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INSURANCE ACCOUNTING PRINCIPLES

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I. Capital adequacy: The main concern of insurance supervisors

By capital resources is usually meant the difference between real assets and real liabilities, or equity plus reserves *stricto sensu*, less intangible assets. This is the accounting approach: capital is that shown in the balance sheet. However, the real value of assets and liabilities can be different from the balance sheet value; the "intrinsic capital", a concept that is closer to the real value of the company, is calculated by taking into account those differences, whether plus or minus, that are not recorded in the balance sheet.

Capital adequacy is, and always has been, the main concern of insurance supervisors.

A. Historical background

Various measures of the level of the own resources that the insurer must have in addition to the external resources provided by policyholders or technical or equalisation reserves, or from other sources, have been proposed.

The following measures have been successively proposed:

- a fixed minimum capital or establishment fund varying according to the type of business;

- a fixed minimum capital plus a supplementary fund financed annually by a levy on profits, with a lower and upper limit to this fund. The shortcomings of this method rapidly became apparent during the period of run-away inflation in the years following the end of the Second World War, since, increasingly, profits were not sufficient to finance the supplementary fund;

- a minimum capital continually adjusted in line with various indicators of the company's business: turnover, losses incurred, amount of technical reserves. This is the approach taken by the Community Directives, which define a "solvency margin" for both life and non-life companies, the aim of which is to make good any possible inadequacy in the valuation of technical liabilities.

- a minimum capital requirement taking into account not only the risk attaching to technical liabilities but also the financial risks attaching to investments *i.e.*:
  - the risk of losses on realised investments
  - the non-marketability risk attached to bonds, loans or real estate.

This approach is based on the Cooke ratio used in the banking sector.

B. Current situation

Currently the most commonly used measure of capital adequacy is the solvency margin as defined in the Community Directives. The last-mentioned measure -- that which takes into account financial risks -- is implemented in the states of the United States. Besides, in Japan, the capital and surplus requirement (solvency margin requirement) has newly been introduced by its new Insurance Business law, which came into effect on 1 April 1996.

Both methods have in common a dynamic approach, the quality of solvency being measured by the value of capital as calculated on a scale graduated either according to the company's type of business or the risks that it runs.

This parallelism can be illustrated by the following table:

Solvency margin (1)	Risk-based capital requirement (2)
No intervention	No intervention
	100 Company is asked to implement a rescue plan to restore its financial situation
100 Long-term recovery plan: measures to redress the situation proposed by the company: raise rates, increase reinsurance,. etc.	75 Company asked to implement recovery plan and Insurance Supervisor issues order to redress situation
	50 Possibility of placing the company under judicial: control after ruling by competent court
33.3 Short-term funding plan: company seeks new funds or possible take-over	35 Company placed under compulsory judicial control after court ruling; recovery or liquidation procedure initiated unless deficit eliminated within 90 days.

(1) Available margin/required minimum margin
(2) Available capital/capital requirement

However, in some countries the regulations also took financial risks into account, in addition to the technical risks. For example:

- in Norway, the regulations are the same for banking and insurance; the capitalisation ratio is 8 per cent of the basis of calculation resulting from weighting the various types of asset by a risk coefficient;

- in Iceland, certain risky assets, notably outstanding premiums and claims on agents, are admitted in the solvency margin;

- in Australia, insurers must maintain a reasonable margin to cover, in addition to minimum solvency requirements, events such as fluctuations in the market value of assets;

- in France, the risk of non-marketability of investments in the event of changes in the rate of settlement of claims is covered by a technical provision called “liquidity risk provision”; there is also a technical provision to cover falls in the yields on investments;

- in Canada, a minimum standard called MCCSR (Minimum Continuing Capital and Surplus Requirements) has been established. The capital that should be available to meet the minimum standard is defined according to a risk-based formula. A company’s minimum capital requirement is determined by applying factors for each of four risk components (assets default risk, mortality/morbidity risk, interest margin pricing risk and changes in interest rate environment risk) to specific on and off-balance sheet assets or liabilities and by adding the results.

C. Calculating available capital

The third and fourth methods described above have in common that they base their estimate of the company's capital on balance sheet, *i.e.* accounting data.

This means that, in order to determine the margin and its liquidity it is essential to know which valuation rules and accounting principles are authorised, and their impact on the company's results.

The following, non-exhaustive, comments may be made:

1. Rules for valuing investments and technical provisions:

- the choice is between a conservative valuation of investments on the basis of two values book value compared with market value or a more realistic valuation based on current value. For example, statutory accounting practices (SAP) in the United States do not admit furniture and fixtures in the insurer's surplus;

- there is also a choice for the method used to calculate technical provisions:
  - on the basis of gross or net ceded reinsurance;
  - zillmerised or non-zillmerised mathematical provisions;
  - outstanding claims estimated on the basis of the present value of future settlements or the cost at the time of liquidation taking into account possible economic and legal developments.

