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

Wolf S. Becke

*Block Assumption Transactions:
An American Revolution
in Life Reinsurance*

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Contents

Section		Page
1.	Introduction and survey	4
2.	Origin and key components of Block Assumption Transactions (BATs)	4
3.	Practical implementation of BATs as a 'step-wise' process	6
4.	Implications of BATs for the participating reinsurer	7
5.	Main applications of Block Assumption Transactions	8
5.1	Mergers and acquisitions (M&A)	8
5.2	Rehabilitation of insolvent life insurers	9
5.3	Yield enhancement techniques	10
6.	Additional applications and modifications of BATs	11
7.	The Future: ATs as a new business segment for life reinsurers	11

1. Introduction and survey

Traditionally, international life reinsurers have concentrated their marketing efforts over the past decades on the assumption of new life business from their direct writing clientele. This approach was based on the understanding that a life insurance policy constitutes a long-term relationship between insured and insurer which can only be terminated unilaterally by the insured person. Consequently, the life reinsurer is only able to participate at the inception date of the policy – and, in this case, for the remaining duration of the policy – or not at all.

In the middle of the last decade developments related to the mandatory introduction of Risk Based Capital (RBC) requirements in the USA led to the recognition that innovative applications of well-known proportional reinsurance arrangements can modify revenue and expense flows within a life company in such a way that strategic corporate targets, e.g. increase of financial liquidity, advance of future earnings and tax optimisation, can be achieved with ease.

These specific forms of proportional treaty reinsurance, which are referred to generically as [Block Assumption Transactions \(BATs\)](#), define the life reinsurer's role as a 'stochastic banker' from a new perspective. In this context, the concept of a long-term partnership between primary insurer and reinsurer takes on considerable importance.

2. Origin and key components of Block Assumption Transactions (BATs)

After lengthy discussions about the capital and surplus requirements of life insurance companies which were prompted by the demise of various insurers (e.g. Executive Life, Mutual Benefit Life) in the 1980s, the National Association of Insurance Commissioners (NAIC) established a guideline for determining solvency margins under the so-called [Risk Based Capital \(RBC\) model](#). This was to be applied for the first time in 1993.

This model requires – put in somewhat simplified terms – that the business activities of a

The new – some observers would say revolutionary – approach of BATs is based on the concept that life insurance portfolios – as generators of premium and investment income as well as claims and expenses – should be treated as a [separate and marketable asset category](#) which can be handled in accordance with well-known principles of asset management.

From a financial viewpoint, life insurance portfolios have several key similarities with other categories of [long-term assets such as commercial MBS/CMO real estate](#), which can also be regarded as a generator of a rather predictable income flow from its tenants. A BAT in insurance terms is therefore equivalent to the sale/purchase of a commercial property.

The following article seeks to provide insights into the origin, conceptual aspects and diversified applications of Block Assumption Transactions (BATs). Naturally, it will report mainly on the [situation in the US life reinsurance market](#). It should be noted, however, that transactions of this type have recently been concluded in the United Kingdom, Italy and Australia, and it can be expected that many other markets will follow suit in the near future.

life company be backed by an [adequate solvency fund per line of business](#) by taking into account and reflecting the specific inherent risk factors of the segment in question. For example, annuity products which provide customers with guaranteed benefits (e.g. guaranteed interest credit rates of 4.0% p.a.) have to be backed by up to 300% higher solvency funds than variable annuities, where the policyholder carries the full investment risk.

The application of the RBC model has focused on several business clusters, i.e. insurance portfolios which could be regarded as homogeneous within the RBC framework, including:

- ◆ Individual and Industrial Life Insurance
- ◆ Group and Credit Life Insurance
- ◆ Medical Insurance
- ◆ Disability Insurance
- ◆ Annuities

The quantitative execution of the RBC model in the course of 1993/94 brought a number of US life insurance companies the – at the time somewhat surprising – insight that they were active in business segments which were **structurally unprofitable**. In other words, these segments would not be able to meet corporate earnings targets, formulated for example in Return on Equity (ROE) terms, after making allowance for the consumption of corporate capital/surplus funds as determined by RBC requirements.

Subsequently, top management at these life companies was faced with the dilemma of what to do with these business segments. The first move was to stop writing new business since every new policy would only exacerbate the problem. But then another problem emerged: What could be done with the block of closed business in-force?

The technical (and traditional) approach of handling the **natural run-off** of the portfolio in question over the next 10-20 years according to the characteristics of the portfolio appeared **sub-optimal** since the relevant earnings and solvency funds would only be released over an extended period.

A **solution to the problem** was put forward from a rather unexpected quarter of the life insurance industry, namely **the reinsurance side**. Reinsurers recommended the implementation of a special coinsurance arrangement on a quota share basis (with 80% to 100% reinsured), under which the reinsurer would allow a one-off cash payment to the primary insurer in the form of a **ceding allowance** to reflect the value of the designated (closed) block of business.

