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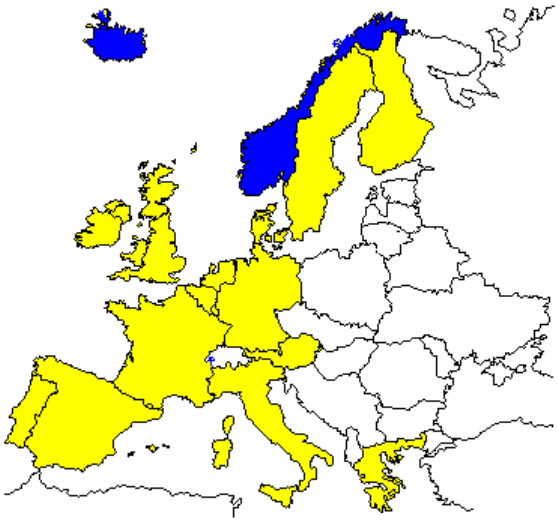
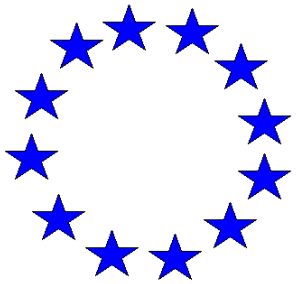


REPORT

SOLVENCY OF INSURANCE UNDERTAKINGS

CONFERENCE OF INSURANCE SUPERVISORY SERVICES OF THE MEMBER STATES OF THE EUROPEAN UNION



CONFERENCE OF THE INSURANCE SUPERVISORY

SERVICES OF THE MEMBER STATES

OF THE EUROPEAN UNION

This report was elaborated under the chairmanship of Dr Helmut MÜLLER,

Vice-President of Bundesaufsichtsamt für das Versicherungswesen

(insurance supervisory federal authority of Germany)

For further information on this publication, please contact the Conference Secretariat :

Philippe VECCHIERINI, Secretary Tel. + 33.1.55.07.41.25 Fax + 33.1.55.07.42.92
internet address: conference@cca.finances.gouv.fr

Christine BOURDIAUX Tel. + 33.1.55.07.42.17 Fax + 33.1.55.07.42.92
internet address: conference@cca.finances.gouv.fr

CONTENTS

List of annexes

1 Introduction

Solvency as referred to by the EC Insurance Directives means the financial resources of an insurance undertaking, i. e. in essence the difference between the assets and the liabilities of the insurer. This kind of safety capital is necessary in order to absorb discrepancies between the anticipated and the actual expenses and profits. In insurance it is not possible despite all actuarial and statistical efforts to safely predict the loss experience. A risk premium which is calculated as prudently as possible may still prove to be insufficient if the negative variances from the expected values are of such proportions that they can no longer be covered by the safety margin previously calculated for this purpose. Aspects applying to the technical risk proper also apply to the other risks encountered by an insurance undertaking (investment risk, operational expenses risk, changes in the political and social environment, mismanagement etc.). In this connection the risk that the expectations may not be fulfilled is even greater. The co-ordinated European supervisory law therefore provides that insurers must have sufficient safety capital in form of the so-called minimum guarantee fund at the moment of taking up operations, i. e. at the moment of being granted authorisation, as well as, in addition to the financial means covering the actual and the expected liabilities, own funds for the on-going business which are available to serve as a buffer to ensure that the obligations under the contract can be met at any time. The required amount of this safety capital (referred to in the directives as solvency margin) is supposed to quantify the risk unforeseen in the meaning of the above words. It must be calculated so that an undertaking covering this margin at a certain point in time with admissible own funds is most probably able to fulfil its obligations during the years to come. This means that if the own funds fall below the required amount the supervisory authority must have sufficient time to prescribe measures to restore the sound financial situation of the undertaking concerned and, if the restoration measures do not appear successful, take other measures to safeguard to the greatest extent possible the interests of the insured or the third parties who suffered the loss.

The actual amount (referred to in the following as actual solvency), in return, comprises the financial means which are available for covering the required amount. In this sense, the undertaking is solvent, if the actual amount is as least as high as the required amount.

The current solvency regulations are mainly based on the provisions of the first co-ordination Directives (73/ 239/ EEC and 79/ 267/ EEC) from 1973 (non-life insurance) and 1979 respectively (life-insurance). Only the provisions regarding the required solvency in credit insurance and the actual solvency both in life and in non-life insurance were amended by the credit insurance Directive of 1987 (87/ 343/ EEC) and the co-ordination Directives of the third generation of 1992 (92/ 49/ EEC and 92/ 96/ EEC).

While the third Directives were being developed, the wish was expressed that the solvency regulations should be reviewed based on the experience made during their approximately 20-year long application. It was finally agreed that this review should take place only after passing of the Directives. The Commission was obligated by article 25 of the third non-life insurance Directive and article 26 of the third life insurance Directive to submit a report to the insurance committee "on the need for further harmonisation of the solvency margin" within three years after the date of application of these directives, i. e. by mid-1997 at the latest.

The insurance committee requested the Conference of the Insurance Supervisory Authorities of the European Union Countries at the session on April 7 and 8, 1994 to have the solvency regulations examined in more detail by a working group. The result of this investigation should enable the European Commission to submit the report mentioned in the third Directives to the insurance committee.

The working group was in particular supposed to

- give an overview of the experience supervisory authorities of the member states and examine whether the present definitions of solvency margin would allow the supervisory authorities to intervene early in the case of problems.

- examine whether the present formulas applied to calculate the minimum solvency requirements still adequately take account of the nature and size of the risks insurance undertakings are exposed to (e. g. investment risk, credit risk, underwriting risk, interest rate risk etc.). In this context, the experience made by other financial supervisory authorities was to be taken into consideration (for instance the North American insurance supervisory authorities, the EU banking supervisory authorities) in order to develop instruments suitable for assessing the capital adequacy.

- examine the present provisions in the Directives about the solvency requirements, e. g. regarding the quality and admissibility of capital elements, the possible need for "closed-end" definitions, the pros and cons of controlling the investment of assets to cover the solvency margin and the need to up-date the thresholds and amounts of the minimum guarantee fund.

In their 102nd session in May 1994, the conference of the supervisory authorities set up a working group chaired by Germany which took up work in the autumn of 1994. Its members are representatives of all insurance supervisory authorities of the EEA member countries.

First, the working group analysed which risks an insurance undertaking is exposed to in carrying on its activities and what preventive measures are available that would be suitable, apart from the own funds, to absorb or at least reduce the risks recognised (see section 2). The purpose of this analysis was to find out, if at all possible, where and to what extent additional free financial means (own funds) are needed which might have the above-mentioned buffer function.

At the same time, the economic collapses of and other adverse developments within insurance undertakings which took place in the past in the various member countries were analysed (see annex 1). It was found that even if the solvency rules had been applied and observed more strictly, and even if they had contained stricter requirements than they do at present, a number of the economic collapses that happened could not have been prevented. The solvency margin as a rule fulfils its warning and safety function but it does not at all replace an effective company analysis and a prudent establishment and coverage of the technical provisions.

The working group's reflections as to if and how the solvency system could be changed or developed further, also considered the regulations in the supervisory laws of other countries outside the European Economic Area (e. g. the so-called risk-based capital approach applied in the USA, see annex 2) as well as the solvency rules applicable to other financial institutions (mainly those for the EC credit institutions, see annex 3). In the end it came to the conclusion that in principle the insurance system created by the community in 1973 and 1979 has proved itself and that there was therefore no reason to totally revise it. On the contrary, the working group is convinced that the existing system adequately takes account of the insurance-specific risk situation if some amendments and additions, which will not affect the core of the system, are carried out. Sections 3 and 5 describe the proposals made to this effect. In this connection, the working group based its reflections on risk-theory consideration. However, it did not develop a theoretically exact scientific definition of the solvency rules, mainly relying on empirical market observations instead. The reason is that on the one hand there are no reliable statistical foundations one could start from. On the other hand the supervisory authorities just like the insurance undertakings and possibly also the public interested in insurance would like to have solvency rules which are easy to handle, not too complicated and which, not least, can also be understood by outsiders.

The working group finally also discussed the instruments available to the supervisory authorities in connection with the supervision of the undertakings' solvency. It takes the view that the supervisory means available up to now often take effect too late and therefore suggests additions to the powers provided in the directives (see section 6).

2 Risks in life and non-life insurance and possible preventive measures

2.1 Risk situation

2.1.1 General remarks

Every insurance undertaking is in connection with its activities exposed to risks which may endanger its existence and in the extreme case - as past experience shows - even ruin the undertaking.

The sum of the individual risks an insurance undertaking is exposed to makes up its overall risk situation and comprises the following three main components: "technical risks", "investment risks", and "non-technical risks". There are partly different aspects of the technical risks in life insurance on the one hand and non-life insurance on the other hand, whereas the investment risks and the non-technical risks are found in both areas, having, however, very different effects depending on the long-term nature of the insured risks. The examination primarily considers investment risks and technical risks because the profit situation of insurance undertakings essentially depends on the development of the technical risks – mortality regarding life insurance undertakings and claims experience regarding non-life insurance undertakings – and in all classes on the performance of investments. The non-technical risks may also have a very negative effect. It is, however, very difficult to quantify them.

The working group defined the following risks insurance undertakings operating in the market are exposed to. The breakdown used is not always free from overlappings and certain risks cannot be seen independently because certain parameters influence each other and enhance their effect. Table 1 gives an overview of the risks for insurance undertakings which will then be explained in more detail.

Table 1

Technical risks	Investment risks	Non-technical risks
Current risks		
- Risk of insufficient tariffs	- Depreciation risk	- Management risk
- Deviation risk	- Liquidity risk	- Risks in connection with guarantees in favour of third parties
- Evaluation risk	- Matching risk	
- Reinsurance risk	- Interest rate risk	- Risk of the loss of receivables due from insurance intermediaries
- Operation expenses risk	- Evaluation risk	
- Major losses risk (only non-life)	- Participation risk	
- Accumulation or catastrophe risk)	- Risks related to the use of derivative financial instruments	- General business risks
Special risks		
- Growth risk		
- Liquidation risk		

2.1.2 Technical risks

a) Current risks

Risk of insufficient tariffs (miscalculation)

This refers to the risk that consciously and deliberately, or unconsciously e. g. due to lack of expert knowledge, premiums are charged which are too low. Since this risk is so important it is explicitly mentioned as first of the following list of technical risks. However, it should be noted that it is very difficult to define this risk without any overlapping. If a miscalculation was made deliberately, this risk could be considered a management risk. If the calculation is wrong despite a responsible rating taking into account any available information, this risk could also fall under the deviation risk.

Deviation risk (risk factors changing subsequently)

Of the technical risks, the deviation risk is a major one. Both in life and non-life insurance it refers to the risk of deviation of the actual development of claims frequency and extent, interest income and administration costs from the calculation bases due to changes in the factors influencing the risk (e. g. changes in mortality and morbidity, medical progress, legislation, criminality, price and wage levels, cancellation probability, falling interest rates) and, in addition, the risks resulting from the introduction of completely new products. These risks are encountered by existing and new undertakings as well as on known and unknown markets.

Evaluation risk (in connection with technical provisions)

The evaluation risk describes the risk of the technical provisions being insufficient to meet the liabilities under the insurance contracts.

Reinsurance risk (insufficient reinsurance cover, failure of the reinsurer to pay)

The reinsurance risk refers to the risk of non-payment by the reinsurer and poor quality of reinsurance. Since it is possible to list this risk also under the non-technical risks, it is discussed again under item 2.1.4.

Operating expenses risk

The operating expenses risk in life insurance refers to the risk of the amount for expenses included in the insurance premium not being sufficient to cover all actual expenses in future. Apart from life insurance, this risk may also occur in non-life insurance where it could lead to the ruin in particular of small insurers in connection with the so-called long-tail business. The operating expenses risk is especially relevant in the case of an existing portfolio being run-off.

Major losses risk (only in non-life insurance)

The major losses risk in non-life insurance reflects the potential risk an insurance undertaking is exposed to due to the size and number of major losses.

Accumulation or catastrophe risk

The accumulation or catastrophe risk describes the risk of an accumulation of losses caused by a single event (earthquake, storm etc.).

b) Special risks

Growth risk (excessive growth, uncoordinated growth)

Growth is associated with particular risks if it is excessive or uncoordinated, if risks are selected or premiums are calculated without applying the necessary care, or if there are no sufficient financial means to cover the risks. In the past, the growth risk contributed to an aggravation of the claims ratio and cost situation of new undertakings in particular. This quite frequently resulted in the economic collapse of the undertaking. The working group believes that the growth risk does not materialise in an undertaking in isolation from the other risks it is exposed to. It rather causes or aggravates other (current) risks which ultimately may endanger the undertaking's existence.

Liquidation risk

The liquidation risk describes the risk of the existing funds of the undertaking not being sufficient to meet all its liabilities towards its insured in case of discontinuation of the insurance business and run-off of existing insurance contracts.

2.1.3 Investment risks

Depreciation risk (credit, non-payment and market risks)

This refers to the risk of an investment losing its value due to changes in the capital market, of the exchange rate in the case of foreign currency liabilities and due to non-payment by the debtor.

Liquidity risk

This refers to the risk that investments may not able to be liquidated at the right time and in the proper manner, with the consequence that the insurance undertaking is unable to meet its financial obligations due. Illiquidity may be caused e. g. by a temporary unsaleability of property, or obstructions in payment transactions between the insurer and his debtors caused by transfer regulations.

Matching risk

The assets of insurance undertakings must with respect to their performance and due dates as well as their returns guarantee at any time that the technical liabilities are sufficiently covered (matched). Since the assets' performance and returns is continuously influenced by changes in the capital market, exchange rates etc. and since this may jeopardise the adequate cover of the technical liabilities, an investment risk arises for insurance undertakings which is referred to as „matching risk".

Interest rate risk (in connection with investments)

Regarding investments there is a risk of write-offs if the prices of the fixed-interest securities of the insurance undertaking's portfolio fall due to a rise of the market interest rate. This risk also includes the risk of falling market interest rates and the related consequences (e.g. reinvestment risk).

Evaluation risk (in connection with investments)

The evaluation risk in connection with investments describes the risk of an investment having been evaluated at too high a value. This risk exists in particular in the case of so-called strategic participations.

Participation risk

The participation risk refers to the risk that undertakings holding shares in other undertakings have to make supplementary contributions which results in the insurance undertakings holding the shares being affected by the difficulties of the undertakings in which shares are held (contamination risk).

Risk related to the use of derivative financial instruments

The use of derivative financial instruments is also subject to specific market, credit and liquidity risks. These are mainly off-balance sheet transactions for which no generally binding evaluation rules are available yet and therefore there is also the potential risk of wrong evaluations. A special risk in connection with the use of derivative financial instruments, apart from high potential losses due to leverage, is untrained staff of insurance undertakings handling such transactions and thus increasing the already existing potential risk of this type of transactions.

2.1.4 Non-technical risks

Management risk

This item summarises the risks an insurance undertaking is exposed to because of a management which is incompetent or has criminal intentions. The management risk can be the actual cause of the technical and the investment risks, or it can also aggravate these risks.

Risks in connection with guarantees in favour of third parties

This refers to the risk that the economic capacity of an insurance undertaking is strained, if a guarantee furnished for the purpose of the financial commitments of a third party being properly met is called.

Risk of the loss of receivables due from third parties (reinsurance undertakings, co-insurance undertakings and insurance intermediaries)

This refers to the risk that external third parties do not meet their obligations towards the insurance undertaking under reinsurance, co-insurance and intermediation contracts. The risk arising from intermediation contracts is borne mainly by those undertakings which acquire new business through external distribution channels and where the insurance intermediaries are not able to pay the receivables they owe to the insurance undertakings. The risk arising from co-insurance contracts materialises for instance if a co-insurer transfers his portion of the insurance payment due to the leading insurer for him to pass it on to the beneficiary, and the leading insurer going bankrupt before he is able to do so. See also paragraph 2.1.2 above on the reinsurance risk.

General business risk

The general business risk primarily describes the amendments to the general legal conditions for an undertaking carrying on business (for instance, amendments to the tax laws and other regulations), changes in the economic and social environments (attitude of the insured), the business profile and turns in the general business cycle.

2.2 Risk prevention

2.2.1 General remarks

The majority of the above risks can be absorbed or at least reduced without allowing for them in the solvency margin by the insurance undertaking and/ or the responsible supervisory authority taking adequate preventive measures such as regulations limiting business activities, adjustment possibilities if certain potential risks arise and controls to detect wrongful developments, as well as the approach taken to the calculation of technical provisions and evaluation rules for investments. Some examples of preventive measures broken down by classes of risk will be given in the following.

2.2.2 Technical risks

a) Current risks

Risk of insufficient tariffs

Within the financial supervision, supervisory authorities see to it that the boards of directors of the insurance undertakings apply the diligence of a prudent businessman when calculating the premiums. In this connection, supervisory authorities also may involve actuaries or other experts in the monitoring of the premium calculation

In life insurance premiums must be calculated in accordance with the requirements stipulated in article 19 of the third life insurance Directive, i. e. it must be ensured that premiums are sufficient so that all liabilities can be met and especially that adequate technical provisions can be established. In life insurance, the supervisory authorities make use of the possibility provided in article 29, sub-section 2 of the third life insurance Directive, i. e. to ask for the bases applied for calculating the premiums to be submitted systematically.

The risk of insufficient tariffs can also be limited by contractually agreed premium adjustment clauses, and, in the case of mutual societies and as laid down in the statutes, by an obligation to pay subsequent contributions.

If it has been found that under-tariffication is present, technical provisions must if necessary be established according to articles 26 and 58 respectively of the insurance accounting Directive (91/ 674/ EEC).

Deviation risk

The deviation risks in life insurance, in health insurance written similar to life insurance and also in some areas of accident insurance can be limited by carefully selecting the bases for calculating premiums and technical provisions (mortality tables, technical interest rate, surcharges).

The deviation risk can be adequately taken account of in all classes of insurance by the inclusion of premium or benefit adjustment clauses in the contract, mixed portfolios, adequate reinsurance, safety margins in the provisions to be established or special provisions (provisions for unexpired risks). As regards risks in connection with completely new products of existing insurance undertakings, the possibility of premium adjustments or analyses of the operating result to be deposited with the supervisory authority would seem to have advantages. If a product was already known in certain markets the use of market statistics would reduce the deviation risk. As regards undertakings in the process of establishment, an adequate organisation fund would also have a risk-reducing effect.

Evaluation risk

Detailed evaluation rules based on article 17 of the first life insurance Directive, article 15 of the first non-life insurance Directive and in particular articles 56 to 62 of the Directive on the accounts of insurance undertakings (91/ 674/ EEC), whose observance has to be controlled by the supervisory authority, the auditor and the actuary, serve to prevent the evaluation risk in connection with the technical provisions.

Reinsurance risk

The risk of non-payment by a reinsurer can be limited by deposits and placing reinsurance with several reinsurers. However, responsible and permanent control of the reinsurer by the direct insurer himself and an improved information flow between ceding insurer and reinsurer are still indispensable - also as a means of avoiding poor quality of reinsurance. Stepping up the direct and indirect supervision of reinsurance undertakings by the respective supervisory authority could also markedly reduce the potential risks in the domestic reinsurance business.

Operating expenses risk

A prerequisite for determining the operating expenses risk is a detailed disclosure of the operating expenses in the annual accounts. The operating expenses risk can be contained by increasing the mathematical provisions or by establishing a separate administrative expenses provision. However, some countries prohibit such a separate costs provision. Another preventive measure is the possibility of contractual premium adjustments. As regards undertakings in the process of establishment, an adequate organisation fund may also limit the risks.

Major losses risk (only in non-life insurance)

Effective measures to limit the major losses risk are the establishment of separate technical provisions (such as equalisation provisions and major risk provisions) and adequate reinsurance cover.

Accumulation or catastrophe risk

If it has not been provided in the contract that coverage of such risks by the insurance undertaking will be limited or completely excluded, suitable preventive measures would be separate technical provisions (e. g. the equalisation provision) and adequate reinsurance cover. Contractual agreements obliging the policyholder to take preventive measures are also considered possible, e. g. the provision that the members of a group of persons insured by one insurance undertaking must not be exposed to a certain risk at the same time.

b) Special risks

Growth risk

Measures to prevent risks associated with excessive and uncoordinated growth are considered to be limiting growth by law or regulation, checks of the development of the undertaking on an on-going basis and at short intervals, as well as suitable reinsurance and the provision of an adequate organisation fund. The actuary could also be involved in the control of the undertaking's growth.

Liquidation risk

The liquidation or run-off risk could be prevented by adequate technical provisions or separate liquidation provisions whose establishment is, however, not compulsory under European law.

