access to insurance initiative

Index Insurance

Status and Regulatory Challenges

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Author: Richard Carpenter (Consultant to A2ii)

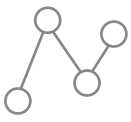
1. Introduction

The use of index insurance[1] as an alternative to traditional indemnity-based insurance has increased over the last twenty years, particularly as a mechanism for insuring against extreme weather risks. More recently, the range of index insurance products has expanded to protect against other types of natural disaster, such as earthquake risk.

Proponents claim that index insurance has several advantages over indemnity insurance, which make it particularly suitable as a micro-level insurance product for insuring low-income farmers, livestock holders and households and that it is therefore an effective tool for promoting inclusive insurance. The advantages claimed include reduced transaction costs and the ability to make claims payments more quickly than would be possible under an indemnity insurance contract. Against these advantages must be set a number of potential disadvantages, particularly basis risk. Basis risk, which this Paper discusses in more detail in section 4, is the risk that the payment made to a policyholder under an index insurance contract, is different to the policyholder's actual loss.

The effectiveness of index insurance as a tool for insuring low income, unserved and under-served farmers and households against weather and other natural disaster risks remains to be proven. Important though that discussion is, it is not the focus of this paper. While index insurance products continue to be developed and offered, it is important that insurance supervisors have the capacity to understand and assess them and the necessary powers and tools to supervise them.

Drawing on the results of an on-line survey carried out in the first half of 2017 together with telephone follow-up, this Paper seeks to provide a review of supervisory approaches to index insurance and to set out some of the regulatory and supervisory challenges faced by insurance supervisors. In that sense, the Paper should be considered a stocktaking exercise, and does not intend to provide solutions or promote best practices. However, it does highlight issues that may be relevant to the development of those solutions.



INDEX INSURANCE

has particularly increased as a mechanism for insuring against extreme weather risks and other types of natural disaster such as earthquake risks.

1 The term "parametric insurance" is sometimes used as an alternative to "index insurance", but both terms describe the same type of insurance product.

2. Background

Towards a Definition of Index Insurance

Although there is no universally agreed definition of index insurance, the fundamental characteristic of all index insurance contracts is that payments to the policyholder are triggered by a pre-agreed index (which should be objective and independent) and, once triggered, the amount of the payment is determined by the value of the pre-agreed index. This sets index insurance apart from traditional indemnity insurance, which pays on an assessment of the policyholder's actual loss.

Previous reports[2] have classified index insurance products into two categories:

1. *aggregate loss products*, where the index aggregates losses over a group; and
2. *indirect loss products*, where the index represents one or more weather or other variables.

Aggregate loss products utilize an index that captures losses across many individuals or units, typically in the same geographic region. Examples are indexes of area crop yield or area livestock mortality. The index used for an aggregate loss product serves as a proxy for individual losses with the assumption that, provided the selected group is sufficiently homogeneous, individual losses will approximate to the average group loss.

Indirect loss products use indexes that are measurements of events (such as drought or excess rainfall) that are highly correlated with losses of the policyholder, rather than being a direct proxy for the losses suffered by policyholders. Examples are indexes of rainfall, temperature and wind speed and satellite vegetation density indexes (which are often used to insure against the risk of drought). An index insurance product that protects against a non-weather related natural disaster, such as an earthquake, would use an index of an appropriate non-weather variable, such as an index of earthquake strength.

As payment to the policyholder is made against the value of the pre-agreed index, there is no need for individual loss assessment as there is with an indemnity insurance product[3].

2 R. Carpenter, J. Skees, B. Collier and B. Barnett. 2012. State of Knowledge Report: Legal Considerations for the Design of Weather Index Insurance. GlobalAgRisk May 2012.

3 Some products have been developed as hybrid products which combine conventional indemnity cover with payments made against an index.

Micro, Meso and Macro Level Index Insurance

Micro-level index insurance describes index insurance that is targeted to and purchased by policyholders or members of a group insurance scheme who are individuals, such as small-scale farmers, or small enterprises. Although micro-level index insurance products may be considered as micro insurance, this is not necessarily the case. Therefore, not all micro-level index insurance products are microinsurance.

Meso-level index insurance describes index insurance that is targeted to and purchased by larger companies or organisations, such as banks, micro-finance institutions (MFIs) or input suppliers to protect against their own losses, but with the intention that the benefit, or part of the benefit, is passed on in some form to their clients. For example, a MFI may purchase a meso-level index flood product to protect against credit default risk in the event that the losses caused to its borrowers should a serious flood occur would adversely impact its ability to repay loans on time. The benefit may be passed on to the MFI's clients, for example, through lower interest rates on loans or, if the insured event occurs, by forgiving part of the debt or offering favourable repayment terms.