In the context of this arrangement, the relevant risks under the RBC requirement are transferred such that the primary insurer is to a large extent relieved of the strain. As part of the transaction, it is also customary to transfer all assets and liabilities related to the designated block of policies to the reinsurer in order to achieve maximum RBC relief.

Special quota share reinsurance arrangements of this type were given the generic name of **Block Assumption Transactions (BATs)**.

In addition to the positive impact on the RBC situation of the primary insurer, a substantial **liquidity injection** is normally recorded under a BAT with the added advantage that these funds can be re-allocated to the expansion of more profitable business lines.

Under **Statutory Accounting** reporting, where the new business strain is immediately reflected in the P+L account of the year of occurrence, a BAT yields a one-off gain in favour of the primary insurer roughly equivalent to the Value in Force (ViF) of the designated portfolio.

It should be noted that, within the process of implementing a BAT, the function of the primary insurer changes from a risk carrier to an **administrator** responsible for proper handling of policy administration. The insurer receives an **administrative service fee** from the reinsurer for this service which is normally calculated on a 'per policy' basis. Additional financial incentives as part of the BAT encourage correct and client-oriented handling of the run-off.

3. Practical implementation of BATs as a step-wise process

In the real world of life reinsurance, the implementation of BATs closely follows a step-wise process which presumes a close interaction and cooperation between the primary insurer and reinsurer:

Step 1: Identification of a designated life portfolio and implementation date

This step serves to **identify the portfolio** which can be used as a basis for a BAT. The crucial aspect to be considered is the long-term nature of the policies within the portfolio. Typically, the selected block of business will consist of individual life policies incl. additional rider benefits, **retained for net account**.

In addition, a suitable date has to be specified as the implementation date (e.g. 31 December 2003) for the BAT.

Step 2: Collection and analysis of data

Various **technical, actuarial and financial data** is collected for the designated portfolio for a period of several years prior to the implementation date, including

- ◆ Description of life plans, actuarial data
- ◆ structural peculiarities of plans, underwriting guidelines
- ◆ Distribution systems, target customers
- ◆ Performance analyses (mortality, morbidity, persistency, et. al.)
- ◆ External financial factors (e. g. interest yield curve)

Step 3: Establishing a model for revenue and expense flows

During this phase, a **deterministic model** is created to simulate the technical and financial cash flows relating to the designated portfolio. For each financial year these cash flows, including

premium income, investment income and commission expenses to name but a few, are consolidated into the technical results $E_1 \dots, E_n$, reflecting the pre-tax stream of earnings of the portfolio in years $1, \dots, n$.

The **period of observation** (i.e. the duration of the model) will normally be defined as the maximum period for which a policy will still exist.

For practical purposes, an observation period of no more than 20 years will be sufficient in most circumstances.

Step 4: Simulation runs (incl. sensitivity analyses)

By stipulating a model set of parameters, a **main scenario** considered as projecting maximum likelihood is determined. These parameters generate a specific flow of results over the full period of observation which can be regarded as illustrating the **expected cash flow pattern**.

Additionally, it is important to test the model under different sets of parameters, each set defining a possible scenario with a lower likelihood of occurrence. On the basis of this exercise it is possible to perform a **sensitivity analysis** of possible results, thereby providing a confidence interval of expected results.

Step 5: Evaluation of results

For each of the selected scenarios a **performance evaluation** is executed by calculating the present value of the earnings E_1, \dots, E_n .

Special attention must be given to selecting an appropriate risk discount rate RDR (or, on a more sophisticated level, a time-dependent risk discount rate vector $RDR_1, RDR_2, \dots, RDR_n$) which transforms the earnings flow E_1, \dots, E_n , into a single figure K , the present value (PV) of the earnings flow at the implementation date.

In various insurance markets the RDR has been put at a level of 1.5–2.0 times the (risk-free) rate of return of long-term government bonds.

Finally, the reinsurer adjusts the present value K in accordance with his own earnings tar-

get and incorporates this modified value into the BAT as the ceding allowance.

4. Implications of BATs for the participating reinsurer

In the context of modern financial theory a BAT can be considered a special form of **Asset Swap** which exchanges a bullet payment (= ceding allowance of the BAT) against a long-term monetary flow of future earnings emerging from the designated block of life business.

Similarly, we have noted that the BAT concept has been applied as a **Liability Swap** in situations where a primary insurer wished to distance himself from the long-term negative impact of an underpriced block of life business. The determination of a negative Value in Force resulted in a negative ceding allowance under a BAT, i.e. a cash payment from the primary insurer to the reinsurer coupled with an assets/liabilities transfer.