2.2.3 Investment risks

Depreciation, liquidity and participation risks

Suitable measures to prevent these risks are mainly diversification and spread of investments as provided by law, as well as limiting possible investment to assets as safe and liquid as possible (catalogue of investments). The risk of depreciation due to changes in the exchange rate can be taken into account in the case of foreign currency liabilities by matching assets (see also matching risk).

Matching risk

The matching risk can be prevented by rules on matching (currency) assets and special investment rules. The use of derivative financial instruments – even though these have to be classified as a risk element themselves – also serves as a risk prevention measure in particular where assets and liabilities have different due dates.

It is possible to prevent the risk of different due dates of liabilities and the assets covering them by investment rules. The so-called resilience test can be applied as a means of control. It provides information as to whether there is a certain balance in an undertaking in a changed investment situation between the technical liabilities and the assets covering them, regarding due dates and adequacy. Please refer to the description in annex 4 for details and effects of the resilience test. The risk of certain liabilities being covered by completely inadequate assets can also be taken into account by respective investment rules.

Interest rate risk

This risk can be prevented primarily by a reasonable diversification of investments.

Evaluation risk

A prerequisite for the prevention and elimination of this risk is a prudent and adequate evaluation of the investments which, in addition, may be prepared by independent experts. In some countries their prudent evaluation is supported by the assets being accounted for in the balance sheet at their acquisition costs in connection with the strict principle of lower-of-cost-or-market-value and the retention option.

Risk in connection with the use of derivative financial instruments

The risks in connection with the use of derivative financial instruments could best be prevented by limiting the nature and scope of the business operated by legal and/ or regulatory rules and also rules established inside the undertakings. Internal control mechanisms, training of the personnel entrusted with such transactions and, on the whole, using these instruments responsibly will reduce the inherent potential risk.

2.2.4 Non-technical risks

Management risk

This risk can be reduced by staffing the management level of insurance undertakings with persons having the required reliability and professional qualification, and sufficient professional experience. By the addition of permanent fit and proper procedures and internal controls the risk can be limited even further. However, it cannot be completely prevented. A mutual exchange of information between the national supervisory authorities on whether or not the managers and directors of international insurance undertakings in particular are fit and proper will contribute to reduce this risk.

Risks in connection with guarantees in favour of third parties

A possible measure to prevent the risk in connection with financial guarantees in favour of third parties is to strictly forbid any such guarantees to be given by insurance undertakings to non-insurance undertakings and insurance undertakings not being part of the same group. Giving financial guarantees to insurance undertakings belonging to the same group could be made subject to approval by the supervisory authority in charge.

Risk of the loss of receivables due from third parties (reinsurance undertakings, co-insurance undertakings and insurance intermediaries)

Sufficiently spreading business and supervising business partners of insurance undertakings may be considered adequate risk prevention measures. The risk of the loss of receivables due from insurance intermediaries can be prevented by furnishing securities (accounts held on trust).

General business risks

Suitable measures to prevent general business risks exist to a limited extent only because the latter comprise a number of heterogeneous risk components which are difficult to prevent by general measures. It becomes obvious in the course of regulatory practice of the respective national supervisory authorities which measures should be taken.

2.3 Preliminary result

It is to be noted that the measures described above to prevent the risks to which insurance undertakings are exposed in the market can only reduce such risks but not completely eliminate them. For this reason it is necessary to allow for any remaining risks, for which no explicit risk prevention measures have been taken, in the solvency rules and thus to provide for an additional safety cushion. However, the working group refrained from trying to individually quantify possibly existing deficits regarding the risks discussed in order to calculate the required solvency by adding up the remaining quantities. Such an exercise seemed futile due to the lack of meaningful statistical data and other experience. It did, however, investigate if and to what extent – as has been done before in some cases – it is possible to establish separate parameters for the individual groups of risk (technical risks, investment risks, non-technical risks) to determine the required solvency and the actual solvency. Other known methods for taking account of the risks in the solvency margin where considered by the working group as well. This is true in particular for the method of the risk-based capital (RBC) introduced in the USA.

This also refers to individual risks insurance undertakings are exposed to. These include mainly the investment risk, the technical risk, the interest rate risk and the operating expenses risk. All these risks have also been discussed in the above analysis. They are already taken into account in the existing solvency system to a great extent.

However, sufficient experience with the RBC system has not been gained to date, since it was introduced in the USA only quite recently, and it remains to be seen in the future if this system has proven its worth and if it can be transferred to circumstances in the EU. Therefore, the working group set itself the target of first reforming the existing solvency rules which according to the prevailing opinion have proven successful, taking account of the developments which have occurred in the meantime.

One aspect of the RBC approach is taken up, i. e. to possibly switch to the assets side to evaluate the investment risk. The idea realised in the RBC approach of introducing thresholds which are considerably above 100 % of the solvency margin and which enable the supervisory authority to intervene at such an early stage, is also considered by the working group.

The fact that a certain risk is taken into account in the solvency requirements does, however, not affect the preventive measures which may have to be taken by the supervisory authorities.

Moreover, the majority of the working group is of the opinion that in addition to the already existing preventive measures, an extension of the investment rules laid down in the Third Directives to include the uncommitted assets, namely at least to the amount of the solvency margin, would be desirable because this could further limit the investment risk an undertaking is exposed to.

3 Solvency requirements in non-life insurance

3.1 Minimum guarantee fund

3.1.1 General remarks

The present regulation, i. e. to fix an absolute amount in the form of the minimum guarantee fund representing the minimum limit of the solvency requirements, is to be maintained. It does, however, not make much sense to base this amount on the three groups of risks described in section 2, "technical risks", "investment risks" and "non-technical risks" since either the parameters required do not exist (as is the case with new undertakings where the minimum guarantee fund is particularly justified) or the results achieved would not be meaningful due to the small business volume (in the case of small, already existing companies whose margin would be lower than the minimum guarantee fund), but rather arbitrary. The working group agrees that, as before, different amounts of the minimum guarantee fund should be stipulated, depending on the gravity of the risks contained in the various classes.

Regarding the amount the members of the working group agree that the inflation since 1973 must be taken account of by considerably raising the amounts which have been required up to now. Some members go even further, claiming that an increase above the level required to take inflation into account is absolutely necessary.

On the other hand the working group recognises that small insurers, especially those having the legal form of mutual societies, not only work satisfactorily, but also fulfil an important economic and socio-political function. These insurance undertakings shall be granted facilities, with the working group absolutely being aware that this may affect competition.

Moreover, the working group discussed the question if the member state option to reduce the minimum amount of the guarantee fund by one quarter for mutual societies should be abolished without replacing it.

In the following, the working group proposes a regulation which should apply in principle, as well as possible exceptions to it.

3.1.2. Basic principle

The working group agrees that non-life insurance undertakings must also in future furnish proof of own funds equivalent to a minimum amount depending on the class of insurance written already when applying for authorisation to take up operations.

It is generally considered necessary to increase the current minimum amounts at least to an extent taking account of inflation and market development since 1973. The amounts below in million ECU for the four classes of risk in non-life insurance result from applying the consumer price index EUR 12/ 15, after adding 10 % to take account of inflation until the expected amendment of the Directive in 1998 at the earliest, and after rounding up:

Class of risk 1:	3	(previously 1,4)
Class of risk 2:	2,5	(previously 0,4)
Class of risk 3:	2	(previously 0,3)
Class of risk 4:	1,5	(previously 0,2)

In order to address the difficult nature of liability insurance better than before, the working group – with the exception of three delegations – believes that liability risks should be allocated to the class of risk requiring the highest minimum amount and thus placed on one risk level together with credit insurance. According to the great majority, the previous class of risk 2 should be merged with the class of risk 1. At the same time, hail, frost and other damage to property included in class of risk 4 should be placed on one level with fire and elementary losses, showing the following result:

Table 2

Class of risk	Minimum guarantee fund
1 (types 10 to 15)	ECU 3 million
2 (types 1 to 9, 16 and 18)	ECU 2 million
3 (type 17)	ECU 1,5 million

With respect to the remaining class 3, it was also suggested to reduce the amount of the minimum guarantee fund to ECU 1 million.

One delegation would prefer the amounts to be raised above the inflation-adjusted level and to completely do without a categorisation into classes of risks – as is the case with the solvency margin.

A majority wishes the absolute minimum amounts to be reviewed and up-dated at regular five-year intervals by applying the comitology procedure, in order to avoid, through regular adjustments, extreme increases.

3.1.3. Exceptions

The working group agrees that exceptions to the basic rule may only be made, if at all, for the so-called small insurance undertakings and mutual societies.

The question arises if exceptions are to be provided only for existing undertakings or also for new undertakings, or if certain special provisions are to be provided only for undertakings having a certain legal form.

The majority of the working group take the view that exceptions should be made only for existing undertakings. Some delegations qualify this further by saying that exceptions should be considered for existing mutual societies only. Other delegations consider that special provisions should be made also for new undertakings. However, exceptions should not extend to such undertakings writing classes 10 -15 (all liability risks, credit and surety).

The working group first investigated whether raising the thresholds in article 3 of the first directive at least in accordance with inflation would represent a reasonable solution. A considerable increase of this value may benefit at least the mutual societies among the small undertakings because they would then no longer come within the scope of the directive. The national legislator would then be free to lay down regulations providing lower thresholds more adapted to the individual risk situation of the companies than could be provided by one directive for the whole of Europe. In the end, however, this idea was dropped. First, the group's mandate is not to investigate which undertakings should be subject to the directive and which ones should not. Moreover, the majority of the group's members believes that the circle of companies which are not subject to the co-ordinated supervision law should not be widened. All insurance undertakings having their head offices in the EEA states enjoy the right of establishment and the freedom to provide services under the jurisdiction of the European Court of Justice, irrespective of whether or not the co-ordination directives apply to them. In order to avoid distortions of competition, the number of undertakings not subject to the directive must be kept a small as possible. Therefore, the wish to delete the exemption provision under article 3 of the directive was expressed among the working group.

The attempt to solve the problem by finding a generous transitional regulation is, in the opinion of the working group, also bound to fail. On the one hand, new undertakings of this type could then not be authorised any more. And the existing undertakings would, even after a transitional period of approximately five years, not be able to meet the general requirements. An even longer transitional period is no option to be considered because in the meantime the then applicable rates would, as experience shows, have to be raised again which would again lead to problems for the small insurers.

One possibility to solve the problem could be to draw a line between the small undertakings subject to the directive, and the larger and large insurance undertakings depending on the premium income, i. e. the actual premium income of existing companies, and the expected premium income of new companies. The gross premium income should be taken as a yardstick. A solution is conceivable according to which the ratio of premiums and minimum guarantee fund is be 5 : 1, i. e. if the premium income were ECU 5 million, the minimum guarantee fund would be ECU 1 million. Minimum amounts should, however, also be required in connection with this possibility. It is suggested to double the present amounts. The regulation should be valid until the amounts mentioned under 3.1.2 which are basically required in future are reached and/ or the solvency margin exceeds these amounts. Other than for the large and medium-size insurance companies, the liability risks for these small companies should however not be included in the new class of risk 1 (see table 2), but in a separate class of risk, as before. This solution would lead to the following result (amounts in thousand ECU):

Table 3

Class of risk	Premium income	Minimum guarantee fund
1 (classes 14 and 15)	0 to 15,000	2,800 to 3,000 (until now 1,400)
2 (classes 10 to 13)	0 to 12,500	800 to 2,500 (until now 400)
3 (classes 1 to 8, 16 and 18)	0 to 10,000	600 to 2,000 (until now 300)
4 (classes 9 and 17)	0 to 7,500	400 to 1,500 (until now 200)

On the other hand, a different solution is conceivable which would grant member states the right to fix the minimum guarantee fund at:

- ECU 1 million for undertakings whose premium income is less than ECU 5 million,

- ECU 0.5 million for undertakings whose premium income is less than ECU 2.5 million,

- ECU 0.2 million for undertakings whose premium income is less than ECU 1 million.

However, these undertakings would not be allowed to carry on the risk classes of insurance 13, 14 and 15, unless the business concerned private customers only (e. g. in connection with usual risks concerning anybody under one joint policy). The members states may additionally provide other qualifying preconditions for this privilege e. g. with respect to the geographical area or the professions covered. It would then be left to the supervisory authorities of the member states concerned to decide if the requirements for these restrictions are met.

If any exceptions are to be introduced at all for small insurance undertakings, the majority of the working group lean towards the second, easy solution. However, these undertakings would not be allowed to write classes 10 - 15, even if only private client business was concerned. One delegation suggests to increase the amounts of the minimum guarantee fund regarding the second alternative so that the lower limit is ECU 0.5 million.

No agreement could be reached on the question of whether the option for member states to allow a reduction by one-fourth of the minimum guarantee fund for insurance undertakings having the legal form of a mutual society should be abolished without replacement. A narrow majority is against this special regulation under article 17 (2) (c) because the solvency requirements should depend on the risks, not the legal form. The other members of the working group are in favour of maintaining this provision.

3.2. Solvency margin

3.2.1 Basic principle

3.2.1.1 Bases for evaluation

General remarks

A majority considers an increase of the present own funds requirements for already existing undertakings necessary, some members even being in favour of a significant increase to at least double the amount. The following sections will describe various ways to realise this increase. Few delegations wish to maintain the own funds requirements at their present level.

In non-life insurance, risks remain even after risk prevention measures have been taken in the areas of technical risks, investment risks and non-technical risks (other risks). Past experience with the previous system shows that a revision of the provisions on own funds with respect to the technical risks and investment risks is generally considered necessary to take those potential risks into account even more suitably. In this connection it is to be taken into consideration that the technical risks and the investment risks are not independent of each other; a bad development of the technical results can lead to a more venturesome investment policy.

Technical risks

The working group is in favour of maintaining premiums and claims as cornerstones for the evaluation of the solvency margin which is to be established. With respect to premiums it is suggested to take earned premiums as a basis instead of written premiums, or whichever of those two (written or earned premiums) is higher. In this connection, however, multiple-year contracts are to be treated differently.

The great majority of delegations is of the opinion that a third parameter in addition to the premium and the claims indices should be introduced which is calculated on the basis of the provisions for outstanding claims (provision index). One delegation rejects this proposal saying the such a provision index would probably not be relevant in practice on its own market and that at the same time it would lead to the paradoxical situation of undertakings calculating their provisions so that they are just sufficient having to meet lower solvency requirements. The majority of delegations is of the opinion that the provision index is to be used as an alternative to the premium and the claims indices, only a minority supports a additive application.

The purpose of the provision index is to take account of the particularly high settlement risk prevailing in the long-tail business due to the generally long settlement periods. The appropriate yardstick would therefore be the provision for outstanding claims. If this provision exceeds a certain amount in relation to the entire premium volume of an undertaking one can assume that the settlement risks exceed all other technical risks and that they should therefore be the decisive solvency parameter.

In connection with determining the provision index, the deduction for reinsurance should be the same as for the premium and claims indices.

The provision index should be determined on the basis of a (limit) provision rate (LPR) to be established (provision for outstanding claims in per cent of the premiums) for the total business. If this rate is exceeded it is to be assumed that the settlement risks prevail. If this LPR is not reached, the solvency margin is to be established – as before – depending on the premium index or the claims index. The LPR is then the provision rate which when used for the calculation will lead to the same results as the alternative indices. This is represented by the following formula :

$$\text{Provision index} \times \text{LPR} = 0.18 \times 100 \; (= \text{premium index})$$

The provision index can be derived from the above:

$$\text{Provision index} = \frac{0.18 \times 100}{\text{LPR}}$$

The provision indices for different LPRs can then be calculated using this formula, and their effects on the amount of the required solvency margins can be assessed. Model calculations for limit provision rates of 150 %, 120 % and 100 % respectively were carried out (see annex 5).

The delegations support limit provision rates of between 120 % and 180 %, a clear majority supports rates below 150 %. This would correspond to a provision index of between 12 % and 15 %.

The working group discussed at length the question as to whether the premium claims and provision indices should be differentiated depending on the insurance classes (classes of risk) operated as is done in connection with the minimum guarantee fund. Basically, it does seem justified to differentiate the solvency requirements depending on the risks actually existing. The difficulty in classifying these risks in accordance with the classes of insurance operated as per the

first Directive, or in accordance with the accounting rules, is an argument against this approach, and it complicates the solvency system. Moreover, an implicit differentiation is realised by introducing the provision index taking account of the high settlement risks in the long-tail business. The majority of the working group comes to the conclusion that a differentiation by classes causes too many difficulties; only one delegation supports it without restrictions.

Investment risks

The investment risk in non-life insurance is not taken account of in the present regulation. The authors of the first non-life insurance Directive took the view, after analyses going back to the 1950s, that this risk may be neglected. The short-term contracts one usually deals with in this context and during the term of which the risk hardly changes were considered to be not or hardly susceptible to the investment risks, in contrast to long-term life insurance contracts.

In the working group's opinion, however, there are risks remaining also in non-life insurance in the area of investment risks which should be absorbed in the solvency margin. Opinions differ among the group as to how precisely this remaining risk should be taken into account.

A number of delegations believe that the investment risk in non-life insurance is already sufficiently taken account of by the generally supported provision index. The investment risk is predominant in the long-tail business due to the long settlement periods. But the risks in this area are to be taken account of by the provision index in particular.

Other delegations in turn take the view that the provision index should mainly take account of the increased technical risks involved in the long-tail business (for instance, the operating expenses risk). Since the investment risk can materialise not only for insurers whose business includes a high proportion of long-tail business, these delegations believe that further prevention measures with an additional effect should be taken. This could for instance be done by applying the provision index in addition to the premium index and the claims index coming into effect alternatively. In this case, the percentage rates for the last-mentioned indices could be somewhat reduced, especially in health and accident insurance. If the following formula is applied:

[A x Max. (premium income, 1.4 x claims ratio)
+ B x provision for outstanding claims] x reinsurance rate

the cumulative effects of the risks would be taken account of. With A equalling 0.12 and B also equalling 0.12, the result obtained is a considerable increase of the present solvency margin (with larger insurance companies the increase could amount to approximately 50 % according to the calculations done by some delegations). This result is by all means desired by the minority of the working group supporting this procedure (for details of the method see annex 6).

Another possibility to take account of the investment risk by additional measures would be to introduce a further index (investment index) which would come into effect not alternatively, but additively to the result of the other alternative indices (premium, claims and provision indices).

The yardstick for this investment index could be the risk-weighted assets of the undertaking, as under the American risk-based capital system and the European banking regulations. The investments are the actual risk carriers; it therefore appears obvious to use them as the yardstick for the required own funds. A risk-weighting corresponding to the EC banking regulation (article 6 of the Council Directive of December 18, 1989 on a solvency coefficient for credit institutions 89/ 647/ EEC), for instance, would result in the solvency requirements being lower in the case of a prudent conservative investment strategy than in the case of a venturesome risk strategy (see examples in annex 7). Since the investment risk is inherent not only in the assets covering the technical provisions, but in all assets of the undertaking, the investment index should cover the entire assets.

The counter-argument used is that the solvency margin requirements are supposed to ensure that insurance liabilities can be met at any time. Therefore, the yardstick used should be the technical provisions, not the assets. Moreover, a solvency regulation based, even if it was only partly, on the assets would influence the investment strategies of the insurance industry in an unacceptable way by leading the companies to invest only in low-risk assets (mainly in bonds issued by the state) in order to present a lower solvency amount. Moreover, "richer" undertakings would be penalised if the total capital of the undertaking were used as a yardstick for the required solvency.

The reply to this argument, however, is that "rich" undertakings especially had no problems presenting their solvency and could thus not be placed at a disadvantage. On the other hand, the technical provisions are insofar not suitable as a yardstick for the investment index as the methods for calculating these provisions have not properly been co-ordinated yet. Furthermore, balance sheet items such as the equalisation provision are in some countries shown under technical provisions, whereas in other countries they are considered like own funds.

Another proposal to include the assets of an undertaking in the calculation of the solvency margin involves a system the philosophy of which is similar to that of the resilience test. It also implies an additive method the additional element of which for the investment risk is based neither on the provision index nor on the RBC system. It was developed in such a manner as to be able to take account of the different characteristics of the insurance business and to guarantee at the same time an equal treatment irrespective of the accounting system applied in a country. (For details, see annex 8).

Finally, another method was proposed as a compromise which makes it possible to join the present rules (premium index or claims index alternatively) additively with an additional provision index and an additional investment index. The basis of these considerations is that an index based on the provision for outstanding claims can only adequately take account of the technical risk, but not the investment risk. Therefore, the above formula is extended by an investment index derived from the risk-weighted investments – similar to the approach applied in banking.

