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IAA Risk Book

Introduction to Inclusive Insurance

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IAA Risk Book

Introduction to Inclusive Insurance

This Risk Book chapter has been developed and approved by the Insurance Regulation Committee of the IAA

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Comment and feedback on Risk Book chapters is welcomed.

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Introducing the IAA Risk Book

The actuarial profession has contributed significantly to the development of risk management tools and processes, in insurance, pensions and related industries. Actuarial skills are also increasingly being applied in new and developing areas of knowledge.

Actuarial practice continues to improve the understanding, measurement and communication of risk and risk events and their implications through the development of tools and increasingly processes to manage the future uncertainty of risks in a sustainable and transparent way. These tools and processes trace, manage and mitigate the acceptance and transmission of the uncertain outcomes of risks.

The Risk Book is intended to provide high-quality reference materials to support a better understanding of the risks and inherently uncertain future outcomes that need to be managed when delivering financial services products – whether they involve insurance, investments or retirement incomes, or more broadly. The Risk Book is written to be accessible to a wide range of readers, many of whom may not be actuaries or experts in the areas discussed but may be decision-makers in those areas. Consequently, the Risk Book should provide insight into the ideas and concepts behind actuarial topics and concepts. It is therefore focused on being descriptive rather than being formal and mathematically precise.

All the Risk Book chapters are publicly available on the IAA website and are periodically updated. See www.actuaries.org and follow the path to '*Publications*' and then to '*Risk Book'*. A discussion of their structure and relationships is provided in the Chapter: *Introduction – Using the Risk Book*.

The Risk Book is intended to be a dynamic and evolving resource, updated over time, reflecting new areas where actuarial expertise can add value, experience and advances, and topics of current interest and importance. It is electronically distributed to support ongoing updates. Risk Book chapters will be reviewed periodically at least every 5 years and more frequently if significant changes or developments occur.

The development and maintenance of the Risk Book is managed by the Risk Book Editorial Board of the IAA Insurance Regulation Committee.

Many people, mostly actuaries, have contributed to the Risk Book. Contributors are listed on the website.

To submit comments or questions about this Risk Book chapter, or to report any problems with the website, please email riskbookcomments@actuaries.org. To express interest in becoming involved with the Risk Book please go to the website and provide the requested information.

1 Summary

This Risk Book chapter provides actuaries, and a wider audience including industry providers and supervisors, with some insight into how and where actuarial skills can be used to develop and sustainably support inclusive insurance initiatives and outcomes. It also highlights some of the traps that may be encountered when local conditions and contexts are not recognized and reflected. This chapter introduces, but does not fully resolve, a range of complex challenges and issues whose effective solutions depend on local and variable contexts and needs.

We use the following definitions:

> "Inclusive insurance" refers to insurance products through which adults have effective access to insurance and savings products offered by insurers through formal providers.
>
> "Effective access" involves convenient and responsible service delivery, at a cost affordable to the customer and sustainable for the provider, with the result that financially unserved or underserved customers can use formal financial services rather than existing informal options.

In our approach, inclusive insurance includes microinsurance. Increased access to inclusive financial services, including insurance, helps to reduce poverty and improve social and economic development. This is emphasized by an Access to Inclusive Insurance policy document[1] analysis which states that insurance, primarily inclusive insurance, is an important contributor to nine of the United Nations' 17 Sustainable Development Goals. Inclusive insurance also supports major public policy objectives such as improving health conditions for the population, dealing with the effects of climate change and food security. In emerging (insurance) markets and developing economies, insurance supervisors are increasingly seeking to appropriately balance regulation, enhancing access to insurance services and protecting customers. These are ongoing and difficult challenges.

It is widely acknowledged that there is a shortage of actuarial capacity in many markets, particularly emerging and developing markets, and this shortage is more marked in an inclusive insurance context. For example, see the 2017 International Association of Insurance Supervisors surveys.[2]

From an actuarial perspective, inclusive insurance is also a challenge. The development of formal insurance has typically been in developed countries with strong infrastructure, plentiful resources, data availability, and relatively wealthy people who may need and can afford traditional insurance products. This differs from more informal insurance arrangements where, for example, local cooperatives, traditional community-level self-help groups and funeral parlours may self-insure. Inclusive insurance typically has a formal risk provider (life, general or health insurer) that accesses the unserved or underserved population through distribution channels such as agents, brokers, cooperatives and microfinance institutions. Inclusive insurance customers largely come from the informal sector.[3]

Many of the challenges and characteristics of solutions for inclusive insurance differ from those used in more traditional forms of insurance, so different and lateral approaches are needed for success. The lack of pre-conditions for traditional actuarial work – for example, appropriate mortality tables, which

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[1] See the A2ii Policy Note "Insurance and the Sustainable Development Goals", https://a2ii.org/en/sustainable-development-goals.

[2] See Supervisory Capacity Building and Development Needs Survey Results Report.

[3] See www.imf.org/external/pubs/ft/fandd/2020/12/what-is-the-informal-economy-basics.htm for the International Monetary Fund's definition of the "informal sector".

traditionally are assumed to be available – suggests the continuing development and actuarial support of inclusive insurance may need to take a broader path than merely attempting to apply traditional actuarial approaches. This may also be exacerbated by the lack of qualified actuarial resources in many countries among both the insurers and supervisors. In these countries both insurers and supervisors may struggle to access and retain the actuarial expertise and resources needed to help develop their insurance sectors.

2 Overview

2.1 Objective

The objective of this Risk Book chapter is to introduce actuaries to inclusive insurance, explain how it differs from insurance in traditional established insurance markets (traditional insurance), and analyze the drivers and actuarial implications of these differences. The chapter concludes with some suggestions on how actuaries can bridge the differences between inclusive and traditional insurance.

This topic is relevant to actuaries because the actuarial challenges of inclusive insurance can differ markedly from those of traditional insurance. Also, the demand for cost-effective, professional and high-quality actuarial services in inclusive insurance exceeds the supply in many countries.

Inclusive insurance covers a spectrum of customers and requires a wide range of inter-related services, facilities and supporting infrastructure. Inclusive insurance products and services therefore need to be seen as part of a larger picture for their target customer markets.

This chapter is intended primarily for actuaries and users of actuarial services and should also be useful to a wide range of readers, including market participants in the inclusive insurance industry, supervisors, donors and educators.

2.2 Defining inclusive insurance

We use the following definitions:

> "Inclusive insurance" refers to insurance products through which adults have effective access to insurance and savings products offered by insurers through formal providers.
>
> "Effective access" involves convenient and responsible service delivery, at a cost affordable to the customer and sustainable for the provider, with the result that financially unserved or underserved customers can use formal financial services rather than existing informal options.
>
> "Microinsurance" is often defined as insurance that is accessed by low-income populations, usually involving low premiums and/or low sums insured, whereas inclusive insurance is about providing access to insurance for unserved or underserved markets.

Inclusive insurance products include all insurance products aimed at unserved or underserved markets. While these markets typically are in insurance markets in developing countries (from an insurance perspective), they are not restricted to such countries. Microinsurance is a subset of inclusive insurance. In practice, the two terms are often used interchangeably even though they are not the same.

There is also an “access frontier” for inclusive insurance to recognize. Reaching the poorest, most rural people may be better accomplished through social safety nets. The focus of inclusive insurance should be on including the next most feasible groups of customers. In many developing countries insurance inclusion can grow multiple times by providing appropriately designed products for customers moving toward the middle class and having characteristics such as relatively consistent incomes, mobile phones and education.

2.3 Importance of inclusive insurance

A key objective of inclusive insurance is to provide access to insurance for unserved or underserved markets. The estimated market potential is about four billion customers globally.

Insurance has been identified by Access to Inclusive Insurance (A2ii) to have an impact on nine of the 17 United Nations Sustainable Development Goals (SDGs).[4] This emphasizes the key role of insurance in supporting economic growth, and of inclusive insurance, in particular, in supporting the growth of developing economies. The SDGs are high-profile goals that will have a great impact on developing countries, with the global community working together to achieve them by 2030.

There have been many innovations in inclusive insurance and other areas of financial inclusion over the last 20 years, and some may have lessons for traditional insurance markets. Examples include:

- In Kenya, the rise of “mobile money” has seen financial inclusion increase dramatically from 25% to 85–90% over the period 2010 to 2020;
- In the Philippines, inclusive insurance provided financial protection to millions of people, many of whom had purchased insurance for the first time, following the devastating Typhoon Haiyan in 2013, which affected 11 million people;
- In India, “telemedicine” has been operating since 2008 with microinsurance schemes providing health services to people in remote areas;
- Inclusive insurance has been many customers’ first encounter with insurance, so new methods of communication such as dramatizations and comic-book storytelling have been needed to raise awareness of and educate customers about insurance; and
- Innovations in index-based inclusive insurance (IBII) have been developed to provide financial protection against weather events for farmers and people living in rural areas. A notable example is in Mongolia, where such insurance provides financial protection to its nomadic population over its vastly expansive lands in a cost-effective manner.

Inclusive insurance can provide a safety net and build resilience against risks for small businesses, smallholder farmers, informal sector workers and other low-income households. However, it is important to recognize that inclusive insurance solutions and products need to be tailored to the needs

[4] Specifically, No Poverty (SDG 1); Zero Hunger (SDG 2); Good Health and Well-being (SDG 3); Gender Equality (SDG 5); Decent Work and Economic Growth (SDG 8); Industry, Innovation and Infrastructure (SDG 9); Sustainable Cities and Communities (SDG 11); Climate Action (SDG 13); and Partnerships for the Goals (SDG 17).

and characteristics (including the reputation and awareness of insurance) of the specific market they target.

2.4 Inclusive insurance market overview

2.4.1 A brief history

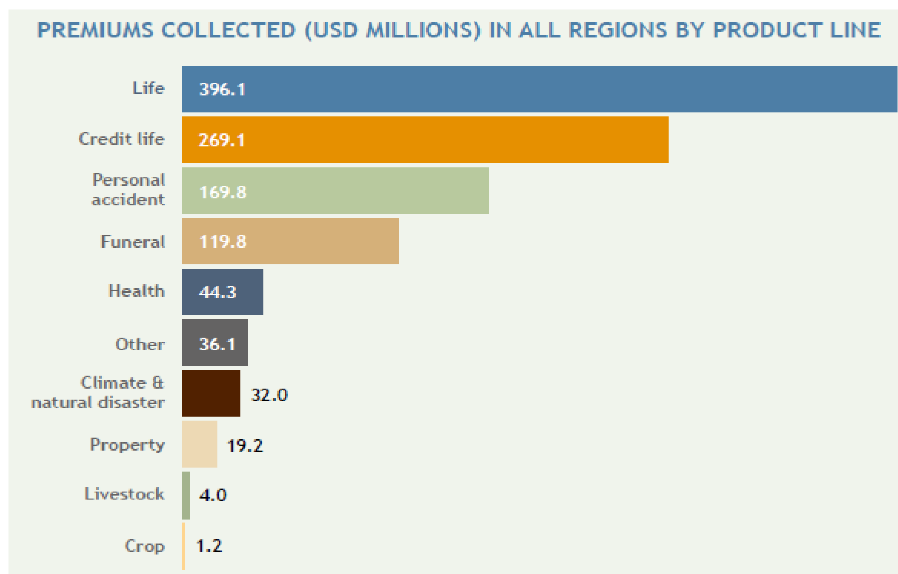
Inclusive insurance had its beginnings in the 1990s, when microfinance institutions (MFIs) began providing credit life insurance to their microloan customers; that is, a simple life insurance product embedded in the loan. Much of the early growth was driven by non-profit organizations which recognized the need to increase the resilience of the low-income populations they served, with many families pushed into, or back into, poverty every year by a single major risk event, often an insurable event such as illness or the death of a breadwinner.

Since then, inclusive insurance has seen significant growth in terms of the number of products, breadth of products, premium income and number of risks covered as well as the range of business models developed to support these products. This has also been strongly supported by the application of new technologies.

2.4.2 Risks covered by inclusive insurance

The types of risks covered by inclusive insurance products have expanded from the simple credit life insurance to a wide range of risks, as shown in the following graphic.

