



Insurance-linked securities

October 4, 2010

A niche market expanding

The market for insurance-linked securities (ILS) expanded strongly during the past few years. Although exact data on issuance volumes is not available – due to the private nature of many transactions – estimates suggest that the market grew tenfold during the past decade and more than doubled during the past five years.

Despite high growth rates, ILS have not yet found their way into mainstream asset management. Compared to other securitised products ILS represent a niche market, which to date has not justified the build-up of large buy-side resources. The main buyers of insurance-linked products are dedicated cat funds, hedge funds and money managers, followed by (re-)insurers and banks. Retail clients have so far been largely absent from the ILS market.

Insurance-linked securities have weathered the financial crisis relatively well. Due to the low correlation between insurance risk and credit or asset price risk, ILS were less affected by the crisis than other securitised products – although more than previously anticipated. Issuance declined during the crisis but has resumed pre-crisis levels in the non-life segment.

Lessons learned from the financial crisis will lead to more robust products, including the use of higher quality collateral and less complex structures. Meanwhile, systemic threats to financial markets appear to be limited, given the relatively small size of the ILS market.

Going forward, the market will receive support from various directions:

- For the insurance sector, ILS provide unique coverage unavailable in the traditional marketplace. They allow purchasers of protection to diversify their counterparties and access a separate pool of capital.
- Investors are presented with an uncorrelated asset class, which can be used to generate synergies in a portfolio context. ILS provide an efficient mechanism to place macro and micro views on specific insurance risks.
- Current low levels of securitisation relative to risk capital and traditional reinsurance capacity bear considerable potential for further issuance activity; additional support will likely come from the implementation of Solvency II.
- Demand for risk coverage is expected to expand, not least due to a rise in insurable value, changing demographics and an increased need to insure against natural catastrophe risk.

Key challenges remain in balancing the needs of investors and sponsors. To this end, further attention should be devoted to the development of products that are transparent and less reliant on counterparties. Increasing standardisation may further help to lower the cost of issuance, broaden the investor base and attract a critical mass in both ILS demand and supply.

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Introduction

During the past few years, insurers have made increasing use of alternative risk transfer instruments. By means of securitisation, insurers – particularly reinsurers – have started to shift insurance risk to capital markets. At the same time, investors discovered the new instruments as an attractive investment opportunity.

Both the insurance industry and investors have strong motivations to further engage in this market: While insurers are able to manage their risks more efficiently, investors benefit from additional diversification opportunities and attractive yields. Enhanced risk distribution holds benefits also for the insured, as opening insurance risk to capital market investors helps to expand insurance capacity and tends to lower insurance risk premiums.

Compared to the credit markets, securitisation of insurance risk is a niche market – however, one that has expanded strongly in recent years. Insurance-linked securities have weathered the financial crisis relatively well, although they were probably more affected than previously anticipated. In the meantime, new issuance – at least in the non-life business – has resumed pre-crisis levels, with a bright outlook for future growth.

What are the key drivers that will shape this market segment going forward? And what do the new instruments hold for investors? This study provides a primer on the ILS market. It reviews the wider economic principles that govern the use of ILS and gives a brief overview of the current size and scope of the market and identifies future growth drivers.

The economics of ILS

Imagine a hurricane striking a major US city, destroying hundreds of homes and generally wreaking havoc. In addition to creating human tragedy, such an event forces the government to mobilise additional resources to fund relief and reconstruction measures. To the extent that properties are covered by private insurance, insurers have to pay out large amounts, too, which can erode their capital base. In the case of Hurricane Katrina – the largest insured loss from a natural catastrophe – insurers paid out more than USD 60 bn. Primary insurers rely on reinsurance companies to protect themselves against unexpected losses. But also at the level of reinsurers, the capacity to bear risk is limited and losses from catastrophic events – such as Katrina – can be large relative to the equity capital of insurers and reinsurers.

ILS complement and extend traditional reinsurance

Against this backdrop, ILS can be used to shield an insurance company's equity from unexpected losses, just like traditional reinsurance does. However, in contrast to traditional reinsurance, the counterparty for a hedge need not be another insurance company but can be a capital market investor, such as a pension fund. This enables risks to be transferred to investors outside the insurance sector and increases risk-bearing capacity overall.

ILS allow for direct investment in insurance related risks

Before the introduction of insurance-linked securities (ILS), the stock market was the primary channel by which insurance risk was transferred to capital market investors – at least for the risks assumed by publicly listed insurers. By purchasing stocks, investors are able to indirectly acquire insurance risk and become the ultimate risk bearers of the risk insured.

Yet, those who invest are exposed to the entire portfolio of the insurer as well as to other company-specific risk, such as bad asset management. Only in recent years have alternative risk transfer instruments been developed, which has created the possibility to invest directly into specific, well-defined insurance-related risks without having the investment diluted by business risk of the insurance company.

The economic benefits of having such instruments can be summarised as follows:

ILS help to expand insurance capacity overall

— As mentioned above, natural catastrophes or pandemic events generally affect a whole region or an entire country. Losses can assume huge dimensions, which may eventually rise beyond the capacity of individual insurance companies – or even the industry as a whole – to bear them. Owing to the sheer size of global capital markets, capital market investors are in principle able to finance extremely large risks. Even extreme losses from catastrophic events would represent a mere fraction of capital market volume – in the case of Katrina losses, amount to 0.5% of US private bond markets.

ILS offer additional hedging opportunities to insurers

— By means of securitisation, potentially large losses are broken down into smaller pieces. The resulting securities can then be distributed to a broader investor base, often extending to other countries and groups of investors. This offers additional hedging opportunities and facilitates better risk diversification on the part of the insurer transferring the risk.

ILS provide an additional source of funding

— The life company business, i.e. pension or life insurance, often bears significant amounts of trapped value in the policies written, i.e. in the form of unrealised earnings from future premium payments. Such embedded value can be monetised by means of securitisation and thus serve as an additional funding source to the insurer.

ILS represent an uncorrelated asset class to investors

— From the investors' point of view, investing in insurance-linked securities offers additional possibilities for risk diversification. Since insurance risk is largely uncorrelated with credit or market risk, the risk-return profile of investors can be improved. The benefits from diversification can be particularly large in times when markets for traditional assets are very volatile.

ILS offer new investment opportunities

In addition to the diversification aspects, ILS provide an efficient mechanism to place macro and micro views on specific insurance risks. In the non-life business, ILS offer a high-yielding investment alternative to more traditional assets, whereas life ILS allow the investors to access highly-rated securities with longer tenor.

