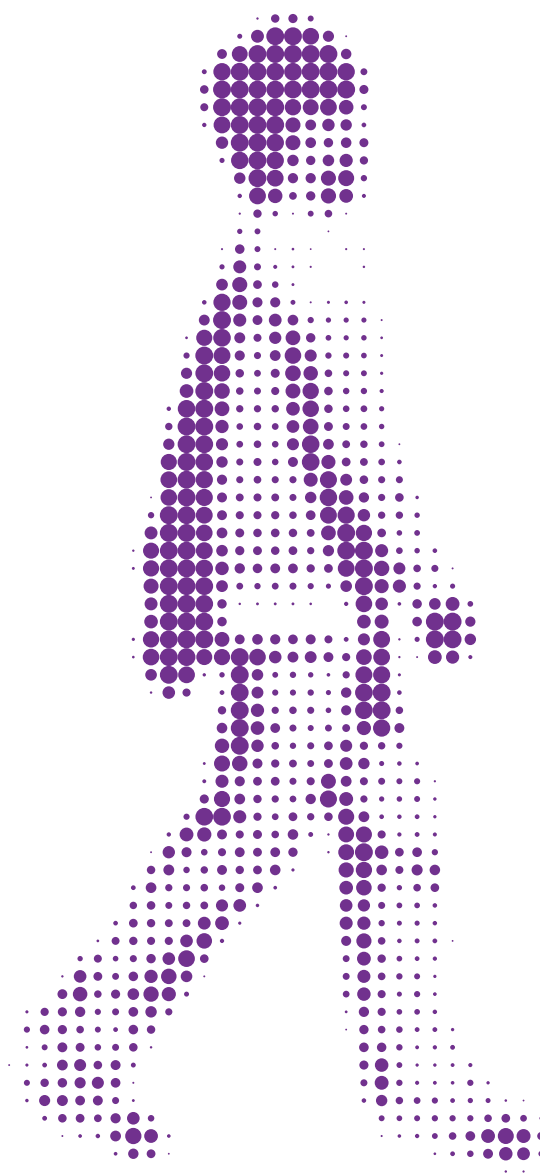


The essential guide to reinsurance

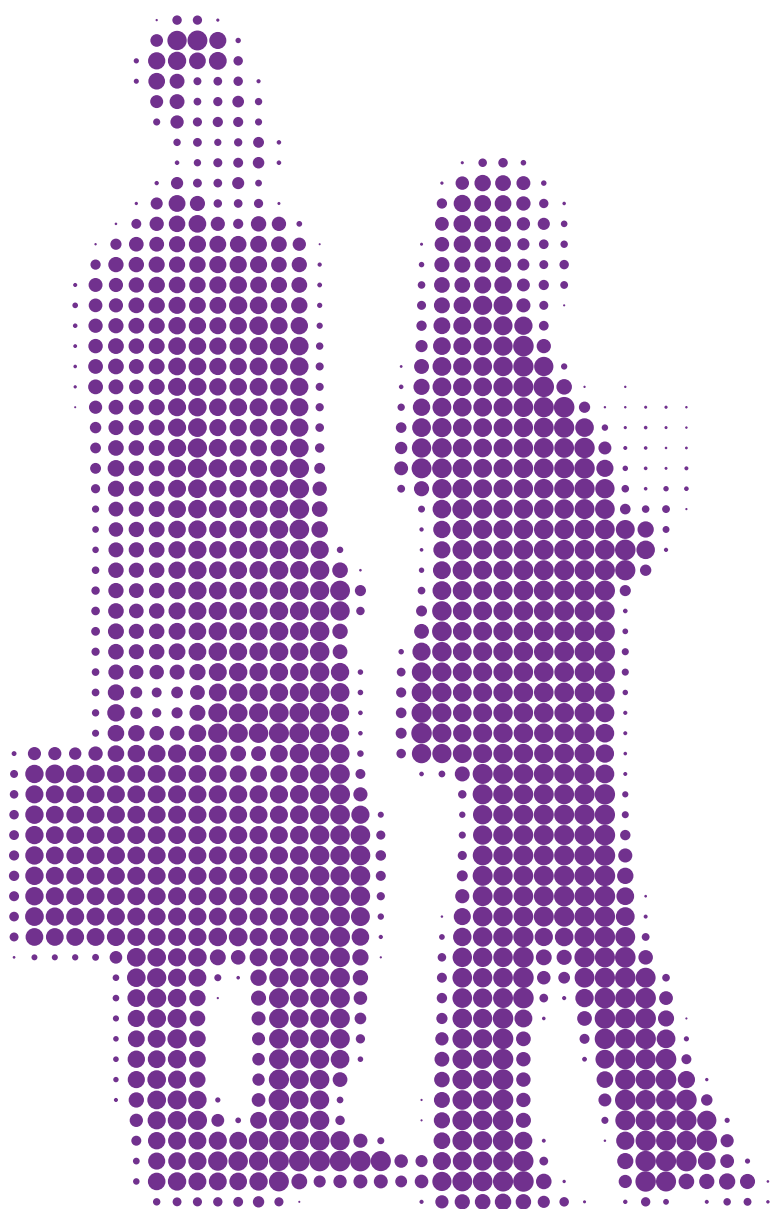


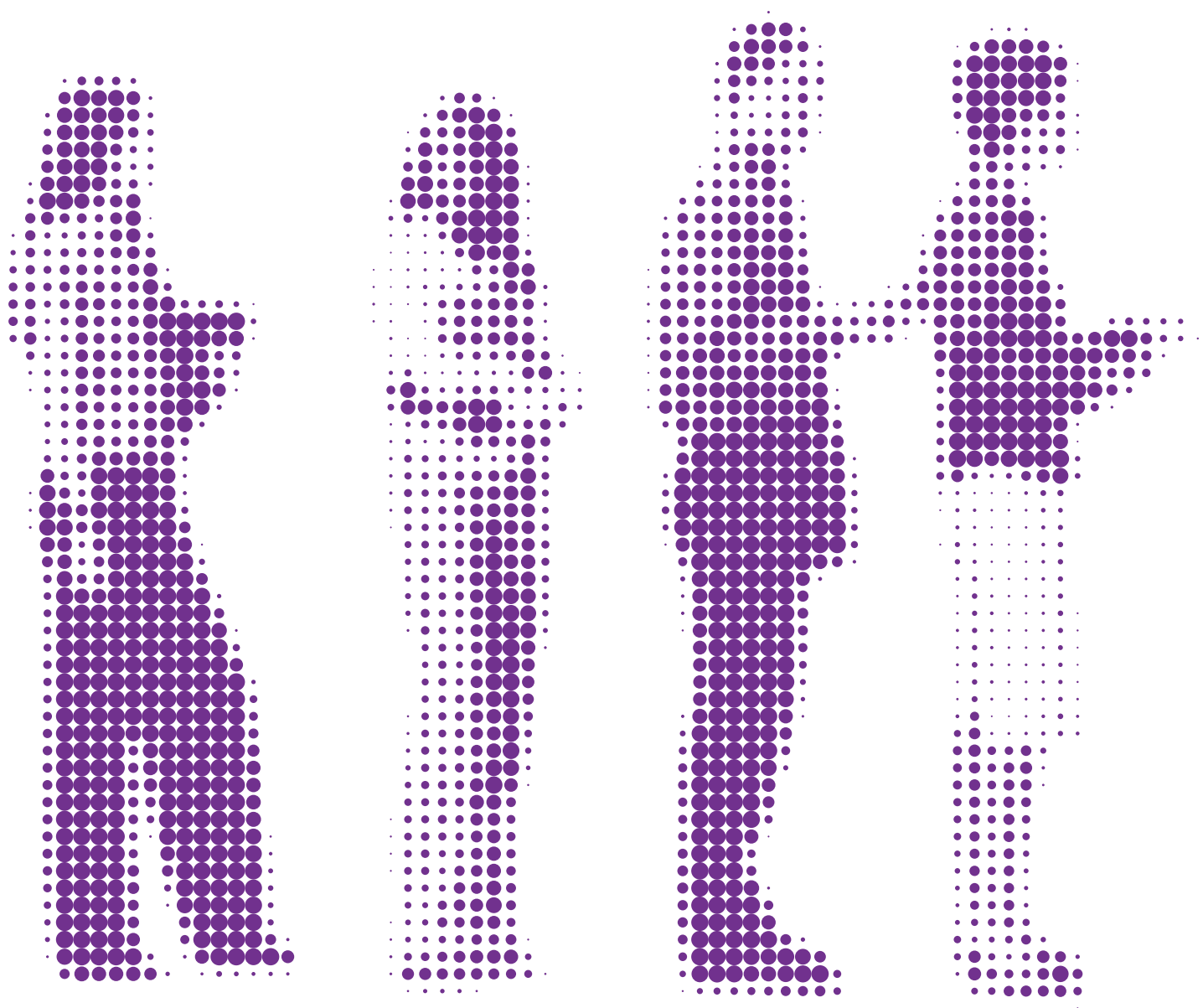
Reinsurance helps insurers to manage their risks by absorbing some of their losses. Reinsurance stabilises insurance company results and enables growth and innovation to continue. Due to the large sums of money that they invest in financial markets, reinsurers also contribute significantly to the real economy.

Though they were relatively little known in the past, reinsurers are gaining recognition in the light of major disasters for the role they play in helping insurers, governments and society as a whole to deal with today's risk landscape.



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Foreword

Anyone who ventures into unfamiliar terrain requires an experienced guide. To get your bearings, there is no substitute for the knowledge of someone who has been there before. It is in this spirit that we have produced *The essential guide to reinsurance*.

For many people, the reinsurance industry is not especially well known. Newcomers to the sector, as well as those who deal with reinsurers as part of their daily work, might be surprised to learn just how multifaceted the reinsurance business is. A truly global industry, reinsurance has played a decisive role for more than a century in helping companies, and ultimately society, to better prepare for and manage the risks that we face.

In recent years, natural catastrophes such as Hurricane Katrina in 2005 or events such as September 11, 2001, have brought home the important function that reinsurance companies have in supporting the insurance industry in paying claims to their policyholders. As the world in which we live becomes more fraught with risk, then this role will become all the more significant.

The essential guide to reinsurance is not the sum of all wisdom on the topic of reinsurance nor do we claim that it is unique. But we do believe it lives up to its title in several ways. In addition to an overview of the industry's defining characteristics, the publication also describes the essence of reinsurance, its basic forms and the principal functions of a reinsurance company. It also draws attention to the regulatory environment in which reinsurance companies operate and stresses the importance of risk management within the industry.

Most importantly, the guide describes the essential role that reinsurance plays in enabling progress and contributing to the stability of our economy and society at large.

We hope that you enjoy reading this publication.



Living life and running businesses involves risks. To mitigate these risks, individuals and companies buy insurance. Insurers, too, need to protect themselves and do so by buying reinsurance. This industry touches almost every part of our lives and draws on insights from virtually every scientific discipline. It's also one of the few industries that is, and always has been, truly global in nature.

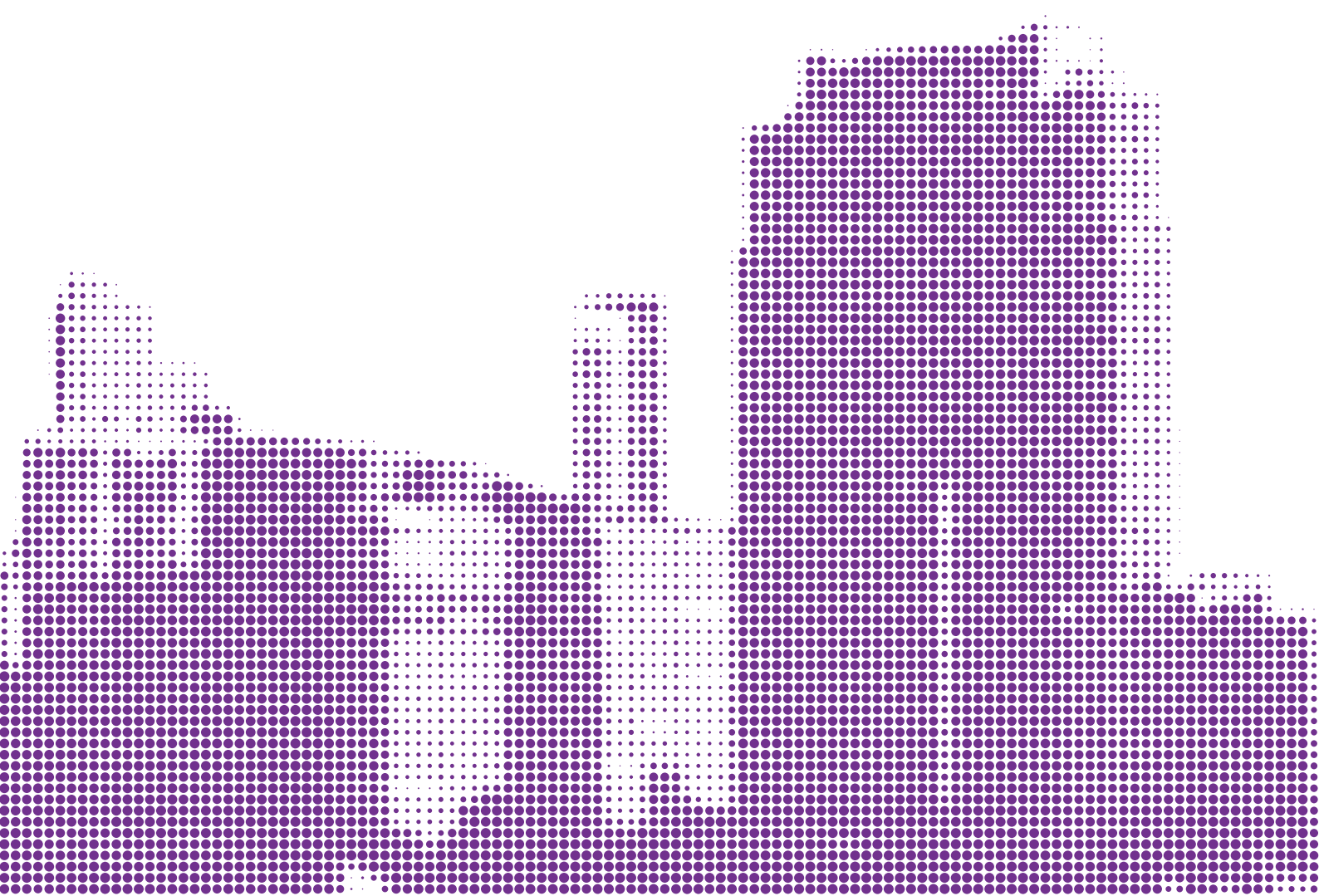


The essentials and origins of reinsurance

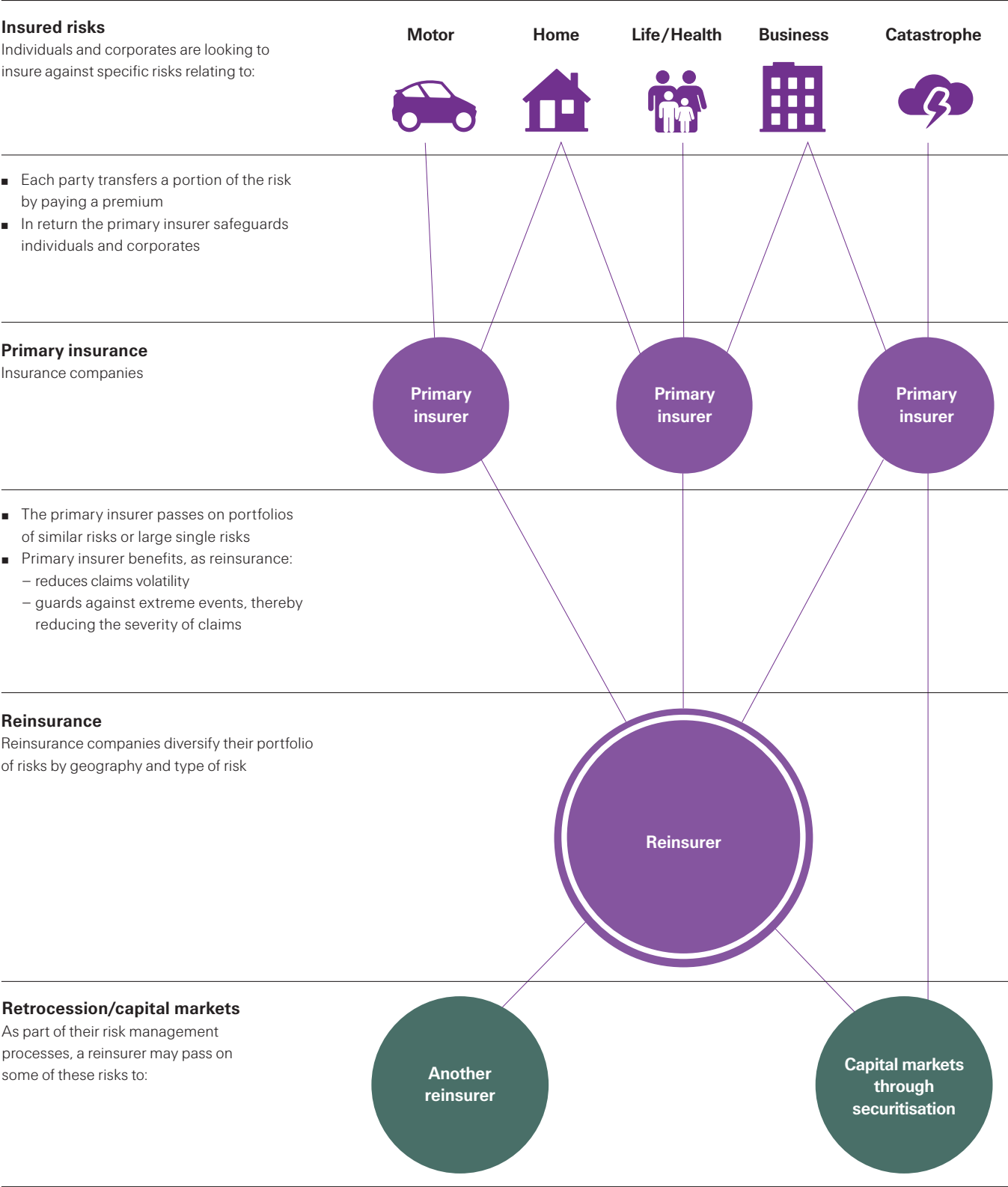
What do reinsurers do?