Microinsurance Network 2020 Landscape report: Premiums collected (2019 data)



This data is taken from the Microinsurance Network's (MIN's) 2020 Landscape of Microinsurance report.[5] Life, including credit life and funeral, and personal accident insurance are still the most prevalent

[5] See https://media.microinsurancenetwork.org/sites/default/files/MiN-Landscape-2020-ENGLISH_vf_0.pdf.

products. More recently, there has been significant growth in health insurance products, especially simple hospital cash cover.

Insurance in emerging markets is now a significant component of the overall global insurance industry and a growing proportion of the total market. A Swiss Re report[6] estimated that global direct insurance premiums written in emerging countries will rise from an estimated 21% of the total in 2018 (that is, 21% of about US$5.2 trillion, nearly US$1.1 trillion) to about 34% of the total in 2029.

A joint Institute of International Finance and Centre for Financial Regulation and Inclusion (Cenfri) report, *Inclusive Insurance: Closing the Protection Gap for Emerging Customers*, published in 2018,[7]

- Estimates the global market for inclusive insurance at about 3.8 million people (and the traditional insurance market is also estimated at about 3.8 million people);
- Estimates that the microinsurance market covers at least 600 million lives, and notes this is less than 20% of the relevant total population;
- Indicates that projected growth in inclusive insurance is consistent with high growth in insurance in emerging markets overall, but this growth is starting from a low level;
- Reports that in some countries the rate of growth of inclusive insurance is rapid; and
- Indicates that over 60 major insurers (in 2016), including some that are globally systemically important, are active in the inclusive insurance space.

2.4.3 Business models

A key driver of inclusive insurance growth has been innovations in business models. Early investors in inclusive insurance were able to attract expertise and provide risk-taking capital that has given rise to many innovations that have helped inclusive insurance become more commercially viable over time. This has led to growing interest from traditional insurers to the extent that several large multinational insurers and reinsurers are actively involved in the inclusive insurance market.

A period of rapid growth in the number of lives covered occurred from 2010 with the emergence of models that depended on mobile phone operators as distribution channels. These models were typically driven by technical service providers who took a lead role in developing insurance products and providing the technology to distribute the products via mobile phones. The products were usually underwritten by a traditional insurer. Cover was usually provided free to the mobile operator's end customers if the end customer met predetermined spend thresholds on the mobile network, with premiums being paid by the mobile operator. The "free" nature of the products resulted in many millions of customers registering for such products, with many experiencing insurance for the first time. The focus has shifted in recent years to providers consolidating growth and the monetization of the millions of new insurance customers, with a renewed focus on long-term sustainability.

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[6] See www.swissre.com/dam/jcr:b8010432-3697-4a97-ad8b-6cb6c0aece33/sigma3_2019_en.pdf.
[7] See https://content.centerforfinancialinclusion.org/wp-content/uploads/sites/2/2018/08/Inclusive-Insurance-Final-2018.06.13.pdf.

2.5 Environmental, social and governance factors

Environmental, social and governance (ESG) factors are beginning to receive increased attention in mainstream investment and insurance markets. However, ESG has always been forefront in the development of inclusive insurance markets.

2.5.1 Environmental

Inclusive insurance customers tend to live in areas of the world vulnerable to extreme environmental events and catastrophes. The Caribbean, Central or South America, sub-Saharan Africa, the Middle East and Asia tend to be very susceptible to extreme weather in the form of storms, hurricanes, earthquakes and unpredictable rainfall (floods and drought), often with life-changing impacts on people. Climate change magnifies the vulnerability of these inclusive insurance markets. While inclusive insurance cannot solve all issues, it can play a valuable role in helping people manage the financial impact of weather and other events.

IBII is an approach under which claim payments determined by a specified index rather than by actual loss experience of individual policyholders. The aim is to provide financial protection for people in rural areas, such as farmers and nomadic people, against weather events, with claims paid based on some index-based weather gauge rather than being based on evidence of actual loss following a weather event. It is an area of inclusive insurance that shows how innovation can help solve pressing social issues. This is discussed in more detail in Appendix 1.

As new risks emerge, actuaries may be stretched beyond their comfort zones when working with other disciplines to design suitable solutions; for example, addressing the COVID-19 pandemic. In developing countries, low- and middle-income households may be most affected. With no social security frameworks in most developing countries, most households are left with no back-up plan, and no one to rely on. The long-term effects on low- and middle-income households are seen mostly through an economic lens, with these households either returned to poverty or plunging deeper into it, and insurance will be even further out of their reach. The loss of livelihoods, businesses, dreams and opportunities may have an effect for generations to come.

2.5.2 Social

Particularly during its early development, the motivations for developing inclusive insurance had a strong component of addressing societal needs and helping to protect and support vulnerable groups, such as women and itinerant or migrant workers. Some products were subsidized by donors and/or governments and this continues to be the case in, for example, addressing the impacts of the consequences of climate change. As inclusive insurance has developed it has also become apparent that it can be delivered by private insurers on a sustainable and commercial basis with technology enabling cost-effective and lateral solutions to be implemented, and increased volume of coverage. Often there is a clear recognition of the broader social benefits insurance can bring, beyond the immediate financial protections. These broader societal goals include things such as food security, financial inclusion, empowering women and other disadvantaged and vulnerable groups, economic development, security and managing the impacts of climate change.

The need for and contribution of insurance to support broader societal goals is well established in many countries; for example, compulsory third-party motor insurance, workers' compensation schemes and building construction insurances.

2.5.3 Takaful

Insurance can be constructed along religion-based tenets, and this can take an inclusive approach. For example, takaful is insurance that follows Islamic rules. Takaful products generally cover insurance needs like any other insurance products, but with different implementation rules, relating to the set-up of the contract, operations and permitted investments. This is called "shariah compliance" and is enforced through a shariah council consisting of scholars chosen by the insurer or the regulator. Takaful insurance is designed with funds set up as a type of trust for the participants (customers). The most common structure is where the participants are the owners of the trust and receive the surplus in the fund while the insurer (operator) manages this fund and receives a fee for its efforts (including profit). This type of structure can be thought of as similar to a cooperative or mutual society.

While takaful retains the essential features of insurance, the structure changes the look and feel of it. However, takaful cannot provide minimum investment guarantees in savings products as that is not shariah-compliant.

A valuable aspect of takaful is its application to inclusive insurance. For example, suppose an insurance program is being designed for people who already have diabetes. The factors used to price this product are somewhat unknown, as most insurance coverage either excludes customers who currently have diabetes or puts significant exclusions into the contract. With a takaful plan the participants are helping each other, with the operator taking a fee of perhaps 20% to cover costs and profit. The remaining 80% will be put into the fund to pay benefits. As the expected claims experience may be variable, the pricing would be expected to be applied fairly conservatively. This is similar to any other product where experience is uncertain, but in this case the participants receive the surplus back if claims end up being lower than expected. This surplus could be returned to participants directly, or channelled back to the community; for example, to a national diabetes society for further research or other programs. Also, if the fund runs out of money, the insurer would provide an interest-free loan (called qard) to assist, with the loan subsequently repaid from future surplus before any surplus is given out to participants. This provides added security to the participants.

The product in this example caters directly to a risk which can be difficult to price or, to be precise, a risk for which it is difficult to give rates that are low enough to add value to customers. Adding value to participants in this context is ensuring that loss ratios are fairly high, yet with sufficient loadings to ensure fair profit for the insurer. If experimental or unknown risks are being insured, a takaful structure with the product priced fairly conservatively and with all underwriting surplus returned to participants can be viable.

To put takaful insurance into context, the Islamic Financial Service Board, in its 2020 Islamic Financial Services Industry Stability Report[8], indicated that global takaful contributions in 2018 were US$27 billion with an annual growth rate over the last eight years of 8.5%.

[8] See https://www.ifsb.org/sec03.php

2.5.4 Governance and management

As inclusive insurance involves significant effort and time to reach scale to become commercially sustainable, members of the value chain need to have aligned missions and motivations. Many companies see inclusive insurance as part of their Corporate Social Responsibility (CSR), understanding that profitability may be years in the future and so require a long-term perspective and plan for success. Clear messaging from the top of the company about the priority and importance of inclusive insurance should help produce better results.

It takes time to build trust with the target population that is new to insurance. Intermediaries between the customers and the insurer help establish strong relationships with the customers. This, supported by how the insurer communicates, provides customer service and pays claims, goes a long way to establishing trust. The quality of these functions and how they are managed flow from the company's values.

Increasing inclusive insurance sales and claims payments

The monthly reports from an inclusive insurance scheme in South Asia revealed varying sales and claims ratios among the MFI distributors. One MFI in particular was among the lowest in sales and claims ratios for most of the year until results dramatically improved in September. In discussions with the front-line staff, it was found that in late August, top management stressed very clearly to them that inclusive insurance was a high priority and an extremely important aspect of their job. That alone caused results to shift dramatically. Front-line staff then spent time talking to the MFI customers about inclusive insurance, explaining coverage information and providing customer service at a higher level, which all raised awareness, improving uptake and increasing claims payments.

A key driver of low claims ratios in inclusive insurance is customers not knowing that they have insurance (for mandatory schemes), lack of awareness of what they have coverage for and unfamiliarity with the claims process. These issues, if not addressed, may be warning signals regarding the future success of the product.

2.6 The link to financial inclusion

"Financial inclusion" refers to effective access to and participation in financial services such as banking, credit, insurance and payments by unserved and underserved populations. As with the broader concept of financial inclusion, inclusive insurance has multiple interacting issues and needs to address, involves multiple stakeholders and has the objective of achieving effective and comprehensive inclusive insurance coverage. The approach does not focus on the size of transaction or benefit, but on the access to, and safe use of, formal financial insurance services. However, it is noted that some regulatory jurisdictions limit the premium or benefit size allowed in inclusive insurance.

2.7 Future challenges for inclusive insurance markets

Despite the significant progress in expanding the number of risks covered, types of cover available and innovations in business models, a very significant cover gap still remains. With a potential market of four billion customers, there is much work to be done.

Some areas of inclusive insurance that require further attention are:

- Demonstrating the commercial viability of business models: too many inclusive insurance schemes remain subscale or are not commercially viable in the long term.
- Improving long-term claims ratios: the median claims ratio for inclusive insurance schemes covered by the MIN 2020 Landscape report was 23%. While many factors impact claims ratios, this level of claims ratios may be perceived to give customers insufficient value.
- There remains a strong need for insurance protection for smallholder farmers with current schemes covering relatively few lives.
- Finding ways to adequately protect against climate-related risks; for example, public–private partnerships are growing and showing potential to support this, but further work is required.

3 Drivers of differences between traditional and inclusive insurance

The extent of insurance coverage in traditional markets is generally higher than in inclusive insurance markets. In traditional markets the insurance industry, the actuarial community, and products and distribution channels are typically more developed. In inclusive insurance markets, coverage may be much more limited but with significant room to grow. Awareness of, understanding of or trust in insurance may not be high; products may not be well developed; or distribution channels may not currently provide effective access to insurance.

The challenges for actuaries and insurers are to better understand the needs of inclusive insurance customers, communicate with them and provide easily accessible products that add customer value. There are many examples where some or all these challenges have not been met. Some drivers of the need for different approaches are discussed below.

3.1 Inclusive insurance customers

Inclusive insurance insureds may differ from traditional insureds in many ways and these differences should be considered in developing sustainable inclusive insurance products. This does not mean they lack an understanding of risks they may face; rather that they may rely on alternate, community-based approaches to manage them. In situations where traditional insurance approaches may not be considered viable, an important task for inclusive insurance providers is to demonstrate that additional rigor in risk management and formality of inclusive insurance provides community benefit.

Many consumers of inclusive insurance may have a low level of understanding of insurance and be impacted if insurance has a poor reputation; for example, as a consequence of historic insurer failures. At a community level, this suggests that successful inclusive insurance initiatives need to demonstrate their value to the community in tangible ways to reduce the risk of, or perception of, exploitation. They also need to demonstrate their reliability and offer greater customer value than the existing informal mechanisms.

