Risk Transfer to the Capital Market - Using the capital markets in Insurance Risk Management

Insurance Derivatives - Convergence of Capital Markets & Insurance Markets

Two Publications of Munich Re

ART has succeeded in establishing itself as a viable source of innovative solutions, complementing traditional risk transfer and financing techniques.
Furthermore, the following global trends apparent in the insurance industry will continue to favor alternative reinsurance concepts with respect to acceptability, market share and product innovations:

1. Focus on shareholder value
2. Deregulation and consolidation of insurance markets
3. Higher risk retention and restructuring of reinsurance programmes
4. Innovative risk management
5. Desire to get away from cyclical pricing
6. Shortage of capacity for certain types of risk
7. Transparent accounting and disclosure of earnings volatility
8. Convergence of insurance and capital markets

Alternative risk transfer and financing techniques, as we see them today, basically fall into the following categories:

Risk financing instruments

- Contingent capital ((contingent liquidity))

Risk transfer instruments

- Securitization of insurance risks by way of bond issue
- Insurance derivatives

Although there is no generally accepted definition of ART, alternative risk transfer and financing concepts and techniques can be differentiated as per the following criteria or (dimensions):

1. Goal - risk financing vs. risk transfer
2. Market - insurance markets vs. capital markets
3. Products - reinsurance and financial structures
4. Risk type - insurance vs. holistic risk

Based on this solution-oriented rather than product-oriented approach, the various concepts and techniques can also be embedded in the overall spectrum of traditional and alternative risk transfer tools that access insurance as well as capital markets and deploy reinsurance as well as financial structures.

Natural catastrophes reached new record levels in the 90s both in terms of loss amounts and intensity. The discrepancy that this brought to light between economic and insured values, capacity and price fluctuations on international reinsurance markets, as well as doubts regarding the ability of certain catastrophe (re)insurers to pay claims following a major natural catastrophe are making it important to look for alternative methods of risk transfer and to take advantage of the nearly inexhaustible capacity offered by the global capital markets. A broad spectrum of new financial market instruments such as risk bonds, futures, swaps and options are proving to be suitable instruments for risk transfer to the capital

market. The volatility of available reinsurance capacity and reinsurance prices make capital market solutions appear to be attractive hedging alternatives for insurance risks.

In the wake of and in response to Hurricane Andrew in 1992 and to the Northridge earthquake in California in 1994, which caused insured losses amounting to US$ 18bn and 11bn respectively, the first attempts were made to transfer catastrophe risks to the capital market.

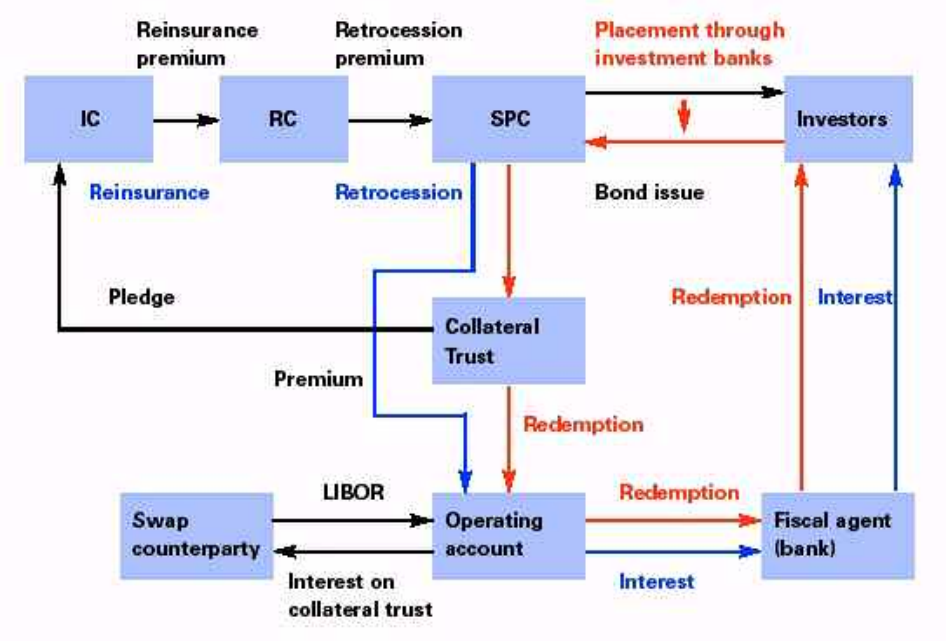
One of the first steps in implementing financial markets as supplementary instruments for dealing with insurance risks was taken on the Chicago Board of Trade (CBOT) with the development of insurance derivatives such as futures and options for natural catastrophe risks in the USA. At the same time, the first bonds securitizing insurance risks came onto the market. After early attempts were made with smaller volumes issued, it became possible to also place larger volumes, i.e. from US$ 100m to US$ 500m, on the capital market as from 1997/98.