The complete formula then is:

[A x max. (premium income, 1.4 x claims ratio)
+ B x provision for outstanding claims
+ C x risk-weighted assets] x reinsurance rate.

The parameters A, B and C are to be appropriately determined. See annex 9 for details and a model calculation.

It is, however, to be noted that neither of the additive methods finds a majority among the working group because and as long as they result in a considerable increase of the solvency margin.

Non-technical risks

The working group does not consider it appropriate, but rather extremely difficult, to take the remaining non-technical risks into account for the determination of the solvency margin. For this reason, this idea is not pursued any further.

3.2.1.2 Rates to be applied

An agreement could not be reached.
All delegations are in favour of abolishing the thresholds of ECU 10 million and ECU 7 million for the premium index and the claims index respectively without replacing them and fixing instead one percentage rate for each of the two indices, but a differentiation according to the business volume and the claims volume has proven to have little effect and practical value. (It was initially intended to take the principle of the economies of scale into consideration, but the gap between percentages was then narrowed to such an extent that a differentiation does not make sense anymore).

According to a majority of the working group the percentages should be 18 % (premium index) and 26 % (claims index) respectively. Very few group members think that the rate should be increased considerably. They consider rates of 36 % for premiums and 52 % for claims appropriate. Regarding the provision index, the rates considered by the delegations are between 12 % and 15 %. This however should, in the opinion of the great majority of the group, apply only if this index were to be used alternatively, but not cumulatively (see 3.2.1.1)

To the extent that the introduction of an additional investment index is called for, the delegations considering the assets the appropriate yardstick for determining the margin wish to follow the EC banking regulation providing a margin of 8 % of the risk-weighted assets. With respect to the fact that compared to the banking sector the investment risk in insurance is considerably restricted by other preventive measures (investment catalogue, principle of diversification and spreading, matching assets), the percentage mentioned would have to be considerably lower. Model calculations in one member country showed that a reduction of the rate of 8 % applicable in banking to 7 % results in an increase of the required minimum solvency margin by 40 %, and a reduction of this rate to 6 % results in an increase by approx. 30 % insofar as the rate is applied to the entire capital. If only the assets covering the technical provisions are taken into account, the solvency margin would increase by 29 % at a rate of 7 %, and by 25 % at a rate of 6 %. In the view of the majority of delegations, this increase, just because of the investment risk that is now to be taken account of, appears too high so that a further reduction should be considered.

3.2.1.3 Taking account of reinsurance

A clear majority of the working group is of the opinion that treatment of the insurance business ceded is to remain unchanged due to the lack of suitable alternatives to the present procedure (maximum deduction from the solvency margin of up to 50 %). There is no delegation supporting an increase of this rate.

However, one delegation proposes to calculate the ratio of own losses after reinsurance and gross losses for the calculation of the reinsurance share not only on the previous financial year, but to use a balanced arithmetical average of the last three financial years as a basis. This is to compensate for the influence of major losses on the reinsurance deduction. Other delegations are against this proposal since including data from observations of several previous years would increase the risk of transferring outdated reinsurance concepts to the future.

The working group considers it to be appropriate that the Directives allow the insurance supervisory authorities in future to permit deduction of a smaller amount than is generally provided for, i. e. below 50 %, if there are doubts regarding the quality of the reinsurance concept or the reinsurance undertakings, or the stability of the reinsurance relationships. In order to avoid discrimination, this decision should be made subject to objectively verifiable criteria mentioned in the Directives.

One delegation proposes to fundamentally change the calculation of the reinsurance deduction factor. Its considerations are based on an analysis of the reinsurance portfolios of internationally leading reinsurance undertakings from which it concludes that these portfolios have become more volatile and more risky but at the same time less profitable. The own funds of the reinsurance companies examined, however, increased by a relatively slight amount only during the period investigated, and in relation to the risk situation, it even decreased. The delegation therefore considers it necessary to intensify supervision of the business ceded by direct insurers to reinsurers. In this connection, it would also like to optimise the taking account of reinsurance in the calculation of the solvency margin by amending the bases for the calculation.

According to this delegation, reinsurance must predominantly aim at reducing the fluctuations in the net claims ratio of the direct insurance undertaking. The various reinsurance types would achieve this target in very different ways without this being taken into account in the calculation of the reinsurance deduction. The different degree of risk reduction for the direct insurer should be the relevant factor. This degree could be calculated by applying a mathematical standard method as the ratio between the fluctuation width of the net claims ratios and the fluctuation width of the gross claims ratios observed during a sufficiently long period. For instance, the various forms of excess of loss reinsurance were said to reduce risk to a much greater extent than quota share reinsurance does. This delegation therefore proposes a calculation procedure for the reinsurance deduction taking account of the degree to which the fluctuation risk is reduced.

The majority of delegations admit that the reinsurance deduction method applied up to now does not take account of the different balancing effects of the various types of reinsurance contract. However, it did not support the method change proposed by the delegation. The main objection was that this would lead to certain types of reinsurance contracts being given preference, especially excess of loss reinsurance, and this was not what the majority aimed for, and doubts were expressed if this was justifiable. The purpose of reinsurance is not exclusively to transfer the fluctuation risk. Other forms of reinsurance also transfer important current technical and non-technical risks to the reinsurers. Therefore, all forms of reinsurance contract must be considered equally when it comes to finding the best reinsurance form possible for the direct insurance undertaking, and the individual situation must be taken into account. However, the proposed changes can result for example in quota-share reinsurance contracts being placed at an extreme disadvantage.

The preference of excess of loss reinsurance would also have the negative effect that especially that type of contract aggravating the risk situation of the reinsurer most could lead to the highest reinsurance deduction (as shown by the calculations presented). This is not suitable to enhance security of the direct insurance undertakings.

Another important reason stated against the proposed new calculation method is that it is more complicated and does not sufficiently take account of most recent developments due to the data needed being collected over a relatively long observation period.

3.2.1.4 Treatment of Financial Reinsurance

The working group takes the view that financial reinsurance contracts not including any risk transfer to the reinsurance undertaking must not be taken into account in the calculation of the reinsurance deduction. First, however, a standardised practicable definition of these contracts should be found which could then also be applied to the method of accounting for such contracts.

The working group did not consider it appropriate to submit an independent proposal for a definition. As a basis for further considerations however, it is to be assumed in its opinion that financial reinsurance contracts are reinsurance contracts under which the reinsurer bears no technical risk or a very low technical risk only. These are in particular contracts transferring exclusively or predominantly economic risks (e. g. credit risk, interest rate risk [timing risk]). Irrespective of the amount of technical risk accepted by the reinsurer, financial reinsurance is not deemed to exist if the reinsurer participates on account of proportional reinsurance contracts in the original risk to an amount corresponding to the written quota.

With regard to the numerous variations of contracts encountered in this context, the supervisory authorities will only be able to clearly define reinsurance contracts by examining cases individually. It is therefore necessary that supervisory authorities are given scope for evaluation.

3.2.2 Special cases

3.2.2.1 Health insurance carried on according to the technical principles of life insurance

The working group has basically no objections to maintaining the present regulation. Health insurance written similar to life insurance as described in article 16 (4) of the first life insurance Directive is carried on in very few member states only. The reasons which at the time led to the solvency margin being reduced to one third for this type of insurance still apply.

The major technical risk in health insurance is that of the actual facts deviating from the calculation assumptions (deviation risk). On account of the required premium calculation based on actuarial principles using probability tables and other relevant statistical information, in particular morbidity, mortality and the claims ratio as well as the correlation between the risk and age and sex are placed on a sufficiently safe basis deduced from experience gained in the past. If the actual developments deviate from the expected developments, the calculation bases and the premiums can be adjusted to the actual situation due to a premium adjustment clause incorporated in the insurance contracts. In the case of considerable deviations, an adjustment of premiums may even be prescribed. The technical risk is thus reduced to such an extent by supervisory provisions and measures that it need not be taken account of by additional uncommitted own funds.

The investment risk and the operating expenses risk are taken into account by the required solvency margin reduced to one third. This becomes obvious when the requirements currently valid for life insurance undertakings are applied to health insurers. A sample survey in one member country comprising approximately 78 % of the local health insurance market showed that an application of the factor of 4 % to the ageing provision which in health insurance replaces the mathematical provision (see annex 10) would result in a required solvency margin exceeding the amount required under the present provisions by approximately 20 %. If it is taken into account that the required solvency margin is increased by 10 % by abolishing the threshold value, as proposed, and applying the higher percentage rate (18/ 26) and that health insurers in part also dispose of profit reserves which they may use to cover losses but which, other than in life insurance, are not available to cover the solvency margin, the requirements laid down in the current Directives appear adequate.

One delegation does not endorse this reasoning, but takes the view that a reduction to one third of the solvency margin is only meant for a reduced, but not totally eliminated technical risk. Also in health insurance, the investment risk should be taken account of completely by solvency requirements.

An agreement could not be reached on this question. If however an additional investment index was to be introduced in non-life insurance, a reconsideration would be necessary regarding health insurance written similar to life insurance.

Another delegation suggested to allow the supervisory authorities to reduce the percentages of the premium and claims indices under certain conditions, e. g. if business is limited to medical services only without any economic compensation for the insured.

3.2.2.2 Storm, hail, frost and credit insurance

For insurance undertakings mainly covering risks under storm, hail, frost and credit insurance contracts, the present observation period of seven years required for the claims index is to be maintained.

3.3 Preliminary result

The working group takes the view that the previous breakdown of the solvency system into minimum guarantee fund, guarantee fund and solvency margin has proven its worth and is to be maintained.

The amount of the minimum guarantee fund is to be raised considerably, at least to an amount compensating for the inflation since 1973. Special regulations are to be provided for small undertakings.

In future, the solvency margin shall be based on at least three indices. A provision index should be used besides the premium and the claims indices in order to better take account of the risks inherent in the so-called long-tail business. Opinions differ as to whether this third index is to be applied alternatively or additively. The majority of the working group is in favour of applying the above three indices alternatively. The index resulting in the highest margin shall be the decisive one. This is sufficient to absorb remaining risks if and as long as the supervisory authority ensures that the calculation of premiums, the evaluation of provisions and the coverage of provisions are all based on the principle of prudence.

In contrast, a minority is of the opinion that the provision index should be applied additively, with the percentages of the premium and claims indices being lowered, so as to better take account of the technical as well as the investment risk. Another minority in the group believes the investment risk is not adequately taken account of on the basis of the premium, claims and provision indices coming into effect alternatively. It is of the opinion that this would have to be covered by introducing another index, the investment index. This index would have to be applied additively to the three above-mentioned alternative indices. The yardstick for this index should be the weighted assets of the insurance companies, similar to the RBC approach and the EU banking regulation.

The working group agrees that the thresholds of ECU 10 million and ECU 7 million respectively are abolished without replacement and that instead the percentages for the premium index and the claims index are fixed at 18 % and 26 % respectively at least what will lead to an increase of the solvency margin.

4 Solvency Requirements in Life Insurance

4.1 Minimum guarantee fund

4.1.1 General remarks

What was said about non-life insurance (see 3.1.1) is also true for life insurance where an absolute amount in the form of the minimum guarantee fund will also continue to be required as the minimum limit of the solvency margin. In contrast to non-life insurance, this basic amount should be the same for all types of life insurance. There is no obvious reason why differences should be made depending on the class of insurance, as is done in non-life insurance. Only with regard to the business carried on by tontines would it be possible to consider reducing the minimum amount of the guarantee fund fixed for life insurance proper (see 4.1.3 below).

The working group agrees that the amount fixed in 1979 must be raised considerably, if only to take account of inflation since the first life insurance Directive was adopted. As in non-life insurance, however, a number of delegations think a mere inflation-adjusted increase is not adequate yet. They support a real increase of the minimum guarantee fund in excess of an inflation adjustment, not least because the requirements in their countries were much stricter before they had to implement the present European solution than was the case afterwards. A comparison with the European banking regulation, which despite all remaining differences between life insurance undertakings and credit institutions suggests itself, also gives some delegations reason to call for an increase of the minimum guarantee fund at least to the level applicable in banking.

On the other hand the working group must bear in mind that at least in one member state, a considerable increase of the minimum guarantee fund would lead to the disappearance from the market of small undertakings which up to now have satisfactorily carried on life insurance. This would be regrettable for both economic and socio-political reasons. Finally, the working group also discussed the question regarding life insurance if mutual societies should as before be given the right to reduce the minimum guarantee fund by one quarter.

The following paragraphs outline basic regulations as well as exceptions to those.

4.1.2 Basic principle

The working group is in favour of maintaining the present rules whereby life insurance companies must present own funds equalling or exceeding a fixed absolute amount at the moment of being granted the authorisation to do business. The minimum amount of ECU 800,000 laid down in the first life insurance Directive of 1979 must be increased at least to an

extent taking account of inflation and market development since 1979. If the consumer price index EUR 12/ 15 is taken as a base, due to the lack of a more appropriate index, the amount of ECU 2.3 million is obtained. The great majority of the working group members is in favour of fixing a minimum amount of ECU 2.5 million. A minority considers this amount to be insufficient and supports a substantial increase to ECU 4 - 5 million, with the banking regulation taken as an example (minimum start-up capital ECU 5 million).

Almost all delegations consider it in principle desirable that the minimum amount be reviewed and up-dated at regular five-year intervals by applying the comitology procedure; the regular adjustments should help avoid extreme increases, as are occurring now after the old amounts have been maintained for nearly 20 years.

4.1.3 Exceptions

The working group sees a need for action also in life insurance. The question arises, however, if exceptions should be made only for existing undertakings, given that all delegations are of the opinion that new companies intending to write life insurance must meet the same requirements as regards the minimum guarantee fund as long as they come within the scope of the directive, irrespective of the volume the intended business is supposed to have.

What was said about non-life insurance is also true for life-insurance. A solution which would imply raising the threshold mentioned in article 3 of the first life insurance Directive is generally rejected for the same reasons as in non-life insurance.

Restricting the business to certain geographical regions or professions is not possible because there are no reliable definitions of "regional" and "restricted to certain professions".

In view of the fact that in contrast to the situation in non-life insurance, only very few undertakings which are probably in just one member country are concerned and that new undertakings should not come under the scope of a special regulation, this problem could be solved by finding a generous transitional solution based on article 20 (2) (c) of the first life-insurance Directive which would comprise not only mutual societies but all legal forms.

Also in life insurance, no agreement can be reached on the question as to whether or not the right that has been granted to the member states up to now to reduce the minimum guarantee fund for companies having the legal form of a mutual society, should be maintained. A clear majority is against facilities for mutual societies coming within the scope of the Directive because the solvency margin must depend only on the risks covered by a company but not the legal form and the possible difficulties associated with it to procure capital.

There are no objections, however, to maintaining the present possibility to reduce the requirements applying to tontines by 25 %.

4.2 Solvency margin

4.2.1 Basic principle

4.2.1.1 Yardsticks

General remarks

For life-insurance companies already existing, a significant increase of the solvency requirements is generally rejected, a moderate increase, however, finds unlimited support. As to the procedures, there is agreement that separate yardsticks should be defined for the technical risk and the investment risk, that each yardstick should be multiplied by the rate applicable to it (per cent or per mille) and to add up the individual results cumulatively, as before. The result is the total amount of the solvency margin.

Technical risk

All of the delegations take the view that the technical risks (excluding the operating expenses risk) should be evaluated on the basis of the capital at risk, and the operating expenses risk should as before be evaluated on the basis of the mathematical provisions. One delegation thinks that the gross premiums would also be a suitable yardstick. The working group agrees that premiums as well as the mathematical provisions have the disadvantage of "penalising" insurance companies who calculate prudently since in both cases a higher index is used as a basis than with imprudently calculating companies. The proposal, however, to apply past administration costs as a yardstick has not been pursued any further since such a parameter is difficult to define and control.

It has been noted, however, that at the moment, standard definitions for both terms, i. e. "mathematical provisions" and "risk capital", do not exist yet.

The working group discussed at length whether a reference to article 18 of the third life insurance Directive would be sufficient regarding the mathematical provisions, or if a complete definition of the term 'mathematical provisions' in accordance with the items mentioned in the insurance accounting directive is necessary. It was finally agreed to understand 'mathematical provisions' to mean at least the total of the provision for unearned premiums and the life assurance provision referred to in articles 25 and 27 of the insurance accounting directive.

The term 'risk capital' of the first life insurance Directive is then understood to mean the difference occurring at the respective point in time between the insurance sum becoming due upon realisation of the insured event and/ or in pension insurance the cash value of all existing obligations incurred by the undertaking on the one hand, and the available mathematical provisions on the other hand.

Investment risk

Two alternative yardsticks are proposed for the investment risk in life insurance, the mathematical provisions or, similar to the RBC approach and the European banking regulation, the risk-weighted investments. A majority leans towards the method applied up to now, according to which the mathematical provisions are considered an adequate yardstick for the investment risk.

However, a number of delegations consider using the investments themselves as a yardstick, which in this case would have to be weighted appropriately as is done in banking. To assess the effects of a transition in the evaluation basis applied from the liabilities side (mathematical provision) to the assets side, the life-insurance market in one member country has been examined. For this purpose, the weighting factors were derived from the respective provisions of the banking sector (article 6 of the Council Directive of December 18, 1989 on a solvency coefficient for credit institutions, 89/ 647/ EEC). This examination shows that taking account of all investments including the investments of the uncommitted assets, a rate of 7 % applied to the risk-weighted investments would result in an increase of the requirements in life-insurance in this member state by an acceptable rate of 12 %. It has moreover been noted for selected insurance undertakings showing different attitudes towards risks that, if a different calculation method were to be applied, companies pursuing a rather low-risk investment strategy would have to cover a lower solvency margin, and rather venturesome companies a higher solvency margin (see examples in annex 11). A point in favour of considering the assets side of the balance sheet for the solvency calculation is that the investments are the actual risk carriers. Moreover, the disadvantage associated with applying the mathematical provisions, i. e. an undertaking prudently calculating the mathematical provisions must present a higher solvency than a less prudent competitor, is avoided. In this context it is also important that there is a certain danger that undertakings calculating their provisions so that they are just sufficient pursue at the same time a risky investment policy. An approach involving the risk-weighted investments would force such companies to adequately increase their own funds.

A point against the approach taken from the banking sector is that insurance undertakings, in contrast to banks, are mainly interested in the liabilities side of the balance sheet. Explicitly taking the assets side into consideration for the solvency calculation is also rejected by a number of delegations because this does not take account of the required balance between the due dates and adequacy of the technical liabilities and the assets covering them. This danger could be averted by the resilience test (see 2.2.3 above, Matching risk) as part of risk prevention, rather than by a higher solvency margin. The risks inherent in investments should therefore be taken into account in the evaluation of the provisions (resilience test), in the amount of the technical interest rate or when evaluating the investments themselves, but not within solvency. Moreover, in the insurance sector, opposed to the banking sector, there are detailed investment rules which may no longer be justified if the investments were to be risk-weighted. In addition, an undertaking is forced by the proposed approach to follow an investment strategy which would consider investments with a low weighting factor only. Also, the determination of the risk-weightings is considered very subjective and difficult to follow.

Another proposal involved translating the idea of including the assets side in the solvency calculations into a system following the philosophy of the resilience test. An additive method is proposed in which the additional element for the investment risk is not based on the RBC system. It is developed so as to be able to take account of the different characteristics of the insurance business and to guarantee at the same time an equal treatment irrespective of the accounting system applicable in a country. This could be achieved by explicitly including the hidden reserves of undertakings establishing their balance-sheets by the principle of lower-of-cost-or-market-value, and then grouping all assets in four categories and weighting them, similarly to the banking sector approach. (See annex 8 for details.)

It is to be noted that the working group is not able to agree on one standard yardstick.

4.2.1.2 Rates to be applied

There is agreement that in order to take account of the technical risks, excluding the operating expenses risk, 3‰ of the capital at risk is to be applied, as before, the purpose being particularly to take account of the mortality risk. In the past, this procedure has proven to be useful, it is easy to handle and to verify by outsiders.

The great majority is in favour of applying 1 % of the mathematical provisions, as before, to take the operating expenses risk into account. Only one delegation considers 4 % of the gross premiums to be adequate.

The majority of delegations who prefer the mathematical provisions as a yardstick for the investment risk are satisfied with a rate in the region of the present 3 %, whereas one delegation believes that the investment risk is only properly taken account of if the rate is raised from 3 % to 8 %. The other delegations supporting a transition to the assets side of the balance prefer a rate of 6 % - 7% of the risk-weighted investments.

4.2.1.3 Taking account of reinsurance

The delegations consider it appropriate to reduce the capital at risk to as much as 50 %, as before, if direct business and inward reinsurance business are reinsured at a corresponding amount. The reason given is that reinsurance in the case of death risk is able to balance claims experience fluctuations. One delegation would prefer an even higher deduction.