In essence, reinsurance is insurance for insurance companies. Only by sharing some of their risk with reinsurers it is possible for primary insurers to offer cover against the key risks we face today and to keep prices at affordable levels. Reinsurers provide coverage against all kinds of risks, all over the world: They range from earthquake risks in Chile to hurricane risks in the Gulf of Mexico; from the effects of drought for Brazilian farmers to mortality risks for a European life insurer; and from an auto insurance portfolio in the US to aviation liabilities in Asia.

Risks are transferred from individuals and companies, through primary insurers to the reinsurer. Reinsurance allows those parties to reduce their risk exposure and own capital requirements. Freeing up capital allows insurers to write more business, thus enabling economic growth and helping to create stability. The diagram on the following page sets out how.



How risks are transferred in insurance and reinsurance



While property reinsurance (covering perils such as natural catastrophes or fire) is one of the most immediately obvious lines of business that most non-life reinsurers cover, others such as marine (cargo and shipping), casualty (including product liability or employers' liability insurance) or engineering (construction and new technologies) are also important areas of focus. Life & Health reinsurers cover portfolios of insurance policies that pay out in the event of death, disability or illness of the insured. This includes covers for catastrophic events. They also reinsure annuities, which provide the insured a regular income payment for a specified period of time.

By transferring risks, insurers protect their balance sheet, reduce earnings volatility and make better use of capital.

Beyond the perils we face today, reinsurers are also constantly scanning the horizon for indications of emerging and future risks. Because of their experience in analysing, identifying and modelling risks, reinsurers are also key drivers in the adoption of better risk management practices by many organisations.

How does reinsurance work?

Under a reinsurance agreement, a reinsurer takes on part of the risk that an insurer has written. Reinsurers deal therefore with professional corporate counterparties, such as primary insurers,

Reinsurers deal with professional counterparties, such as insurers, brokers and other reinsurers.

reinsurance brokers or multinational corporations and their own insurance companies, so-called captive insurers. The party transferring the risk, for example a primary insurer, is known as a cedant. The original policyholder, for example the home owner or airline operator, is not involved in the transaction.

There are many different forms and types of reinsurance contracts: They either cover entire insurance portfolios or just relate to single risks; they may involve a sharing of all premiums and losses or they may just cover losses exceeding a certain threshold. Whatever the differences between the various contracts, they all have the same ultimate goal: Reinsurance contracts help provide capital relief, they smooth the volatility in an insurance company's earnings and protect their balance sheet.

By spreading risks around the world, reinsurance companies avoid over-exposure and act as a stabilising force in local insurance markets, thus ensuring that more insurance is available at lower prices than would otherwise be possible. Because of the broad range of risks that they take on, reinsurers are also able to cover particularly large one-off risks, such as major construction or civil engineering projects, aviation risks such as satellites or large sporting events, thus enabling innovation and growth. And because they invest the premiums they generate on a long-term basis in a range of different financial assets, reinsurers provide capital to the real economy and thereby support the production and provision of goods and services.

Since homeowners or motorists have no dealings with the reinsurance company, many people are generally not even aware of the existence of reinsurers. Indeed, they have maintained a low profile in the past. However, this has changed in recent years as a series of high-profile events, whether man-made disasters or natural catastrophes, have shone a spotlight on the industry. As a result, the vital role that reinsurers play in preserving the stability of the insurance sector, and more broadly the economy as a whole, is now becoming more widely understood.

The origins of reinsurance: Protecting the assets of traders and merchants

The development of the insurance and reinsurance industry reflects the major industrial and trade developments of the past 700 years. The first evidence of insurance contracts dates back to the great Italian commercial cities of the 14th century such as Genoa. At this time, insurance was offered exclusively by individual underwriters rather than specialised companies. Insurers of the time worked without statistics, rates, or calculations of probability, relying solely on their personal assessment of the risks. To protect themselves against risks that were too large, they started to transfer part of the risk to another insurer. Reinsurance at that time was only available for individual risks. The other main risk-sharing instrument used in this period was co-insurance, a practice which involves spreading risks among a pool of insurers.

The growth in reinsurance markets was fuelled by the insurance industry's realisation that ceding their biggest risks to another party could limit the volatility of their earnings and optimise their use of capital. This became particularly important as the investor base of the insurance industry became broader. Co-insurance was seen as increasingly problematic, since it involved disclosing sensitive and often commercially valuable information to competitors. Some direct insurers founded professional reinsurers as a way of bypassing the need to rely on their competitors for cover.

The first independent professional reinsurer, Cologne Re, was established in 1842 in the wake of a fire that devastated the city of Hamburg. The reserves of local insurers turned out to be grossly inadequate, highlighting the need to share disaster risk among several carriers and seek diversification on both a national and international level. Professional reinsurers were quick to fill this gap. The following decades saw the establishment of many more specialist providers such as Swiss Re in 1863 – also in response to a city fire, namely the one in Glarus, Switzerland – and Munich Re in 1880. An effective and efficient global reinsurance market began to develop.

Reinsurers stabilise local insurance markets and provide capital to the real economy.

The foundations for the modern insurance industry were laid in the 18th century. The Industrial Revolution later saw the creation of many insurance companies and established the insurance industry's importance. It also triggered increasing demand for reinsurance as insurable assets started to grow rapidly. Treaty reinsurance, which provides cover for portfolios of risks, was developed during this period, too.

Swiss Re: The making of a global leader

Like the Hamburg fire of 1842, the 1861 fire in Glarus, Switzerland, made it clear that insurance companies were ill-equipped to deal with the financial consequences of large-scale catastrophic events. In light of this major disaster, 1863 saw the Helvetia General Insurance Company in St. Gall, Credit Suisse of Zurich and the Basle Commercial Bank set up the Swiss Reinsurance Company in Zurich.

Swiss Re started spreading its risks internationally as early as 1864, but the business environment for reinsurance at the time was extremely difficult and it proved hard to gain a firm foothold abroad. It was not until the San Francisco earthquake and fire in 1906, however, that Swiss Re truly established a global reputation. Even though this major disaster cost the company about 50% of its annual non-life premiums, Swiss Re ultimately paid all claims. Soon after, in 1910, the company opened its first foreign office in New York and laid the foundations for its international expansion.

By the 1930s, Swiss Re had become the world's leading reinsurance company, with strong footholds in the US, Great Britain and Continental Europe, as well as contracts in Asia. Thanks to solid reserves, the global recession of the 1920s and 1930s was overcome without serious difficulties. Due to Swiss neutrality, World War II did not severely impact Swiss Re's global business relations. The post-war period presented the company with major challenges as its previously leading position in the countries of the newly formed Soviet bloc was lost and decolonisation in Africa and Asia led to fundamental changes in local marketplaces. However, this was more than offset by the post-war consumer boom in Europe and North America. It was during this period that Swiss Re's reputation for technical, engineering and scientific expertise was formed. At the same time, Swiss Re expanded its globe-spanning presence through subsidiaries and branches in Australia, Canada, Hong Kong and South Africa.

The 1990s saw significant structural changes in the insurance industry, primarily driven by deregulation and liberalisation of markets, leading to a wave of mergers and acquisitions, the increasing globalisation of the industry and strong growth in the life insurance business. Swiss Re took advantage of these changes and expanded its Life & Health portfolio, primarily through acquisitions. In 1994 this line of business accounted for only 15% of its business but by 2009 this had risen to 46%.

In parallel with the growth in Life & Health activities and in response to concerns that traditional reinsurance was reaching its limits, Swiss Re developed complementary financial services capabilities, such as comprehensive risk-financing solutions for large losses and catastrophes. Swiss Re has been the major global force from the outset in developing insurance-linked securities (ILS). These are instruments which securitise hazards such as earthquakes, hurricanes or pandemics in order to pass them on to capital markets.

Over the course of the last decade, while expanding its Life & Health business and building capital markets capabilities, Swiss Re also accelerated the internationalisation of its Property & Casualty business. In 2005, the firm consolidated its leading position through the acquisition of GE Insurance Solutions, the 5th largest reinsurer worldwide at the time, from General Electric Company (GE).

While Swiss Re's traditional reinsurance business weathered the financial crisis of 2008/2009 well, the company reported a full-year net loss for 2008 due to losses in its financial services business and investment operations. Swiss Re consequently overhauled its financial services strategy. Building on its almost 150 years of experience in reinsurance, the company strengthened its focus on the core business of reinsurance and large commercial risks, ensuring that it remains a strong partner for clients. In 2009, Swiss Re returned to a net profit and restored its capital strength.

The modern reinsurance marketplace

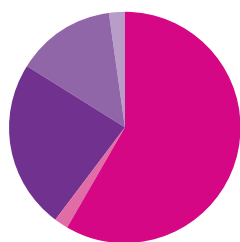
Today, there are about 200 companies offering reinsurance, most of which are specialised reinsurers. The top ten non-life reinsurers by premium volume account for about half of the total global premium volume while the ten biggest life reinsurers account for about two thirds of the market. Germany, the US and Switzerland are the three most important domiciles for reinsurance companies but key players can also be found in Bermuda and among the Lloyd's of London syndicates. Beyond this circle, a number of large primary insurance companies also write reinsurance business, either through their in-house reinsurance departments or through reinsurance subsidiaries.

With annual premium income of around USD 220 billion in 2011 and shareholder equity of about the same amount, the reinsurance industry has a strong capital base. This allows reinsurers to take on the world's largest and most complex risks. Roughly half of all reinsurance business originates from North America. This not only reflects the huge size of the primary insurance market there, but also the fact that North America is heavily exposed to natural catastrophes and liability risks.

In relative terms, however, insurers in emerging markets tend to rely in particular on reinsurance; many emerging countries are also very vulnerable to natural catastrophes, insurance penetration is lower there, and local insurance companies tend to be smaller and less

Life reinsurance market, 2011

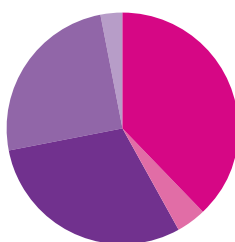
USD 53 bn



59% North America
2% Latin America
24% Europe
14% Asia & Oceania
2% Africa

Non-life reinsurance market, 2011

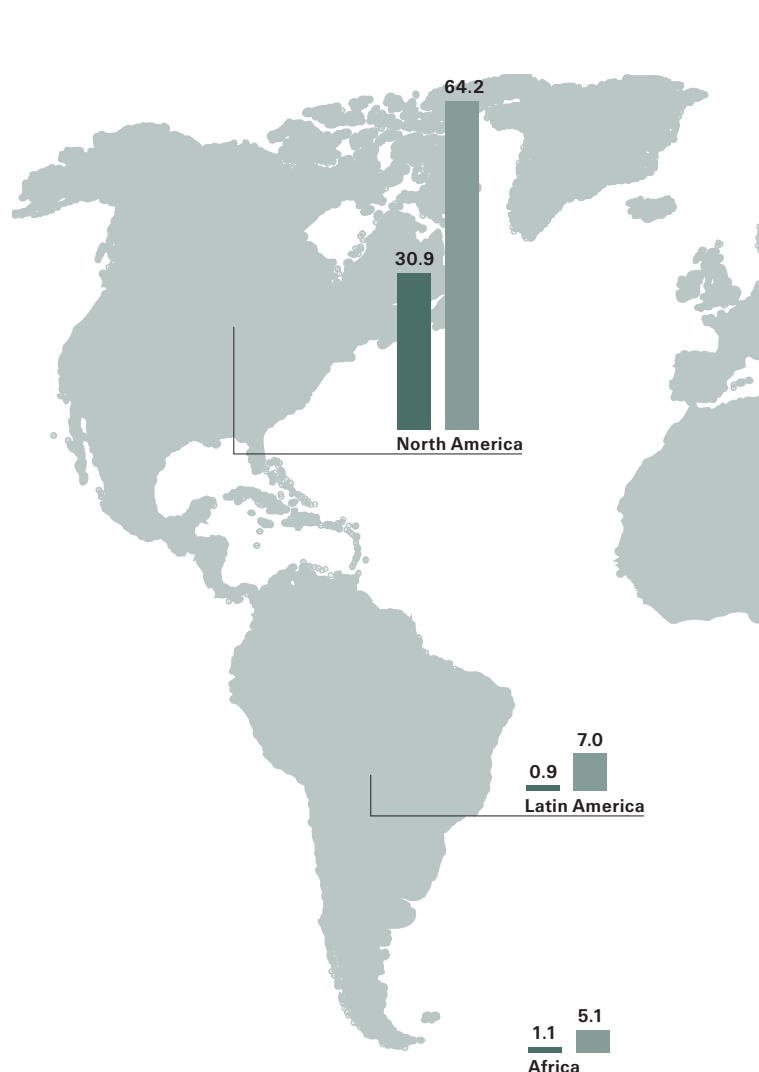
USD 170 bn



38% North America
4% Latin America
30% Europe
25% Asia & Oceania
3% Africa

Geographical origin of cessions

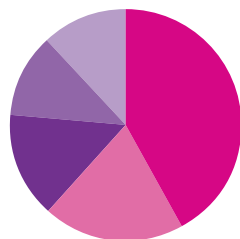
USD bn



Source: Swiss Re, Economic Research & Consulting

Top 5 natural catastrophe loss events

(Insured losses, indexed to 2011) USD bn



59% Hurricanes Katrina (2005)
24% Tohoku earthquake triggering tsunami (2011)
14% Hurricane Andrew (1992)
2% Northridge earthquake (1994)
2% Hurricane Ike (2008)

Source: Swiss Re, Economic Research & Consulting

From the very beginning, reinsurance has been a global industry.

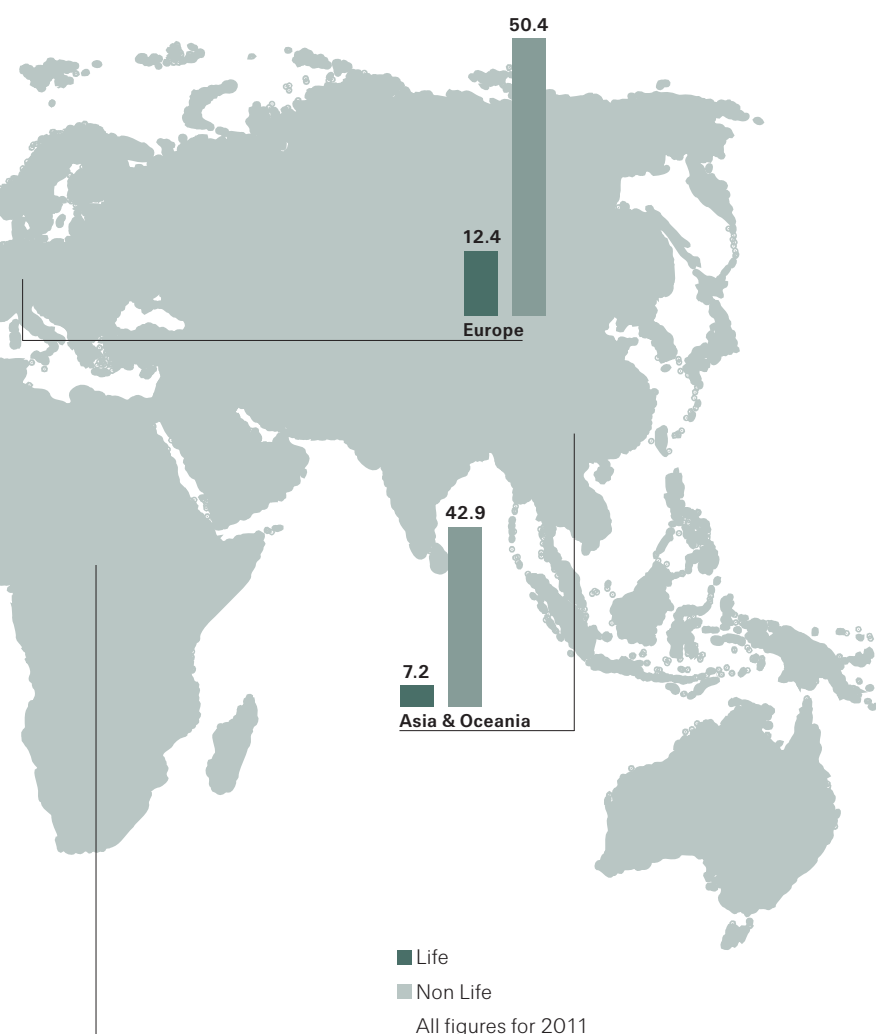
diversified, meaning that big, well-diversified reinsurance companies are important partners.