For several years now capital markets have been providing insurance companies with limited capital via so-called contingent capital programmes for the event of a natural catastrophe and loss of equity. This process merely involves providing capital which is repaid to the creditors or investors after expiry of the contingent capital transaction (no transfer of the insurance risk, just pure financing). Insurance securitization, i.e. the securitization of insurance risks and the transfer of risks to the capital market via bonds and derivatives has only been widely used as an instrument for covering insurance risks since 1997.
Insurance securitization is giving insurers access to the capital market as a new additional source of capacity to supplement traditional reinsurance.
As insurance risks do not correlate with other investment classes, insurance risk bonds as well as insurance derivatives and contingent capital programmes provide investors with means for diversifying their investments.

First - Insurance securitization by means of bond issues

With the most common insurance securitization model via an insurance risk bond, the insurer, acting as the sponsor of the transaction, concludes a reinsurance agreement with the reinsurer, who then cedes the risk to a special purpose reinsurance company (SPC) under a retrocession agreement. This SPC covers any liabilities from the retrocession agreement by issuing a bond.
The proceeds from the bond issue are invested in top-quality bonds through a collateral trust. Management of the collateral trust is in the hands of a trustee whose task is to ensure the proper administration and use of the trust assets. The assets of the collateral trusts serve as a guarantee for any liabilities on the part of the SPC arising from the retro-cession agreement and thus allow top security rating (AAA) of the cover for the insured.
The investment income from the collateral trust should be based on a reference interest rate, such as the London Interbank Offering Rate (LIBOR). This is made possible by means of an interest rate swap between the trust and a swap counterparty, which swaps the investment income rate from the collateral trust for the LIBOR rate and thus ensures a fixed interest rate for the investors. The reinsurance and retrocession premium rate is passed on to the investors as a spread over LIBOR and offers the investors an incentive to invest in this bond (the below figure shows the flow chart of such a securitization transaction).
Insurance risk bonds can have different structures:
In the case of principle-at-risk bonds, the entire nominal value serves as liability. Liability can, however, also be restricted to the interest payment, as is the case with principle-protected bonds. In such a case, the nominal value of the bond is repaid to the investor five to ten years after a loss event. If a loss occurs, only a portion of the bond serves as liability.
The other portion is invested in discounted (zero-coupon) bonds, which are paid back at par after five to ten years, thus securitizing repayment of the bond at nominal value.
The basis for cover can be the actual loss sustained by the cedant (insurance portfolio), a loss index or a parametric trigger.

Insurance securitization by means of bond issues



Second - Insurance derivatives

Insurance derivatives, which transfer insurance risks to the capital market and which, in contrast to insurance risk bonds, do not provide prior liquidity to safeguard the maximum liability, can be structured as swaps or options. The basis for such a transaction may be a market loss index (e.g. the PCS index of the Property Claims Service in the USA) or a parametric trigger. A market loss index reflects the losses incurred in the insurance industry after a natural catastrophe. A parametric trigger links the trigger of cover to a natural catastrophe, which must comply with precisely defined and transparent criteria in terms of severity (magnitude of earthquakes, wind velocity or air pressure for windstorm).
The Chicago Board of Trade has for several years now been trading in standardized option contracts on the basis of market loss indices for nine regions in the USA with coverage periods of up to one year. Through the option contracts, participants can buy or sell covers against natural catastrophes in the USA (hurricanes, earthquake). The option premium here corresponds to the reinsurance premium. In addition to insurers and reinsurers,
other financial institutions such as investment banks or unregulated funds can also be active in this sector. As the volume traded is still relatively low, this market cannot really be described as being particularly liquid at this stage.
Outside commodity exchanges, derivatives are negotiated and agreed upon between the parties on a case-by-case basis. These are referred to as over-the-counter (OTC) derivatives.
With an OTC insurance swap or an option, the cedant pays the investors a premium and receives indemnification in the event of a loss. From a purely technical point of view, this construction is comparable to a standard (re)insurance contract. The cedant acts as the option buyer, the investor as the option seller. The option seller receives an option premium (fixed-rate payment) in advance from the cedant (option buyer), which is comparable to an insurance premium. The option can be exercised when an agreed market loss index level is exceeded or a parametric trigger occurs. The option buyer receives the fixed nominal amount as (compensation) or (indemnification) (floating-rate payment).
The option buyer does not require proof of an insured interest or the occurrence of a loss event for payment from the derivative. The deciding factor is merely the point at which the agreed market loss index level is exceeded or a parametric trigger comes into effect.
The option can also take the form of a second-event cover under which the option buyer receives coverage at a previously fixed price if an agreed market loss index level is exceeded or a parametric trigger comes into play and the option is exercised.
Similar risks can be swapped without payment of a floating rate or option premium on the basis of a risk swap. In this way, the over-exposure of one party in a risk class can be ceded or swapped for another risk class that is underrepresented in the insurance port-folio.

