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MICROREINSURANCE APPLICATIONS

FILLING SUPPLY AND DEMAND GAPS

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Alex Bernhardt, Guy Carpenter

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GLOSSARY AND ACRONYMS

Attachment	The point at which an excess of loss reinsurance coverage begins; the top end of the XOL coverage retention
Basis risk	The risk of mismatch between the payout of a non-indemnity insurance contract and actual losses incurred by the contract holder
Cedant	The purchaser of a reinsurance agreement
CSR	Corporate social responsibility
Facultative	Reinsurance for individual insurance policies as opposed to portfolios of policies (see Treaty)
GIZ	Deutsche Gesellschaft für internationale Zusammenarbeit (the German government international development agency)
GWP	Gross written premium
ILS	Insurance-linked securities
LPT	Loss portfolio transfer
LR	Loss ratio
Microinsurance	Insurance which is oriented toward low-income populations or groups otherwise excluded from the formal financial system
Microreinsurance	The provision of reinsurance products, services and expertise to support microinsurance programmes
MFI	Microfinance institution
PPP	Public-private partnership
Pro rata	A reinsurance agreement involving the proportional sharing of risk from the first dollar of loss
QS	Quota share; the main type of pro rata reinsurance
Retention	The portion of a reinsurance agreement retained by the cedant
Retro	Abbreviation for retrocession or reinsurance for reinsurers
RSBY	Rashtriya Swasthya Bima Yojana (a cashless national health insurance scheme for poor people run by the Government of India in partnership with private insurers)
Social insurance	Insurance which usually caters to low-income populations and is supported significantly by sovereign or sub-sovereign public entities through premium/loss subsidies and/or mandatory purchase requirements; a prominent example would be the RSBY programme in India
Treaty	Reinsurance of portfolios of insurance policies
XOL	Excess of loss

1 INTRODUCTION

Over the past 200 years the amount and scope of risk insured worldwide has grown rapidly amid widespread economic development. This growth has fuelled demand among insurers for a secondary reinsurance market¹ where catastrophic exposure and capital constraints can be readily alleviated and large risks or risk accumulations² can be transferred and better (that is, more efficiently) managed. While some localized or discrete market segments have a tradition of co-insuring among insurers to address such capital management issues, most of the secondary market for primary insurance risk today is handled by professional reinsurers and, recently, a growing variety of alternative secondary risk transfer providers supported by the capital markets have become involved (for example dedicated insurance-linked securities (ILS)).³ Table 1 shows the top ten global traditional reinsurers ranked by 2012 gross written premium (GPW), all lines.

Table 1: Top ten global reinsurers by gross written premium, life and non-life (US\$)

		Reinsurance premiums written				Total shareholders' funds
		Life & non-life		Non-life only		
2013 ranking	Company	Gross	Net	Gross	Net	
1	Munich Reinsurance Co. ^a	37 251	36 167	22 539	22 038	36 248
		31	25	19	15	34
2	Swiss Reinsurance Co. Ltd	723	344	468	117	026
3	Hannover	18	16	10	9	8
	Rueckversicherung AG ^a	208	231	201	060	909
		15	11	15	11	31
4	Lloyd's ^{b,c}	785	371	770	358	204
		15	15	9	9	191
5	Berkshire Hathaway Inc. ^d	059	059	668	668	588
		12	11	6	5	6
		576	286	146	558	358
6	Reinsurance Group of America Inc.	8	7	-	-	6
		233	907	-	-	910
7	China Reinsurance	6	6	4	4	7
8	(Group) Corp.	708	471	184	090	026
		5	3	5	3	1
9	Korean Reinsurance Co. ^e	113	390	113	390	275
		4	4	3	3	6
10	PartnerRe Ltd	712	567	910	768	934
-	Total top 10	155 367	137 792	96 999	84 047	330 478
-	Next 40	61 766	52 572	53 880	44 951	258 745
-	Total top 50	217 132	190 365	150 879	128 998	589 223

1 For a good review of the historical origins of reinsurance, see Swiss Re (2010, p. 10).

2 In this document, the term "risk" will be used in two ways: (1) to describe the probability of something going wrong (as in "the risk of an accident happening" or "the risk of an earthquake"); and (2) to describe a unit of risk transfer, i.e. something that is insured (as in "pooling a large number of comparable risks", which means providing insurance to many people, buildings, etc.). This dual use of the word is customary.

3 The recent and ongoing convergence between the traditional reinsurance markets and the capital markets via ILS is a hot topic in the market today though addressing this key trend is beyond the scope of this analysis. A short definition of ILS, however, may be useful for some readers: "In general, an ILS is an investment whose underlying performance and risk of loss is tied to an insurance risk, often a catastrophic one. An ILS can originate in the form of a bond, a reinsurance contract, an equity investment in a special purpose vehicle, or a derivative instrument, such as an option. The ILS market is made up of catastrophe bonds, collateralized reinsurance, sidecar vehicles, and ILWs (industry loss warranties)" (Conning, 2013).

a Net premiums written data not reported, net premiums earned substituted.

b Lloyd's premiums are reinsurance only. GPW for certain groups within the rankings also may include Lloyd's Syndicate GPW when applicable.

c Total shareholders' funds includes Lloyd's members' assets and Lloyd's central reserves.

d Shareholders' funds includes non-reinsurance subsidiaries of Berkshire Hathaway.

e Fiscal year-end 31 March 2013. Source: Best (2013).

Professional reinsurers have unique expertise in the analysis and management of large or complex risks and in the layering and parcelling of complicated risk profiles. They are also well positioned to support risk pooling on a global scale: since reinsurers transact with other risk industry professionals, such as insurers, reinsurance brokers and other reinsurers, they are generally subject to different (read less stringent) (inter) national regulations than insurers. This facilitates geographical diversification, which in turn allows reinsurers to better harness the law of large numbers for certain big or complex risks to manage catastrophic or covariate risk.⁴

Nevertheless, while reinsurance negotiations and arrangements are a customary component of conventional insurance value chains, this is generally not true in microinsurance. This paper contends that, as in traditional insurance markets, where secondary risk transfer is essential to the operational solvency of primary insurers both large and small, microreinsurance is, and will continue to be, important to the long-term growth and sustainability of the global microinsurance market. However, microreinsurance is not the same as traditional reinsurance; in many instances it is, and should be, used differently from traditional reinsurance (or not used at all), in order to accommodate the unique aspects of microinsurance programmes. This is often left unacknowledged – microreinsurance is a specialist field and should be treated as such.

Moreover, at this still nascent stage in the development of a global microinsurance market, there is a gap between the supply of and demand for microreinsurance. This gap is most pronounced in jurisdictions where insurance programmes lack significant governmental support⁵ and is in part enabled by a break in knowledge between practitioners on either side of potential transactions. We hope this paper helps to close that gap.

Some of the other main reasons for this market imperfection include, but are not limited to, the following:

- many microinsurance portfolios are written by commercial insurers and are still too small to threaten their bottom lines if things go wrong;
- simple and predictable credit life business, where the need for reinsurance is limited, still makes up the lion's share of microinsurance business worldwide;
- many non-credit-life microinsurance programmes, where reinsurance might be more useful, are still in “pilot mode”, with premium adequacy and product design being fine-tuned and with limited exposure;
- the profit potential in microinsurance remains relatively minimal for both insurers and reinsurers today.

The above notwithstanding, microinsurance is developing rapidly. Globally, lives covered by microinsurance were up nearly 300 per cent in 2011 since just 2009⁶ and are projected to double by the end of this decade.⁷ Yesterday's pilot projects are providing the key lessons for tomorrow's scalable offerings, and the potential market is growing every day with the advent of innovative distribution methods and the influx of capital from donors and (to a lesser extent) investors to support experimentation and scaling. Extending current trends into the near future makes it very clear that the microinsurance market will need to embrace the reinsurance market and vice versa. In an effort to bring these two market segments closer together, this paper will explain what reinsurance is, why it is relevant to microinsurance and how it is being used in microinsurance today. It will also attempt to identify gaps between current microreinsurance supply and demand, with the primary goal of devising strategies for the development of more reinsurance activities supportive of microinsurance market growth and sustainability.

4 Some background on probability theory may be useful here for some readers. One of the best-known principles of probability theory is the “law of large numbers”, which, roughly speaking, means that the more comparable risks you bundle together in a pool, the better you will be able to predict the total outcome of the pool, since the degree of uncertainty that makes any individual risk intolerable is reduced for a large enough collection of risks. Stated anecdotally, it is impossible to say if a particular person will have an accident during the next 12 months, but it is possible to predict within tolerable boundaries how many persons out of 10,000 will have an accident. The term “covariate risk” is used to describe the possibility of the same adversity happening to a large number of persons or assets in the same geographical area. Some well-known causes of covariate losses are earthquakes, hurricanes, epidemics and droughts.

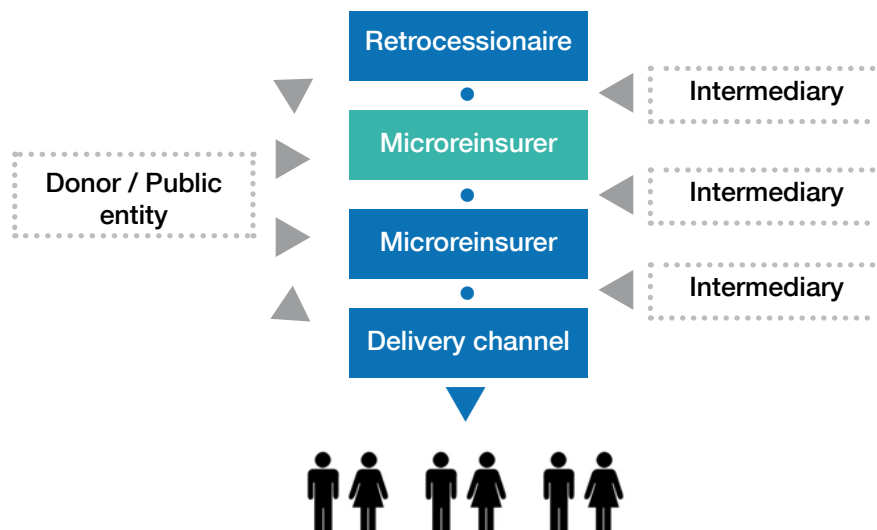
5 Big government-sponsored programmes with the objective of social protection or economic development already have significant business potential for reinsurance companies and have drawn significant attention therefrom. Such social insurance schemes, though important, are not the central focus of this paper.

6 Lloyds estimated 135 million covered lives in 2009 (Lloyds and Microinsurance Centre, 2009). The ILO estimated 500 million covered lives in 2011 (ILO, 2012).

7 Microinsurance Network (2013).

2 THE MICROREINSURANCE VALUE CHAIN

Figure 1. The microreinsurance value chain
Intermediaries can play a key role in facilitating risk transfer at each stage in the process.
Donors promote value chain development, functionality and scaling.



Micro(re)insurance programme value chains are often complex. The reasons for this are many though they include the newness of many microinsurance business models and concepts, the diversity of delivery channels, the involvement of various stakeholders outside the direct value chain (for example donors and intermediaries) and the idiosyncrasies of certain types of microinsurance business. Moreover, the relationships and contracts between delivery channels and insurers, and insurers and reinsurers are often determined by other factors in the value chain that are beyond their control, such as the size and nature of an underlying risk profile, the value-added capabilities of an intermediary or the availability of retrocession protection (or “retro” for short).⁸ To understand the importance of microreinsurance to a given value chain, it is important to understand broadly the role of each value-chain constituent.

2.1. (RE)INSURERS

Reinsurers and insurers are essential to any micro(re)insurance value chain. Without appropriately licensed and willing risk-bearing entities, risk cannot be assumed from low-income consumers.⁹ Insurers generally set the criteria for the assumption of a given risk and will transfer the said risk on to the secondary market where necessary, though for some types of risk and in certain markets reinsurers either effectively or actually set the price or determine the capacity available for primary risk transfer (more on this later). Reinsurers can also support insurers by helping them to develop their underwriting capacity for certain types of risk (for example, index-based weather insurance).

⁸ Retro, put simply, is reinsurance for reinsurance companies and, where needed, typically represents the last stage in a potential risk transfer value chain. As retrocession markets and underwriting criteria are distinct from reinsurance equivalents and the perceived need for retro coverage in microinsurance is de minimis, at present this paper will not focus on retro in any degree of detail. A retrocessionaire appears in Figure 1 for illustrative purposes only.

⁹ While the author acknowledges the widespread existence of so-called “informal” microinsurance schemes ungoverned by national insurance supervisory authorities (and the significant body of literature devoted to their analysis), one of the key barriers to the expansion of such informal schemes is their general inability to access reinsurance and related expertise. To quote from the paper Issues in regulation and supervision of microinsurance (AIS and CGAP Working Group on Microinsurance, 2007): “Such arrangements may have negative implications at the institutional and client levels even though their services might be the only one that a poor household has access to. First, these providers operate on an uneven playing field, which goes along with market distortions and a lack of transparency, and favors arbitrary conduct by providers. Second, they have little chance to grow, attract investors or partners, or access risk transfer mechanisms like reinsurance. Third, they may have little or no reserves, and be rather inefficient. Consequently, there is a lack of risk sharing and adequate technical support from reinsurers for underwriting and claims administration. If they were licensed under the insurance law, such microinsurers would be able to access reinsurance (and reinsurers’ technical support) and could manage their capital more efficiently.” This being said, it should also be noted that reinsurance, when used purely as financial risk management, is rarely the sole or main impediment to the growth of microinsurance schemes, informal or otherwise.