Macro-level index insurance describes index insurance purchased by national or regional governments or large public authorities. Payments made under the contract may be used to benefit low income households, for example by financing emergency relief following a natural disaster, although that is not always the case. Macro level index products are sometimes provided as non-insurance financial products, such as derivatives, which may be provided by non-insurance financial institutions.

Most index insurance has been sold as micro-level index insurance, and this is the focus of this Paper.

The Supervisor's Problem

The problem that may be faced by insurance supervisors is that, because traditional insurance products are indemnity-based, index-based risk transfer contracts do not always readily fit within the existing regulatory definition for insurance. Insurance supervisors have therefore found that they do not always have the tools, and sometimes the experience or capacity, to supervise the growing number of index insurance products being provided in their jurisdictions.

Payment against an index is a feature of other types of financial contract, such as a derivative contract. Indeed, one of the significant drivers for the increased use of weather derivatives in the late 1990s was to transfer the risk of weather related losses, and they still serve that purpose. Derivative contracts (if used to hedge or protect against losses) and index insurance contracts may be collectively referred to as index-based risk transfer contracts.

Although derivatives can provide insurance-like benefits, they are not legally defined as insurance products and those who provide them are not regulated and supervised as insurers. This may not be important if only sophisticated counterparties purchase such derivatives, but the different, and usually lighter, prudential and market conduct requirements to which those who provide them are subject implies material concerns for supervisors in their role of protecting consumers.

As index-based risk transfer contracts developed from sophisticated weather derivatives designed for large commercial growers and energy providers, to retail products intended to be provided to smallholder farmers, livestock herders and low income families, insurance supervisors recognised the need to ensure that the products are supervised and regulated as insurance. It is necessary to ensure that the products can only be sold by

licensed insurers and that their development and sale is therefore subject to the stronger market conduct standards applicable to insurance products.

Index insurance has been offered for sufficient time to enable insurance supervisors to gain an understanding of the associated regulatory and supervisory risks and challenges. Recognising that insurance supervisors and policy makers in many jurisdictions are in the early stages of developing appropriate regulatory and supervisory frameworks for index insurance, the A2ii considered that it would be helpful to undertake a regulatory and supervisory stocktake. The intention is that the results should enable insurance supervisors to take advantage of the experience of insurance supervisors in other jurisdictions both in terms of the risks and challenges that they face and how they are seeking to address them.

Insurance Products Offered

Although the survey response was relatively low, with only 11 countries responding, it nonetheless provided useful input for this report. It may also be indicative that the regulation of index insurance is still at an early stage, and the responses were sufficient to provide a reasonable impression of the approach being taken by insurance supervisors.

Some of the supervisors reported that there are currently no index insurance products offered in their jurisdictions. In some cases this is because there is no legal and regulatory framework in place to enable index insurance. In other cases, the products might be available but not readily classified as insurance or may be operating informally. Taken together, the remaining supervisors who responded to the survey have responsibility for a total of 14 index insurance products.

These insurance products are predominantly micro-level indirect loss products designed to protect policyholders against weather risks, most covering losses from drought or excess rainfall, including crop losses. The few aggregate loss products covered by the survey are all area yield crop products. Only one of the products reported included cover for a non-weather risk (earthquake risk).

One of the products reported is a meso-level product and one is available at both the micro and meso level.

3. Risks and Challenges[4]

Introduction

Regulatory and supervisory risks associated with insurance can be grouped into two broad categories, prudential risks and market conduct risks.

Prudential risks are those risks that arise from the financial soundness of an insurer. The Insurance Core Principles state that the enterprise risk management framework of an insurer should identify and address all reasonably foreseeable and relevant risks to which an insurer is likely to be exposed and that these should include, at a minimum, underwriting risk, market risk, credit risk, operational risk and liquidity risk and may also include, for example, legal risk and reputational risk.

Market conduct risks are those risks that arise from the functioning of the market, and include market efficiency and integrity and conduct of business risk. The IAIS Issues Paper on Conduct of Business Risk and its Management suggests that conduct of business risk can be described as:

4 This section of the Paper draws not just on the survey and follow-up interviews, but also on the practical experience of the author and the A2ii.

> "[…] the risk to customers, insurers, the insurance sector or the insurance market that arises from insurers and/or intermediaries conducting their business in a way that does not ensure the fair treatment of customers".

Neither the ICPs nor the Issues Paper referred to above indicate specific types of business conduct risks that should be identified and addressed in an insurer's risk management framework, in part as such a list should reflect more local and specific situations and the nature of an individual insurer's business. For the purposes of this Paper, therefore, a broad classification of business conduct risk is used, identifying those areas of risk associated with index insurance products that may result in customers not being treated fairly.

