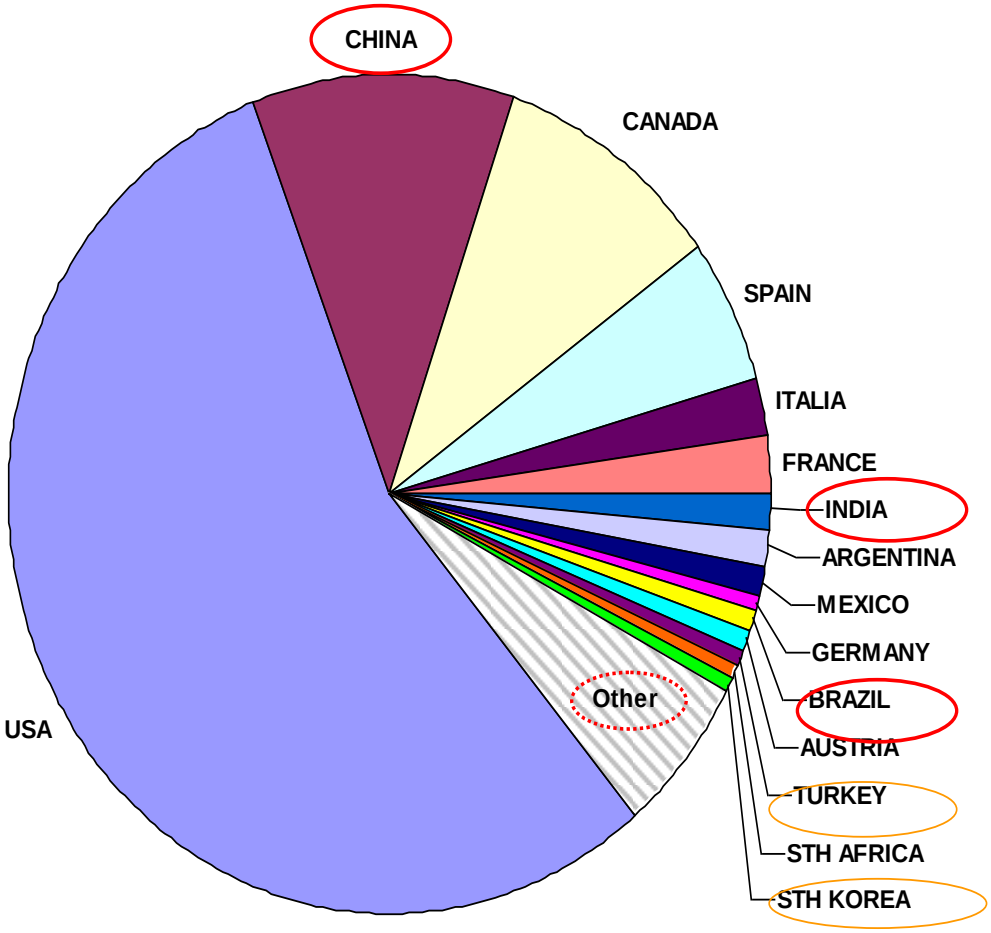
Scope of agricultural production covers

- STANDING CROPS
  - Traditional hail : « mechanical impact of hailstones on aerial parts»
  - « Hail + » covers : hail + windstorm + frost …
  - Multi Peril Crop Insurance (MPCI) : yield cover (mainly drought exposure)
  - Revenue : production yield + market price

Scope of agricultural production covers

- LIVESTOCK
  - Accident, diseases, emergency slaughters
  - Highly contagious diseases, compulsory slaughter by governmental order
  - Aquaculture (Stock only)
- FORESTRY
  - Fire, windstorm, snow
- GREENHOUSES
  - FLEXA type cover + damages to the crops

Agricultural Production
Direct Insurance Premium
€ 16,5 Billion Worldwide estimated Volume



100% increase of direct premium in last 4 years

- Emerging new markets
- Premium highly supported by governments
- Increased underlying values
- Growing price risk component (US, Canada, Spain…)

2. Hail vs Rain: before and after index based covers

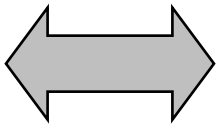
Origin of Crop Insurance
Hail : technically insurable !

- ✓ Sudden and random occurrence
- ✓ Prevention measures either costly or inefficient
- ✓ Experienced loss adjustment methods
- ✓ Long loss history

Most Common Risk for Crops
Drought : non-insurable ?

- ✓ **Impact of landscape or/and type of soil**
- ✓ **Existing preventive measures**
- ✓ **Big geographical spread, less diversification**
- ✓ **Forecast**

Premium calculated
by insurers
on targeted population



Exposition
of the
actually insured sample

Chronic misfit !!

Adverse Selection

Here it is !

- ✓ **Rating is built according to the Norm or LogN distributions**
- ✓ **Rates are attractive only for a population that considers itself for very sensible reasons as more exposed than estimated by insurers.**
- ✓ **Rates are consequently under evaluated in regards of the portfolio actually underwritten, this leads to bad insurance results…**
- ✓ **At this point, it is very tempting to increase the rates, making the situation even worse …**
- ✓ **On the other hand, dropping the rates unbalances the results even on the targeted population !!**

Solutions: State Incentives and a dose of indices

Need of a State welfare:

- ✓ **Premium subsidy**
- ✓ **Absorption of catastrophic losses by State reinsurance**
- ✓ **Central managing entity**

Solutions: Index agricultural covers

Index steps in when traditional insurance is not economical:

- ✓ high distribution cost of insurance (small farming units)
- ✓ adverse selection
- ✓ difficult loss adjustment and general moral hazard

Index are limited to widespread perils and based on:

- ✓ meteorological data (weather stations)
- ✓ NDVI (detection of vegetation infra red radiation via satellites)
- ✓ Officially published regional crop yields

3. Examples of Index based agri covers

The Indian Model: Curry Derivatives

- **Index based insurance and reinsurance**

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Complexity; an index per:

- Crop (wheat, mustard, paddy)/region
- Risk (frost, drought, excess rainfall, excess heat, etc)

Basis risk is on the farmer side

+

Fast payment

Few administrative expenses and no claim adjustment costs

Innovative Solution, sometimes the only available option

The Mexican example: Tortillas derivatives

- **Sell traditional insurance to farmers**
  and
- **Buy index based reinsurance per Region/Crop/Risk**

\- Basis Risk on the insurer side

Complexity

\+ Fast payment for the insurance company

Easier access to the financial market

New Index markets:

- ✓ Central America & Caribbean zone
- ✓ France
- ✓ Sub Saharan Africa
- ✓ Canada
- ✓ Maghreb (Morocco, Tunisia)
- ✓ Asia (Vietnam, Thailand..)
- ✓ ……

Vielen Danke