ILS provide valuable price signals

— Pricing in ILS markets can be used to derive more frequent – and possibly more accurate – price signals concerning natural catastrophe and other risks.

The use of ILS may create additional welfare gains

— From a systemic perspective, a liquid and transparent market for insurance risk leads, in principle, to a more efficient allocation of risk and a reduction in overall hedging costs. However, in order to reap these welfare gains from securitisation, the regulatory and supervisory regime needs to be sufficiently robust and suited to contain systemic risk.



How do ILS work?

Cat bonds and systemic risk

Unlike senior tranches in credit securitisations – which also cover low-probability high-loss events – most cat bonds are being rated below investment grade. The “fat tails” and changing correlations in insurance are one of the main drivers that led to the development of the cat bond market. Risks are generally well known to market participants and reflected by the risk premiums.

Only if the extreme risk materialises will cat bond holders suffer losses on their investments. Claims within the expected range on the other hand are generally borne by the insurers themselves. This ensures incentive compatibility and reduces systemic risk, as insurers keep an interest in the selection and monitoring of their clients.

Smaller capital investors, e.g. hedge funds or large diversified investors, e.g. pension funds, seem to be the natural counterparts for the insurance sector. With a cat bond, the sponsor's eventual claims are pre-funded. Unless the contracting partner is a highly rated, well-capitalised institution, pre-funding is preferred in ILS transactions. This ensures that claims can be honoured even in extreme circumstances. A potential source of systemic risk, namely that of a counterparty failing to honour its obligations, can thus be mitigated.

In order to increase the resilience of the insurance sector to severe shocks, it makes sense to place extreme risk either with well capitalised reinsurers or outside the insurance sector. Cat bonds facilitate the latter. Placing extreme risks outside the insurance sector ensures that there will be a sufficient amount of capital to absorb losses – even if the insurance sector in total faces large unexpected losses. Thus, from a system-wide perspective, cat bonds can be used to shield the insurance industry from a sector-wide shortfall in capital and reserves.

The relatively small size of the ILS market on the other hand limits the possibility for troubles in the insurance sector spilling over to other segments of financial markets.

Source: DB Research

Insurance-linked securities can be classified into three major categories – each of them reflecting a different motivation for the use of these instruments: first, ILS that are used to transfer peak risk to the capital markets; second, ILS which in addition to the transfer of insurance risks are used for financing purposes; and third, securitisations which are used to fund regulatory reserves in excess of what is economically deemed necessary.

To each end there are a host of different structures and instruments. To exemplify how ILS can serve the different purposes we look at (i) risk transfer using cat bonds, (ii) embedded value transactions and (iii) Regulation Triple X securitisations.

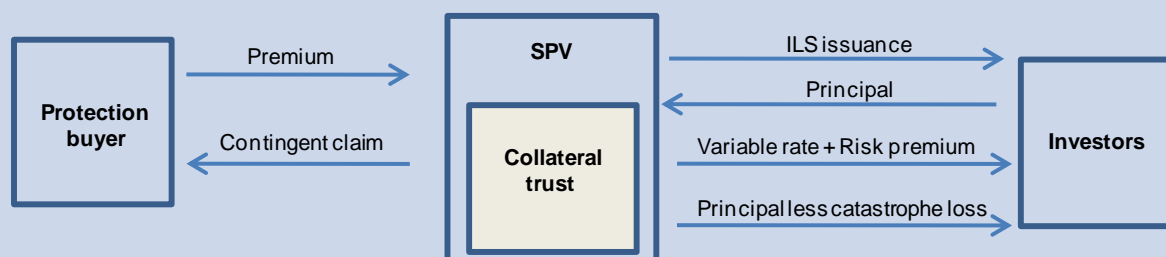
1. Risk transfer using cat bonds

With an outstanding volume of more than USD 13 billion at year-end 2009, cat bonds represent an increasingly attractive option for a sponsor who wishes to hedge against peak risks – although traditional reinsurance remains the most common form of hedging. In a cat bond transaction, the investor loses a portion of or the complete principal if the loss from a predetermined event, i.e. a US hurricane or European winter storm, materialises. The cat bond investors in turn are compensated by a premium – commensurate with the risk they are bearing – in addition to being paid the market rate on the principal (e.g. LIBOR).

In practice, the cat bond is issued by a special purpose vehicle (SPV), sponsored by the insurer (see chart 1). Such a vehicle is a legally independent, bankruptcy remote entity that is set up for the sole purpose of arranging the transaction. The SPV is used to transfer the proceeds of the ILS issuance and invest it in high-quality, liquid assets. In previous transactions, collateral management involved an asset swap, which could involve significant counterparty exposure. Usually, a swap arrangement is used to match the interest payment scheme of the bond (e.g. variable instead of fixed-rate payments). In more recent transactions, the proceeds from the cat bond are invested directly into a low risk asset and swapped with minimal exposure to the swap counterparty.

The set-up of an SPV serves several purposes: It helps to isolate specific cat risks from the insurer's portfolio. Note that entities that issue cat bonds are not typically consolidated by the sponsor – as a result there is generally minimal (if any) impact on the balance sheet of a sponsor. Second, the use of an SPV mitigates credit risk in such a transaction as neither the party seeking insurance nor the party providing it needs to fear that the respective counterparty becomes

Risk transfer using a cat bond



Source: DB Research

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insolvent. This differs from a swap arrangement, where the protection buyer may bear substantial counterparty risk. If the cat bond is triggered, the SPV will distribute the bond principal to the sponsor.