To the extent that index risk transfer products are regulated and supervised as insurance, the regulatory and supervisory risks associated with (non-life) insurance will apply equally to index insurance. The purpose of this paper is to consider only those regulatory and supervisory risks that are associated specifically with index insurance, i.e. those risks that arise from the specific characteristics of index insurance.

Supervisors identified several prudential risks and conduct of business risks associated with index insurance. Of those identified, the most frequently mentioned were legal and regulatory risk, basis risk and risks associated with inadequate data.

The risks identified by supervisors can be grouped as follows:

→ **Prudential risks:**

- Underwriting risk (including inadequate technical provisions)
- Legal and regulatory risk
- Data risk (insufficient/inadequate data)

→ **Conduct of Business Risk:**

- Basis risk
- Data risk (insufficient/inadequate data)
- Risk that policies will not provide client value
- Risk that policyholders interests will not be adequately protected
- Risk that customers will not understand the product

The IAIS Issues Paper on Conduct of Business Risk recognises that there is an interaction between prudential risk and conduct of business risk, and this interaction is very apparent from the survey responses.

For example, some supervisors were concerned that a lack of quality data could make it difficult for insurers to understand the risk, leading them to under-price the product. This is clearly a solvency side risk. Other supervisors were concerned that a lack of quality data makes it difficult to assess whether the product provides value to policyholders. Although essentially the other side of the same coin, the lack of data manifests itself as a business conduct risk.

There is also potential overlap between the risks identified. For example, where basis risk (discussed further in the next section) operates against the interests of policyholders, it may result in the sale of policies that do not provide client value, or may adversely impact clients with limited insurance literacy, or potentially undermine confidence in the insurance industry if issues become widespread.

2 categories of risks

> Prudential risks
> Market conduct risks

Risks Associated with Index Insurance

The tables below set out the main prudential and conduct of business risks associated with index insurance, the principal sources of each risk and the potential impact of each risk.

PRUDENTIAL RISKS			
Risk	**Description**	**Source of risk**	**Potential impact**

Underwriting Risk	Underwriting risk is the risk that the value of an insurer's liabilities is greater than their estimated value.
	
	Underwriting risk includes the risk that the premium is mispriced, the risk that claims are higher than expected, the risk that technical provisions are incorrectly calculated and the risk that operating expenses (including acquisition costs) are higher than expected[5].
	
	Where data risk was identified by supervisors as a prudential risk, this is best considered part of underwriting risk rather than a separate type of risk.
		Underwriting risk was referred to as a significant risk by three supervisors. Two supervisors were concerned that insurers would not assess the risk correctly, leading them to under-price the premiums. The third supervisor was concerned that insurers would incorrectly calculate the technical provisions, leading them to under provision for the risk.
		
		Potential sources for this risk are:
		• Lack of actuarial and technical capacity available to insurers, whether internal or outsourced.
		• Reliance on reinsurers, whose objectives and interests may not be aligned with those of insurers.
		• Inadequate or insufficient data.
		• Unexpected natural disasters or worse natural disasters than anticipated by models.
		• Occurrence of natural disasters in early years
		• Higher than expected costs of sale due, for example, to poor distribution channels.
			• Premium rates may be set at too high a level, resulting in:
			  ◦ Lower than expected sales (potentially), which may affect profitability and the viability of the product.
			  ◦ Reduced client value.
			• Premium rates may be set at too low a level, causing underwriting losses or a failure to cover expenses. This may result in:
			  ◦ The insurer, and potentially other insurers, withdrawing from the market.
			  ◦ If the insurer has ceded a substantial portion of the risk to the reinsurance market, reinsurers declining to provide cover in future years.
			• In the event of an unexpected natural disaster, the losses could be large enough for the insurer's solvency to be jeopardised, requiring the insurer to recapitalise or, in a worst case scenario, becoming insolvent (leaving policyholders with unpaid claims).
			• If the technical provisions are insufficient, the potential impact would be similar to setting premium rates too low.
			• If the technical provisions do not take account of the multi-year nature of the risk (when applicable), the insurer may take excess profits in the good years, leaving inadequate provisions for the years when a natural disaster occurs.

5 Note that expense risk is sometimes considered as an operational risk, but the ICPs include it within a broad definition of underwriting risk.