The impact of financial shocks, such as deaths, health issues and natural catastrophes, on financially vulnerable people can be much more profound and lasting than for customers of traditional insurance.

Inclusive insurance customers are discussed in more detail in Section 4.

3.2 Regulatory frameworks

Insurance requires a clear regulatory framework supported by robust supervision and appropriate government policies. These play an important role in the development of inclusive insurance as without them it is very difficult to build customers' trust in insurance. A regulatory framework for inclusive insurance should be proportionate to the risks it covers and adopt a risk-based approach. Regulatory matters are discussed in more detail in Section 6.

3.3 Insurance value chain

The insurance value chain refers to the entire insurance process. It includes:

- Development of insurance products, including product features and product pricing, for the target customer base;
- Creation of awareness and promotion of the product, including the benefits of the product for customers;
- Sales processes, including premium collection;
- Customer administration and service; and
- Claims processing and payments to customers.

Some important notes regarding the value chain follow, and the differences between inclusive and traditional insurance value chains are discussed in detail in Section 7.

3.3.1 Pricing

Pricing should be fair, equitable and affordable. In a more traditional setting, achieving this relies on competition, established good or best actuarial practices, adequate and appropriate data, and effective regulation and supervision. In an inclusive insurance context, all these things may be missing. Alternative approaches are therefore required and may require increased actuarial skills and judgement coupled with an active control cycle approach to monitor experience and adjust as required. For example, it is unlikely that a product that has a long-term 1% claims ratio provides, or is perceived to provide, value to customers. There are a number of reasons why claims ratios may be seen as low, including, but not limited to, valid claims not being made, inappropriate claims processing (perhaps due to inappropriate policy wording), new products with waiting periods for benefits or inappropriate pricing.

3.3.2 Efficiency

Inclusive insurance premiums and sums insured are often much smaller than those for their wealthier counterparts. This drives the need for efficiency and greater scale, which in turn drives a need for simplicity of product and reduction or removal of fixed costs. Simplicity of outcome does not imply that the process to achieve this is, or needs to be, simple (indeed, it is likely the processes may not be simple as they require care and judgment in their derivation).

Examples of simple outcomes might include products with no underwriting and/or no exclusions or automated claims processing for index-based insurance. Claims processes may need to be reworked to emphasize speed of delivery of insurance benefits. Distribution systems may need to change and be simplified. The use of mobile phone technology for sales, policy maintenance (premium payments) and

claims is an example of a change-enabler that supports achieving these efficiencies and also illustrates that radical shifts in approach, rather than improving existing approaches, may be required.

3.3.3 Risk management

The set of risks to manage and their relative priorities may vary between inclusive and traditional insurance. For example, the use of third-party service providers and distributors, such as mobile telephone service providers, may pose different risks compared to more traditional approaches and may increase the number and nature of participants in the insurance value chain for consumers. This may have regulatory and supervisory implications such as supervisors not being able to supervise some third parties and/or not having clear outsourcing governance requirements in place for insurers.

3.3.4 Distribution partnerships

In practice, the development and delivery of many inclusive insurance products is led by third-party distributors, often supported by technical service providers, with insurers playing a much smaller role than would traditionally be the case.

3.4 Actuarial pre-conditions

Actuarial work in traditional insurance markets typically presumes a number of pre-conditions:

- A ready supply of actuaries, the availability of actuarial education and the presence of robust professional standards;
- The availability of relevant, timely and appropriate data;
- Access to systems through which data can be collected and analyzed by providers, the industry and at the national level; and
- A regulatory framework that is reasonably well developed and understood by market participants.

In inclusive insurance markets, the reality may well be different:

- The supply of actuaries and/or actuarial profession may be limited or non-existent;
- Data may not be available or not readily collectable (this could, for instance, lead to a lack of insurance mortality and morbidity tables);
- Systems for collecting and analyzing data may not be well developed or integrated;
- Customer understanding of insurance may be limited, especially for first-time customers of inclusive insurance;
- Trust in insurance may be lacking; and/or
- Regulation that is appropriate for inclusive insurance may not be in place, or conversely existing regulation may act as a barrier to inclusive insurance.

Further discussion of these issues is given in IAA (2014), and some examples of how these issues may be addressed are given in Blacker (2015).

There is a risk that standard actuarial tools and approaches may not be appropriate in inclusive insurance markets, or that their application could even lead to unintended outcomes, such as inappropriate premiums or claims processing.

4 Inclusive insurance consumers

While there is no single profile of a typical inclusive insurance customer, there are some common attributes. Understanding these characteristics before discussing the differences between traditional and inclusive insurance is useful.

Inclusive insurance insureds may differ from traditional insureds in terms of their needs, trust and vulnerability, with many having variable earnings and being in the informal sector. This does not mean they are unaware of insurable risks; rather, they may rely on the local community and informal mechanisms to manage them. The local community perspective is important as it suggests that there may be similarities between traditional group insurance and inclusive insurance; for example, the “self-policing” that may occur within a community, and the importance of engaging with the leaders of the community on whom the rest of the community relies on for guidance. Additionally, the key role that women may often play in community affairs and functioning should not be underestimated. In situations where traditional insurance approaches are not viable, an important role for inclusive insurance is to demonstrate that the additional rigor in risk management and formality that inclusive insurance products can provide leads to community benefit.

Overall, an important task for inclusive insurance providers is to demonstrate that it can return better value than the current community-based approaches.

Many consumers of inclusive insurance may have a low level of understanding of insurance and be impacted if insurance has a poor reputation. At a community level, this suggests that successful inclusive insurance initiatives need to demonstrate their value to the community in tangible ways to reduce the risk of, or perception of, exploitation. An example of how this might be achieved is through the introduction of risk mitigation steps as part of an inclusive insurance program. Such steps need not increase premiums and may lead to premium decreases through reduced claims. An example of this might be the distribution of health aids and/or education to improve hygiene practices. A traditional example of this is the use of seat belts in cars.

The impact of financial shocks on inclusive insurance customers may be much more profound and long-lasting than for customers of traditional insurance. For example, without insurance they may be forced to live below the poverty line and unable to rise above it.

Inclusive insurance customers and their needs vary due to multiple factors such as culture, geography, the need for and effectiveness of alternate coping mechanisms, and knowledge and perception of insurance and the insurance industry. This implies the need to segment customers based on customer research, and design products and distribution strategies according to consumers' actual needs.

Typically, an inclusive insurance customer displays a higher level of vulnerability than a traditional insurance customer in terms of their exposure to risks, often due to one or more of the following:

- Works in the informal economy, such that understanding of or familiarity with insurance may be minimal and distribution of insurance to this sector at scale may be very challenging;

- Undertakes work that increases their exposure to risks (for example, manual labourers, bicycle riders, rickshaw drivers);
- Lives in an area prone to risk, such as a rural area or an area with a limited water supply;
- Lives in a region of the world susceptible to natural disasters and other personal calamities;
- Has little or no access to social protection or another government safety net; and
- Has limited education or access to education.

As a consequence of these vulnerabilities, there is often an increased risk that a person will fall into, or fall back into, poverty or extreme financial hardship if a risk event occurs and the person does not have financial means to absorb the impact of that event.

5 Trust in and awareness of insurance

Despite the efforts that have gone into the designing of inclusive insurance products, the uptake has sometimes remained lower than may have been hoped for. Building trust in and raising awareness of insurance are critical to building sustainable inclusive insurance markets. This may be addressed in many ways, including:

- Raising awareness and providing education about insurance: these are inter-linked, and need innovative customer education strategies that go beyond just explaining how insurance works.
- Research showing that adults learn best by experience and practice, and through trial and error: gaming may be an accessible and interesting approach to educating consumers, simulating situations and risk experiences that they may be exposed. It has been used in the traditional societies for a very long time.
- Quick and easy access to insurance services, especially when making claims, to demonstrate that insurance "works" and responds to real needs in communities in a timely way.
- Raising the awareness of the benefits of inclusive insurance: as insurance typically has low penetration rates in many inclusive insurance markets, many communities, in one form or another, manage risk in the absence of insurance. Raising awareness should lead to better risk management in many communities

Gamification as an example of an innovative education tool

In Kenya, actuaries have designed a game that will be a fun and cost-effective way of teaching consumers the importance of having insurance. The game simulates real-life events that have huge financial impacts on small and medium-sized enterprises (SMEs), smallholder farmers, informal sector workers and other low-income households. The participants in the game will be drawn from various business, literacy and income levels with the aim of mirroring real-life scenarios. At the end of the game the participants are expected to have a better understanding of insurance, among other proactive and reactive risk mitigation mechanisms that will enable them to make better financial and risk management decisions. The game has also helped participants to learn about financial planning and basic bookkeeping.

Simulations such as these help customers imagine what insurance can do for them.

The success of inclusive insurance depends on consumer awareness of the products, trust in the product providers, comfort that promised benefits will be delivered in a timely manner and acceptance that the products provide customer value. Building trust in insurance is exceedingly difficult and takes a long time. Because insured people often have very infrequent engagement with insurers, there is a very long feedback loop, unlike, for example, making premium payments, which can happen frequently. Behavioural science suggests that building trust requires meeting expectations many times, but losing trust often only takes one failure to meet expectations. A key implication is that quality service, rapid claims payouts and higher claims ratios may not be simply "nice to have" characteristics but, instead, may be pre-requisites to growing a sustainable retail inclusive insurance market.

There may be adverse historical events that do not build trust in insurance or insurers. The legacy of such events needs to be overcome for future success. Some issues that may need to be addressed include:

- Misunderstandings due to inadequate awareness and education about insurance – insurance is an intangible benefit until the time of a claim, and is abstract and can be difficult for unserved or underserved communities to understand;
- Knowledge that some insurers have behaved inappropriately, such as:
    - Putting in place barriers to claims, having slow and onerous claims processes, or having a history of unpaid claims; or
    - Having instances of fraud when a person has paid a premium and the payee disappears with the money;
- A perception that insurance does not provide value for money (for example, if a person pays a premium of 100, that person may expect a benefit of 100 and not just "peace of mind" provided by the insurance);
- Concerns raised by low claims ratios; and
- Lack of trust in financial services providers in general.

5.1 Role of insurance and value-added services in helping people manage risk

Risk mitigation is managing the context in which a risk event may occur with the objective of reducing the probability and/or severity of that risk event occurring. Implementing plans that specifically reduce the probability and/or severity of the risk event can reduce claims and help stop customers having a financial shock that could spiral them back through the poverty cycle. In most cases, risk mitigation involves cooperation and action on the part of the customer.

Many communities, in one form or another, collectively manage risk in the absence of insurance. For instance, in many African countries, when someone dies – no matter their status in society – the community comes together to raise money for a funeral. Increasing the typically low penetration rates of insurance in inclusive insurance markets should improve risk management in communities and support their better economic development

Value-added services included with insurance products are a way to mitigate risks while also providing product tangibility and improving customer value, trust, education and awareness. This is not yet widespread across developing markets but is an area of strong potential growth and development.

Adding risk mitigation services or items to a product may generate significant challenges to maintaining affordability and customer value, and meeting customer needs may be a challenge for traditional approaches and so may require some innovative and lateral thinking. Strong partnerships and subsidies can help with affordability. Effective customer communication efforts through surveys, conversation and focus group discussions can help establish risk mitigation strategies that are valued by the customers and therefore used. Effective strategies can add enough customer value that they encourage renewals. For example, some schemes see risk mitigation strategies that create a large reduction in customer out-of-pocket costs driving health insurance renewals.

All of these “add on” services which the customer may perceive as free can increase customer value and reduce the chance of a health event and subsequent claim occurring. Most importantly, the customer stays healthy.

These risk mitigation product design features do not always add to the cost of an insurance product and may lower long-term cost.

For example, there is a plan that covers a rapid malaria test at pharmacy outlets where a malaria prescription will not be given without this rapid test. If someone tests positive, they can be treated and quickly get a prescription. Taking malaria medication when you do not have malaria can be harmful. In this case the risk mitigation service saves money and eliminates waste.