The reinsurance industry has proven its solidity as a partner by consistently paying out following the major insured disasters of modern history; examples that spring to mind are the San Francisco earthquake in 1906, Hurricane Andrew in 1992, and the terrorist attack on the World Trade Centre on September 11, 2001, as well as the hurricanes Katrina, Rita and Wilma in 2005 and the Chile earthquake of 2010. Also, throughout the

financial crisis of 2008/2009, reinsurers continued to operate as usual, meeting their obligations to clients and providing sufficient capacity.

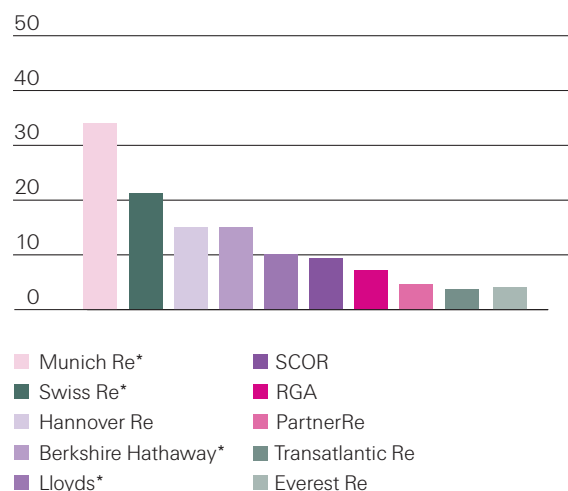
The key to this solid standing is the broad geographical base of the risks that a reinsurer takes on. From the very beginning, reinsurance has been a global industry, harnessing the benefits of a diversified portfolio of risks spread across the world to offer cover for major catastrophes at reasonable prices. Beneath the surface of complexity lies a fascinating business, characterised by a truly holistic perspective on the risk landscape of today and tomorrow.

to reinsurance companies



World's biggest reinsurance companies, 2011

Net premiums, USD bn



* Reinsurance segment only

Source: Swiss Re, Economic Research & Consulting

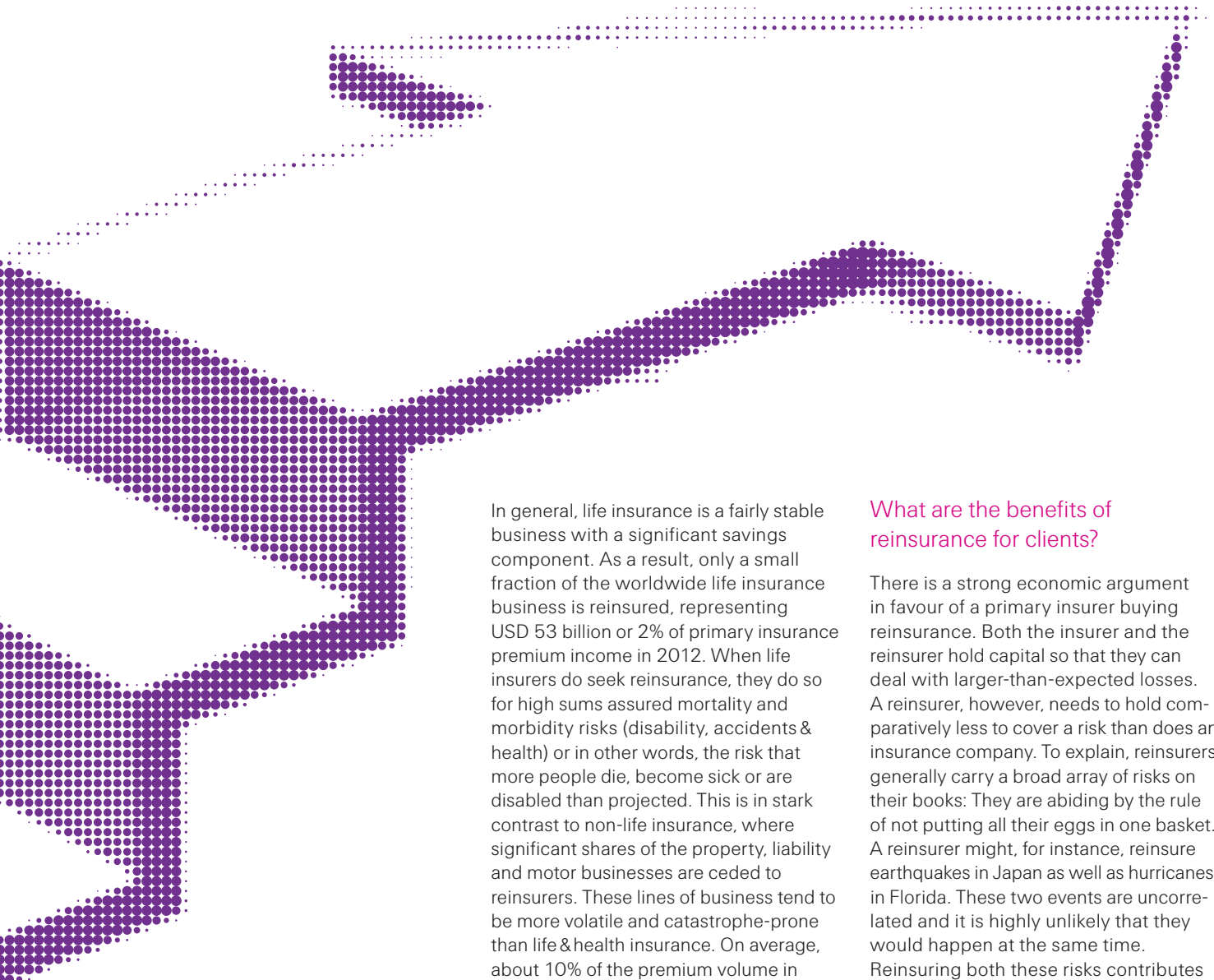
The value that reinsurers create for primary insurers who transfer their risks is relatively well understood. But it is only more recently that the value of reinsurance for society as a whole has become more widely appreciated.

The increasing severity and frequency of major disasters, including natural catastrophes and manmade events, has shed light on the role that reinsurers play as shock absorbers for the global economy. By helping to mitigate the potential losses that could result from risks such as major new construction projects or breakthrough new technologies, reinsurers also fulfil an important function as enablers of innovation. And as long-term investors in equities, bonds and other asset classes, reinsurers provide capital to the economy and thus give companies the means necessary to grow and prosper.

What motivates clients to buy reinsurance?

Motivations for purchasing reinsurance and the amount of reinsurance required vary according to an insurers' level of capitalisation and their exposure to different kinds of risk. Insurers with a significant exposure to highly volatile lines of business or with exposure to natural catastrophe risks tend to rely particularly heavily on reinsurance. The same applies to small, local or regional insurers, or specialised insurers which have only limited scope to diversify their book of business or who lack capital to grow it.

Benefits of reinsurance for customers and society



In general, life insurance is a fairly stable business with a significant savings component. As a result, only a small fraction of the worldwide life insurance business is reinsured, representing USD 53 billion or 2% of primary insurance premium income in 2012. When life insurers do seek reinsurance, they do so for high sums assured mortality and morbidity risks (disability, accidents & health) or in other words, the risk that more people die, become sick or are disabled than projected. This is in stark contrast to non-life insurance, where significant shares of the property, liability and motor businesses are ceded to reinsurers. These lines of business tend to be more volatile and catastrophe-prone than life & health insurance. On average, about 10% of the premium volume in primary insurance is ceded to reinsurers, accounting for USD 170 billion in 2012.

Reinsurance reduces volatility, provides capital relief, and can be a source of knowledge and information.

What are the benefits of reinsurance for clients?

There is a strong economic argument in favour of a primary insurer buying reinsurance. Both the insurer and the reinsurer hold capital so that they can deal with larger-than-expected losses. A reinsurer, however, needs to hold comparatively less to cover a risk than does an insurance company. To explain, reinsurers generally carry a broad array of risks on their books: They are abiding by the rule of not putting all their eggs in one basket. A reinsurer might, for instance, reinsure earthquakes in Japan as well as hurricanes in Florida. These two events are uncorrelated and it is highly unlikely that they would happen at the same time. Reinsuring both these risks contributes to the diversification of a reinsurer's portfolio.

Because a reinsurer is generally more broadly diversified than an insurer, the reinsurer does not need to hold as much capital to cover the same risk as an insurer: The difference between the insurer's and the reinsurer's capital needs for the same risk represents the economic gain that reinsurance produces.

Reducing claims volatility

Were it not for reinsurance, huge disasters such as Hurricane Katrina or an unprecedented event such as the attacks of September 11, 2001 might have led to a wave of insolvencies amongst insurers. Reinsurance is an effective means of mitigating the effects of disasters which might be too severe for an insurer to absorb or simply uneconomic for the insurer to cover with its own capital. Having reinsurance contracts in place means insurers can shield their capital base against such peak exposures.

The capital needed to cover a particular exposure falls as diversification increases, making reinsurance inherently attractive.

To illustrate the point, let us consider 2005 which was a year with a particularly large number of catastrophes. Hurricanes Katrina, Rita and Wilma had a significant impact on US non-life insurers. According to Swiss Re's economic research publication *sigma*, around 12% of all direct insurers in the US received payments from reinsurers that were equal to or exceeded 100% of their shareholders' equity in that year. And about 23% of them received payments from reinsurers that accounted for more than one third of their equity capital. In other words, reinsurance helps reduce the likelihood that insurers would face potentially grave consequences as a result of a significant depletion in capital.

Life insurers also face similar challenges. Just as a series of disasters could threaten the financial stability of a non-life company, a sharp increase in fatalities as a result of a pandemic or a major catastrophe would severely affect a life insurer. While an inherently positive trend for society, longevity is another major risk for this sector: If people live longer than expected, pension scheme and annuity providers will suffer in consequence. Just as reinsurance can help a non-life insurer to protect against unexpectedly high catastrophe claims, life insurers can purchase reinsurance to mitigate volatility and to protect their balance sheets from potentially devastating impacts.

Reducing balance sheet volatility can enhance the risk-return profile of an insurance company: As volatility decreases, the company becomes increasingly attractive for equity and debt-market investors, all other things being equal. This is a very important benefit, in particular for non-life insurers: Major catastrophes or unexpected liability claims can result in large fluctuations in earnings for non-life insurers, making them less attractive to investors.

Providing capital relief

When insurers write new business, they take on additional risk. Their ability to write business is limited by two factors: The cost of acquiring that business and the extent of their capital. When an insurer reaches its limit in terms of capital, it can raise more capital or seek capital relief. Alternatively, it can stop writing new business or scale back existing business. Reinsurance offers insurers the opportunity to transfer portions of their risk thus freeing up capital, and allowing them to write more business.

Capital relief is particularly useful to life insurance companies where initial statutory reserves, solvency capital requirements and commissions can amount to a multiple of the first year's premium for new business they write. Reinsurance alleviates this strain on capital, helping life insurers to fulfil their role of providing protection and savings

What are the benefits of reinsurance for clients?

	What reinsurers do	Benefits for clients
Risk transfer function	Stabilise financial results by smoothing the impact of unexpected major losses and peak risks	Companies become a more attractive investment proposition and benefit from reduced cost of capital
Risk finance function	Offer reinsurance as a cost effective substitute for equity or debt, allowing clients to take advantage of global diversification	Capital freed up, thereby increasing underwriting capacity and enabling growth
Information function	Support clients in pricing and managing risk, developing new products and expanding their geographical footprint	Accelerate profitable growth

Reinsurance helps cover peak risks, whether earthquakes or pandemics, and frees up insurers' capital, allowing them to expand their business.

schemes to society. With capital relief in place, insurers can write more business and begin to reap the economies of scale from expanding their customer base: They can spread overheads such as administration, distribution and claims management expenses over a broader base of business.

Advisory expertise

Traditionally, reinsurers assist their clients in assessing and underwriting risks, designing contract wordings, managing claims as well as developing and pricing new products. Reinsurers typically carry a diversified portfolio of business on

a global basis. This equips them with a broad and deep understanding of a wide variety of insurance markets and products. Their global reach also provides them with superior data from a wide range of insured populations. Based on this experience, reinsurers develop tools which help insurers underwrite risks and process new business.

Insurers who are looking to enter new geographical markets or expand into new products might seek reinsurance to benefit from reinsurers' underwriting and product expertise. This motivation to buy reinsurance is particularly common in life insurance, but also non-life insurance, given the lack of publicly available market data and the complexity of certain products which require specialised actuarial and underwriting skills. Alternatively, those who are exiting certain businesses or markets might choose to transfer entire books of business and the underlying liabilities associated with these contracts to reinsurance companies.

On that basis, reinsurers have established a reputation as trusted advisors to the insurance industry, lending their support in pricing, product development and geographic expansion, for example. From the perspective of ceding companies, the reinsurers' intellectual capital is an important complement to the financial strength they provide. Ultimately, these

Insurers call on reinsurers' expertise when entering new markets.

Spreading risk globally means reinsurers can take on large and complex risks.

complementary capabilities and services indirectly benefit individual policyholders through more efficient claims processes, innovative products and stable, affordable coverage.

What are the benefits of reinsurance for society?

Reinsurers are able to assume some of the world's largest and most complex risks because they spread risk on a global basis. Because they enjoy this superior diversification, reinsurers make a vital contribution to stabilising domestic insurance markets which, otherwise, might face disruption following major catastrophic events. Foreign (re)insurers, for instance, made more than 60% of payments related to the destruction of the World Trade Center in 2001 and hurricanes Katrina, Rita and Wilma in 2005, respectively (see graphic below). In Chile, where a devastating earthquake at the beginning of 2010 wrought severe damage, reinsurers are expected to pay about 80% of all insurance claims.

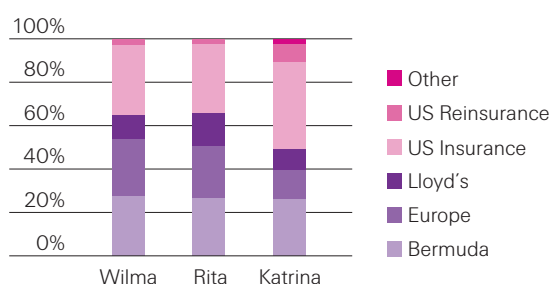
Without reinsurance, some domestic direct insurers may have experienced difficulties in meeting claims in the event of a major catastrophe. In anticipation of such losses, capital limitations may have forced insurers to restrict the scope of coverage or to write less business. Reinsurance, therefore, helps to make insurance more broadly available and adds credibility to its promise to pay.

Transferring risk enables economic growth

Reinsurance helps to unlock the full potential of insurance as a catalyst for economic growth. A strong and efficient insurance sector encourages commerce and trade significantly. It enables entrepreneurs to take risks and thus fuels innovation. Without insurance products that cover liability risks, many goods and services would simply not be available. Investors will often require that assets such as power stations, factories, shops or laboratories be insured before they commit money to a project. Without reinsurance, primary insurance companies would often not be able to insure many of these risks.

Global diversification allows reinsurers to absorb major losses

Regional distribution of 2005 hurricane payments: Wilma, Rita and Katrina



Source: J. David Cummins, "The Bermuda Insurance Market: An Economic Analysis", 6 May 2008.

What are benefits of reinsurance for society?

	What reinsurers do	Benefits for society
Risk transfer function	Diversify risks on a global basis	Make insurance more broadly available and affordable; enable economic growth
Risk finance /capital market function	Invest premium income according to expected payout	Provide long-term capital to the economy on a continuous basis
Information function	Put a price tag on risks	Set incentives for risk-adequate behaviour

The construction of the skyscrapers Henry Ford witnessed in Manhattan are now commonplace throughout the world, a testimony to the impact that insurance can have on society (see box below). In our age of megaprojects, insurance continues to play a significant role not just as an enabler but also as a promoter of improved practices to manage the risks associated with such major undertakings.

Part of the value that insurers and reinsurers add is to put a price tag on risks. This encourages companies to take a long-term perspective on their businesses and to consider all the risks that they are likely to face in the projects that they launch. Mitigating those risks through insurance enables firms to take other risks.

For instance, new technologies as incorporated in state-of-the-art aircraft need significant investments to become reality. Many of these projects would never happen if the manufacturers were required to hold all the capital necessary to absorb every conceivable loss. An insurance company, however, can help here in taking on some of the risk. In turn, a reinsurance company can relieve the insurer of parts of that risk burden, thus freeing up capital to help another manufacturer elsewhere. In this sense,

Reinsurance unlocks the full potential of insurance as a catalyst for economic growth.

Enabling innovation by absorbing risks

In the early 20th century, the United States was experiencing a building boom. The skyline of cities like Chicago and New York were changed forever by the construction of skyscrapers of 20 floors and more.

Once, Henry Ford I heard a visitor to New York express wonder at the sight of the city with its soaring towers. "This has only been made possible by the insurers," Ford said. "They are the ones who really built this city. With no insurance, there would be no skyscrapers. No investor would finance buildings that one cigarette butt could burn to the ground."