PRUDENTIAL RISKS			
Risk	**Description**	**Source of risk**	**Potential impact**
Operational Risk	Operational risk is the risk of loss resulting from inadequate or failed internal systems, personnel, procedures or controls, or from external events[6]. Although operational risk includes custody risk, this is not likely to be relevant with respect to index insurance. Operational risk is usually considered to include legal risk, but the ICPs suggest that it is a separate risk. It considered further below.	Operational risk was not specified as a significant risk by any supervisors. However, there are potential sources of operational risk: • Given its special characteristics, insurers will need to establish specific procedures, systems and controls for index insurance. • Index insurance products are likely to be highly technical and may be complex. The insurer's sales staff and intermediaries may not have sufficient understanding of the product to explain it adequately to potential policyholders. • Index insurance products usually utilise an index produced by, and under the control of, a third party that is independent of the product. The third party may change the basis for the calculation of the index or cease to produce the index. • Basis risk (discussed below in relation to conduct of business risk) may also expose an insurer to operational risk. For example, if an event for which an index insurance contract has been sold occurs, but the index does not trigger a payment, the insurer may be subject to external pressure, or perhaps even required, to make ex gratia payments to policyholders	• If sales staff and intermediaries are unable to explain the index insurance product to potential policyholders, clients may purchase products that they do not need or are not appropriate for their requirements, resulting in mis-selling claims being made against the insurer. • If a third party whose index is being used as the basis for the product changes the basis for the calculation of the index or stops producing it, the insurer may be forced to compensate policyholders on a different basis. This may result in additional administrative costs, claims being higher than expected, affecting the financial performance of the insurer. • If an insurer is required to make ex gratia payments to policyholders: • As ex gratia payments are not priced into the premium, the insurer is likely to sustain losses; • Even where risk is reinsured, the reinsurer may decline to contribute towards ex gratia payments • Ex gratia payments undermine the principle of insurance, resulting in expectations of ex gratia payments in future years

6 This is a slightly expanded version of the definition in the IAIS Glossary.

PRUDENTIAL RISKS			
Risk	**Description**	**Source of risk**	**Potential impact**
Legal risk and regulatory risk (or compliance risk)	Legal risk includes, but is not limited to, exposure to fines, penalties, or punitive damages resulting from supervisory actions, as well as private settlements. Legal risk is usually considered to include the risk that contracts are unenforceable. Regulatory risk (sometimes referred to as compliance risk) is the risk that a change of the regulatory framework will significantly impact an insurer and could result in increased compliance costs, sanctions (including fines) and limitations imposed on, or loss of, licence.	Legal risk and/or regulatory risk was referred to as a significant risk by 5 supervisors. Several of these supervisors were concerned that the lack of a legal/regulatory framework would result in contracts being classified as a non-insurance products (for example, as derivatives). Potential sources for this risk are: • Due to their unique characteristics, index insurance contracts do not fit within the definition of insurance under the existing insurance law • Lack of specific legislation covering index insurance (as this is a relatively new type of product) • Lack of regulatory framework to guide insurers and insurance supervisors • Misalignment between the reinsurance contract and the insurance contract (for examples exclusions in the reinsurance contract not reflected in the underlying insurance contract	The lack of a legal framework that enables index insurance may have significant potential impact. These are discussed separately below.
Reputational risk	Reputational risk may be described as the risk of loss of future business, and therefore revenue, due to breaches or perceived breaches of insurance contracts, including a failure to play claims.	No supervisor mentioned reputational risk as a significant risk associated with index insurance. However, basis risk (discussed below in relation to conduct of business risk) that results in a perceived failure to pay claims may also expose an insurer to reputational risk.	If an event for which an index insurance contract has been sold occurs, but the index does not trigger a payment, the reputation of the insurer and of index insurance generally, may suffer leading to reduced sales of index insurance and potentially all insurance.

PRUDENTIAL RISKS			
Risk	**Description**	**Source of risk**	**Potential impact**
Credit risk	Credit risk, as relevant to index insurance, is the risk of financial loss arising from the default of counterparties, such as under reinsurance contracts and derivative contracts, and intermediaries, to whom the insurer has an exposure.	No supervisor mentioned credit risk as a significant risk associated with index insurance and there seems to be little reason to suppose that there is any additional credit risk associated with index insurance products. However, index insurance products usually insure against catastrophic events carrying a high level of correlated risk. If a significant portion of the insurance risk is ceded to a reinsurer, a claim under the reinsurance contract may be very large and there is a risk that the claim may not be met (particularly if the reinsurer does not have a strong financial strength rating).	If a reinsurer is unable to meet claims under a reinsurance contract, at best the profitability of the insurer will suffer. In the worst case scenario, the insurer may have to recapitalise or even become insolvent.