Value-added services in inclusive health insurance

In inclusive health insurance, many schemes include telemedicine services, public health information (such as the benefits of hand washing), health camps, and outpatient counselling and services such as blood pressure and blood sugar checks as part of services covered by the health insurance.

Risk mitigation also involves treating diseases early to prevent more severe and costly claims or encourage the prescribing and use of effective but less costly treatments. For example, educating customers and encouraging providers to prescribe relatively inexpensive oral rehydration solution at the early stages of diarrhea could prevent more severe cases requiring more costly inpatient admissions. In another example, some schemes have distributed subsidized insecticide-treated mosquito nets to their members to reduce the risk of malaria.

Some customers do not seek treatment because it is perceived as unaffordable. Offering discounts through pharmacy cards and affiliated network hospitals improves the affordability of medical services, which may encourage treatment-seeking behaviours or even disease maintenance by reducing associated patient out-of-pocket costs.

6 Regulatory frameworks

6.1 Insurance Core Principles

The International Association of Insurance Supervisors (IAIS), primarily through the Insurance Core Principles (ICPs), provides a globally accepted framework for the supervision of the insurance sector. The ICPs are intended to establish the minimum requirements for effective insurance supervision. The IAIS considers that the ICPs apply to all jurisdictions regardless of the level of development of the

market or the regulatory system. They therefore apply to inclusive insurance as well as traditional insurance.

The ICPs specify five pre-conditions for an effective system of insurance supervision:

- Sound and sustainable macroeconomic and financial sector policies;
- A well-developed public infrastructure;
- Effective market discipline in financial markets;
- Mechanisms for providing an appropriate level of protection; and
- Efficient financial markets.

In established insurance markets, these pre-conditions are generally met, but in developing insurance markets they may not be. Actuaries need to recognize the gaps, understand their impact and address them.

6.2 Risk-based and proportionate regulatory framework

Supervision of inclusive insurance should take both a risk-based and proportionate approach:

- "Risk-based supervision" refers to supervisory activities and resources being allocated to insurers, lines of business or market practices that pose the greatest risk to customers, the insurance sector or the financial system as a whole; but
- The proportionality principle focuses on the application of supervisory activities in a way that is proportionate to the nature, scale and complexity of risks.

Risk-based regulation may currently be more of an aspiration than a reality in practice in many developing countries. In contrast, the IAIS expects the ICPs to be implemented in a proportionate manner. Supervisors have the flexibility to tailor their implementation to the local legal structure, market conditions and consumers. Supervisors should also adjust the intensity of supervision according to the risks to insurers and customers and the risks to the insurance sector and the overall financial system.

Three matters to consider in the context of inclusive insurance are:

- **Appropriateness:** Supervisory measures should achieve their objectives, but not over-reach them. The focus should be on outcomes as well as the means used to attain them.
- **Flexibility:** Applying differing approaches to reflect differing characteristics of insurers, while addressing the same underlying issues, requires a focus on the principles underlying the issues being addressed. This requires expertise and experience to support consistency of outcomes. Directly applying rules-based approaches can inhibit the capacity to tailor solutions and flexibility.
- **Risk management:** This implies the need to identify, assess, manage and monitor risks, both separately and in aggregate as part of the portfolio of risks that apply in practice. In particular, this requires that risk appetites be set to inform supervisory judgments and that differences between inherent risks and residual risks – that is, the risks that remain after mitigating steps have been taken – are identified.

There is broad consensus among standard-setting bodies (SSBs) that proportionate application of global standards is important for financial inclusion. An ongoing challenge is to determine how far

global SSBs can go toward specifying "proportionality in practice" as this entails reflecting different approaches across jurisdictions given varying country contexts, and across service providers, especially considering the evolving fintech landscape and digital financial inclusion.

Historically, proportionality has also been described as addressing the "nature, scale and complexity of risks posed by individual insurers". The application of proportionality does not imply a dilution of professional or supervisory obligations and requirements. Rather, it implies the need to adapt approaches to manage the entire financial inclusion value chain, which may be very different to the value chains for more traditional insurance in more established and traditional markets.

To assess a proportionate solution, ana approach for comparison with accepted (traditional) solutions proposed here is:

> A proposed solution, relative to an accepted solution, is a valid outcome if, from the perspective of the assessor, the proposed solution is attained at a lower cost (broadly interpreted) and remains sufficiently close to the accepted solution that the assessor would, under normal circumstances, not change a decision depending on whether the proposed or accepted solution was used.

A range of approaches to addressing supervision of inclusive insurance, reflecting proportionality, have been implemented. Some have been more successful than others, and approaches continue to evolve. The differences between inclusive and traditional insurance when addressing the regulation and supervision of inclusive insurance need to be recognized and addressed. Recent A2ii publications discuss this in more detail.

Regulatory frameworks can act as barriers to the development of inclusive insurance. Regulators want rules for consumer protection, but too many barriers will reduce access to insurance. Countries such as the Philippines and Ghana have been successful in creating proportionate inclusive insurance regulatory frameworks. Inclusive insurance regulations may differ considerably between countries as they need to work in different contexts. Regulators may be addressing multiple issues, may have different perspectives and may need to address country-specific issues. The following example illustrates this.

Example of a proportionate approach to inclusive insurance: The South Africa experience

South Africa introduced a new, dedicated microinsurance licence in 2017 with the objectives of supporting financial inclusion, formalizing insurance provision by informal providers, encouraging broader participation in the insurance industry by lowering entry barriers and enhancing consumer protection.

In support of these objectives, two key barriers to entry were addressed:

- The minimum capital requirement for a microinsurance licence was set at R4 million (about $US267,000), almost a 75% reduction compared to the capital required for a traditional licence; and
- Market conduct requirements were also relaxed.

In view of the lighter requirements, various restrictions were placed on microinsurance licences in an attempt to limit the level of risk that a microinsurer could take on. These include:

- Limiting the benefit amounts under microinsurance policies;
- Restricting the maximum contract term to one year;
- Restricting cover to risk-only benefits, thereby excluding the complexities of savings products; and
- Requiring policy contracts to be written in simple, plain language.

Early indications are that the lighter microinsurance regulatory requirements are achieving the desired objectives, with seven new microinsurance licences having been fully or provisionally approved by early 2021 and another nine applications having been lodged.

6.3 Regulations that can help or hinder the development of inclusive insurance

Regulation can play a key role in helping or hindering the development of inclusive insurance. A helpful framework might include:

- The category of inclusive insurance and/or microinsurance should be permitted;
- Multiple types of distribution channels, including non-traditional channels, should be permitted;
- Bundling of various insurance products and/or bundling of insurance with non-insurance should be allowed;
- Capital requirements should not be prohibitive and should be proportionate to the product and/or risk;
- Customer disclosure requirements should be simple;
- Regulatory processes such as filing of products and reporting should not be disproportionate; and
- Claims processes should be simple and relatively fast.

Conversely, there are regulatory provisions that can block or impede the development of inclusive insurance, such as:

- Education requirements for sellers of insurance that are too high relative to the relevant insurance product or customer base (for example, a college education should not be required for the seller of a simple one-year term life insurance product);
- Minimum capital requirements that are too high compared to an appropriate minimum using risk-based capital;
- Not permitting alternative distribution channels nor allowing channels to perform more roles;
- Formal documents requirements for claims that cost a lot compared to the amount of claims paid;
- Know Your Client requirements that are not proportional;
- Fees and procedures for product admittance that are not proportional; and
- Not permitting bundling, other forms of contracts, or other payment and transaction modalities.

7 Inclusive insurance value chain

From an actuarial perspective, the differences between traditional insurance and inclusive insurance can be viewed in terms of an insurance value chain. At a high level, there are three key roles in the insurance value chain:

- *Distribution partner* refers to any player that has a role in the distribution of insurance. There may be several distribution partners working together or sequentially to distribute insurance to the customer.
- *Insurer* or *risk carrier* is the party that accepts financial risk in return for payment of the insurance premium.
- *Technical services provider* (TSP) is a provider of technical services to a distribution partner, insurer or any other party in the insurance value chain. Such services can include actuarial services, data services, international development services or country- or market-specific knowledge on how to reach a type of consumer.

In traditional insurance, the risk carrier plays the lead role in deciding where it will accept financial risk, while the distribution partner plays a key role as the interface between the risk carrier and the customer. In some markets, such as Canada, TSPs play a major role in traditional insurance, but this is not the case in all established markets.

Typical differences between the value chains for traditional and inclusive insurance are highlighted by comparing the following value chain diagrams and observing the variation of levels of involvement for the key players. These value chains are indicative, and in practice there will be variations.

Diagram 1: The value chain for traditional insurance

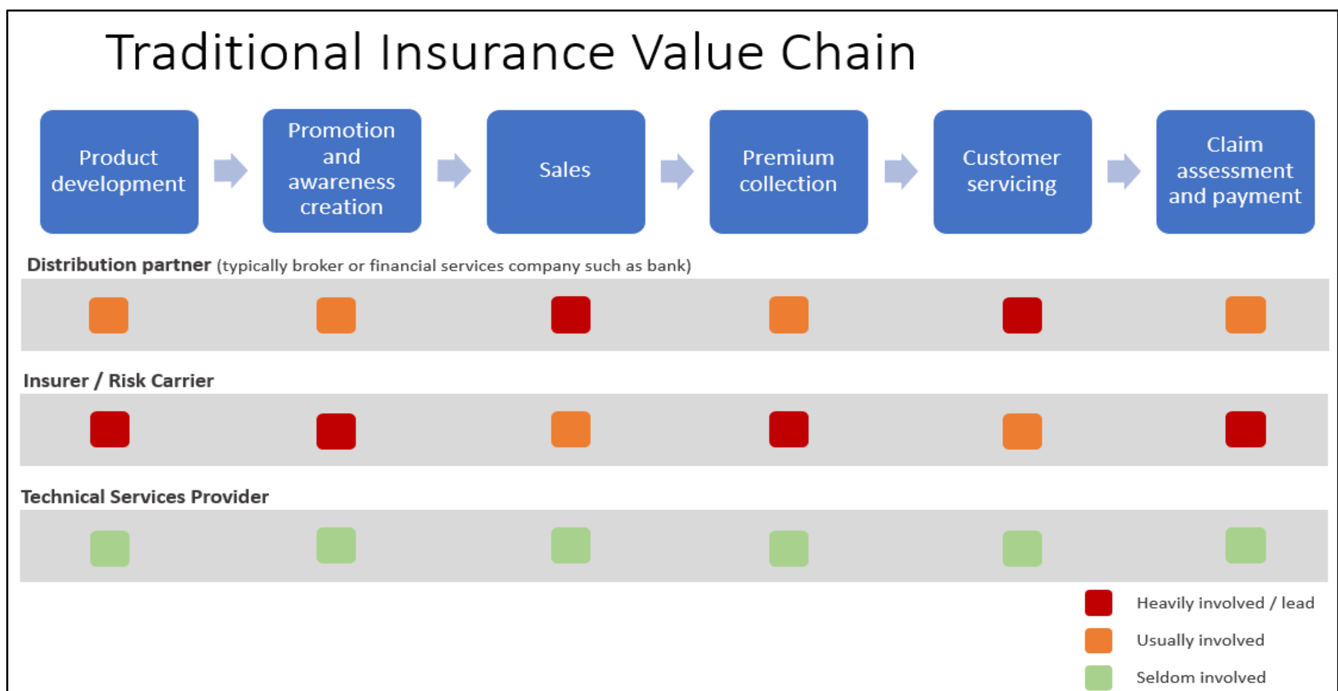
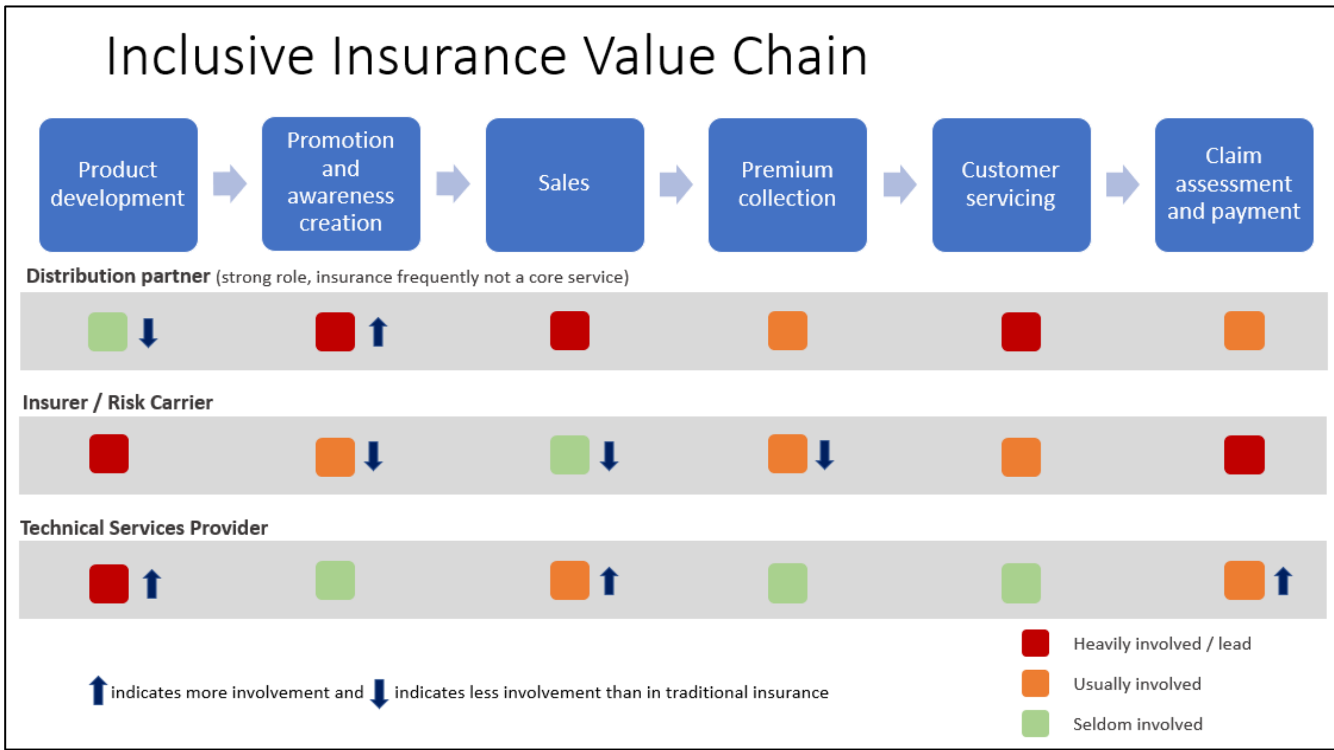