With regard to taking account of reinsurance in connection with the mathematical provisions, the majority of the delegations consider it appropriate to reduce the mathematical provisions by up to 15 %, if corresponding reinsurance is available. One delegation believes that an even higher deduction is justified. Other delegations think that a deduction is not at all justified, because the assets in principle remain with the direct insurer and thus also the investment risk.

The delegations agree that the quality of a reinsurer should be taken into consideration when the solvency margin is determined. Opinions differ, however, as to how this requirement can

be put into practice. A number of delegations believe it would be useful to make the deduction of the reinsurance share conditional on the fulfilment of certain solvency requirements, others object to such a procedure. Moreover, most of the delegations are against allowing the deduction of the reinsurance share in its present form only if the reinsurance business ceded is sufficiently spread.

The delegations take the view, as they do regarding non-life insurance, that the national supervisory authorities should be given the possibility to reduce a deduction of the reinsurance share that is generally considered admissible, in an individual case, if there are doubts regarding the quality of the reinsurance concept or the reinsurer, or the stability of the reinsurance relationships

4.2.2 Special cases

4.2.2.1 Short-term risk insurances

Regarding short-term risk insurances under article 19 letter (a) of the first life-insurance Directive, the majority of delegations is in favour of maintaining the present regulation according to which the minimum required solvency is 1‰ of the capital at risk for a maximum term of 3 years, 1.5 ‰ of the capital at risk for terms between 3 and 5 years, and 3 ‰ of the capital at risk for longer terms. The reason given for this differentiation is that in the case of short-term risk insurances the risk is assessable. Only a small number of delegations believe that the present regulation should be reconsidered, because a lower risk may already have been allowed for in the premium calculation and because the solvency rules should be standardised for the purpose of simplification.

4.2.2.2 Supplementary insurances

The delegations are of the opinion that with regard to solvency provisions, supplementary insurances under article 1 (1) (c) of the first life-insurance Directive should in future be treated like non-life insurance. Thus, in addition to the currently applicable premium index, a claims index should in any case be introduced for this type of insurance and possibly a provision index as well as an investment index. It is, however, doubtful if the provision index will actually come into effect in the case of supplementary insurances.

This analogous treatment should also extend to possible changes in the non-life sector. If the thresholds are abolished in non-life insurance, or the currently valid percentages are changed or an additional index is introduced to take account of the investment risk, this procedure should also be binding on supplementary insurances.

The delegations suggest that supplementary insurance should be defined more precisely in the Directive in future in order to prevent the possibility of the separation of insurance classes being circumvented by cleverly subdividing the portfolio into main and supplementary insurance classes.

4.2.2.3 Unit-linked life insurance

With respect to solvency requirements in unit-linked life insurance according to article 1 (1) (a) and (b) first life insurance Directive, it is important whether or not the insurer bears an investment risk.

All delegations consider the mathematical provisions to be the appropriate yardstick under contracts where the insurance undertaking bears no investment risk. The majority then prefers the present procedure whereby for contracts with a long-term fixed proportion to cover the administration expenses (> 5 years) 1 % of the mathematical provisions is applied. It is moreover suggested to extend this regulation irrespective of the contract term also to those contracts which have so far been exempted from the solvency requirements. Two delegations, however, think that a rate of 0.25 % of the mathematical provision would be adequate for these contracts.

If, however, an investment risk is borne by the undertaking, the mathematical provisions are considered the appropriate yardstick by most of the delegations. The delegations agree that if in the classic life insurance a transition is made to the assets side of the balance sheet, the same transition should also be made in unit-linked life insurance.

Regarding the percentage to be applied, these delegations as before consider a rate of 4 % in total of the mathematical provisions to be adequate for taking account of investment risk and the operating expenses risk. As to the evaluation basis to be applied, one should bear in mind in this context that some undertakings do not bear the full investment risk, but cover only a certain basic amount. One delegation expresses doubts regarding the approach involving the total amount of the mathematical provisions as the yardstick to be applied in such cases. It is therefore suggested to use the following wording in the Directive: "In the case of unit-linked insurances, the solvency margin must at least be equal to the amount of 4 % of that part of the mathematical provisions which is equal to the investment risk borne by the undertaking".

Taking reinsurance into account in a different way is not considered. If an insurance undertaking also accepts a mortality risk, this will have to be covered by 3 ‰ of the capital at risk, as has been done up to now.

4.2.2.4 Capital redemption operations

The capital redemption operations under article 1 no. (2) (b) of the first life-insurance Directive should in the opinion of those countries having experience in capital redemption operations in principle be treated as before, i. e. the mathematical provisions are used as the evaluation basis and 4 % of those are to be applied as the solvency margin. In determining the evaluation basis, reinsurance should be taken account of as before, even though with this kind of operation there is no risk transfer but only an portfolio transfer. But in order to ensure that classic life insurance and capital redemption operations are treated equally, the reinsurance deduction will not be changed in this connection.

4.2.2.5 Tontines

At the moment, this type of business under article 1 no. (2) (a) of the first life insurance Directive is operated in two countries only. The delegations agree that the management expenses risk associated to tontines is, as before, adequately taken account of, the rate being 1 % of the fund assets. An amendment of the existing provisions is not considered necessary.

4.2.2.6 Permanent Health Insurance

Also permanent health insurance as per article 1 no. (1) (d) of the first life-insurance Directive is at present mainly carried on in two countries only. Please refer to annex 12 for an explanation of this type of operations, calculation of the premiums and the technical provisions.

The yardstick of the capital investment risk and the operating expenses risk should continue to be the mathematical provisions, taking reinsurance of up to 15 % into account. The rate applied to this should be 4 % as before.

Since the current regulations do not provide a specific element which would take account of a technical risk, it is suggested to apply x % of the premium income as an equivalent to 3 ‰ of the risk capital. The amount of x % of the premium income should be chosen to be consistent with the percentage relevant to the short-term health insurance contracts in classes 1 and 2 of non-life insurance.

4.2.2.7 Management of pension funds

Regarding the management of pension funds as per article 1 no. (2) (c) of the first life-insurance Directive, there is agreement that the regulations should remain as they are at present, i. e. 3 ‰ of the capital at risk must be applied to take the technical risk into account. Moreover, a distinction must be made as to whether or not the managers of the pension fund bear an investment risk. If they do not, 1 % of the mathematical provisions remain sufficient. If the fund manager does bear an investment risk, the regulations regarding this type of operations should be adjusted to be in accordance with the regulations for unit-linked life insurance and classic life insurance. If in classic life insurance a transition is made to the assets side in order to take the investment risk into account, this transition is imperative also for this type of operations. Thus, in order to take account of the investment risk, 3 % of the mathematical provisions or x % of the weighted investments must be applied.

The delegations take the view that the regulations as to taking account of reinsurance in the mathematical provisions and in the capital at risk should not be changed for this type of business.

4.3 Preliminary result

As in non-life insurance, the current system (minimum guarantee fund, guarantee fund, solvency margin) is to be maintained also in life insurance.

The amount of the minimum guarantee fund must be raised at least so that it takes account of the inflation since 1979. Special regulations for small undertakings are not necessary. At the most, transitional regulations applying to existing undertakings should be provided.

According to the working group, the solvency margin must in principle not be increased. The technical risk shall continue to be taken into account by the second result (3 ‰ of the capital at risk). Opinions diverge as to how to take account of the investment risk. A majority is in favour of maintaining the present regulation according to which this risk (together with the operating expenses risk) is taken into account by the first result (4 % of the mathematical provisions). A minority of the working group believes that the different investment policies of the undertaking are better taken account of if the yardstick used for taking account of this risk are the risk-weighted assets, as with the RBC approach and the EC banking regulation.

5 Components of the solvency margin

5.1 General remarks

Whether an insurance undertaking meets the requirements regarding the solvency margin depends not only on the required amounts of the own funds but also on the quality of the assets covering them. Increasing the required amounts of the minimum guarantee fund and the solvency margin results in better safety for the insurance undertaking and thus the insured only if the required amounts are in fact covered by own funds but not intangible assets. Therefore, the working group also investigated if the components making up the required guarantee funds and the solvency margin to be established still sufficiently meet the requirements.

In the Directives, the assets covering the solvency margin are defined as "assets free of all foreseeable liabilities, less any intangible items". Certain objections to this definition are raised. Since the third Directives have become effective, substitutes for own funds (cumulative preference shares, subordinated loans etc.) have been put on one level with the own funds recognised so far. They represent capital from outside sources, i. e. they are certainly not "free of all foreseeable liabilities". The working group believes that this part of the Directives should be amended to avoid misunderstandings, without, however, deleting the general definition and not replacing it. The supervisory authorities must also in future be given the possibility to decide whether the elements making up the solvency margin and mentioned in the directives can in the individual case indeed be accepted, and if so to what extent. The working group takes the view that the idea that the generally accepted own funds and own funds substitutes must indeed be suitable as a safety cushion in a concrete case, in connection with the possibility of the supervisory authority to make the acceptance in the individual case conditional on a quality check, should be incorporated in the directives.

Moreover, the working group discussed the issue of the deduction of intangible assets. The definition of what is to be considered an intangible asset is important. The working group comes to the conclusion that the term "at least" comprises the following items in accordance with article 6 (B) of the insurance accounting Directive (91/ 674/ EEC) in connection with article 9 (b) of the fourth company Directive (78/ 669/ EEC):

- expenses for setting up the undertaking,
- research and development costs,
- franchises, patents, licences, trademarks,
- goodwill acquired for a consideration,
- deposits paid.

All delegations are of the opinion that the expenses on the assets side for

- an insurance portfolio acquired for a consideration and
- EDP software

are also to be counted among the intangible assets.

All delegations agreed that an annual deficit, a net loss or a deficit not covered by own funds are not to be included in the own funds free of all foreseeable liabilities, like the intangible assets. Agreement was also reached on that, as per article 18 of the insurance accounting Directive (91/ 674/ EEC), the acquisition costs shown under assets are to be deducted from the own funds insofar as they are not covered by provisions on the liabilities side.

The working group also discussed if the catalogue contained in the directive of the eligible own funds should be made definite, in other words whether the words "in particular" are to be deleted. Up to now the wording of the directive has given the member states the possibility to extend the scope of eligible covering elements. A great majority of the working group believes that for reasons of equal competition alone, but most of all for safety reasons, the catalogue should be made a definite one, as in the equivalent European regulation for credit institutions. This is especially true because a survey done by the European Commission among the member states has shown that in fact nobody thinks of accepting any elements covering the solvency margin other than those mentioned in the catalogue. If the list is made definite, a relatively simple amendment procedure should be incorporated in the Directives allowing the supervisory authorities to quickly adapt to changing market needs.

5.2 Own funds catalogue

5.2.1 Share capital, initial fund and members accounts

No objections are raised to the acceptance of the paid-up share capital or the initial fund, or the members accounts.

The delegations are split into two camps regarding the countability of the share capital or the initial fund which is not yet paid up. Referring to the default risk and the difficulties to collect money from the shareholders in a crisis situation, a number of delegations are in favour of completely rejecting acceptance of this part of capital in future. An equal number of delegations are in favour of maintaining the present regulation to the same extent.

However, it should be possible for the supervisory authority to reject the not paid-up portion of the share capital and the initial fund as solvency elements if the situation in a concrete individual case is such that in an emergency it will hardly be possible to recover the corresponding receivables from the debtors.

The working group agrees that own shares must in any case not be taken into account in the solvency margin.

5.2.2 Reserves and carry-forward of profits

There are no objections to accepting the above without restrictions, with the profit carried forward which is an admissible solvency element being that portion of the profit which is not earmarked for distribution.

5.2.3 Hidden reserves

The working group in principle accepts hidden reserves as elements covering the solvency margin, if only not to place insurance undertakings from member countries where the acquisition costs must be shown in the balance sheet at a disadvantage vis-à-vis undertakings from countries where it is allowed to show the current market value in the balance sheet. The current values of the investments must in future be shown in the notes, as per article 46 (3) of the insurance accounting Directive. The working group discussed the question if it will still make sense to make the acceptance of hidden reserves as an element covering the solvency margin conditional on the approval of the supervisory authority with respect to this legal situation which is new for some countries. In guidelines from 1977 and 1981 on taking account of hidden reserves in the solvency margin (S(147/ 77 and DT/ S/ 123/ 81), the Conference of Supervisory Authorities had already accepted that in member countries where these reserves were shown in the notes to the annual accounts the approval of the supervisory authorities provided in the Directives was not required. Irrespective of this fact, the majority of delegations in the working group wishes that the hidden reserves be also in future accepted subject to the approval of the supervisory authority so that the latter can check the quality of the values shown. A few delegations suggest to recognise only a certain percentage of the hidden reserves. This proposal is however vehemently rejected by other delegations.

It is to be noted that in principle the present legal situation need not be changed. Perhaps, for the purpose of clarity, the member states should be given the option to stipulate individually whether the reserves are recognised as own funds and if so under what conditions.

5.2.4 Own funds substitutes

Own funds substitutes have been incorporated in the directive only quite recently, which is why member states have only little experience with this item. The great majority of the working group is therefore of the opinion that the regulation should at present remain unchanged (but see 5.2.5 below). One delegation takes the view that stricter regulations are necessary for own funds substitutes to be accepted.

However, the supervisory authority should be given the possibility to reject own funds substitutes as solvency elements if the underlying legal contractual arrangement entails for risks than security for the insurance undertaking.

5.2.5 Supplementary contributions called for by mutual societies

Up to now, potential supplementary contributions have been accepted as own funds only to a limited extent and only in non-life insurance. Similar to the not paid-up part of the share capital and/ or the initial fund, there is a certain risk of non-payment, especially in difficult situations. The less the policy holder feels inclined to regard himself as a member of the mutual society with the associated rights and duties, the greater this risk. If, due to competition, a mutual society presents itself like a public limited company, the sense of solidarity which members of societies limited to certain regions or professions may still have is unlikely to set in. The willingness to sacrifice in an emergency situation will be correspondingly low.

In view of the difficulties to find clear demarcations and the desire to keep the solvency system as simple as possible, the working group did not consider to propose a different treatment for the call for supplementary contributions by the various types of mutual societies. The general evaluation prerogative suggested under 5.1 above would indeed give the supervisory authority the possibility to differentiate individual cases.

The majority of the group therefore supports maintaining the present regulation, with one qualification, however: Almost all members of the working group take the view that the solvency margin must not be covered by own funds substitutes and calls for supplementary payments exclusively. The majority therefore believes that in future the sum of admissible own funds substitutes and supplementary contributions must not exceed 50 % of the solvency margin.

5.2.6 Profit reserves in life insurance

The member state option to recognise under certain conditions parts of the so-called profit reserve as own funds is based on the following thought: The profit reserve is a provision and therefore external capital. The amounts accumulated in the provision are basically available

for distribution to the insured in the following years in the form of a profit participation, thus representing an overall liability of the insurer towards all insured entitled to a profit participation without any individual claims already existing. The latter arise only when the individual insured are credited with amounts upon distribution of the profit. If it is provided by law or by the statutes that amounts not yet credited to the insured may be used to cover losses, a liability towards the insured collectively entitled to a bonus that is subject to a resolutory condition is to be assumed. This justifies using these means to cover the margin. However, the Directive provides that – apart from the already allotted profit shares – also the declared bonuses may not be used to cover the solvency margin. Declaration means the decision taken by the competent bodies of an insurance undertaking on which amounts are to be used for the current profit participation and the terminal bonuses, without these amounts already being taken from the profit reserve. Neither in this context does a concrete claim for the insured arise yet. But they are not accepted as an element covering the solvency margin because the undertaking made a definite decision and also announced its business report that these amounts will be distributed to the insured according to a certain plan. Only that part of the provision which is really uncommitted and neither allotted nor declared, i. e. the part which is really without any doubt available to cover losses in an emergency situation, is admissible under the Directive as an element covering the solvency margin. This solvency element plays an important role in countries where insurance undertakings obtain high surpluses by applying extremely prudent calculation bases. These surpluses are then allocated to the profit reserve unless they are directly attributed to the insured.

All members of the working group except one are in favour of maintaining the present regulation.

5.2.7 Future profits in life insurance

Accepting the potential profits of life insurance undertakings as elements covering the solvency margin is rejected by many delegations in the working group. This solvency element had been included in the life insurance Directive on the assumption that constantly high surpluses could also be obtained in future because of the at that time in most countries prevailing careful choice of calculation bases, the long-term nature of contracts, the associated long-term investments, and a stable mortality rate.

The delegations which are against taking account of future surpluses in the solvency calculation state as the main reason that the situation has changed. Because of deregulation, undertakings are more tempted to work from less prudent calculation bases. In some countries the contract terms are already much shorter that they used to be and mortality has in part changed dramatically. This has led to decreasing surpluses mainly in pension insurance.

The other delegations are in favour of maintaining the present regulation since it gives the supervisory authority the possibility to investigate and decide in the individual case if the undertaking's earning capacity of the past can be expected to be achieved also in the future or even if future losses must be expected.

A number of members of the working group believe that the Directive should provide for the possibility to involve an actuary or another expert who would have to certify that based on reasonable actuarial assumptions, adequate surpluses can also be expected in future. The supervisory authority then decides on the acceptance as own funds, without being bound by the expert opinion. It should in particular be allowed to refuse acceptance of future surpluses if it is obvious that the source of surpluses will at some point in the future run dry.

5.2.8 Amount of the difference between the unzillmered or only partially zillmered, and the zillmered mathematical provision in life insurance.

The working group does not feel that this regulation must be changed.

5.3 Composition of the guarantee fund and the minimum guarantee fund

Up to now, there have been special provisions in life insurance only as to which own funds are to make up the minimum guarantee fund and the guarantee fund. Article 20 of the first life insurance Directive stipulates in paragraph 1 that the minimum guarantee fund must be made up fully, and the guarantee fund at 50 % by own funds as per article 18, nos. 1 and 2. There is not such restriction in non-life insurance. Here, all own funds under article 16 (1) of the first non-life insurance directive are admissible.

The working group is of the opinion that the present regulation should be maintained as regards coverage of the guarantee fund. However, the situation is different with respect to the minimum guarantee fund where the great majority takes the view that at least the minimum guarantee fund should be covered by real own funds only, i. e. the paid-up share capital or the paid-up initial fund, the reserves and the profits carried forward. A few delegations believe, however, that hidden reserves and own funds substitutes should also be admissible as components to a limited extent.

5.4 Preliminary result

The working group thinks that new regulations should refer not only to the solvency margin, but also to the composition of the margin and the guarantee fund.

The definition of 'own funds' is to be reviewed. Supervisory authorities should have the possibility to check also the own funds included in the catalogue to see whether they are actually suitable to be used as a safety cushion in the individual circumstances.

Besides, the working group's overall opinion is that the admissible own funds listed in the catalogue of the directive will also in future be used to cover the margin and the guarantee funds, but to a much lower degree than up to now, and with respect to some elements only subject to other conditions being met, e. g. approval by an actuary or any other expert regarding acceptance of future profits.

6 Additional supervisory instruments

The first Directives give supervisory authorities certain powers to be used if the provisions under community law on technical provisions and solvency are not observed.

If the regulations on technical provisions are not adhered to, the home authority may prohibit free disposal of the assets. If it becomes obvious that the undertaking no longer has own funds sufficient to cover the required solvency margin, it must submit a reorganisation plan for the restoration of a sound financial position for approval by its home supervisory office. At this stage, free disposal of the assets may be restricted or prohibited if there are any extraordinary conditions and if the authority believes that the financial situation of the undertaking will deteriorate further. If the own funds do not even reach the amount of the guarantee fund any longer, the undertaking must submit a short-term financing plan to the home supervisory authority for approval. Moreover, this authority may restrict or prohibit free disposal of the insured objects of the undertaking. In all cases where rules on the technical provisions and the solvency margin are infringed, the competent supervisory authorities can take any other measures suitable for safeguarding the interests of the insured.

It has become apparent in the past that these measures alone provided in the directive are not sufficient to protect the insured from financial losses. The measures are only available in extreme emergency situations when the undertaking is often already so badly affected financially that it is beyond rescue.