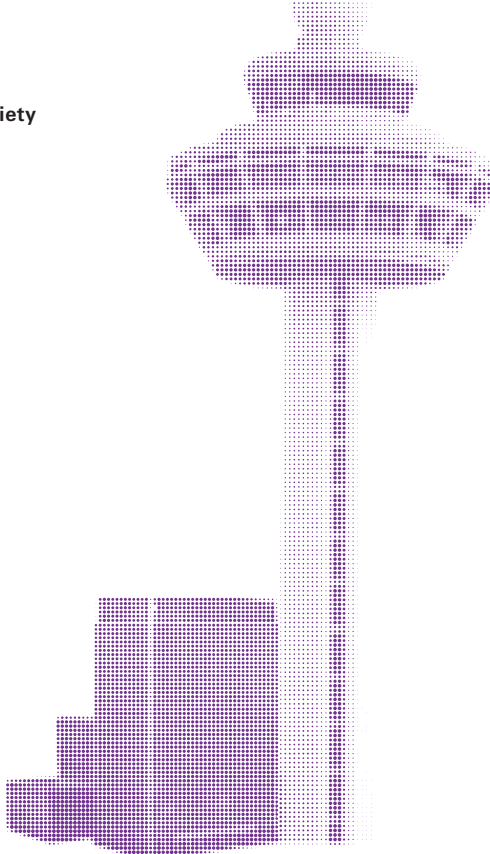


Risk management in major projects

Heathrow Airport's Terminal Five was 25 years in the making and involved a four-year public enquiry. After lengthy preparations, construction began in November 2002 on a site the size of London's Hyde Park (260 hectares).

With 20 000 suppliers and 8 000 workers, coordinating construction and managing the risks that exist on a major building site was a mammoth task.

The construction was insured by many companies, Swiss Re among them. These insurers would not have offered the project an insurance policy without the knowledge that it was backed by a solid risk-management strategy.



insurance and reinsurance are an essential part of the risk-taking process, something that oils the wheels of technological progress and the development of our society.

The real economy needs the financing from (re)insurers and pension funds.

Providing long-term capital to the economy

With more than USD 26 trillion in assets under management in 2011, insurers and reinsurers are among the world's largest investors. The industry holds more than a fifth of all institutional investors' assets. Together with pension funds, (re)insurers account for more than 50% of the total, global institutional asset base (see graphic on page 21).

By collecting premiums from policyholders or ceding companies, insurers and reinsurers accumulate huge funds. The funds, which are needed to pay future claims arising from policies written today, are invested, usually with a long-term perspective, in ways that reflect or correspond to the company's liabilities. These investments might be in government bonds, corporate bonds or equity investments. Life insurance, in particular, is an important vehicle for

channelling people's savings into investments. By enabling insurers to assume risk and grow, reinsurers directly and indirectly contribute to this capital market role. Reinsurance therefore goes far beyond simply compensating insurance companies in the case of losses. It is also a key pillar of any modern economy's financial system and promotes growth by financing the real economy. It is important therefore that investment rules for (re)insurance companies are not made overly conservative as this would mean lower returns for policyholders and less capital for the real economy.

Promoting risk-adequate behaviour

Reinsurers assess the world's largest and most complex risks on a global basis. By putting a price tag on risks, they help to improve capital allocation, create important incentives for appropriate risk behaviour and promote risk prevention.

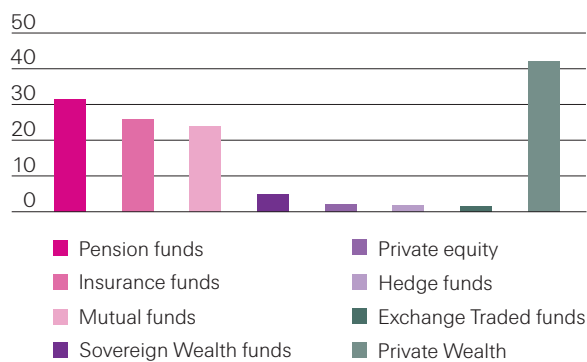
Reinsurers invest significant resources in extensive research. They try to better understand existing risks as well as to anticipate emerging developments in the risk landscape. Climate change is a case in point. Decades before this phenomenon hit the headlines and entered the global political arena, the world's leading reinsurers were already incorporating research findings on climate change into their business decision-making.

The findings of these research efforts back up reinsurance underwriting decisions and help to support the evaluation of loss potentials. Reinsurers set a price (or premium) for cover based on the assessed riskiness. The higher the exposure, the higher the price will be. Some exposures are so high that reinsurers refuse to cover them at any price: For example, during times of war there would be such a significant accumulation of risks as to render the situation uninsurable.

By putting a price tag on risks, reinsurers and insurers exercise significant influence on the risk-taking and risk mitigation activities of their clients, setting incentives for risk-adequate behaviour and fostering risk awareness throughout society.

(Re)insurers are among the world's biggest institutional investors

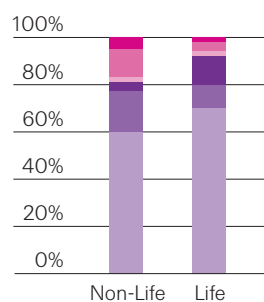
Assets under management
USD trillion, 2011



Source: TheCityUK, Swiss Re Economic Research & Consulting

Asset allocations of non-life and life insurers
2011

Based on five largest insurance markets ¹

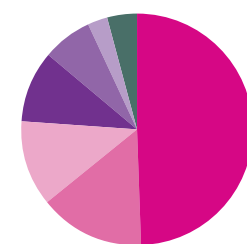


- Cash
- Other
- Real estate
- Loans
- Equities
- Bonds

¹ US, Japan, UK, France, Germany

Source: Swiss Re, Economic Research & Consulting

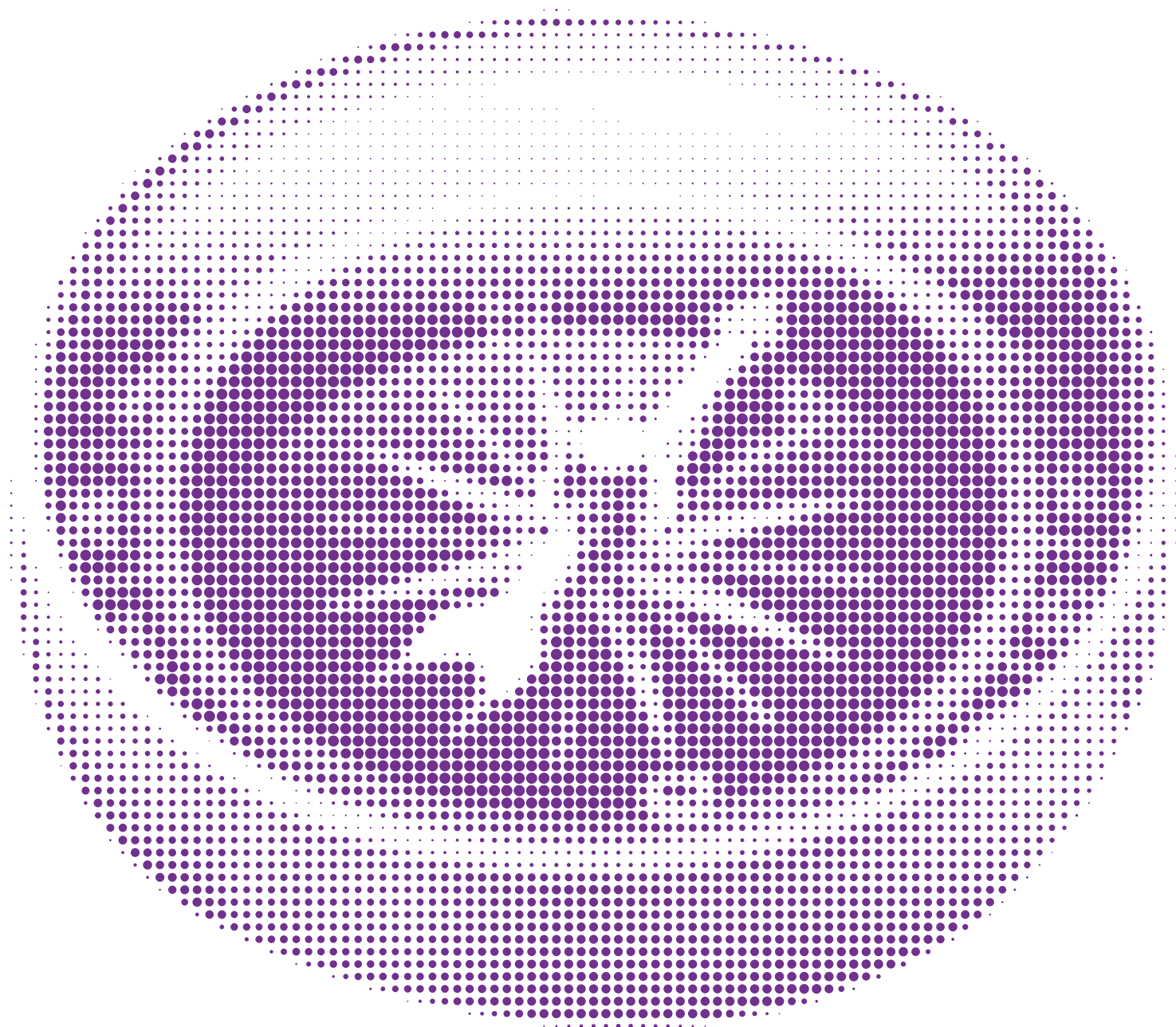
Example US life insurers



- 50% Corporate and Other Fixed Income Securities
- 15% Mortgage-Backed Securities
- 12% US and Foreign Govt Securities, Treasuries and Municipals
- 10% Mortgage Loans
- 7% Cash and other invested assets
- 3% Equities
- 4% Policy Loans

Values do not add up to 100% due to rounding.

Basic forms of reinsurance



There are two basic forms of reinsurance. Facultative reinsurance, the oldest form, is a case-by-case approach to transferring risks. The other form is obligatory reinsurance, in which an insurer and reinsurer are bound by an obligation to cede and assume a contractually agreed share of a portfolio of risks.

Facultative reinsurance: Case-by-case risk transfer

Insurance underwriters use the term risk to refer not only to specific hazards but also to the actual object insured. A bridge or a building, for example, would be a risk that requires insurance. Such risks are exposed to many different perils and represent a complex situation that would require individual treatment on the part of the reinsurer.

For these risks, facultative reinsurance is the appropriate solution since it adopts a case-by-case approach. Unlike obligatory

reinsurance, which as its name suggests involves obligatory risk sharing, the reinsurer in a facultative contract retains the option – or the ‘faculty’ – to accept or refuse all or any policy offered to it. Likewise, the primary insurer is free to choose which risks they want to reinsure.

Today, facultative reinsurance is mostly used by the primary insurer as a complement to obligatory reinsurance, covering additional risks above and beyond what has already been covered by the obligatory reinsurance treaty.

Obligatory reinsurance: Covering entire portfolios

When a primary insurer wishes to reinsure all of its insurance policies within certain risk categories, then an obligatory reinsurance contract is most likely to fit the bill. This form of cover is used in both life and non-life reinsurance.

A primary insurer agrees to cede a portion of the risk of all of its health insurance policies or all of its motor insurance policies

Facultative reinsurance is reinsurance of individual risks. It grants the reinsurer the option to accept or refuse all or any policy offered.

to the reinsurer. Obligatory reinsurance derives its name from the fact that both parties are obliged to cede or to accept any risk covered in the treaty that they conclude. The reinsurer is bound by the treaty to accept its share of the risks, and it cannot refuse to provide insurance protection for an individual risk or policy that falls within the scope of the cover.

Obligatory reinsurance is reinsurance of an entire portfolio of policies. It obliges both parties to cede or accept all risks covered in the treaty.

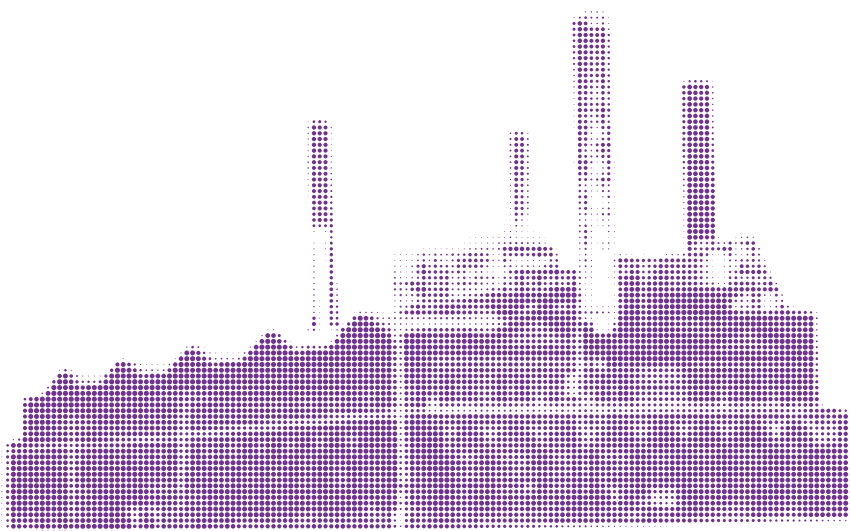
The insurer is likewise obliged to cede the agreed-upon risks. Obligatory reinsurance is also often called treaty or automatic reinsurance

Because of its 'automatic' nature, this form of reinsurance is efficient in terms of administration. Non-life reinsurance treaties are usually renewed on an annual basis. Reinsurance treaties for some Life & Health contracts such as medical insurance or personal accident insurance are also renewed, like the original contract, on either an annual or a five-year basis. Many life reinsurance treaties for mortality business, however, are not renewed. Because the original policy has guaranteed premium income throughout the duration of the contract, these particular reinsurance contracts will generally run for the same amount of time, which can be up to 30 years.

Both obligatory and facultative reinsurance can be proportional or non-proportional. Proportional reinsurance involves one or more reinsurers taking a pre-agreed percentage share of the premiums and liabilities of each policy an insurer writes. Non-proportional reinsurance on the other hand reimburses losses suffered above a fixed sum.

What's the difference between facultative and obligatory reinsurance?

Single risks such as those involved in running a complex factory or insuring an individual life with a large sum assured are unique. They require detailed contracts and individual, facultative solutions.



Whole portfolios of risks that are similar, such as motor insurance portfolios, can be covered under treaty reinsurance: Insurers and reinsurers are obliged to cede and accept the risks on a predetermined basis.



Proportional reinsurance

Under proportional reinsurance, the primary insurer and the reinsurer share premiums and losses by a ratio defined in their contract. The reinsurer's share of the premiums is directly proportional to its obligation to pay any losses. Additionally, the reinsurer compensates the primary insurer for a portion of its acquisition and administration costs by paying a reinsurance commission. This is usually expressed as a percentage of the original premium. The commission paid to the primary insurer also serves as the price for the reinsurance: it is reduced or increased according to the quality of the portfolio and it is calculated independently of the primary insurer's original premium.

Proportional reinsurance means the insurer and reinsurer share premiums and losses by a defined ratio.

Quota share reinsurance: Sharing premiums and losses

The simplest form of proportional reinsurance is the quota share. The reinsurer assumes an agreed-upon, fixed quota or percentage of all the policies written by the direct insurer within the particular branch or branches defined in the treaty. The primary insurer retains a fixed percentage of each policy's premiums and cedes the remainder. Losses are apportioned at the same ratio.

In other proportional reinsurance contracts, this ratio may vary from risk to risk, but for quota share the ratio is fixed. This means the quota share is ideal for homogenous portfolios like motor and household insurance where all the risks are fairly similar. The maximum size of the policies that can be ceded is limited by quota share agreements.

Quota share reinsurance treaties are also particularly suitable for young, fast-growing insurers or established companies which are new to a certain class of business. Quota share reinsurance also makes sense for primary insurers who are seeking capital relief in light of solvency considerations or protection against random fluctuations across an entire portfolio. Another reason to enter into a quota share might be changes triggered by unexpected legal developments or economic factors, such as inflation.

However, quota share reinsurance has its drawbacks. It is based on the relatively crude notion of the proportional sharing of premiums and losses. As such, it does not effectively protect the insurer against extreme loss scenarios, such as an accumulation of losses as a result of a natural disaster. The potential imbalances in a primary insurer's portfolio also remain unaddressed. By the same token, because it is not flexible, quota share reinsurance may also result in a primary insurer ceding too much and retaining too little – possibly at the expense of profitability.

A popular solution to these drawbacks is for the insurer to take out coverage to protect it from extreme losses. A medium-sized life insurer, for instance, might combine a quota share agreement with a so-called surplus reinsurance agreement.

What is a balanced portfolio and why is it relevant?

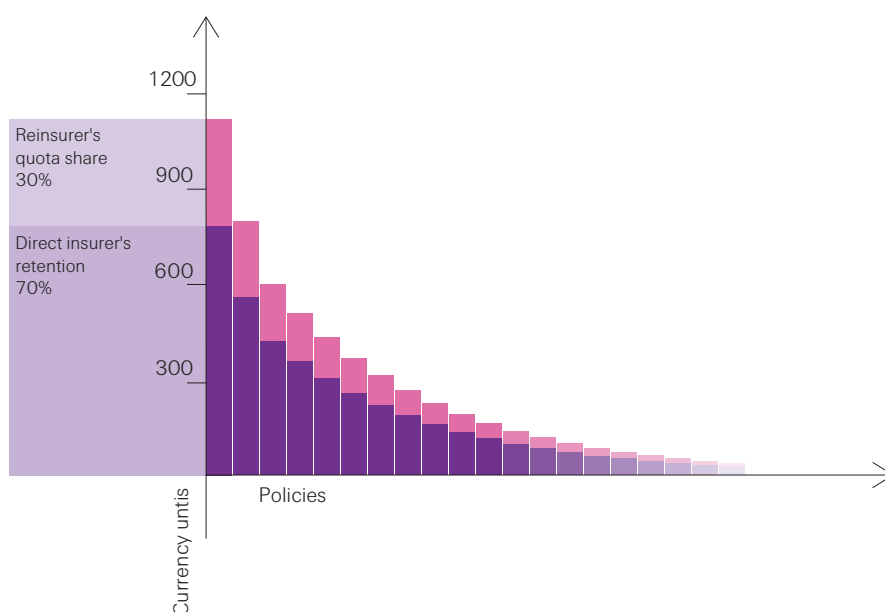
To be considered homogenous or balanced, a portfolio should include many similar and equivalent risks. In this way, losses can be balanced collectively and minimal reinsurance will be needed. A big motor insurance portfolio with a large direct insurer is a good example for this. If there are enough individual risks in the portfolio (say 200 000 motor policies) then the law of large numbers applies, meaning that the ratio of losses to premiums should fluctuate only minimally from year to year. Reinsurance might still be needed to cover unexpected claims like losses from a hailstorm or a spike in car theft.