2. Embedded value financing

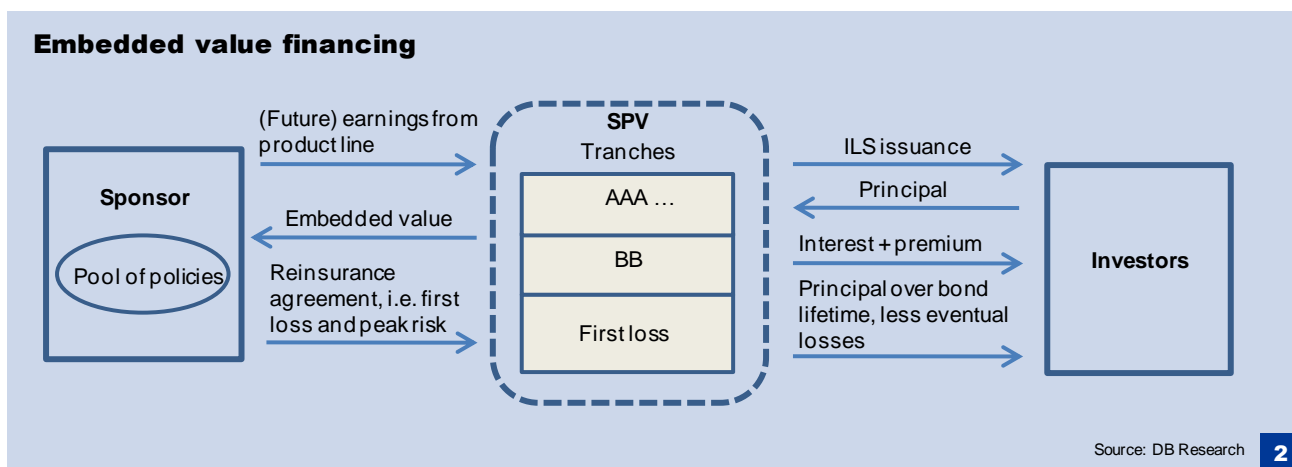
In contrast to cat bonds, which are used for risk transfer only, ILS can be used also as a financing option. To highlight the differences between the risk transfer and financing function, we explore embedded value (EV) / value in force (VIF) transactions – another form of ILS, which have been used on some occasions in the life company business to monetise future earnings from insurance policies.

An instrument to monetise future earnings...

By means of securitisation, insurance companies transform the value embedded in their portfolio of policies into (tradable) securities, similar to conventional true sale securitisations in credit markets. These securities may then be sold and the proceeds used to finance new business or other corporate purposes. One major difference between a cat bond and embedded value financing is the timing of capital flows. While the sponsor of a cat bond (i.e. the insurance company) receives a payment conditional on the insured event, the sponsor of an EV transaction receives a down-payment at the beginning of the contract's duration. Thus, the primary objective of an EV securitisation is to monetise the present value of future earnings from policies, while the desire to insure against possible losses is a subordinated objective.

... which also has a significant risk transfer component

An SPV is used to pool and split the proceeds from an insurance portfolio into different tranches. While a cat bond typically provides loss coverage in excess of a reinsurance agreement that covers the expected losses, an EV transaction is generally a more comprehensive arrangement (i.e. including the first dollar loss and intermediate tranches). Depending on the seniority of a tranche, embedded value financing also involves a significant risk transfer component. Although expected losses are generally borne by insurance premiums, and extreme (mortality) risks are covered by the sponsor or a third party, payments to capital investors can be delayed or even reduced if mortality and lapse rates are higher than expected. Investors are paid interest plus a risk premium to compensate them for the provision of capital.



3. Funding of excess reserves

Changes in regulatory reserve requirements for US life insurers have created one of the largest segments in insurance-linked securities. Regulation Triple X, which came into effect in 2000,



requires large capital holdings against the underlying mortality risk, often in excess of what is deemed economically warranted by the insurers.

With so called Regulation Triple-X securitisations, the insurance companies aim to fund the difference between the regulatory reserve requirements and the amount of capital that is deemed economically necessary to run the business. To achieve this, a portfolio of policies, i.e. a product line – rather than the future proceeds from the policies – is transferred to a non-recourse special purpose vehicle (SPV). These types of transactions are driven solely by the current regulatory regime: Insurers raise capital in the markets that is used directly to fund a product line, which tends to be less costly than raising capital in a regular equity offering.

The market for ILS at a glance

Covering catastrophe risk has traditionally been the domain of insurers and reinsurers. These companies have long offered property insurance contracts, i.e. building or industrial property insurance, which cover losses caused by natural catastrophes. The idea of transferring extreme risks to the capital markets was considered for the first time in the early nineties, when hurricane Andrew (1992) and the Northridge earthquake (1994) resulted in large losses for the insurance and reinsurance industry. Hannover Re issued what is considered to have been the first cat bond in 1994, followed by Swiss Re (1995) and Georgetown Re (1996). These early transactions marked the birth of the cat bond market, which has been used ever since to pass on peak risks from insurance contracts to the capital markets.

Though banks had introduced similar instruments for the transfer of credit risk several years before, securitisation was a novelty for the insurance industry at that time. The advantages to insurers were manifold. Securitisation of catastrophe risks could be used to reduce concentrations of risks in insurance portfolios. Additional capital could be raised – especially by the reinsurance industry – to expand risk capacity and meet funding requirements.

Growing strongly, a niche market still

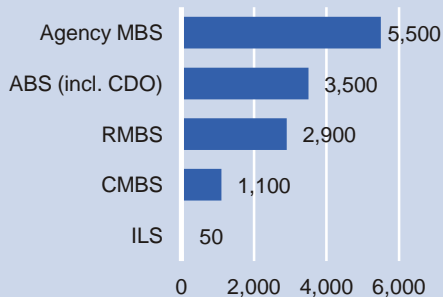
The market for insurance-linked securities (ILS) has evolved over the past decade. While ten years ago, the market was virtually negligible, overall volume outstanding in the meantime has reached about USD 50 bn, of which approximately 30 bn represent life and 20 bn non-life risk. Cat bond volume – the most widely used instrument in the non-life segment – more than doubled during the past 5 years (see chart 5 on page 8). The same holds true for the securitisation of life risk, i.e. mortality and longevity risk.

During the financial crisis, issuance volumes in life and non-life risk came down in line with a tumbling market for securitised credit products. Due to constrained liquidity and a reduced appetite for risk, many investors were not able or willing to absorb new issues during that time. In the meantime, issuance activity in the non-life segment has reached pre-crisis levels. In the life segment, issuance has not seen as rapid a rebound, although the medium-term outlook remains positive.

