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A Crash Course on Insurance

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Definition of insurance

"Insurance: **risk-transfer** mechanism that ensures full or partial **financial compensation** for the **loss** or damage caused **by event(s)** beyond the control of the insured party (…) within a **specified period**, provided a fee called **premium** is paid."

(businessdictionary.com)

Insurance products can be designed to cover individuals, households, groups or enterprises and even countries. People buy insurance because they seek protection from the financial losses that come with experiencing shocks.

What is an insurable event?

- Random
- Rather low frequency
- Beyond control of insured
- Financial loss
- Proof of event / loss

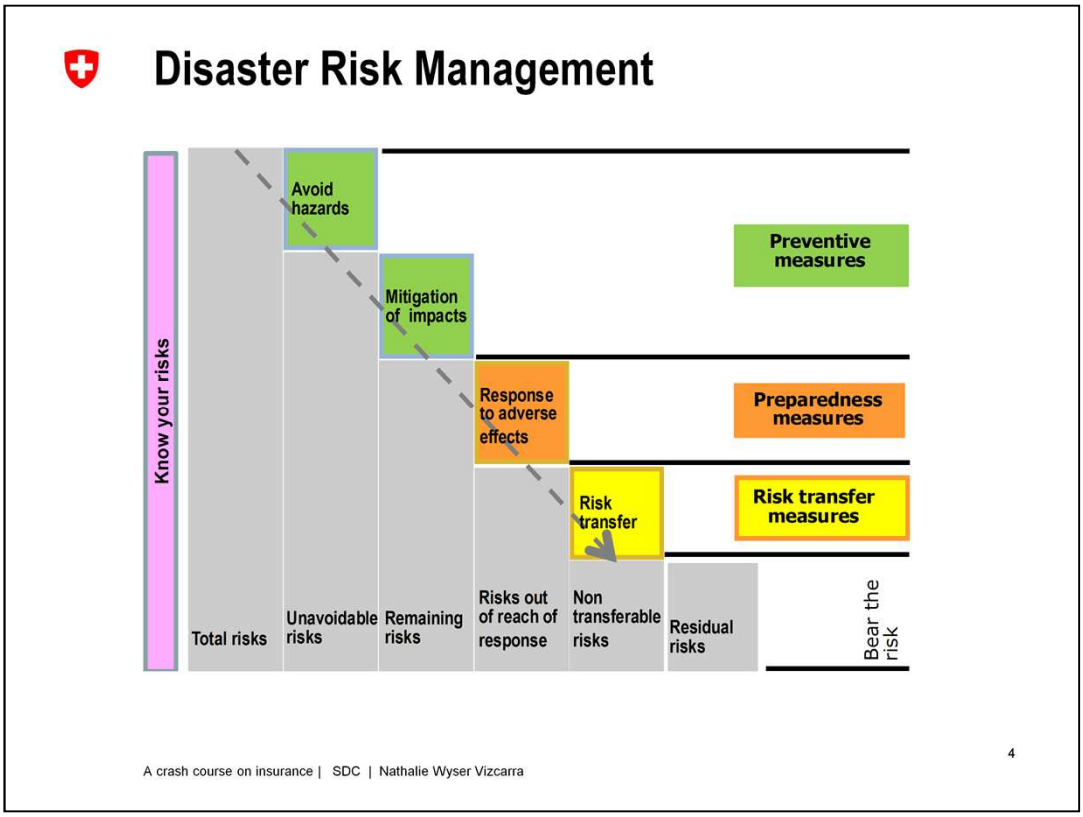
It has to be random, but still a probability has to be calculable (either if or when: does this house burn down? When will I die?)

Probability of occurrence should be relatively low, otherwise the premium will be too high

Occurrence of event should be beyond the control of the insured party: given with natural disasters, not with fire and theft

Need for a financial loss (it's after all about a financial service, but you can argue in the life sector)

Clarity whether sth has happened or not



Based on a risk analysis, the total risk is consecutively reduced by prevention/ mitigation, and preparedness measures and transferred to resp. shared with a larger community. The residual risk of disaster has to be born.

We all face a variety of risks and often have several options at hand to deal with them. For the purpose of illustration, let's look at flood risk.