Insurers generally set the criteria for the assumption of a given risk and will transfer the said risk on to the secondary market where necessary, though for some types of risk and in certain markets reinsurers either effectively or actually set the price or determine the capacity available for primary risk transfer (more on this later). Reinsurers can also support insurers by helping them to develop their underwriting capacity for certain types of risk (for example, index-based weather insurance).

The process by which insurers determine the price for assuming a given risk is referred to as underwriting.¹⁰ The types of information insurers might obtain from prospective insurance purchasers vary by line of business, though for life and health risks (re)insurers will want to collect information about the mortality and/or morbidity of the insured, such as age, gender and occupation. For property risks the type of information collected generally pertains to the likelihood of a given property to suffer damage, which is determined by its location, construction quality, occupancy and so on. Portfolio or treaty reinsurers (defined in section 3, 'Forms of microreinsurance') underwrite by obtaining aggregate information relative to the portfolio of risks being considered.

2.2. INTERMEDIARIES

Due to the many machinations involved in value-chain formation, intermediaries with expertise in certain aspects of programme development and management are often relied upon to fit the pieces of the puzzle together. Reinsurance intermediaries can provide both reinsurers and cedants (another term for reinsurance purchasers) with a variety of value-added services, such as negotiating the details of cover, performing routine administrative or complex analytical tasks and even supporting aspects of product development.

In general, reinsurance intermediaries have the same aspirations as insurance brokers: to be advocates who understand the needs of both parties in a transaction and negotiate a fair deal. But in reinsurance, they often have an additional role, namely breaking down large risks and distributing them among a variety of programme participants – a process called risk syndication. In traditional reinsurance contexts many reinsurers only want to take a small share (for example, 10 per cent) of a single reinsurance cover, typically when large property catastrophe risks are covered. In this scenario ten similar reinsurers would be needed to provide the insurer with the desired level of risk transfer. A reinsurance broker is well equipped to find them all and collect their commitments. Obviously, reinsurance brokers require remuneration for their services and therefore some (re)insurers avoid them. As the global market for reinsurance has grown larger and more complex, the value of the services provided by an intermediary has increased. In the US market over 80 per cent of reinsurance business is now conducted through intermediaries.¹¹

Sometimes, brokers deal with both insurance and reinsurance. A few traditional intermediaries have applied their business models to microinsurance, and provide both primary distribution and reinsurance placement services to insurance companies, which are thereby required to play only a passive role in the assumption of microinsurance risk. Other brokers specialize in either the primary or secondary transference of risk.

Notable specialist microinsurance intermediaries include MicroEnsure and PlaNet Guarantee. The services these intermediaries provide are similar to those provided by wholesale intermediaries or managing general agents in developed world markets. They act as a bridge of sorts between insurers and a variety of retailers (known more readily as “delivery channels” in microinsurance). In addition they provide insurers with specialist product design expertise and administrative support.¹² They may even sometimes be involved in the placement of programme-related microreinsurance or alternative risk transfer solutions.

¹⁰ Views on the etymological origins of the term “underwrite” as used in insurance are somewhat mixed, though the most common one refers to the early days of insurance at Lloyd’s of London in the seventeenth century, where risk-takers would literally write their names at the bottom of a policy under the risk information provided, thereby assuming financial responsibility for the risk in exchange for a premium.

¹¹ Conning w/ A.M. Best data, 2012. Based on market share of US direct (18 per cent) and broker (82 per cent) reinsurers.

¹² For more on microinsurance intermediaries see Churchill and Matul (eds) (2012, chapter 23).

2.3. DONORS

In many micro(re)insurance programmes, donors play a crucial role. As many such programmes are “pre-commercial” (meaning they have little chance near-term of turning a profit, owing to insufficient technology, limited distribution or untested product designs), donor support for technical development and sometimes premium subsidy during the initial stages is essential until the programme in question can become self-sufficient. Learning to work with and alongside donors to achieve programme sustainability is not always the easiest of transitions for commercial reinsurers to make.

The reasons for this are various though they relate primarily to the emphasis by donors on development impact and the measurement thereof. This is a very different yardstick for performance measurement than many commercial players are used to. To track such performance, grants from donors also generally involve extra application and reporting requirements, which can be cumbersome.

2.4. DELIVERY CHANNELS

It is also important for commercial (re)insurers to recognize the importance of delivery channels to successful micro(re)insurance programme administration. Delivery channels are a diverse bunch – ranging from microfinance institutions (MFIs) to retailers and mobile network operators – and are the first point of contact for low-income insured people when it comes to policy issuance and claims settlement. Given their direct relationships with low-income consumers, delivery channels are also a source of invaluable information relative to risk characteristics and historical losses. The importance of their role in the value chain cannot be underestimated.

As such, it is vital for any given micro(re)insurer to invest in the capacity development of its delivery channel(s), which will probably be unfamiliar with the nuances of insurance administration. It will also be important for would-be micro(re)insurers to embed their operations at the delivery channel level as far as possible; meaning some degree of interconnectivity between the delivery channels systems/reporting lines and the micro(re)insurers would be advisable. To achieve this will usually require some sort of “capacity building” work on the part of the micro(re)insurer (for example, training of trainers) to ensure the delivery channel develops sufficient institutional knowledge to inform programme administration. Such work increases relationship stickiness and should improve the overall quality and smoothness of programme administration, though it could also result in a form of overreach for commercial (re)insurers that are not used to investing in capacity-building activity with distribution partners.¹³

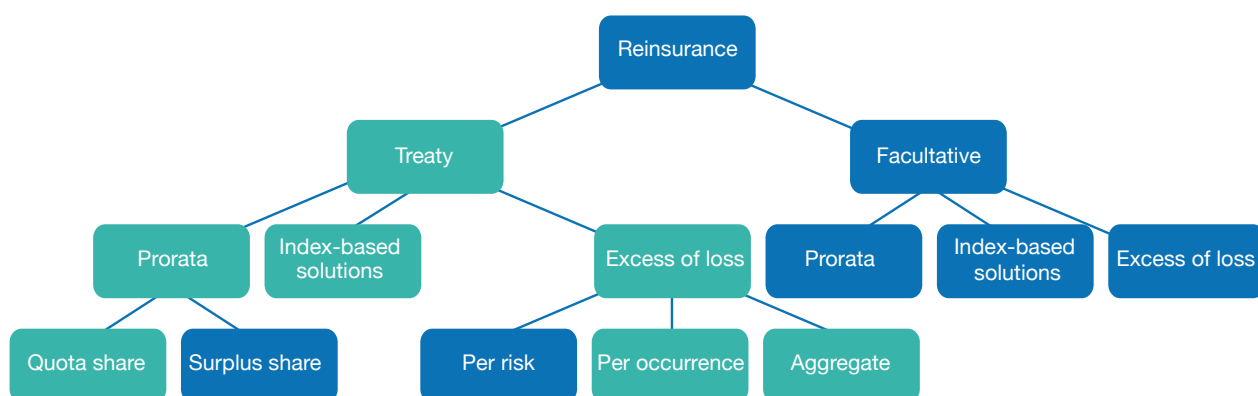
3 FORMS OF MICROREINSURANCE

Put simply, reinsurance is insurance for insurance companies. Reinsurance transactions come in a variety of shapes and sizes and are usually adapted to specific situations. This section discusses all major reinsurance options suitable for microinsurance, as well as the main uses of reinsurance in the context of microinsurance programme design and sustainability. Particular emphasis is placed on those forms of reinsurance of most relevance to microinsurance business.

¹³ For more on microinsurance delivery channels see Churchill and Matul (eds) (2012, chapter 22).

To reduce underwriting risk to levels commensurate with their risk appetite, professional insurance companies usually purchase an array of types of reinsurance cover. Their composition depends on the nature of an insurer's business, an insurer's risk inclination and its reinsurer(s)' preferences and specialisms, as well as on some ancillary considerations indirectly related to risk transfer, which will be discussed in more detail later on. The various types and forms of reinsurance generally available are outlined in Figure 2. While not all the types shown are applicable to microinsurance contexts, others are highly relevant. Generally, reinsurance arrangements will be made up of one or more of the basic reinsurance products shown in Figure 2 (in mature markets, more sophisticated forms of reinsurance are available but they are seldom justified in microinsurance and will not be covered here).¹⁴

Figure 2. Basic classes and forms of reinsurance.
The boxes outlined in red are most relevant to microinsurance.



Broadly speaking there are two classes of reinsurance – treaty and facultative (the latter is often called “fac” for short). Treaty reinsurance is used to protect portfolios of multiple underlying risks, whereas facultative reinsurance is used for single risks that are too large, asymmetrical or heterogeneous to be retained in their entirety by an individual insurer and may fall outside the scope of the said insurer's treaty arrangement(s). Microinsurance programmes are generally defined by large homogenous portfolios of risk – hundreds, thousands or even millions of low-income consumers with reasonably similar risk profiles obtain reasonably similar or the same standard coverage for a given risk. From a reinsurance perspective such portfolio-level characteristics lend themselves particularly well to treaty underwriting.¹⁵ Thus, for the purposes of this review we will focus on treaty reinsurance concepts and ignore facultative ones.¹⁶

Within the treaty category, there are three main types of coverage offered. They are presented in Figures 3, 4 and 5.

¹⁴ Among the more complex types of reinsurance transaction that will not be discussed in any detail in this paper are excess cessions agreements (hybrid agreements whereby an insurer cedes a portion of its risk excess of a certain limit threshold at a predefined price and receives a ceding commission in return); loss portfolio transfers (LPTs) (used to transfer a book of claims which have already occurred off of an insurer's balance sheet protecting against adverse reserve fluctuations – used also to support novation, or the complete transfer of an in force book of business); block acquisition transactions (where the reinsurer advances part of the present value of future profits from a book of long-term (usually life) insurance); structured or finite reinsurance; and surplus share reinsurance. LPTs are touched on in section 4.6.

¹⁵ Somewhat perversely these same characteristics impede demand for treaty reinsurance since the predictability of portfolio outcomes is increased by their size and relative homogeneity. See section 5.2, “Demand, for more on this subject.

¹⁶ Some microreinsurance contracts are written facultatively, though these tend to reinsure a master or group policy whereby a single policy and named institution is the original insured underlying the reinsurance agreement. However, this named institution (e.g. an MFI) is usually extending coverage in some form or another to its individual low-income membership. While the reinsurance contracts put in place to protect such master policies could technically be determined facultative since only one policy is being reinsured, the risk transfer concepts being applied relate to a portfolio of risks – a decidedly treaty approach to underwriting – rather than a true individual risk (e.g. a very large skyscraper).

Figure 3. Functionality of excess of loss reinsurance in six distinct claim scenarios. Note that reinsurance coverage only kicks in above a certain claim level.

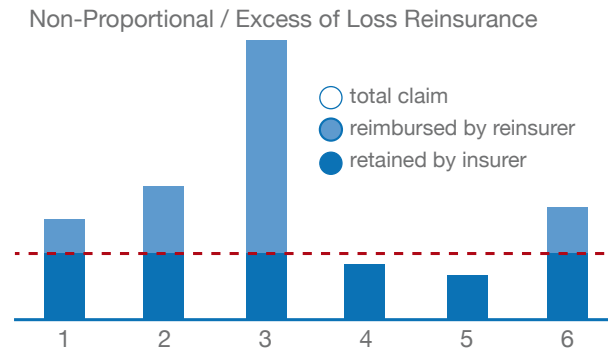


Figure 4. Functionality of 40% quota share reinsurance in six distinct claim scenarios. Note that the loss amount in each scenario is shared proportionally 60/40% between the insurer and the reinsurer.

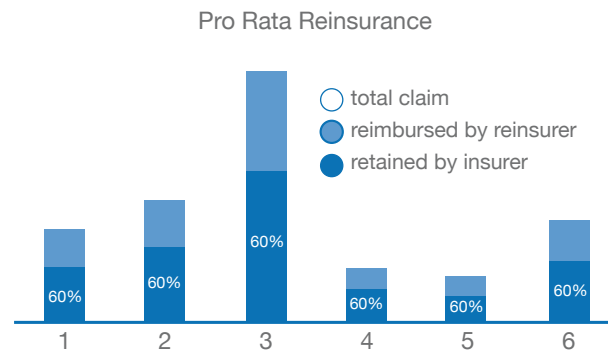
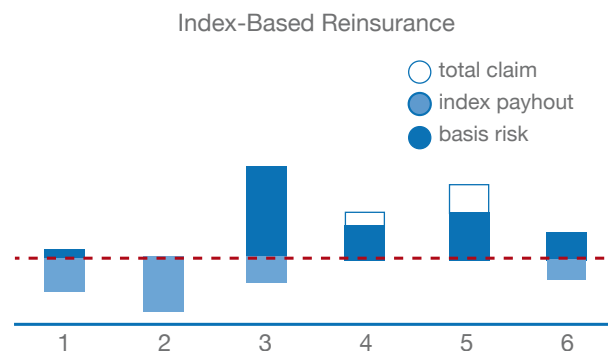


Figure 5. Functionality of index-based reinsurance in six distinct claim scenarios.



Note that the index payout does not always equal the loss amount, resulting in a basis risk gain or loss for the reinsured. Also note that the usage of index-based microreinsurance depends on the nature of the underlying policies being reinsured. If the underlying policies are themselves index-based, the supporting reinsurance contract can simply be structured as an excess of loss or quota share of the underlying parametric liabilities. However, if the underlying policies are indemnity-based, the index-based reinsurance agreement should function in much the same way as an index-based insurance product and should be structured to mimic the actual experience of the reference risks (in this case a collection of insurance policies rather than crop yields, for instance).