Diagram 2: The value chain for inclusive insurance



The next section discusses key differences between these two value chains from an actuarial perspective.

7.1 Roles of players

Traditional insurance products are typically distributed through brokers and other intermediaries closely linked to the insurer. Such traditional channels have generally proven to be too expensive to be viable for lower inclusive insurance premiums, with a greater reliance being placed on distribution partnerships with an aggregator of large numbers of customers, often through non-traditional intermediaries such as mobile operators.

TSPs typically play a significantly broader role than in traditional insurance, bringing inclusive insurance skills and experience that insurers and distributors may not have. They often play a leading role in forming partnerships between distributors and insurers, formulating strategy, performing market research and designing products, providing IT platforms to reach customers and administer insurance products and, sometimes, processing claims.

There are often multiple stakeholders involved in bringing inclusive insurance to the market, often with stakeholders from outside the insurance industry. For example, mobile telephony operators increasingly act as distributors of insurance products, while governments may provide premium subsidies in some cases. Actuaries need to be aware of the potential for multiple and various partners and understand their roles, which can have implications across areas such as product design. For example, digital distribution by mobile operators requires extremely simple products, and pricing with multiple partners each requiring a share of premiums generated, potentially reducing customer value. When multiple

distribution channels are used for a single product, which is quite common, this adds complexity to the product economics from a pricing and actuarial perspective.

The use of partnerships in inclusive insurance can raise some challenges in terms of who owns the customer, and may risk insurers being disintermediated from their customers. High commissions paid to intermediaries may increase the risk of product churn, often leading to customer trust being undermined. Unfortunately, this has been seen in some cases. It is not uncommon that distributing insurance is seen as an add-on or “nice to have”, rather than being core to the business model of intermediaries. Inclusive insurers therefore need to ensure that the insurance products are relevant to the core business model of the distributors.

7.2 Product development

The main differences between inclusive insurance and traditional insurance customers are discussed in Section 4. The implications for actuaries are many – most notably the need for simple, understandable products that are sufficiently flexible to take account of customers’ dynamic needs, especially in relation to volatile income receipts. Lower premium amounts make it more difficult to balance the interests of the various stakeholders.

7.3 Promotion, sales and distribution

The limited knowledge and understanding of insurance, as well as a general lack of trust, mean that significant effort must be expended in educational and promotional activities during the inclusive insurance sales process. Actuaries should ensure that product designs are as simple as possible to help potential customers better understand product features.

Characteristics of the inclusive insurance customer require the use of higher-touch distribution models such as the use of face-to-face sales agents or outbound call centres, rather than following a mostly digital distribution approach. However, these higher-touch models come at increased cost relative to models that rely more on digital channels. Inclusive insurance premiums must also be affordable and so are price-sensitive, which creates a complex problem to solve if costly distribution channels are required to effectively reach inclusive insurance customers while keeping premiums affordable. This is particularly relevant for actuaries involved in pricing inclusive insurance products. Providing customer value is also important in light of the potentially high distribution costs and low premiums.

The fact that inclusive insurance sales are often performed by non-traditional distribution partners (such as mobile operators) can raise other issues that are not actuarial in nature but are very relevant to actuaries and their work. In particular, a number of regulatory issues can arise that are not usually encountered by traditional insurance. For example, do insurance supervisors have jurisdiction over distribution partners that are regulated by other government entities? A prime example is mobile operator distributors whose primary regulator would be the telecoms regulator. Training for non-traditional distribution channels is also critical to ensure inclusive insurance customers make informed decisions relating to the products they purchase and understand how to claim.

7.4 Premium collection

Inclusive insurance customers typically belong to the informal economy, resulting in fewer touch points with formal financial service providers through which premiums can be collected. The higher variable nature of incomes and very uncertain expenses requires inclusive insurance products to have flexible payment plans. Actuaries designing inclusive insurance products must be aware of these differences from the typical traditional insurance customer.

To address these challenges, inclusive insurance providers have adopted a variety of alternative premium-collection approaches such as bundling insurance premiums together with the purchase of other products and services. Examples include the purchase and payment of crop insurance together with agricultural inputs such as seeds and fertilizers for smallholder farmers, and mobile money payments for mobile-operator-led models.

7.5 Customer servicing

The low margins in inclusive insurance premiums make it critical to ensure processes to service customers are as quick, efficient and cost-effective as possible, bearing in mind that inclusive insurance customers typically have limited awareness and understanding of insurance products. Simplicity of product design is once again important as it will reduce the customer-servicing burden and therefore cost.

A related challenge when offering inclusive insurance in a partnership model is customer ownership. In particular, a key question is “Who has the right to talk to the customer, and when?”

7.6 Claims assessment and payment

The scale of inclusive insurance schemes means there is often potential for very high claims volumes. For example, some mobile-operator-led schemes have reached millions of customers within months. The benefit amounts of many inclusive insurance products tend to be very small, and benefit amounts of $100 or less are not uncommon. The potential for high claims volumes and low benefit amounts means that traditional claims underwriting practices will not be practical or affordable. Actuaries must be aware of these differences when pricing inclusive insurance products. But caution should be exercised as reduced claims underwriting does not necessarily mean inclusive insurance will have higher claims experience than traditional insurance. Customers’ lack of awareness of the insurance cover they have may often outweigh the impact of reduced underwriting, resulting in lighter claims experience. This example highlights how important it is for actuaries to be fully aware of how the context in which an inclusive insurance scheme operates differs from the traditional insurance practices they may be used to, and to adjust their approaches accordingly.

7.7 Customer value

The inclusive insurance value chain was examined above, and it was explained how it may differ from a traditional value chain. The focus has been on how inclusive insurance products and services are provided.

It is important to also be aware of the customer's perspective of inclusive insurance Success ultimately depends on those customers perceiving that they get value from their inclusive insurance cover. That implies they need to trust that the benefits from the cover they buy will be delivered in a timely and appropriate manner.

It should also be recognized that there may be established community-based approaches in place to help manage risk events. That is, inclusive insurance may not be offered into a vacuum, but into a space where other approaches, whether effective or not, may be established. In this context providers of inclusive insurance should demonstrate that their approach provides increased value and security to their customers.

A number of things relating to customer value have been mentioned in this section. Not all the aspects of increasing value to customers are directly within the actuarial contribution to the design and delivery of inclusive insurance products, but they should be acknowledged and considered when actuarial contributions and advice are provided.

8 Actuarial implications of the differences between inclusive and traditional insurance

There is a range of implications for actuaries when dealing with inclusive insurance. At a summary level, these include:

- The actuarial control cycle needs to be applied, sometimes in very fluid ways, between the different parts of the cycle for both its "analytic" and "professional" components. The "analytic" cycle can be summarized as an "identify, solve, monitor" cycle. Put more simply, "Determine what you want to do, attempt to do it and review how successful you were." This lies within the "professional cycle" which provides the context of environment, implementation, governance and professionalism and thus the links into the business world.
- Increased application of actuarial judgment is required, driving the need to understand context much better than might be the case in traditional insurance markets. This often implies a need to think "outside the box".
- There is a need to consider alternate ways to manage uncertain, and possibly volatile, risk outcomes. This may require more flexibility and lateral thinking due to a lack of rules and/or data, an unstable environment, a lack of best practices, possibly a lack of regulatory or supervisory clarity and expectations, and the need to address a new situation.

The challenge for actuaries is to reinvent how insurance can be provided while retaining a balanced approach that protects against insurer failure, provides customers with access to value-based coverage meeting their needs, and functions in a non-traditional business environment that may be evolving and/or unstable.

8.1 Supply of and demand for actuaries

The supply of and demand for actuarial resources varies widely between countries. Demand will be driven by factors including product complexity, insurance regulations and the socio-economic

environment of the country. For example, the existence of a national health program could decrease demand for health actuaries.

In some developing countries actuarial skills are undervalued and, even where there is a supply of actuaries, they may not be particularly well paid, with most seeing a progression path into management rather than as professional specialists in financial risk management. Additionally, boards and executive management frequently may not fully understand or see the value that actuarial analysis can offer their business, and consequently actuarial analysis and input often stops at a regulatory checkbox. Equally, supervisors may hold narrow views on the role and skills that actuaries can provide. This presents the profession, both as a whole and in specific countries, with the challenge of increasing its profile and establishing the value it can add to insureds, insurers and regulators.

On the supply side, there may be few actuaries in low- and middle-income countries for multiple reasons. In some countries there are no university programs or professional actuarial associations. Where university programs do exist, graduates may leave the country to work for higher pay in developed markets. Actuaries who remain in their home country may choose to work on traditional insurance products rather than inclusive insurance. Actuaries who are not resident in a country may need to be careful to ensure they have sufficient knowledge of that country and its insurance environment.

There is no single solution to balance the supply and demand of actuarial resources. Insurance regulators can reduce unmet demand by applying proportionality in their requirements for simple, short-term insurance benefits. Actuaries in developed markets can help increase supply by developing pricing toolkits or educational materials, such as IAA (2018).

8.2 Requirements for actuarial services to be effective in inclusive insurance markets

As described in IAA (2018), effective actuarial services provided in inclusive insurance markets should be consistent with the following guiding principles as given in IAA (2018). They apply equally to insurers and supervisors. Their focus is on services supporting the development and delivery of insurance products.