Due to an unbalanced composition of the portfolio, under-tariffication, excessive administration costs, insufficient reinsurance, unprofitable and poorly mixed and spread investments as well as other negative influences of a technical, business-political or similar nature, an insurance undertaking can already be in a bad financial situation even though there are no indications yet of insufficient technical provisions or an insufficient solvency margin. The delegations described examples of undertakings in which considerable over-coverages of the solvency margin dramatically decreased within a few years but the supervisory authorities were not allowed to intervene until the amount of the solvency margin finally fell below the minimum limit. A similarly dangerous situation occurs when the solvency margin falls below its minimum limit, and undertakings, upon demand by the supervisory authority, increase their own funds so that they just meet the minimum requirements. An unforeseeable or disproportionate increase of the claims expenses or the business volume may then quickly lead to a financial collapse. This danger exists in particular for young undertakings growing fast, as experience has shown in some member countries. If in cases like these the supervisory authority had been allowed to require in time an increase of the own funds in excess of the co-ordinated minimum requirements at least for a certain period of time, financial collapses could in all probability have been avoided.

Therefore, the working group is of the opinion that supervisory authorities must be empowered to intervene and correct the situation at an early stage, i. e. when the technical provisions have not yet proven to be insufficient but when the interests of the insured appear

to be at risk. In some member states, legislation already provides for such possibilities of intervention. For instance, in one member state, the supervisory authority can ask the undertaking to submit a so-called recovery programme ("programme de rétablissement") outlining various measures which are supposed to restore the economic balance permanently. These measures include increasing tariffs, terminating contracts that are particularly claims-prone, changing reinsurance relations, transferring portfolios, taking measures to reduce administrative costs and changing the investment policy. The undertaking can be required to submit this programme as soon as its activities give reason to fear that the interests of the insured are jeopardised even if the financial resources still meet the minimum requirements. In some other member states, the supervisory authorities may take similar regulative measures on the basis of general clauses. Other member countries in turn consider themselves not able to grant the supervisory authorities any powers going beyond those allowing them to intervene in connection with the rules on technical provisions and the solvency margin because these power are an express exception. They consider the regulation in the Directive to be definite. Therefore, the working group wishes the Directives to state clearly that the supervisory authorities have the right to intervene even if the requirements regarding the technical provisions and the solvency margin are still met, but if nevertheless the interests of the insured risk being adversely affected. For example, the supervisory authorities could intervene in time if surplus over the solvency margin changes dramatically, leading to under-coverage. In the other example mentioned above, they could also ask in good time for the own funds to exceed the actual minimum requirements if in view of the particular situation of the undertaking concerned it is to be expected that the minimum equipment with own funds will soon no longer be sufficient because the undertaking shows for instance strong growth.

The situations and means of intervention, similar to the degrees of intervention under the RBC system (CAL, RAL, ACL and MCL in addition to the corresponding possibilities to react [see annex 2]), should in the opinion of the working group not be described in more detail in order to give the supervisory authorities the flexibility for any regulative measures.

7 Summary and result

The working group takes the view that the present solvency margin system has in essence proven its worth. However, some changes and additions are necessary.

The minimum amounts of the guarantee funds are to be raised considerably to take account at least of the inflation which has occurred since the Directives were adopted. Special provisions should be provided for certain small undertakings.

The solvency margin in non-life insurance should in future be calculated on the basis of at least three indices: A provision index is to be applied in addition to the premium and claims indices. An agreement could, however, not be reached on the question as to whether the provision index should be applied alternatively or additively.

There was no majority support either for the proposal to take account of the investment risk both in life insurance and in non-life insurance by applying a separate investment index.

There is agreement that the present solvency regulation should be adjusted not only with respect to the minimum amounts of the guarantee funds and the solvency margin, but also with respect to the own funds covering them. Although the working group is of the opinion that the own funds mentioned in the Directives should in principle also be accepted in future, it suggests certain restrictions regarding some components.

Finally, also the instruments available to the supervisory authorities in accordance with the Directives in case the solvency requirements are not met should be reviewed. The working group wishes the Directives to state clearly that the supervisory authorities have the right to intervene even if the requirements regarding technical provisions and solvency are still being met, but if the interests of the insured risk being adversely affected.

Opinions diverge among the working group on whether a definite coordination of the Directives' requirements in the sense of generally applicable rules for all countries is necessary, or if the Directives should merely represent minimum requirements.

A reason stated in favour of a complete coordination is that an equal treatment of all insurance undertakings in the Common Market avoids discriminations against insurance undertakings and moves to less strict countries. Also the intended introduction of a Directive for insurance groups asks for equal requirements for all undertakings.

A reason stated against a complete coordination is that in some questions an agreement could not be reached. Moreover, the discussion has shown that some countries interpret certain rules in very different ways and that there are still differences in what certain terms are understood to mean.

It will only be possible to finally answer this question when details of the new regulation will have been established, and especially when it is clear how the solvency margin will be calculated in future.

ANNEXES

FINANCIAL DIFFICULTIES OCCURRING IN INSURANCE UNDERTAKINGS IN EU MEMBER STATES

- Analysis of the notes communicated by the delegations -

1. Aim of the analysis

This analysis by the „Solvency of Insurance Undertakings“ working group of the Conference of Insurance Supervisory Authorities gives a summary of observed difficulties occurring in the financial situation of insurance undertakings in the individual Member States, highlighting their particular features and peculiarities. The analysis of the background and causes, and in particular identification of the underlying risks, is intended to help taking decisions in further discussions on the framing of future solvency regulations.

2. Methodology

The Notes submitted by the delegations were analysed using a set of criteria spanning the (four) parameters „type of insurance“ (life/ non-life), „type of difficulty“, „background/ causes“ of difficulties, and „risk classification/ attribution“. After analysis of the risks arising from the difficulties, it is possible, in combination with the working group's paper on risk DT/ D/ 154/ 94-Rev.1, to conclude whether and to what extent the identified risks should be taken into account in future solvency regulations.

Results for the life and non-life sectors are presented separately.

3. Results

3.1 General features (not sector-specific)

- Both small insurance undertakings operating in a geographically limited area and large companies and (insurance) groups have experienced financial difficulties in the past. The financial difficulties of insurance undertakings that were part of a group were not always due to a lack of professionalism in the conduct of insurance business; they were also due to financial transactions carried out by holding companies (not insurance undertakings) which had a knock-on effect on subordinate (insurance) undertakings. There is no direct link between anomalies of this type and the solvency requirements for individual insurance undertakings now in effect in the EU and discussed in the working group. Insufficient own funds proved to be a factor at group level, for which at the present time no (consolidated) own funds requirements apply.

- The delegations reported not only serious cases (insolvency, liquidation, withdrawal of authorisation to conduct business, appointment of a special administrator, etc.) but also all incidents connected with financial supervision that had previously necessitated specific measures or intervention by the supervisory authorities in order to protect policyholders (e.g., when assets were insufficient to meet statutory reserve requirements). The difficulties did not always result in the bankruptcy of the insurance undertaking. In many cases the measurers taken in order to avert bankruptcy and restore the undertaking's financial health (merger, transfer of assets, injection of capital by the shareholders, stabilisation and reorganisation, etc.) were successful, with the result that policyholders ultimately suffered no prejudice. In some cases, however, despite the appointment of an administrator by the supervisory authorities, bankruptcy could not be averted.

- By far the greatest number of problems arose in the non-life sector; only a few cases concerned life assurance. In particular, existing rules on the valuation of mathematical reserves applicable to life assurance undertakings reduce the risk of under-valuation of statutory reserves to a very considerable extent and thereby eliminate a significant risk factor (under-valuation of liabilities) which is directly linked to the financial difficulties experienced.

- Financial difficulties have affected insurance undertakings in almost all countries. Although international comparisons reveal many common features and parallels between the characteristics and causes of such difficulties, country-specific factors and the specific features of a particular national insurance market were clearly often at the root of problems in a particular Member State.

The relatively few problems that have occurred among reinsurance and health insurance undertakings in the past have not been treated separately but rather included in non-life insurance.

3.2 Non-life insurance

3.2.1 Types of difficulty

The delegations described the following types of difficulty:

- failure to meet solvency ratio and minimum guarantee fund requirements;

- substantial losses during the start-up phase;

- failure to comply with reserved asset requirements;

- steady deteriorating results;

- inappropriate capital structure;

- steady decline in own funds;

- high balance sheet losses;

- insolvency and bankruptcy.

3.2.2 Causes of difficulties

The most frequently cited causes of difficulties were:

- inappropriate underwriting policy (quantity rather than quality: cash flow underwriting), together with insufficient provision especially in the liability, accident and credit/ fidelity branches;

- poor management (including management information system failure);

- inadequate investment policy (e.g. over-reliance on real estate assets, whose value slumps following the collapse of national property markets; losses on guarantee business; losses on equity interests - including in affiliates - as a result of contagion; use of high-risk investments);

- insufficient provisions for unsettled claims (especially in long-tail business), in order to keep the solvency ratio low;

- lack of an appropriate reinsurance policy (quality of the assignee) and of an effective reinsurance system providing sufficient protection, e.g., in the event of major and natural disaster claims (key concept: community between initial insurer and reinsurer);

- general under-capitalisation with regard to underwritten risk;

- high losses due to rapid growth (especially as a result of underwriting bad risks, linked to a considerable extent to high transaction costs and the miscalculation of premiums);

- poor risk performance;

- criminal enterprise (both in-house and externally, e.g., by brokers);

- double gearing.

The experience of the delegations indicates that these factors affect small insurance undertakings (especially small mutual associations which are unable in practice to take advantage of the possibility afforded to them by law of charging supplementary premiums) more than larger companies.

3.3 Life assurance

3.3.1 Types of difficulty

The delegations described the following types of difficulty:

- failure to meet reserved asset requirements;

- failure to meet solvency ratio and minimum guarantee fund requirements;

- substantial losses during the start-up phase;

- losses from non-insurance business.

3.3.2 Causes of difficulties

The most frequently cited causes of difficulties were:

- excessive transaction and administration costs;
- under-pricing in connection with an inappropriate underwriting policy;

- inadequate investment policy (e.g., over-reliance on real estate assets, whose value slumps following the collapse of national property markets; losses on equity interests - including in affiliates - as a result of contagion);

- criminal enterprise (substantial commission payments for non-existent business, break of insurance contract law).

4. Identification of the principal risks in connection with observed difficulties

The analysis shows that the paper on risk DT/ D/ 154/ 94-Rev.1 drawn up by the working group lists the principal risks to which insurance undertakings operating on the market are exposed and which in extreme cases may be demonstrated to have caused bankruptcy. It is therefore not difficult to classify the causes of difficulties, using the approach applied in the risk paper, according to insurance-specific areas (current risks and special risks, each differentiated between life and non-life) and, spanning both types, investment and general business areas.

In terms of frequency of occurrence, management risk (not specific to the insurance business) in particular proves to be an intrinsic danger factor, directly related to observed financial difficulties. Other significant risks include investment risk, in all the guises mentioned in the risk paper DT/ D/ 154/ 94-Rev.1, valuation risk for technical reserves (potential danger of under-provision, especially for long-tail business), growth risk (especially in connection with rising costs and an inappropriate underwriting policy) and, to some extent, reinsurance risk.

The frequent emphasis on management risk is striking. Almost all the submissions describe as very serious the dangers arising from management that fails to meet the „fit and proper" criteria. Most delegations also attribute the problems arising in the four core areas/ core risks ultimately to inappropriate management behaviour (management information system failure), with the result that management risk represents a kind of overarching or exceptional risk.

5. Possible consequences for the future framing of solvency regulations

The starting point for further consideration of the framing of future solvency regulations is the function of purpose of own funds requirements as applied to insurance undertakings. In its discussions to date, the working group has agreed that solvency measures can cover only those dangers and risks that are not already covered by other measures (provision). It should therefore be regarded as an additional safety factor which can reduce the residual risks that remain after risk provision. This raises the practical question of whether the risk linked to the difficulties recorded in the Member States in the areas of management, reserves, investment, costs/ growth and reinsurance contain residual elements (residual risks) for which future solvency regulations should provide. The submissions contain practical suggestions on this matter, but as they are currently the subject of consultation and have also to some extent already been raised by the delegations in discussions, they need not be recapitulated here. As the concrete results will in any case be included in the working group's final report, the following comments again present only Member States' essential thoughts resulting from the difficulties experienced.

Management risk

In the opinion of some delegations, this risk hangs over all other risks to which an insurance undertaking operating on the market is exposed. From this point of view, controlling and ensuring sound and prudent management is far more important than the solvency system, because management errors by their nature cannot be compensated by solvency requirements. Supervisory authorities must therefore combat criminally disposed or incompetent management by drawing up a specific set of requirements against which managerial aptitude can be assessed and by monitoring senior managers. Ultimately, however, deception and incompetence can never be

entirely ruled out, with the result that (residual) management risks cannot be offset by tightening up own funds requirements. Moreover, this sort of measure would penalise all properly managed insurance undertakings (and if not all then at least the vast majority of them are properly managed) for the incompetence and irresponsibility of a minority.

On this point, consideration has not yet been given to the high level of personnel costs even when management is poor, imposing a further burden on undertakings experiencing financial difficulties.

It may be presumed that if management acts responsibly, sufficient account will be taken in the day-to-day running of the business of the principal risks connected with observed difficulties, making it possible to alleviate the negative repercussions of such risks. For that reason, „fit and proper" management is essential if the statutory solvency ratio, even after modification, is to take appropriate account of residual risks in the future.

Valuation risk for technical reserves

There is widespread agreement among the delegations that if provisions for technical reserves are systematically underestimated, the resulting residual risk cannot be covered or eliminated by means of the solvency ratio. Such cases can be identified and eliminated only be appropriate methods for controlling liabilities.

It should be remembered, however, that the rules for valuing mathematical reserves applicable to life assurance significantly reduce the risk of undervaluing liabilities in this branch. Long-tail business (especially liability risk) in non-life insurance is identified as a particular problem area, insofar as it is difficult to evaluate the necessary level of provision because it takes so long to determine the final level of damages. The delegations felt that future solvency regulations should take this particular problem into account.

Investment risk

Most of the delegations felt, with reference to past difficulties, that insufficient account had been taken of investment risk hitherto. The shortcomings that still existed in this regard should be rectified in the future.

Cost/ growth

On the basis of past experience, the risk of excessive and uncoordinated growth linked to a significant rise in overheads was generally regarded as significant. Discussion so far suggests that as far as solvency is concerned this risk tends to compound other risks and should therefore be treated in conjunction with solvency.

Reinsurance risk

In some countries, difficulties occurring in non-life insurance were caused by the failure of the reinsurance system to work properly or by the failure of reinsurers to fulfil their contractual (payment) obligations or to fulfil them in a timely manner. In life assurance, on the other hand, reinsurance risk or reinsurer loss risk is almost negligible. Thus, suggestions were made for closer supervision of reinsurers in the non-life business.

Reinsurance contracts where the reinsurer bears no underwriting risk or only a very small underwriting risk should be classed as financial reinsurance contracts. In particular, these include contracts in which exclusively or overwhelmingly economic risks (e.g., credit risk, interest rate risk, exchange rate risk) are assigned or only timing risk is transferred. Financial reinsurance contracts were not treated in the delegations' submissions on financial difficulties.

6. Conclusion

A majority of delegations emphasise that even after amendment of the solvency regulations, insurance undertakings will not be entirely safe if they meet the new requirements. Past experience has shown that in some cases failure to respect solvency ratios came to light only when it was too late for supervisory authorities to take appropriate measures and when policyholders' interests could no longer be sufficiently protected because the undertaking's financial situation had already reached an advanced stage of deterioration.

Inadequate solvency (insufficient cover) is a reliable indicator that something has gone wrong but it does not reflect all possible and imaginable scenarios for financial difficulties affecting insurance undertakings. Furthermore, it is likely that the limits of the present system would be reached in the event of over-concentration of insurance risks, for example in a particular geographical area.

Most delegations felt that the solvency system fulfils its warning function. Raising minimum requirements would therefore lead to tighter control; however, it cannot in any way replace effective scrutiny resulting from a (thorough and forward-looking) personal examination of an undertaking's situation, results and balance sheet structure. To that extent, even in the future the solvency ratio can act only as a buffer against remaining (residual) risk for which no provision is made.

THE RISK-BASED CAPITAL APPROACH IN THE USA (RBC)

1. Introduction

In December 1992 the "National Association of Insurance Commissioners" (NAIC) adopted risk-based-capital (RBC) standards for US life and health insurers and a year later in December 1993 similar standards for property-casualty insurers.

These standards stand for a model which is to permit an actual/ required comparison between the existing capital (Total Adjusted Capital - TAC) and the capital required to cover all technical risks as well as investment risks and other risks (Risk-Based Capital, RBC). It is the objective of this approach to take into account all risks to which an insurance company is exposed both on the assets and liabilities side of the company.

The fundamental idea behind this approach is to fix risk categories to which an insurance company is exposed. The individual risk categories are quantified and equipped with a certain required capital amount. This required capital amount depends on the assessment of the risk and is considered to be the minimum amount required as security for a certain risk category.

The necessary requirements obtained in this way for each risk category are then combined into a single RBC taking into account any existing dependencies or adjustment possibilities. Finally, this amount is compared with the TAC of the insurance company. The result of this comparison will be the basis for any measures to be taken by the supervisory authority.

2. RBC in life insurance

According to the NAIC there are four main risk categories in life insurance. They are the asset risk, insurance risk, interest rate risk and business risk.

Within each category so-called basic values are defined which, as a rule, may be taken from the balance sheet, such as the volume of a certain type of investment. Each basic value is multiplied by a factor (percentage) fixed by the NAIC. The individual values calculated for each risk category are added up and the result is the RBC value of a category.

In the following the individual risk categories will be described in more detail and their relevant basic values and weightings or factors mentioned.

a) Asset risk, C_1:

The asset risk of an insurance company is the risk associated with the insurer's assets losing value and therefore no longer being adequate to cover its liabilities. In order to determine the required amount needed to cover the risk individual groups of assets are examined separately. The balance sheet values of those assets are used as basic values which after they have been multiplied by a risk factor are to reflect the special risk of the asset group. The risk factors of the assets have been fixed by the NAIC and vary between 0% for US government bonds and 30% for risky securities. A 30% factor is applied to shares while only a 10% factor is applied to real estate. Finally, the percentage representing the risk is graded upwards if an insurer's assets have to a considerable degree been concentrated in certain types of investment.

b) Insurance Risk, C_2

This is the risk associated with adverse mortality or morbidity experience. A loss experience is deemed to be adverse if due to random fluctuations and the happening of occurrences the level of claims will increase above the level allowed for the pricing (so-called excess claims over the expected claims). In order to quantify this risk examinations have been made where disproportionally bad loss experiences were simulated in portfolios of different sizes and the levels of the relevant risk sums (mainly the difference between the sums insured and the existing mathematical provisions) have been determined. It became apparent that companies with greater portfolios showed relatively lower risk sums than companies with smaller portfolios. Finally, the capital at risk was taken as basic value to quantify the technical risk which was broken down and weighted as follows to take account of the different sizes of portfolios:

for the first $500 million of risk capital	0,150 %
for the next $4,500 million	0,100 %
for the next $20,000 million	0,075 %
for $25,000 million and above.	0,060 %.

c) Interest rate risk, C_3

The interest rate risk is the risk of losses due to changes in interest rate levels in circumstances in which the liability cash flows are not matched to the asset cash flows. In this case fluctuations of market interest rates may result in considerable losses.

In this context products granting the policyholders certain guarantees in case of surrender are considered to be very risky. Therefore, the interest rate risk has roughly been broken down into three sub-categories depending on the possibilities granted to the policyholder on surrender.

The low risk category includes life insurance contracts without right to surrender, with right to surrender at market values and contracts with a period left to run of one year at the maximum. The mathematical provisions serve as yardsticks for these contracts which are weighted with 0.75% or 0.5%. The medium risk category includes contracts with surrender values in the amount of the mathematical provisions from which at least 5% are deducted as a kind of

surrender charge. In this case a weighting of 1.5% or 1% is applied. The high risk category includes contracts which guarantee surrender values almost of the same level as the mathematical provisions, i.e. without any surrender charge. In this case a weighting of 3% or 2% is applied

The weighting factors for the three categories will be increased by 50% unless the insurer can prove that its assets and liabilities are well-matched.

d) Business risk, C_4

The business risk category includes all those risks which are not included in the other categories. Such risks include competition, over-expansion, poor management, poor business or economic conditions, etc. but also the operating expenses risk is subsumed under this category. The premium income serves as basic value and is weighted with 2% in life insurance and with 0.5% in health insurance (also in accident insurance).

Once all RBC values of the individual categories have been calculated they are combined into the total RBC. For this the individual values are, however, not simply added up but a compensation is made because not all risks will cause losses simultaneously. If it is assumed that both asset risk and interest rate risk (C_1 and C_3) are completely correlated and the technical risk (C_2) is not related to either of them and in addition that the business risk (C_4) is completely correlated with the other three risks this will result in a total RBC in life insurance (RBC_{LV}) as follows:

(1) $$RBC_{LV} := C_4 + \sqrt{C_2{}^2 + \left(C_1 + C_3\right)^2}$$

This (total) RBC as REQUIRED amount is to be understood as the required minimum capital to be held by an insurance company.