2. Rules regarding adjustments to value of annual inventories:

- the reason for an adjustment can vary from one country to another and a distinction is not always made between systematic depreciation and a sudden depreciation -- *i.e.* a loss;

- straight-line or declining balance depreciation methods can be used and tax law can affect accounting;

- the very concept of a depreciable asset is not always identical in all countries; for example, some countries do not allow investment property to be depreciated;

- a sudden depreciation may be charged when the loss is considered to be definitive or highly probable;

- some countries allow depreciation provisions to be calculated on a statistical basis, others do not;

- some countries allow capital gains and losses to be offset but most do not.

3. Rules regarding the assets that can be used to cover technical liabilities

- there are restrictions varying across countries on the admission of investments deemed to present an above-average risk of non-payment, such as unguaranteed loans, shares in unlisted companies, and real estate. Mexico allows non-mortgage loans to cover up to 40 per cent of technical provisions but Austria does not allow such loans to be used as cover. Ireland allows

property assets to represent up to 60 per cent for non-life companies, whereas the State of New York authorises only 5 per cent;

- rules regarding the spread of assets also vary widely: Turkey allows property assets to represent 50 per cent of representative assets but the State of New Jersey sets a ceiling of 2 per cent.

4. Rules regarding the treatment of accounting data

It would be easy to given numerous examples of differences in the way accounting data are treated. For example:

- Germany and Austria record banking transactions in the current account on the basis of bank statements and not in the order in which the transactions were authorised, whereas the usual practice is to follow the chronology of transactions;

- in another area, some South American countries book premiums to the profit and loss account only when they are received and not when they are written, the insurer becoming liable only once the money has been received.

D. Risks incurred by the insurance company

The list below (1-4.) shows the main categories of risks to which insurers are exposed independently of the technical risk arising from the contract. Most of these risks are reflected in the companies' accounts.

1. Underwriting risks

These risks relate to:

The composition and growth of portfolios: badly balanced portfolios or portfolios consisting mainly of long classes, rapid growth with risk of adverse selection.

Inadequate tariffs, due to a lack of reliable statistics or unforeseen variations in the frequency of claims, a disparity in loss experience or catastrophe claims out of proportion to the size of the portfolio.

Underestimated liabilities: provisions calculated by retrospective methods from inadequate premiums will themselves be inadequate (unearned premiums, mathematical provisions, outstanding losses); miscalculation of the cost of claims or deliberate reduction in the cost with a view to improving the presentation of the accounts will have a similar effect.

The management costs for portfolios of long-term contracts or contracts being wound up, although included in the premium, may prove higher than foreseen.

Disparities between actual mortality and mortality tables: depending on whether a death or survival risk is involved, when the tables used are out-of-date, the difference will give rise to a mortality profit or loss. Likewise, the insured population can exhibit different rates from national statistics.

2. Reinsurance risks

These can be:

Difficulty in placing the risk with a reinsurer: if the premium base is too small, to facilitate the placement the insurer has to cede liabilities over and above that which should be technically necessary; similarly, recurring technical losses passed on to reinsurers.

Dependence on reinsurers: the reinsurer is obliged, either during the initial period or periods of temporary difficulty, to provide support at the margin to the reinsured party. If such support lasts too long, there is a danger that the reinsurer will intervene on a lasting basis in the cedent's management.

3. Investment and credit risks

The following events or risks may be mentioned:

A depressed market or segment of the stock market: for example, the fall in the UK and French property markets, and then in the Paris stock market, was unforeseen.

Interest rate risk: if the economy turns down, borrowers, policyholders, reinsurers or other third parties may become insolvent.

Risks relating to strategic choices: a stake acquired in another company may have been bought at too high a price given the company's potential.

Liquidity risk: in non-life insurance, the occurrence of a large claim, and in life insurance, a massive wave of policy surrenders due to more attractive policies coming onto the market, can oblige the insurer to liquidate assets in unfavourable conditions.

Off-balance sheet liabilities: risk relating to sureties and guarantees given to third parties and in particularly to subsidiaries.

The trend towards mergers and take-overs, risks involved in conglomerates: with conglomerates containing both credit institutions and insurers, there is a very high risk that the net assets of the group will be used to meet both the Cooke ratio and the solvency margin.

Risk in currency matching of assets and liabilities. In principle this risk is small if the companies respect the level of currency matching set by national laws.

4. Exogenous risks

These relate to economic or legal developments, technological progress or changes in the political context.