1. **Customer needs:** Services and solutions should strive to meet the needs of inclusive insurance customers, noting that these customers may have an increased level of vulnerability due to their lack of awareness or understanding of insurance.
2. **Differences:** The key differences between inclusive insurance and conventional, or traditional, insurance should be identified and addressed in order to meet customer needs.
3. **Financial sustainability:** Services and solutions should be financially sustainable over the longer term.
4. **Barriers:** Services and solutions should not create barriers to the development of inclusive insurance and should provide scope for innovation. For instance, a rigid requirement to apply traditional actuarial approaches to inclusive insurance markets could form such a barrier.
5. **Simplicity:** Analytical tools provided should be easy to use by customers, even if the underlying issues or analysis are not simple.
6. **Objectivity:** Models should be based on objective and quantifiable criteria. The outcomes of the models provide a starting point for a discussion. Professional judgment should be applied as necessary in reaching conclusions.

7. **Holistic industry development:** Professional capacity in industry, supervisors and actuarial service providers should be developed in parallel. Services and solutions should support the holistic development of inclusive insurance markets and the prudential protection of consumers.

8.3 Customer needs

8.3.1 Simple products that cover customer priorities at affordable prices

Inclusive insurance products are not pared-down traditional insurance products. An inclusive insurance product is developed with the target customer in mind. Going to customers, talking with them and learning about their unique lifestyle and needs is essential for product design. For example, a typical hospital cash product would be adjusted depending on the target customer's characteristics, such as adjusting premium payment frequency to seasonal income patterns.

Inclusive insurance contracts have no or minimal exclusions. This risk can be covered by having a significant segment of the target population enrolled. This then requires a strong distribution channel that reaches large numbers of people. Even with these large numbers, product development may start with no data or limited data on the target population and may require modifying data derived from other sources or countries.

Service standards must enable rapid payment of claims, while still seeking to reject false claims (at least to within an accepted tolerance). Inclusive insurance service standards require a greater focus on improving customer communications compared to traditional insurance. Having customers speak highly of an inclusive insurance experience and share that with friends and family through word of mouth is an effective way to retain and gain new customers.

8.3.2 Connecting with customers

Understandability and familiarity are very important. The language used to reach the low-income population has to be simple and clear in the local language, not the traditional insurance jargon. Customers, whether in rural, urban or remote areas, need to be approached in their environment by someone they already know and trust and can relate to in a way they are familiar with.

Typically, inclusive insurance customers have low insurance awareness and low trust in insurers, so continuing customer education is an essential component in the sales, service and communication strategy. For some products, such as agriculture and health, a customer will need help to understand risk mitigation strategies explained in terms or language that they understand.

8.4 Insurance products and providers

IAA (2018) discusses a practical approach to assessing risk and proportionate actuarial services in inclusive insurance. The focus is on product development and review. The approach looks at two primary dimensions, product and provider. The first, product, reflects the need to address standard considerations directly related to product development, recognizing that these considerations need to be addressed in an inclusive insurance context. The second, provider, reflects the importance of safe, reliable and effective delivery of products from inception through to claim management. Most of the

issues in the provider dimension relate to provider robustness and operational risk matters. However, just as it is important to manage considerations in the product dimension, it is equally important to properly manage those in the provider dimension. A good product poorly delivered is still vulnerable to failure and may also generate reputational damage not only for the provider but also for the industry more broadly.

The key product dimension considerations highlighted in IAA (2018) are:

- Customer insurance awareness and product understanding;
- Sum insured: amount and predictability;
- Insured event: frequency and predictability;
- Data: availability, quality and suitability;
- Product features: coverage term, deductible, exclusions, waiting period, guarantees, etc.;
- Moral hazard and anti-selection;
- Fraud potential;
- Reserving: complexity and significance;
- Very large and catastrophic risks and systemic risks; and
- Other product factors (supervisor to specify).

The key provider dimensions considerations are:

- Product design capability
  - Market research, prototype and product design, testing and rollout, disclosure and documentation, review reflecting experience;
- Sales, marketing and customer education
  - Sales, underwriting, premium collection, customer marketing and education;
- Customer administration
  - Customer queries, claims administration and payments, dispute resolution;
- Technical insurance management
  - Reserving, reinsurance, investment, capital requirements, solvency management, monitoring capability and reporting, data collection;
- Operations
  - Institutional assessment and internal audit, finance and administration, technology, management of partnerships, regulatory compliance;
- Staff
  - Technical insurance skills, skills dealing with customer base, training and education;
- Other provider factors (supervisor to specify).

While the concepts above may be familiar to all actuaries, the approaches to address them in an inclusive insurance context may vary relative to traditional approaches.

The list of specific points under each bullet point suggests that additional particular considerations may be required for specific products. This includes the situation where supervisory approval of products is required.

The process given in IAA (2018) provides a "language" that can be used during product development and in discussion between providers and their supervisors. It therefore provides a management tool that can be used by both providers and supervisors.

8.5 The business case for inclusive insurance

Innovation is not easy, and it is not for everyone as there is risk involved. Inclusive insurance requires a significant investment of time, money and resources over a longer time frame to allow for development, education, growth and change. As it is unproven in some countries, insurers will also have to navigate the regulatory and political environments as well as longstanding attitudes about the insurance market.

Traditional insurers may not be adapted to selling small-ticket/high-volume coverage. They would need to simplify administration, develop information technology, learn how to deliver service rapidly and make significant company-culture changes to understand the low-income market. This may require more effort than is needed to overcome barriers compared to the relatively simple traditional insurance market, and so some insurers may prefer to maintain their focus on the high-income, higher-margin markets.

National and international insurers across the globe have entered the inclusive insurance market not only for CSR reasons but also with a long-term vision to expand their current market and open opportunities to future markets. These companies see how inclusive insurance offers value to those in the untapped market and also how it can be developed into a profitable business endeavour.

Top management of all partners must have strong messaging that shows employees that inclusive insurance is a priority. They must champion effective operations that serve customers rapidly. This requires thinking outside of the box and changing the way "things have always been done" in traditional insurance. Most importantly, results need to be monitored closely and management action applied promptly when issues emerge.

A product achieves scale when it generates premium income sufficient to cover all cashflows including fixed expenses. Inclusive insurance may have significantly lower premiums per policy than traditional insurance, requiring thousands (in some cases hundreds of thousands) of sold policies to achieve scale. Successful insurers find ways to reach many customers efficiently, such as selling through organizations that already have a positive relationship with the target market.

8.6 Distribution

The cost of traditional insurance distribution would be too high to provide affordable inclusive insurance products, so an insurer providing inclusive insurance will need to work with a variety of new distribution channels. Ideal partners are customer-trusted organizations that can reach, educate and provide services to the target population.

8.7 Pricing when there is a scarcity of data

8.7.1 The primacy of understanding the context

In a new market, the most important skill of a provider is understanding the whole picture.

Finding perfect incidence rate data or the availability of mortality or morbidity tables for inclusive insurance are often less important than a good understanding of the target market, product expenses, distribution costs, product design, the capacity and quality of the distribution channel, marketing and communication, administration and claims service. In inclusive insurance, even with data, if the entire picture is not understood the product could be priced wrongly because of the large impact of other factors on outcomes.

The above factors combined with a lack of management skills of the insurer and partners can add to the actual total cost of the product. It is possible to have two identical products, one having the best skills, management and distribution, and the other not, and the price variation could be very significant.

8.7.2 Sources of information if data is not available

The preferred source of pricing data is experience from monitoring similar insurance products already available in the target market. This type of data may be impossible to find when pricing inclusive insurance in new markets. Inclusive insurance pricing often relies on secondary sources of data, including:

- Population and national data from governments or international non-profits;
- Focus group discussions, surveys and interviews with members of the target market;
- Distribution partners; and
- Other insurers or reinsurers.

When data is not available for the target population, the initial product pricing can use alternative data sources. Data for comparable products from an established inclusive insurance market can also be used where pricing parameters are modified based on different situations in the countries or markets. These modifications require some experience with inclusive insurance as familiarity with the impact of contextual situations on pricing parameters is important.

Secondary sources of data	
Mortality rates	• Target population experience (from an MFI or a cooperative) • Country's national mortality table (from the country's statistics departments) • World Health Organization mortality tables • Other similar mortality data (country/region/product) • Data from the insurance scheme
Health event incidence rate	• Surveys from the target customers • Health care hospital/provider data • National and international health surveys • Other health publications • Other similar morbidity data (country/region/product)
Agricultural data	• National information from climate institute • Data from NASA and other bodies providing satellite information

8.7.3 Investing to get data

An additional way to collect data is to invest in a small-scale pilot project to obtain it. A pilot project would set a price based on surveys or other inclusive insurance schemes. During the pilot project, enrolment and claims data would be collected that could be used in longer-term and broader-scale pricing. This is a valid way to enter a new market as an investment to get real data when the pilot project itself may not be profitable.

For any inclusive insurance project, whether or not previously rolled out as a pilot, collecting data and setting up a management information system is important so that there is data available in the future for analysis, monitoring and possible repricing.

8.7.4 Periodic adjustments to the product price

The overall objective of pricing is to set a price sufficient for the long term where, ideally, only small price changes should ever be required. This would include having expense assumptions suitable for when scale is reached. Profit would be set at a reasonable level based on return on equity for an appropriate risk-based capital requirement of the product.

Periodic monitoring is important to determine necessary operational or pricing changes. The management information system should provide relevant Key Performance Indicators. Managers should act when there are large deviations from expected assumptions.

This is a natural example of the actuarial control cycle at work.

8.8 Pricing inclusive insurance

Pricing for both inclusive and traditional insurances needs to consider the same key issues, including the contingency being insured against, distribution, product administration, claims payments and a fair

profit for the insurer. In both cases key stakeholders should have their reasonable needs and objectives met in a sustainable manner.

However, the approaches to pricing and product development may need to vary considerably to be effective and equitable. In a traditional product, the largest pricing component is typically the contingency, such as mortality or morbidity, which may vary little from company to company and is usually well known. Distribution channels and their associated costs are well known. Administration and claims vary depending on the customer profile and product but may not vary significantly from company to company. The ongoing impact of technology may change many aspects of product delivery, but the underlying needs remain the same. For established insurers, the impacts of technology may be a hindrance to driving change, while for inclusive insurers they may be more of an opportunity as they may not carry the legacy systems and attitudes of more traditional approaches.

In the inclusive insurance case, an extra margin or component may need to be added for anti-selection, demographics and deficiencies in overall management skill, distribution (capacity and ability to reach scale), customer service and education, administration and claims processes. Inclusive insurance products also need to meet more affordability targets and demonstrate value for money, so consumers are willing to prioritize insurance premium payments from their limited wallets.

The price of an inclusive insurance product should be set to be appropriate to its market, neither too low nor too high. With little or no data in a new product and target market, a reasonable upper bound of potential claims can be developed from data that is obtainable. For example, for a hospital cash product with a trusted distribution partner, the use of hospitals will be constrained by the actual number of hospital beds in the target area. It requires some skill and experience to integrate various data sources to set an initial fair price. Actuaries with traditional backgrounds and applying traditional approaches, when faced with such uncertainty, may have a natural tendency to set a price that is too high, which can result in a failure to launch.

Appendix 2 provides some detailed examples of the differences between pricing of a traditional insurance product and an inclusive insurance product

Efforts have been made in the past and continue today to help actuaries who see the value in inclusive insurance make an informed entrance into the inclusive insurance market and successfully address the differences between inclusive insurance and traditional insurance. More can be done to assist those actuaries that see the value in inclusive insurance to successfully adapt their skillset to that work environment.

8.9 Education of the profession

Educating interested actuaries on the realities of the inclusive insurance journey may help align actuaries and their organizations with realistic goals, expectations and progress. The daily lifestyle of the target population is very different from what most actuaries in developed and developing countries have ever personally experienced before. The circumstances of the customer are not known, but relatability is one of the cornerstones to reaching customers. Understanding the country and the target population from the perspective of the customer helps develop a context for inclusive insurance. Inclusive insurance is a long-term commitment, and achievement of that commitment may not be easy. Actuaries are natural problem-solvers and can play an important role in the development of inclusive insurance. This is an ongoing problem that has not yet been solved.

