

Issue
No 7

Hannover Re's Perspectives –
Current Topics of
International Life Insurance

Steffen Bütow

*Securitization in
life, health and personal
accident reinsurance*

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Securitization in der Personenrückversicherung

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*Securitization in
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1. Introduction

The basic idea behind securitization (also known as a form of Alternative Risk Transfer or ART) is to be able to handle large exposures under insurance policies. Major losses (caused for example by earthquakes or flooding) may leave insurers and reinsurers facing claims which are very difficult to meet. One example here is hurricane "Andrew", which in 1992 caused insured losses in excess of USD 16 billion. Many insurers and reinsurers suffered severe financial strains as a consequence of this event. If the same hurricane had passed through a more built-up area, the insured losses could have been many times higher.

It is for this reason that efforts have been made in recent years to find ways of expanding the capacity offered worldwide by the insurance industry. Such enlargement makes it possible to insure risks which hitherto could not be covered. One feasible option in this connection is the utilization of the capital market and its available financial resources. The capital market thus provides liquidity which is used to cover insured risks. The return on the invested funds develops according to the technical performance of the covered portfolio. A more precise explanation of possible forms of securitization is to be found in sections 2.1 and 2.2.

The term "capital market" primarily refers here to the international capital markets, as represented by institutional investors such as banks and investment fund companies. What sets these investors apart are their sufficiently large financial resources and their interest in an investment vehicle, the performance of which is not dependent on other types of investment. From the investor's standpoint, this independence vis-à-vis economic trends and typical investment vehicles such as stocks and fixed-income securities constitutes one of the principal reasons to participate in a securitization and thereby improve the spread of an investment portfolio.

Needless to say, the question arises as to why securitization is particularly appropriate to reinsurance while lending itself only to certain

scenarios in the primary insurance sector. The reasons are twofold: firstly, reinsurers serve as extended risk-carriers, who are able with the aid of their existing in-force portfolio to offer risk equalization over time and place; secondly, the capital markets are only interested in large volumes of EUR 50 million or considerably more. Smaller amounts would not be profitable due to the costs incurred for the securitization transaction. Purely on account of their generally regional orientation, individual insurers would find it difficult to call on the capital markets for such a level of capacity. Thanks to the size of their existing portfolios, reinsurers are more readily able to effect such transactions.

Securitization has frequently been encountered in recent years in reinsurance practice in the property and casualty segment. With a few exceptions, however, the international reinsurance industry has not made use of securitization in the life, health and personal accident segment. In the past Hannover Re has completed transactions in both segments, thereby assuming a pioneering role. The appendix presents four examples from lines involving the reinsurance of persons which illustrate some of the many possible variants for involving the capital markets in life, health and personal accident reinsurance business.

Why has securitization hitherto tended to be the exception in life and health reinsurance? The main reason is undoubtedly the insufficient prevalence of individual major risks. It is true that exposed risks do exist which tie up considerable coverage capacity at insurers or reinsurers. However, the bulk of the business in proportional portfolios is composed of numerous similar, smaller individual risks. This creates an acceptable, natural spread of risks which does not oblige companies to look elsewhere towards the capital markets.

In other cases, however, it can be very appropriate to use securitization instruments. The key phrase here is the financing of new business, since the commissions payable in connection with new business frequently hamper expansion

at strongly growing insurance companies. Insurers can pass this strain on to their reinsurer or to the capital market in order to fund such activities. For their part, reinsurers – who to a large extent finance the acquisition costs of primary insurers – can also refinance this strain through the capital markets.

In recent years ceding companies have shown growing interest in strengthening their balance sheet or improving their available liquid funds. In such cases it is also possible to transfer existing insurance portfolios from the cedant to the reinsurer by way of a so-called block assumption transaction (BAT) in order to provide the client with balance sheet support. The reinsurer enables his clients to improve their solvency (margin). As an additional service offered by the reinsurer, it is also possible to bring the capital markets

into play since in a securitization transaction the funds are made available in tangible form.

This type of securitization is particularly advantageous if the refinancing costs are lower than the return on the transferred portfolio. Life, health and personal accident (life and health) insurance meets this criterion, especially due to the low susceptibility of the business to fluctuations and the minimal correlation to standard investment vehicles (stocks, bonds, etc.).

The possibilities for securitization in life and health reinsurance have by no means been exhausted. The present brochure provides an overview of the diverse potential applications. The present remarks are aimed specifically at the reinsurance industry, but they can also be applied to the insurance sector.

2. Basic principles of securitization in reinsurance

In a securitization transaction, appropriate instruments are used to pass on homogeneous receivables to investors. In return, these investors make capital available and enjoy a corresponding financial participation in the development of the underlying items.

As a general rule, securitizations today entail the transfer of technical risks (claims, lapses etc.) which affect the performance of the underlying insurance portfolio. With a good portfolio performance, for example, the return on the invested

capital increases, whereas in the event of a poor performance interest payments may be forfeited and the invested capital may be only partially – or indeed not at all – repaid. Depending on the particular structure, a distinction is made between primary and secondary securitization.

For the sake of completeness, item 2.3 also describes how the securitization of non-technical receivables may be structured.

2.1 Primary securitization of liabilities-side items

Under a primary (direct) securitization there is a direct relationship between the investors and the reinsurance company. For example, the reinsurer may issue a bond, shares of which are acquired by the investors. Frequently a bank acts as an intermediary, advising the reinsurer on the issue and placing the bond with investors by using its existing bank distribution channels.

The basis of such a bond consists of an insurance portfolio which has been precisely defined in advance. The conditions of the bond are closely linked to the performance and existence of the said portfolio. The securities are issued with a fixed term, and on maturity the invested capital is paid out together with any interest due. There are many ways of structuring such a bond, and

the design can be varied according to the composition of the covered portfolio and needs of the insurer and/or investors. For example, the bond may carry an annual fixed-interest coupon. In the event of a poor claims experience the interest payment is entirely omitted, whereas otherwise interest is paid on the bond (so-called "coupon-at-risk bonds").

It is, however, also possible to pay intermediate levels of interest. A previously defined benchmark (e.g. loss ratio, number of claims or total loss amount) can be used to grade the level of interest payment. The amount may vary from complete omission of all interest payments in the event of poor performance to a multiple increase in interest payments if the portfolio performs well.

This type of risk cover entails only limited liability on the part of investors – namely in the amount of the interest payments. It is clear that such bonds do not provide for a complete transfer of the risk.

Yet it is also possible to design bonds which are not fully repaid on maturity, but where the redemption price depends upon the development of the reinsured portfolio. In a worst-case scenario, therefore, there would be no provision for repayment of the capital. In this case, the technical liability carried by investors would be defined as the full amount of the capital employed. Similarly, in the event of a good claims experience the redemption price can exceed

the nominal value. Under such a model there would be no need for interest payments, thereby simplifying the structure of the bond and the administrative tasks of the issuer.