Relative to reinsurance capacity overall, the market for ILS remains comparably small. To date, ILS represents approximately 10-15 percent of the total capacity provided to cedents for property

Market size of ILS in comparison

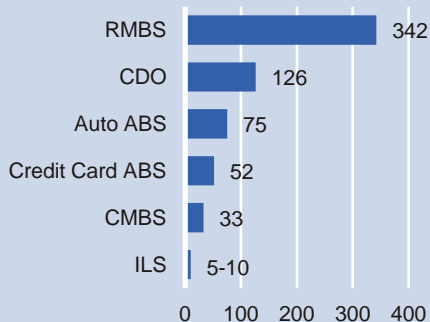
USD bn, European and US volumes outstanding, 2009



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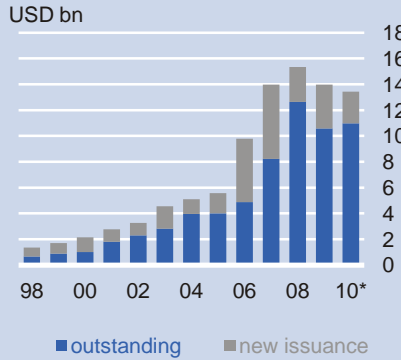
Issuance volume of ILS in comparison

USD bn, 2009



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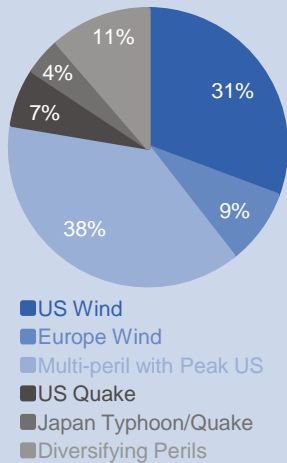
The cat bond market (non-life risk)



* as of August 2010 Source: Deutsche Bank **5**

Cat bonds: insured perils

Volume share in cat bonds outstanding, July 2010



Source: Deutsche Bank **6**

catastrophe reinsurance protection. A relatively small group of institutions offer capital market-based risk transfer solutions to their clients – among them the large reinsurers Munich Re and Swiss Re, securities houses Goldman Sachs, Deutsche Bank, Merrill Lynch and JP Morgan as well as specialised reinsurance intermediaries such as Aon Benfield and Guy Carpenter.

To investors, ILS represent a niche segment with less than 0.5 percent of global volume of securitised products outstanding (see chart 3 on page 7). Also in terms of issuance, ILS account for a mere fraction of issuance in credit card ABS or Auto ABS, not to speak of mortgage-backed products which dominate the securitisation business (see chart 4 on page 7).

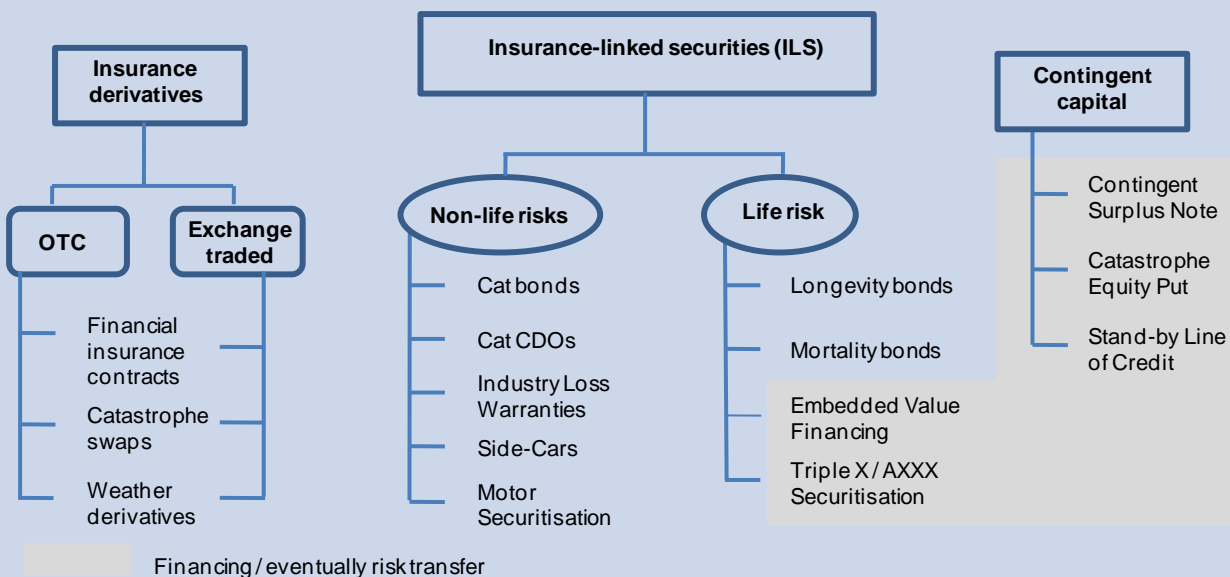
Large product diversity with few block-busters

Reflecting the traditional insurance business, there appears to be a distinct line between the life and non-life business in ILS. Non-life ILS refer to property and casualty risk (P&C), whereas the life-business is concerned with longevity and mortality risk. Securitisation in the two segments frequently follows different objectives: While in the non-life business insurers seek to off-load peak risk, i.e. natural catastrophe risk, the life-business is driven mainly by liquidity and capital needs on the part of the reinsurance industry.

Non-life risk

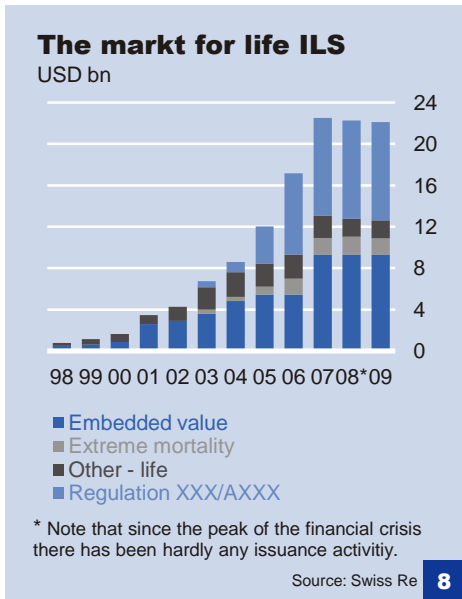
A number of different structures have evolved over time (see chart 7). Yet, the traditional cat bond structure remains at the core of alternative risk transfer. Other relevant instruments include industry loss warrants (ILW), sidecars and OTC financial insurance contracts. With a sidecar arrangement, the investor shares proportionally in the risk of an insurance portfolio according to a predetermined quota. An industry loss warrant (ILW) is a form of capital market-financed (re-)insurance contract that is linked to an industry loss index. ILW are usually pre-funded private placement, although there have been recent attempts to establish exchange trading for standardised ILWs. Unlike for cat bonds, there is generally no liquid secondary market for (privately placed) ILWs, sidecars and cat swaps.