First, we can try to avoid certain risks. For example, we could move out of a flood risk zone to avoid being flooded.

Second: we can reinforce dams so that in the case of a flood, the impact is lower than when we had not improved it.

Third, we can prepare for the flood event and plan what to do in case the flood occurs

Finally, we can take out insurance and by doing this transfer at least part of the remaining risk to a third party.

Solidarity and mutuality and its limits

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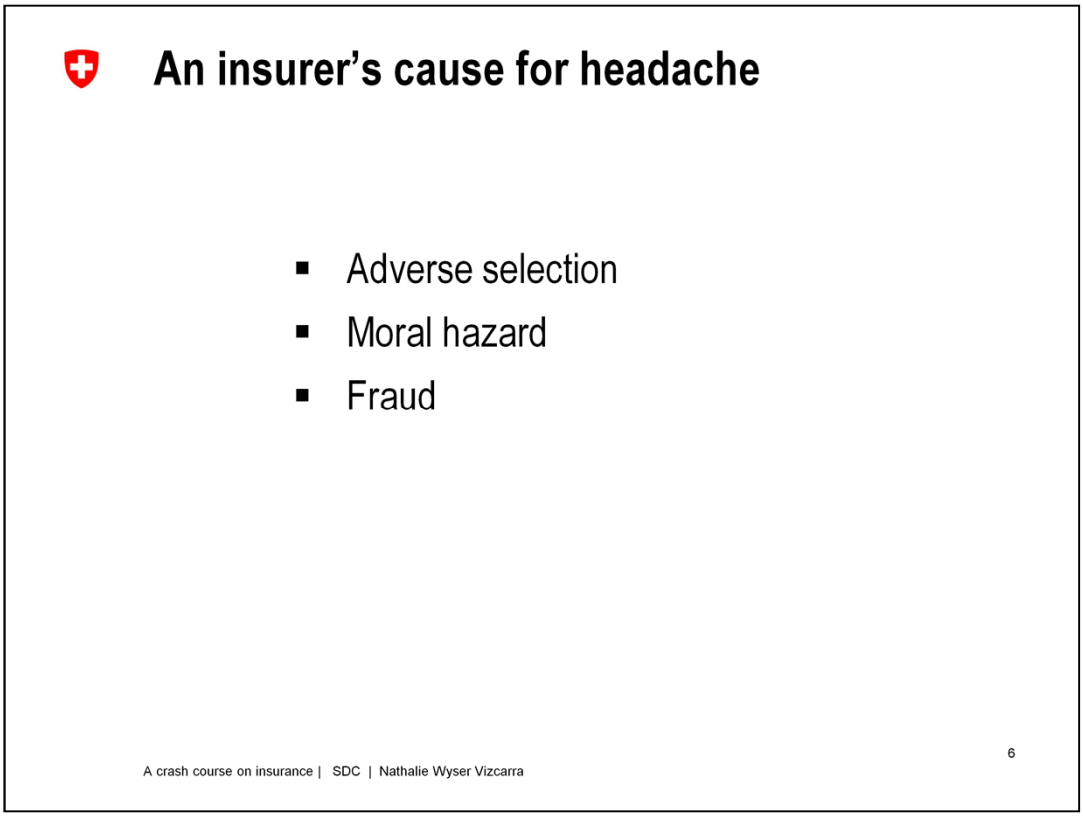
At the very heart of insurance lies the principle of solidarity. It is about pooling of risks within a group, spreading costs within the community in order to absorb shocks.

We can imagine inhabitants of a village coming together, all contributing their share to a village health fund, which covers health expenditures of the unlucky ones who get sick. The individual contribution is then lower than the payout to those who fall sick. You can imagine the same principle to cover other risk like fire in your home or the death of a cow.

However: there are limits to what can be handled through solidarity within a community: if health issues become an epidemic, if a fire ravages a whole slum, or a city gets destroyed by an earthquake, the risk pool is too small and, more importantly, all members are hit by the same event, with mutuality basically breaking down.

This is where pooling across different risks and geographies through the insurance market (incl. reinsurance) comes in.