This allows a multi-dimensional diversification effect (risk-class, region) and produces a more efficient risk portfolio. For example, it would be possible to swap the US windstorm risk for the Japan windstorm risk or the Californian earthquake risk for the Tokyo earthquake risk, assuming that these have the same probability of loss and identical exposure (nominal value). Existing insurance risk bonds provide a perfect basis (underlying index) for risk swaps.
The legal basis of insurance derivatives are standard specimen agreements developed by the international Swap and Derivatives Association (ISDA), which are in general use for financial derivatives.

Insurancer derivatives: OTC swap/option

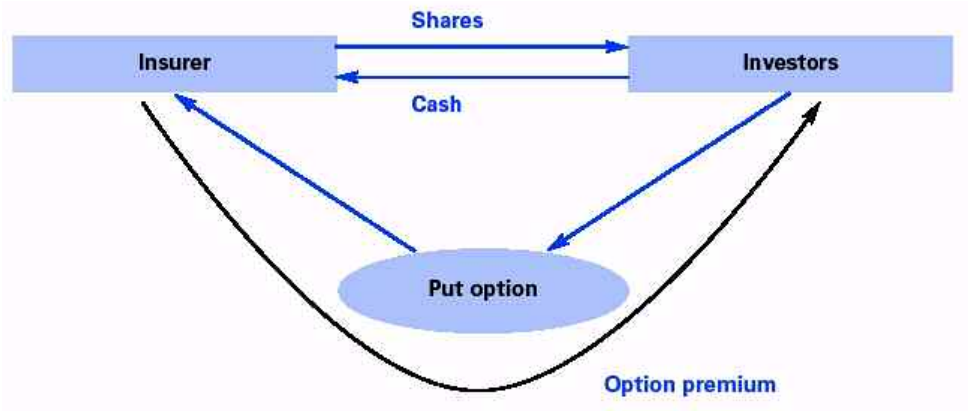
Insurance derivatives versus insurance risk bonds

A fundamental advantage of insurance derivatives is that they are much quicker and easier to structure and realize than securitization by way of a bond issue.
The transaction costs are well below those involved in a bond issue.

On the other hand, a bond can cover greater volumes than a derivative.
However, insurance derivatives harbor a partner risk (counterparty risk), which manifests itself when the investors cannot meet the indemnification payment. The options or swap premium is paid in advance as with an insurance premium; the counter payment or indemnification payment is made only after the occurrence of a given event. With a bond securitization, on the other hand, the proceeds from the bond issue are available in advance in the collateral trust as a liability mass and thus enable best solvency (top security AAA) for the risk-ceding primary insurer.

Third - Contingent capital (liquidity) programmes
Following the occurrence of major losses, e.g. a natural catastrophe accompanied by a loss of equity capital, contingent capital (liquidity) programmes offer insurance companies capital support in the form of surplus notes or preference shares.
Within this structure, which incorporates an equity put or surplus put option, the cedant (option buyer) pays a premium to acquire the right to sell surplus notes or preference shares to investors in the event of a specifically pre-defined natural catastrophe and the loss of equity capital. The option can be exercised after the occurrence of a natural catas-trophe.
Investors purchase the shares or the surplus notes with a cash payment. In many cases, reinsurers also act as investors and, in this way, make additional and alternative capital available.

Contingent capital/liquidity
Catastrophe equity put arrangement = equity put

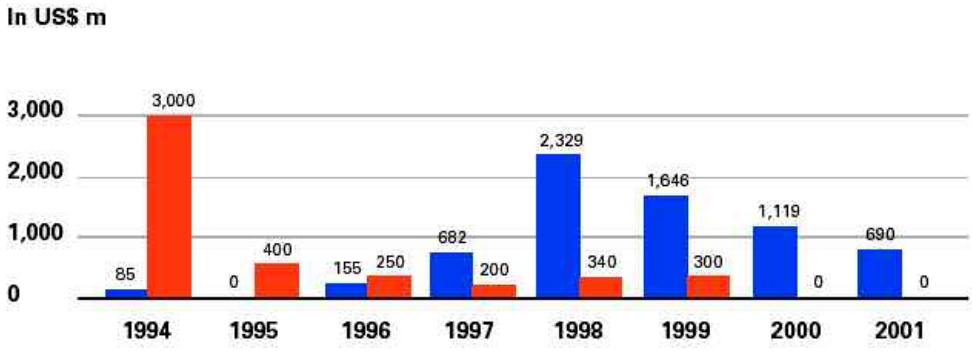


- The insurer buys the right to issue preference shares to investors in the event of a catastrophe (put option).
- The option to purchase shares can be exercised with a cash payment.