Quota share reinsurance: An example

In this example, the reinsurer's quota share is 30%. This ratio is reflected throughout, with losses and premiums shared at the same rate.

The primary insurer retains:	70%
The reinsurer accepts:	30%
Sum insured:	10 m
Primary insurer retains:	7 m
Reinsurer accepts:	3 m
Premium is 2‰ of the sum:	20 000
Primary insurer retains:	14 000
Reinsurer accepts:	6 000
Losses:	6 m
Primary insurer retains:	4.2 m
Reinsurer accepts:	1.8 m

Quota share reinsurance: An illustration



Surplus reinsurance: Beyond the insurer's retention

Surplus reinsurance is the most common form of proportional reinsurance cover. With surplus reinsurance, the reinsurer does not participate in all risks; up to a specific amount, the primary insurer retains all risks for its own account. This is in contrast to quota share reinsurance where the retention is defined as a percentage, starting from the very first dollar of premium. Under surplus reinsurance, the reinsurer is obliged to accept the surplus or the amount which exceeds the primary insurer's retention.

The limit of a surplus agreement is based on the maximum amount of liability a reinsurer is prepared to take on. This limit is usually expressed as a multiple of the primary insurer's retention, known as a

line. For example, a three-line surplus means the reinsurer assumes coverage up to three times the primary insurer's retention.

The reinsurer pays a commission to the insurer. Originally, the commission was intended to compensate the insurer for the costs incurred in writing the business in the first place. Given the competitiveness of the marketplace for direct insurance, however, this premium is often insufficient: after the direct insurer deducts his operating costs, the remaining original premium is less than the total losses incurred. More and more reinsurers are thus adopting the procedure of returning to the direct insurer only that part of the original premium that was not paid out for losses. Therefore the reinsurance commission is increasingly defined by commercial considerations rather than the direct insurers' actual operating costs.

Surplus reinsurance is a useful tool for balancing a primary insurer's portfolio by limiting its exposure to the single largest risks in its portfolio; this makes the resulting retained portfolio more homogenous. Surplus agreements can be used to calibrate a primary insurer's reinsurance needs much more accurately than a quota share can. Retentions can be set at various levels depending on the type of risk, the size of a risk and the company's overall risk appetite. This flexibility, however, comes at the price of more complicated and costly treaty administration.

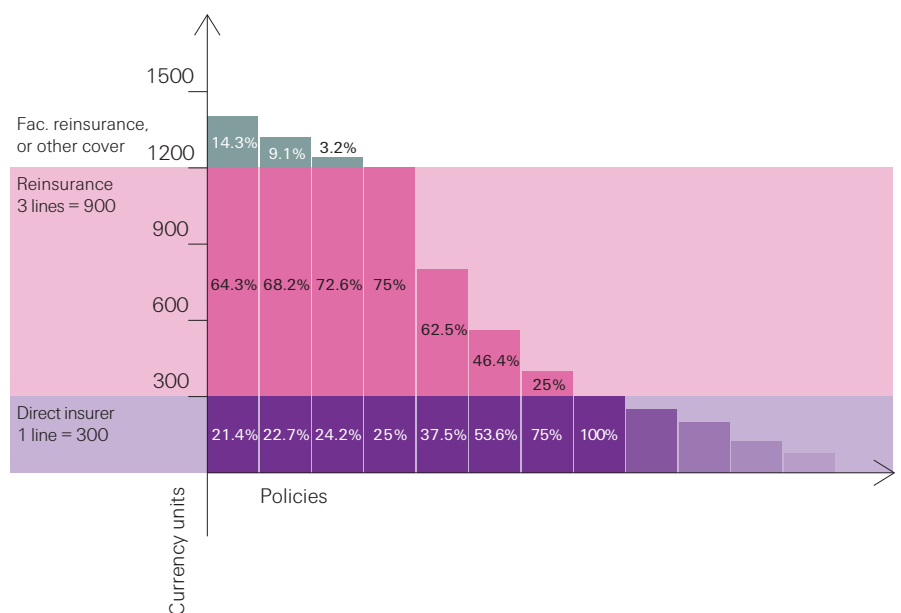
The following table shows an insurance portfolio containing three different policies. In each case, the total amount insured is shown, followed by the amount that the insurer wishes or is able to retain. In this example, the insurer has a retention (line) of 300 000. The reinsurer takes the surplus between the retention and the total insured sum, in this case up to a maximum multiple of 9 times the retention. The premium in all cases is 1.50‰ of the sum insured.

Surplus reinsurance: Treatment of a portfolio of risks

Policy I is a straightforward surplus reinsurance contract. Policy II shows that the reinsurer does not participate in risks that fall within the primary insurer's chosen retention (line). Policy III shows that the reinsurer takes its maximum surplus, but that the primary insurer must either bear the additional respective losses itself (in this case 14.29% of the sum insured or 500 000) or else purchase an appropriate amount of facultative insurance.

	Total	Insurer retains (1 line)	Reinsurer's surplus (9 lines max)
Policy I			
Sum insured	3 000 000	300 000 = 10%	2 700 000 = 90%
Premium	4 500	450 = 10%	4 050 = 90%
Losses	1 500 000	150 000 = 10%	1 350 000 = 90 %
Policy II			
Sum insured	130 000	130 000 = 100%	0 = 0%
Premium	195	195 = 100%	0 = 0%
Losses	80 000	80 000 = 100%	0 = 0%
Policy III			
Sum insured	3 500 000	300 000 = 8.57% +500 000 = 14.29% = 22.86%	2 700 000 = 77.14%
Premium	5 250	1 200 = 22.86%	4 050 = 77.14%
Losses	2 000 000	457 200 = 22.86%	1 542 800 = 77.14%

Surplus reinsurance: An illustration



Non-proportional reinsurance

In the 1970s, non-proportional reinsurance emerged as an alternative and a complement to traditional proportional forms of cover. Insurance companies were growing financially stronger, enabling them to retain the more frequent small risks for their own account. Reinsurance solutions were consequently sought that would provide protection against the biggest and accumulated losses, those which could potentially jeopardise primary insurers' solvency. Non-proportional forms of cover – meaning cover where there is no fixed or pre-determined split of premiums and losses – were devised to address these needs.

Non-proportional reinsurance covers losses that exceed the insurers' deductible up to an agreed cover limit.

Non-proportional reinsurance requires that all losses up to a certain amount are borne by the primary insurer. This amount is known as a deductible, the net retention, excess point or priority. Losses that exceed this deductible are assumed by the reinsurer up to a pre-agreed cover limit. In contrast to proportional insurance, where the sum insured is the important figure, for non-proportional covers it is the loss amount that is of paramount importance.

Capping an insurer's liability at a suitable point

From a primary insurer's point of view, the advantages of non-proportional reinsurance are clear: It can limit its liability with a deductible which reflects its willingness and capacity to bear risk. As smaller losses within the primary insurer's net retention are no longer covered by the reinsurer, the company retains for its own account a higher proportion of its gross premiums, thus enhancing its earnings potential. Finally, administration costs are far lower for both parties as the primary insurer no longer needs to calculate his proportion of a loss for each risk (as under surplus reinsurance).

These solutions offer the insurer the benefit of retaining more of its premium, potentially allowing it to make more profit. However, in contrast to a proportional insurance contract, an insurer is also obliged to pay out the full amount up to its deductible in the case of a loss. From the perspective of the reinsurer, the advantage lies in being able to determine the pricing of the risk, regardless of how the risk was originally priced by the insurance company. This implies in both scenarios that the reinsurer obtains data from the underlying portfolio. As the price for this cover, the reinsurer demands a suitable portion of the original premium. In defining (rating) this price, the reinsurer considers the loss experience of recent years (known as the experience rating) as well as the losses expected from that type and composition of risk (exposure rating).

Excess of loss reinsurance: The most popular form

Excess of loss reinsurance is the most common form of non-proportional reinsurance. It helps the insurance industry to handle various loss situations. These include the risk of a single building burning to the ground as well as the accumulation of losses incurred from a single event, such as a severe windstorm. These contrasting needs are met by two different kinds of coverage: Excess of loss per risk and catastrophe excess of loss or excess of loss per event.

Excess of loss per risk is a traditional reinsurance product where the reinsurer indemnifies the primary insurer for the loss amounts of all the individual policies affected, which are defined in the treaty terms and conditions and which exceed the contractually fixed deductible. The reinsurer's participation in each claim is limited by the reinsurance cover and there is usually an additional annual limitation of the total amount of all claims that the reinsurer pays. The excess of loss per risk is a very effective means of risk mitigation against large single losses (eg a large bodily injury claim in a motor

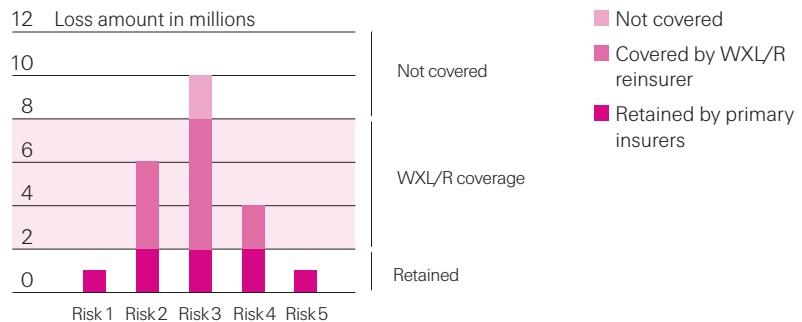
third-party liability insurance or a large fire claim in property insurance). However, such a contract does not offer adequate protection against frequency or against cumulative losses, where many policies are affected by the same loss event such as a major natural catastrophe.

Catastrophe excess of loss is a more sensible solution for such situations. The essential difference to excess of loss per risk is that the unit of loss is not the individual loss per policy but the aggregate loss caused by one event within the insurance portfolio covered

by the reinsurance treaty. Therefore, the excess of loss per event represents effective risk mitigation against large catastrophe losses made up of the sum of potentially hundreds or thousands of relatively small losses created by the same cause. These could be claims from private property insurance after a windstorm, or claims from motor policies after a hailstorm event.

Excess of loss per risk: An illustration

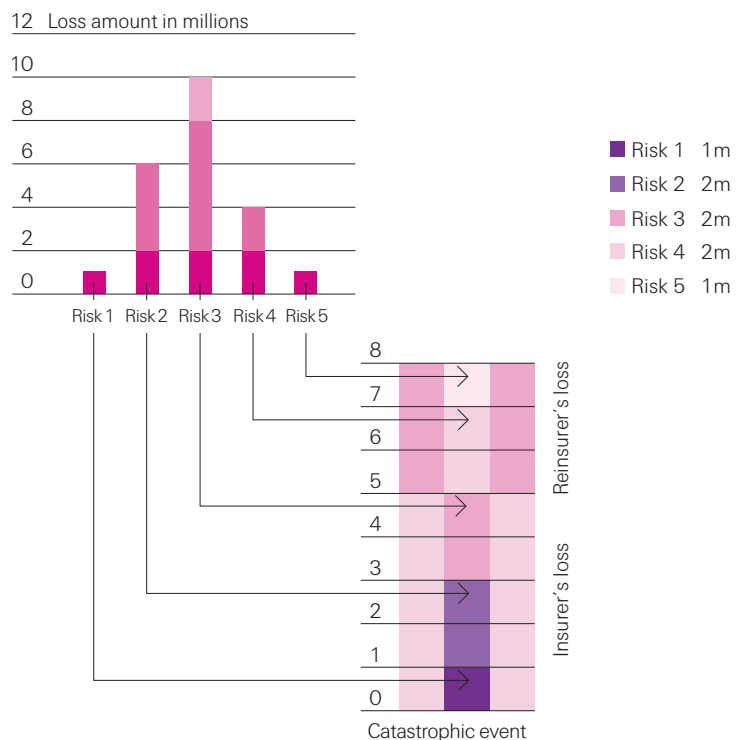
After applying all proportional covers, a direct insurer retains 8 million. To protect his retention from major loss, he buys WXL/R protection of 6 million in excess of 2 million (6 million xs 2 million).



Catastrophe excess of loss:

An illustration

To further protect his retention from catastrophic events, such as earthquakes, the direct insurer also buys a CatXL coverage with the limits 4 million xs 5 million. This means the direct insurer's net loss from the catastrophe is 5 million. The CatXL reinsurer's net loss in this case is 3 million.



Stop-loss reinsurance: Protection against annual claims volatility

A less frequent form of non-proportional cover is stop-loss reinsurance. Under such a treaty, the reinsurer covers any part of the total annual loss burden which exceeds the agreed deductible (usually expressed as a percentage of annual premiums) or a specified absolute amount. This allows the primary insurer to smooth its earnings by protecting itself against large claims fluctuations from year-to-year. As a rule, this form of reinsurance only comes into play when the primary insurer has suffered a technical loss, that is to say when claims and administration costs exceed premiums. This ensures that the primary insurer continues to have “skin in the game” and is not relieved of all entrepreneurial risk which could otherwise encourage excessively risky or even reckless underwriting. This type of treaty provides primary insurers with the most comprehensive level of coverage.

New forms of reinsurance

In recent decades, new risk transfer techniques have been developed. The spectrum ranges from multi-year, multi-line structured insurance contracts – to securitising insurable risks and tapping capital market investors as an additional source of underwriting capacity. The following section introduces some of these new forms of reinsurance.

Insurance-linked securities: Transferring risks to capital markets

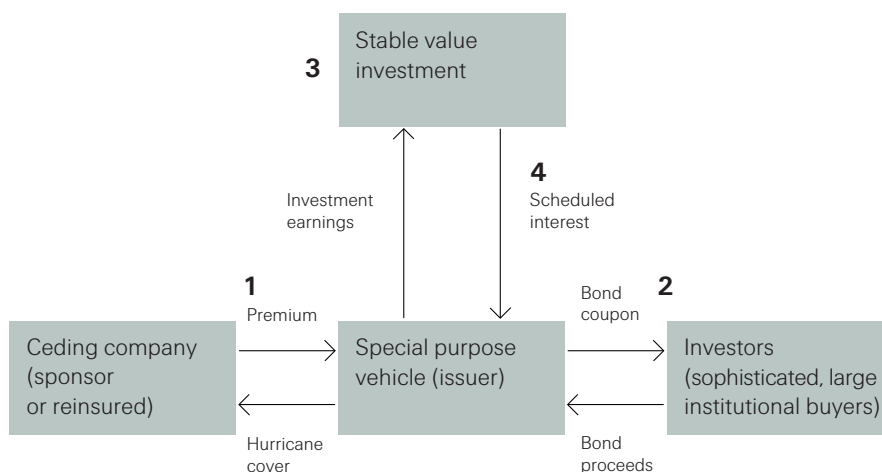
Insurance-linked securities (ILS) are a means of ceding insurance-related risks to the capital markets. Cash flows from regular (re)insurance premium payments are transformed into interest-bearing securities. Since the first cat bond in 1997, ILS have been used to transfer a wide range of risks – from natural catastrophes to life insurance risks. ILS can be used to transfer peak risks, for example the risk of a severe natural catastrophe event or the risk of extreme mortality. The motivation for an insurance or reinsurance company to use ILS might be to tap into additional capacity offered by capital markets, or to benefit from the unique features of an ILS transaction compared to traditional reinsurance.

Insurance-linked securities are a means of transferring insurance-related risks to the capital markets.

In a typical ILS structure used for catastrophe bonds, a special purpose vehicle is established which provides conventional reinsurance to an insurer or reinsurer (the “sponsor”). The SPV capitalises itself through the issuance of interest bearing notes to the capital markets and invests the proceeds from the notes in high-

A typical insurance-linked security (ILS) structure

1. The reinsurer (sponsor) enters into a financial contract with a Special Purpose Vehicle (SPV)
2. The SPV hedges the financial contract by issuing notes to investors in the capital markets
3. Proceeds from the securities offering are invested in high quality securities and held in a collateral trust
4. Investment returns are swapped to a LIBOR-based rate by the swap counterparty



Source: Swiss Re

quality securities such as government bonds held in a collateral trust. The SPV's funds are paid out to the sponsoring insurer or reinsurer if the bond's specified catastrophe event (eg the magnitude of an earthquake on the Richter scale) is triggered. Investors' principal is reduced by the amount of loss payment.

From the sponsor's perspective, ILS offer various advantages. These include the ability to transfer peak risks which might be otherwise difficult to place through traditional reinsurance as well as additional underwriting capacity. Because ILS typically have a multi-year duration, the sponsor can also partially uncouple from the pricing cycles common in the insurance and reinsurance industries. In addition, counterparty credit risk (ie the risk of a reinsurer defaulting on its payment obligations vis-à-vis the primary insurer) is very limited as the proceeds from the securities issued are held in a collateral trust.