CONDUCT OF BUSINESS RISKS			
Risk	**Description**	**Source of risk**	**Potential impact**
Basis risk	Basis risk is the risk that the payment made to the policyholder is different to the policyholder's actual loss. Basis risk affects the policyholder adversely if: • the index does not trigger a payment to the policyholder on the occurrence of the insured event; or • although the index triggers payment, the payment is significantly less than the actual loss suffered by the policyholder. Basis risk operates to the policyholder's advantage if: • the index triggers a payment to the policyholder on the occurrence of the event; or • the index triggers a payment to the policyholder that is significantly greater than the actual loss suffered by the policyholder. From a conduct of business risk, the greater concern is adverse basis risk.	Basis risk was referred to as a significant risk by three supervisors. However, it is likely that basis risk is a much wider problem, that affects most index-based insurance products, particularly at the micro-level. There are a number of potential sources of basis risk, including the following: • Local weather variations not captured by the index (spatial basis risk) • Variations caused by a failure in alignment between the insurance phase and, for example, the intended crop growth stage (temporal basis risk) • The index is not sufficiently aligned with losses on the ground (contract design basis risk)	• Policyholders do not receive payment in respect of losses due to occurrence of an event for which they thought they had cover. • Failure to receive payment may cause policyholders severe hardship (particularly if micro-level policy). • Policyholders lose faith in insurance as a risk transfer mechanism and reduce or cease their future purchases of insurance products, leaving them uninsured for future events • Receiving payments exceeding their losses raises expectations for future events.

CONDUCT OF BUSINESS RISKS			
Risk	**Description**	**Source of risk**	**Potential impact**
Policy-holder value risk	This is the risk that the product provides poor value to policyholders.	• Insufficient data available to assess client value. • The index is not sufficiently aligned with losses on the ground (contract design basis risk)	• Policyholders lose the opportunity to utilise more efficient forms of risk coping mechanisms, such as saving. • Policyholders will cease purchasing the product in future years.
Policy-holder under-standing risk	This is the risk that clients do not understand the product..	• Insufficient attention to raising customer awareness. • Insufficient training of insurer sales staff and intermediaries. • Over-complex products, particularly if sold at the micro-level.	• Policyholders do not claim when an insured risk event occurs. • Similar impact to mis-selling risk (see below).
Mis-selling risk	Mis-selling risk is the risk that customers are sold index products that they do not need, fail to purchase products that they do need, are inadequately insured or are over-insured.	• Insufficient training of insurer sales staff and intermediaries. • Inappropriate commission structures that encourage sales, regardless of customer need. • Insufficient attention to raising customer awareness. • Over-complex products, particularly if sold at the micro-level.	• Policyholders spend money which they could have put to more valuable use on products that they do not need or on purchasing too much insurance. This could have very severe consequences where policyholders are low income persons. • The payments to policyholders who are under insured may not be sufficient to enable them to continue in business or may push them into poverty. • Persons who are not insured will receive no payments, with similar (but more severe) outcomes to those suffered by under insured policyholders.

4. Further Discussion on Risks, Challenges and Impact

Legal and Regulatory Risk

As indicated in the table above, it is legal and regulatory risk that most concerned the supervisors surveyed. This is perhaps not surprising given that none of the jurisdictions have a specific legal and regulatory framework for index insurance.

Some of the supervisors who referred to legal and regulatory risk stated that no index insurance products are currently being offered in their jurisdictions as the general insurance legislation does not permit it. It is likely that the lack of a legal framework is a constraint to the development and provision of index insurance in other jurisdictions that did not respond to the survey. This is a particular problem if the insurance legislation states that the payout under a property insurance contract must not exceed the actual loss experienced by the policyholder.

Supervisors in countries where index insurance is offered supervise the products using the existing legal and regulatory framework for insurance. Where insurance products require the supervisor's approval, the supervisor is able to undertake an assessment of the product before it is offered on the market. If appropriate, the supervisor may be able to set conditions that must be met before the product can be sold and, once approved, on an ongoing basis. These could cover, for example, changes to the product design and to the terms of the contract, conditions on how the product is sold and requirements for additional provisioning for losses. Conditions set on approval and on an ongoing basis can go some way to enabling the supervisor to establish a regulatory framework on an informal basis, especially if the licensing conditions are documented and applied to all insurers.

Although the objective of a pilot is to test a product, and the product is likely to be refined based on the results, where the supervisor permits an index product to be sold on this basis, care must be taken to ensure that the general approach is well thought through. Subsequent changes to the way in which index insurance products are regulated and supervised could be very costly to an insurer and may even result in the product no longer being viable.

There is a risk that, if a decision of the supervisor in relation to an index insurance product is appealed to court or a disgruntled policyholder takes legal action against an insurer, the lack of a wider legal framework may result in a court decision inconsistent with this approach[7]. For example, a court determination that an index product is not insurance under the general insurance law could have serious legal and regulatory consequences, including the following:

- The authority of the supervisor to supervise the provision of the index product may be called into question;
- If the court decides that the product is legally a derivative, the insurer may find that, in providing the product, it has breached both the insurance law and the securities law. This could open it up to regulatory action or, at worst, the insurer could face prosecution for undertaking a regulated activity without the appropriate authorisation.
- Under some countries' legislation, an illegal contract is unenforceable. This may result in the insurer having to refund the premiums paid, potentially over a number of years, and may call into question the right of the "policyholder" to any payment under the contract.