In addition to offering a company the benefit of capital procurement, the structure of a direct securitization also entails certain disadvantages. The most notable drawback of direct securitization lies in its balance sheet effect. Under German accounting law, bonds must be reported as debt capital on the liabilities side. This causes changes in key balance sheet ratios (e.g. equity ratio) which may impact ratings – a very important factor for insurers and reinsurers in today's market. On the other hand, the passing on of the technical risk favourably influences the company's situation. At least compared to normal bank loans, this constitutes an advantage.

If the investors' liability is very extensive, the bond may even be classed as secondary equity (surplus debenture). This, in turn, would favourably impact the balance sheet structure.

One advantage which should not be overlooked is the promotional benefit associated with the placement of such a bond. Especially companies listed on the stock market as joint stock corporations can hope for "cross-selling effects" which will boost their share price. Such transactions also give rise to closer contacts with banks and other players in the financial sector.

2.2 Secondary securitization of liabilities-side items

2.2.1 Structure of a secondary securitization

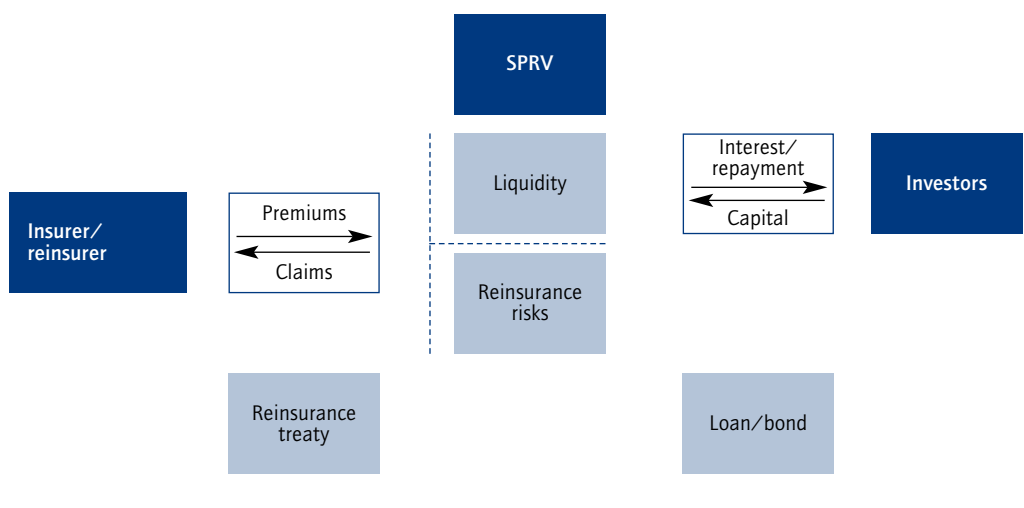
In the case of an indirect or secondary securitization, an intermediary – a so-called Special Purpose Reinsurance Vehicle (SPRV) – is created between the reinsurance company and the investors. For balance sheet, solvency and tax reasons a company is frequently established in certain countries or national territories (e.g. Guernsey, Bermuda). A minimal capital stock

usually suffices for capitalization, and the start-up and transaction costs are also low. The resulting web of relationships can best be understood by considering two separate perspectives: on the one hand, the relations between the reinsurer and the SPRV, and on the other hand the relationship between the SPRV and investors.

The reinsurer and SPRV conclude a retrocession treaty which precisely defines the insurance business which is to be retroceded. For the purposes of the reinsurer's balance sheet and statement of income, this arrangement is

therefore treated as a normal retrocession. Compared to direct securitization, the advantage here is that there are no bonds or loans to report as liabilities and the balance sheet structure remains unchanged.

Figure 1:
Structure of a secondary securitization



Depending upon the underlying business and the structure of the securitization, the accounting periods agreed for retrocession statements may vary from monthly to yearly.

The relationship between the SPRV and the investors may take many forms. Under a classical model, of course, the SPRV would issue a bond as described in the section on direct securitization. Shares of the bond are acquired by investors, who participate in the performance of the insurance portfolio by way of interest payments and/or repayment of the invested capital.

Yet other forms are also possible. The SPRV may take out a bank loan secured by the claims under the reinsurance business. This case constitutes a so-called "asset-backed" loan. The payment flows correspond to the repayments under the reinsured business. This structure is made possible by the fact that the SPRV is not obliged to satisfy strict solvency criteria or other balance

sheet requirements. Rating considerations also play no role here. However, in order to avoid the increased credit risk associated with the low capitalization, the lending bank will usually insist on an additional non-proportional cover which the SPRV can obtain from a second reinsurer. It is in this splitting of the technical risk and the liquidity that the attraction of this type of securitization lies. There are no investment companies or other investors seeking to diversify their investment portfolio in this way. Rather, it is the bank itself – which otherwise merely played the role of intermediary – which takes the position of investor. The bank has found an investment vehicle which really is independent of the financial markets. Due to the special nature of the SPRV in that it was only established for the purpose of a securitization, assets-side risks (financial investments) as well as some liabilities-side risks (such as bad debt losses) are eliminated. All that remains is the technical risk.

A third option for linking the SPRV and the investors is a direct equity participation. The investors assume the role of shareholders in the SPRV, i.e. they pay their capital contributions upon establishment of the SPRV. This leads to high capitalization of the SPRV, which in turn entails greater activity on the assets side. Repayment of the contributions to the investors is also more complex. This is closely tied to the winding-up of the SPRV, the timing of which cannot be exactly determined. Instead, it is possible to meet the obligations for payment of the stockholders' equity by way of a guarantee, cash deposit or similar constructions. The further question as to the most appropriate ownership structures at the SPRV is discussed in greater depth in the next section.

2.2.2 Ownership structure at the SPRV

It is natural to conclude that the initiator of the secondary securitization (insurer or reinsurer) should also be considered the owner of the SPRV. The question therefore arises as to how the SPRV is to be integrated into the consolidated balance sheet.

It is always essential to comply with the consolidation rules applicable in the reinsurer's country of residence. Thus, in Germany an equity participation of more than 50% in an SPRV by a reinsurer generally leads to its consolidation, i.e. the inclusion of the SPRV's annual financial statements in the balance sheet of the reinsurance group.

Decisive in this context is the exercise of a controlling influence as defined by the German Commercial Code (HGB), which is deemed to exist in the case of a participation of more than 50%. However, consolidation completely eliminates the positive effects of a secondary securitization, and in the consolidated balance sheet the transaction is reflected as a primary securitization. For this reason, the reinsurer should not appear as the principal owner of the SPRV.

The bank will only be available in the role of owner to a limited extent, since in the (hypothetical) case of the SPRV's bankruptcy it would be

What, then, are the pros and cons of indirect securitization? As has already been mentioned, no strain is placed on the reinsurer's balance sheet. Furthermore, indirect securitization can be used to control balance sheet results over time and thus manage issues relating to tax law. This is not possible with direct securitization.