Source of picture: Karl Jauslin [Public domain], via Wikimedia Commons



Taking on the risk of others is the core business of insurance companies. However, they constantly worry about at least three key aspects related to this transfer of risk: adverse selection, moral hazard and fraud.

What does this mean?

Adverse selection

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Adverse selection occurs if an insurance company designs and prices an insurance product for the average member of a given community, but then ends up with clients that are more exposed to risk than the average.

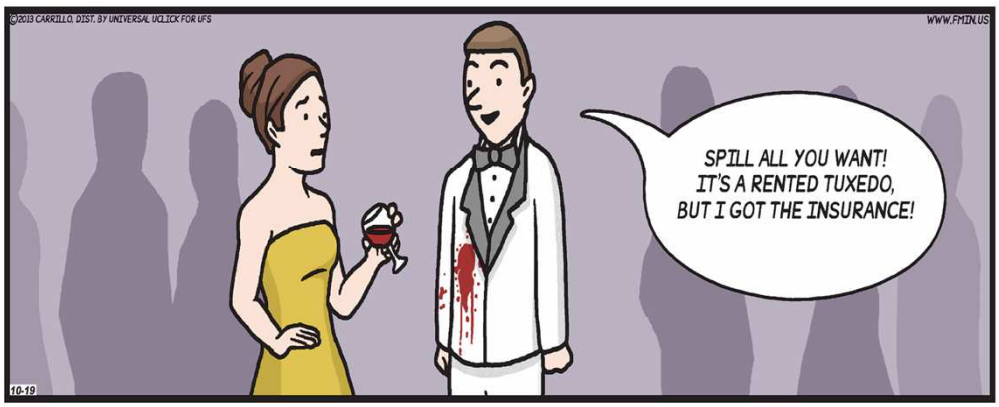
Examples here include health insurance, where you don't want to insure only the elderly obese smokers when during the research and product design phase you have considered a large community of mostly fit, young and middle-aged people.

Or, in the case of floods, you don't want to end up insuring only those living on a riverbank (Paris, flood risk map).

Adverse selection has therefore also to do with information asymmetry between the insurer and the insured party.

Picture: flood risk map ofParis.

Moral hazard



Moral hazard is describing the fact that people may change their behaviour once they are insured.

This can be positive and intended change, for example, when people visit the doctor more often or quicker once they benefit from health insurance.

However, even thought it is positive from a public health perspective, it can cause problems for the insurance company if that effect was not foreseen or underestimated.

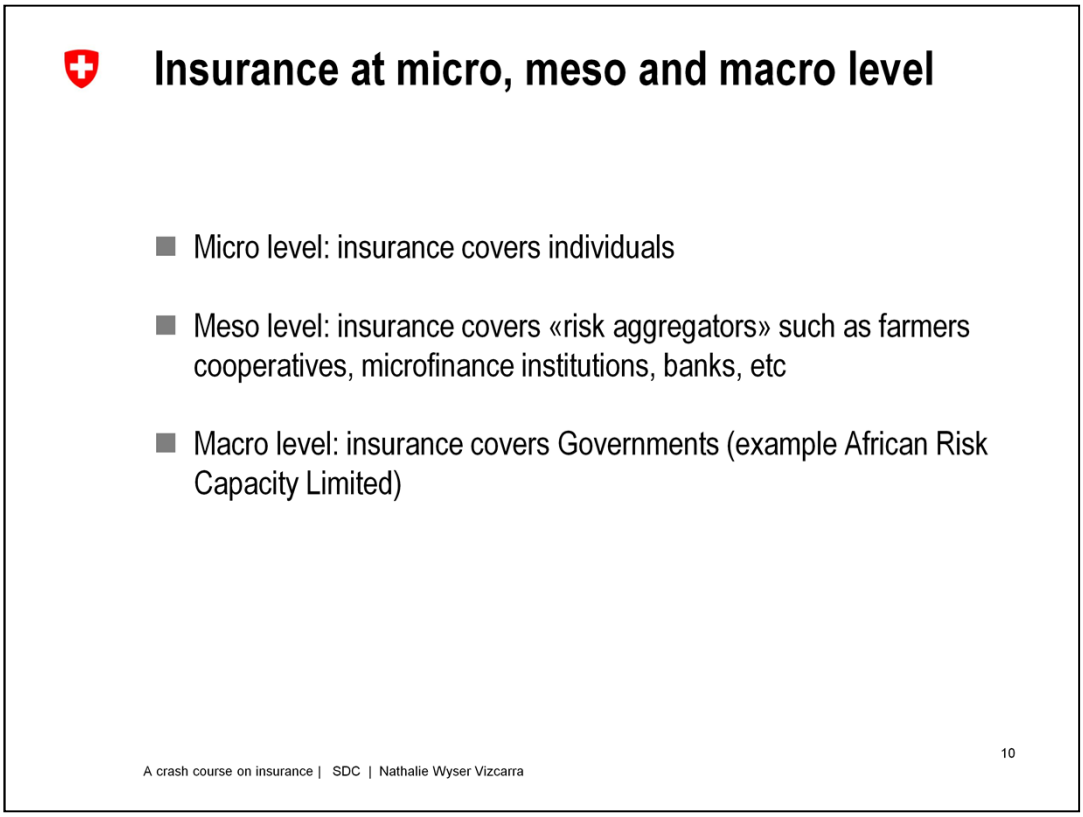
Moral hazard is also feared in the context of crop and livestock insurance, where some farmers may pay less attention to their animal or crops once they know that they are protected through insurance.

