

Actuarial Toolkit - Part B

Document Date: 1st November 2011

1. Introduction

Key Objective

The principle objective of the toolkit is to serve as an **educational tool** to enhance the understanding of pricing microinsurance for both existing microinsurance practitioners and those in the process of developing microinsurance schemes.

Target Audience

The target audience is primarily frontline microinsurance **practitioners** (e.g. microinsurance NGOs, MFIs). However, the toolkit will be publicly available.

The toolkit is not designed to be used by insurance companies, wishing to use the toolkit for commercial purposes. However, the toolkit will be freely downloadable, under a [creative commons] license and can be freely used for training purposes. Basic user information will be captured during the registration process. This information will help us to understand what types of users are using the toolkit.

Toolkit Deliverable

Part B of the Actuarial toolkit is specifically to develop "**illustrative models**"- relatively simple models on commonly available free software. These models will be used for an educational purpose and will illustrate the use of actuarial principles and methods. They can also be used for simple sense checks.

The models should be driven by 'simple inputs', which the user can change. The assumptions underlying the models will be carefully explained to avoid misinterpretations. Caveats on the shortcomings and limitations of these models should be clearly highlighted. These worked examples will be driven by actuarial first principles, but some examples will allow for common idiosyncrasies of microinsurance calculations, e.g. make allowance for the lack or poor quality of data.

2. Components of the Toolkit (Part B)

Section (Sheet)	Description	Life/Health/Agri
1. Introduction	Overview of the workbook	All
2. Glossary	Description of technical terms used in the workbook	All
3. Parameters	Specific parameters and assumptions for the calculation (eg mortality table)	All
4. Data Cleaning	Data collection and cleaning; importance of a standardised procedure and how to allow for changes in data collection.	All
5. Detrending	Worked example for accounting for trends in historical data.	Agri
6. Overfitting	Worked example demonstrating why care is required if the same data is to be used for product design and pricing.	Agri

7. Credibility Theory	<ul style="list-style-type: none"> • Demonstration of the importance of spatial smoothing. • Worked example using credibility theory. 	Agri, Health
8. Illustrative Calculation	Illustrative ratemaking calculation. (Each step is covered in more detail in the remaining worksheets.)	All
9. Reserving & Margins	<ul style="list-style-type: none"> • Principles and worked example of reserving calculations and basic capital levels. • Determination of risk margins 	All
10. Portfolio Analysis	<ul style="list-style-type: none"> • Calculation of PMLs for use in cost of capital calculations. • Projections of insureds, premium, claims, cashflows 	All
11. Summary	Summary table of key results	All

3. Issues not considered in the toolkit

In order to keep the toolkit to a manageable size and to have most effective number of users we have to limit some of the scope. There are a number of other important factors/issues but these are left out of the scope. These are listed below;

- Operational factors; and possible impact on the actual experience and adequacy of pricing
- The full product development process (ie market research, pilot testing, prototype development etc)
- Taxes
- Profit levels and profit margin determination
- Competitive factors
- Regulatory factors

The following are not included in the toolkit, although we plan to add them at a later date:

- Reinsurance
- Assets, Investments and matching