Excess of loss (XOL) coverage is often described as providing purchasers with “vertical” protection – hence coverage above a retention. Pro rata coverage on the other hand is described as applying “horizontally” or “sideways”, since pro rata reinsurers participate in the losses of their underwriting partners, starting from the first dollar or from the ground up. Index-based coverage provides coverage as soon as the index criteria are met (for example, rainfall of x millimetres or less in location y), though more complex structures are available and all index-based solutions involve some level of basis risk – or the risk of mismatch between the contract payout and the actual losses incurred by the contract’s beneficiary. Index-based reinsurance at the portfolio level functions in much the same way as its does at the individual level though both versions are designed to match the loss experience of the risk pool rather than that of an individual.¹⁷ Each of these treaty coverage forms is discussed in more detail in sections 3.1. to 3.3.

3.1. EXCESS OF LOSS

Excess of loss (XOL) contracts come in many sub-forms including per risk, per occurrence/event and aggregate (also known as stop loss). Per risk XOL tends to be used to provide protection for “lumpy” or heterogenous portfolios of risk with some small and some large individual exposure. Since microinsurance programmes are generally homogenous – meaning they tend to comprise many small risks with similar characteristics – per risk XOL cover is often not the first choice as a form of protection. However, portfolios of small microinsurance risks can still be exposed to catastrophic loss, against which per occurrence XOL is ideally suited to protect.

Aggregate XOL or stop loss protection can be very useful for many types of microinsurance programmes since it provides a fairly definitive cap on adverse aggregate loss experience. Aggregate XOL contracts are often structured using loss ratio figures (aggregate programme claims divided by aggregate programme premium) to provide clients with budgetary and solvency assurance. A structure would be something like this: 50 per cent loss ratio points of coverage in excess of an 100 per cent loss-ratio-point retention (or, in short hand, 50% LR xs 100% LR cover). Such contracts can be especially useful for new programmes in new areas with limited catastrophic risk, where uncertainty around price adequacy and ultimate loss ratio outcomes can be quite high (for example, large new life and health schemes).¹⁸ However, in exchange for relative certainty around primary outcomes, reinsurers can charge hefty premiums for such cover. A more detailed overview of per occurrence and aggregate XOL contracts follows.

Regardless of form, the selection of attachment and exhaustion points for any given XOL cover should be based on risk analysis of the underlying portfolio. Ideally this risk analysis would be probabilistic in nature, providing estimates of both loss frequency and severity, though simple deterministic measures can be used as well (e.g. a LR of > x% will cause programme insolvency, so purchasing aggregate protection below x% would be advisable). Microinsurance programme managers should also be wary of over-reinsuring their risk. This can manifest in XOL by attaching too low and buying unnecessary protection or paying more than warranted for the risk ceded. Reinsurance can be a very useful financial tool but it is not always the most efficient or effective means of financing risk – detailed risk analysis is integral to appropriate XOL protection design.

¹⁷ It should also be noted that portfolios of individual-level index-based insurance products can be reinsured using pro rata or excess of loss structures as well.

¹⁸ It is rare for reinsurers to provide XOL coverage for new health schemes though demand for such protection may still be there.

3.1.1. Per occurrence

Per occurrence reinsurance contracts are best and most often used to protect against catastrophic losses. As low-income populations tend to be more exposed and vulnerable to catastrophes than their higher-income counterparts, it would seem logical for per occurrence microreinsurance to be endemic in the microinsurance market. However, according to research conducted by the author, there are very few, if any, instances of programme-specific per occurrence reinsurance being used by microinsurers. The reasons for this are varied, though they include the following:

- Most catastrophic risk is dealt with via index-based risk transfer solutions.¹⁹
- Catastrophic risk is most apparent in property and very few property microinsurance programmes operate on an indemnity basis today.
- A large portion of global microinsurance business is written by very large commercial insurers, who simply do not require reinsurance support for their microinsurance programmes.
- Most commercial insurers purchase per occurrence XOL reinsurance protection corporately for their entire portfolio. To the extent that such insurers engage in non-life microinsurance, these programmes are most likely subject to their corporate catastrophe cover and are thus technically reinsured on a per occurrence basis (however, while technically reinsured, they may not be effectively reinsured since corporate commercial cover tends to be designed to protect traditional risks and so may attach at a much higher level than could be effected by a microinsurance-specific loss). The same is generally true for life microinsurance, whereas for health there is very little per occurrence XOL available for either microinsurance or commercial insurance, an operational definition of pandemics being one obstacle.
- Non-life microinsurance programmes with catastrophic exposure tend to be small, in start-up mode, geographically concentrated or share some combination of these factors. It is very difficult for a reinsurer to underwrite a small portfolio of risks on an XOL basis economically since per occurrence XOL cover is generally most effectively/efficiently implemented to cover infrequent severe events, thus sharply diminishing the available ceded premium volume by simple virtue of the product's inherent structure (the higher the attachment point, the less risk transferred and the lower the premium rate for the excess risk ceded). Moreover, without at least some underlying portfolio diversification, the risk of loss to the business can often simply be too high or volatile for the cost of risk transfer to make sense for the cedant.

It is not clear whether the structural barriers to obtaining programme-specific per occurrence microreinsurance mentioned above are acting as a hindrance to the growth of the indemnity-based property microinsurance market. It is more likely constrained at the front-end by difficulties surrounding distribution, loss assessment and local underwriting expertise. Regardless, there are some interesting active microreinsurance models which seem to be addressing the conundrum of non-life microreinsurance access from both sides through public-private collaboration and the creative use of pooling mechanisms or new products. One such model has been successful at removing some of the structural barriers to obtaining per occurrence and other reinsurance protection for a consortium of small Latin American cooperatives (see Box 1 – ICMIF LARG). Another has developed a hybrid index and indemnity protection for MFIs (see Box 4 – MiCRO).

¹⁹ Again, while reinsurance contracts protecting index-based microinsurance programmes can be written on an XOL basis (e.g. only triggered losses above a certain threshold are covered, up to a specified limit), we make a deliberate distinction here between per occurrence XOL and index-based microreinsurance, based on the underlying characteristics of the microinsurance business reinsured.

BOX 1: ICMIF LARG



The Latin American Reinsurance Group (LARG) housed at the International Cooperative and Mutual Insurance Federation (ICMIF) consists of 16 members, all of which are insurance cooperatives based in Latin America. The impetus behind the formation of the LARG was grounded in a market failure – each member organization struggled to access non-life reinsurance independently, owing mainly to their relatively small size and perceived lack of sophistication. With assistance from the ICMIF and other stakeholders, these individual insurers banded together and developed a consortium approach to the purchase of reinsurance in the form of LARG.

At present only six of the 14 LARG members are buying reinsurance jointly, though the remaining members intend to buy in the near future and have joined the group in advance thereof to gain access to training, underwriting support and other appurtenant membership benefits. Reinsurance products purchased by LARG include property catastrophe XOL; per risk, motor and miscellaneous working cover XOL. American Agricultural is LARG's lead reinsurer and Willis Re is the facility's placing broker. For those members that do purchase reinsurance jointly, they save on reinsurance premium compared to what they would pay individually for equivalent protection at market rates. These discounts are attributable both to the statistical merits of exposure volume and risk diversification and to the administrative efficiency associated with combining member portfolios from a variety of jurisdictions, as well as to the adherence to common underwriting standards and discipline by LARG members.

All LARG members pay an annual membership fee and reinsuring LARG members pay an additional 2 per cent of gross premium as a contribution towards the operating expenses of the LARG. Fees go to pay the salary of a full-time coordinator, the costs of an annual seminar and other operating expenses of the group. LARG's decision-making process is highly democratic, meaning members are asked to vote on most decisions related to reinsurance coverage, underwriting parameters and training procedures.

While LARG is not a licensed entity in any one country at present, its members are interested in obtaining a licence so as to acquire a legal status that will allow it to operate with all faculties. A step towards this formalization was taken as a result of a large fire loss suffered in 2006 by a LARG member, which hit LARG's property XOL reinsurance treaty and sparked some conversations among the group and its reinsurers about standard underwriting criteria. LARG has since developed a set of joint underwriting principles as a condition of membership, which are duly enforced.

None of the LARG members define themselves as pure microinsurers per se, though if we apply as the main criterion for this status an access-based definition of microinsurance (that is, insurance for the otherwise financially excluded or un(der)insured) instead of the traditional income-based definition (insurance for persons on a low income by local standards) then much of the insurance provided by LARG members would most likely be considered microinsurance. Furthermore, since many LARG members were formed (as many cooperatives are) to fill a commercial market gap, their very mission implies ipso facto an alignment with the above access-based definition of microinsurance.

This being said, four LARG members offer products that are specifically branded "microinsurance", all of which are forms of life cover and so do not fall under the purview of the LARG's non-life reinsurance programme. One of the LARG members, however, is working on a project to offer non-life microinsurance and was expected to launch the product in 2013. Irrespective of the group's current relevance to microinsurance, the LARG is an excellent example of how risk pooling can be used effectively by small insurers (formal, informal or otherwise) to achieve cost-efficiencies by increasing the exposure volume, geographic diversity and administrative simplicity of a subject portfolio. Several similar schemes have been mooted for microinsurance though none have to date gathered any steam. The reasons for this will be discussed in more detail in the conclusion to this paper, though some of the key lessons to be drawn from the LARG's success are as follows:

- A consortium approach to reinsurance purchasing increases the purchasing power of each member and results in valuable premium cost discounts afforded by increased exposure volume, risk diversification, underwriting discipline and administrative efficiency.
- The alignment of interest and understanding among consortium members is crucial for the solidarity of the group and to maximize underwriting efficiency, leading to the development of a common ideology and consensus on best practices/standards.
- Resourcing the consortium adequately is crucial to ensure that purchasing and other ancillary activities are managed appropriately.

3.1.2. Aggregate

Aggregate XOL, sometimes referred to as “stop loss” arrangements, are reinsurance contracts that provide annualized protection to cedants. Such arrangements are attractive to cedants because they provide protection against deviations both in the frequency and the severity of claims, though a stop loss arrangement is often difficult to obtain since it has a number of disadvantages for the reinsurer. Specifically, reinsurers are required to assume a greater degree of volatility in potential loss outcomes since both catastrophic claims and/or a large number of small claims can expose the contract. For lines of business where catastrophic claims are rare, such as in health, stop loss arrangements are somewhat common, though in other lines of business, such as property, true stop loss arrangements are harder to come by.

BOX 2: AGA KHAN AGENCY FOR MICROFINANCE, PAKISTAN

When the Aga Khan Agency for Microfinance (AKAM) decided to develop microinsurance in Pakistan in 2006, its belief in the business case for microinsurance, combined with an acceptance of the fact that product design and pricing had to be experimental in the beginning, gave the agency the conviction that it would be able to gather sufficient data in the first few years of the programme to improve product design and minimize the risk of error. But as AKAM did not have an insurance license, it had to rely on existing insurance companies for policy issuance and their appetite for health microinsurance was limited: the initial mispricing risk was high in the absence of prior experience and data, and there was little room for safety margins in the premium, given the inherent “small ticket” nature of microinsurance.

To address the worries of its insurance partner, AKAM partnered with a large international reinsurance company to provide a stop loss cover for the health microinsurance business. To overcome the reinsurer’s initial reluctance to take on such a high level of risk, AKAM arranged a funds provision and hold harmless agreement with the reinsurer in parallel to the stop loss reinsurance contract between the reinsurer and the insurer. Under that agreement, AKAM established a deposit with the reinsurer, from which the reinsurer was compensated for claims payments under the stop loss in a form of retrocession. With this structure, AKAM had very cost-efficiently replicated an insurance captive for its health microinsurance. In other words, AKAM arranged insurance that was underwritten by NJI Life Pakistan, which in turn reinsured the risk with Swiss Re. AKAM also arranged the funds provision and hold harmless agreement with Swiss Re, which compensated the reinsurer for any payments they might make under the reinsurance agreement with NJI Life.

As the stop loss paid only 90 per cent of covered claims up to a limit, the insurer retained some risk and alignment of interest. But as knowledge of this arrangement spread along the value chain, some microinsurance programmes came to view it as a generous (if complicated) donor subsidy mechanism, and underwriting results deteriorated as alignment of interest diverged. In other words, since losses were ultimately paid by AKAM, local stakeholders involved in the scheme including the First Microinsurance Agency and its value chain partners like NJI Life, were not influenced by the risk of underwriting losses and were incentivized to increase sales and provide generous healthcare to their communities rather than being incentivized to control claims costs. Given the delay in obtaining useful data from remote areas and implementing the necessary corrective action through long value chains, these issues could not be resolved satisfactorily, and eventually the stop loss and hold harmless agreement were not renewed.

3.2. PRO RATA

3.2.1. Quota share

Quota share (QS) is the simplest form of reinsurance, where a reinsurer agrees to pay a cedant a predefined percentage of every claim in return for the same percentage of premium for the reinsured book of business.²⁰ To compensate the cedant for its costs of acquiring the business subject to the reinsurance contract, reinsurers will usually offer cedants a ceding commission taken as a percentage of ceded premiums. So if Insurer A buys a 50 per cent quota share from Reinsurer B with a 25 per cent ceding commission, for every dollar of premium A cedes to B it will receive 25 cents in return.

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Quota share is similar to co-insurance contracts in long-term life markets.

On a net basis, after accounting for ceding commission income, A will retain five-eighths of total gross programme premium but only half the gross risk. While this income differential should be largely commensurate with the cedant's related acquisition costs, in practice a ceding commission is a negotiated rate ²¹ and it is possible for insurers to make "risk-free" commission income on the portion of the book ceded.