Nevertheless, a significant disadvantage should also be noted. The retrocession by the reinsurer brings about a reduction in its retention rate (i.e. the proportion of business retained). To this extent, indirect securitization can only be considered for companies whose retention rate after the retrocession to the SPRV is sufficiently high.

liable for certain financial obligations. For the bank, this constitutes an additional undesirable risk in addition to the traditional credit risk associated with the reinsurance company. Most importantly, however, in some countries banks are not permitted to become involved in the technical side of the business or they prefer to avoid such commitments.

A quick and cost-effective alternative, therefore, is to call on the services of a trust company which assumes ownership as an independent institution. A strict distinction is maintained, however, between ownership and business management.

A further possibility is that the investors can own the SPRV, although ultimately this only makes sense through the issue of shares. Although this is feasible, it would entail additional expenditure associated with the share issue as well as another undesirable aspect: arrangements would have to be found to limit the influence which the shareholders could exert on the SPRV – for example, with regard to the existing retrocession treaty with the insurer as well as distributions and dividends. Needless to say, the insurer would want to prevent the investors being able to bring about the collapse of the securitization structure. In practice, an equity participation on the part of investors in the SPRV

is a path chosen only in exceptional cases in property and casualty reinsurance. The associated expenditure may be tolerated for specific reasons connected, for example, with the structure

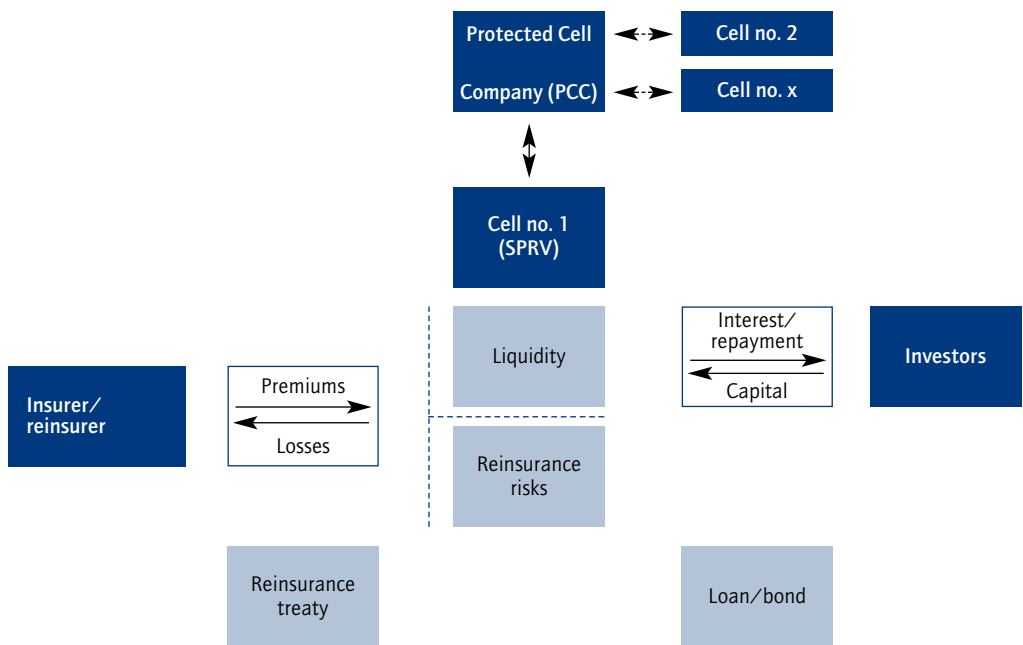
of the retroceded portfolio. In life and health reinsurance there is little point in using such a construction.

2.2.3 Protected Cell Company (PCC) as a suitable SPRV

For securitization purposes increasing use is being made of a corporate structure referred to as the "protected cell company" (PCC). This novel corporate form, which is permitted by law inter alia in Guernsey, is exactly tailored to the needs of an SPRV for secondary securitization. A so-called core company is established as the protected cell company. This in turn is able to set up a number of mutually unrelated controlled entities (known as "cells");

other companies – which may, for example, include international reinsurers – can then utilize these cells for specific purposes. One such purpose may comprise the bundling of similar reinsurance receivables (e.g. under life reinsurance treaties) and their subsequent transfer to the capital markets. The core company receives appropriate financial remuneration for its service.

Figure 2:
Structure of a secondary securitization with PCC



One of the most significant advantages of using a PCC for a securitization is the quick and low-cost creation of a suitable SPRV. Full business operations can often be commenced within the space of a few weeks. The cells are not mutually responsible for incurred liabilities, and even the

core company is only required in certain cases to cover the liabilities of the cells with its equity capital. The core company also assigns the cells a number of staff to handle administrative tasks. It may not cancel or amend existing treaties, nor is it permitted to initiate new treaties. The profits

and losses of the individual cells do not accrue to the core company, but are instead credited to the reinsurer or the investors according to the contractual arrangements. In other words, the economic and legal components of each cell are separated from one another.

2.3 Securitization of assets-side items

It is of course also possible to bundle and securitize homogeneous items on the assets side of the balance sheet. Insurance companies can pass on accounts receivable from other companies or private individuals, including for example a broad variety of leasing agreements and loans. In general, then, these involve future payment flows which are assigned in exchange for payment of a corresponding cash value.

In the past it was primarily assets which were securitized; the trend towards liabilities-side items has only gathered pace in recent years.

One example from the primary sector is the securitization of policy loans. Life insurance companies hold a certain portfolio of asset-forming insurance policies, on which loans and advances are granted to policyholders. From the insurer's standpoint, these constitute a long-term financial investment which tends to generate a rather low return. By issuing a securitization on these loans, the insurance company receives the cash value of these receivables from interested investors and can put its money elsewhere into high-interest investment vehicles. Securitization may also support liquidity, e.g. in the case of expansion involving the acquisition of another company or the enlargement of new business.

This type of PCC is particularly well-suited to solving organizational and balance sheet problems. Hannover Re has already incorporated this corporate form into the structures of its own securitization transactions.

The investor in the securitization, on the other hand, obtains a secure investment since the large number of homogeneous risks ensure good risk spreading and facilitate a reliable estimation of the future payment flows. Furthermore, repayment of the policy loans is largely independent of movements on stock or bond markets, since the loans and advances granted are always below the level of the already existing actuarial reserve.

One disadvantage with the securitization of assets-side items is the effect on the balance sheet. The commitments given to the investors must be carried as liabilities. At the same time, the initial payment made by investors produces a liquidity inflow on the assets side. The outcome is thus a stretching of the balance sheet. The existing accounts receivable still remain in the balance sheet. This stretching of the balance sheet adversely impacts the equity ratio. Possible implications for the company's rating should be assessed carefully in advance.

3. Securitization in life, health and personal accident reinsurance

3.1 Reasons for securitization in life reinsurance

As has already been mentioned, the reasons for securitization in the life, health and personal accident reinsurance segment are unlikely to lie in the management of the technical risk. There is no requirement for coverage of previously uninsurable risks. Rather, it is principally aspects such as

- ◆ easing the strain on results
- ◆ liquidity improvement
- ◆ enhancement of the awareness level
- ◆ use as a marketing instrument

which play a crucial role in the design of the contractual arrangements.