In contrast to insurance risk bonds, investors in contingent capital programmes provide their capital only after a loss event. This capital is repaid when the term of the transaction expires.
In the case of insurance risk bonds, the capital is made available by the investors before the loss event, the capital is managed in the collateral trust during the term of the transaction and, in the event of a loss, it serves as a liability mass which is completely lost in the worst case.

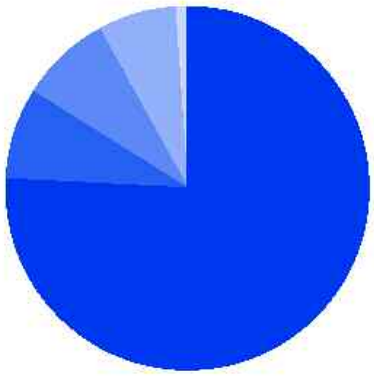
The transfer of insurance risks to the capital market and the financing of insurance risks through the capital market is still a very young field of business. The volume of all capital market transactions carried out since 1994 exceeds US$ 13bn.
The initial focus was on risk financing through the capital market (contingent capital/ liquidity), whereas, risk transfer to the capital market began growing in significance as from 1997. Within the framework of more than 50 bond transactions, an insurance capacity of more than US$ 6.5bn has been generated on the capital market.

Capital markets - Risk financing and transfer



In the securitized risk classes, there is a clear focus on natural catastrophes (placement volume exceeds US$ 5bn). In other risk classes such as life, credit, weather or residual value insurances, individual, large-volume transactions dominate.

Risk securitization - Total volume and number of deals



	US$ m	%	#
Nat. cat.	5,107	76	42
Life	520	8	3
Residual	566	8	1
Credit	463	7	1
Weather	50	1	1
Total	**6,706**	**100**	**48**

In the past, it has essentially been risks with a low probability of occurrence and a high loss potential that have been transferred to the capital market. The probability of loss occurrence is, as a rule, less than 1% for such transactions, the rating between BB and BBB.
Natural catastrophes will continue to be the focus of securitization of insurance risks in future as well. Due to their relatively short run-off periods and the possibility of illustrating the risks within the framework of a transparent parametric trigger or market loss index structure, natural catastrophe risks are perfectly suited for securitization. In addition to this, it is the domain of natural catastrophes that is most strongly affected by capacity and price fluctuations.
In the face of a hardening reinsurance market and an increase in capacity shortages, the capital market will have to prove that it can effectively generate additional and alternative capacity in the long run.

The Role of Reinsurers

Reinsurers support their clients in the transfer of insurance risks to the capital market, functioning as a structurer and project manager, drafting and putting capital market solutions into practice.
As a reinsurer, Reinsurers can assume important functions in insurance securitization and insurance derivative transactions that have a decisive effect on whether the transaction is a success or not.

Structurer and project manager
As a professional reinsurer, Reinsurers act as a consultant to its clients for all products, from traditional reinsurance to complex capital market solutions. It is from this position that Reinsurers provide client support in securitization transactions as a structurer and project manager. Reinsurers thus assure their clients direct access to the capital market.

Fronter and transformer
A reinsurer is needed as a fronter and transformer in insurance securitization transactions to ensure that the reinsurance premium is tax deductible and that supervisory regulations are adhered to.

Risk evaluation
For each insurance securitization transaction, an insurance risk must be written by a specialist risk carrier before it can be transferred to the capital market. The underwriting process embraces the analysis and evaluation of the underlying risk or risk portfolio. It is most advantageous to have the reinsurer involved in the transaction perform the under-writing function here.

Risk assumption
The aim of insurance securitization is to have institutional investors assume a risk. In some cases however, reinsurers involved in the transaction must also assume a part of the risk in order to guarantee the viability of the transaction and hence its success.
The reinsurer can thus assume the basis risk in a securitization transaction, as well as the currency risk. The basis risk can always be assumed in cases in which the bond issue has an index or a parametric trigger as a basis for indemnification and the reinsurer concludes the reinsurance agreement on the basis of the actual loss.
In addition to this, the reinsurer can also assume the currency risk if the bond issue and the reinsurance agreement are based on different currencies.

Reinstatement
In contrast to conventional reinsurance, securitization transactions do not provide for any reinstatement or continuation of the cover following the occurrence of a loss event. The cover is exhausted with the depletion of the available assets in the collateral trust.
A reinsurer, however, may extend the scope of cover by means of a reinstatement.

Loss adjustment
The reinsurers experience in the loss adjustment process can prove to be another important factor in a securitization transaction.