QS reinsurance fundamentally provides cedants with capacity relief; that is, it frees up solvency capital required by the insurer to be used elsewhere. QS also protects against the risk of initial programme mispricing and the risk of an exogenous factor affecting underwriting outcomes. It can also be supportive of growth, though it does not protect against covariant risk. For more on the uses and benefits of QS reinsurance see section 4.1, "Capacity relief".

BOX 3: ORCHARD INSURANCE GROUP: A QS MICROREINSURANCE CASE STUDY²²



Orchard insurance Group is an insurance subsidiary of the African Alliance Group and sister company to Select Africa, a leading pan-African MFI. Orchard received its licence to operate in Swaziland in 2010 and was formed primarily for the purpose of writing microinsurance business to cover Select Africa's microlending clients. Orchard's current product suite consists of two main product lines: credit life and funeral. Credit life is offered only to microlenders on a mandatory group/portfolio-wide basis, whereas funeral is offered both as a mandatory and a voluntary group product ²³ and on an individual basis (the latter "retail" offering was launched late in 2011).

Prior to Orchard's formation, Select was offering its borrowers credit life and funeral microinsurance products via partnerships with local insurers. In this way Select took no underwriting risk, but instead was compensated for its role in the value chain as a delivery channel. After several years of operating in this fashion, Select's management began to recognize the value of microinsurance products to its individual clients and its institutional credit risk management. They also recognized that the loss history associated with the Select credit life and funeral business was reasonably stable over time and that managing it separately from other causes of credit default increased their comfort with the risk. After developing a firm foundation of understanding in microinsurance underwriting and experiencing some volatility in product pricing, as quoted by third-party insurers, Select staff and management became interested in increasing the company's control over its insurance business. This prompted the development of a full-service business model for the delivery of microinsurance products to Select's clients – Orchard represented the culmination of this exercise. Select's sister microinsurer has since expanded its client base beyond Select and intends in the short term to extend its reach into other lines of short-term business which it is approved to transact in Swaziland.

As a small start-up insurer owned by a predominantly non-insurance financial enterprise, Orchard came into existence with due caution and relied heavily upon relationships with reinsurers from its inception. With the assistance of reinsurance intermediary Guy Carpenter and Company, in early 2011 Orchard purchased a credit life and funeral QS from a panel of international reinsurers, covering 90 per cent of the company's risk. The terms and conditions of this reinsurance agreement informed the company's initial rating and underwriting practices and bolstered its capital base substantially, allowing it to write significantly more business than it would have been able to otherwise. With the full technical and financial support of its reinsurance partners, the company is now moving towards greater risk retention, more underwriting authority and product diversification.

²¹ The insurer may not always have the bargaining power to negotiate the best rate, in which case it may be best to associate with another cedant and/or solicit the services of an intermediary

²² See also Churchill et al. (2012, Box 10). This paper can be found here: http://www.ilo.org/public/english/employment/mifacility/download/mpaper18_models.pdf

²³ A voluntary group product involves an insurer writing a single policy covering an association of some description but allowing the individual members to decide whether to sign up for the coverage, which is not a prerequisite for membership.

Many MFIs are overwhelmed by the prospect of adding microinsurance products to their portfolios, irrespective of the manner in which such products are managed and delivered. Partner-agent relationships are a common and effective way for MFIs to enter the microinsurance marketplace without assuming any underwriting risk. For more sophisticated or larger MFIs, or those with some specific in-house experience relative to insurance, the full-service model is a compelling and viable alternative. Absent a significant controlled portfolio of business, ample internal underwriting expertise and/or a significant initial investment in underwriting capital to support risk retention, starting a new insurer often requires reinsurance support, both technical and financial. Lessons to be drawn from Orchard's experience include the following:

- The full-service model of microinsurance makes sense for more sophisticated, experienced and/or larger MFIs since it allows them to control more aspects of the product offering. It can also represent a profitable new business line so long as underwriting risk is managed prudently.
- Owing to the underwriting risk involved in the full-service model, MFIs interested in starting their own microinsurance business should evaluate the many tangible and intangible merits of obtaining reinsurance support for such an effort, and this evaluation should be renewed periodically. Beyond internal concerns around risk levels, new insurers are commonly required by regulators in their domicile of choice to incorporate certain reinsurance arrangements into the business plan accompanying their license application. The nature of such a regulatory requirement will naturally vary depending on the insurer's initial capital levels and target lines of business.

3.3. INDEX-BASED SOLUTIONS

Microinsurance product development inevitably encounters a variety of challenges. For commercial insurance companies to access the low-income marketplace, entirely new business models are required so as to streamline distribution and attendant administrative processes without compromising product and service quality. Such an innovation imperative erects a significant barrier to market entry – this is particularly true for natural catastrophe risk.

Index-based or parametric insurance products represent a very promising avenue for the implementation of effective and efficient catastrophe risk transfer. Such products can benefit the poor and be supportive of economic development, mainly due to their ability to streamline programme administration, reduce associated expenses and increase the speed of payouts to low-income policyholders after a natural disaster. Since index insurance payouts are priced and triggered on the basis of an objective parameter, they do not require any of the detailed underwriting and loss adjustment processes used for traditional indemnity products.²⁴

However, while administrative expenses may be reduced by the use of index-based products, these can prove rather difficult and expensive to design. Moreover, the implementation and/or expansion of index-based microinsurance programmes may also remain hampered by a number of other external limiting factors. These include data shortage, model development complexity, and a dearth of technical capacity in emerging markets, all of which lead to diminished or non-existent catastrophe risk transfer markets. Recognizing this, a number of aid agencies and government-funded initiatives have begun to focus their efforts on promoting the significant research and development necessary and unlocking the required international resources to deploy effective, efficient and innovative index-based catastrophe cover. These include the ILO Microinsurance Innovation Facility, the Global Index Insurance Facility (GIIF), the Index Insurance Innovation Initiative (I4) and the Munich Climate Insurance Initiative (MCII), to name but a few.

²⁴ While data on expense ratios in microinsurance are sparse, some life and health microinsurance programmes have posted total expenses above 40 per cent of total programme premiums. This is somewhat comparable to the US property and casualty insurance industry, which posted an aggregate underwriting expense ratio of 28% and a loss adjustment expense ratio of 12% in 2012 (Source: SNL Financial, US P&C Underwriting Analysis, accessed in Nov 2013). With appropriate product design, some scale and a well-functioning value chain, index-based catastrophe programmes should theoretically be able to achieve single-digit expense ratios inclusive of underwriting and loss adjustment costs.

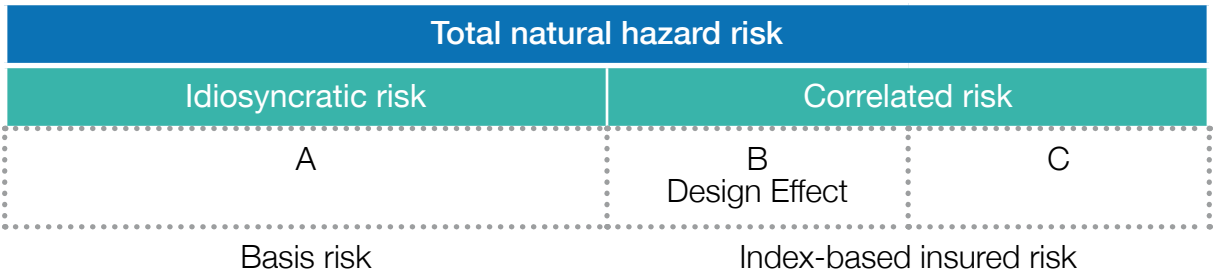
Much of the expertise needed to design index-based products and much of the risk capital needed to support the transfer of catastrophic risk from the developing world resides in the international reinsurance market. It is for this reason that much of the reinsurance market’s activity in microinsurance has taken place in the index-based catastrophe arena. Unsurprisingly a number of notable reinsurance organizations have affiliated with the above-mentioned donor initiatives, either as contractors or as co-founders, in an effort to develop solutions for the management of catastrophic risk among global low-income populations.

As this section will reveal, such reinsurance-driven public–private partnerships (PPPs) play a pivotal role in the establishment and expansion of many index-based micro(re)insurance schemes; to the extent where many reinsurers can be seen acting in a capacity well beyond the traditional scope of their operations, advising on microinsurance product design or development and assisting with the technical capacity building of delivery channels. With this in mind, much of the section that follows will focus on primary index-based microinsurance innovations and challenges, given the heavy influence of reinsurers on this market. Moreover, focusing purely on the reinsurance of index-based microinsurance schemes would not be very informative for readers since such arrangements are generally placed on a simple pro rata or XOL basis and many are structured as pure pass-throughs, where the insurer transfers 90–100 per cent of its risk to the reinsurer.

3.3.1. Basis risk ²⁵

Despite the promise of index insurance and the high-profile initiatives mentioned above, few programmes have attempted to address head-on what is arguably the most notable hindrance to the widespread adoption of parametric catastrophe microinsurance programmes: basis risk. Basis risk – or the risk that an index-based contract payout will be greater than the actual loss incurred by the insured (“basis risk gain”) or less than it (“basis risk loss”) – is unavoidable to some degree in index insurance. However, it tends to be pronounced in a microinsurance context because of the comparative lack of detailed long-term weather and exposure data in low-income markets. When index product payouts are insufficient to cover the losses incurred by a low-income individual or community, the risk of irrecoverable reputational damage to the product is significant without adequate client education coupled with any number of additional financial and/or social basis risk management methods. Figure 6 presents a more technical portrayal of basis risk.

Figure 6. Types of basis risk associated with typical catastrophe index insurance contracts
The total width of the diagram (A+B+C) represents the total risk faced by the insured.
The total basis or uninsured risk under a standard index insurance contract will be the sum of the idiosyncratic risk plus the “design effect” (A+B). The insured risk is represented by the width of area C. The design effect reflects the imperfect ability of any index to predict the average outcomes in the covered zone. The size of B will vary loss by loss.



Source: Adapted from Carter (2011).

²⁵ The introductory paragraphs of this sub-section were paraphrased from Bernhardt and Young (2012). The article can be found [here](#).

Of the many index-based microinsurance pilots worldwide, few have been able successfully to address the issue of basis risk directly. However, many innovative programmes have been launched in recent years with significant technical and financial support from reinsurers in an attempt to increase catastrophe insurance penetration among the poor and to unlock international reinsurer capacity for the purpose. Such schemes tend to be driven from the top down by reinsurance practitioners since the skills to develop and underwrite index insurance reside predominantly in the reinsurance industry, where catastrophe modelling is de rigueur and science-based analytics are already well understood and used. Boxes 4 and 5 outline two such programmes.

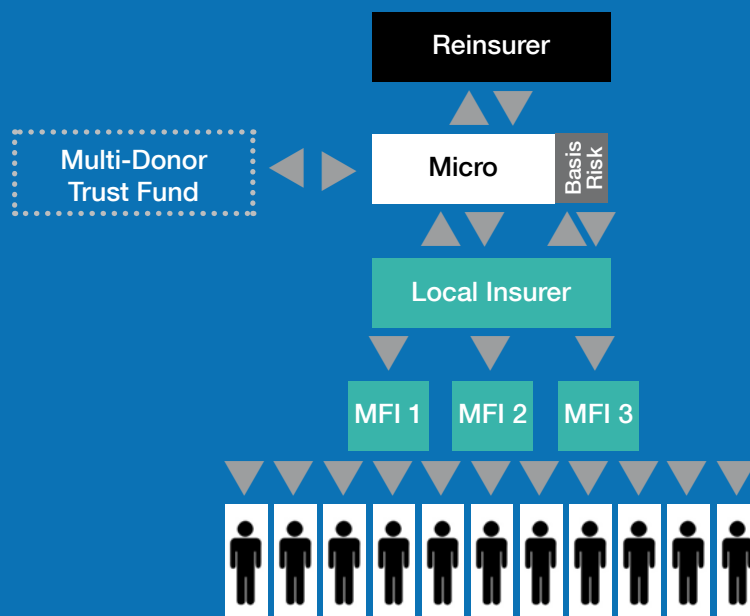
BOX 4: MICROINSURANCE CATASTROPHE RISK ORGANISATION, SCC (MiCRO): AN INDEX-BASED PROPERTY MICROREINSURANCE CASE STUDY



In March 2011, the launch of the Microinsurance Catastrophe Risk Organisation (MiCRO), a licensed insurance company domiciled in Barbados, was announced by its founding partners (see below for details). MiCRO began operations in Haiti in January 2011, supporting the provision of mandatory group catastrophe insurance²⁶ to approximately 58,000 microentrepreneur borrowers of the MFI Fonkoze. Although initially launched in Haiti, MiCRO intends to expand globally, providing catastrophe cover distributed through organizations such as MFIs.

The following case reflects on MiCRO's first implementation of microinsurance in Haiti. This microinsurance programme has since been discontinued in favour of a portfolio cover for Fonkoze, and MiCRO is currently developing new products in Central America.

The basic structure of the initial MiCRO partnership is shown in Figure 7: Fonkoze – Haiti's largest MFI – and Mercy Corps are equity investors in the facility, with support for operations provided by a host of major donors including the UK Department for International Development (DFID) and the Swiss Agency for Development and Cooperation (SDC). Swiss Re provided parametric reinsurance (technically retrocession) to the facility, and CaribRIM and Guy Carpenter & Company's GC Micro Risk Solutions® unit were the contracted operators of the facility (responsible for technical product design and financial risk management/risk transfer placement, respectively).