8.10 Mentorship

Globally, there are industry stakeholders including actuaries and regulators that have experience working in inclusive insurance and have seen some success. For those in traditional markets aspiring to become involved with inclusive insurance, there is value in seeking out mentors who will share their experiences. These experiences (including how they have adapted when moving from theory to practical realities in non-traditional contexts, made judgment calls, succeeded and failed) will help people transition to the challenging world of “no data”, “no precedent” and “figure it out as you go”. Of course, there is always the need to adhere to core actuarial standards and principles and legal and regulatory requirements. Developers of inclusive insurance markets should also learn from the experiences of early adopters in other markets.

8.11 Work with industry to develop proportionate financial management approaches

Understanding and applying proportionality to actuarial concepts is based on judgment. In environments where there is a different context to the risks, and the rules are still being developed, proportionality is even more challenging. Helping actuaries see where judgment calls are made, along with examples and consequences, may build confidence in those new to inclusive insurance to broaden their perspective away from strict traditional insurance rules to inclusive insurance judgments. For example, how can it be established that an insurer has the management skills to monitor a product and then react appropriately?

8.12 Work with supervisors to develop proportionate financial regulatory approaches

As actuaries in the industry need to understand and apply proportionality, so do supervisors. Moving away from “right and wrong” rules-based decisions to a risk-based “risky and less risky” approach implies moving to a very different approach and mindset. The transition can be difficult for all parties and takes time to become entrenched. The IAA has developed a tool – see IAA (2018) – that can assist with the application of proportionality in actuarial services. Both A2ii and the IAIS have numerous papers providing guidance on proportionality.

8.13 Capacity-building of market participants in inclusive insurance

As partnerships form an important part of the inclusive insurance value chain, market participants need to understand inclusive insurance and the resources, systems and knowledge needed to perform their designated functions in a way that is aligned with inclusive insurance principles. Some participants may not be familiar with insurance at all or may only have experience with traditional insurance, and may therefore need to adjust to apply an inclusive insurance lens to their part of the value chain.

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Further reading

Following are some references for those interested in learning more about inclusive insurance.

Some specific documents:

ADA (2010): Wipf, J., and Garand, D., *Performance Indicators for Microinsurance: A Handbook for Microinsurance Practitioners*, 2nd edition, ADA Microfinance Expertise, October 2010.
See http://files.microfact.webnode.com/200000095-10248111eb/Handbook%20Performance%20Indicators%20version%202.pdf

Blacker (2015): Blacker, J. (editor), *Actuaries in Microinsurance: Managing Risk for the Underserved*, ACTEX Publications, Winsted, CT, 2015.

IAA (2014): *Addressing the Gap in Actuarial Services in Inclusive Insurance Markets*, International Actuarial Association, 2014.
See www.actuaries.org/LIBRARY/Papers/Paper_Inclusive_Insurance_Markets.pdf

IAA (2018): Yan, H. (editor), Angove, J., Bowman, N., Garand, D., Grenham, D., Gribble, J., Kelly, E., and Marshall, I., *Assessing Risk and Proportionate Actuarial Services in Inclusive Insurance Markets*, International Actuarial Association, 2018.

See www.actuaries.org/IAA/Documents/Publications/Papers/MIWG_Assessing_Risk_Inclusive_Insurance_Paper.pdf

Some key sources for more information on inclusive insurance are:

- Access to Insurance Initiative (A2ii). A2ii provides capacity-building for regulators and supervisors and is a knowledge hub for regulators wanting to expand access to insurance for the unserved or underserved population. A2ii is the implementation partner of the IAIS.
See https://a2ii.org/en/home
- Centre for Financial Regulation and Inclusion (Cenfri). Cenfri is a global think tank that helps stimulate growth and increase sustainable development in emerging markets through research, analysis and capacity-building of governments, regulators, policymakers and innovators in the private sector.
See https://cenfri.org
- International Actuarial Association (IAA). The IAA's Inclusive Insurance Virtual Forum facilitates discussion and knowledge-sharing among members on the topic of inclusive insurance through research and training materials.
See
www.actuaries.org/iaa/IAA/Forums/Inclusive_Insurance/IAA/Forums/Inclusive_Insurance_Virtual/Landing.aspx?iUniformKey=0c61e746-0d3f-4209-9f94-6d12a7563480&tools=WB-DI-AN&CCode=IIVF&hkey=065aa356-ea8d-4cf4-991b-c597022c067b
- International Labour Organization Impact Insurance Facility (ILO). The Impact Insurance Facility is at the forefront of research, innovative insurance development and capacity-building to help strengthen insurance markets and reduce vulnerability in populations.
See www.impactinsurance.org/

- International Finance Corporation (IFC). The IFC has recently partnered with the ILO to provide free guided training to insurers on how to navigate gender bias and reach the women's market. See www.ifc.org
- MicroInsurance Centre at Milliman. The Microinsurance Centre provides product development, research, capacity-building and advocacy to help generate risk management solutions for low-income populations across the globe.
  See www.microinsurancecentre.org/
- Microinsurance Network (MIN). The MIN gathers and shares knowledge that is needed to make insurance work for the poor. Its members are a range of microinsurance stakeholders from around the world who provide input regarding the priorities and needs of the target customers. See https://microinsurancenetwork.org

Appendix 1: Index-based insurance

Significant progress has also been seen in agricultural insurance. Smallholder farmers make up a significant proportion of the population in most developing countries and are particularly vulnerable to crop failures or the death of livestock. Consequently, there has been substantial focus on improving the resilience of this customer segment. It was soon realized that traditional claims assessment models were too costly for the small cover amounts that could be afforded by smallholder farmers. Providers turned to index-based insurance to solve the problem of excessive claim assessment costs.

The approach has removed the cost of individual claim assessments but has introduced a new challenge of basis risk. Significant research continues, seeking data-driven solutions using remote sensing such as satellite images to confirm whether a loss has occurred.

A1.1 What is index-based inclusive insurance?

Index-based inclusive insurance (IBII) products have their claim payments determined by a specified index rather than the customer's (or beneficiary's) actual loss experience. It is critical that the defined index accurately reflects the actual risk exposure and the actual loss experience of the insured parties and related beneficiaries. IBII typically relates to agriculture inclusive insurance, particularly for smallholder farmers, where farming is mostly rainfall-dependent and exposed to aggregate climatic shocks, such as droughts, dry spells, flooding, excessive rainfall, pests and disease epidemics. In addition to smallholder farmers, IBII products can also be applied to other types of customers, such as micro, small and medium enterprises and institutions in the agriculture value chains, like banks, microfinance institutions, fintechs, agri-businesses and farmer organizations.

With pure IBII products, claim payouts are made solely on the basis of whether the index has triggered a payout or not. If the index triggers a payout, then all beneficiaries related to that localized area – for example, a village – are due a payout regardless of whether they have incurred an actual loss or not. Similarly, if the index has not triggered, then no beneficiaries in the localized area would receive a payout, even if some of them have actually incurred a loss. For pure IBII products, there is no room for claims to be reported or for insurers to verify or process claims based on actual loss assessment on the field. Hence, there may be a difference between the beneficiary's actual loss experience and whether the index triggers a payout of not. This is referred to as "basis risk".

The index should be constructed and fine-tuned very carefully so that it is accurately reflecting the key risks for the insured parties, is easy to measure and easy to verify and presented as simply as possible so that the products can be explained to beneficiaries, such as small-scale farmers. The index should not be exposed to the risk of manipulation by customers/beneficiaries, insurers or other stakeholders. The index needs to be cost-effectively, reliably and quickly monitored by the relevant insurers and reinsurers so that when a payout has been triggered it can be paid very quickly. Fast claims settlement is a particularly important requirement for most inclusive insurance products. With IBII, "insurable interest" is an important consideration both from a regulatory and best-practice perspective. Some IBII products are similar to financial derivatives and so it is important that the insurance is not used as a speculative tool by beneficiaries or investors.

Historically, IBII products were based solely on weather stations and physical crop yield estimates. But over the last decade, in many countries different types of satellite data and other types of remote sensing have been used as the basis for monitoring the underlying data used to calculate the indices.

Typical parameters that have been monitored for IBII products include rainfall, temperature, crop yield, vegetation cover, soil moisture, relative evapotranspiration, relative humidity, flood estimates, river levels, livestock mortality rates, etc. IBII can be applied at a household (micro), meso and macro level as well, provided the index captures the key risks that are relevant to users of the product. Indices can be designed to capture risks, which are usually aggregate risks, such as drought, flooding, storms and other variations in weather parameters. For example, weather parameters for climate disaster risk insurance, yield variations for crop insurance, and vegetation cover changes for livestock farming. There is also the potential to apply an IBII approach to other categories of insurance such as health and group life insurance, although currently there are very few examples of IBII for these product lines.

A1.2 Potential benefits of index insurance

IBII has several potential benefits for beneficiaries, such as small-scale farmers. Having access to insurance in the first place can also have a very positive impact on farmers by lowering their overall risk and so improving their access to agriculture loans and farming inputs, and bettering their relationships with agriculture off-takers. Generally, most insurers in developing countries refuse to provide agriculture insurance or disaster risk insurance on an indemnity basis to smallholder farmers or small and medium-sized enterprises. However, IBII enables insurers to offer these products to inclusive insurance customers, leading to improved financial inclusion. IBII does not cover all types of risks, but it can be an effective tool for addressing the key aggregate risks for beneficiaries, such as drought, dry spells and flooding.

IBII products generally pay out claims much faster than indemnity insurance; theoretically, as soon as the index has been triggered. For small-scale farmers speedy claims payout is crucial, and even partial payouts during a farming season can enable farmers to replant different crops or invest in other productive activities. IBII payouts are generally much more transparent and objective and there is more accountability of insurers in the event that claims are due to be paid.

For insurers and reinsurers companies, IBII products are much easier to underwrite, price, reserve for and obtain reinsurance for, especially if working with relatively rich datasets, such as satellite data. IBII products can be significantly more cost-effective than indemnity-based products, which require physical loss verification, often in very remote areas with fragmented and small farming plots. As a result, associated costly claims-handling expenses may drive up the cost of a traditional insurance product. IBII products can also effectively reduce adverse selection and moral hazard since the basis of the insurance product is usually outside of the customer's/beneficiary's control. IBII generally results in insurers being able to access good-quality reinsurance cover, which is important, particularly for aggregate risks in agriculture and for climate disaster risks in general.

A1.3 Potential challenges with index-based inclusive insurance

Basis risk, which is the mismatch between actual losses and index-based insurance payouts, is a significant risk for customers/beneficiaries (for example, farmers) and to a lesser extent for insurers.

Basis risk can result in customers feeling they were denied a valid claim and potentially mis-sold the product. This scenario can lead to a breakdown in trust and unhappy customers, and can be a major reputation risk for insurers.

Index-based insurance products are relatively difficult for field staff to explain and for beneficiaries to understand, including the key limitations of the products.

Although many datasets are available from different sources, sometimes there are challenges with insufficient historical data for the pricing and design of products and also with accessing data on a timely and cost-effective basis for claims settlement. It is very important to use appropriate datasets for the validation and calibration of the indices (for example, actual drought losses experienced by farmers), noting that it is sometime difficult to obtain these different types of data for effective validation of the insurance products. The insurance premium usually becomes relatively high due to the nature of the underlying risks, index design and the expectation of relatively high-frequency/high-severity payouts. However, the high premiums are a challenge for farmers given their difficulty in paying those premiums at the start of the farming season, relatively slim margins in farming, affordability, choices of distribution channels and regulatory constraints.

In many countries, index-based products for sectors such as agriculture receive significant premium subsidies from governments as a form of social security financing. However, the premium subsidies should be administered carefully and efficiently and should not disincentivize participation of private sector insurers.

As with other types of inclusive insurance, having effective and reliable distribution channels is a major challenge for index-based insurance products. In the agricultural sector, distribution channels such as financial institutions, agri-businesses and farmer organizations can be exposed to many other challenges and volatilities, and so may be prone to insurance product cancellations in some seasons due to these operational challenges.

Index-based insurance can be technically demanding and hence the technical capacity of local insurers, brokers, intermediaries, regulators and policymakers is crucial for the viability of these products.