From the viewpoint of the reinsurer the following factors have to be taken into account before entering into a BAT:

In contrast to traditional life reinsurance, which concentrates on new business, it should be noted that the **growth potential** under BATs for financially well-equipped reinsurers is enormous since total portfolios are transferred together with substantial premium revenues and asset blocks. As a disadvantage, it should be noted that these insured portfolios are closed for new business and each of them will therefore run off with diminishing premium income and assets over the years.

The **pricing of a BAT** will normally be handled in a transparent manner such that both parties (i.e. primary insurer and reinsurer alike) have full insight into all pricing-related portfolio parameters. This aspect again reflects the partnership-based approach that is typical of BATs.

- ◆ Does the reinsurer have sufficient free liquidity and RBC-free solvency funds?
- ◆ Has the designated life portfolio been actuarially tested such that a reliable and credible actuarial expectation can be formulated in respect of future earnings?
- ◆ Do the completed sensitivity analyses demonstrate that the risk of technical underperformance can be limited to an acceptable level?
- ◆ What is the structure of the technical liabilities and assets; matching of liabilities and assets?

5. Main applications of Block Assumption Transactions

Practical experiences in the US have rapidly demonstrated how the BAT concept has evolved from a defensive mechanism to comply with new regulatory requirements into a pro-active tool for achieving new management and corporate objectives.

BATs are currently used, in addition to their original purposes of advancing earning flows emerging from life insurance portfolios and relieving solvency requirements, in the following areas:

5.1 Mergers and Acquisitions

A number of Anglo-American life markets (notably the USA, Canada and the United Kingdom) are presently characterised by a **consolidation phase** which manifests itself in visible merger and acquisition activities.

providing valuable financial support without which in many instances the acquisition would have been doomed to failure.

The following example illustrates the possible use of a BAT in the context of an acquisition:

A properly structured BAT can assist the assuming company/purchasing life company by

We assume that Company A (Purchaser) intends to buy Target Company X whose corporate value, equivalent to the purchase price or appraisal value, has been determined in a due diligence examination to be USD 60 million. The following components have been used to determine the purchase price:

• Capital and surplus funds	USD	20.0 million
• Present value of future profits of life portfolio in-force	USD	35.0 million
• Value of future business (Goodwill)	USD	5.0 million
TOTAL:	USD	60.0 million

With a BAT in the form of a 90% quota share reinsurance applied to the net retained in-force block of life business of Company X, the reinsurer will contribute approx. USD 31.5 million (= 90% of USD 35.0 million) such that the total purchase price will be split accordingly:

• Purchaser (= Company A)	USD	28.5 million
• Reinsurer	USD	31.5 million

The inception date of the BAT is stipulated in such a manner that Company A first takes over Company X and the reinsurance arrangement then becomes effective shortly thereafter (e.g. 1 day later).

of USD 31.5 million, but the actual corporate value of X at the date of purchase will have shrunk to USD 28.5 million.

It is also possible to implement the BAT **before** the transfer of ownership to Company A. In this case the previous owner of Company X will receive the proceeds from the BAT in the order

A major advantage of BATs rests in the ability of the parties involved to create tailor-made terms and conditions which satisfy corporate requirements for both the seller's and buyer's side, e.g. the tax implications of the said deal can be optimised.

In the case of the sale of a corporation as described in the above example, it must be borne in mind that in many countries the solvency fund cannot be reduced to an unlimited extent by ceding a large quota share of the portfolio, i.e. a minimum retention must be kept. Nevertheless, a tailor-made solution can also be designed for such cases.

In many instances BATs have proven to be an advantageous instrument compared to other

forms of leverage (e.g. through bank loans) due to the fact that no explicit collateral is required and the financing is repaid exclusively from the future earnings of the portfolio, **if and when these emerge**. There is no guarantee whatsoever for the participating reinsurer acting as a stochastic banker that his financing contribution will be reimbursed!

Note on the UK life insurance market

An anomaly of the UK life insurance market which is closely connected to the compliance risk related to **Personal Equity Plans** (PEPs) sold in the 1980s has led to a situation in which for several UK life offices the corporate value is **lower** than the Value in Force of the company's portfolio, despite the availability of sufficient capital and surplus funds.

Consequently, in these cases the complete acquisition of such a life office can be financed by a BAT (with nil capital requirement on the part of the purchaser!). This is because the reinsurer performs the valuation of the reinsured portfolio without considering the compliance risk – a risk which in any case is not transferred under the BAT.

5.2 Rehabilitation of insolvent life insurers

It is well documented that over the last 10–15 years a number of US life companies have approached near-insolvency, mainly due to speculative commercial real estate involvements. Insurance departments have had to step in and put these companies into liquidation because the remaining capital and surplus funds had dropped below legal requirements.

Indeed, in many cases the remaining adjusted net worth even turned out to be a negative value!