²⁶ Cover is provided for wind, rainfall and earthquake.

This catastrophe cover provided by MiCRO endeavoured to leverage the lower cost and expediency of parametric insurance while buffering the MFI and its clients against basis risk by offering them the option to purchase comprehensive basis risk cover, subject to certain policy limits. Cover was comprehensive in that it included both idiosyncratic losses and losses (or gains) caused by the design effect portrayed in Figure 6. This unique basis risk approach was developed to provide institutional clients with a hedge against the risk of mismatch between actual losses and parametric payouts, which is a significant impediment to the development of viable parametric micro(re)insurance products worldwide.

MiCRO's parametric product in Haiti was designed to align with Fonkoze's Kore W product, which eliminated borrowers' debt and provided them with an emergency expense payment of 5,000 Haitian gourdes (US\$125). Overall MiCRO paid out nearly US\$9m in parametric and basis risk claims to Fonkoze in its first 2 full years of coverage, well over the amount of associated premium collected. In addition, because Fonkoze was not fully insured for the total value of the Kore W products outstanding with clients, the MFI absorbed a significant portion of the losses.

An open question about the sustainability and scalability of this model remains the role of donor capitalization for the provision of basis risk coverage and the pricing of the associated risk. As MiCRO expands to reach additional countries and to provide different types of cover, it will need to adapt the model to reflect the lessons learned in Haiti and reduce its dependence on donor funding over time. If it is able to develop a product that is both affordable and financially sustainable, while maintaining the efficacy of its operations in order to transition away from grants, MiCRO could play a key role in extending disaster microinsurance coverage to many more low-income communities.

Lessons learned from MiCRO's experience in Haiti included the following:

- Basis risk can be insured against if techniques can be developed to quantify the risk, though insuring both types of basis risk – idiosyncratic and design-effect – with a single policy can be extremely challenging since such risks are very different. Design-effect basis risk losses in particular have a high potential to create an adverse result, given the extreme vulnerability of low-income clients to catastrophe events and the difficulty of designing affordable parametric index products that capture all aspects of this vulnerability appropriately.
- Innovating can be expensive and time consuming. After less than 3 years of operations and US\$9m in claims payments, MiCRO's coffers need to be replenished to allow the company to continue underwriting basis risk coverage. Finding a sustainable new business model in a difficult frontier market can take years, ample human resource and a significant amount of cash.

Source: Adopted and updated from ASEAN (2012) and supplemented with the first-hand knowledge of the author.

3.4.1. Triggers

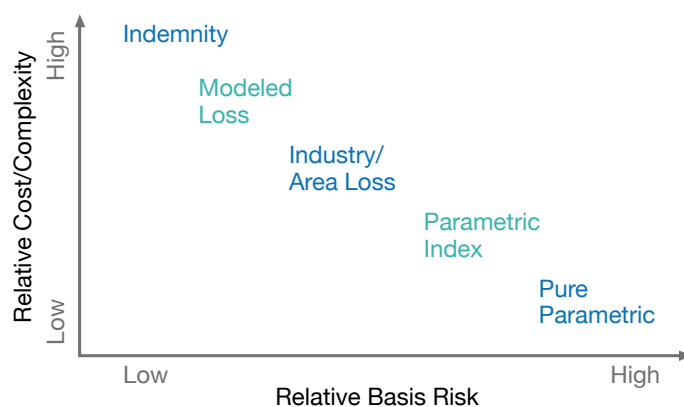
The main difference between index-based microinsurance contracts and traditional indemnity or quasi-indemnity²⁷ contracts is the objective determination of loss of the former. To determine whether a loss has occurred, index-based contracts rely on what is called a "trigger" or a predefined threshold at which a payout becomes due. Types of triggers which are or could be used for index-based micro(re)insurance contract design include the following:

²⁷ Quasi-indemnity cover is a contract that is triggered by some actual loss but does not compensate insureds dollar for dollar as with full indemnity contracts. An example would be a rubric-based damage assessment cover whereby the amount of the payout depends roughly on the extent of damage actually incurred by the insured (for example, assessed "total loss" as predefined equals US\$100 payment, "partial loss" as predefined equals US\$50 payment, etc.).

- **Parametric loss:** A parametric loss contract uses an objective measurement of a parameter – such as wind speed, rainfall amount or earthquake ground motion – to determine loss amounts. Events measuring above the stated parameter(s) will result in loss payouts. Pure parametric triggers – where the parameter itself determines the occurrence and magnitude of loss – are differentiable from parametric index contracts, where a parametric reading is fed into an indexation formula to determine the loss amount. In either instance parametric loss triggers often involve substantial basis risk.
- **Industry or area loss:** Industry or area loss triggers depend on actual aggregate losses experienced in a given community and require an independent third party to verify community loss amounts. Contracts will typically trigger if aggregate losses exceed a certain predefined threshold, and can involve substantial basis risk if the insured portfolio in a given community does not reflect the exposure characteristics of the whole community. The smaller the community used for index loss determination, the lower the associated basis risk. Yield-based or “multi-peril” crop insurance cover could be classed as area loss triggers insofar as they are set at the community level or some higher administrative level, for example.
- **Modelled loss:** A modelled loss trigger uses parametric inputs from an event to simulate the event’s characteristics and its effects on the covered exposure portfolio. Models are usually “escrowed” (that is, held in stasis and validated by an independent third party) and run post-loss by a modelling firm (and validated by the escrow agent) to determine the magnitude of payouts. Generally today such complex trigger designs are not warranted or practical in the context of micro(re)insurance, though this could change as technology improves and the reach of existing catastrophe models extends further into developing markets.

Each of these trigger types has advantages and disadvantages, which should be evaluated on a case-by-case basis. Generally evaluation of trigger design usage should take place along two dimensions: the cost and complexity of trigger development and the maintenance and the associated basis risk (see Figure 8). Coarser index products will generally have a higher degree of basis risk, though often the cost of developing a more granular (and more complex) version of the product outweighs the associated benefits in terms of basis risk minimization.

Figure 8. A stylized view of the relative complexity/development cost and basis risk associated with certain index-based trigger types versus indemnity contracts



BOX 5: MUNICH RE CLIMBS INITIATIVE: AN INDEX-BASED PROPERTY MICROREINSURANCE CASE STUDY

In 2011, Cooperative Life Insurance and Mutual Benefit Services (CLIMBS) entered into a public–private partnership with Munich Re, with support from the Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ), to strengthen the sustainability of member MFIs in the Philippines. As an umbrella cooperative with more than 2,000 cooperative primaries and federations countrywide, CLIMBS was able to provide a sizeable distribution network for the extreme weather event insurance product designed principally by Munich Re. The parametric index for the product was structured at the municipality level and categorized wind speed and rainfall into 10-, 15-, and 20-year events. Using these benchmarks as payout triggers, CLIMBS was equipped as the local insurer to make payments to local cooperatives based on the percentage of their loan portfolios affected. Severe weather events were monitored in real time via satellite across the entire country and timely reports were made available online to all member cooperatives. Munich Re acted as the reinsurer to the project, providing reinsurance capacity to enhance the long-term sustainability of the programme.

Loss payments (if any) were meant to strengthen the cooperatives' lending operations and to keep them active shortly after loss occurrence – a critical time for local disaster recovery. With stronger loan portfolios, the cost of microcredit should have also been reduced. Furthermore, by a binding statement of principles, the local cooperatives committed themselves to passing on any insurance proceeds to those individual members most affected by a given catastrophic event. This innovative institutional-level claims methodology placed the onus for equitable distribution of loss funds on the local cooperatives and relied on the mutuality of member cooperatives to serve the best interests of their clients. This in turn served to mitigate the potential adverse impact of basis risk on individuals. Insurance payouts were intended for use by the individual beneficiaries to assist them, for example, in rebuilding their houses or replacing livestock or other assets after a tropical cyclone.

Although the results of the CLIMBS project have yet to be fully assessed, and the programme is presently dormant, it does offer some insight into the value of public–private partnerships that enhance disaster resilience by bringing advanced disaster risk financing tools and technology to bear on behalf of individual farmers and landholders. It also highlights the potential usefulness of mutual insurance structures to the downscaling of index-based insurance programmes and to the equitable management of basis risk.

Lessons learned:

- Wholesale aggregation of risk increases the size and potential scalability of the programme significantly versus partnering with individual cooperatives.
- A mutual operating structure can facilitate the management of basis risk among individual members since the effects of any mismatch in actual losses versus indexed payouts are smoothed across a cooperative group and the rules/mechanisms for this smoothing are mutually determined among group members, thereby minimizing the risk of discontent over outcomes.

Source: Munich Re (2010).

Given the experiences recounted in Boxes 4 and 5 above, phased programme development is important to the sustainability of any index insurance programme. In many cases there is a great deal of concentration of resources and effort on launching a pilot programme though very little follow-through with respect to growing the pilot and placing it on a firm commercial foundation where programme volumes are sufficient to support all risk transfer value-chain stakeholders. It takes time (sometimes years) for the ultimate beneficiaries of index insurance products to begin to truly appreciate the benefits of the cover, for delivery channels to build their sales and administration capacity and for (re)insurers to adjust and improve the product so as to better attend to client demand. All in all, developing sustainable markets for index insurance requires a long-term investment/commitment on all sides.

In the longer term, the microinsurance market for property and agriculture risks may transition from parametric index-based solutions to area-loss or even indemnity solutions, where basis risk is minimized and risk transfer maximized. Broadly, the business model innovations, technology, data collection and

validation efforts and cultural change required to see such a revolution come about are probably many years away. In the meantime, the index-based initiatives featured in this report and other similar initiatives are making significant contributions toward the mitigation and minimization of basis risk, and the lessons learned from each project will inform many similar innovations as time goes on. Reinsurers are well positioned to continue to drive this innovation as they seek new business in alternative, emerging jurisdictions and continue to possess the lion's share of commercial risk industry expertise with respect to index-based product design and catastrophe risk modelling and management.

4 CORE FUNCTIONS OF MICROREINSURANCE

Microreinsurance, like traditional reinsurance, serves one or several of six main functions, each of which is explained in this section. To provide some background to this, it is important to explain the broad types of risk that reinsurance is generally purchased to protect. These are:

- **Risk of random fluctuation:** This is the risk of deviation of actual claims from the estimated expected value when – by chance – a particularly high or low number of insured events occur and/or there is a particularly high or low number of individual claims. Covariant risk, or the risk that an event will affect a large number of the insured items/people at the same (for example, an earthquake, flood or pandemic), is perhaps the most commonly reinsured form of random fluctuation.
- **Risk of error:** This is the risk of deviation that results from an incorrect assessment of a given probability distribution. The risk of error is most present when an insurer expands into new fields. While there is plenty of global mortality data, there is very little data on the mortality of, say, low-income people between the ages of 20 and 65 in a particular region and even less on their morbidity. The same holds true for property or crop damage in new markets as well. Based on this reality, errors in pricing for new microinsurance programmes are likely. Reinsurers are often willing to assume this risk, especially if the profit potential of the new market is promising. However, they try to limit their loss positions by participating in the primary underwriting of new cover, requiring stringent monitoring by insurers and/or delivery channels to uncover errors as early as possible, and reserving the right to review reinsurance conditions as necessary.²⁸ Understandably, reinsurers often have more information on new perils or coverage forms than local insurers in less mature markets, given their experience from other markets. It is often reinsurers who bring new insurance products to new markets and are more comfortable assuming the risk of error than relatively inexperienced local insurers. However, in many lines of microinsurance business the risk of error is likely to be a major deterrent for reinsurers. This may be because there is little room for margins intended to compensate for pricing errors in microinsurance premiums and an aggravating factor may be that the risk of error is not diversifiable, and grows with growing insurance volumes; therefore, the larger the anticipated scale of a microinsurance venture, the more worrisome this risk becomes for (re)insurers, subject of course to the potential velocity of catching and implementing corrections as needed (which, owing to the typically long value chains in microinsurance, can be slower than for conventional insurance).
- **Risk of change:** This is the deviation from the estimated value of a given loss distribution due to an unanticipated exogenous change that took place after the distribution was generated impacting the slope of the probability distribution. All insurance is subject to the risk of change, or the risk of external factors affecting the profitability of a given programme. Common examples of such risk include an adverse change in a salient macroeconomic interest rate or a political act or event that has an adverse effect on a local microinsurance plan. The only remedy for such risk is timely corrective action, which is feasible in the absence of any long-term guarantees. This is a strong argument to avoid long-term guarantees in experimental new lines of business, and microinsurance could be included in this category. But even when no policies with a duration of longer than 1 year are sold, it can take time to realize that the premium has become inadequate – because of the long and often manual process of microinsurance data collection, collation and distribution, from the field to the underwriter – and to prescribe and implement a remedy – because of the long value chain in microinsurance, which often requires agreement from several partners (especially in the instance of often complex PPPs). In this situation appropriately structured reinsurance can ensure the financial survival of a microinsurer or a particular microinsurance programme.

²⁸ While reinsurers may have the necessary technical design knowledge, in microinsurance it usually makes more sense to determine what clients want with market research rather than imposing products from the top down.

Generally speaking, reinsurance is not only used for the purposes of risk transfer: sometimes the so-called “intangibles” of partnering with a reinsurer can weigh significantly on a cedant’s decision to engage with it. Suffice it to say that a reinsurance transaction rarely fulfills a unilateral purpose – cross-functionality within single transactions is common and sometimes a combination of reinsurance and non-reinsurance (for example, consulting) arrangements is warranted, to achieve more complex or holistic aims.

The core functions of microreinsurance are outlined in this section..

