

GIRO Conference and Exhibition 2012

Microinsurance:
Small **Insurance Policies** making a **BIG** Difference
Doug Lacoss

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Microinsurance

Agenda

- **What is Microinsurance anyway?**
- Special considerations for developing markets
- Microinsurance Working Party / MIG
 - Actuarial Toolkit
- Case Studies
 - AKSItext
 - Kilimo Salama
 - Mi Life
- Opportunities to get involved

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What is Microinsurance?

IAIS definition

- Not a specific product or product line
- Not limited to a specific provider type
- Provision of cover to a specific market segment
- i.e., **“low-income persons.”**
 - ~ *IAIS Issues Paper (2007)*



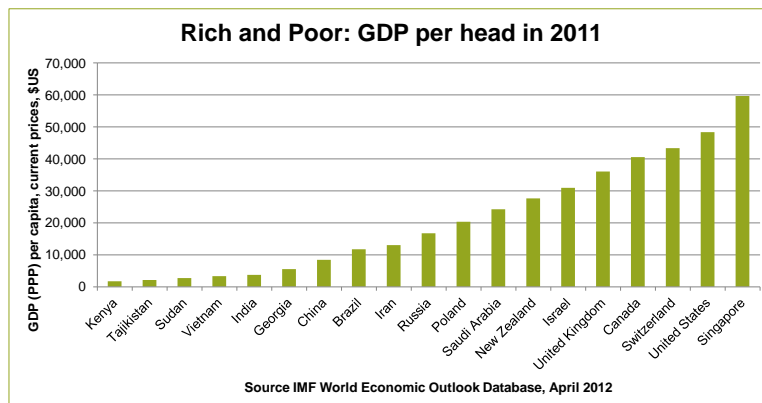
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What is Microinsurance?

- But how low is “low-income”?



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What is Microinsurance?

- But how low is “low-income”?
- Is insurance “micro” due to
 - Target insured population?
 - Insurer?
 - Distribution channel?
 - Type of product?



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Being poor is risky

‘One of the least remarked-on problems of living on two dollars a day is that you don’t literally get that amount each day. The two dollars a day is just an average over time. You make more on some days, less on others, and often get no income at all.’

‘How do you make sure there is something to eat and drink every day, and not just on the days you earn? If that seems hard enough, how do you deal with emergencies?’

Portfolios of the Poor, Collins et al. (2009)

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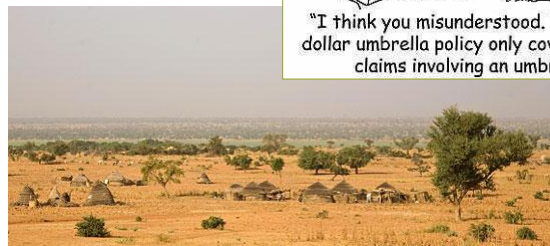
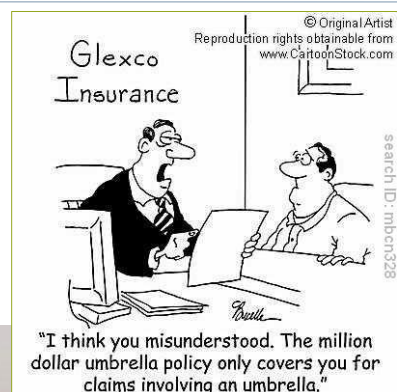
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Microinsurance – Some basic considerations

- Affordable
- Simple
- Verifiable
- Beneficial



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Microinsurance – Some basic considerations

- Basis risk and index insurance



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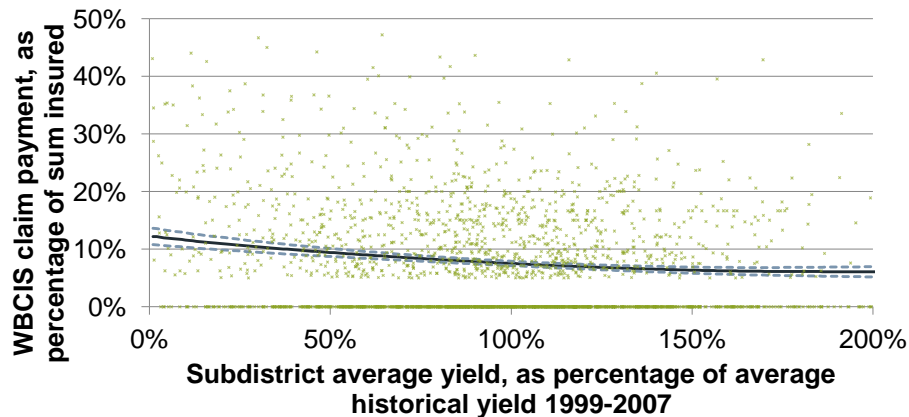


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How high is basis risk in weather index insurance?