As easing of the strain on results may be desired, inter alia, if a company has to accept a heavy burden on its annual profit due to portfolio growth. Which areas might give rise to such disproportionately strong growth and the associated burden on results? For the most part, in life and health reinsurance the causes are likely to be high-commission new business or arrangements under which entire blocks of existing reinsurance business are acquired. Such treaties are generally reinsured on a coinsurance basis, i.e. all technical items are booked. In other words, actuarial reserves are included.

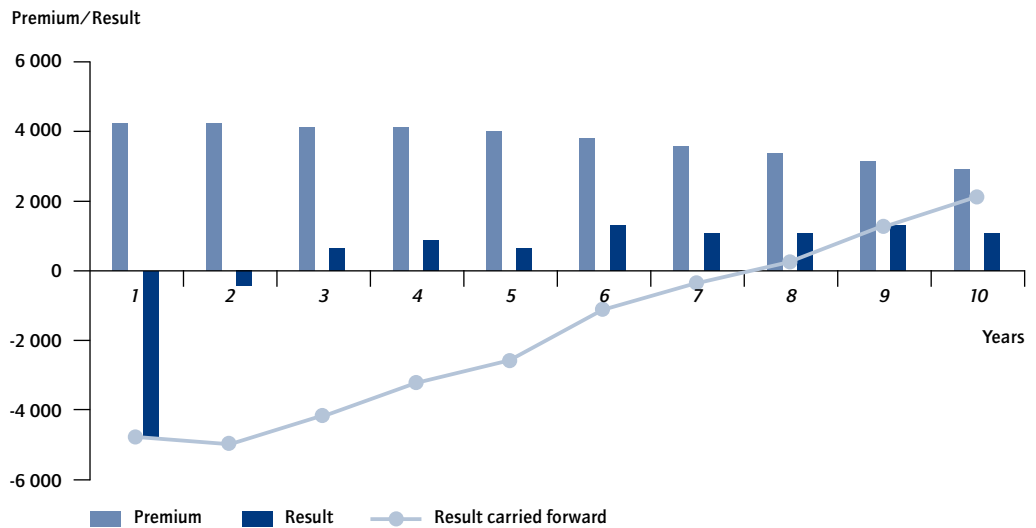
In Germany the application of Commercial Code guidelines may present a problem for reinsurers. It is necessary here to include first-year commissions and the aforementioned acquisition costs for insurance portfolios in the statement of income immediately in the year of their occurrence; they are consolidated with the company's true management expenses under the item "net operating expenses". Consequently, stronger growth in the area of "reinsurance with a financing component" is immediately reflected in the result.

In many countries this problem does not arise due to different accounting standards. Specifically, what is involved is the creation of an additional assets-side item in the balance sheet referred to as "Deferred Acquisition Costs" (DAC). To this end, many companies in Germany have begun to compile a second, voluntary set of annual financial statements – in addition to those under the German Commercial Code – in accordance with US GAAP or IAS so as to be able to smooth the effect of prefinancing and bring out the profitability of the business.

It is true that the German Commercial Code alternatively provides for the possibility of capitalizing such acquisition costs (i.e. showing them as assets), but only in compliance with "formal continuity" – a principle of proper accounting. In other words, if a decision was taken in previous years against capitalization under the German Commercial Code, this continues to be binding for future years.

The following graph clearly illustrates the impact of substantial new business on the profit for the year stated in accordance with the German Commercial Code:

Figure 3:
Life reinsurance – development of an underwriting year under the German Commercial Code (HGB)



For German reinsurers, which as stock corporations should safeguard an adequate stock price, it is still absolutely essential to show an acceptable result under the German Commercial Code as well as a good US GAAP financial statement. This is where the advantages of a secondary securitization would fully come into play. A proportional retrocession of the profit-straining insurance business to the SPRV brings a proportionate level of relief to the operating expenses item. This leads to a very considerable improvement in the technical result for the year. A primary securitization would not bring about any improvement in the result whatsoever, since it merely gives rise to a stretching of the balance sheet. A more in-depth analysis of the balance sheet effects is to be found in section 3.2.

Securitizations are also attractive in cases where the company is unlisted but the dividend policy is of particularly great interest. The profit transfer is of course determined on the basis of the Commercial Code result (after tax). Shareholders expect a steady or modestly increasing profit distribution. Securitization can be used to adjust or improve the distributed profit and it thereby serves the interests of shareholders.

Securitization may also be motivated by the desire to make sufficient liquidity available. If the scale of new financing business reaches substantial dimensions, it may place a strain not only on the annual result but also on liquidity. Block assumption transactions are also usually financed with liquid funds. Under a primary securitization, the income from the sale of the bond flows directly to the reinsurer and improves his cash flow situation. The same can be observed with a secondary securitization. In this case, the SPRV is merely interpolated as an intermediary, which forwards the liquid payments on to the reinsurer.

Theoretically, it is of course also possible that the strain on a reinsurer's liquidity and/or equity situation is not attributable to the increased underwriting of new business. Poor claims experiences and unfavourable treaties concluded in the past will also cause balance sheet problems with negative results or solvency requirements. Such companies could try to solve these problems by means of securitization. Yet they will find it difficult to obtain backing on the capital market, since investors consider life and health reinsurance as an instrument of diversification and

not as a risk investment. A high insolvency risk on the part of the company ceding the business is undesirable (cf. section 4, Risk analysis).

Yet a securitization may be to the benefit of a company whose liquidity is adversely affected by an ill-judged matching of assets-side and liabilities-side maturities. In such cases, the necessary financial resources are at a company's disposal, but due to the selection of incorrect maturities or non-liquid types of investment the funds are currently unavailable – or can

only be accessed at a loss. In other words, there is nothing ominous about the company's economic position and it could seek to enhance its current liquidity by reinsuring portfolios on the capital market. Capital market investors will certainly be prepared to provide such liquid funds by assuming technical risks. However, considering the considerable expenditure and time required in connection with a direct or indirect securitization compared to a "normal" reinsurance transaction or a simple bank loan, securitization is less likely to be an appropriate solution.

3.2 Effects on the balance sheet and result

In order to assess the effects of a securitization in life reinsurance on the statement of income and the balance sheet, it is essential to distinguish

between the two types of securitization (primary/secondary).

3.2.1 Primary securitization

The effects on the balance sheet of a direct securitization can be compared with those of borrowing or issuing a bond. The debt capital shown on the liabilities side increases. Hence, it is also extremely important to monitor the impact on the equity ratio, since a low equity ratio limits the scope for securitization.

The liquid funds accruing to the reinsurer are to be regarded as the contra item to the stretched liabilities side of the balance sheet. They strengthen the assets side of the balance sheet in the form of, for example, the larger equity or bond positions which can be acquired using this capital. Initially, then, the resulting effect is one of balance sheet stretching.