7 It is worth noting that to date there are no known cases of this occurring, though the risks are recognised as being material.

In the circumstances, even if a supervisor is able to supervise index insurance through the legal and regulatory framework applicable to insurance generally, supervisors may consider that they should press for changes to the legal framework to recognise the concept of index insurance and enable the regulatory framework to provide for its special characteristics.

Pilot projects

Many index insurance products have been introduced as pilot projects with support from international funding organisations or NGOs and very few have moved beyond the pilot stage to scale up and sustainable products. Indeed, many pilot projects terminate without ever scaling up. Experience suggests that there may be a variety of reasons for this:

1. low demand;
2. poor product or project design;
3. failure to prove commercial viability, and therefore sustainability;
4. high basis risk;
5. technical design issues;
6. the limited availability of data or the high cost of data;
7. lack of interest from local insurers;
8. limited understanding of insurance, or index contracts, in the target market;
9. the high cost of the product; and
10. a lack of distribution channels;
11. reliance on subsidy given to enable the product to be piloted, which is subsequently withdrawn.

These factors are usually interconnected. For example, low demand may be a direct result of poor product design, where the product does not understand the customer's needs and preferences. Similarly, a lack of interest from local insurers may be a side effect of poor technical design, low demand and a lack of distribution channels.

That so many index insurance products are established as pilots has significant supervisory implications. An insurance supervisor may permit an index insurance product to be introduced as a pilot on the basis of a limited exemption rather than a full approval, deferring a full consideration of the merits to the point when the product has scaled up. This is more likely where the product is part of a project led by a trusted partner, such a development agency, a NGO or an international reinsurer.

However, this approach carries risks.
For example:

- A failure to make payments on the occurrence of a severe weather event due to poor technical design or high basis risk, may adversely impact the confidence of policyholders' and potential policyholders, not just in index products but in insurance more generally.

- Similarly, consumer confidence may be adversely impacted if an index insurance product is withdrawn abruptly, particularly if it has operated for a number of years.

- As most index insurance is designed to provide financial protection against severe but infrequent weather events, a short-lived product may be in existence only in the "good years", terminating before an insured weather event occurs. This would represent poor value for policyholders who find that after several years of paying premiums, the product is not there when needed.

In considering a pilot, insurance supervisors may, therefore, be interested in understanding why the pilot is being established, and for whose benefit. For example, pilots may be set up with limited objectives, such as testing

the index, rather than with a view to the commercial development of a sustainable and scaled product. Insurance supervisors may, therefore, wish to satisfy themselves that the pilot will benefit policyholders and aid market development.

Pilots often focus on the technical aspects of the particular product. However, experience suggests that index insurance may be more suited to a programmatic approach implemented through a public-private partnership that focuses on building the public and private sector institutions necessary to ensure the sustainablity of the programme. For example, the Mongolia index-based livestock insurance programme, which successfully scaled to a national programme, was established from the start as a PPP involving several insurance companies, working together through a co-insurance arrangement, the project implementation unit, which provided technical assistance, the Government statistical service and the Government departments responsible for agriculture and finance. The insurance supervisor was involved in the development of the appropriate regulatory framework.

For further reading on the issue of pilot projects, see IAIS (2017), "Issues Paper on Index-based Insurances".

For further reading on the issue of pilot projects, see IAIS (2017), "Issues Paper on Index-based Insurances".

Role of reinsurers

The survey responses, supported by the follow up, indicate that most index insurance products offered are supported by one or more international reinsurers. The follow up with one supervisor indicated that one or more international reinsurers had driven the design of the product. This may also have implications for the insurance supervisor. For example:

- If an international reinsurer has been involved in the design of the product, the reinsurer's interests are not necessarily aligned with those of the domestic insurers or policyholders. Supervisors may, therefore, need to pay attention to whether the right balance is struck between the interests of reinsurers and insurers and to whether the product provides client value.

- The involvement of an international reinsurer may provide an opportunity for the transfer of specialist knowledge to the insurer and for building local capacity. When considering whether to approve an index insurance product, the supervisor may seek to verify that mechanisms to enable this have been built into the arrangement.

- If a significant layer of the risk is passed to the international reinsurance market, the supervisor may consider that there is less need for it to be concerned as to the technical aspects of the product or the capacity of local insurer to service the product.