3. RBC in non-life insurance (property-casualty sector)

As regards non-life insurance the development of uniform criteria to judge a company was much more complex than in life insurance because due to the different lines of business which can be operated by a company the risk structure is quite different. Finally five groups have been selected as main risk categories:

- Asset risks
- Off-balance sheet risks
- Credit risks (mainly reinsurance recoveries)
- Technical reserving risks (run-off risks)
- Technical underwriting risks (rating risks)

Also in the case of non-life insurance companies the method for the calculation of a single RBC is similar to the one used in life insurance. Again monetary basic values are established for individual risk categories or sub-categories which when multiplied by certain previously fixed

factors will result in the required capital which is to guarantee maximum security. However, deviations from this scheme are made when certain adjustments are necessary. The reasons for such adjustments may be as follows:

- to take into account risks due to greater concentration or outstanding elements within individual categories (such as concentration in a particular security);

- to take into account risks resulting from the fact that the development of a company is not in line with that of the market (for instance regarding loss ratios, run-off and growth);

- to take into account a possible reduction of the risk by transferring part of the technical risk to the policyholder;

- to take into account a possible reduction by using certain forms of contracts.

The risk categories are defined as follows and provided with the following basic values:

a) Reserving risk

The reserving risk primarily includes the risk of errors made in the assessment and establishment of technical provisions. The provision for outstanding claims is used as basic value for each line of business and multiplied by a percentage fixed by the NAIC (weighting). The resulting minimum amount is to ensure that run-off losses of future loss provisions will be covered with adequate probability. Originally this adequate probability was fixed at 98.25% by the NAIC so that a loss probability of 1.75 for each separate risk category was considered admissible.

To determine the percentages a formula was developed for each line of business where half of the components are to reflect the company experience and the other half market experience. The following formula is used to calculate the weighting factor f_{Qi}, which when applied to the provision for outstanding claims in line of business i is to result in the RBC value for the reserving risk:

(2) $$f_{Qi} = \max\left(0, \left[\left(\tilde{f}_{Qi}\left(0{,}5\frac{CD_i}{ID_i} + 0{,}5\right) + 1\right)PV_{Qi} - 1\right]\right)$$

where

$\tilde{f}_{Qi}$:= a factor provided by the NAIC to balance in line of business i the maximum deterioration of run-off observed in the market over the past 10 year ;

CD_i := individual run-off factor from the accounts of the company concerned in line of business i covering the past nine years (400 % max.);

ID_i := a run-off factor of the market in line of business i provided by the NAIC covering the past 10 years;

PV_{Qi} := a cash value factor provided by the NAIC representing the possible average discounting (with a 5% interest rate) of the provisions available in the market.

Before the RBC component for the reserving risk is included in the overall formula certain adjustments have to be made. These are

- a deduction for loss-sensitive contracts, i.e. for contracts concluded on the basis of loss frequency the share of these contracts in the total provisions is determined. In accordance with this share the value f_{Qi} originally applicable to the RBC is reduced by 30% for direct insurance contracts and by 15% for reinsurance contracts to take account of the lower run-off risk;

- a second deduction for so-called medical malpractice (professional liability of medical doctors and hospitals); an additional deduction of 20% is granted for policies which assume liability only for losses which have been reported during the policy period (no liability after expiry of the contract);

- a deduction for adequately spread portfolios calculated on the basis of the shares of the individual lines of business. In the case of 15 lines with completely equal shares this factor could be reduced to 72 % of its original level;

- an addition for disproportional growth; a growth of more than 10% recorded for premiums will result in an additional RBC of 45%.

b) Underwriting risk

This risk is the risk that the periodical premiums are not adequate to settle future claims. Here, too, percentages are determined for each line of business which when they are multiplied by the written net premiums as basic values will result in the premium RBC. The weighting factors are calculated using the following formula:-

(3) $$f_{Pi} = \max\left(0, \left[\tilde{f}_{Pi}\left(0{,}5\,\frac{CL_i}{IL_i} + 0{,}5\right)PV_{Pi} + CE_i - 1\right]\right)$$

where

$\tilde{f}_{Pi}$:= a factor provided by the NAIC to balance in line of business i the highest loss rate of the market of the past 10 years;

CL_i := the individual average loss rate of the company concerned in line of business i covering the past 10 years

IL_i := an average loss rate of the market in line of business i provided by the NAIC covering the past 10 years;

PV_{Pi} := a cash value factor provided by the NAIC (with a 5 % interest rate), representing the premiums after taking into account the costs ;

CE_i := current technical cost rate of the company concerned in line of business i

Adjustments of the formula are made in a way similar to the reserving risk.

c) Asset risk

The asset risk in non-life insurance is defined in the same way as in life insurance. However, as compared with life insurance the individual weightings have been somewhat modified. In non-life insurance the RBC share for the asset risk is separately determined for the three groups of investments with affiliated companies, fixed-interest securities and shares, real estate and other assets. Within these groups the balance sheet values of the relevant asset categories used as basic values are multiplied by factors (percentages) which are to reflect the safety of the relevant types of assets. As regards the fixed interest securities group government bonds are considered absolutely safe and provided with a zero weighting. The percentage then increases to 10% for lower quality bonds and to 30% for in or near default bonds.

As regards shares in affiliated companies the factor to be determined is based on the RBC applicable to these companies, i.e. for common stocks, for instance, the RBC of the affiliated company is simply multiplied by the participation quota and included in the RBC of the company concerned. As regards shares in alien insurance companies a single factor of 50% of the balance sheet value and as regards other participations a factor of 22.5% is used. For non-voting shares the factor is, for instance, 15%.

Different adjustments are also made in the individual asset categories to take account of the diversification of the portfolio. As regard the largest 10 risk-exposed assets the RBC is doubled and the maximum factor may reach 30%. Risk-exposed assets are assets with a risk factor of more than 1%. Also in the case of fixed-interest securities the formula is modified depending on the number of issuers. The greater the number of issuers the lower the addition to be made.

d) Off-balance sheet risk

This category of risk includes 4 components, i. e. risks in connection with non-controlled assets, guarantees for affiliates, contingent liabilities and in particular companies with an excess growth rate. An average growth in excess of 10% over the past five years is considered a risk. A 1% factor is applied to non-controlled assets, guarantees on behalf of affiliates and contingent liabilities.

e) Credit risk

This risk has mainly been defined as the risk of losses from unrecoverable reinsurance. A single factor of 10% is applied to the total amount of reinsurance recoveries.

Other than in life insurance the RBC of the individual risk categories are not combined into a single RBC. Certain elements are selected from the individual categories to form new categories. The following elements are taken into account (also see enclosure 1):

R_0: RBC for investments in affiliates and RBC for deposit requirements and contingent liabilities;

R_1: total RBC for investments risks in connection with fixed-interest securities and short-term investments, including adjustments for concentration in certain securities;

R_2: total RBC for investment risks in connection with shares and real estate, including adjustments for concentration in certain shares;

R_3: 50 % of the total RBC for reinsurance recoveries and other receivables;

R_4: R_3 plus RBC for the reserving risk;

R_5: RBC for the insurance risk.

The formula to determine the total RBC_{NLV} in non-life insurance is as follows:

(4) $$RBC_{NLV} = R_0 + \sqrt{R_1^2 + R_2^2 + R_3^2 + R_4^2 + R_5^2}$$

Except for R_0 the other components of the formula are not simply summed up. This type of calculation results in the RBC_{NLV} value being by about 1/ 3 lower than in the case of a simple summation in order to take account of certain risk compensation of the individual risk categories.

4. Possibilities of the supervisory authorities to intervene

At the balance sheet date the total adjusted capital (TAC) is compared with the calculated RBC. The TAC is meant to be the total of company capital, surplus, asset valuation reserve, voluntary investment provisions and 50% of the dividend commitments and relevant amounts of the subsidiaries. The essential part of the TAC is the surplus, i.e. the amount by which the receivables exceed the liabilities..

If the supervisory authority finds that the TAC exceeds the required capital there is no need for the supervisory authority to intervene. If the TAC falls below the required capital the following 4 possibilities of intervention exist no matter to what degree it has fallen below the required capital: [1)]

[1)] In the original NAIC requirements the ACL (corresponding to 50 % of the RBC) is taken as a reference. The percentages mentioned will be doubled and refer to the ACL level.

First level of intervention (Company Action Level, CAL):

This level of intervention is characterised by the TAC available ranging between 100% and 75% of the required RBC. As regards life insurers falling into the marginal range of 100% to 125% there is another limitation. The RBC of the last three years is calculated. If it shows a downward trend regulatory intervention is called for.

The company concerned must submit within a period of 45 days a plan identifying the reasons why the TAC has fallen below the required capital and the measures to restore adequate capital resources.

Second level of intervention (Regulatory Action Level, RAL):

This level is characterised by the TAC available ranging between 50% and 75% of the RBC.

The supervisory authority is entitled to establish a catalogue of measures and the management of the company concerned is responsible for these measures to be taken.

Third level of intervention (Authorized Control Level, ACL):

In this case the TAC ranges between 35% and 50% of the RBC. The level of 50% of the RBC is also described as the ACL because there may be massive intervention by the supervisory authority if this level is not reached.

The supervisory authority is entitled to take over management of the company and to initiate a restoration or liquidation procedure, if necessary.

Fourth level of intervention (Mandatory Control Level, MCL) :

In the last case the supervisory authority disposes of the most rigorous intervention rights; the TAC is below 35% of the RBC.

The supervisory authority is then obligated to take over control of the company and to initiate a restoration or liquidation procedure.

If the regulatory measures required under one of the above levels have not been taken it will be proceeded to the next higher level.

The following table is a summary of the above (also see enclosure 2):

Intervention level	In % RBC	Measures
No intervention	> 100 %	-
CAL	≤ 100%	The company must submit within a period of 45 days a plan to restore adequate capital resources
RAL	≤ 75 %	The company has to comply with a catalogue of measures of the supervisory authority
ACL	≤ 50 %	Right of the supervisory authority to take over management of the company
MCL	≤ 35 %	Obligation of the supervisory authority to take over control of the company

The following table is to give an idea of the number of interventions by the supervisory authority in non-life insurance in 1994 and 1995 (see NAIC: P&C Risk Based Capital Newsletter, Volume 2.1, July 1996, p. 2):

Intervention level	Nos. in 1994	In %	Nos. in 1995	In %
No intervention	2348	97,8	2278	97,2
CAL	20	0,8	30	1,3
RAL	13	0,6	12	0,5
ACL	5	0,2	5	0,2
MCL	27	1,1	19	0,8

The table shows that more than 97% of the insurance companies crossed the hurdle. Please note that the above figures may not be very meaningful because it is not clear whether in the case of insurance companies to which the supervisory authority's attention had been directed there was actually a need of intervention or whether rather errors had been made when the RBC was calculated.

OWN FUNDS REQUIREMENTS FOR CREDIT INSTITUTIONS

1. General

The principles for adequate provision of the credit institutions of the EU with own funds have been laid down in Directive 89/ 647/ EEC of 18 December 1989 on a solvency ratio for credit institutions (solvency Directive). The objective of the Directive is to harmonize prudential supervision of the banking sector and to strengthen solvency standards to contribute to the protection of both depositors and investors and to maintain banking stability in Europe.

The solvency Directive together with the second banking law coordination Directive (89/ 646/ EEC), the own funds Directive (89/ 299/ EEC), the Directive on large exposures (92/ 121/ EEC), the second consolidation Directive (92/ 30/ EEC) the Directive on Investments Services (93/ 22/ EEC) and the Directive on the capital adequacy of investment firms and credit institutions (93/ 6/ EEC) form the applicable legal framework for the European credit institutions and investment firms. The objective of these regulations is to enhance competition in the banking and investment services sectors and to secure equal chances for all those operating in the European internal market (level-playing-field).

2. Interaction of both own funds Directive and solvency Directive with regard to adequate own funds of credit institutions

2.1 Introductory remarks

The own funds Directive lays down the qualitative requirements for the liable capital of credit institutions, while the solvency Directive deals with the solvency ratio which is considered a particularly suitable parameter for a bank's own funds, the quantitative own funds requirements and thus the absolute level of the liable capital of which a credit institution must dispose for its day-to-day operations.

The solvency ratio is the relation between the liable own funds of a credit institution and a risk asset weighted with a credit risk and off-balance-sheet items (art. 3 (1) of the solvency Directive). It must not fall below 8% (art. 10 (1) of the solvency Directive); the sum of risk-weighted assets and off-balance-sheet items is, therefore, limited to 12.5 times the liable capital determined in accordance with the own funds Directive. The national supervisory authorities are, however, entitled to fix a higher minimum ratio than 8% as they consider appropriate and thus higher own funds requirements for the credit institutions subject to their supervision (art. 10 (2) of the solvency Directive).

2.2 Liable own funds (= numerator of the solvency ratio)

The own funds within the meaning of the own funds Directive are the numerator of the solvency ratio (art. 4 of the solvency Directive). The own funds Directive does not give a definition of a fixed own funds term but enumerates all admissible own funds items (exhaustive list of items; cf. art. 2 (1) of the own funds Directive) using supplementary criteria. A distinction has to be made between the core capital and the supplementary capital. The core capital comprises high-quality components (so-called „genuine capital" such as paid-up capital, disclosed reserves and profit carried forward). On the other hand, the supplementary capital also comprises lower-quality own funds such as revaluation reserves, subordinated liabilities and participation right capital, fixed-term cumulative preferential shares or commitments of members of cooperative societies.

The supplementary capital may not exceed 100% of the core capital after deduction of any own shares held by a credit institution, intangible assets and current operating losses (art. 6 (1) (a) of the own funds Directive). Holdings in other credit and financial institutions amounting to more than 10% of their capital and subordinated claims which a credit institution holds in respect of credit and financial institutions in which it has a holding exceeding 10% of the capital are to be deducted from the liable capital (art. 6 (1) (c) of the own funds Directive). In addition the sum of subordinated capital and commitments of members of cooperative societies may not exceed 50% of the „genuine capital" after deduction of any own shares held by a credit institution, intangible assets and current operating losses (art. 6 (1) (b) of the own funds Directive).

2.3 Risk-weighted assets and off-balance-sheet items (= denominator of the solvency ratio)

The individual assets and off-balance-sheet items are assigned to different credit risk categories expressed as percentage weighting factors. Depending on the solidity of the counterparties (nature and origin of borrowers such as central banks and central governments, credit institutions and non-bank sectors, credit institutions and foreign borrowers located inside the EU or OECD) these weighting factors are 0%, 20%, 50% and 100%. The risk-weighted value of a balance sheet item is the result of the asset (balance-sheet value) which has been multiplied by the relevant weighting (art. 5 (1) in conjunction with art. 6 (1) of the solvency Directive).

In the case of off-balance-sheet items a difference is made between items excluding interest rate and exchange rate risks (art. 5 (2) of the solvency Directive) and items including interest rate and exchange rate risks (art. 5 (3) of the solvency Directive). The risk-weighted value for off-balance-sheet items excluding interest rate and exchange rate risks is calculated in two stages. Before the final weighting with the uncertainty factor depending on the solidity of the counterparty (similar approach as

in the case of balance-sheet items) a risk weighting is performed depending on the type of transaction (high risk : 100%, medium risk: 50%, medium/ low risk: 20%, low risk: 0%). For allocation of the individual off-balance-sheet items excluding interest rate and exchange rate risks to the four risk categories see Annex I of the solvency Directive (art. 6 (2) of the solvency Directive).

In the case of off-balance-sheet items including interest rate and exchange rate risks the risk is not the non-payment of the nominal amount of the basic transaction but the actual costs incurred for a replacement contract for offsetting or closing out an unmatched position. The price to be paid for a counterdeal is, however, subject to market fluctuations. The credit institutions may choose among two different methods to determine the relevant risk ('marking to market' approach and 'original exposure' approach) with the decision as to the application of one of the two methods depending on the responsible supervisory authority's approval (art. 5 (3) in conjunction with Annexes II and III of the solvency directive).

In the case of the 'marking to market' approach, the current replacement costs of a contract and the potential future credit exposure resulting from the multiplication of the notional principal amounts or values underlying an institution's aggregate books by a factor for the remaining term are added up. In the case of the 'original exposure' approach the notional principal amount of each instrument is multiplied by a factor depending on the original term.

Finally, in order to determine the necessary credit equivalent under both the 'marking to market' and 'original exposure' approaches a weighting with the uncertainty factor of the counterparty is performed (similar approach as in the case of balance-sheet items and off-balance-sheet items excluding interest rate and exchange rate risks) with the envisaged 100% weighting being, however, reduced to 50% in order to obtain risk-adjusted values (art. 5 (3) of the solvency Directive).

The sum of the above amounts for risk-weighted assets and off-balance-sheet items including and excluding interest rate and exchange rate risks will be the denominator of the solvency ratio (art. 5 (4) of the solvency Directive).

3. Legal instruments

The solvency ratio must always be maintained at the prescribed level, even if the period concerned is less than a year. If the ratio falls below 8% or the (higher) value prescribed by the member state the responsible authorities will ensure that the credit institution in question takes appropriate measures to restore the ratio to the agreed or prescribed minimum as quickly as possible (art. 10 (3) of the solvency Directive).

RESILIENCE TEST FOR LIFE INSURANCE UNDERTAKINGS

1. Objective

The objective of the resilience test is to verify that the assets of an insurance company will remain adequate to cover the liabilities, both assessed in accordance with EU Insurance Directives, in different future investment scenarios.

2. Rationale

It is important to ensure that every insurance undertaking will be able to meet its liabilities to policyholders. This means that the company must in particular set up adequate provisions to cover investment risk. This investment risk includes

(a) Risk of lower future interest rates earned on investments

(b) Risk of adverse variations in the capital value of assets

The first of these risks, the future interest rate risk, is normally deemed to be covered by margins in the technical rate of interest, as required by Article 18.1.B of the EU Third Life Directive.

However, the second of these risks is not specifically covered at present by the provisions of that Directive. Nevertheless, in the UK, a 'resilience test' has been devised, and applied by all life insurance undertakings since 1988, to ensure that this investment risk is fully covered.

3. Methodology

It is assumed that the interest rates available in the market on fixed-interest securities move by x% (where x is a parameter, positive or negative in value, chosen by the supervisory authority) shortly after the balance sheet date, with a consequential effect on the value of fixed-interest securities. At the same time, it is assumed that equity property and other similar investments fall in value by y% (where y is also a parameter chosen by the supervisory authority).

This assumed movement in interest rates therefore results in a revised value of assets available to cover technical provisions, since the market value of the investments would alter in these circumstances.

The value of the liabilities, and particularly the mathematical provisions for insurance contracts, is then re-assessed in the assumed changed investment conditions, in accordance with the provisions of Article 18.1B. For example, the technical rate of interest assumed for single premium policies will generally be altered to be consistent with the assumed new market rate of interest on fixed-interest securities.

If the revised value of assets would be less than the revised value of liabilities under these postulated new investment conditions, then the undertaking is required to establish an additional 'resilience test' provision at the balance sheet date in respect of this potential shortfall.

This resilience test is repeated with different sets of parameters (x, y) and the actual 'resilience test' provision established at the balance sheet date is the highest such provision indicated by any set of parameters tested.

An example of this procedure is illustrated in the Annex to this note.

4. Parameters

The parameters (x, y) can be chosen by reference to historical experience of changes in investment conditions during suitable periods of time (such as a 12 months time horizon), and consideration of possible future experience over similar periods.

At present, in the UK, three different sets of parameters are tested as follows:

(1) A 3 percentage point increase in the yield (i.e. current yield%+3%) on fixed-interest securities, and a 25% fall in the value of equity and property investments.

(2) A 20% reduction in the yield (i.e. 0.8 × current yield %) on fixed-interest securities and a 10% fall in the value of equity and property investments.

(3) A 10% reduction in the yield (i.e. 0.9 × current yield %) on fixed-interest securities and a 25% fall in the value of equity and property investments.

5. Commentary

1) The size of the 'resilience test' provision will depend on how closely the projected cash flows on investments held by the undertaking match the projected cash flows in respect of policy liabilities. If these are well matched, as illustrated in the first example in the annex to this note, then no significant provision may arise. Conversely, if the assets and liabilities are not well matched, then a resilience provision is likely to be required.

2) This 'resilience test' provision is additional to the prudent margins in the technical interest rate already required by Article 18.1B of the EU Third Life Insurance Directive, in respect of future interest rate risk.

3) It has some similarities to the capital adequacy tests applied for banks and investment institutions. However, unlike the traditional banking regime, it does also look closely at the interaction between the assets and liabilities of the undertakings.