Payments in case of a loss event in ILS transactions can be based on actual losses but are in most cases tied to pre-specified measurements such as the intensity of a disaster in a particular location. This simplifies the claims settlement process. One of the principal tasks in structuring such index-based contracts or parametric triggers is to minimise basis risk, ie the risk that the actual losses of the sponsor differ from the losses implied by the index or parametric trigger.

For investors, ILS offer attractive potential for diversification. Changes in inflation or interest rates and the implications for equity and bond markets have obviously no bearing on the frequency and severity of natural catastrophes, for example. The volume of outstanding catastrophe bonds has grown steadily since their first emergence. In 2008, the ILS market suffered a temporary set-back in the wake of the global financial market dislocation. New issuance of ILS dropped sharply, but recovered quickly. Future development of ILS is expected to be favourable: These securities have proved their worth as an effective tool for diversification and were one of the very few asset classes which generated positive returns during the financial crisis of 2008/2009.

Admin Re®: Solutions for Life restructuring

Administrative reinsurance (Admin Re®) is a specific form of reinsurance, mainly used by life insurance companies. Some firms may stop writing new business completely or stop writing new business in certain lines, or they want to exit the insurance business. However, they still have policies in force. In an Admin Re® transaction, a reinsurer acquires these closed blocks of in-force life, pension and health insurance business or even an entire portfolio from a life insurance company which no longer writes any new business. The reinsurer assumes responsibility for administering the underlying policies either directly or through third parties. Longevity, mortality, lapse, market, credit and expense risks are transferred to the reinsurer. Such a deal enables the primary insurer to exit a product or market, release capital and redeploy it to core operations or new ventures. For clients mainly interested in solvency capital relief, administrative reinsurance is preferable to traditional reinsurance as a sale or business transfer does not incur any counterparty credit risk for the insurer (unlike traditional reinsurance).

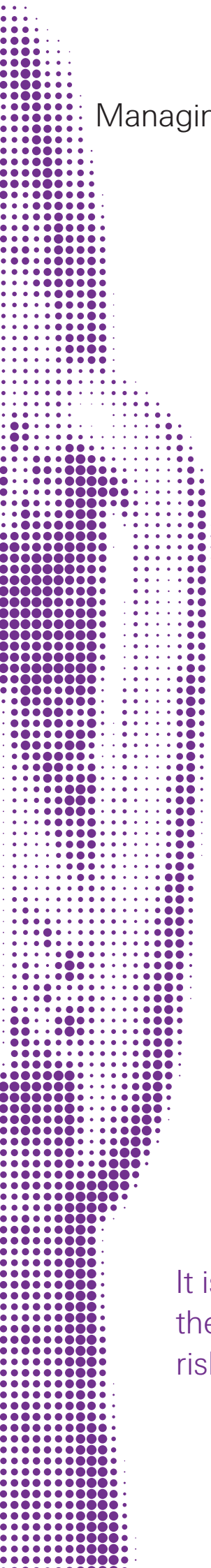
Insurance-linked securities are particularly attractive for investors seeking diversification.

Managing risks lies at the heart of what reinsurers do. In recent decades the scope of risk management has widened significantly. It is no longer confined to traditional underwriting risk but also encompasses risks to a company's investments, its capital base and liquidity position.

Risk management in reinsurance is about anticipating, identifying, assessing, modelling and controlling risks. Reinsurers create value by extracting information from a very large data pool of risks which they collect globally. A particular challenge is to establish where the interdependencies between individual risks lie and to ensure that the aggregate exposure is in line with what a reinsurance company is willing and able to bear. While it might look like reinsurers take a bet on whether an adverse event will happen or not, decisions about risk-taking are made in a controlled way and enabled by a very sophisticated risk management framework.

Enabling risk control: The risk management framework

It is important to clarify roles and responsibilities and distinguish between the risk owner (Board), the risk taker (business unit) and the risk controller (independent risk manager) for the entire business and specific transactions. Senior management is the ultimate risk owner of the company and plays an important risk management role by defining the company strategy. Business unit managers are the actual risk takers and have the responsibility for properly assessing and pricing risks. The specific risk management function, under the stewardship of the chief risk officer, is responsible for risk governance, risk oversight and independent monitoring of risk-taking activities. It supports



Managing risks in reinsurance

decision-making with state-of-the-art risk models that provide insights into how each risk that the company assumes contributes to the overall risk profile and affects capital requirements.

A particular challenge is to take account of accumulation potential. In contrast to a portfolio of different and independent fire risks, exposures to earthquakes or windstorms carry a potentially huge accumulation potential for the reinsurer. One single event can easily trigger losses in thousands of policies and therefore appropriate modelling and assessment are required.

Risk management starts at the top of the organisation, with the strategic steering of the company, in particular by defining the risk tolerance and the risk appetite. Defining the organisation's risk tolerance means stating explicitly what magnitude of a loss event the company can withstand without going bankrupt. This maximum aggregate loss amount depends on the available capital and required liquidity.

The risk appetite is then defined to determine where the company's capital is best invested to generate the required returns or in other words defining what types of risks the company wants to assume (eg natural catastrophes versus liability or life insurance risks) and allocating the capital to these businesses accordingly. Decisions about particular transactions are then taken by the "risk taker", which could be, for example, a particular business unit. Steps and decisions made by the company should be monitored and signed off by the "risk controller" which is risk management.

A key consideration is to what extent a risk can be diversified. A reinsurer's capacity to safely assume complex and large risks depends not only on its capital strength, but also on its ability to spread its risks. Reinsurers achieve a high

degree of diversification by operating internationally, across a wide range of different lines of business and by assuming a large number of independent risks. Diversification over time is also an important factor. The more risks meeting these criteria that are added to a reinsurer's portfolio, the lower the volatility of that reinsurer's results. Lower volatility translates into reduced capital requirements, or alternatively, allows the reinsurer to take on more risk with its existing capital base.

Based on these considerations, specific limits are then set for every single risk-taking activity. It is of utmost importance for reinsurers to adopt a holistic approach towards risks, not only looking after "traditional" insurance and hazard risks but also to incorporate counterparty credit, financial market and operational risks. The risk management framework should encompass all three major value drivers in reinsurance: Underwriting management, asset management and capital management.

Underwriting: Assessing, pricing and assuming insurance risk

The core business of insurers is to take insurable risks off households' and firms' shoulders. Before assuming these risks on their balance-sheet, insurers examine, classify and price them. The underwriting process in the reinsurance industry is very similar; the major difference is that the risks are assumed from insurance companies and not from policyholders themselves.

An insurer seeking coverage provides the reinsurer with the relevant data. The reinsurer then determines whether additional information about the characteristics of the insured objects or persons is needed. In non-life reinsurance, this usually includes information about an object's specific location, value and particular exposure to certain risks. For individual buildings, for example, the specific exposure can be established through flood or wind zone maps. In life reinsurance, underwriting decisions are essentially based on information about

It is important to distinguish between the risk owner, the risk taker and the risk controller.

the risk of death or illness of the policyholder, such as age, gender, and medical as well as lifestyle factors.

Risk management should encompass the three value drivers: Underwriting, asset management and capital management.

When assessing risks, any insurer or reinsurer must take into account the fundamental principles – and limitations – of insurability. Insurability is not a strict formula but rather a set of basic criteria which must be fulfilled for a risk to be (re)insurable. Disregarding these constraints would ultimately jeopardise the (re)insurer's solvency and ability to honour its obligations. But that also means that certain exposures remain uninsurable. The following are criteria for insurability:

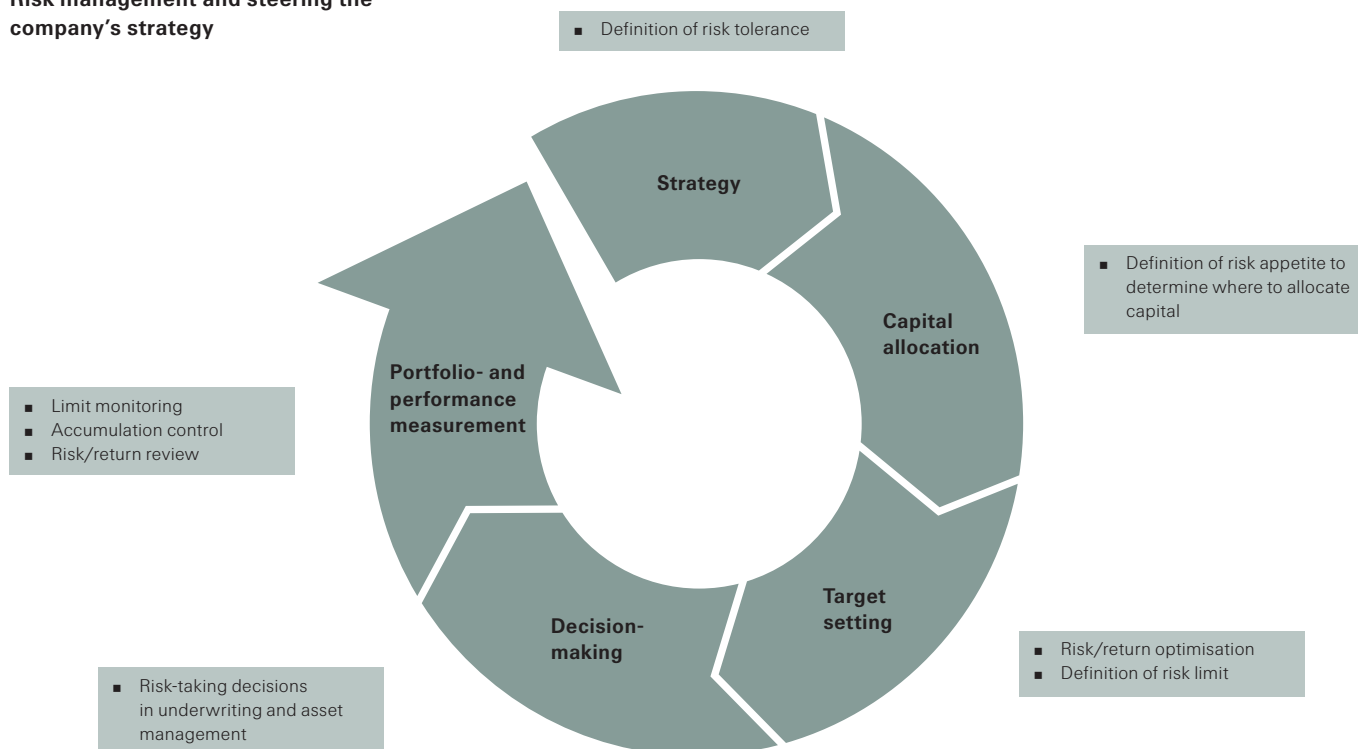
Randomness: The time and location of an insured event must be unpredictable and occurrence itself must be independent of the will of the insured. Insurers have to keep in mind, that the existence of insurance may change the behaviour and the occurrence of an insurable event (moral hazard).

Assessability: The frequency and severity of claimable events can be estimated and quantified within reasonable confidence limits.

Mutuality: For the insurer and reinsurer, it must be possible to build a risk pool in which risk is shared and diversified at economically fair terms.

Economic viability: From the reinsurer's perspective, the price needs to cover the expected cost of acquiring and administering the business as well as – and this is the bulk of the total – claims costs. In addition, the price must allow for an appropriate return on the capital allocated to the risk, a return which meets shareholder's return requirements.

Risk management and steering the company's strategy



Source: Swiss Re

When assessing risks, any reinsurer must take into account the fundamental principles of insurability – a basic set of criteria to be fulfilled for a risk to be insurable.

Experience- or exposure-based rating can be applied to determine the price of a risk. Experience-based pricing is used when historical claims experience can be applied to the current situation, as for example with fire and mortality risks

where underwriters can draw on long historical time series. For other risks, like low-frequency, high-severity natural catastrophes or pandemics, there are no extensive data pools on insured losses. Underwriters need to come up with a price based on the individual merits of the exposure which is being specifically modelled, using both scientific information and expert judgment as well as scenario thinking. Pricing, therefore, is more than a quantitative science.

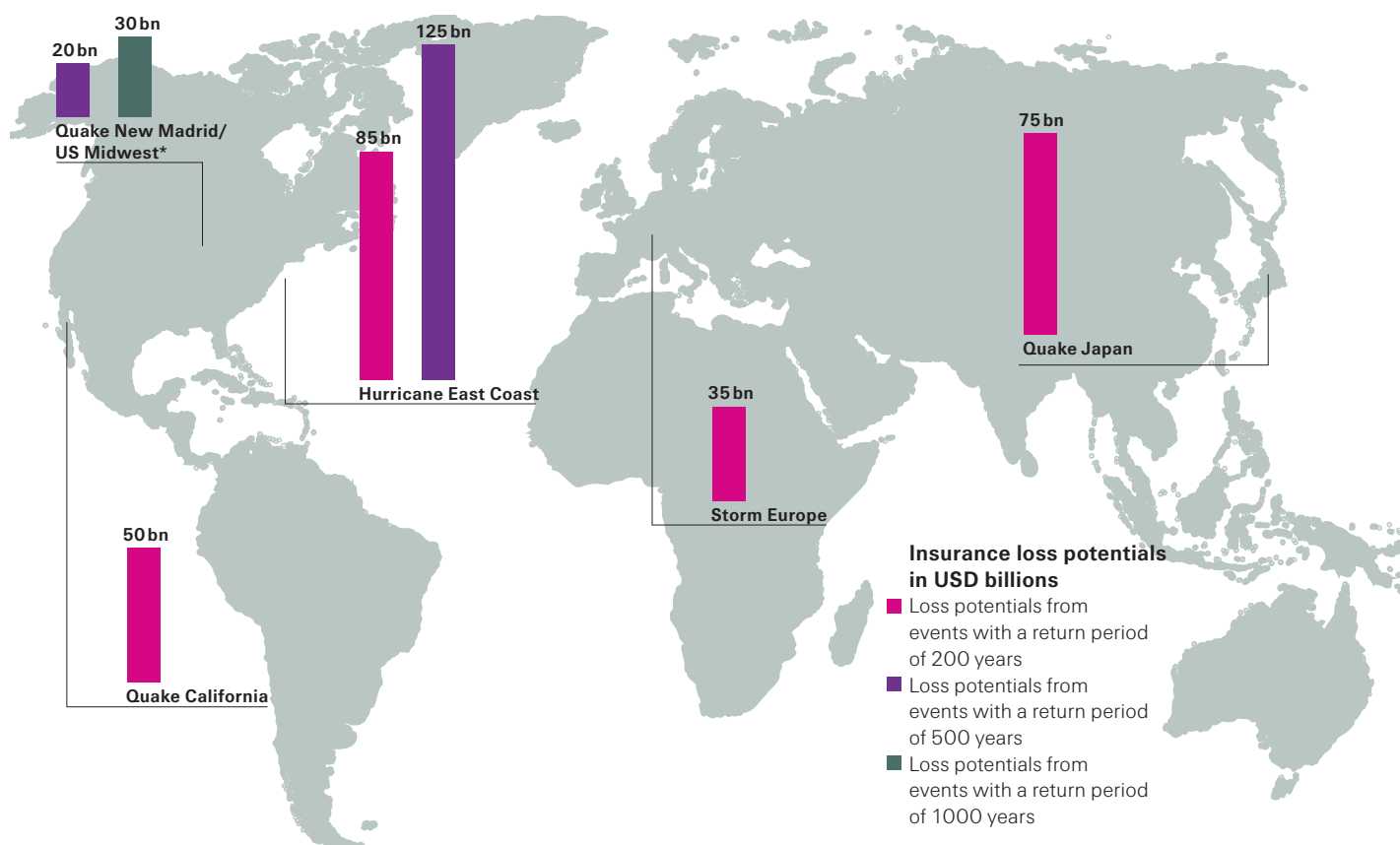
For a reinsurer, thinking the unthinkable is a core competency of utmost relevance to its long-term survival. The graphic below illustrates the enormous size of natural catastrophe exposures which need to be modelled.

Peak risks consist of:

- Earthquakes or storms
- in industrialised countries
- with high insurance density

The world's largest natural catastrophe loss potentials

Insurance loss potentials from natural catastrophes are on the rise – globally. This trend reflects an increasing concentration of insured values in catastrophe-prone areas, such as China's Eastern coastal region, changing weather patterns related to climate change as well as the growing complexity and interconnectedness of globally integrated economies and corporate value chains. Especially for reinsurers, the correct modelling of such exposures is of crucial importance – given their major role in assuming and managing these risks.



* A very small loss is assumed for the 200 year return period

Terrorism: Testing the limits of insurability

The destruction of the World Trade Center on 11 September, 2001 claimed more than 2 600 lives and wrought hitherto inconceivable damage on a section of lower Manhattan. Previously, losses from terrorist acts were comparable in size to other property losses, and terrorism was rarely excluded from property policies. The attacks, together with subsequent terrorist acts in Europe and Asia, clearly demonstrated the human toll and financial consequences of international terrorism.

The potential losses of a major terrorist attack could involve multiple lines of insurance and could far exceed the financial capacity of the insurance industry. These developments, combined with increased demand for terrorism insurance, call for new solutions involving public-private partnerships, such as specialised terrorism pools making best use of the capacity available from insurers, reinsurers and the government.

While parameters have changed, the risk of terrorism can nonetheless be insured privately if liabilities are limited and premiums are commensurate with the new dimension of this risk. In addition, appropriate involvement of governments is needed to set the necessary framework and to provide funding for some of the potentially enormous terrorist attacks. Without state involvement, extremely large losses may be substantially underinsured.