A1.4 What does the future hold for index insurance?

IBII products have evolved significantly in recent years. In the future, there is the potential for more intermediate and macro-level implementation of IBII products; for example, at a distribution-channel level. Some banks have considered an IBII approach as an alternative to credit guarantees and derivatives. Local governments may use IBII to complement their disaster relief financing. There is the likelihood of a greater variety of satellite data and other remote sensing tools, such as drones and radar, being used for monitoring more sophisticated parameters and at a more granular level. Indices are likely to become more sophisticated, including for composite parameters and for different types of farming, such as irrigated farming and forestry. Hybrid approaches, which integrate different types of indices (for example, a weather index combined with a yield index) are likely to become more sophisticated so that a greater variety of crops and risks can be insured.

IBII for other sectors, such as fishing communities, renewable energy and other types of micro, medium and small enterprises, can become more prevalent. More bundling of IBII with other services – for example, loans or farming inputs – and with other types of suitable inclusive insurance products, such as health or funeral insurance, is likely in the future to provide a holistic product for the most relevant risks. In addition to insurance, the underlying data and indices can also be increasingly used for other types of risk management services, such as weather forecasts and crop advisories. This would enable an overall improvement of the resilience of small-scale farmers and other potential customers of inclusive insurance products.

A1.5 Actuarial considerations of index-based insurance products

There are many actuarial considerations and applications in index-based insurance:

- Actuarial skills are needed for deterministic, stochastic and hybrid pricing methods using different sources of data, which include satellite data, weather station data, crop yield data, feedback from farmers, aggregators and expert opinions.
- Actuarial skills and judgment can be applied to assess the suitability of different types of data and for using multiple sources of data for pricing and product-design decisions, particularly when a single data source cannot be relied upon on its own.
- Actuarial approaches can be used for defining, measuring and mitigating basis risk, which is a crucial challenge for index-based insurance.
- Reserving considerations and reinsurance placement and strategy also require actuarial skills.
- Actuarial skills can help find ways to measure and optimize “customer value” for beneficiaries, such as small-scale farmers. For example, different approaches to measure the correlations between the index performance and loss experience can be used to optimize the setting of the product parameters and as a criterion for pricing products.
- Actuarial skills can be used for optimizing the business case for insurers as well as distribution channels, without whose active collaboration most index-based products would not scale up or continue. For example, the impact of index-based insurance on farmers side-selling a crop or defaulting on a loan could be assessed using multivariate regression techniques.

Appendix 2: Pricing differences between traditional and inclusive insurance

Two examples illustrating the differences between actuarial considerations in pricing traditional and inclusive insurance are given. A traditional insurer that uses typical sales channels is compared to an inclusive insurer that accesses a customer base through a partnership with a microfinance institution (MFI). The two products discussed are a hospital cash plan and a one-year term life insurance cover.

In a traditional product, the largest pricing component is mortality/morbidity, which may vary little from company to company. Distribution channels and the management capacity of the entire value chain are well established, so their associated costs are well known. Administration and claims expenses may also not vary significantly from company to company.

Assume that a hospital cash plan and one-year term life product are offered in both a traditional insurance market and an inclusive insurance market. In the inclusive insurance case, an extra margin or component may need to be added for anti-selection, demographics, deficiencies in overall management skill, distribution (capacity and ability to reach scale), customer service and education, administration and claims processes. Conversely, the inclusive insurance product also needs to meet more affordability and willingness-to-pay targets.

The price of an inclusive insurance product should not be set too low nor too high, so that both insurer and customer receive good value. With little or no data in a new product and target market, a reasonable upper bound of potential claims can be developed from non-traditional data sources that are obtainable. For example, for a hospital cash product with a trusted distribution partner, the use of hospitals will be constrained by the actual number of hospital beds in the target area. It does take some skill to integrate various data sources to set an initial fair price. Traditionally, actuaries in these conditions often set a price very high and have not considered the non-traditional data available, resulting in a failure to launch.

A2.1 Hospital cash traditional and inclusive insurance pricing example

A2.1.1 Plan design

Traditional insurance: An insurer wishes to develop a hospital cash product in a country where there is limited health coverage. The product will be included in a standard group health inpatient plan offered to the employees of various organizations. The customer and family will be paid a daily amount after spending three days in hospital for conditions outside the exclusion list. Competitor insurers seem to be having success with this type of product.

Inclusive Insurance: For an insurer developing an inclusive insurance hospital cash product in a country where there is limited health coverage, comparing the inclusive and traditional value chains suggests differences between the pricing cycles for inclusive and traditional insurance to be considered. These may include:

- **Target population:** A search for partners with a strong relationship with a large number of the unserved or underserved population uncovered an MFI that had the capacity, drive and social objective to offer an insurance product to customers.
- **Product choice:** Through a series of focus group discussions (FGDs) and surveys, it was found that events that caused the greatest financial stress were related to hospitalization and the death of the family's breadwinner.

- **Product design:** Through research, the insurer saw that globally a hospital cash plan was more successful and affordable for inclusive insurance customers than more comprehensive inpatient benefits. Affordability and willingness-to-pay surveys showing various benefit and premium combinations help determine the benefit amount, premium range and coverage criteria. The product also needed to cover any condition requiring hospitalization with no minimum-night stay for the MFI member, spouse and family member. As the MFI provided loans, to limit anti-selection the insurance was a mandatory addition for all loan holders for the term of the loan. The MFI has pre-loan screening and qualification criteria, so the customer base is relatively healthy. This also helped manage sales and marketing costs.

A2.1.2 Expected claims

		Traditional insurance		Inclusive insurance	
	Component of expected claims	**Definition assumption**	**Data source**	**Definition assumption**	**Data source**
1	Incidence rate	By age and gender	Company inpatient data	* Overall rate	National country health data
2	Average days in hospital	For over 3 days' stay	Company inpatient data		National country health data
3	Benefit amount	Employee: 1/3 x daily salary (monthly salary/20) for a maximum of 180 days Spouse/child: 50% of employee benefit		50% x avg daily wages of MFI customer base for a maximum stay of 30 days	FGDs and survey
4	Number in family	Each family member is listed individually	Company inpatient data	Avg family size	MFI customer data
5	Net premium	The average rate per employee in each family coverage category (single, couple or family by employee age and gender) = $\frac{\sum 1 \times 2 \times 3}{\text{Number of employees}}$		Flat rate = 1 x 2 x 3 x 4	

* Verification that there are available hospital beds in the target area at this incidence rate is necessary.

A2.1.3 Other components

Traditional insurance: From internal data and analysis of the company's existing health business, the other components are pre-established as a percentage of gross premium. The insurer has a commission structure set with its sales force for group health business.

Inclusive insurance: Each component is determined based on the business plan projections and partner agreements. The FGDs revealed that insurance awareness was low, eye disease was prevalent in the population and the distance to medical care was prohibitive to receiving timely treatment. Local eye treatment facilities and telemedicine were included in the product as a value-added service along with

insurance-awareness activities. Negotiations with the MFI helped establish a fee to be added to the premium to cover the MFI's expected expenses and commissions.

An adjustment was added for lower skills in distribution and claims management, ultimately adding a percentage to expected claims. This is shown separately in the table under *Other pricing components*.

<table>
<tr><th>Component of pricing</th><th colspan="2">Percentage of gross premium</th></tr>
<tr><th></th><th>Traditional insurance</th><th>Inclusive insurance</th></tr>
<tr><td>Expenses</td><td>Tiered based on group size</td><td>Include:
MFI fee (covers commissions and expenses)
Value add services (eye treatment, telemedicine)
Building MFI capacity
Building insurance-awareness of customers
Administration
Premium collection
Customer service
Management information system (MIS) and data-sharing processes
Insurer staff training and operation modifications to adjust to inclusive insurance</td></tr>
<tr><td>Reinsurance</td><td rowspan="3">These are set percentages based on the company's targets.</td><td>The benefit amounts were small so do not require reinsurance. Catastrophe reinsurance is usually not necessary for hospital insurance, but it would be for life.</td></tr>
<tr><td>Investment</td><td>Very small, given the small premiums and the fact that the average loan duration is 9 months</td></tr>
<tr><td>Profit</td><td>Using a 15% return on risk-based capital leads to an expected profit of 3% of premium</td></tr>
<tr><td>Capital requirement</td><td>Based on requirements from the regulator</td><td>Based on requirements from the regulator and company targets</td></tr>
<tr><td>Other pricing components</td><td>None</td><td>Management capacity of MFI
Management capacity of insurer
Margins for lack of data</td></tr>
</table>

A2.2 One-year term life insurance traditional and inclusive insurance pricing example

A2.2.1 Plan design

Traditional insurance: The company is also adding a one-year group term life product to the current employee benefit plan for employees. The benefit is 200% of the employee's salary. Once again, the company has pre-defined targets for its life portfolio similar to the *Other pricing components* in the chart above.

Inclusive insurance: Based on the FGDs, a one-year group term life product upon the death of the loan holder or spouse is also being added to the insurance offering on the loan. The benefit is a flat amount

based on average earnings and typical funeral expenses. The components to consider in the pricing are similar to the hospital cash components chart above.

A2.2.2 Expected claims

Traditional insurance: The country's actuarial association has group mortality tables by age and gender. The organization has also seen in its whole life portfolio that mortality varies by region, industry and salary level bands, so associated factors from the whole life product are also applied for each employee.

Inclusive insurance: For simplicity, the mortality rate is averaged across all ages and genders. If the MFI has suitable data regarding loan holder mortality, that can be compared to mortality obtained from the national statistics department for reasonability and comparability. Since the MFI pre-screens loan holders, the MFI mortality can be expected to be lower than the national mortality.

		Traditional insurance		Inclusive insurance	
	Component within expected claims	**Definition assumption**	**Data source**	**Definition assumption**	**Data source**
1	Mortality	For each employee by age and gender	Actuarial association group mortality tables	Average mortality rate across all ages	• National country mortality data • MFI data on loan holder deaths
2	Benefit amount		200% of employee's salary		Flat amount based on MFI average customer earnings and typical funeral expenses
3	Persons per policy		1	100% are married	2
4	Mortality adjustment factors	The product of the region, industry and salary band factors for each employee	Company's whole life portfolio		
5	Net premium	Avg rate per employee by age and gender = $\frac{\sum 1 \times 2 \times 3 \times 4}{\text{Number of employees}}$		Flat rate = 1 x 2 x 3	

A2.3 Other elements of the pricing cycle (both hospital cash and one-year term life)

Traditional Insurance: Regulations and licensing will be reviewed for potential constraints. The final premium will be compared to competitor premiums of similar products. The product will be integrated into the company's current MIS and the sales force and group customers will be provided with coverage information to share with their employees. A smaller initial rollout will identify modifications and customer acceptance before a wider rollout occurs. The claims, customer service process and monitoring are the same as for the other products.

Inclusive insurance: Regulations and licensing will be reviewed for potential constraints such as premium and face amount size, and sales force certification. The premium will be compared to the FGD

affordability and willingness-to-pay information, and product adjustments will occur if premiums are not affordable or if there is low willingness to pay. The final product design and associated premium will be presented to potential customers for feedback, and resulting adjustments to product features may be necessary to fit their needs and provide better customer value.

The product will be integrated into the company's current MIS, if possible. The current MIS may not be simple enough, or adding the inclusive insurance product may be cost-prohibitive, so an alternative system will need to be developed. Either way, the system would need to link with the MFI to facilitate data-sharing. An efficient and timely claim-filing and payment process also needs to be developed within regulatory constraints and customer limitations. The MFI will be trained on the product, registration, claims process and customer service guidelines. The MFI needs to ensure that the customers are aware of the mandatory life insurance coverage with repeated awareness-building activities. Premiums will be collected with the loan repayments by the MFI and forwarded to the insurer. A smaller initial rollout will identify modifications and customer acceptance before a wider rollout occurs. The claims, customer service process and monitoring will be developed based on inclusive insurance standards established by the regulator or through global schemes.

IAA Risk Book

Introduction to Inclusive Insurance

Website: See www.actuaries.org and follow the path to 'Publications' and then to 'Risk Book'

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