It is important to note that the technical result in the statement of income changes only slightly and the disbursement of the loan under the securitization does not influence the result. The effect on the non-technical result derives from the interest payments made to service the bond. This influences the net income or loss and hence also to a minor extent the equity

capital. Further, not insignificant expense items are associated with the issue of a bond (e.g. bank charges).

In contrast to indirect securitizations, there are no major effects on the statement of income. This is the principal reason why a direct securitization makes less sense for vigorously growing life reinsurers in Germany.

3.2.2 Secondary securitization

Under a secondary securitization an SPRV is integrated into the transaction structure in order to avoid the negative effects on the balance sheet of raising capital. The effects of the securitization on the balance sheet and result are comparable with those of a normal retrocession. Depending upon the type of accounting standards which apply (German Commercial Code or US GAAP), some of the effects will vary.

In the securitization of new financing business some of the strains associated with first-year commissions are passed on to the SPRV. Due to the effect on liquidity, this provides considerable relief for the reinsurer's technical result and equity capital as well as the assets-side investment items. Thus there is a favourable influence on the equity ratio (e.g. from the perspective of rating agencies or for the purposes of solvency requirements).

However, all that is involved here is a deferment of result and liquidity strains to subsequent years. From as early as the second year onwards positive reflows from the original treaty must be passed on to the SPRV, and are thus not available to the reinsurer. Furthermore, the actuarial reserves are not built up to the same level as they would be in a situation without securitization.

Under US GAAP, even without a securitization the strain on the technical result is considerably lower since the change in the DAC largely offsets the first-year commission. The impact of the heavy prefinancing effects on liquidity is unchanged.

In the event of retrocession to the SPRV, the DAC item on the assets side of the reinsurer's balance sheet (US GAAP) decreases. This change in the DAC is also reflected in the statement of income, but it is to a large extent offset here by the additional commission income and the item "other technical income". Apart from marginal effects of the technical result on equity capital, the principle impacts of a securitization lie in an increase in the cash item (receipt of pro-rata

commission payments) and a decrease in the DAC; in other words, it is possible to speak of an exchange of assets.

In Anglo-Saxon markets the insurer's balance sheet for new business is also affected by the so-called "reserve strain", which arises because the actuarial assumptions for the reserve calculations are more conservative than those used for the premium calculation. The relief provided by the securitization develops according to the situation with the acquisition costs for new business.

When retroceding an existing block of business (BAT), it is important to bear several components in mind at the beginning of the transaction. Under the German Commercial Code, the effect of the purchase price on the result and equity capital corresponds to the effect on the balance sheet and cash flow of the first-year commission under new financing business. However, since the block of business has already been in existence for quite some time, sizeable actuarial reserves exist; these are transferred to the SPRV as part of the securitization. If the reserves are deposited with the SPRV (coinsurance), the reinsurer shows a balance sheet contraction under the German Commercial Code. Both the reserves on the liabilities side and the investment items on the assets side decrease. Allowance must therefore be made for the impact on the balance sheet structure.

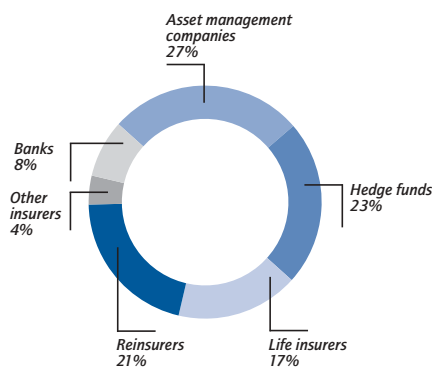
The normal practice with BATs, however, is to deposit reserves with the ceding company (modified coinsurance). Consequently, a retrocession to the SPRV does not give rise to any deposit of the reserves. Instead, under the Commercial Code the decrease in the actuarial reserves on the liabilities side of the balance sheet is counterbalanced by an increase in deposits received from retrocessionaires. At the beginning of the securitization, therefore, it is possible to speak not only of the aforementioned asset exchange (cash/DAC) but also of an exchange of liabilities, which has no further repercussions on the equity ratio.

3.2.3 The reinsurer as an investor in a securitization

Reinsurers frequently take the role of investors in a securitization in property and casualty reinsurance. This can be observed inter alia in cases where the business covered under a securitization carries a higher premium than comparable business written directly. This may be attributable to the fact that the initiating reinsurer uses the securitization to control the balance sheet or liquidity.

The acquisition of securitizations through other reinsurers can be attractive for other reasons too. It may be possible to tap into regional areas in which it was hitherto impossible or possible only to a limited extent to write business, where it was not worthwhile setting up a local presence or where this was prevented by supervisory regulations. In other words, securitization is consciously viewed as a source of reinsurance business.

Figure 4: Investors in ART products



Source: Versicherungswirtschaft 17/2000, p. 1279

In life reinsurance, however, this concept has hitherto not been implemented in practice because considerations as to the amount of risk premium play a relatively minor role with regard to financing transactions.

From the accounting standpoint, a number of special features are associated with the writing of a securitization by a reinsurer. For example, the incoming coupon payments are frequently split. The variable interest component (generally LIBOR) is in Germany actually booked as interest income in the non-technical account. The interest spread supplementing the variable component, on the other hand, is booked as reinsurance premium and thus allocated to the technical account.

When tapping into this source of business, it is also important to bear in mind that undesirable accumulations may arise between direct acceptances and this indirectly written business. In other words, there is a need for a sophisticated accumulation control system which protects against excessive loss payments from a single event in specific regions or lines of business. Since securitizations involve the insertion of an additional intermediate step, important information may sometimes only be passed on in truncated form, thereby hampering reliable accumulation controlling.

Hannover Re itself not only utilizes the capital markets as a source of capacity; it is also active in this sector as an investor. A budget of EUR 100 million p.a. is earmarked for securitizations.

4. Secondary securitization and its risks

4.1 General considerations

The technical risks in proportional life insurance derive primarily from fluctuations in mortality or increasing life expectancy, lapse patterns and the level of guaranteed interest. In the reinsurance sector, due to its international orientation, additional factors include ex-

change-rate risks, the risk of changes in legislation in the ceding company's home country and the credit risk associated with each cedant (in the case of financing transactions). The last three points are not technical concerns, however, but are of a purely economic or political nature.

Table 1:
Breakdown of risks in life reinsurance

<i>Technical risks</i>	<i>Economic and political risks</i>
Fluctuations/changes in mortality	Changes in exchange rates
Increased lapse rate among policyholders	Credit risk of the ceding company
Guaranteed interest	Changes in legislation

Sections 4.1 to 4.3 will be restricted exclusively to a discussion of secondary securitizations, since these play the most significant role in life reinsurance. It should not be overlooked in this regard that under a primary securitization some risks are eliminated (e.g. exchange rate risks) or alleviated (e.g. all technical risks in the case of a primary coupon-at risk securitization) for investors.