Alternative risk transfer – an overview of instruments



Financing / eventually risk transfer

Sources: Anders (2005), DB Research **7**



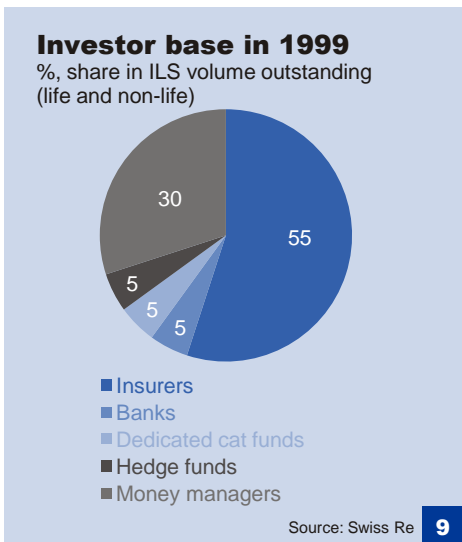
In addition to cat bonds, sidecars and ILWs, over-the-counter (OTC) swap arrangements have frequently been used to place insurance risk with investors. Such financial insurance contracts (FICs) are generally unfunded and often tailored to the specific needs of the contracting partners. More recently, there have been new attempts to establish standardised products suitable for exchange trading – both in the life and non-life segment. However, with the exception of weather derivatives, liquidity in the market for exchange traded insurance-linked derivatives remains limited.

Life risk

The need for financing is the main driver of securitisation in the life segment. Although traditional equity and debt remain the prevailing means to raise capital in the market, so called Regulation Triple-X and A-Triple-X Securitisations as well as embedded-value financing have become important sources of funding, too.¹ Meanwhile, bilateral risk transfer solutions such as tailor-made swap transactions, the traditional letter of credit and reinsurance continue to be used extensively.

Compared to securitisations used for financing purposes, pure risk transfer instruments have played a smaller role in the life segment, although several longevity swap transactions have been completed in the past two years. While cat bonds have been used on occasion to transfer peak *mortality risk* (mainly to insure against pandemic), attempts to apply this instrument to *longevity risk* have not been successful to date. There appears to be a strong demand for longevity hedges on the part of life insurers and pension funds that offer annuities. Investors, on the other hand, seem to be more reluctant to assume the counterpart, as longevity risk and other risks inherent in the structures to transfer these risks are difficult to price.

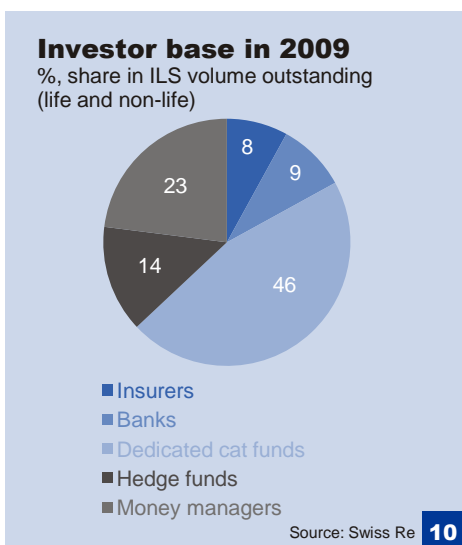
There is an active secondary market for life settlement though, which offers some access for investors to longevity risk. Life settlement is different from the ILS described above, because the policy holder – not the insurer – serves as a sponsor. The policy holder sells his or her insurance policy, which is then securitised and marketed to capital market investors.



Non-life risk increasingly placed outside the insurance sector

Ten years ago, more than half of ILS outstanding was used to facilitate the risk transfer between (re-)insurance companies (see chart 9). Traditional money managers were another important group of investors. Nowadays, market participants from outside the insurance sector form the bulk of the investor base by far (see chart 10). With the market maturing and liquidity increasing, further groups of investors – such as dedicated cat funds, hedge funds and money managers – rushed into this segment. While insurers acquire ILS mainly to complement their existing insurance portfolios, capital market investors gain access to a new asset class.

Despite growing issuance volumes, it is still a rather small group of institutional investors which participate in the market for insurance-linked securities. ILS have not yet found their way into mainstream asset management. Buy-side barriers to market entry exist in the form of adequate pricing expertise. The appraisal of insurance risk as well as the assessment of how these risks translate into the performance of ILS products requires special know-how in the field of the risk covered (e.g. earthquake or hurricane risk). Comparably



¹ See page 5 for a brief description of these instruments, as well as Anders (2005)

Bilateral solutions prevail in the life segment

The investor market for life risk has never truly been developed

small issuance volumes overall and a lack of liquidity in secondary markets, except for cat bonds, have not justified the build up of extensive buy-side expertise so far.

Dedicated cat funds, it seems, have become the vehicle of choice to overcome potential barriers. Pension funds as well as high net-worth individuals, family offices and sovereign wealth funds make increasing use of these vehicles to enter the ILS segment. Retail investors, on the other hand, barely participate in the market, as suitable investment products are generally not available.

Investor market for life risk has yet to develop

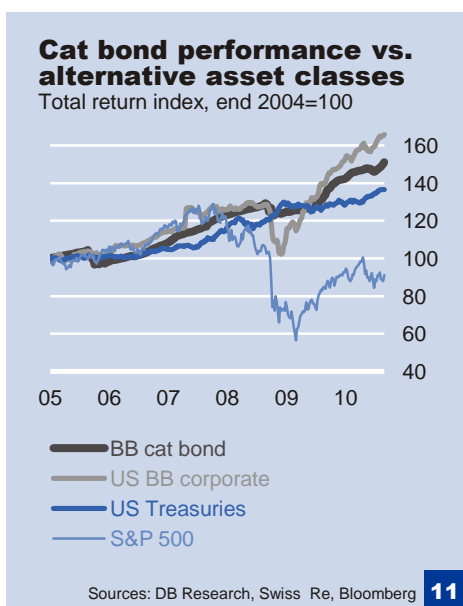
One of the reasons why bilateral funding and risk transfer solutions prevail in the life business is that the life business has a much longer tenor than property and casualty (P&C) insurance, which makes it more expensive and more challenging to execute transactions. A typical P&C transaction is 1-3 years, whereas insurance transactions are generally a minimum of 5 years and could go as long as 40 years (although it may be possible to structure certain shorter tenor contracts for capital markets). During the past 10 years, there were a large number of banks that provided life companies with tailor-made, bilateral solutions to support their reserve financing needs. Bilateral transactions were often easier to execute, had more efficient pricing, and offered higher execution certainty so that many life companies favoured these over public transactions, limiting the growth of a broad investor base for these structures.