4.1. CAPACITY

Reinsurance can enable insurers to write large individual risks, or portfolios of risk, which may be larger than they could take on alone, owing to regulatory restrictions (for example, no individual risks greater than 10% of surplus allowed), rating requirements (for example, premium-to-surplus or other financial leverage ratios) or capital constraints.

4.2. SURPLUS RELIEF

One of the reasons insurers purchase reinsurance is to achieve a degree of surplus relief, most often via some form of pro rata protection. The motivation behind the purchase of pro rata reinsurance is generally tied to the internal cost of capital considerations and the strain which growth can place on internal capital ratios. For instance, a start-up microinsurer with a large distribution channel (for example, a mobile network operator) and/or limited initial capital may find itself quickly on the wrong side of certain financial metrics that are used as gauges of insurance company solvency, such as premium-to-surplus (a generally accepted benchmark for this ratio in non-life business is 3 to 1). A QS reinsurance transaction with a well-rated and legally admitted counterparty²⁹ enables a cedant to access the balance sheet of a reinsurer and to limit the potential negative impact of new business on its own finances. The case study of Orchard Insurance Group in Box 3 provides a good example of the effective use of QS reinsurance by a microinsurer.

Table 2. A basic balance sheet accounting scenario analysis demonstrating the ability of QS reinsurance to provide cedants with surplus relief (US\$)

QS reinsurance and capacity relief demonstration	No reinsurance	50% QS reinsurance w/30% ceding commission
Assets		
Net premium	1 000 000	500 000
Ceding commission income	0	150 000
Other	1 000 000	1 000 000
Total assets	2 000 000	1 650 000
Liabilities		
Net unearned premium reserve	1 000 000	500 000
Other	700 000	700 000
Total surplus	300 000	450 000
Premium to surplus ratio	3:33	1:11
Difference in surplus	150 000	

²⁹ Local regulations must allow cedants to take credit for the cession of risk to a given counterparty in order for QS risk transfer to have the desired effect on the cedant’s capital position. The acceptance of a given counterparty’s credit will generally depend on its rating and regulatory status (e.g. admitted/licensed, “A+” or better, etc.). These requirements vary by jurisdiction.

Many reinsurers prefer to take a pro rata position on new or small accounts since it increases their likely premium income more than XOL coverage alternatives. Moreover QS coverage increases reinsurers' control of subject business by placing them in a "first loss" position and often making them the majority risk bearer with respect to the underwriting results of a new reinsured book.

4.3. RESULTS STABILIZATION

Reinsurance can be used to stabilize underwriting results. Results are at risk of instability either from acute risks, which manifest quickly and dramatically (see section 4.4 for more detail) or chronic risks affecting aggregate portfolio quality over time, such as premium mispricing (a.k.a. the risk of error) or an unexpected shift in exogenous circumstances (a.k.a. the risk of change). Reinsurance can be used to smooth underwriting results by cutting off peak losses or diminishing the aggregate effect of a given portfolio's deterioration on overall company results. XOL (per occurrence or aggregate) is most commonly used when a cedant wishes to assure its stakeholders of results within certain limits. In some circumstances QS and XOL reinsurance may be used together to achieve the degree of stabilization desired; for instance, a QS coverage applying to a cedant's gross portfolio with an XOL protection applying to the cedant's net position.

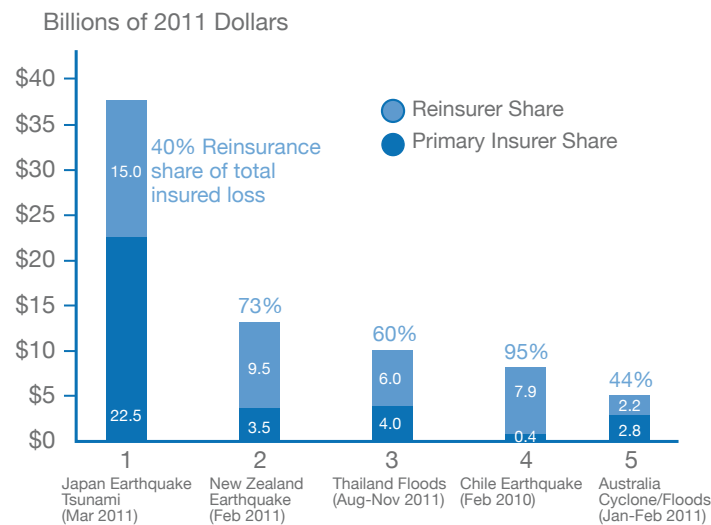
4.4. CATASTROPHE PROTECTION

Sustainable underwriting results are characterized by a microinsurer's ability to manage the various above-mentioned chronic risks, sometimes without reinsurance. But even large homogeneous risk pools in stable regulatory environments with adequate premium can face ruinous acute losses when catastrophes hit. Earthquakes or floods of previously unimaginable dimensions as well as intentional or unintentional man-made disasters can in one day cause more insurance claims than in years of normal experience, and without reinsurance some such events could wipe out even the strongest insurance companies in the world.

To some extent, this risk is diversifiable: disasters seldom affect all regions of a country with the same strength, so a microinsurer who has a good geographic spread of business may be able to compensate for catastrophic losses in the north with profits in the south to some extent (and vice versa). However, a microinsurer operating in a small country (for example, any of several dozen small island states) versus a large one (for example, India) has much less diversification potential. Moreover profits in microinsurance are seldom large enough to compensate for big regional losses, and most microinsurers have geographic concentrations – such is the general nature of microinsurance distribution today in low-income communities. Moreover, quantifying the benefit of diversification requires expertise that not all single-country or regional insurers, regulators and rating agencies have.

It is in the catastrophe risk market that the expertise of reinsurance practitioners in decomposing and redistributing risk on many balance sheets has possibly the biggest impact. This is evidenced by recent catastrophic loss events in markets as diverse as Japan, Australia, New Zealand, Chile and Thailand, where reinsurers paid significant portions of overall insured losses – between 40 and 90 per cent for the events sampled (see Figure 9). While by no means a comprehensive study, this ratio implies a heavy reliance on reinsurance capital to support the primary assumption of catastrophic risk in many developed and developing jurisdictions.

Figure 9. In recent years reinsurers have paid a high proportion of insured losses arising from major catastrophic events worldwide



(Source: Insurance Information Institute from reinsurance share percentages provided in RAA, ABIR and CEA press release, 13 Jan 2011. Economic loss figures from CRED EM-DAT.)

Current catastrophe (re)insurance markets, however, do not yet cover low-income populations extensively. This is primarily due to the fact that the vast majority of (potential) catastrophe victims in emerging markets remain un(der)insured. Somewhat paradoxically, the poor tend to live in countries exposed heavily to natural catastrophes, and are often forced to live in the most perilous areas in the least protected homes. Because of this, as microinsurance penetration increases, so too will the exposure of insurers' bottom lines to catastrophes. So not surprisingly, the first reinsurance cover many microinsurance programmes desire is catastrophe XOL.

4.5. MARKET ENTRANCE OR EXIT

This function of reinsurance is intimately tied with the other functions discussed in this section, since, for example, a reinsurance transaction supporting market entrance or exit will often provide capacity relief or be coupled with essential underwriting expertise (see section 4.6). As mentioned in the discussion of risk of error above, reinsurers may be better placed than local insurers to develop and deploy certain new products since they may have more experience in a specific class of business gained from global operations or more resources for research-and-development-type activities. On the side of market exit, reinsurers often have expertise either in claims management or business processes to support the more efficient run-off or management of existing portfolios.³⁰

Reinsurance in general plays an important role in filling market gaps and developing insurance markets in emerging economies. Knowledge is transferred to local insurers through their engagement with international reinsurance companies and can go as far as reinsurance companies taking a leading role on the primary side (including through product development or policy form drafting, for example). Cedants' willingness to enter the microinsurance market beyond standard life or accident products is often only reached once the availability of reinsurance has been confirmed. Moreover, many insurance markets require certain amounts of reinsurance coverage by law.

³⁰ Reinsurers will sometimes acquire closed books of "long-tail" business through transactions known as loss portfolio transfers or LPTs. In these situations the reinsurer assumes the reserves associated with a book of business where claims have already been incurred and bets effectively on its ability to administer these claims more efficiently or aggressively than the ceding insurer could. Exit can also be achieved through novation of an active book of business, whereby the assuming party (usually another insurer in this case) acquires all the rights associated with the active administration of the ceding party's business, in the hopes of growing the book.

4.6. EXPERTISE

In addition to the five main functions above, reinsurance fulfills a sixth, often unsung, role in the form of supplying intellectual capital or expertise. Reinsurers hone valuable skills and build up associated services by transacting business with multiple clients in many countries. This gives them access to invaluable data and experience which allow them to help (or require) local cedants to meet global best practices in their underwriting and risk management procedures. They can offer this expertise to insurers to assist them with entering (or exiting) lines or classes of business, such as microinsurance, by supporting the development of new products.

5 MICROREINSURANCE SUPPLY AND DEMAND

Every peril that can be insured can be reinsured. Mature insurance markets have developed a considerable diversity of lines of business, and the characteristics for insurability carry over to reinsurability. Not all perils demand the same degree of reinsurance, however. Large, stable portfolios of small risks with reasonably similar and small sums insured and/or broad geographic spread tend to need less risk transfer than, say, a small portfolio of highly concentrated and very large risks.

The first portfolio description in the paragraph above represents a good portion of microinsurance written today, specifically the many credit life books written by and through MFIs. In markets where microfinance is prominent or well understood, local and multinational insurers are generally sufficiently well equipped to underwrite and manage such risk and thus do not have much need for microreinsurance to support engagement in this line. Credit life portfolios are also not generally exposed to covariant risk to the same extent as other microinsurance products, which diminishes the demand for a key form of microreinsurance protection: catastrophe or per occurrence XOL.

On the other hand some credit life portfolios might be unable to access reinsurance support if needed, owing to important supply-side considerations, such as a lack of scale or scalability. As should by now be apparent, reinsurers have a variety of different preferences. Some apply to reinsurers in general. For example, most reinsurers prefer to be long-term partners when supporting the development of new lines of business such as microinsurance, so that their initial investment can be amortized and early experimentation (with highly uncertain results) paid for. They also like to see that a programme has the potential to reach scale or critical mass to support such amortization. And they prefer to do business in countries with predictable political systems and rule of law. Some preferences, on the other hand, are specific to a particular reinsurer, such as a focus on life insurance or on very large, very rare events (for example, catastrophic risk). Some preferences are regularly updated according to the reinsurer's assessment of the market cycle.³¹

Beyond credit life business, the market for microreinsurance is not easy to understand or navigate. Because of this opacity, the development of a robust microreinsurance market is hampered, resulting in gaps in commercial supply of and demand for related products and services. Overall the reasons for these gaps vary. For the purposes of this paper, supply and demand are assessed across three different basic dimensions:

- (1) Size and sophistication of cedant:** Insurer size and sophistication are usually positively correlated, meaning that as the size of an insurer increases so too does its level of sophistication. As a cedant grows in size and sophistication, its need for microreinsurance and value-added services tends to diminish. Paradoxically the willingness and ability of reinsurance counterparties to transact business with them increases.
- (2) Size of programme:** A lack of current or potential scale in individual microinsurance programmes is a hindrance to gaining effective commercial microreinsurance support. Very few programmes, excepting those in large countries supported heavily by government subsidy (which by some definitions wouldn't even qualify as microinsurance but rather as "social insurance"), have reached sufficient scale to attract open market microreinsurance support.

³¹ Due mainly to relatively low barriers for market entry, reinsurance is considered a highly cyclical business: after a year of very bad insurance results (following, for example, a major natural catastrophe) the demand for reinsurance grows in line with the capital depletion of insurers, driving up reinsurance premium rates (the start of a "hard market") and attracting new reinsurers. This reactive surge of supply starts eroding premium margins, leading to a "soft market" which eventually depletes reinsurers' collective capital levels, forcing some to exit until another exogenous event starts the cycle over again. For a graphic view of the cyclical nature of the global reinsurance market, see <http://www.gccapitalideas.com/tag/world-rol-index/>.

(3)Line of business: This is what might be referred to as the “microinsurance complexity paradigm” (or possibly paradox): as microinsurance products increase in complexity (for example, move down the continuum towards index-based and health products), the amount of value reinsurers can add to a given programme increases. Ironically, since such products require greater investments in time and resource to develop and underwrite and tend to be more difficult to distribute and administer (and therefore scale), reinsurers’ general willingness and ability to provide risk financing support is inversely related to their ability to add value when evaluated on a purely commercial basis.

Figure 10 illustrates how these three dimensions relate generally to demand for and supply of microreinsurance. While there are some nuances to any given situation, and while the diagram is far from scientific, significant gaps clearly persist in the marketplace at present. Based on this illustrative assessment, the strongest indicator of market fluidity is the size of a given programme, followed by the complexity of the product in question. The size of the cedant matters less though is still a factor. These findings and others will be discussed in more detail in sections 5.1 and 5.2.