Across all 318 products sold in one state in India

- Correlation between yield and claim payment only -13%

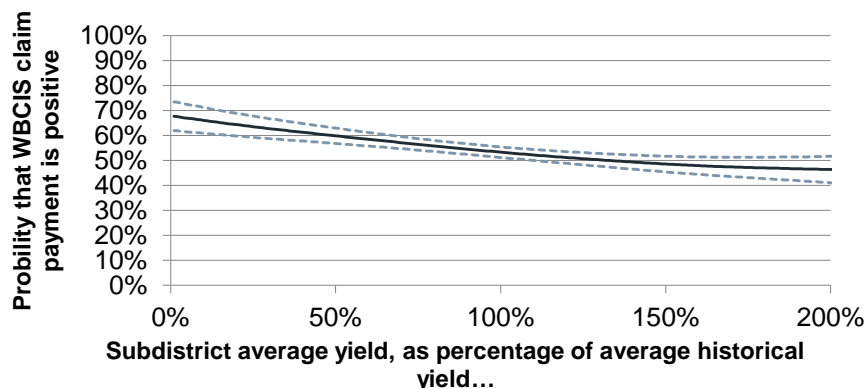


Source: Clarke, D.J., O. Mahul, K.N. Rao, and N. Verma, (2012). "Weather Based Crop Insurance in India," World Bank Policy Research Working Paper No. 5985.

How high is basis risk in weather index insurance?

Across all 318 products sold in one state in India

- If lost entire crop there is a 1-in-3 chance you would get no claim payment



Source: Clarke, D.J., O. Mahul, K.N. Rao, and N. Verma, (2012). "Weather Based Crop Insurance in India," World Bank Policy Research Working Paper No. 5985.

How high is basis risk in weather index insurance?

Malawi index insurance products

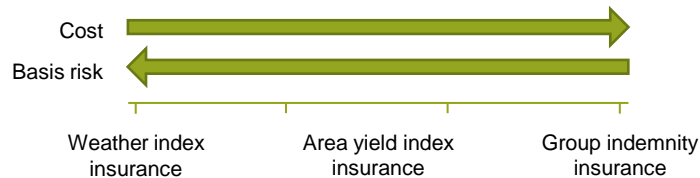
- (~12 years of matched data)

Station	Crop	DSSAT/hist. yields	WRSI/hist. yields
Lilongwe	Groundnut	13%	31%
	Maize	17%	38%
Kasungu	Groundnut	-1%	39%
	Maize	37%	77%
Nkhotakota	Groundnut	10%	35%
	Maize	-22%	-6%
Chitedze	Groundnut	30%	52%
	Maize	1%	24%
Average		11%	36%

Source: Osgood, D., M. McLaurin, M. Carriquiry, A. Mishra, F. Fiondella, J. Hansen, N. Peterson and N. Ward, (2007). "Designing Weather Insurance Contracts for Farmers in Malawi, Tanzania, and Kenya," Final Report to the Commodity Risk Management Group, ARD, World Bank, excerpt from Table 4.3

The quest for better indices

- A good index should capture local aggregate shocks
 - Particularly if there is some risk pooling within a community
- Weather indices seem to miss too many of these shocks
 - Due to imperfect calibration, imperfect functional form, or missing perils
- Total production indices can accurately capture aggregate shocks
 - Based on sample (e.g. sample-based area yield) or population mean
 - Area yield *can* be nearly as good as MPCl (Deng et al. 2007)



Source: Daniel Clarke - <http://www.stats.ox.ac.uk/~clarke/>

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Work by UK actuaries on microinsurance: The Microinsurance Working Party