While several billion dollars of life reserve financing and embedded value transactions have been executed in recent years, most of the securities issued in past transactions were wrapped by monoline insurers. For the assessment of life-ILS transactions investors relied on the credit rating of the monoline instead of analysing the underlying insurance risk. The promoted structures were often among the highest-rated securities so as to accommodate capital market investors which did not have the capacity to rate insurance-linked risks in-house. As such, the investor market for life risk has never truly been developed. A useful means to develop the market for life and longevity risk can be the creation of longevity indices. To this end, the newly formed Life & Longevity Markets Association (LLMA) has launched a corresponding methodology and governance framework and invited interested parties to comment on the proposal.

Low correlation, but no independence from financial markets

The traditional view holds that (non-life) insurance-linked securities are largely uncorrelated with other financial assets, because insurance risks are independent from most risks traded in financial markets. Thus, by adding ILS to an existing portfolio, additional diversification benefits can be realised.²

While this generally holds true with regard to the correlation between underlying insurance and most other risks traded in capital markets, one of the lessons learnt from the crisis is that ILS performance can well be linked to other asset classes via liquidity risk or risk related to the collateral or third-party guarantees used in ILS structures. The failure of Lehman Brothers provides a case in point. While most ILS weathered the financial crisis relatively



² Of course, the low correlation of ILS needs to be weighed against the risk-return profile of the asset itself and its effects on the risk-return profile of the overall portfolio.

ILS connectedness with financial markets

Drivers of cat bond yields	Connectedness
Insurance risk	-
Liquidity risk	+
Risk in collateral	+
Investor risk appetite	+

Source: DB Research

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unscathed, cat bonds that relied on Lehman as a swap counterpart for their collateral management were badly affected. Also, many life insurance products have significant amounts of non-insurance risk (e.g. third-party credit risk, asset and interest rate risk) as well as policyholder behaviour risk (e.g. the ability for lapses to be lower/higher than expected) in addition to the life risk they bear. Therefore, ILS supported by life business may not be totally uncorrelated with other asset classes.

Apart from the effects of the financial crisis, convergence in the pricing of risk generally increases as insurance and capital markets become more intertwined. Arbitrage sets in between the assets with comparable ratings but different underlying risks. Changes in market-wide risk appetite, i.e. the general willingness by market participants to bear risk, may lead to the pricing of ILS and other financial products to move more closely in sync.

Also in future, ILS will continue to offer attractive diversification opportunities, notwithstanding that the insurance and capital markets will eventually become more integrated. To date, ILS premiums are driven mainly by the premiums paid in the traditional reinsurance markets – which do not necessarily follow the boom and bust cycles in the capital markets. Low correlation with other asset classes qualifies ILS as an attractive portfolio addition – especially for investors with a long-term view, such as pension funds. In addition, opportunistic investors are attracted by the new possibilities ILS offer to place macro and micro views on specific insurance risk.

Future growth drivers

For several years now, ILS pundits have been predicting a rosy future, as there are a number of convincing arguments why investors and sponsors should engage in the new instruments. As mentioned above, insurers are able to manage their risks more effectively, while investors gain direct access to insurance risk.

Although the market for ILS expanded considerably in the years preceding the crisis, as we have pointed out, new issuance and outstanding volumes represent a relatively small segment of securitised products overall. Also with respect to global cat risk coverage, capital market solutions account for 10-15% of risk capacity – the major part is still provided by traditional reinsurance. These numbers suggest that the market for insurance-linked securities is still in an early phase of development. Adding to the fact that insurable value is to increase, there is much scope for further expansion of the ILS market.

Yet, there are still a number of issues that need to be dealt with if insurance risk is to be transformed into marketable securities on a larger scale.³ After all, a critical mass of new issuance and continuous issuance activity are needed to broaden the investor base, reduce transaction costs and fully lever the economic benefits of these instruments. The following paragraphs provide an introduction to some of the issues relevant for future market development.

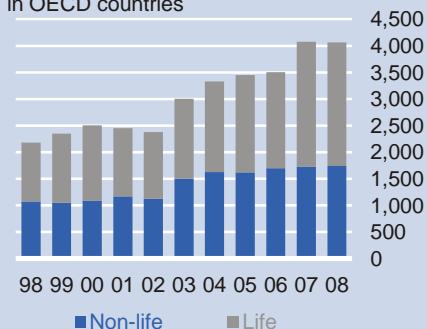
Much scope for further expansion of the ILS market

A critical mass of issuance activity is needed

³ For an overview of possible impediments to future growth from the perspective of the insurance industry, see World Economic Forum (2008).

Rising demand for risk coverage

USD bn, total gross insurance premiums in OECD countries



Source: OECD **13**

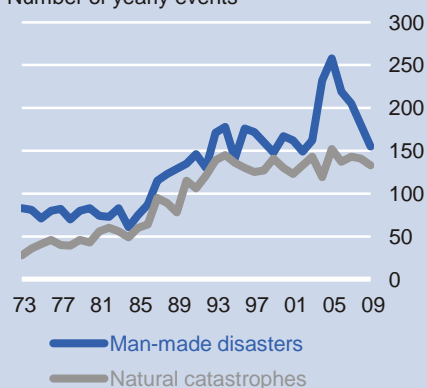
Demand for risk coverage rising steadily

During the past decade gross premiums in the industrialised countries have risen steadily, with an annual growth rate in real premiums of 4% annually. By contrast, the emerging markets experienced a yearly growth rate of real insurance premiums between 1998 and 2007 of 13%, with South East Asia and Central and Eastern Europe representing the most dynamic regions (Swiss Re, 2010; see also chart 13 for OECD data).

With more people in the emerging and developing markets becoming more affluent, insurable values will rise. As a consequence, demand for property and casualty insurance as well as life and annuity insurance will be boosted. India and China are among the most relevant markets, given their dynamic growth and total size of population. For the industrialised countries, there will be more balanced growth as a rise in per capita demand is partly offset in some countries by a declining in population.