Related to the previous picture, i.e. flood: after a flood, insurer's may find that a disproportionate number of older TV sets were stored in the basement and hence got destroyed…

Fraud

Fraud (Versicherungsbetrug) or the wilful distortion of truth, is a constant worry for insurance companies. For example, livestock is often tagged in order to identify individual animals. A few years ago, an Indian insurance company providing livestock insurance required the farmer to send in the ear with the eartag of the dead cow in order to make a claim. This has let some farmers to simply cut ears of animals still alive, send them in and getting an insurance payout. The cows with one ear left were known as Van Gogh cows to the locals…

Picture: source: By Sandstein (Own work) [CC BY-SA 3.0 (http://creativecommons.org/licenses/by-sa/3.0)], via Wikimedia Commons



A different way to extend the benefits of insurance to the same group of people is to place the cover at the level of the cooperative and not selling individual policies to each person. This meso-level approach would protect the assets of the cooperative, thus keeping it afloat after a natural calamity. Members of the cooperative would benefit indirectly through a more resilient coop. Especially in face of large scale natural disasters, such meso-level covers provide valuable services, keeping the local economic actors solvent after an event and thus helping to rebuild quickly.

In the area of catastrophe insurance we have examples from Indonesia and Peru, where microcredit banks protect their credit portfolio against shocks linked to natural disasters. Their clients benefit indirectly from the fact that this extra liquidity will allow banks to be restructure their loans after a catastrophe and simply stay in business.

The protective and productive aspects of insurance

Protective aspects:

- Fast payout in case of loss helps client to recover and to avoid adverse copying strategies such as selling their productive assets

  -> Protection from falling back into poverty

Productive aspects:

- Insured farmers/micro and small entrepreneurs have better access to credit and invest more in their (farming) business than non insured farmers/entrepreneurs

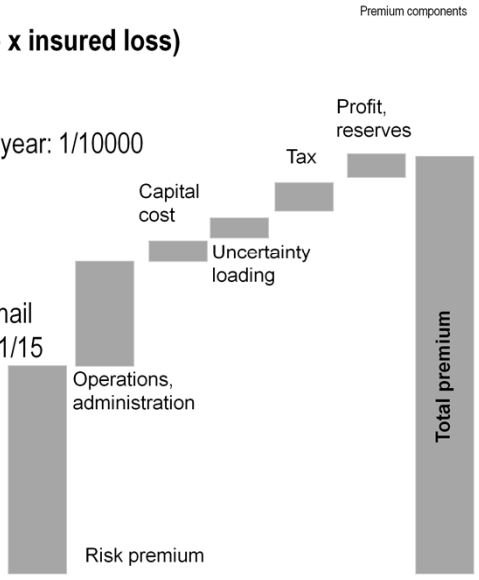
  -> Enabling people to get out of poverty sooner