The term of the contracts in question is also significant. As a general rule, the securitization with the investors should be of a shorter term than the underlying original treaties of the reinsurance arrangement. Investors usually prefer original treaties with fairly long terms, since if the reflow of the liquidity employed under the ori-

ginal treaty is delayed it is possible to extend the securitization arrangement and they can to some extent safeguard their return.

It is in any case advisable to commission an independent firm of actuaries to audit the underlying reinsurance treaties and/or receivables. The managing bank frequently makes this a condition prior to agreement of the contract in order to be able to give investors an indication as to the quality of the business. In property and casualty reinsurance, it is in fact standard market practice that the issued risk bonds are awarded an independent rating; only those bonds which receive an excellent rating have a chance of being fully placed.

4.2 Technical risks

As with any reinsurance treaty, the portfolio retroceded under a securitization is subject to mortality and lapse fluctuations. On the acceptance side, these risks are considered as part of the quotation process and their profitability is tested with the aid of sensitivity analyses. Generally speaking, the mortality risk exhibits considerably less volatility since – especially with larger portfolios – numerous individual risks are bundled together, thereby facilitating very good risk spreading. The average expected mortality rate can be determined from the current mortality tables or the company's own experience. In other words, the mortality risk rests less in the susceptibility to fluctuation than in inaccurate assumptions as to the basic mortality of a portfolio.

An increased lapse risk among policyholders may constitute a further problem. It reduces the portfolio and hence the reflows which are to be expected in the future. If this "excess lapse" occurs in the early years, the reinsurer or the SPRV generally receives a lapse commission which reduces the initially paid commission. This risk is therefore particularly attributable to "late lapse" occurrence, and it may even sometimes cast some doubt on the repayment of financing. So-called "lapse shocks" arise for the most part as a consequence of deteriorations in the economic environment, including for example changes in tax legislation and financial difficulties affecting the insuring company.

Looking at the typical performance of a life/health reinsurance treaty with initial commission prefinancing and later repayments, an increased burden of losses or an increased lapse rate later in the course of the treaty adversely affects the expected repayment of the outstanding financing. The participation of the SPRV and the investors in the technical risk is clear.

In this way, as with a normal retrocession, the reinsurer reduces his risk positions. This should prove beneficial during growth phases at the reinsurer, in asset/liability management and with respect to assessment by rating agencies.

4.3 Non-technical risks

As described above, an internationally active reinsurance company is particularly exposed to exchange-rate risks between various currencies under financing transactions. By precisely harmonizing the foreign currency liquidity flows (principle of matching currency coverage) and using hedge instruments on a localized basis, such risks can very largely be excluded. During a securitization, however, these risks may be exacerbated if the cash flows are not passed on in the currency of the original treaty. In the case of a secondary securitization, for example, a euro bond would have to be serviced in this currency by the issuing SPRV, whereas the underlying business has substantially diminished in value due to a currency decline. In other words, the passing on of liquidity flows in any currency other than the original one should generally be avoided under a securitization.

The credit/insolvency risk of the cedant constitutes a special risk in life reinsurance with a financing component. Normally, even under the supervision of a trustee in bankruptcy, reinsurance accounts and the corresponding balances are still passed on to the reinsurer. The situation becomes problematic if reserves are deposited which are no longer sufficiently covered by assets. In the case of a secondary securitization, the reinsurer can only pass on to the SPRV the accounts which he himself receives

All forms of guaranteed interest represent a substantial technical risk. As far as the existing portfolio is concerned, if the interest rate level falls sharply there is a risk that liabilities cannot be discharged. The implications of this situation can currently be observed in Japan. During periods with higher interest rates primary insurers gave commitments which – given the present zero interest rate policy of the Japanese Central Bank – contrast with minimal receipts for the insurers. If the SPRV has inadequate capital resources, this could cause problems in extreme cases with the discharge of benefit commitments.

from the ceding company. The SPRV will then fail to adequately service the bond or a secured loan. Consequently, the risk of cedant default after bankruptcy of the SPRV remains with the investors, who for their part must ensure that this risk was already reflected in the structure and conditions of the securitization.

The situation is similar with political risks. These risks, which may range from the forced nationalization of the cedant to the implementation of new restrictions on the transfer of foreign exchange, are difficult to assess in advance. They too are passed on under a securitization. Investors can generally be explicitly protected against such risks under the terms of the bond. The reinsurer then assumes responsibility for these political uncertainties. In the final analysis, the individual structure of a securitization will have to be formulated according to the needs of the participating companies.

4.4 Safety of coverage commitments

The capital markets are thus seen as a supplement to or partial substitute for traditional risk carriers. Needless to say, the question arises as to whether the transfer of technical risks to the capital markets affects the safety of coverage commitments in the event of a claim.

It is indeed the case that any such extensive coverage of risks only makes sense with adequate capital resources. Ultimately, in the event of a claim the insurer urgently needs a solvent risk carrier with the ability to pay. Securitization must also be measured by this requirement.

The need for such capital backing depends on the covered risks as well as their mutual (non-) interdependencies, likely loss amounts and probabilities of occurrence. Insurance companies conduct precise portfolio analyses in this regard, which ultimately enable them to quantify the necessary risk capital backing. Reinsurers generally enjoy good risk spreading within their portfolio of insurance. Such spreading exists between individual risks which are homogeneous and yet independent of one another, and it is further promoted by the supra-regional diversification of risks across various lines of business and time. There is no denying, for example, that the earthquake risk in California

and German liability risks can be treated as entirely independent of one another. When determining the capital resources required by a reinsurance company, this independence reduces the level of risk capital which must effectively be available. This advantage of risk spreading across various lines of business cannot generally be offered by the capital markets as an alternative risk carrier.

The securitization of insurance risks entails one major advantage: the securitization arrangement is generally structured in such a way that at the beginning of the transaction the investors actually provide the capital as liquid funds or in the form of guarantees etc. If the underlying portfolio performs poorly, these amounts can be accessed directly. From the standpoint of reinsurance clients, this fact can actually be interpreted as an improvement in the reinsurance protection. Whilst no reinsurer can or must guarantee 100% capital backing for the covered risks, a securitization structured in this way does provide complete capital backing. In other words, in the purely theoretical scenario of the worldwide system of insurers and reinsurers collapsing as a consequence of massive loss events, the securitization can for the most part ensure actual payment of the insured loss amount.

5. Outlook

Due to the broad scope for structuring securitization transactions, there can be no doubt that additional innovative courses will be charted in the future. New investor groups will continue to be cultivated. The insurance industry has hitherto looked to international banks, investment companies and its own sector. Banks, in particular, are subject to limitations on their risk commitment and they must comply with provisions governing maximum credit line utilization per company. A bank's investment in a securitization may under certain circumstances cause conflicts with letters of credit and existing lines of credit for individual insurance companies.

One possible alternative may therefore be to involve large-scale industrial corporations as investors in securitizations. In this context, it is of course significant that industry is on the lookout for financial investments which are independent of normal capital market risks (interest rate changes and stock market crashes). The needs of industry and the goals of the insurance and reinsurance sectors can thus be conveniently combined by way of a securitization transaction.