Basis risk

As the payment under an index insurance contract is made against the value of an index, with no individual loss assessment, the index can do no more than act as a proxy for the policyholder's loss. It must be accepted, therefore, that there will always be basis risk. However well the index is designed, there can be no guarantee that a payment based on the index will precisely indemnify the policyholder for the loss sustained. If the contract is not well designed, the basis risk might be high.

Supervisors may consider requiring insurers to design contracts in such a way as to reduce basis risk to the lowest possible level, even though this may compromise the value of the product in some ways. This basis risk reduction could be done in a number of ways, such as by refining the index so that it is more closely aligned with policyholder losses or by lowering the trigger point so that more events trigger payment. However, both methods will increase the cost of the product. In the first example, product design and ongoing monitoring costs would increase, probably significantly, which would have to be reflected in higher premiums. In the second case, more frequent payments would require either that the amount paid for an event is reduced or that the cost of premiums is increased.

Increasing the cost of the product or reducing the level of the benefits paid is not necessarily in the best interests of the policyholder. It may be preferable to accept a certain level of basis risk to ensure that index insurance products remain affordable to policyholders, especially at the micro level. This will require the supervisor to consider what, in general terms, is an acceptable level of basis risk. Basis risk manifests itself at the micro, meso, and macro level, though it is most pertinent at micro level.

Basis risk becomes more important if the index insurance is considered as a type of indemnity insurance, as this suggests that the payment should be a good proxy for a specific loss (e.g. the policyholder's crop losses due to drought). However, one supervisor indicated that the index insurance product offered in its jurisdiction covered business interruption losses. This recognises that the actual costs of an extreme weather event to a policyholder go well beyond the value of crops or livestock lost. If, therefore, index insurance can be considered as a fixed sum insurance contract, rather than an indemnity contract, the focus can move from an analysis of whether the index is a good proxy for crop losses to an analysis of whether the index is a good predictor of the loss event and whether the total direct and indirect costs and losses to the policyholder arising from the loss event exceed the payment received.

Provided that basis risk is within acceptable limits, emphasis may be placed on other methods of dealing with it. For example, policyholder dissatisfaction may arise, not from basis risk, but from the failure of the policyholder to understand that the index product is not intended to cover all events that cause losses. This may be better addressed by raising awareness of the purpose of the index product and ensuring that policyholders understand that, due to basis risk, the index insurance product will not pay, even if an event that it is intended to be covered does not trigger the index.

Other Risks and Issues

Data risk: Several supervisors mentioned data as a major risk, but in different contexts. One supervisor was concerned that there is insufficient data on pilot schemes. This makes it difficult to assess the viability of pilots in the jurisdiction. Two supervisors indicated that there is insufficient data to assess whether index products provide client value. Another supervisor was concerned that data limitations made it difficult for insurers to assess the risk.

In each case, although the lack of data is certainly a risk, it has been considered as contributing to another risk rather than as a risk on its own.

Supervisory capacity and resources: Several supervisors indicated that they lacked the resources and expertise to adequately supervise index insurance. This is not surprising as index insurance is usually technical and complex as well as being a novel form of insurance.

This has not been treated as either prudential or a conduct of business risk. However, it is a factor that supervisors should bear in mind when deciding whether or not to authorise index insurance products. To a certain extent, supervisors can require certifications from experts, such as the insurer's actuary, but ultimately the supervisor will need to be satisfied that it has, or can acquire, sufficient resources and capacity to understand the product and to monitor it and supervise it on an ongoing basis.

Cost: The high cost of index insurance was also specified as a risk factor by more than one supervisor. However, this may be better considered as a factor that contributes to other risks, such as whether the product provides client value.

5. Regulatory and Supervisory Approaches

Regulatory Approaches

None of the supervisors who responded to the survey currently have a legislative or regulatory framework in place for index insurance. However, at the time of writing, it is anticipated that the insurance law in one of the responding countries would be amended to recognise the concept of index insurance and to enable more detailed index insurance regulations to be put in place. These have already been drafted and consulted on and the supervisor expects the regulations to be brought into force in the foreseeable future.

Another supervisor who responded stated that index insurance regulations have been drafted, and these will be brought into force as part of a wider regulatory reform package.

One supervisor indicated that a new insurance law has been drafted and that this provides for index insurance. However, the insurance law has not yet been enacted. Once enacted, index insurance regulations will be drafted. The anticipated timeline is approximately 3 years.

One supervisor indicated that it intends to review the insurance law and develop a regulatory framework for microinsurance, including index insurance. The anticipated timeline is two years.

One supervisor indicated an intention to issue regulations on index insurance, but no timeline was given.

The laws of many jurisdictions require that a policyholder must have an insurable interest in the subject matter of the insurance contract for the contract to be valid. Another way

in which this may be expressed is that the insurance risk must be adverse to the policyholder, i.e. that the occurrence of the insured risk will in some way harm or damage the policyholder or cause the policyholder loss.