Figure 10. Assessing commercial supply of and demand for microreinsurance

Supply/Demand Matrix - Legend									
○ 0	◐ 1	◑ 2	◒ 3	◓ 4	● 1	● 0	● (1)		
None	Low	Low-Mid	Mid-High	High	Excess	Adequate	Insufficient		

Illustrative Microreinsurance Demand Matrix		Relative Size of Cedant			Relative Size of Program			Line of Business		
		Small	Medium	Large	Small	Medium	Large	Life & Accident	Health	Property & Agriculture
Type of Reinsurance	QS	◐ 3	◑ 2	○ 0	◐ 3	◑ 2	◐ 1	◐ 1	◑ 2	◐ 1
	XOL	◐ 3	◑ 3	◐ 1	● 4	◑ 2	◐ 1	◐ 1	◑ 2	● 4
	Index	◐ 3	◑ 3	◐ 1	● 4	◑ 2	◐ 1	○ 0	◑ 2	● 4

Illustrative Microreinsurance Supply Matrix		Relative Size of Cedant			Relative Size of Program			Line of Business		
		Small	Medium	Large	Small	Medium	Large	Life & Accident	Health	Property & Agriculture
Type of Reinsurance	QS	◐ 2	◑ 2	◐ 3	◐ 1	◑ 2	◐ 3	◐ 3	◑ 1	◐ 1
	XOL	◐ 2	◑ 2	◐ 3	◐ 1	◑ 2	◐ 3	◐ 3	◑ 1	◐ 1
	Index	◐ 2	◑ 2	◐ 3	◐ 1	◑ 2	◐ 3	○ 0	○ 0	◐ 1

Supply Excess (Deficiency)		Relative Size of Cedant			Relative Size of Program			Line of Business		
		Small	Medium	Large	Small	Medium	Large	Life & Accident	Health	Property & Agriculture
Type of Reinsurance	QS	● (1)	● 0	● 3	● (2)	● 0	● 2	● 2	● (1)	● 0
	XOL	● (1)	● (1)	● 2	● (3)	● 0	● 2	● 2	● (1)	● (3)
	Index	● (1)	● (1)	● 2	● (3)	● 0	● 2	● 0	● (2)	● (3)

Such assessments for new and/or complex products like microreinsurance are challenging. This diagram attempts to distill the results of research conducted for this report, as well as the author’s experience, to determine where market gaps exist. The green, yellow and red icons in the third section respectively represent either excessive, adequate or insufficient supply to meet demand. (Source: Author, qualitative research).

Briefly to synthesize the findings from the analysis presented in Figure 10, reinsurance is most in demand from small cedants, with small programmes in relatively complex and catastrophe-prone lines of business. Supply on the other hand is most readily available for large cedants, with large programmes and in relatively simple lines of business. Donors have been instrumental in bridging supply–demand gaps with grant funding and some reinsurers have taken it upon themselves to subsidize their involvement in this burgeoning market sector. Until property, agriculture and health programmes begin to scale up, by and large these gaps will persist.

5.1. SUPPLY

While there are several notable exceptions (many of them featured in this paper), and while interest appears to be high, there is a general lack of action among commercial reinsurers regarding microinsurance business despite its apparent market potential. This is surprising since microinsurance would seem a very compelling opportunity for commercial reinsurers in the aggregate (see section 5.2 on demand).

According to research conducted by the author, of the top ten global reinsurers in the microinsurance market (see Table 1) only three – Munich Re, Swiss Re and Hannover – are appreciably involved in supporting transactions at present. Others have dipped their toe in the water (for example, Lloyd's), have taken a purely passive role (for example, SCOR) or have already come and gone (for example, PartnerRe). Some smaller reinsurers (for example, Achmea Re) have a notable presence and one reinsurance broker (Guy Carpenter) continues to be involved though overall the reinsurance market's role in supporting the hundreds of microinsurance programmes in existence is limited. Of these reinsurers it seems only Swiss Re and Hannover approach the microinsurance market on a largely commercial basis. Others, notably Munich Re and Achmea, run their microinsurance activities alongside or within their sister foundations and categorize most of their related corporate activities as corporate social responsibility (CSR) as opposed to a business line (see the appendix for a more detailed summary of reinsurance organizations active in microinsurance).

Despite the potentially large volume of new business for reinsurers, in its current form the microinsurance market is diffuse, and individual programmes (outside India and China, and not heavily subsidized by governments) are generally quite small. This can make it difficult for reinsurers to justify the investment of time and resource necessary to underwrite innovative new programmes in new territories, which in microinsurance tend to have a limited history and limited potential to reach scale in the short term, and operate in relatively small markets.

Another concern cited by certain reinsurers for their hesitance is the potential inverse relationship between the demand for microreinsurance and the size of a given programme. As microinsurance portfolios grow to their anticipated scale, the need/demand for secondary capacity may diminish as the risk in the programme becomes more predictable by virtue of the law of large numbers and the insurer becomes more savvy. In this scenario reinsurers fear that whatever intellectual capital they have invested in the programme's growth at or near inception will have been absorbed by the insurer, along with the majority or all of the underwriting risk, leaving the reinsurer with nothing to show for its investment in the long term.

Taking the above challenges into consideration, a given microinsurance product or project is subject to evaluation by a potential microreinsurance partner from various perspectives, ranging from the purely commercial to the purely social. Some reinsurers will take a purely commercial view. In this instance an opportunity is deemed by the underwriter to be either commercially viable or not. The criteria for such an assessment can be complex though putting it in simple terms, a reinsurer evaluating microreinsurance from a short-term commercial perspective will expect a payback on its initial investment to fall within overall corporate profitability expectations.

While there may be some degree of leniency towards microinsurers regarding profitability standards (for example, as compared to, say, Florida property catastrophe business) and perhaps an allowance made for the innovative nature of microinsurance and the benefit of diversification that it would bring, if a reinsurer does not expect a return on its initial investment within a reasonable timeframe (considering ongoing administrative and capital charges) and expects in the interim to be supporting a project far afield and on an uncertain path towards scale and sustainability, it is unlikely to elect to provide support. Since microinsurance is still very much an evolving field and individual programmes have rarely achieved scale without ample government intervention and/or subsidy, most programmes remain quite small and will stay as such for the foreseeable future, subject to improvements in untried and untested business models, cultural shifts and/or the development of innovative high-volume delivery channels.

Given this situation, approaching microreinsurance in general is a difficult proposition from a purely commercial angle. This is further the case since there is very little precedent for (or at least very little public disclosure of) the profitability of existing microinsurance business, even programmes which have scaled. This makes it impossible for reinsurers (and other would-be capital providers) to make an informed microreinsurance investment decision based upon traditional investment criteria.

In further digesting this point, it is instructive to think of reinsurance as an alternative source of capital used by insurance companies to complement debt and equity. From this angle reinsurers could then be considered a type of investor. It therefore may be useful in the recent historical context of the microinsurance market's development to analyse briefly where microinsurance investments have been made to date. The following is a non-exclusive list of some recent notable transactions:

- Sweden-based BIMA, a specialist mobile insurance technical service provider, received an investment of US\$7 million in 2012.³²
- UK-based MicroEnsure, a specialist microinsurance administrator and intermediary, received an investment in 2012 after pioneering mobile microinsurance in Ghana and expanding to other markets.³³
- Mauritius-based MFS Africa, a specialist mobile money and value-added service provider, received an investment of US\$2.5 million in 2011 and is in the process of raising an investment of a further US\$10 million.

As is clear, the above transactions all centre on the promise of distribution by mobile network operators. While this sub-set of the overall microinsurance market appears to be in the process of becoming commercially viable, secondary risk transfer opportunities therein are quite limited since the products presently being distributed via mobile phones (with the notable exception of the Kilimo Salama programme operated by Syngenta and Safaricom in Kenya, which is supported by Swiss Re) tend to be homogenous short-term life products with relatively low catastrophic loss potential.

While it may be impossible for the time being to justify an investment in microreinsurance through the promise of meaningful short-term underwriting income, some reinsurance organizations have been able to profit from their expertise through consulting. The availability of funds to support such consulting work can serve to unlock corporate resources for specific projects, though very rarely does the consulting income alone meet the profit expectations of reinsurers.

For all of these reasons it is unlikely that a reinsurer will enter the microreinsurance market without requiring at least some potential long-term gains and/or “non-commercial” benefits. With a few notable exceptions, many reinsurers are having considerable difficulty successfully straddling the divide between traditional (re)insurance and micro(re)insurance and finding a way to profit from micro(re)insurance in the long term – hence certain market exits (see the appendix for details of the activity of specific reinsurers). This in turn results in product/service access difficulties on the demand side.

By and large there is a lack of creativity regarding business models in microreinsurance regarding both the programmes already in existence and those being developed, as well as a general unwillingness to forego a short-term return in favour of investment in a long-term prospect. Without some sort of business model innovation, the only ways for commercial reinsurers to write microreinsurance successfully are by targeting large programmes, of which there are very few.

³² <http://www.microcapital.org/microcapital-brief-leapfrog-kinnevik-invest-7m-in-mobile-microinsurance-provider-bima/>

³³ <http://www.opportunity.org/press-releases/opportunity-international-courts-new-strategic-investors-for-microensure/>

On the other hand, by entering into PPPs (which usually require significant staff time and entail some form of in-kind subsidy for technical assistance) or by simply agreeing to forego short-term returns in favour of long-term and intangible gains, reinsurers can achieve market share, gain a first-mover advantage and learn a great deal about an emerging market segment. For some reinsurers the pull of these potential benefits have proven so compelling that they have engaged in the market pro bono, with CSR goals acting as a primary driver.³⁴ There are of course opportunity costs associated with any such investment and these will need to be evaluated on an individual basis.

5.2. DEMAND

As regards reinsurance, there appears to be a general lack of knowledge of good practices and available secondary risk transfer options among microinsurance practitioners. This leads to low awareness surrounding the potential benefits – both tangible (financial) and intangible (non-financial) – associated with microreinsurance, thus hindering demand unduly. It also impedes active and prospective programmes from engaging with reinsurers appropriately, if at all.

Demand is also suppressed by the business mix in microinsurance, which again is dominated by credit life, where large amounts of reinsurance are simply unnecessary because of the nature of the business. On the other hand demand for reinsurance is high in the agriculture or natural disaster realms, though the overall volume of such business is limited.

For those nascent programmes where a need for microreinsurance products or services has been acknowledged, in order to access such support it is essential for the programme manager to develop a convincing business model and growth plan. In the absence of obvious short-term commercial growth prospects, government premium support or a commitment from a donor, reinsurers are unlikely to be interested in supporting the project. If growth prospects are long term then it may be essential for a pilot programme to establish a PPP with a donor (if such a relationship does not already exist) to support business development and programme expansion, in order to attract commercial reinsurer involvement.

Overall, if demand for microreinsurance eventually catches up with demand for traditional reinsurance, the market should become much more fluid than it is today. The market's potential size is estimated in Box 6.

BOX 6: TOTAL GLOBAL MICROREINSURANCE MARKET POTENTIAL: A DEMAND PERSPECTIVE

With over 1 billion lives expected to be covered by 2020¹ and US\$40 billion in potential ultimate direct written premiums² worldwide, the market for microreinsurance and related services is potentially quite large. To contextualize the potential opportunity for reinsurers in microinsurance, the following is an estimate of the potential size of the global microreinsurance market.

Reinsurance usage varies across countries and regions depending on diverse factors including regulations, cultural tendencies and market size. One common way to measure usage of reinsurance in a given market or by a certain company is to calculate the related “cession ratio” (also sometimes referred to as the “reinsurance ratio”), which is the total amount of reinsurance premiums ceded to reinsurers over the total amount of insurance premium written. While this is a coarse measure, distorted in some instances by large or unique reinsurance transactions, legal requirements and other factors, when it is calculated over a wide enough area, the effects of outliers and market distortions should be more or less neutralized.

¹ Ibid., footnote 7.

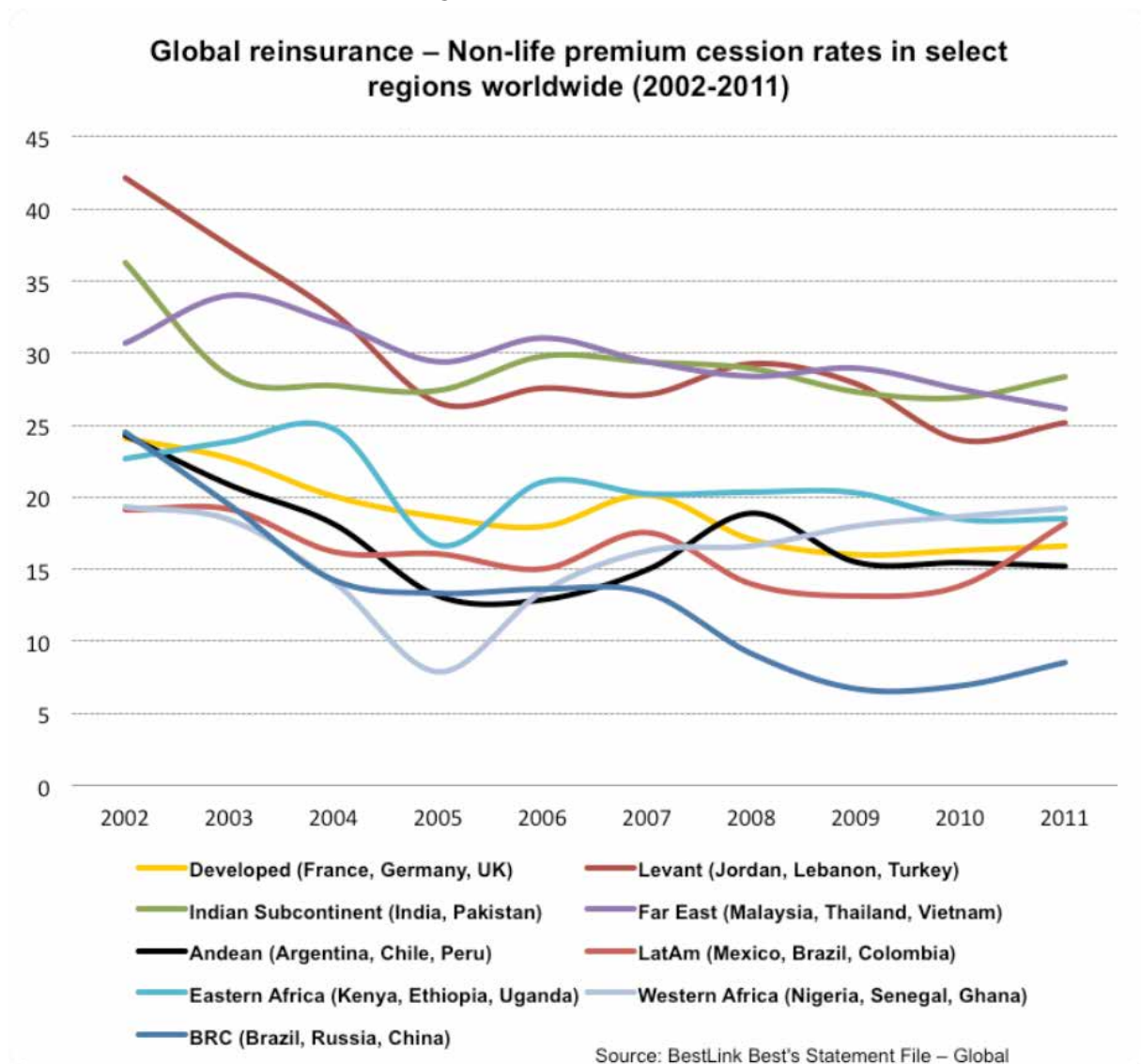
² Referring respectively to the ILO's estimate of global microinsurance policy issuance circa April 2012 (http://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_177356/lang-en/index.htm) and Swiss Re's estimate of mature microinsurance market size circa 2010 (<http://www.propertycasualty360.com/2010/12/17/swiss-re-says-microinsurance-market-huge-potential->).