How to calculate a premium

Risk premium = frequency x severity
(=probability of occurence x insured loss)

Example 1: fire insurance
Probability for house getting burnt by fire in a year: 1/10000
Value of house: 100'000USD
Yearly risk premium: 10 USD (0.01%)

Example 2: hail insurance
Every 15 years: full destruction of harvest by hail
Yearly probability destruction harvest by hail: 1/15
Harvest's value: 500 dollars
Yearly risk premium: 33.50 dollars (6.7%)



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Great challenge: best value for money for low-income families (affordability)

For inclusive insurance the big question is: How to decrease the premium?

Risk premium: Improved risk management (prevention, mitigation, preparedness)

Operations and administration: reducing transaction costs! Through mobile technologies, aggregators

Capital costs: concessional loans (lower rates than market) from investors interested in social impact etc.

Uncertainty loading: good historical data and loss statistics. Problem: climate change.

Tax: negotiate tax exemption on schemes targeting low-income households.

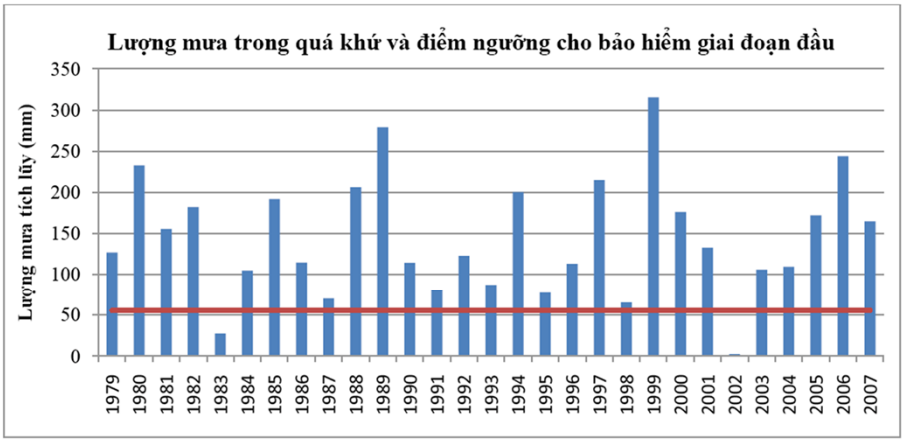
Profit: Mutual insurance companies! Profit flows back to clients as pay backs on premium, reduced future premium, or increased policy value.

What is index insurance?

- Traditional indemnity based insurance: a loss adjuster assesses damage and determines payout level
- Index insurance: payouts are determined on the basis of objective measurable index
- Examples: amount of rainfall for draught insurance, water depth for flood insurance, wind speed for hurricane insurance, quake intensity for earthquake insurance.

-> Condition: Creation of a correlation between an independently verifiable measure and the client's loss.

Example index

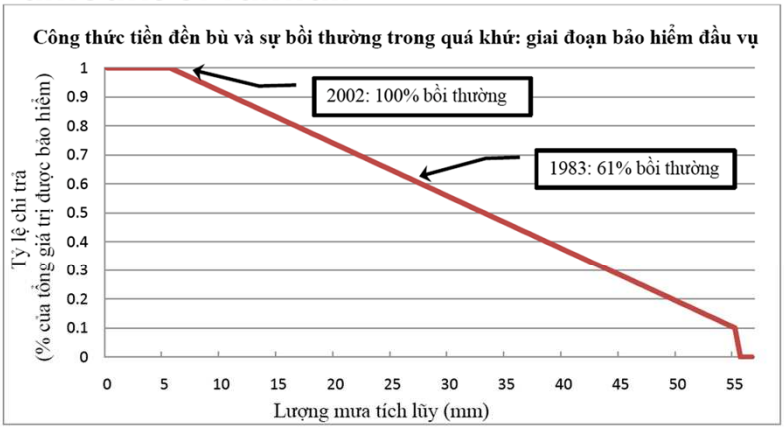


Y-axe: mm rainfall per cropping season

Trigger: 56 mm of rainfall If less: insured get payout If more: no payout

Two payouts: 1983 (27mm) and 2002 (7 mm).