Disasters world-wide

Number of yearly events



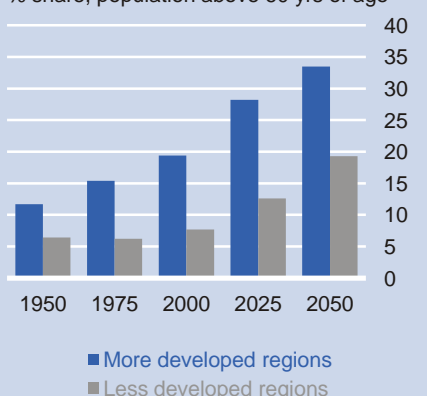
Source: Swiss Re **14**

In the non-life segment, additional impetus is expected to come from the perceived rise in the frequency and severity of extreme weather events. In the life sector, the demand for annuity products is fuelled by governments shifting social security over to private systems as well as general life expectancy rising. For the life insurers this means that they have to bear substantial longevity risk as well as manage “asset risk” of future earnings from premiums not yet paid. In this situation, ILS may be an effective means to deal with the resulting financing and risk management needs.

On the buy-side, demand for ILS is likely to rise, too. As we have already pointed out, the investor base of ILS has changed during the past 10 years – moving away from the insurance industry as the main counterparty towards traditional capital investors buying and holding ILS. The change in the investor base reflects additional funds flowing into the insurance sector overall. These flows are likely to persist, as substantial efficiency gains can be reaped from the distribution of insurance risk to the non-insurance sector.

Longevity on the rise

% share, population above 60 yrs of age



Source: United Nations **15**

Pricing is key to ILS demand and supply

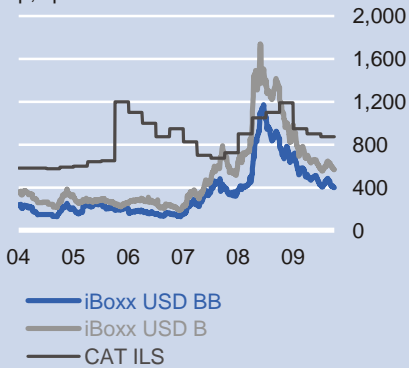
Although capacity for peak events can at times be constrained (e.g. US Wind), new issues are generally well absorbed by the investor community. Pricing plays a key role here. As mentioned above, cyclical movements in reinsurance feed directly into the pricing of ILS. Following large losses, premiums paid tend to be high – and low after a period without major losses. Overall levels of capital in the insurance sector are also a major driving force of reinsurance premiums – and hence affect the pricing of ILS. Often a fall in capital is closely related to losses from the insurance business, e.g. due to natural catastrophes, but the performance of asset holdings also plays a role here. The limiting factor for ILS supply is determined by the additional risk capacity sought by the insurance sector and the price insurers are willing and able to pay.

The overall volume of new issuance can also be restricted by the investors’ ability to bear risk. For instance, in the life segment market conditions over the past two years led to pricing that was too expensive for life insurance companies to support and so rather than finance reserves or monetise EV with a structured transaction, insurers preferred utilising internal capital and/or alternative financing sources (e.g. traditional debt markets). This illustrates how capital and insurance markets interact with each other and how ILS



Cat risk offers attractive rents

bp, spread over LIBOR



Sources: Lane Financials, Deutsche Bank

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demand and supply may be constrained by factors that affect reservation prices on either side of the market.

A related – although more structural – issue is the ability by capital market participants to understand the complex structures and to evaluate the insurance risk involved in ILS. Adequate risk models are not yet used by a large investor community. Instead, investors either depend on third-party ratings and/or demand a premium for pricing uncertainty. For instance, premiums paid in the cat bond market can be 2-3 times the expected loss from an ILS transaction. In the life segment, investors are often insulated from the underlying insurance risk involved by third-party guarantors. However, given the experience in other securitisation markets, investors will want to evaluate the risks involved in an ILS transaction more directly.

A promising way to overcome difficulties in valuation may be to better educate investors by granting them access to basic evaluation tools for their ILS investments. Also, independent risk modellers and rating agencies can play a role in dealing with information asymmetries.

Basis risk

The use of non-indemnity-based triggers in ILS transactions creates basis risk for the insurer using the ILS for alternative risk transfer. Basis risk is defined as the residual of the risk traced by a trigger and the actual risk covered by the portfolio the insurer wishes to reinsure. With risk transfer solutions based on non-indemnity-based triggers being used more widely, there will also be an increased need to manage basis risk.

Source: DB Research

Payment triggers

Triggers of insurance-linked securities – such as industry loss warrants, cat swaps or cat bonds – can either be indemnity-based or linked to some index. This box provides a brief overview of the various trigger types.

Indemnity-based

Payment trigger is based on the sponsor's actual losses.

Modelled loss trigger

Losses are modelled for a specific reference portfolio based on the characteristics of a loss event, e.g. natural catastrophe.

Industry loss index

Industry-wide loss index which is determined in the USA by information services provider Property Claim Services (PCS). There is as yet no generally accepted industry loss index for Europe.

Parametric index

Based on physical characteristics of a loss event, e.g. location and wind speed of a hurricane.

Source: DB Research

Lessons learned from the financial crisis

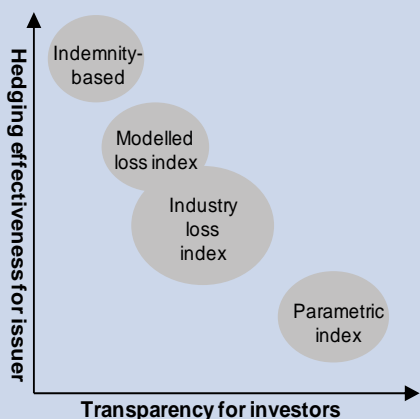
Performance of ILS outstanding has proved relatively robust during the financial crisis. However, uncertainty in securitisation markets and the flight to low-risk, highly liquid assets have left its marks on the market for ILS. The failure of financial guarantors proved to be a problem in some Regulation Triple X securitisations, as did collateralisation issues in cat bonds, especially where Lehman served as a swap counterparty. Issuance volumes in life and non-life ILS declined significantly during the crisis.

In life securitisations, most of the tranches were wrapped by a financial guarantor. Financial guarantors came under pressure as a result of their significant exposure to the real estate sector and were downgraded as a result. The securities they had insured had to be downgraded as well. This set potential buyers – mainly hedge funds – under additional pressure, who were already suffering from declining asset values and rising margin calls on their credit exposures. In these circumstances, reinsurers had a hard time finding buyers for their new issues. There is generally no financial guarantor involved in cat bonds. However, collateral management in legacy transactions included some form of total return swap. In the case of Lehman, these contracts bore significant counterparty exposure. And when Lehman collapsed, the cat bonds for which Lehman had been serving as a counterparty faced significant price declines in secondary market trading.