Asset management: The other side of the reinsurance business model

Asset management is an integral part of the core reinsurance business model. Reinsurers collect premiums and in exchange they provide their clients with protection. Reinsurers are thereby obliged to indemnify their client after a claim event. Generally, there is a time-lag between the premium payment and the claim payment during which the funds are held on the reinsurer's balance sheet and can be invested in different asset classes. How long the funds are held differs significantly between lines of business and contract structure. This influences the investment decision.

To have sufficient funds for claims payments, the reinsurer estimates the expected future claims payments, establishes adequate reserves and invests these funds in corresponding asset classes. Premium and investment income together need to cover all the expected losses, administrative expenses and capital costs, in order to generate economic value. In addition to these claims reserves, the reinsurance company needs to hold shareholder capital as a buffer to cover eventual adverse surprises. The shareholders accordingly expect to have sufficient yield on the provided capital.

The objective for the reinsurance investment management process is therefore to create value for both cedants buying reinsurance and the shareholders of the reinsurance company. Both estimated future claims payments (= liabilities) and the values of the invested reserves (=assets) change with the movements of the capital markets. If the value of liabilities and investments diverge, then this can have an impact on shareholder capital in both directions. Matching and then managing the relative changes between liabilities and investments is a core competency of any reinsurance company. This process is known as asset-liability management (ALM), which is described in the box below.

The ALM process also takes into account other investment constraints, apart from the matching of the liabilities, such as the company's overall risk tolerance and regulatory restrictions. In every market in which the reinsurance company conducts business, there is a regulator. The regulator makes requirements of the reinsurance company to hold sufficient assets, proscribing not only their value, but also their liquidity risk and, in many cases, the type of instrument. Furthermore, the reinsurer needs to review the risk and return expectations for the different assets.

Asset-liability management

The ALM process is designed to maximise the risk-adjusted investment return. This can be achieved at different levels of the investment management process and is normally differentiated into risk-free return, market-return and active return. The risk-free return originates from the liability matching portfolio set-up in order to avoid a mismatch between the outstanding liabilities and invested reserves. These portfolios are mainly invested in low-risk fixed income instruments with similar cash flow characteristics as the expected future claims. For example: Expected mortality claims payments in five years can be replicated by a five-year zero-coupon bond with the same maturity and payout.

The market return is generated by investing in different asset classes. The risk allocated to the respective asset class is determined by the reinsurers' overall risk capacity and risk appetite. The active return is generated by identifying temporary market dislocations. A dedicated portfolio manager and committed teams are necessary to follow the financial markets closely. A variety of instruments and techniques can be used to generate active, above-market returns.

Capital and liquidity management: The flip side of risk management

For any insurer or reinsurer, capital is the prerequisite for assuming underwriting, financial market, counterparty credit and operational risks. Capital provides a buffer against unexpected losses. These could come from different sources such as when claims payments exceed premiums and investment income, when loss reserves turn out to be insufficient or when assets are impaired, for example during severe stock market slumps, as we witnessed in 2001–2003 and 2008–2009. Capital management must ensure that the company is able to withstand unexpectedly high levels of loss.

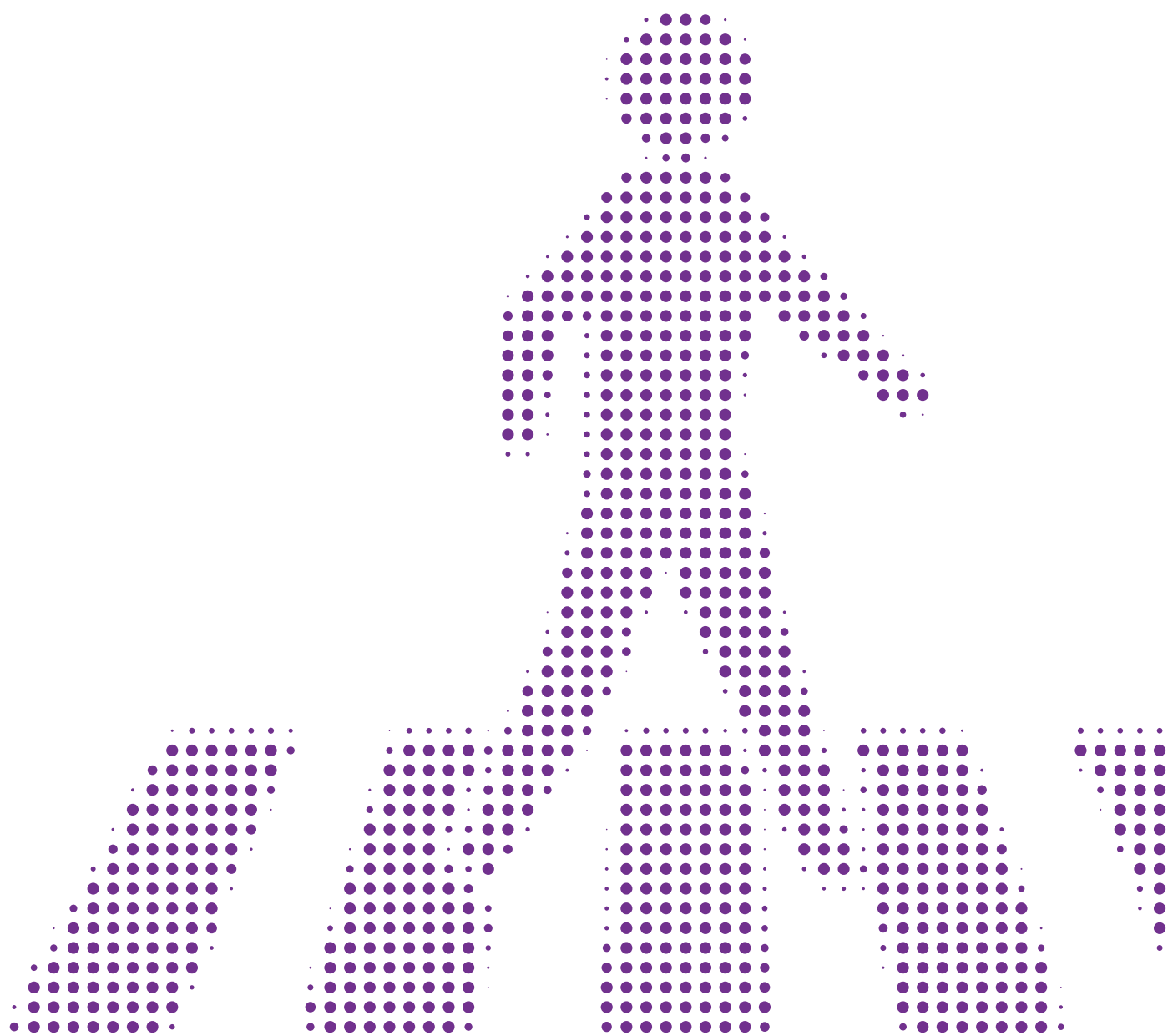
they fall due. Insurance and reinsurance companies generate liquidity in their core business through the premiums they receive up-front when providing a (re) insurance cover. As such they effectively pre-fund future claims payments. Therefore, liquidity risk is limited. Nevertheless, it is important to monitor and manage liquidity actively to have sufficient liquidity even in extreme situations. A reinsurer's capital and liquidity management has to respond to various and partially conflicting stakeholder interests: Customers, ie primary insurers, care about the prompt payment of claims. Regulators focus on policyholder protection and – in light of the financial crisis – overall systemic stability. Rating agencies are primarily interested in capital being sufficiently available to honour obligations to policyholders and debt holders. And investors seek attractive risk-adjusted returns and put pressure on companies to maximise capital efficiency. While all stakeholders agree that a reinsurer should have an adequate capital position, there are different views as to how capital adequacy should be measured.

These differences in perspective reflect the dynamics of the regulatory, accounting and competitive environments and add significantly to the complexity of a reinsurer's capital and liquidity management processes. The convergence of these perspectives towards a consistent economic view has gathered pace recently (partly driven by Solvency II) and is ultimately expected to prevail.

Future claims payments are effectively pre-funded by premium income.

Any discrepancy between a reinsurer's risk profile and its capital base needs to be addressed by raising additional capital, transferring risk to third parties (for example, through retrocessions, which are cessions to other reinsurers, or insurance-linked securities) or reducing the amount of risk assumed in underwriting and investment activities. Liquidity management ensures that the company is able to pay claims and meet all financial obligations when

Regulators and supervisors in the financial industry aim to protect customers and to ensure the general functioning of the financial markets. But financial institutions differ greatly from one another and it is important their unique characteristics are taken into account when new regulations are developed.



The regulatory framework for reinsurance

While regulation and supervision are needed to protect insurers and ensure the stability of the market, they also play an important role in establishing the basis for reinsurance to function efficiently. In addition to fundamental requirements such as freedom of contract and legal security, these conditions include capital requirements which take into account the specific characteristics of the reinsurance business model as well as the ability to provide reinsurance internationally.

Insurer insolvencies typically result for different reasons – hardly ever from an inability to recover reinsurance proceeds.

A different regulatory framework for reinsurers

There are significant differences between primary insurance and reinsurance. Most insurance policies are sold to households and individuals, and the main objective of regulators is to protect these parties. Therefore, in most countries, if an insurance company has direct dealings with retail customers, it needs a local insurance license and virtually all aspects of that insurer's operations are subject to regulatory oversight: Capital requirements, claims practices, policy provisions and in some countries even premium rates. By imposing such robust regulatory conditions, governments strive to protect the solvency of primary insurers and, ultimately, to ensure that they can continue to pay legitimate claims made by policyholders.

But one might ask the question whether this also needs to be the case for reinsurance companies. Most reinsurers do not have direct contact with retail clients. Reinsurance clients are sophisticated counterparties such as insurers, brokers or other reinsurers. However, the default of a reinsurance company could have an indirect impact

on retail customers in so far as it could possibly bring a primary insurance company to the brink of default. It is therefore in the interests of the primary insurer to cede their risks to a reinsurer which enjoys strong financial health. That only a few insolvencies have been attributable to a primary insurer's inability to recover reinsurance proceeds illustrates the effectiveness of the reinsurance market as well as the fact that most primary insurers manage their counterparty exposure relative to their other sources of capital.

Against this backdrop, capital requirements for reinsurers have traditionally been either the same as those for primary insurers or more liberal. The aim of reinsurance regulation is to safeguard the financial health of ceding companies against the failure of the reinsurance company and thereby to ensure the proper functioning of the insurance market. Some countries (eg USA, Canada, Australia, UK) have for a long time had prudential regulation of pure reinsurers on a similar basis to insurers. Many EU countries had no regulation and others a light regime. The EU introduced minimum prudential regulation for reinsurers effective in all Member States in 2005. These rules are similar to those applied to primary insurers in the EU. The regulation also introduced a concept of mutual recognition between Member States, facilitating cross border business within the EU and a concept of allowing market access to non EU countries meeting 'equivalent' requirements.

In Switzerland reinsurers were subject to reserving and capital requirements similar to those for direct companies and now are required to comply with the Swiss Solvency Test. The International Association of Insurance Supervisors (IAIS) has standards on the supervision of reinsurance and reinsurers.



Capital requirements: Towards a risk-based and economic approach

The European Union's new regulatory framework for insurers and reinsurers is due to be applied by 2013. The Solvency II framework replaces Solvency I which was not risk sensitive. Non-insurance risks were not explicitly captured. For

In the United States, the Risk-Based Capital (RBC) system was introduced as early as 1994. However, Solvency II goes one decisive step further: It will rely on market-consistent valuation of assets and liabilities, whereas RBC is based on US statutory accounting rules, and thus does not reflect the true economic reality of a company's balance sheet.

Solvency regimes based on economic principles and an all-risk approach are pointing the way forward for how insurance and reinsurance regulations should look around the world.

Principle-based, all-risk approaches point the way forward for (re)insurance regulation.

non-life business, capital requirements were set as a percentage of premium income or a percentage of claims and for life business, as a percentage of reserves and of sum at risk – both rather simplistic and crude approaches which disregarded the fact that, in terms of underlying risk, one unit of premium or reserve can differ significantly from another.

The new Solvency II framework is more closely aligned with the (re)insurers' specific risk profile: In addition to conventional hazard risks (eg a fire loss), other major risks emanating from financial markets (eg changing interest rates), counterparties (eg insolvencies) and operations (eg faulty IT systems) need to be underpinned by capital.

Access to international markets: A prerequisite for doing reinsurance business

Diversification is a fundamental part of how reinsurers create value and it ultimately provides efficient and effective cedant protection – a key aim of law-makers and regulators. It is achieved by writing a mix of business that is exposed to different, not totally connected, risk factors. This can arise from different geographical locations but also from different lines of business. As a result, a loss event within one product line or a local market can be absorbed by the return on other policies not affected by that event.

For example a reinsurer who accepts Japanese earthquake exposure could balance this with uncorrelated exposure from other parts of the world. Any barriers to accessing international markets would impair a reinsurer's capacity to absorb risk in an economically viable, socially responsible and reliable way. Examples of such restrictions include regulations that prevent foreign reinsurers from setting up in a country or prohibiting local insurers from wholly or partially reinsuring abroad.

For international diversification to work, reinsurers also need the ability to invest their premium income internationally to pay local claims and to move their capital from one jurisdiction to another. Restrictions on the free flow of capital for

Open markets for reinsurance are a pre-requisite to absorb large risks efficiently.

reinsurers curtail their ability to move funds to cover major events. Deposit or collateral requirements which compel reinsurers to maintain specific funds within the country to cover their liabilities to ceding companies may serve as an example of such restrictions. Such policies lead to a fragmentation of the reinsurers' capital base, requiring companies to maintain larger capital funds than otherwise needed. The servicing of that capital adds to the cost of reinsurance which has to be reflected in reinsurance pricing.

The business model of (re)insurers is fundamentally different from that of banks.

Core reinsurance business does not pose a systemic risk

The financial crisis of 2008–2009 has highlighted the importance of effective regulation and supervision of the financial industry and the need for better monitoring of potential systemic risks. Studies on the potential impact of an extreme loss scenario have shown that the effects of the collapse of a large reinsurer would not threaten the stability of the insurance market or financial system. The business model of insurance and reinsurance is fundamentally different from that of other financial services providers. Banks for example are exposed to the risk of a run on deposits, triggered by nervous customers who might wish to empty their accounts in the event of an impending collapse. For insurers, who effectively pre-fund claims from the premiums they earn at the start of a contract's life, such a risk is not relevant. Pay-outs are triggered by actual events and not at the behest of the policyholder. The exception is with certain life insurance policies. But even here early-withdrawal penalties make this unlikely.

Why are (re)insurers' core activities not a systemic risk?

Size	Diversification not size is the key
Interconnectedness	Modest impact of reinsurer failure due to low cession rates and conservative reinsurance recoverables held on primary insurers' balance sheets
Substitutability	Reinsurance is highly substitutable as demonstrated by net capital inflows into natural catastrophe reinsurance during periods of rising prices
Timing	Timing of transmission between insurers is significantly slower than between banks, allowing mitigation measures that dampen systemic risk

Note: Criteria based on Financial Stability Board and IAIS

Source: Geneva Association, Systemic Risk Report, 2010

A study published in early 2010 by the Geneva Association, a global insurance industry think-tank, confirmed earlier findings. A reinsurer's core activities — managing capital, providing reinsurance protection and transferring risk through retrocession or capital markets — fundamentally pose no systemic threat to the financial system. These activities are either too limited in size to pose a danger to the stability of financial markets, or their potential impact could be easily absorbed by the industry, such as in the case of unprecedentedly large claims which in any case are only paid out gradually. Contagion risk, or the risk of knock-on effects from the failure of a particular organisation, is also low due to the moderate level of interconnectedness in the industry.

Reflecting economic reality: Towards cross-border group supervision

Insurance and reinsurance regulation still largely operates at the national level, whereas an increasing number of companies write business and maintain an operating presence in many different jurisdictions. The financial crisis highlighted the ineffectiveness of such a fragmented regulatory approach. It is obvious that large cross-border institutions, whether banks, insurers or financial conglomerates, should be supervised in their entirety, for example, by a lead supervisor, based in the group's home country, who works in close coordination with local counterparts. Such an approach would also effectively support the harmonisation and mutual recognition of standards across jurisdictions.