³⁴ Achmea and Munich Re are perhaps the best-known proponents of this approach. See <https://www.achmea.com/csr/our-world/Paginas/default.aspx> and <http://www.munichre.com/corporate-responsibility/en/solutions/reinsurance/microinsurance/default.aspx>.

Figure 11 shows weighted average reinsurance cession ratios for select regions worldwide based on an index of component countries compiled and selected by the author. As is evident from the variance across regions or groups of countries, the usage of reinsurance depends upon the economic status of a given jurisdiction, the political regime, the geographic particularities and the risk-taking culture. This regional variance is most manifest in the BRC group, where the cession ratio is much lower than might normally be expected of middle-market countries exhibiting significant economic growth. Diving into this number a bit deeper, the stand-alone cession ratio for China over the time period surveyed is 6.5 per cent, compared to 14 per cent and 16 per cent in Brazil and Russia respectively.

One reason for China's low usage of reinsurance may be the dominance of large state-owned insurers on the local primary market, which generally have less need for secondary sources of risk capital because of their large balance sheets and implicit (or explicit) sovereign guarantees. Brazil's cession ratio is also somewhat low compared to that of other non-developed markets. This may have something to do with the geographic characteristics of the market – Brazil does not have a high incidence of catastrophic risks, thereby diminishing demand for catastrophe XOL reinsurance, a key non-life reinsurance product.

Figure 11. Reinsurance cession rates for select regions worldwide using non-life market statistics



(Source: A.M. Best)

Taking all of the above into consideration, generally speaking reinsurance usage tends to be higher in developing markets than in developed ones.³⁵ This reflects the relatively fast growth of developing market economies. Such growth drives demand for insurance, often outpacing the growth in the necessary capital base of local insurers and creating a need for surplus relief from external capital providers. This need is then often compounded by the high catastrophe exposure seen in many such countries.

From Figure 11 it is also possible to see the downward trend in reinsurance usage that has taken place over time on a more or less worldwide basis. This may reflect the relative strengthening of insurer balance sheets over the same time period, though regardless of cause, decreased usage of reinsurance overall indicates an increasing pressure on reinsurers' top-line growth. Only in supporting the development of new markets and products like microinsurance will reinsurers be able to grow their existing business meaningfully.

In the context of microinsurance it is unclear whether microreinsurance will be used to the same extent as traditional reinsurance. However, in the absence of a better guide it is fair to assume current traditional reinsuring trends would persist and apply in this emerging business class. In this instance, taking a range of potential ultimate cession ratios of 15 to 30 per cent, the total potential market for microreinsurance is in the realm of US\$6 billion to US\$12 billion worldwide, based on the primary microinsurance market estimate of US\$40 billion promulgated in 2010 by Swiss Re and cited above.

³⁵ Increased usage does not equate to a larger market. While on a relative basis emerging market insurers may cede more risk than developed market insurers the overall premium volume in emerging markets is much lower than in developed markets.

6 CONCLUSION – THE FUTURE OF MICROREINSURANCE

Treaty portfolio underwriting principles prevail. The need for facultative reinsurance in microinsurance is minimal since many of the hallmarks of typical microinsurance programmes – lots of small policies with similar characteristics – lend themselves well to treaty reinsurance underwriting techniques. By virtue of these same hallmarks certain treaty coverage structures are largely irrelevant in the microinsurance market. A good example is per risk XOL. Since microinsurance policies are generally limited to the same or a similar small size, there is generally no need to protect against large losses arising from single risks.

Microinsurance value chains are complex. Often microinsurance programmes are launched and fostered with donor assistance and via PPPs. This adds a number of parties who are external to the central flow of risk transfer and who have alternative vested interests in project outcomes (for example, development impact) that can be very different from the typical return-on-investment criteria used by commercial reinsurers to evaluate transactions. Reinsurers may also be surprised by the extra effort required of them in locating and training adequate delivery channels, which are essential to successful programme design though they may initially be new to insurance altogether.

Reinsurance can address the risk of random fluctuation, the risk of error and the risk of change. It can also provide insurers with extra capacity, surplus relief, results stabilization, catastrophe protection and support for market entry or exit. However, despite this litany of balance sheet benefits, **the hottest reinsurer commodity in the microinsurance market appears to be their general depth of expertise in relation to the management of key risks, especially natural disasters.** Since demand for microinsurance services revolves primarily around the delivery of reinsurer expertise as opposed to capital this has created the beginnings of a market for reinsurance practitioners qua consultants to advise on programme/product development, though it has not yet led to a vibrant market for microinsurance transactions.

Behind expertise, demand for catastrophic microinsurance protection follows. However, such protections are hard to come by on the open market since most catastrophe-exposed property or agriculture microinsurance programmes remain small and thus well below the commercial radar of most reinsurers. Without donor involvement or government subsidy to promote programme launch and scale, reinsurer involvement is generally not possible. In the absence of programme-specific coverage another option to promote reinsurer involvement would be to develop new business models or risk-sharing mechanisms which allow for the “artificial” achievement of scale and to create an incentive-based forum for the sharing of best practices.

Specifically, the pooling of microinsurance programmes within or between nations offers a compelling opportunity for microinsurers to engage the reinsurance community and access reinsurance capital for the first time or more efficiently. The ICMIF’s LARG facility is an excellent example. Its individually small members have successfully achieved a level of scale and coordination that is attractive to the reinsurance market by banding together across national boundaries and using the law of large numbers and geographic diversification to their collective advantage. This solidarity has also led to the important development of best practices in underwriting, which increases the homogeneity of their collective risk profile, making it more palatable – and probably more predictable – for secondary underwriting partners. This type of arrangement offers excellent lessons and promise for the microinsurance community. With greater collaboration at the regional, continental or even global level, individual microinsurance programmes could more easily obtain competitive microinsurance cover by pooling their liabilities. Multinational microinsurance organizations, such as the Microinsurance Network, the Access to Insurance Initiative or certain development banks might prove excellent conveners/administrators for such a facility given appropriate resources. Alternatively a professional reinsurance organization with global reach and support from a donor might be able to pull something like this together.

While the volume of microinsurance business worldwide is appreciable and expected to eclipse 1 billion lives covered by the end of this decade,³⁶ it is highly dispersed throughout the global market, with very few individual programmes having achieved scale. Given this market dynamic, very few reinsurers have developed a commercial business model that allows them to underwrite what amounts to a number of small and diverse microinsurance programmes on a worldwide basis. Swiss Re, the reinsurer with probably the largest share of the natural catastrophe microreinsurance market, appears to underwrite such programmes on a commercial basis though it is unclear if this business has been profitable for the company. Hannover, the reinsurer with probably the largest share of the life and health microinsurance market, has focused primarily on large so-called social insurance schemes operated with heavy government subsidies and mainly in India, and again profitability is unclear.

The potential ultimate size of the global microreinsurance market is estimated somewhere between US\$6 billion and US\$12 billion in ceded premium. An untapped market of this size warrants significant attention from the reinsurance community, given downward global trends in reinsurance purchasing and other pressures on top-line growth. Yet, **while the global reinsurance industry is flush with capital, the supply of microreinsurance is quite limited and the cover that is provided is concentrated among just a few players.** Supply of microreinsurance is constrained by a variety of market forces though perhaps most notably a lack of business model creativity on the part of reinsurers. In the same way that primary microinsurance business development requires innovative approaches, so too does business development in the secondary market. This is often left unacknowledged – microreinsurance is a specialist field and should be treated as such.

The case studies in this report surveying various existing or discontinued microreinsurance programmes reveal some interesting insights into the potential future of microreinsurance. Several index-based insurance programmes have pushed or are pushing the frontier of accepted standards of insurance delivery and are developing innovative ways of addressing the basis risk dilemma. The use of mobile network operators as distribution channels is showing very positive signs of enabling certain lines of business – such as short-term life – to scale and achieve sustainability. Before long in certain pockets of the microinsurance market the gap between supply of and demand for microreinsurance products and services will close and first-movers will be best positioned to capitalize on the growth of this new market.

³⁶ Ibid, footnote 7

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8 APPENDIX

Table A1. Reinsurance organizations active in microreinsurance

Reinsurance organization	Description of main microreinsurance activities to date	Current status
Munich Re	Founder of the Munich Re Foundation, an important micro(re)insurance research and development organization; founder of the Munich Climate Insurance Initiative (MCII); development and reinsurance support of select weather index microinsurance pilots in various jurisdictions	Some ongoing reinsurance support of active microinsurance programmes though the bulk of Munich Re's activity takes place at its sister foundation
Swiss Re	Dedicated microinsurance professionals within Global Partnerships division; significant involvement in index-based weather insurance projects worldwide through Swiss Re Group's Reinsurance and Corporate Solutions divisions; retained as technical supporter to IFC Global Index Insurance Facility (GIIF) project management unit; reinsurance support for various life, accident and health microinsurance schemes worldwide. Investment in LeapFrog's second fund. Announced several microinsurance commitments at Clinton Global Initiative with partners. Headline-grabbing SIGMA microinsurance research	Market leader in index-based micro(re)insurance programme development and risk-bearing support; involvement in or fostering of PPPs with partners including multilaterals, donors, MFIs and NGOs; engages with a commercial approach related to the development of multiline microinsurance programmes
Hannover	Reinsurance of public health microinsurance programmes, predominantly in India (e.g. RSBY); co-development and reinsurance support of weather-index pilots in various jurisdictions; founding investment in PlaNet Guarantee, a micro(re)insurance intermediary and lead supporter of PlaNet-Guarantee-led microreinsurance pool	Focus on "social health insurance" in Asia, particularly India; diverse book of business in Africa (mostly francophone countries); use PlaNet Guarantee and other brokers as main business development channel
Achmea Re	Achmea Reinsurance provides reinsurance coverage for the projects managed by the Achmea Insurance for Development department; since the start of these projects (in 2004) Achmea Re provided reinsurance coverage for projects in countries such as India, Senegal, Nepal, Sri Lanka and the Philippines. Currently, Achmea Re provides protection for livestock insurance, health insurance, crop insurance and life insurance. Achmea Re performs its microinsurance work under Achmea's CSR banner and will sometimes not charge reinsurance premium for the first 3 years of a new programme	Actively supporting a diverse array of products on a CSR basis
Lloyd's (Liberty Syndicates)	Weather index deal in Philippines	Unknown

Reinsurance organization	Description of main microreinsurance activities to date	Current status
Allianz Re	RIICE	RIICE project is ongoing. No other active projects to speak of
PartnerRe	Several weather-index pilot projects with World Bank	No longer active in microinsurance
SCOR	Investment in LeapFrog's first fund; some support for index-based insurance in India	Passive involvement in microinsurance via LeapFrog transitioning to more active involvement in index insurance
Flagstone Re (since purchased by Validus)	Supported at least one "social insurance" transaction out of India; investment in LeapFrog's first fund	Passive involvement in microinsurance via LeapFrog
Caisse Centrale de Réassurance	Following market supporter of PlaNet Guarantee credit life reinsurance pool	Unknown
Mapfre Re	Following market supporter of PlaNet Guarantee credit life reinsurance pool	Unknown
PlaNet Guarantee	Administrator of microreinsurance pool led by Hannover	Involved in the placement of microreinsurance to support local microinsurance programmes
Guy Carpenter & Company, LLC	Global reinsurance intermediary with a division dedicated to micro(re)insurance called GC Micro Risk Solutions®; multiline expertise though with a focus on index-based insurance product development and micro(re)insurance value chain development; reinsurance broker for several established microinsurance programmes	Involved as a consultant in the development of green-field donor-funded projects; reinsurance broker for microinsurance programmes

Source: Internet research by author. This is a representative, non-exclusive list; the author makes no warranty as to its completeness.

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