Example index: correlation of payout to amount of rainfall



7mm and less rainfall: 100% payout of sum insured
55mm: 10% payout
Rest of distribution: linear

1983: 27 mm rainfall : 61% payout

2002: 7 mm rainfall: 100% payout

Advantages and disadvantages of index insurance

Advantages

- Reduced administrative costs
- Timeliness of payouts
- Moral hazard is controlled. If compulsory, adverse selection is controlled, too.

Disadvantages

- Basis risk (index measurement does not match insured's actual loss)
- Lack of high quality weather and yield data
- Greater need for awareness raising activities

Why is there a basis risk?

1. Poorly designed index product
2. Geographic distance between measurement point and insured object

How to reduce basis risk?

1. Area covered by index has to be homogenous in terms of weather and farming techniques.

The distribution challenge

- Traditional distribution: person-to-person model
-> costly and not adapted to reality of low-income households

Solutions: cost-effective ways to explain, market and sell insurance

-> Distribution through aggregators: Microfinance institutions, Cooperatives, farmers' association

-> Mobile solutions

From a theoretical point of view there are many good reasons to promote an increased use of insurance services to transfer risks away from vulnerable communities. In practise, however, a number of formidable challenges have to be addressed. One of them all players in microinsurance face is distribution.

Finding ways to cost-effectively explain, market, sell and service insurance at scale is key to reach low-income people sustainably. Traditionally, insurance is sold through agents that contact individuals.

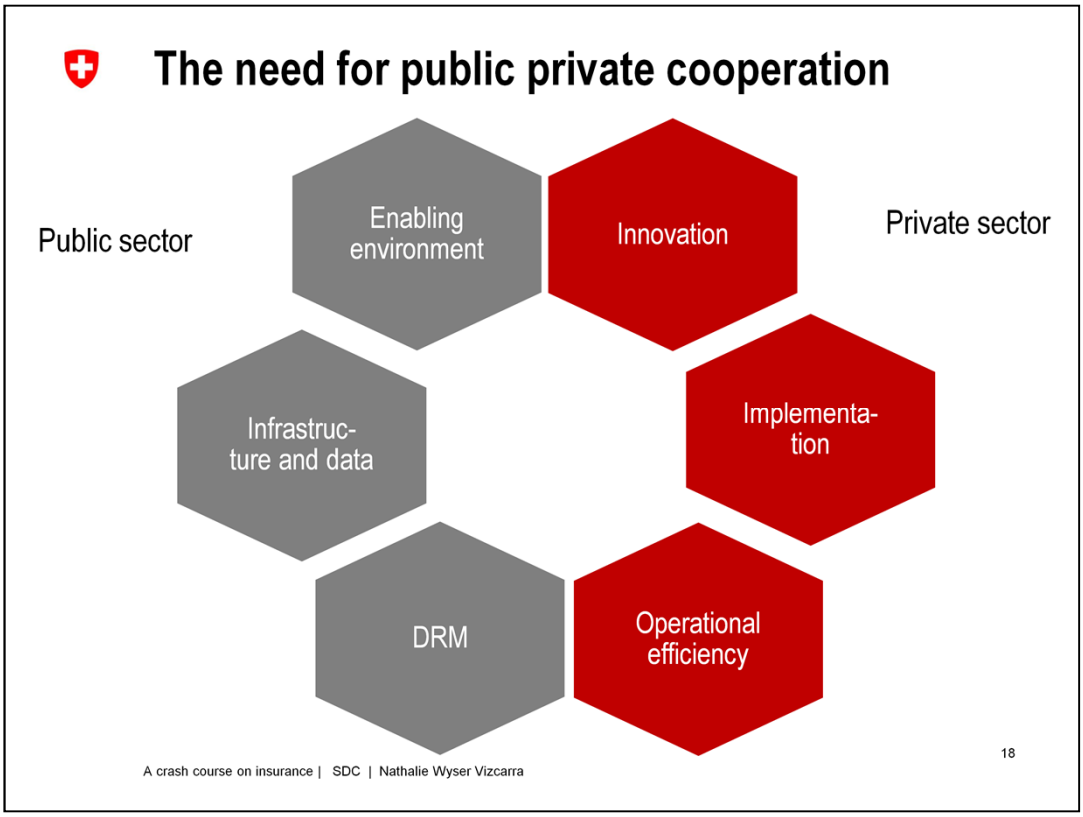
This person-to-person model is very costly and mostly not adapted to the reality of low-income earners in emerging economies.