4) In particular, this means that the life insurance undertaking can take account explicitly or implicitly of the effect that changing values of assets may have on the future bonuses payable on with-profit policies.

5) The parameters of the 'resilience test' can be chosen to take account of prevailing investment conditions and possible variations in those conditions over an appropriate time horizon. The length of this time horizon can also take account of the period of time that might elapse before investments could be rearranged to match the expected cash flow on the liabilities more closely.

6. Summary

The resilience test is applied to ensure that an insurance undertaking is adequately protected against adverse variations in the capital value of the investments that are held as assets to cover technical provisions. It examines, for example, the scenario of the rise or fall in the yield on fixed-interest securities which could have consequential effect on the value placed on both assets and liabilities, and hence the solvency margin of the undertaking.

An assessment is made of the revised value of assets and liabilities that would apply in each postulated scenario. If the assets were less than the liabilities in any of these scenarios, then an additional 'resilient test' provision would have to be established at the balance sheet date in respect of the potential shortfall of assets to cover liabilities.

Examples of resilience test calculation

Example 1

An insurance undertaking has issued an annuity contract paying an income of 1,000 ECU per annum to a 75 year old male policyholder throughout his lifetime.

It holds as an asset to cover this liability a 7,000 ECU fixed-interest security redeemable in 7½ years time, with an interest coupon of 6½% per annum.

The current yield available in the market on such securities is assumed to be 7% per annum, and the liability is assumed to be valued at a technical rate of interest of 6% per annum.

Current Market Value of Asset	= 6,801 ECU
Current Value of Liability	= 6,801 ECU
Solvency Surplus	= 0 ECU

In the resilience test these assets and liabilities are revalued in the scenarios of (1) a 1% rise in market yields or (2) a 1% fall in market yield with the effect as shown in the following table.

Market Yield on Assets	6%	7%	8%
Technical Interest Rate for Liabilities	5%	6%	7%
Value of Assets	7,207	6,801	6,424
Value of Liabilities	7,207	6,801	6,432
Solvency Surplus	0	0	-8

The 'resilience test' provision indicated by this test would be the largest potential shortfall in the two scenarios examined, namely 8 ECU.

Example 2

The circumstances of the insurance undertaking are identical to those in Example 1, except that the fixed-interest security is redeemable in 16 years' time, and has an interest coupon of 6.7% per annum.

Current Market Value of Asset = 6,801 ECU
Current Value of Liability = 6,801 ECU

Market Yield on Assets	6%	7%	8%
Technical Interest Rate for Liabilities	5%	6%	7%
Value of Assets	7,495	6,801	6,194
Value of Liabilities	7,207	6,801	6,432
Solvency Surplus	288	0	-238

The 'resilience test' provision indicated by the test would then become the largest potential shortfall in the two scenarios examined, namely 238 ECU.

ALTERNATIVE PROVISION RATE IN NON-LIFE INSURANCE

Model calculations for alternative limit provision rates of 150 %, 120 % and 100 %

Model calculation A

Assumptions:

Gross premiums :	100 ECU	
Claims ratio	:	70 %
Provision rate	:	150 %
Premium index	:	0,18
Claims index	:	0,26
Provision index	:	0,12

A. First result (premium index)

0,18 x 100 =	:	18 ECU

B. Second result (claims index)

0,26 x 70 =	:	18 ECU

C. Third result (provision index)

0,12 x 150 =	:	18 ECU

Amount of the required solvency margin (A = B = C)	:	18 ECU

Result:

Provision rates of more than 150% for the entire business would mean that the required solvency margin would have to be calculated according to the provision index.

Example: 0,12 x 200 =	:	24 ECU

Model calculation B

Assumptions:

Gross premiums :	100 ECU	
Claims ratio	:	70 %
Provision rate	:	120 %
Premium index	:	0,18
Claims index	:	0,26
Provision index	:	0,15

A. First result (premium index)

0,18 x 100 =	:	18 ECU

B. Second result (claims index)

0,26 x 70 =	:	18 ECU

C. Third result (provision index)

0,15 x 120 =	:	18 ECU

Amount of the required solvency margin (A = B = C)	:	18 ECU

Result:

Provision rates of more than 120% for the entire business would mean that the required solvency margin would have to be calculated according to the provision index.

Example: 0,15 x 200 =	:	30 ECU

Model calculation C

Assumptions:

Gross premiums :	100 ECU	
Claims ratio	:	70 %
Provision rate	:	100 %
Premium index	:	0,18
Claims index	:	0,26
Provision index	:	0,18

A. First result (premium index)

0,18 x 100 =	:	18 ECU

B. Second result (claims index)

0,26 x 70 =	:	18 ECU

C. Third result (provision index)

0,18 x 100 =	:	18 ECU

Amount of the required solvency margin (A = B = C)	:	18 ECU

Result:

Provision rates of more than 100% for the overall business would mean that the required solvency margin would have to be calculated according to the provision index.

Example: 0,18 x 200 =	:	36 ECU

PROPOSAL OF AN ADDITIVE FORMULA FOR NON-LIFE INSURANCE SOLVENCY MARGIN

1. Proposal

It is proposed that the solvency margin for non-life insurance should be calculated according to the following method:

[A x max (premiums receivable, 1,4 x claims incurred) + ...

.... + B x technical provisions for outstanding claims] x reinsurance ratio

where

(i) A and B are fixed constants (to be agreed by the working group).
(ii) The reinsurance ratio is the reduction for reinsurance as allowed under the present methodology.
(iii) The max function in the above formula means the greater of the two amounts shown.
(iv) Premiums receivable and claims incurred are as defined at present in article 16 of INLD.
(v) Technical provisions for outstanding claims are from the balance sheet at the current year end.

2. Rationale

The rationale for the above formula is found from considering the main types of risk associated with non-life insurance. The three main risks identified by the working group are (1) underwriting risk, (2) risk of insufficiency of claims provisions and (3) investment risk.

The underwriting risk is related most closely to the premiums receivable. However, the claims incurred during the year are also relevant since the premiums charged might be too low. Consequently, it is proposed that the underwriting risk should be covered by the first component in the above formula, namely as a proportion of the greater of premiums receivable and 1.4 times claims incurred. The factor of 1.4 is a broad allowance for the average expected ratio of claims incurred plus expenses to claims incurred, and is equivalent to an average loss ratio (excluding expenses) of about 70 %. This overall first component is then analogous with the current solvency margin regime.

Risk of inadequacy of claims provisions reflects the risk that there may be statistical or other variations in the amount of claims payments, particularly for lines of business where there are claims incurred but not reported. It is therefore related to the size of those claims provisions, and this is covered by the second main component in the above proposed formula.

The investment risk reflects the risk of a loss in value of the assets covering technical provisions. In principle, therefore, it should be related to the size of all the technical provisions. However, the main element of those provisions is the outstanding claims provision, and for simplicity, the investment risk is deemed to be covered by the second main component in the above proposed formula. A factor for the investment risk would be chosen having regard to a standard diversified portfolio of investments customarily held to cover the technical provisions.

The structure of the solvency margin formula should then reflect the normal interaction between these three different risks. It is unlikely that these three risks are mutually exclusive but rather they are likely to be independent or even positively correlated. Mathematically, an additive formula is broadly consistent with this likely relationship between these risks. Consequently, it appears more appropriate that they should be represented by an additive formula rather than as the greatest of three components.

A significant consequence of this type of formula is that a rather higher solvency margin will be required for types of business, such as liability insurance, which are 'long-tailed' in nature and in practice therefore normally exhibit considerable variability in the ultimate underwriting result.

Another useful result is that variations in the mixture of business written or in premium volume will always result in corresponding changes to the required solvency margin.

Illustration

As an example of the application of this formula, we have looked at the effect on a range of locally authorised insurers of adopting the proposed formula with A = 0.12 (but reduced to 0.04 for Class 1 or 2 health insurance) and B = 0.12. The general formula then appears as follows:

> [0.12 x max (premiums receivable, 1,4 x claims incurred) + 0.12 x technical provisions for outstanding claims] x reinsurance ratio.

This has the effect of increasing the current solvency margin requirement by around 50% for large multi-line companies. However, companies writing mainly high risk liability business (among which we have experienced a number of failures) would have increases of 100% or more to their current solvency margin.

Conversely, most of the health insurers or property insurers would have a solvency margin close to the current level.

3. Conclusion

It is considered that an additive formula for the solvency margin will reflect the incidence of the main underlying risks most closely. The practical effect on individual companies will depend on the actual parameters chosen, but a clearer distinction will emerge between companies with relatively straightforward short-tail business and those with riskier long-tail classes of business.

EXAMPLES FOR THE CALCULATION OF AN INDEX BASED ON RISK-WEIGHTED INVESTMENTS IN NON-LIFE INSURANCE

In non-life insurance, the amount of the total solvency margin to be established was used for comparison. The target value in the financial year 1995 was DM 12,527 million.

Calculation of the target values based on risk-weighted investments is shown in enclosure 1. As in life insurance, the effects of three different percentage rates are shown. They were selected on the basis of the same assumptions as in life insurance (see annex 7 of the report).

Regarding non-life insurance, it is to be taken into account that the portion of the solvency margin attributable to the investment risk has so far not been quantifiable. Therefore, a direct comparison between the old and the new method is not possible. This needs to be taken into account when deciding whether to use the new index on a cumulative or an alternative basis.

The figures show that, if the index were to be used alternatively, it would never become applicable. Therefore, only a cumulative application can be considered. A rate of 7 %, as in life assurance, would increase the target amount by approx. 38 %. A rate of 6 % would still lead to an increase by approx. 33 %. Both increases, looked at separately, appear too high. In this context, the possibility of reducing the premium and the claims index as well as the potential new provision index is obvious. They should be reduced to the extent that a similar rate of increase of the target amount due to the investment risk as in life insurance (approx. 11 %) is obtained.

Enclosure 2 shows the effects of the new index for an insurance undertaking following a low-risk investment policy, enclosure 3 illustrates the reverse case.

This investigation has shown for non-life insurance that undertakings with negative technical results have a tendency to pursue a more venturesome investment policy.

Annex 7 - enclosure 1

Estimate of an index on the basis of risk-weighted investments for non-life insurance in Germany.

The weighting factors applied were derived from the respective provisions for the banking sector.

The figures used are based on data from the insurance sector for the third quarter of 1995.

Items according to article 6 of the directive on insurance accounts: C. Investments [1]		Value in K DM	Factor in %	Value x factor	of which 8 %	of which 7 %	of which 6 %
I. Land and buildings	(6.1%)	8,546,602	100	8,546,602	683,728	598,262	512,796
II. Investments in associated undertakings and participating interests	(9.8%)	13,688,918	100	13,688,918	1,095,113	958,224	821,335
III. 1. Shares and other variable-yield securities and ...	(18.8%)	26,168,551	100	26,168,551	2,093,484	1,831,799	1,570,113
III. 2. Debt securities and other fixed-income securities [2]	(57.8%)	80,391,566	20	16,078,313	1,286,265	1,125,482	964,699
III. 3. Participation in investment pools [3]							
III. 4. Loans guaranteed by mortgages	(3.0%)	4,199,696	50	2,099,848	167,988	146,989	125,991
III. 5. Other loans	(0.3%)	412,547	100	412,547	33,004	28,878	24,753
III. 6. Deposits with credit institutions	(3.9%)	5,402,543	20	1,080,509	86,441	75,636	64,831
III. 7. Other investments	(0.2%)	285,928	100	285,928	22,874	20,015	17,156
Total	(100%)	139,096,351		68,361,216	5,468,897	4,785,285	4,101,674

Notes:

1) Excluding the item "IV. Deposits with...", since there is no risk here due the possibility to set off.

2) Approx. 91 % of the total amount would have to be weighted at 0 % or 20 %. For this reason the whole position was weighted at 20%.

3) This item does not exist in Germany. The question of the weighting factor remains open.

16.5.97

Example: non-life insurance undertaking; more risk-averse than the sector.

The figures used are based on data for the fourth quarter of 1995.

Items according to article 6 of the directive on insurance accounts: C. Investments [1]		Value in K DM	Factor in %	Value x factor	of which 8%	of which 7%	of which 6%
I. Land and buildings	(1.6%)	5,008	100	5,008	401	351	300
II. Investments in associated undertakings and participating interests			100	0	0	0	0
III. 1. Shares and other variable-yield securities and ...	(7.1%)	21,545	100	21,545	1,724	1,508	1,293
III. 2. Debt securities and other fixed-income securities [2]	(85.6%)	260,207	20	52,041	4,163	3,643	3,122
III. 3. Participation in investment pools [3]					0	0	0
III. 4. Loans guaranteed by mortgages	(1.4%)	4,289	50	2,145	172	150	129
III. 5. Other loans		64	100	64	5	4	4
III. 6. Deposits with credit institutions	(3.1%)	9,453	20	1,891	151	132	113
III. 7. Other investments	(1.2%)	3,574	100	3,574	286	250	214
Total	(100%)	304,140		86,268	6,902	6,038	5,175

Note: 1) Excluding the item "IV. Deposits with...", since there is no risk here due the possibility to set off.

Item	Value in K DM	of which 3%
Target amount as at 31.12.1995	38,765	48,508

Example: non-life insurance undertaking; more venturesome than the sector

The figures used are based on data for the fourth quarter of 1995.

Items according to article 6 of the directive on insurance accounts: C. Investments [1]		Value in K DM	Factor in %	Value x factor	of which 8%	of which 7%	of which 6%
I. Land and buildings			100	0	0	0	0
II. Investments in associated undertakings and participating interests			100	0	0	0	0
III. 1. Shares and other variable-yield securities and ...	(73.3%)	178,511	100	178,511	14,281	12,496	10,711
III. 2. Debt securities and other fixed-income securities [2]	(23.6%)	57,451	20	11,490	919	804	689
III. 3. Participation in investment pools				0	0	0	0
III. 4. Loans guaranteed by mortgages	(0.9%)	2,212	50	1,106	88	77	66
III. 5. Other loans			100	0	0	0	0
III. 6. Deposits with credit institutions	(2.2%)	5,261	20	1,052	84	74	63
III. 7. Other investments	(100%)		100	0	0	0	0
Total		243,435		192,159	15,372	13,451	11,529

Note: 1) Excluding the item "IV. Deposits with...", since there is no risk here due the possibility to set off.

Item	Value in K DM	Existing own funds
Target amount as at 31.12.1995	13,300	14,000

AN ALTERNATIVE METHOD IN ORDER TO CONSIDER THE INVESTMENT RISK IN THE SOLVENCY MARGIN

The method proposed has a double target. First, the method pretends to give an equivalent treatment to both undertakings whose annual accounts are established applying a cost principle and to those undertakings accounting with the market value criterion.
On the other hand the method has the merit of avoiding in the calculation of the actual solvency that assets may be considered at 100% of their market value. In this respect it does not seem to be according to a prudent approach to calculate the actual solvency of an undertaking using a market evaluation of the assets when we are concerned with the investment risk and its effects (the market value criterion is applied both in the case of undertakings accounting with cost rules - they are allowed to include hidden reserves as a positive element of the actual solvency, and, of course, in the case of undertakings accounting with the market value principle).

Following these reasons, and although some exceptions may be considered, as a general idea it seems to be clear that the calculation of the dynamic solvency of an undertaking has to bear in mind the negative effects of the investment risk. As most of these effects are in the end reflected in a reduction of the value of the assets, the method proposed is based on a prudent consideration of the potential reductions in the values of the assets admitted when calculating the actual solvency, making an implicit assumption of simplicity with respect to other effects of the investment risk which have less importance (in terms of frequency or significance).

The method proposed combines the European system, the RBC system applied in the USA and takes some of the advantages of the resilience test applied in some countries for other purposes.

The following tables show the working philosophy of the system and demonstrate their neutral treatment for the two different systems of evaluation of assets allowed under the directive on the annual accounts of insurance undertaking (91/ 674/ EEC).

The final result of the method can be summarized as follows:

In the two examples the assets of equal conditions (two buildings, two stocks, two bonds,...) are considered at the same value, ceteris paribus, without differentiation due to the accounting system.

As a general rule, a safety margin is established corresponding to the investment risk. Thus no asset can be considered for solvency purposes beyond a certain percentage of its market value, reaching similar results to those under resilience test systems.

Enclosure to Annex 8

System to reflect the investment risk in the solvency margin calculation

Example A
Undertakings with cost value criterion

	Balance-Sheet Value	Hidden reserves included in solvency margin	Total value for solvency margin calculation	Market value	Investment risk factor	Value after consideration of investment risk factor	Solvency margin required for type of asset
	(a)	(b)	(c) = (a) + (b)	(d)	(e)	(f) = (d)* (1-e)	(g) = (c) - (f)
Land and buildings	50	30	80	100	0.25	75	5
Shares and other variable-yield securities	75	15	90	110	0.25	82	8
Debt securities and other fixed-yield securities	98	0	98	98	0.02	96	2
Other investments	12	0	12	12	0.15	10	2
						TOTAL	**16**

Example B
Undertakings with MARKET value criterion

	Balance-Sheet Value	Hidden reserves included in solvency margin	Total value for solvency margin calculation	Market value	Investment risk factor	Value after consideration of investment risk factor	Solvency margin required for type of asset
	(a)	(b)	(c) = (a) + (b)	(d)	(e)	(f) = (d)* (1-e)	(g) = (c) - (f)
Land and buildings	100	0	100	100	0.25	75	25
Shares and other variable-yield securities	110	0	110	110	0.25	82	28
Debt securities and other fixed-yield securities	98	0	98	98	0.02	96	2
Other investments	12	0	12	12	0.15	10	2
						TOTAL	**56**

NOTES

(e) Figures of this column only as an example

(g) Figures of this column only computed if positive line by line

(d) and (f) Figures of these columns will be the same in both valuation systems, ceteris paribus

COMMENTS:

Assets corresponding with contracts where the policyholder carries the investment risk require special treatment

In case of article 23, number 1 of the Third Directives,
the assets should be excluded from these transactions.

In case of article 23, number 2 of the Third Directives,
percentages of column (e) should require a significant reduction.

If the undertaking has applied a resilience test for calculating technical provisions and the effects of the resilience test are equivalent to this method the assets where the resilience test has been carried out should be excluded of previous calculations.

EXTENSION OF THE ADDITIVE METHOD BASED ON INDICES FOR PREMIUMS, CLAIMS AND PROVISIONS FOR OUTSTANDING CLAIMS

In annex 6, it is proposed to calculate the solvency margin requirement for non-life insurance undertakings according to an additive formula, including the already established indices for premiums and claims as well as an index for the provisions for outstanding claims (the loss provisions). In section 1 of the present note, we will present some illustrations based on the method proposed by the UK delegation. In section 2 we will indicate how the method can be developed further to include a yardstick for the investment risk based on the total of risk-weighted asset items.

1. Some illustrations based on the additive formula in annex 6

The additive formula for calculating the solvency margin requirement (SMR) for non-life insurance undertakings as proposed in annex 6 can be written as follows:

$$SMR = [a \times \max\{GP, 1.4 \times GCE\} + b \times GLP] \times RR \qquad (1)$$

where GP is the earned premiums on a gross basis and GCE is the claims expenses (incurred losses) on a gross basis for the last financial year, while GLP is the provisions for outstanding claims (the loss provisions) on a gross basis as at the end of the last financial year. Moreover, RR represents the reinsurance ratio, that is the reduction for reinsurance as allowed under present methodology, cf. Article 16, no. 3 of the first non-life insurance Directive.

It remains to stipulate reasonable values for the parameters a and b. In an example presented in annex 6, these parameters are both fixed at 0.12 (i. e. a = b = 0.12). In table 1 we present some more illustrations using other values of the parameters a and b as well as various values of the relation of the provisions for outstanding claims (GLP) to premiums (GP). However, in all the cases presented the values of the parameters a and b add to 0.24.

To simplify, we have assumed that the premiums are larger than 1.4 times the claims expenses (that is GP > 1.4×CE), implying that the loss ratio is less than 71½ %. Moreover, we may in this context ignore the effects of the reinsurance ratio. As a consequence, the relation of the solvency margin requirement to premiums as illustrated by table 1, is given by the following formula:

$$SMR/GP = a + b \times GLP/GP \qquad (2)$$

The calculated values of the ratio of solvency margin requirement to premiums (SMR/ GP) as summarised in table 1 reveal the following pattern:

– The range of variation of the ratio of solvency margin requirement to premiums decreases if the value of parameter a increases at the expense of the value of parameter b. For example, if a = 0.06 and b = 0.18, the ratio of solvency margin requirement to premiums varies between 15 and 42 % when the ratio of loss provisions to premiums vary between 0.5 and 2.0. On the other hand, if a = 0.18 and b = 0.06, the ratio of solvency margin requirement to premiums varies between 21 and 30 percent.