- October 2009-September 2010 (5 members)
 - Microinsurance Working Party formed following GIRO 2009 to review literature on crop microinsurance from an actuarial perspective
 - Won the Brian Hey Prize at GIRO 2010
- October 2010-July 2011 (>10 active members)
 - Members from UK, USA, West Africa, Mexico, Caribbean, Jordan, Pakistan, India etc
 - Working out what to do next, in collaboration with partners (IAA and microinsurance organisations)
- July 2011-present (>15 active members + partners)
 - Development of an educational tool for microinsurance (the 'microinsurance toolkit')
 - Funding from the UK Actuarial Profession for dissemination
- November 2012
 - Launch of microinsurance toolkit at the International Microinsurance Conference

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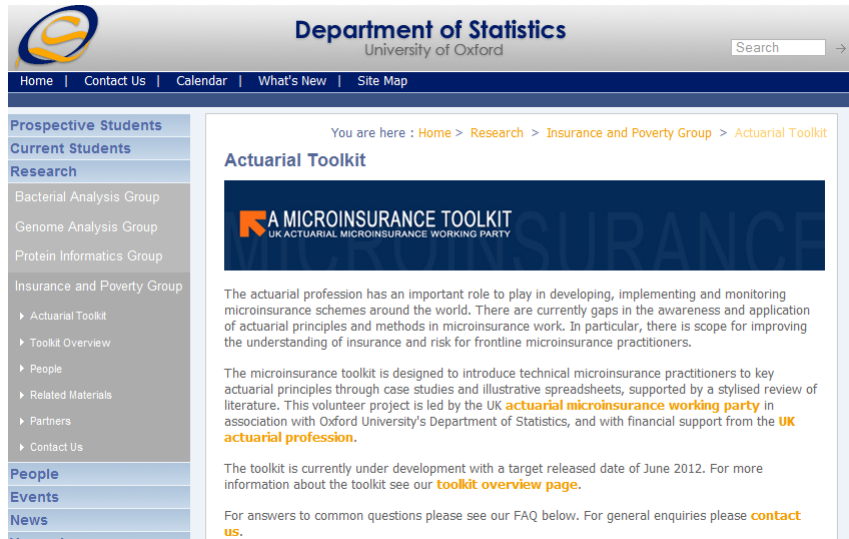
Work by UK actuaries on microinsurance: The Microinsurance Working Party

A MICROINSURANCE TOOLKIT UK ACTUARIAL MICROINSURANCE WORKING PARTY

- Educational resource for technical microinsurance practitioners
- Being developed on a volunteer basis by qualified actuaries
- Will cover life, health and agricultural insurance
- Consists of set of spreadsheets and supporting documentation
- **Will be launched at 2012 Microinsurance Conference in November 2012**
 - Eventually will include Life, Health, Agri
- For more information see <http://www.stats.ox.ac.uk/actuarialtoolkit>
- Or email actuarialtoolkit@stats.ox.ac.uk
- **Thanks to the Actuarial Profession for significant funding of this project!**

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Work by UK actuaries on microinsurance: The Microinsurance Working Party



Department of Statistics
University of Oxford

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Actuarial Toolkit

A MICROINSURANCE TOOLKIT
UK ACTUARIAL MICROINSURANCE WORKING PARTY

The actuarial profession has an important role to play in developing, implementing and monitoring microinsurance schemes around the world. There are currently gaps in the awareness and application of actuarial principles and methods in microinsurance work. In particular, there is scope for improving the understanding of insurance and risk for frontline microinsurance practitioners.

The microinsurance toolkit is designed to introduce technical microinsurance practitioners to key actuarial principles through case studies and illustrative spreadsheets, supported by a stylised review of literature. This volunteer project is led by the UK [actuarial microinsurance working party](#) in association with Oxford University's Department of Statistics, and with financial support from the [UK actuarial profession](#).

The toolkit is currently under development with a target released date of June 2012. For more information about the toolkit see our [toolkit overview page](#).

For answers to common questions please see our FAQ below. For general enquiries please [contact us](#).