Market participants still have the chance to learn from the experience of the financial crisis and avoid the pitfalls that led to the problems in credit securitisation.⁴ Following recent experiences, collateral issues in cat bonds have been addressed. Proceeds are now being invested in Treasury bills, and cash flows are swapped to match the bonds payment stream using more robust structures. To the same end, market participants consider using simpler structures in life securitisations, which are less dependent on financial guarantors.

⁴ For further detail, see Boucher (2009) for the life, as well as Wattman and Feig (2008) for the non-life market.

Payment triggers – effectiveness for issuers and investors



Source: DB Research **17**

Solvency II

Solvency II refers to a new regulatory framework which establishes updated, harmonised prudential rules for the insurance industry in Europe. The primary objective of this legislation is to enhance protection of the policyholder and provide a level playing field for the insurance industry in Europe. Further goals are: maintaining financial stability and enhancing market efficiency. In analogy to the Basel II framework for banks, Solvency II likewise rests on a three-pillar system, with one pillar each for: (i) capital adequacy and reserve requirements, (ii) risk management and supervision, (iii) disclosure and transparency. Unlike Basel II, Solvency II is an all-European regulatory initiative.

The new draft legislation accounts for a risk-sensitive calculation of reserve requirements. There will be (risk-sensitive) reserve requirements not only for the insurance risk but also for the market risk the insurer is bearing from its asset holdings. For instance, fixed income assets with low volatility will be taxed at a lower rate than more risky equities. In the insurance portfolio, alternative risk transfer instruments such as cat swaps or cat bonds will be considered as allowable risk mitigants just like reinsurance.

In 2009, the European Parliament as well as the EU Council of Economic and Finance passed the directive. The new rules are scheduled to come into effect by November 2012. In the meantime, the EU Commission will have to decide on the implementing measures.

Source: DB Research

Balancing investors’ and sponsors’ needs

Since the inception of ILS, there has been an ongoing effort by the industry to balance the needs of sponsors and investors. While sponsors – mainly insurers – wish to cover their underlying portfolio risk (i.e. to minimise basis risk), investors demand transparent products that limit the risk of moral hazard and adverse selection. Here, the choice of payment triggers plays a crucial role – which ranges from pure parametric to indemnity-based (see chart 17 and box “payment triggers” on page 13). The closer the trigger is linked to the incurred losses of an insurer (indemnity-based trigger), the higher is its hedging effectiveness. Insurers using ILS for alternative risk transfer therefore prefer this type of trigger. Purely parametric triggers, on the other hand, are less effective but tend to offer higher transparency. At present, both types of triggers in addition to industry loss and modelled loss indices are used alternatively.

Considering the experience with credit securitisations, it appears that a promising way – not least for financial stability purposes – is to define transparent structures and risk triggers, which limit information asymmetries and ensure incentive compatibility. To this end, recent initiatives aim at the development of loss and parametric indices in order to satisfy investors’ demand for transparent and hard-to-manipulate triggers.⁵ However, the acceptance of new indices will depend not only on the reliability of the indices and the credibility of the institution issuing them, but also on their acceptance by the sponsors. After all, the ILS market is driven primarily by the insurers’ demand for protection: where there is no need for coverage, there is no market for ILS. Due to the basis risk inherent in ILS based on non-indemnity triggers potential sponsors are reluctant to use these instruments and in the foreseeable future the different types of triggers will exist side by side.

Regardless of promoting certain types of triggers, increasing standardisation of product structures and documentation may be a further means to boost the use of ILS. In the medium to longer-term, it would help lower the cost for the use of ILS and allowing insurers to use ILS more extensively. At the same time, it would allow investors to better assess and understand the risks they are taking, thereby lowering the entry barriers to the market and help broaden the investor base.

Effects from Solvency II

Under the header of Solvency II, an overhaul of the regulatory framework for the insurance industry has been drafted (see box). The legislative process has already been completed at the EU level and the new rules are scheduled to come into effect by end 2012. Currently, the EU Commission is undertaking impact assessments and is about to draft the implementing measures. Under the new regime, securitisation will receive commensurate recognition in the calculation of the regulatory capital as does traditional reinsurance. Insurers will be able to use securitisation in the same way they use reinsurance to reduce their reserve requirements.

Although the new rules potentially increase the attractiveness of ILS as an effective risk mitigant, it is not clear how strong the impulse from Solvency II on ILS supply will be. The large reinsurers – who currently provide the bulk of ILS – already use these instruments mainly for risk diversification and risk funding. In contrast, for those insurers who currently rely on traditional reinsurance solutions,

⁵ See Swiss Re (2009).



securitisations may well become an important alternative. As discussed, however, to induce smaller insurers to use ILS, the products probably need to become more standardised and less expensive, so that smaller lot sizes can be realised. Ultimately, the impact of the new rules will depend on the design and calibration of the implementing measures.

Conclusions

The market for ILS has expanded strongly in recently years. It is still a niche market, though, driven by the large reinsurers' needs to hedge specific risks and acquire additional funding. Due to relatively low issuance volumes and lack of liquidity in secondary markets ILS have not yet found their way into mainstream asset management. A selected group of dedicated cat funds, hedge funds and money managers serves as the main counterparty to the insurance industry.

Given the economic benefits from risk diversification and expansion of risk capacity, we expect the ILS market to expand further. Going forward, the market will likely receive support from various directions. There will be increasing demand for risk coverage, not least due to a rise in insurable value, an increased need to insure against natural catastrophe risk and changing demographics. Investors will continue to take a strong interest in ILS as a means to diversify portfolios to seek return enhancement. Finally, regulatory changes in the wake of Solvency II are likely to increase the attractiveness of capital market solutions relative to traditional insurance, which may support ILS issuance additionally.

The financial crisis has revealed some weak spots in ILS structures, which have been addressed by market participants. In order to achieve a closer convergence of insurance and capital markets, further work needs to be done in balancing investors' and issuers' needs. In particular, increasing standardisation of structures and documentation as well as improving transparency of the market may help to lower the cost of issuance, broaden the investor base and attract a critical mass of both ILS demand and supply.

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