Above all, however, the question arises as to the services which a reinsurer can render to his clients as part of a securitization. Thanks to his

international orientation, the reinsurer is able not only to utilize his own product developments but also to import know-how from other markets. This collective securitization expertise can then be used, inter alia, to advise the client on his balance sheet, cash flow or tax needs. In addition to the classical securitization structure, it is possible and indeed expedient to set up transactions directly on the portfolios of primary insurers. In this way, the reinsurer acts as initiator and facilitator between his clients and the investors. He creates special companies as and when needed, and supports the parties in an advisory role with the wording of the terms and conditions.

The conventional transfer of technical risks to the reinsurer ahead of a securitization could thus sometimes be extended via the SPRV. Needless

to say, insurers will frequently not be willing to relinquish the minimum volume called for by investors. In this case, too, the reinsurer can offer his support and include parts of his own portfolio in the securitization.

It can be seen, then, that the coming opportunities in the area of Alternative Risk Transfer and securitization in life, health and personal accident reinsurance are virtually boundless. Leading international reinsurers will continue in the future to use such methods in order to optimize certain sectors of business activity for their clients or for their own needs.

6. Glossary

Asset/liability management (ALM):

Analysis and harmonization of the assets and liabilities sides of the balance sheet. This requires precise modelling of the technical items, while also necessitating analysis of the risks and terms of the investment items shown in the balance sheet. The goal is to safeguard a company's long-term existence and profitability. The purchase or sale of a securitization may result from an ALM analysis.

Block assumption transaction (BAT):

Quota share reinsurance treaty on the life, health or personal accident reinsurance business of a ceding company. The goal is the early realization of future profits, which are made available to the insurer in order to enable him to efficiently achieve targets of his financial or solvency policy. A BAT is suitable for ceding to a securitization.

Diversification:

Expansion of an investment programme to types of asset items other than those already included in the scheme. Diversification derives from a carefully planned risk policy and serves to spread – and hence minimize – the risks entered into with the investments. The involvement of investors in securitizations utilizes the fact that

technical risks are not dependent on the development of stock and bond markets, thereby serving to enhance the risk/return structure of an investment portfolio.

Equity ratio:

Ratio of the total equity items relative to the balance sheet total (total assets/liabilities). In Germany this ratio averages around 10 % to 12 % for reinsurers, although the equalization reserve apportionable to the stockholders' equity is not taken into account. The ceding of insurance business to a secondary securitization serves to increase the equity ratio due to the reduction in insurance provisions. Under a direct securitization, however, the equity ratio is adversely affected due to the rise in debt capital.

IAS:

International Accounting Standards; the goal of the International Accounting Standards Committee (IASC) is to devise a complete, internationally recognized system of accounting standards (IAS). In the past this has involved significant reconciliation difficulties, as a consequence of which many German companies have chosen to use US GAAP for their alternative financial statements.

Letter of Credit (LOC):

Bank guarantee; if called upon by the holder of the guarantee, the bank undertakes to pay the said party an amount up to that specified in the LOC. In the USA this is a standard form of collateral in reinsurance business.

Life and health reinsurance:

Encompasses all lines of reinsurance concerned with the coverage of insurance risks affecting persons. Traditionally, these comprise life, health and personal accident reinsurance. Of late annuity reinsurance has been growing in significance. Disability and dread disease risks are also reinsured, although generally as riders to the main policies.

Matching currency cover:

Coverage of technical liabilities in a foreign currency with corresponding investments in the same currency in order to avoid exchange rate risks.

Protected Cell Company (PCC):

A corporate form that facilitates the quick, cost-effective setting up of cells which are independent of one another. Such cells lend themselves for use as Special Purpose Reinsurance Vehicles. PCCs are already permitted, inter alia, in Guernsey, the Cayman Islands, Vermont, Rhode Island and Illinois.

Securitization:

Certification of bundled, homogeneous receivables for the purpose of transfer to the capital markets, connected with the potential fungibility of the instruments.

Special Purpose Reinsurance Vehicle (SPRV):

Single-purpose company which absorbs the technical risk within a securitization structure and raises the necessary funds for the transaction through loans or the issue of bonds or other participations.

US GAAP:

Generally Accepted Accounting Principles; accounting requirements drawn up by the Financial Accounting Standards Board (FASB) in the USA. All companies listed in the USA must draw up audited financial statements.

7. Bibliography

Agostino, Dominick J./Cosgrove, William J.:

The Securitisation Solution from: Best's Review, January 1990, p. 44-46 and 88

Balantine, Robert:

Capitalising on risk from: Reactions, September 1996 Special report: Securitisation, p. 89-90

Bender, Klaus/Nell, Martin/Winterhalder, Heike:

Die Finanzierungsfunktion der Lebensrückversicherung [The financing function of life reinsurance] from: Versicherungswirtschaft, 3/2000, p. 171-178

Busson, M./Ruß, J./Strasser, W./Zwiesler H.-J.:

Asset Liability Management und Alternative Risk Transfer [Asset liability management and alternative risk transfer] from: Zeitschrift für Versicherungswesen Sonderheft Rückversicherung No. 21, 11/1999, p. 628-642

Challis, Simon:

Putting on Some Financial Muscle from: Reactions, September 1998, p. 80-81

French, Douglas A./O'Connor, Randall M.:

A Capital Idea from: Emphasis, 02/1999, p. 18-21

Hase, Maren:

Alternativen des Risikotransfers via Securitisation [Risk transfer alternatives via securitization] from: Versicherungswirtschaft, Issue 5/1998, p. 291-293

Kielich, Regine/Bütow, Steffen:

Reinsurer on a roll from: reinsurance, February 2000, p. 19

Müller, Dr. Andreas/Schaefer, Cornelia:

ART-Produkte aus Investorensicht [ART products from the investor's standpoint] from: Versicherungswirtschaft, 17/2000, p. 1279-1283

Müller, Eberhard:

Securitisation – Quo Vadis from: Zeitschrift für das Versicherungswesen 11/1997, p. 597-604

No author.:

True Life ART from: Clifford Chance Newsletter, June 2000, p. 80-81

Patterson, Stephen F.:

Alternativer Risikotransfer – immer mehr Realität [Alternative risk transfer – a growing reality] from: Zeitschrift für das Versicherungswesen 11/1997, p. 606-609

Rae, Dick:

Life-long securities from: reinsurance, April 1999, p. 23

Renggli, Dr. Thomas:

"ART 2000" - Entwicklungstendenz in der nicht-traditionellen Risikofinanzierung [Trend in non-traditional risk financing] from: Zeitschrift für das Versicherungswesen, 04/2000, p. 213-215

Turner, Christopher:

Not Culture – but still a good show from: Insurance Day dd. 28 July 1998 Special report: Alternative Risk Transfer

Veysey, Sarah:

Modern ART from: World Insurance Report, September 1999, p. 23

Zeller, Wilhelm:

Risiken in den Kapitalmarkt bringen [Bringing risks into the capital market] from: Börsen-Zeitung dd. 06 February 1999

8. Appendix: Secondary securitizations of Hannover Life Re

Since Hannover Re has to write off acquisition costs from life, health and personal accident reinsurance treaties immediately in the year of accrual under the accounting requirements of the German Commercial Code (HGB), they initially place a considerable strain on the statement of income.