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Work by UK actuaries on microinsurance: The Microinsurance Working Party

	A	B	C	D	E	F	G	H	I
7		Version							
8									
9									
10		This spreadsheet forms part of the following version of the toolkit		CurrentVersion	Beta v0.4				
11		For the latest version of the toolkit see		WebsiteLink	http://www.stats.ox.ac.uk/actuarialtoolkit				
12		Please send comments to		EmailAddress	actuarialtoolkit@actuaries.org.uk				
13									
14		What happens in each sheet							
15									
16		Introduction		Overview of this workbook					
17		Glossary		Description of technical terms used in this workbook					
18		IllustrativeCalc		Illustrative ratemaking calculation for agricultural insurance. (Each step is covered in more detail in the remaining worksheets.)					
19		DataCleaning		Data collection and cleaning; importance of a standardised procedure and how to allow for changes in data collection.					
20		Detrending		Worked example for accounting for trends in historical data.					
21		Overfitting		Worked example demonstrating why care is required if the same data is to be used for product design and pricing.					
22		CredibilityTheory		Demonstration of the importance of spatial smoothing. Worked example using credibility theory.					
23		PortfolioAnalysis		Calculation of PMLs for use in cost of capital calculations.					
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Microinsurance Working Party

Actuarial Toolkit

Detrending illustration

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Area-average yield for subdistrict Mahuva (kg/ha)	1073	867	1399	597	1463	1929	2061	2176	2270	1997
Claim payment rate at 1700 for Mahuva using raw yield data	37%	49%	18%	65%	14%	0%	0%	0%	0%	0%
Area-average yield for subdistrict Mahuva, after removal of linear detrending of 95kg/ha/year (kg/ha)	2023	1722	2159	1262	2033	2404	2441	2461	2460	2092
Claim payment rate at 1700 for Mahuva using detrended yield data	0%	0%	0%	26%	0%	0%	0%	0%	0%	0%



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Case Study – AKSIttext

AKSIttext - Philippines

- Personal accident cover
- Set up policy by SMS: name, birthdate, address
- Cost – 15p for 15 days of cover, paid from mobile account
- Benefit - £150, paid via cheque



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Source: Microinsurance Compendium vol II, p. 534

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Case Study – Kilimo Salama

Kilimo Salama - Kenya

- Agricultural rainfall-index insurance
 - Secure, solar-powered weather stations
- Partnership Syngenta, UAP, Safaricom
- Pilot 2009 with 200 farmers, now covers 22,000
- Policy purchased at agri merchant (seed, fertilizer)
 - Transacted through M-PESA and mobile apps
 - Dealer sends info through specially equipped phone
 - Farmer receives policy info and payments via personal phone



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Source: Microinsurance Compendium vol II, p. 534



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Case Study – Mi Life

Mi Life - Ghana

- First fully mobile payments-based insurance product
- Partnership between MTN Ghana, MFS Africa, MicroEnsure, UT Life, Hollard Insurance, with low administration costs
- ✓ Cost – between £0.40 and £1.15 monthly premium
- ✓ Benefits - £200 to £800 for 2 beneficiaries
- Can be fully transacted through mobile phone
 - Policy registration, policy number
 - Monthly payments, payment reminders
 - Claim notification, claim payment



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Source: Microinsurance Compendium vol II, p. 544

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Microinsurance – Get involved

Opportunities for actuaries in microinsurance

- Join the Microinsurance MIG with the Actuarial Profession
 - MIG meeting at Staple Inn, 10 Dec 2012
- Read (or at least skim) the Microinsurance Compendium vol. 2
- Join the Microinsurance Network – free for IAA members!
 - Read newsletters
 - Go to the Microinsurance Conference Nov 2012
 - Become a consultant, for example
 - Health insurance programme in Senegal
 - GIZ climate change research
 - Indian regulatory regime
 - Mongolian livestock insurance...

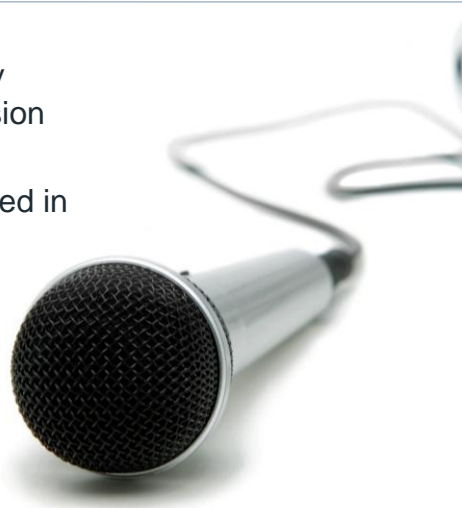
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Questions or comments?

Expressions of individual views by members of The Actuarial Profession and its staff are encouraged.

At least 82% of the views expressed in this presentation are those of the presenter.



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