This is central to the concerns of a number of supervisors relating to the legal and regulatory frameworks within which they operate. For example, several supervisors indicated that an insurance contract is a contract of indemnity and that the principle of indemnity does not allow an insurance contract to pay more than the loss sustained by the policyholder.

The problem of basis risk, discussed above, is clearly relevant to this. However, there is a wider problem. Can an index-based risk transfer contract be regarded as an insurance contract if it can be purchased by persons who do not have an insurable interest in the contract? For example, a weather index insurance contract intended to protect against the risk of flooding in a particular region may be designed to pay against an index of rainfall measured at weather stations within the region. If a person who is at no risk of loss from flooding within the region is able to purchase the contract, the contract is purely speculative for that person.

As a traditional indemnity insurance contract pays out against assessed losses, the importance of insurable interest falls away. A policyholder who can establish that he or she has suffered a loss because of the occurrence of the insured risk almost certainly had an insurable interest, at least at the time that the insured risk occurred. Given that an index insurance contract pays without an assessment of actual loss, how and when to establish insurable interest (or that the occurrence of the insured event is adverse to the policyholder) becomes much more important. This concern was expressed by one supervisor.

Although it is not the role of this paper to provide advice on the design of an appropriate legal and regulatory framework, the concerns raised by the responding supervisors suggest that insurable interest, however expressed, is likely to be a key factor.

Supervisory Approach and Approvals

The supervisors in those countries where index insurance products are offered currently supervise them as any other type of insurance, although most consider that this is not acceptable.

In all but one of the countries whose supervisor responded, the index products offered have been approved as pilots.

As discussed above, it is possible to impose some regulatory control over the provision of index insurance products through the approvals process. However, this may not be fully effective and, in any event, none of the regulatory and supervisory approaches reviewed for this paper take account of the special characteristics of index insurance.

6. Conclusions

Index-based insurance is a business model that could conceivably enhance access to insurance by providing aggregated, streamlined coverage with relatively low overheads. It could provide a positive first experience with insurance for those who may not have any experience with the concept, and may aid in achieving policymaker objectives such as increased economic resilience and social objectives.

However, despite these positive potential aspects, research and experience has highlighted a number of fundamental challenges with the business model that limit its potential.

Despite the increasing use of index insurance, its effectiveness as a tool for insuring low income, unserved and under-served farmers and households against weather and other natural disaster risks remains to be proven. It is clear from the survey responses that most jurisdictions are at an early stage in the development of a legal and regulatory framework for index insurance. Clearly, the lack of a legal and regulatory framework makes it much more difficult for supervisors to supervise index insurance and to address the risks identified. However, as several supervisors indicated, this also leaves supervisors unable to obtain the information and data that they need on index products developed and marketed within their jurisdictions.

The lack of data on index insurance impacts on the ability of a supervisor to effectively supervise index insurance business. This increases both the prudential risk (as it is difficult for the insurance supervisor to establish whether an insurer has adequate provisions, reinsurance and capital to cover the risk) but also the market conduct risk. The most frequently cited market conduct risk was basis risk. Without adequate data, it is difficult to determine how significant basis risk is, let alone devise appropriate supervisory approaches to address it.

From a wider perspective, without good quality market data it is difficult to make an assessment effectiveness of index insurance in protecting low income, unserved and under-served farmers and households against weather and other natural disaster risks.

The most frequently cited prudential risk was legal and regulatory risk. As discussed in this paper, a key issue raised by a number of supervisors is whether an index-based risk transfer contract can be recognised as insurance at all. Although supervisors are able to use their powers under the wider insurance laws and regulations to supervise index insurance, even if less than optimally, the only way to address the recognition and definition of index insurance is through the establishment of a legal and regulatory framework that covers index insurance.

The survey highlighted the importance of a legal and regulatory framework from a supervisory perspective. However, it also became clear that, in some jurisdictions, the lack of legal certainty is operating as a constraint on the development of index insurance.

Although it is not the purpose of this paper to make specific recommendations, it is hoped that the risks identified by those supervisors who responded will assist policy makers and insurance supervisors as a reference point for designing appropriate legal and regulatory frameworks within their own jurisdictions.

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Hosted by:

Access to Insurance Initiative
Hosted by GIZ Sector Project
Financial Systems Approaches to Insurance
Deutsche Gesellschaft für Internationale
Zusammenarbeit (GIZ) GmbH
Dag-Hammarskjöld-Weg 1-5
65760 Eschborn, Germany

Telephone: +49 61 96 79-1362
Fax: +49 61 96 79-80 1362
E-mail: secretariat@a2iiorg
Internet: www.a2ii.org
a2ii_org

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