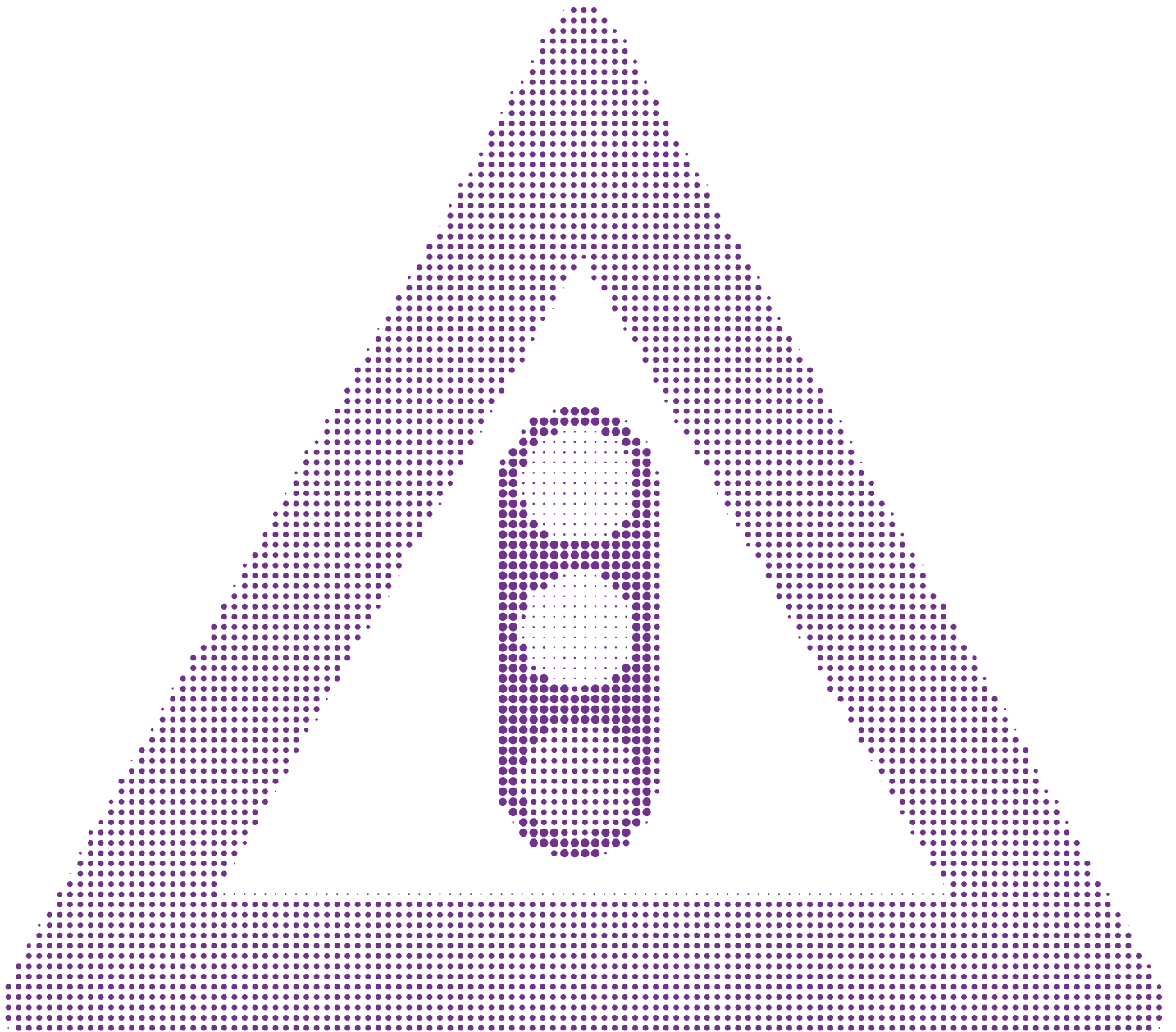
Solvency II – A new global benchmark for insurance regulation

In early 2008, the European Council, together with the European Parliament, approved a joint compromise on the Solvency II Framework Directive, paving the way for a new pan-European approach to calculating capital requirements. When fully implemented, insurers and reinsurers in the European Union will operate under some of the world's most progressive insurance and reinsurance regulatory standards. But what exactly will change under Solvency II?

The new solvency rules are intended to establish a more risk-sensitive capital regime. The Solvency II framework is built on three pillars. The first of these pillars sets out the quantitative requirements that an insurance company's financial resources must fulfil. A key component here is that the use of internal risk models will be permitted to determine the required capital. The second pillar has a qualitative aspect: It establishes the principles for the supervisory review process as well as for the internal risk management of insurers. The third pillar concerns disclosure and transparency, with the aim of promoting market discipline.

Solvency II is based on an economic view and takes into account the company's total balance sheet. Broadly speaking, available capital is calculated as the difference between assets and liabilities valued on a market consistent basis. The Solvency Capital Requirement (SCR) is determined by taking into account all the risks facing insurance or reinsurance companies' balance sheets in an integrated way, be it insurance, market, counterparty credit and operational risk.

A major difference between Solvency II and the old Solvency I system is that the new approach will assess accumulation potential and explicitly recognise diversification benefits. Diversification is a fundamental principle of insurance, and in particular reinsurance. Under Solvency II, (re)insurance companies will be required to check whether their available capital is sufficient to pay even for rare (1 in 200 year), large-scale claims, taking into account correlations between risk factors, that is to say, their accumulation potential.



Reinsurance was invented to help societies deal with the bigger risks associated with economic growth in the 19th century. In a similar way, reinsurance continues to help companies and society tackle some of the biggest challenges of the 21st century.

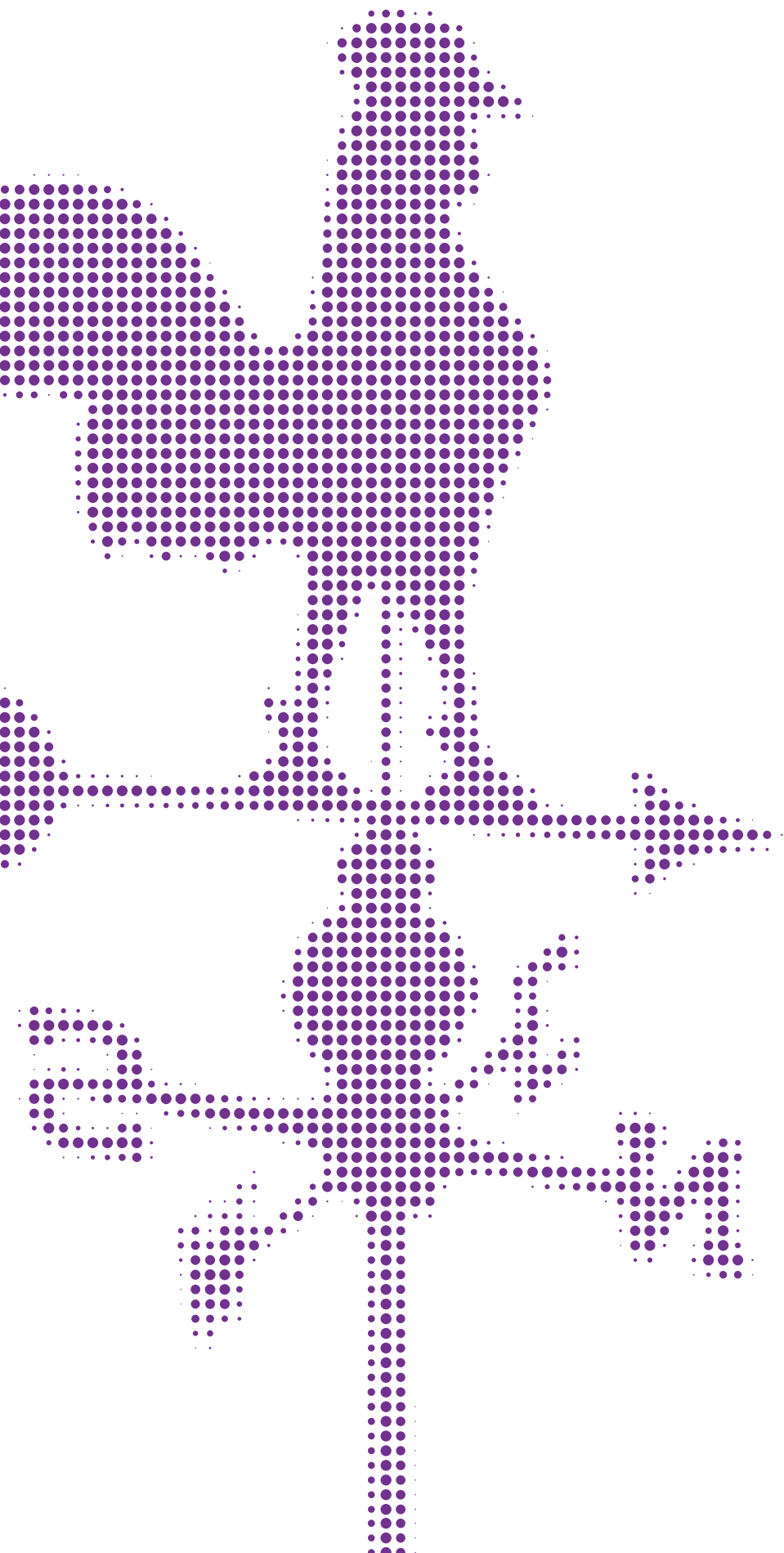
The global risk landscape is becoming ever more complex, creating significant issues for insurance companies and for governments around the world. Changes in demographics are putting pressure on available funding for retirement in many industrialised economies. At the same time, exposure to natural catastrophes is also increasing, as people and assets become ever more concentrated in those parts of the world that are prone to disasters such as hurricanes. In the long term, there looms the threat that climate change will only exacerbate the frequency and severity of weather-related events such as floods, drought and wildfires. The impact of these developments will have profound consequences for sectors such as construction, as well as agriculture.

Longevity risk: Managing the shortfall between pension assets and liabilities

Increased life expectancy and ageing populations pose enormous challenges to society. According to the European Commission, there are currently four people of working age in the EU for each individual over 65. By 2060, it is estimated that this ratio will halve. Amongst other factors, this development reflects major medical advances, increased levels of wealth and improved nutrition. By the middle of this century, life expectancy at birth is projected to reach the mark of 90 years in certain countries.

To be clear, the challenge of managing this longevity risk is not that people are living longer, but rather that life expectancy is increasing much faster than predicted, at a rate that is constantly outpacing actuarial projections. This can lead to considerable shortfalls between pension fund assets and future liabilities, particularly in a low interest rate environment and in the case of defined benefit pension plans. There are simply fewer wage and salary earners to finance a growing number of retirees.

Reinsurance solutions for today's societal challenges



If current trends continue, pension schemes will become increasingly unsustainable, presenting the danger that individuals will outlive the means that are available to them to support their retirement. In order to manage longevity risk associated with annuities or defined benefit pensions, many pension providers are switching to a defined contribution scheme and/or transferring their liabilities to insurance companies using bulk annuities. This allows a pension scheme provider to transfer all investment, inflation and longevity risks associated with paying income to retirees in exchange for a premium and a share of the assets. However capacity for this kind of longevity risk in insurance is limited and will be insufficient to address the long-term challenges associated with demographic change.

In order to bridge the gap, traditional insurance solutions need to be complemented by innovative ways of hedging or redistributing longevity risk. One potentially more efficient way to de-risk pension schemes is to remove longevity risk and manage it separately. Longevity swaps, in which a (re)insurer covers annual payments for longer-living pensioners in return for a specified stream of payments, are becoming a preferred way to do that. By exchanging potential future claims for fixed premiums, this type of risk transfer gives pension providers the certainty of making known payments to a counterparty over a specified period instead of paying

benefits to its pensioners for an unknown period. In practice, rather than the pension plan paying a premium to the insurer and the insurer paying the claims to the pension plan, only the net difference is exchanged – or “swapped”. Another option would be to hedge longevity risk with a contract where payments are made based on the value of a longevity index linked to improvements in life expectancy within a given population. While such transactions have been rare, they have the benefit of allowing the pension scheme to hedge risks in connection with general longevity gains.

Reinsurers play a leading role in designing and developing risk transfer solutions for governments.

Reinsurers play an essential role in developing and offering innovative products such as these. However, with capacity in the industry limited and the future development of pension costs unclear, it is apparent that capital markets solutions need to be developed and that longevity risk needs to become a viable asset class for a broad base of investors. Until now, insurance and reinsurance companies have been the principal buyers of longevity risk, reflecting their natural interest in diversifying portfolios and offsetting mortality risks written through life insurance policies. With their unrivalled expertise in pricing risk, reinsurers have an important role to play in helping to transform longevity into a viable

investment product. By transferring longevity risk from pension schemes to (re)insurers and then passing some of these risks onto capital markets, the mechanisms of the new longevity market would be similar to the natural catastrophe insurance risks that have been transferred to investors in the form of insurance-linked securities. A capital market structure would take time to establish, but this is necessary to develop future capacity for longevity risk in the insurance industry and beyond.

Innovation in disaster risk financing: Making societies more resilient

The economic losses that result from natural catastrophes are clearly increasing, driven by the concentration of people and assets in catastrophe-prone areas and by climate change. Despite increasing insurance penetration, a large part of these losses remains uninsured, placing a considerable financial burden on individuals and governments. More often than not, governments – and ultimately taxpayers – are left holding the bill for major disasters, exacerbating the strain on public finances that may already be stretched.

The gap between insured and economic losses tends to be widest in developing and emerging economies. Generally, these are the economies where the financial resources necessary to deal with the impact of disasters are most limited and where the economic consequences of

Innovative approaches to managing sovereign risks

Mexico decided to take an innovative approach to managing the country's catastrophe exposure and turned to international organisations with experience in capital markets to tap investors for funds which are ultimately deployed to those in need in the event of a disaster.

The resulting collaboration with the World Bank produced a product that pays out based on the pre-defined magnitude of a trigger event (eg the magnitude of an earthquake).

Such insurance coverage can be a particularly effective tool for regions that are afflicted by droughts, storms, floods or earthquakes but where loss assessment is prohibitively expensive or difficult.

natural catastrophes can have long-term implications by hampering future growth prospects and even reversing the gains already made. Especially for these countries, solutions involving risk transfer, can bring major benefits in terms of being better able to manage and fund the impact of disasters.

Reinsurers also play a significant role in terms of creating the conditions necessary for local insurance companies to provide individuals and corporations with insurance coverage against major natural catastrophes. In order to properly fulfil their economic and societal function in this regard, however, reinsurers and insurers must be able to charge the true price for the risks that they take on. For example, if insurance or reinsurance were to be offered at artificially low levels, then that would risk producing the wrong signals about where and what to build when it comes to constructing in hazard-prone areas.

Supporting the development of new solutions designed to address insurance gaps is another of the important functions that reinsurers play in terms of helping to making society as a whole more resilient to natural catastrophes and other

disasters. Microinsurance is one way of providing low-income households with access to insurance, thus making them less vulnerable to the risk of falling into poverty as the consequence of a major disaster. Reinsurers have contributed to the recent growth of microinsurance by assisting microfinance institutions and primary insurers in designing and developing appropriate products and in helping to set-up appropriate risk sharing frameworks. In fact, reinsurance coverage is generally seen to be a necessary condition for the scaling up of microinsurance solutions.

Governments themselves are also highly exposed to the financial consequences of natural catastrophes. They not only shoulder the immediate burden of paying for emergency and relief efforts, but they are also responsible in the longer term for the subsequent costs of major infrastructure projects aimed at rebuilding damaged roads and other public facilities. Traditionally, the public sector has adopted a post-event approach to disaster funding. This includes raising taxes, reallocating funds from other budget items, accessing domestic and international credit, and borrowing from multilateral finance institutions. Increasingly, however, governments are taking a more proactive approach to disaster risk financing and are securing potentially required funding before natural catastrophes even occur. Such pre-event financing mechanisms include insurance cover and also certain capital market

Reinsurers were crucial in the development of weather-index insurance.

Agricultural crop insurance

In July 2009, Swiss Re entered into an agricultural reinsurance agreement with the Beijing Municipal Government. Under the agreement, the Beijing Municipal Government will pool all agricultural insurance business, and provide funding for purchasing reinsurance cover directly from reinsurers. Thereby, the government is able to transfer substantial agricultural risks to the private sector. In the event of a catastrophe loss, Swiss Re, as lead reinsurer, will absorb a large portion of the claims. This public-private partnership facilitates the sustainable development of agricultural insurance, stimulating agricultural productivity in China amid global concern over food security.

The transaction is a further example of how partnerships between the public and private sectors can increase local and regional food security. Swiss Re concluded a number of agriculture-related, public-private business transactions including the provision of weather insurance in Mexico, India and Africa.

solutions, such as bonds that pay out in the event of a pre-defined trigger such as an earthquake of a particular intensity. Reinsurers again play a leading role in designing and developing such new risk transfer solutions for governments.

Food security: Weather-index insurance to stimulate agricultural investments

Farmers are highly exposed to the consequences of a failure in their harvest, whether as the result of drought or other natural catastrophes. This makes investment to increase food production a massive challenge. Reinsurers can help to develop or to support innovative solutions that provide them with financial protection against those weather conditions that would threaten agricultural production and impact their ability to make a living from the land. In developing and emerging countries in particular, such products can make an important contribution to promoting economic and social development.

Reinsurers have a long tradition of enabling new technologies.

Innovative solutions for agricultural protection include index-based insurance products. Instead of being tied to an actual loss amount, these are tied to an index such as rainfall, temperature, humidity, crop yields or satellite-based vegetation indices. As a result, administrative costs for these products are much lower, as there is no need for a case-by-case damage assessment and payout is often faster.

Reinsurers have been crucial in the development of weather derivatives, a market which has been growing strongly for over 10 years. The insurance industry has successfully translated this tool to various weather-exposed industries.

Addressing climate change: Adapting to the unavoidable consequences and enabling green technologies

The prospects of more extreme weather events due to climate change and the potentially devastating economic, social and political ramifications are of great concern to reinsurers. Reinsurance is key to helping governments to develop effective climate adaptation and helping societies become more climate-resilient.

Reinsurers started looking at the phenomenon of climate change as early as the 1970s, making their findings available to the public. Building on their core competence of risk underwriting, reinsurers are actively developing and launching new products which not only help policyholders adapt to climate change but also have a great potential to facilitate the successful conversion to a low-carbon economy. Reinsurance companies have a long tradition of enabling new technologies, including green technologies, such as wind farms and solar technologies, by providing reinsurance coverage.

As major risk carriers, reinsurers are at the forefront of efforts to identify emerging risks posed by new technologies. This is a vital element in safeguarding primary insurers – and ultimately each individual and corporate policyholder – over the long-term against the financial consequences of adverse events, and to enable the economy and society at large to take the risks that allow them to move forward.

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The essential guide to reinsurance

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