From the standpoint of **protecting policyholders'** interests the paramount task appeared to be to run off the existing policies in an orderly manner while looking for opportunities to merge the company with a solvent acquirer.

Under close cooperation between Insurance Departments and reinsurers, the following solution was developed:

Step 1:

Insurance Department decrees a temporary moratorium for existing life policies, including the following conditions:

- Limit on interest credit to policyholders not to exceed the guaranteed minimum (e.g. 4.0% p. a.)
- Agreement of extra-contractual withdrawal penalties.

Step 2:

Life reinsurer effects a 100% BAT and takes over all assets and technical liabilities at the terms and conditions prevailing under the moratorium.

The duration of the moratorium will normally be limited to 24–36 months.

Experience tells us that the quality of a portfolio of an insolvent life office will have deteri-

orated. The conditions of the moratorium are therefore mandatory in order to generate sufficient earnings from the run-off of the portfolio.

By evaluating the impact of the moratorium on the Value in Force of the portfolio, the reinsurer will find itself in a position to pay a ceding allowance which will absorb the deficit on capital/surplus funds of the life company provided the following inequality holds:

$$\text{Equity Deficit (after r/i transactions)} \leq \text{Ceding Allowance}$$

5.3 Yield Enhancement Techniques

The exploitation of temporary price differences for the same asset in different financial markets is known as **arbitrage**. A BAT provides a unique opportunity for a direct life insurer to capitalise on arbitrage within the framework of its own life insurance activities.

Due to differing financial expectations, planning horizons and business strategies, we have noted in many insurance markets a **yield differential** of 250–300 base points p. a. (= 2.5-3.00% p. a.) between the national primary insurance market and the international reinsurance market

Step 3:

After implementation of the BAT the life company returns to a solvent status and the search for (a) new corporate shareholder(s) can thus be actively promoted.

In many cases the rehabilitation of the company can be achieved merely by ceding part of the portfolio through a BAT.

with respect to the financing of life business acquisition.

A national life insurer can benefit from this yield differential, with a BAT serving as the arbitrage device. The leverage effect deriving from the use of BATs provides a (risk-free) additional investment yield.

The major components of a **yield enhancement approach** are illustrated in the following example:

- ◆ A closed portfolio of non-participating life policies provides the primary insurer with an earnings potential of 10.0% p. a., measured in terms of the Return on Investment (ROI).
- ◆ We also assume that careful analysis of the international reinsurance markets has led to the conclusion that large reinsurers will be prepared to allocate sufficient financial resources with an expected yield of 7.5% p. a.
- ◆ Implementing a BAT with a 50% quota share reinsurance on the designated block of life business will enhance the insurer's yield by around 250 base points per annum, i.e. he can expect a total ROI of 12.5%. Obviously, it is possible to maximise the leverage effect substantially by increasing the quota share level to 80% or even 90%.

It should be borne in mind that the life office, as described above, can increase the ROI almost without limit. Yet at the same time, in absolute terms, it will be ceding more earnings. In phases characterised by considerable new

business the life office will work together with the reinsurer to find a tailored strategy for optimising both the ROI and the absolute amount of earnings.

6. Additional Applications and Modifications of BATs

In a natural extension, so to speak, the BAT concept may also be applied to other types of insurance portfolios which generate a long-term, predictable earnings flow (e.g. [personal accident](#) and/or [health insurance portfolios](#)).

The BAT concept has also proven helpful in [optimising tax returns](#) for a life company, especially in life markets where corporate income tax

is determined under an I-E rule (i.e. investment income reduced by (allowable) expenses) or in situations where a life company wishes to stabilise its mortality results as part of a going public exercise ([Block Mortality Transaction](#)).

7. The Future: BATs as a new business segment for life reinsurers

The traditional scope of activities conducted by an international life reinsurer used to be defined as providing [risk-transfer mechanisms](#) and associated technical services in respect of excess life and disability risks as well as financial support to meet the surplus strain related to the acquisition of new life policies.

The implementation of BATs in tailor-made arrangements so as to help primary life insurers achieve key corporate targets offers knowledgeable and surplus-rich reinsurers a unique opportunity to provide added value to their customers and become the premier provider of 'financial engineering' to their clients.

It is our assumption that the previous one-dimensional focus of life reinsurers on reinsuring the mortality risks associated with new business acceptances will be replaced by a [multi-dimensional approach](#) that encompasses mortality, disability, critical illness/dread disease and, last but by no means least, longevity risks and affords equal consideration to [new business writings](#) and [in-force business](#).

The concept of BATs does open up new areas of activity for strong and entrepreneurial life reinsurers. The launch of BATs in the US life insurance market, which has so far received little public attention, does indeed constitute the beginning of a quiet revolution. As a result of this innovative development it can be expected that life reinsurance will remain an area of dynamic growth in the years to come.

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