– The limiting case is of course a = 0.24 and b = 0. In this case, the ratio of solvency margin requirement to premiums will be independent of the ratio of loss provisions to premiums. That is we return to the old method were the solvency margin requirement only depends on the premium and claim indices. (However, in this example the solvency margin requirement has been raised by one third as compared with the present requirement).

As to the alternatives listed in table 1, we will prefer alternative A (a = 0.18 & b = 0.06) or alternative B (a = 0.15 & b = 0.06) to alternatives C, D and E. One of the reasons for our view is that we do not believe the index for outstanding claims represents the investment risk in a satisfactory manner. (However, it is an adequate index for the technical risk). Accordingly, the additive method should be somewhat adjusted, for example as sketched in section 2 below.

2. An extension of the additive method

According to annex 6, the additive method given by expression (1) will represent the technical risks (underwriting risks and risks of insufficient loss provisions) as well as the investment risks. As already indicated, we call in question whether the index for outstanding provisions can represent the investment risk in a satisfactory manner. As a consequence, we will in this section sketch a slightly adjusted version of this method.

For the sake of reference, we decompose the overall solvency margin requirement (SMR) in two parts as follows:

$$SMR = SMR_{TECH} + SMR_{INVEST}, \tag{3}$$

where SMR_{TECH} is assumed to cover the technical risks, while SMR_{INVEST} covers the investment risk.

The part of the overall solvency margin requirement covering the technical risks will be calculated by applying a method similar to that proposed in annex 6, that is

$$SMR_{TECH} = [\alpha \times \max\{GP, 1.4 \times GCE\} + \beta \times GLP] \times RR \tag{4}$$

However, the parameters should be adjusted a little downward, since the investment risk in this extended version will be represented by a separate – and additive – index. (Accordingly, we have named the parameters α and β instead of a and b as in expression (1)).

As to the part of the overall solvency margin requirement covering the investment risk, it should be stipulated as a percentage of the total of risk-weighted asset items (RAI), i. e. according to a method corresponding to the European banking regulations:

$$SMR_{INVEST} = \gamma \times RAI. \qquad (5)$$

However, it is not obvious that the parameter γ should be fixed at the same value as in the regulations for the banking sector (where $\gamma = 0.08$).

If we again simplify by assuming that the earned premiums are larger than 1.4 times the incurred claims and ignore the effects of the reinsurance ratio, the relation of the solvency margin requirement to premiums can be written in the following manner:

$$\begin{aligned} SMR/GP &= SRM_{TECH}/GP + SMR_{INVEST}/GP \\ &= \alpha + \beta \times GLP/GP + \gamma \times RAI/GP \end{aligned} \qquad (6)$$

As to the relation of the total risk-weighted asset items to earned premiums, it should be noticed that this relation can be rewritten as follows:

$$RAI/GP \quad (RAI/AI) \times (AI/GPP) \qquad (7)$$

where AI represents the total of (unweighted) asset items.

Regarding the ratios RAI/ AI and AI/ GP, the following may be stated for Norwegian non-life insurers:

– For the largest Norwegian non-life insurance undertakings (operating in most of the insurance classes), the ratio of overall risk-weighted assets (RAI) to overall (unweighted) assets (AI) varies between 0.03 and 0.65.

– Moreover, the ratio of overall assets (AI) to earned premiums (GP) – also called the degree of capitalisation – varies between 2.5 and 4.5. (For the captive insurance undertakings, the degree of capitalisation is in general considerably larger.)

As a consequence of these facts the ratio of overall risk-weighted assets to earned premiums (i. e. RAI/ GP) may vary considerably. For the largest non-life insurance companies this ratio varies between 0.75 and 3.00.

Having the above-mentioned facts in mind, and using alternative A from table 1 as a point of reference, the parameters α, β and γ may be stipulated as in the following table:

α	0.09
β	0.06
γ	0.06

The part of the solvency margin requirement covering the technical risks will then be the total of the following two components:

(1) The maximum of 9 % of the earned premiums and 13 % of the incurred claims (a three-year average), cf. however the above-mentioned simplifications leading to expression (6).

(2) 6 % of the provisions for outstanding claims.

Moreover, the part of the solvency margin requirement covering the investment risks will be 6 % of the overall value of the risk-weighted asset items, that is 75 % of the requirement implemented for the banking sector.

Having stipulated values for the parameters α, β and γ, the ratio of solvency margin requirement (SMR) to earned premiums (GP) will depend on the ratio of loss provisions to earned premiums (GLP/ GP) and the ratio of overall risk-weighted assets to premiums (RAI/ GP) – as is seen from expression (6).

In table 2, we have summarised the calculated values of the ratio of SMR to GP which emerge when the ratio of GLP to GP varies between 0.5 and 2.0 and the ratio of RAI to GP varies between 0.75 and 3.00. Table 2 reveals the following pattern:

– The variations in the ratio of solvency margin requirement to earned premiums, being a consequence of the variations in the ratio of loss provisions to earned premiums, are of the same magnitude as those generated by the method proposed in annex 6, cf. alternative A in table 1

– As to the variations in the ratio of solvency margin requirement to earned premiums being a consequence of the variations of the ratio of overall risk-weighted asset items to earned premiums, it should be kept in mind that table 2 covers a large range of values for the latter ratio (i.e. RAI/ GP). For example, the values of SMR/ GP listed in column G of table 2 are based on a value of the ratio RAI/ GP which is four times the values of RAI/ GP generating the ratios given in column A. Accordingly it is not surprising that the calculated values of the ratio SMR/ GP vary considerably. On the other hand, it seems reasonable to believe that an insurance undertaking characterised by a high value of the ratio of risk-weighted assets to earned premiums in general will be a "rich" undertaking, i. e. an undertaking which in practice has no problems with meeting the solvency margin requirement.

In principle, an insurance undertaking can manage to evade the part of the solvency margin requirement covering the investment risks. If all the assets are invested in items having a risk equal to 0, then RAI = 0 and accordingly the solvency margin requirement covering the investment risks (i. e. SRM_{INVEST}) equals 0, cf. expression (5).

However, this weak point of the present method may easily be avoided by replacing expression (5) with e. g.

$$SMR_{IVNEST} = \max \{\gamma \times RAI, \delta \times GP\}. \qquad (8)$$

The effect of this revised calculation rule for the solvency margin requirement covering the investment risk is to stipulate a lower bound for this requirement equal to δx100 % of the undertaking's earned premiums.

In our case, we will again apply alternative A of table 1 as a point of reference, and accordingly fix the value of the parameter δ as 0.09. However, it may be appropriate to stipulate the value of δ somewhat lower, e. g. in the range 0.04 - 0.06.

It should be noticed that with $\gamma = 0.06$ and $\delta = 0.09$, the "threshold value" of the ratio of risk-weighted asset items (RAI) to earned premiums (GP) will be 1.5. Introducing expression (8) along with these value of δ and γ will have as a consequence that the values in columns A, B and C in table 2 will be equal to the values in column D.

3. Final comment

In section 2 of the present paper we have tried to make a compromise between two of the methods proposed for covering the risk of insufficient technical provisions and the investment risks in a more adequate manner, i. e. the introduction of an index of outstanding claims on an additive basis (cf. proposal as sketched in section 1) and the index based on risk-weighted investments (cf. the European solvency requirements for the banking sector).

The values of the ratio of solvency margin requirement (SMR) to earned premiums (GP) as presented in table 1 and 2 will of course depend heavily on the chosen values of the parameters (α, β and γ). As far as we can see the calculated values of the ratio SMR/ GP are however within the range indicated by the (minority of) delegations wanting to introduce a significant increase of the solvency margin requirement for the non-life insurance sector. Consequently, we still believe that the methods sketched in the present paper may be a suitable basis for further developments of the present solvency rules.

Table 1: **The ratio of solvency margin requirement (SMR) to earned premiums (GP) for various values of the parameters a and b and various values of the ratio of loss provisions to earned premiums (GLP/ GP)**

GLP/ GP	A a = 0.18 & b = 0.06	B a = 0.15 & b = 0.09	C a = 0.12 & b = 0.12	D a = 0.09 & b = 015	E a = 0.06 & b = 0.18
0.50	0.2100	0.1950	0.1800	0.1650	0.1500
0.75	0.2250	0.2175	0.2100	0.2025	0.1950
1.00	0.2400	0.2400	0.2400	0.2400	0.2400
1.25	0.2550	0.2625	0.2700	0.2775	0.2850
1.50	0.2700	0.2850	0.3000	0.3150	0.3300
1.75	0.2850	0.3075	0.3300	0.3525	0.3750
2.00	0.3000	0.3300	0.3600	0.3900	0.4200

Table 2: **The ratio of solvency margin requirement (SMR) to earned premiums (GP) for various values of the ratio of loss provisions to earned premiums (GLP/ GP) and various values of the ratio of risk-weighted assets to earned premiums (RAI/ GP)**

GLP/ GP	A RAI/ GP = 0.75	B RAI/ GP = 1.00	C RAI/ GP = 1.25	D RAI/ GP = 1.50	E RAI/ GP = 2.00	F RAI/ GP = 2.50	G RAI/ GP = 3.00
0.50	0.1650	0.1800	0.1950	0.2100	0.2400	0.2700	0.3000
0.75	0.1800	0.1950	0.2100	0.2250	0.2550	0.2850	0.3150
1.00	0.1950	0.2100	0.2250	0.2400	0.2700	0.3000	0.3300
1.25	0.2100	0.2250	0.2400	0.2550	0.2850	0.3150	0.3450
1.50	0.2250	0.2400	0.2550	0.2700	0.3000	0.3300	0.3600
1.75	0.2400	0.2550	0.2700	0.2850	0.3150	0.3450	0.3750
2.00	0.2550	0.2700	0.2850	0.3000	0.3300	0.3600	0.3900

AGING PROVISION IN HEALTH INSURANCE

Private health insurance contracts providing insurance cover which may replace compulsory health insurance wholly or partly (so-called substitutive health insurance) are, as a rule, concluded for an unlimited period of time.

The level of average medical expenses heavily depends on age. For instance, for a man of 80 years of age the hospital charges are about 10 times higher than for a man of 30 years of age. If premiums were agreed which increased accordingly these would finally reach a level not financially acceptable to older insured persons and consequently would have to cancel their contracts. An apportionment of medical expenses to younger insured persons is not possible in private health insurance and would entail considerable problems and injustices. Therefore, advance financing while the insured is still younger is necessary.

For this reason, the premiums in substitutive health insurance are calculated (in the same way as in life insurance) such - provided health care conditions remain unchanged - that they will remain constant during the entire period of insurance. The net premium (without additional amounts for certain costs) to be paid by the insured will be higher in the first years of insurance than the risk premium corresponding to the actual age of the insured. The difference between net premium and risk premium is called the savings element of the premium. It will decrease with the length of the insured period. At a certain age of the insured the net premium will be lower than the corresponding risk premium. Then the net premium alone will no longer be adequate to meet the obligations under the insurance contract.

The net premium to be paid by the insured which remains constant while the risk premium increases will be used to establish a provision of premium amounts paid „in excess“ in the earlier years in order to finance later any „deficits“ resulting from the difference between the calculated risk premium and the paid net premium. This provision is called **aging provision**. When the premium is calculated an annual technical interest rate (e.g. 3.5%) is taken into account. Moreover, if the insured dies or the contract is cancelled the aging provision is „inherited“ by the insured community. This enables lower premiums being charged to the insured.

If health care costs increase the premiums must be increased depending on the age reached by the insured. This may result in substantial rises in premiums. These rises may be less severe by having the insured, in addition to the technical interest rate paid, participate in the investment returns of the companies by allocating these amounts to the aging provision to keep down premiums at the old age.

EXAMPLES FOR THE CALCULATION OF AN INDEX BASED ON RISK-WEIGHTED INVESTMENTS IN LIFE INSURANCE

Following is a comparison between the target amounts obtained by the method applied so far (3 % of the mathematical provisions, as a measure for the investment risk), and by a new method based on the assets side of the balance sheet.

For the German market, as at 31.12.1995 in accordance with the 1995 BAV annual report, part B, the following target amounts were obtained by applying the current method:

Item	Amount in K DM	of which 3 %
Mathematical provision	589,715,032	
Provision for unearned premiums	9,934,994	
Total	599,650,026	17,989,501

Calculation of the target values based on the risk-weighted investments is shown in enclosure 1. The weighting factors applied there were derived from the respective banking provisions (see article 6 of the Council Directive of 18 December 1989 on a solvency co-efficient for credit institutions 89/ 647/ EEC). Three different percentage rates are applied for determining the target value to allow a better assessment of the procedure's effects. The rate of 8 % corresponds to the rate applied in the banking sector. The rate of 7 % is based on the consideration that risk-reducing investment provisions exist in the insurance sector. This justifies a deduction which in this case is rated at 10 %. Thus, a rate of 7 % (rounded off) is obtained. A deduction of 25 % results in a rate of 6 %.

Comparison of the different values shows that when applying a rate of 8 % and using the new calculation method, the target amount exceeds the one obtained by using the old method by approx. 27 %. This increase appears to be too high in view of the existing investment rules. A rate of 6 %, however, leads to a target amount which is approx. 5 % lower. In this case, the actual risks are without doubt not adequately taken into account. A moderate increase of the target value is achieved by applying a rate of 7 %. Thus, the result is an increase of approx. 11 %. This should adequately take account of the investment risk which has increased in the past. For such companies who do not diversify their investments as prudently regarding risks as is the current overall trend, and who weight high-risk investments more strongly, the new method would lead to higher target amounts.

Enclosures 1 and 2 show the effects which the new index has for insurance undertakings selected by way of example. Enclosure 1 refers to a life insurance company whose investment policy is more risk-averse than that of the sector. Enclosure 2 shows the effects of a more venturesome investment policy of a different undertaking.

Annex 11 - enclosure 1

Rating of an index on the basis of risk-weighted investments for life insurance in Germany.

The weighting factors applied were derived from the respective provisions for the banking sector.

The figures used are based on data from the insurance sector for the fourth quarter of 1995.

Items according to article 6 of the directive on insurance accounts: C. Investments [1]		Value in K DM	Factor in %	Value x factor	of which 8%	of which 7 %	of which 6 %
I. Land and buildings	(4.7%)	32,454,165	100	32,454,165	2,596,333	2,271,792	1,947,250
II. Investments in affiliated undertakings and participating interests	(3.4%)	23,790,636	100	23,790,636	1,903,251	1,665,345	1,427,438
III. 1. Shares and other variable-yield securities and...	(12.9%)	89,136,021	100	89,136,021	7,130,882	6,239,521	5,348,161
III. 2. Debt securities and other fixed-yield securities [2]	(62.3%)	431,418,965	20	86,283,793	6,902,703	6,039,866	5,177,028
III. 3. Participations in investment pools [3]							
III. 4. Loans guaranteed by mortgages	(14.5%)	100,764,975	50	50,382,488	4,030,599	3,526,774	3,022,949
III. 5. Other loans [4]	(1.5%)	10,429,389	20	2,085,878	166,870	146,011	125,153
III. 6. Deposits with credit institutions	(0.5%)	3,377,063	20	675,413	54,033	47,279	40,525
III. 7. Other investments	(0.2%)	1,306,430	100	1,306,430	104,514	91,450	78,386
Total	(100%)	692,677,644		286,114,824	22,889,185	20,028,038	17,166,890

Notes: 1) Excluding the item "IV. Deposits with...", since there is no risk here due the possibility to set off.

2) Approx. 91 % of the total amount would have to be weighted at 0 % or 20 %. For this reason the whole position was weighted at 20%.

3) This item does not exist in Germany. The question of the weighting factor remains open.

4) 95 % of this item consist of loans to policyholders, the main security being the insurance policy (article 11 of the directive on insurance accounts). Therefore, the whole position was weighted at 20 %.

Annex 11 - enclosure 2

Example: life insurance undertaking; more risk-averse than the sector.

The figures used are based on data for the fourth quarter of 1995.

Items according to article 6 of the directive on insurance accounts: C. Investments [1]		Value in K DM	Factor in %	Value x Factor	of which 8%	of which 7%	of which 6%
I. Land and buildings	(0.6%)	80,147	100	80,147	6,412	5,610	4,809
II. Investments in associated undertakings and participating interests	(0.8%)	108,300	100	108,300	8,664	7,581	6,498
III. 1. Shares and other variable-yield securities and ...	(1.6%)	215,305	100	215,305	17,224	15,071	12,918
III. 2. Debt securities and other fixed-income securities [2]	(83.9%)	11,537,355	20	2,307,471	184,598	161,523	138,448
III. 3. Participation in investment pools [3]				0	0	0	0
III. 4. Loans guaranteed by mortgages	(11.9%)	1,636,491	50	818,246	65,460	57,277	49,095
III. 5. Other loans	(1.0%)	140,873	20	28,175	2,254	1,972	1,691
III. 6. Deposits with credit institutions	(0.2%)	33,000	20	6,600	528	462	396
III. 7. Other investments		2	100	2	0	0	0
Total	(100%)	13,751,473		3,564,246	285,140	249,496	213,855

Note: 1) Excluding the item "IV. Deposits with...", since there is no risk here due the possibility to set off.

Item	Value in K DM	of which 3%
Mathematical provision as at 31.1.21995	12,212,533	366,376

Example: life insurance undertaking; more venturesome than the sector.

The figures used are based on data for the fourth quarter of 1995.

Items according to article 6 of the directive on insurance accounts: C. Investments [1]		Value in K DM	Factor in %	Value x factor	of which 8%	of which 7%	of which 6%
I. Land and buildings	(7.7%)	271,812	100	271,812	21,745	19,027	16,309
II. Investments in associated undertakings and participating interests	(2.9%)	100,548	100	100,548	8,044	7,038	6,033
III. 1. Shares and other variable-yield securities and ...	(30.7%)	1,081,919	100	1,081,919	86,554	75,734	64,915
III. 2. Debt securities and other fixed-income securities [2]	(36.7%)	1,294,253	20	258,851	20,708	18,120	15,531
III. 3. Participation in investment pools [3]				0	0	0	0
III. 4. Loans guaranteed by mortgages	(19.6%)	692,361	50	346,181	27,694	24,233	20,771
III. 5. Other loans	(1.4%)	48,445	20	9,689	775	678	581
III. 6. Deposits with credit institutions	(1.1%)	37,000	20	7,400	592	518	444
III. 7. Other investments			100	0	0	0	0
Total	(100%)	3,526,338		2,076,400	166,112	145,348	124,584

Note: 1) Excluding the item "IV. Deposits with...", since there is no risk here due the possibility to set off.

Item	Value in K DM	of which 3%
Mathematical provision as at 31.12.1995	2,936,909	88,107

PERMANENT HEALTH INSURANCE

In the UK, Class IV business is taken to include contracts of the following kinds:

a) **Contracts providing income benefits** when the policyholder is incapable of work through sickness, infirmity or accident, and where the contracts have an expected duration of at least five years (or to retirement if earlier) and cannot be cancelled by the insurer.

In practice:

- benefits are usually payable until the policyholder has either recovered from the relevant affliction, or has reached retirement age, or dies. Because the purpose of the policy is to replace lost income, benefits are usually not payable after normal retirement age.

- premiums may be set in advance at a level which is constant throughout the term of the contract. However, many contracts are now written (particularly where the term of the contract is fairly long) with provision for review of the premium at five or ten year intervals.

b) **Contracts providing lump sum benefits** on diagnosis of a serious or critical illness (defined in the policy conditions), which are either whole-life contracts or have an expected duration of at least five years, and which cannot be cancelled by the insurer.

- In practice premiums may be set in advance at a level which is constant throughout the term of the contract. However, many contracts are now written (particularly where the term of the contract is fairly long) with provision for review of the premium at five or ten year intervals.

- In some insurance contracts a lump sum benefit is payable on diagnosis in place of a benefit which would otherwise be payable on death – in other words, there is an acceleration of death benefit on diagnosis of a critical illness. Such contracts are regarded as falling within Class I rather than Class IV.

c) **Contracts providing income benefits on infirmity in old age** to offset the costs of assistance with specified living activities, and which are written as whole-life contracts.

- In practice premiums may be set in advance at a level which is constant throughout the term of the contract. However, many contracts are now written (particularly where the term of the contract is fairly long) with provision for review of the premium at five or ten year intervals.

- This is a relatively new kind of contract in the UK: not all insurers offer it.

- There are alternative forms of contract which offer income benefits at a specified level in return for payment of a single premium. Such contracts would be treated as annuity contracts falling within Class I rather than Class IV.