Particularly in the area of life reinsurance, Hannover Re is experiencing a prolonged growth phase, as illustrated by the following table:

Table 2:
Growth of Hannover Re's life reinsurance business (in EUR million):

<i>Balance sheet year</i>	<i>Gross premium</i>	<i>Net technical result under</i>
1995	169.2	- 18.4
1996	257.6	- 42.4
1997	566.0	- 93.2
1998	724.6	+ 11.8
1999	808.3	- 19.9

The rise in the negative result up to and including 1997 caused by the immediate write-off of commission prefinancing under increased new business can clearly be seen. In the course of 1998 Hannover Re concluded its first two life securitizations (L1/L2), by means of which acquisition costs were transferred to the capital markets. This immediately produced a positive result in accordance with the Commercial Code, and it very clearly illustrates the effect of a securitization. The L1 transaction was awarded the accolade of "1998 Innovation of the Year" by the renowned UK reinsurance periodical "The Review". In the subsequent year,

despite the completion of two further transactions (L3 and L4), the prefinancing effect was again dominant due to the unusually strong growth of life and health reinsurance.

The significance of the L-transactions is evident, inter alia, from the level of the financing volumes, which already total EUR 429 million.

Table 3:
Securizations in the life reinsurance business of Hannover Re

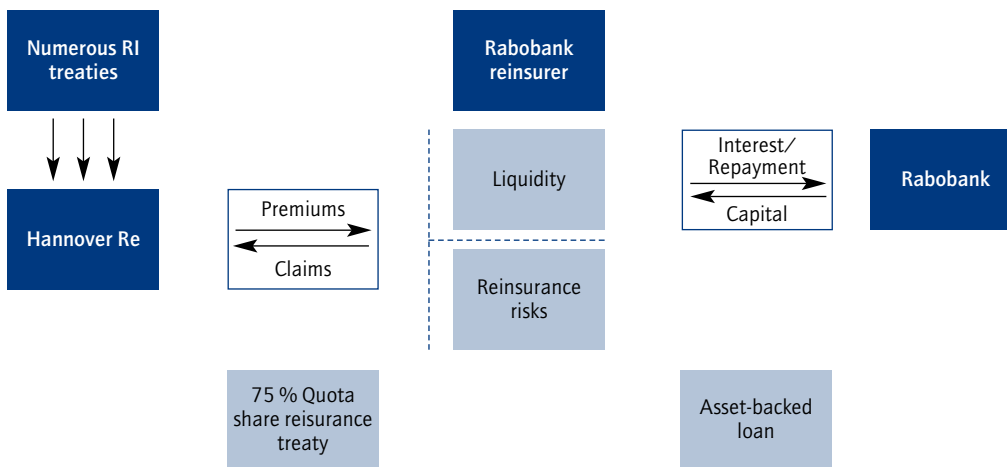
Transaction	Placement	Volume	Area of application
L1	Rabobank	EUR 51 million	New life business Western Europe
L2	Rabobank/Helaba	EUR 128 million	In-force business (BATs) Life, health, personal accident Western Europe and North America
L3	Citibank International	EUR 50 million	New and in-force business Life, health, personal accident Special Markets
L4	Helaba, other German Landesbanken*, Caja Madrid	EUR 200 million	Unit-linked life business (new business) Germany/Austria

* "Landesbanken" act as state banks and central banks of the savings banks in German federal states.

By transferring acquisition costs to the capital markets, Hannover Re thereby guarantees itself sufficient capacity to continue the enlargement of the strategic priority segment of life, health and personal accident reinsurance business in the future at the accustomed brisk growth rates. It is important to note in this context that the extension of L2 and L3 to include health and personal accident business broke new ground in the transfer of new business commissions to the capital markets.

A reinsurance company was used as an intermediary for all the transactions. In the case of the first two transactions, a reinsurance subsidiary of Rabobank – which has long conducted regular reinsurance operations – was used. The structure of the L1 transaction (essentially identical to L2) is illustrated below:

Figure 5:
The L1 transaction of Hannover Rückversicherungs-AG



Since an (existing) reinsurer is used as an intermediary, this constitutes a secondary securitization. It makes sense to bundle numerous similar reinsurance treaties/receivables and retrocede them via a quota share treaty. For investors, the advantage of this bundling is plain to see: the already existing risk spreading among the individual risks in a reinsurance treaty is complemented by a further spread across all the included reinsurance treaties. Any specific defaults on these treaties (caused for example by the insolvency of a cedant or premature portfolio reduction) are cancelled out. The investor's risk is minimized. This in turn cuts the cost of refinancing.

In the case of transactions L3 and L4 concluded in 1999, the innovative approach of creating an SPRV was adopted instead of using an existing reinsurer. A protected cell company on Guernsey was used (cf. section 2.2.3). One cell was established for each transaction. These cells assume the technical risks and pass the liquidity flows on to the investing banks via an asset-backed loan.

As can be seen from the previous table, L3 primarily comprises business from so-called "special markets". These may be countries experiencing significant political instability or those facing a difficult economic situation (for example with high inflation and interest rate fluctuations). Countries where the insurance and reinsurance markets are still fairly undeveloped also fall into this category.

The selection of this special group of markets gives rise to increased exchange-rate risks as well as the problem of difficult-to-manage currencies, since in some cases a fully functioning capital market in the area of long-term financial investments does not exist.

The L3 transaction took account of these considerations with its modified structure. Local investors were drawn on as a source of financing. As a general rule, these investors are subsidiaries of the participating bank, although in exceptional cases they may also be independent institutions. The effect of this distribution is clear: when participating in the securitization the local investor invests capital in the national currency. The funds flow via the SPRV to the reinsurer, who generally passes the capital on in the same currency to the ceding companies resident in the same country. Accounts received as part of the servicing of the securitization are similarly settled in the original currency. In an ideal scenario, the liquid capital flows do not even leave the country in question. It is left to the reinsurer to carry merely a minimal exchange rate risk, since he must draw up his balance sheet in his national currency (e.g. EUR) and show write-downs if a currency falls sharply. Nevertheless, such risks are typically carried by reinsurers and can be managed using appropriate measures.

The L4 transaction was created specially for unit-linked life insurance policies, which are currently recording vigorous growth in the volume of new business in both Germany and other European markets. Hannover Re took over the prefinancing of a number of insurers' acquisition costs and again refinanced its activities through a life securitization transaction. German Landesbanken and a Spanish bank acted as investors. Since the underlying insurance policies are exclusively in euros, it was possible to restrict the group of investors to those based locally in Europe.