With selling individual policies to low-income earners not possible, the microinsurance sector emerged in a partnership with microcredit banks, which played a huge role in the beginning of the microinsurance movement. They have a captive market and can relatively easily add additional financial services to their loan products.

A few years ago, around 2011 or 2012, first attempts were made to offer and sell insurance through mobile phones. This has quickly lead to huge volumes, though it is too early to assess the success in terms of customer understanding and what type of insurance products can and cannot be sold through mobile channels to a

population segment that has very little experience with insurance.

Aggregators of clients and client demand are essential to the success of microinsurance. For example, you can imagine a farmer cooperative, that offers a variety of insurance products to its members. The cooperative management then becomes the agent of an insurance company, earning commissions and making the cooperative more attractive to its members as they get additional services.



As mentioned before, the market for insurance against natural catastrophes for low-income customers is rather unlikely to develop significantly without an outside push. The challenges related to product development, demand, affordability and distribution are simply too big to make this an interesting case for private insurance actors.

And as there are important market imperfections, there is a strong argument for the public sector to get active - not only to support the private sector per se, but to allow the private sector to play its role in providing protection and help better cope with the financial losses due to natural disasters.

The public sector can support the development of catastrophe insurance markets in many forms:

- targeted and time-bound subsidies can make sense to cover start-up costs of private sector-led programmes and insurance innovations.

- collecting and sharing exposure and loss data, which is the necessary basis for quality insurance products.

- **Insurance regulation needs in many countries to be adapted to the new realities**, including dealing with index-based insurance.

Then there is a **huge need for loss prevention measures, which will reduce**

the exposure and make insurance for the residual risks much more affordable - or affordable at all.

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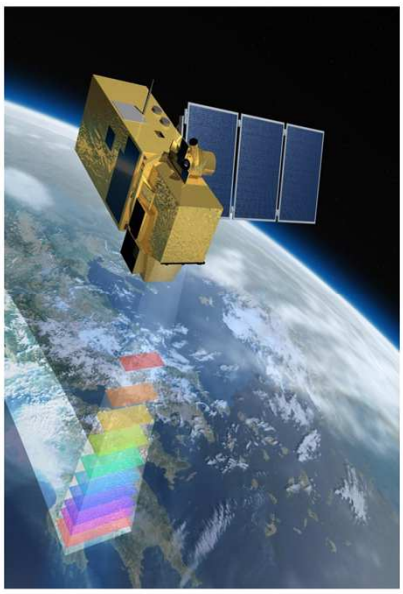
Thank you!

Technology pushing the insurance frontier

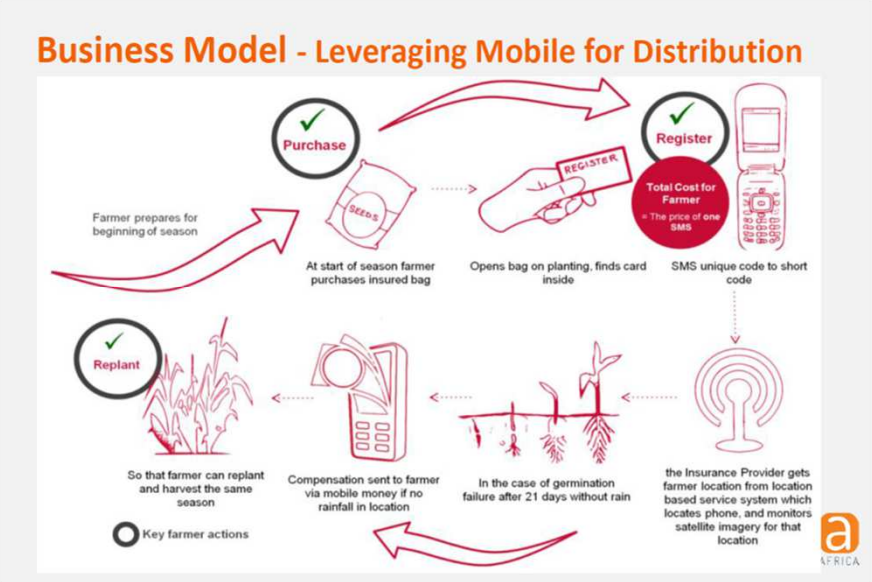


Data, technology and especially data obtained through remote sensing are indispensable in this **game**: they are the very foundation of index-based insurance, which currently is the way to go. The access to and use of remotely sensed data is evolving rapidly, with new opportunities offered through recently launched satellite programmes.

The European sentinel programme, for example, offers free access to data and has allowed using radar data to assess rice production across south and southeast Asia at very granular level.

These new possibilities are exciting and indeed I expect to see many new approaches to be developed and tested in the near future. At the same time, we should also be realistic: such products and programmes require time to develop and mature. It is about creating a whole new market segment, and not an easy one. Patience and long-term commitment are therefore absolutely key.

Example: ACRE Africa



ACRE is an insurance agent. Develops insurance products, distribution throguh aggregators in collaboration with national insurance companies.

At the end of 2016: more than 1 Mio farmers insured (cumulatively since 2009)

Started 2009 in: Kenya Rwanda Tanzania

Head office in Nairobi, plus regional offices.

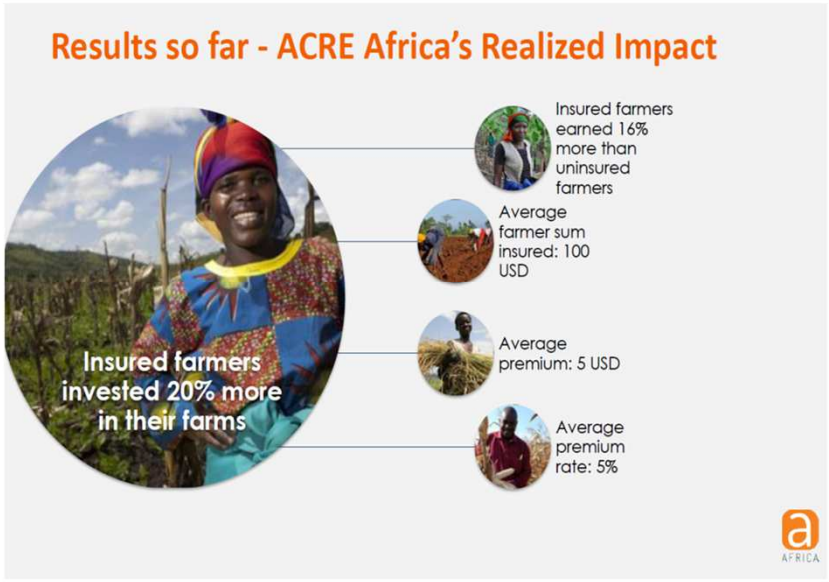
With SDC support: expansion to Uganda, Zambia in 2015 and 2016.

Developed different insurance products: for dairy cows, maize, sorghum, coffee, sunflower, tea, cashew nut or potato.

Most popular product is the «replanting guarantee».

For 2017. topup cover: farmers can extend coverage to the whole season, but this time need to pay.

Example: ACRE Africa



Example: ACRE Africa

Challenges and suggested solutions

- Lack of awareness on insurance
  - ➢ Client education
- Unavailability of historical weather and crop production data for pricing
  - ➢ Investment in Data infrastructure
- Lack of trust in insurance by potential clients
- Premium affordability
  - ➢ Smart subsidies – parallel investments to factors leading to high premium
- Regulations – high taxes
  - ➢ Policy advocacy for tax reduction or exemption

Example: ACRE Africa

Key Lessons Learned

1. Bundling insurance with other services , inputs, credit, contract farming
2. Partnership with trusted brands – mobile companies
3. Simple and affordable products
4. Distribution through aggregators i.e. Banks, SACCOS, farmer organizations, off takers and agribusiness