For example:

- A change in the inflation path; this would have a sharp impact on provisions which were calculated using the retrospective method and on cash-flow, and hence on the margin;

- Legal developments. For example, for more than ten years courts in Spain and particularly Catalonia have been aligning their rulings on rulings by French and German courts. This has led to inadequate claims provisions, causing numerous companies to fail;

- Heightened competition has put pressure on tariffs and prompted companies to market new higher-yielding products;

- The economic crisis: the number of fraudulent claims has been observed to rise in the most affected sectors;

- Technological change: this can aggravate existing risks and create new ones;

- Political risks: the risk of nationalisation or expropriation or exchange controls, and thus restrictions on repatriating profits from foreign subsidiaries.

II. Accounting: A management tool for the insurer

A. Generally accepted accounting principles

It is useful at this point to recapitulate the most important accounting principles, which, with a few exceptions, are the same for insurance companies as for any other company.

- Going concern concept

Assets are valued on the assumption that the firm will continue to operate (and not at their scrap value), unless the asset has to be realised in the short term.

This principle underpins the Community Directive. In the particular case of bonds, if the market price is below the historical price, it can be disregarded and the redemption value used.

- Accruals concept

At the time of the annual inventory, costs and revenue are charged to the years they concern, or charges considered to be structural expenses are spread over several years.

In insurance, the general practice is to close the accounts on 31 December (Japan closes them on 31 March). Some specialised reinsurers close them on 30 June.

In non-life insurance, a distinction is made between the accounting year and insurance year.

The principle of charging expenses and revenue to specific years is illustrated in insurance by the practice of carrying forward to the following year(s) expenditure incurred on the acquisition of commercial premiums, which are carried forward as unearned premiums.

- Booking at nominal value

Assets are booked at their historical value, disregarding the purchasing power of the currency. This principle is not unanimously accepted, especially in high-inflation countries.

In insurance, the value of a large part of liabilities is automatically updated during ongoing or annual inventories of “Claims”. In many cases, the value of investments is updated using legal or regulatory revaluation procedures, which can be offset by revaluation differences.

– Significance and quality of information

Transactions that can affect valuations and decisions must be published in the company's financial statements and the notes to the accounts. When accounting standards are too detailed for the needs of company, accounts can be grouped to some extent. The information provided must be true and fair (true, clear, accurate and complete).

Insurance supervisors consider that it is for them to decide whether the information in the accounts and statements submitted to them is significant.

Article 5 of the Community Directive allows some items to be grouped together. However, the grouping together of technical provisions is not allowed.

– Non offsetting concept

Assets and liabilities, as well as charges and revenue, must be valued item by item, without any off-setting. However, when a contract provides for the periodic rendering of a current account, off-setting is allowed.

In insurance, many reciprocal transactions unwind in a current account: transactions with agents, active and passive reinsurance transactions.

– Intangibility of the opening balance sheet

This principle states that charges and revenue from previous financial years may not be imputed directly to capital and reserves.

B. Justification for specific supervision of insurers

All countries, even the most *laissez-faire* ones, have insurance supervisors. Their role may vary, take different forms, but all have the same aim: to safeguard the interest of policyholders.

Why is supervision needed?

– First, because of the unequal relationship between the insurer and the insured.
  - In most cases, the consumer can either only accept or refuse the contract;
  - The insurer sells the contract at a price fixed in advance, promising to provide a service in the future in certain conditions. Often the contract is written in a technical-legal jargon which makes it difficult for the customer to understand;

– The contract is paid in advance but it may take a very long time to unwind -- whether in life insurance, due to the object of the contract, or in third party liability insurance, due to the difficulties involved in determining bodily injury or the apportionment of liability. It is therefore essential to protect the insured against mismanagement on the part of the insurer, who, very often, will suffer the consequences only a long time after. In this connection, we may cite the example given by Jean Fourastié, economist and former *Commissaire-Contrôleur des Assurances*: a non-life company which undercharges by 5 per cent, with constant growth of new business, will be able to settle claims for 19 years without selling any investments; it will be unable to pay only from the 35th year.

– The traditional concept of "working capital" is difficult to apply to the insurer's balance sheet because technical provisions are not split into short, medium and long-term, while a large proportion of invested assets can be realised almost immediately. In any case, even if the

concept could be applied to insurers, it would give an idea only of their short-term solvency and would be negative, since long-term liabilities, including technical provisions over one year, are usually lower than invested assets. Thus, in insurance the concept of short, medium and long-term "coverage of technical liabilities" replaces the ill-defined and vague concept of working capital, and makes it possible to measure the company's ability to meet its future technical liabilities.

C. The traditional concept of working capital

Table 1 illustrates the concept of working capital: in any firm, equity capital and other permanent funds serve to finance fixed and other assets. Working capital is said to be positive when long-term resources exceed fixed assets. Or looking at the bottom of the balance sheet, it can be expressed by saying that short-term liabilities must be less than short-term assets.

This is not necessarily the case in a number of sectors. For example, in large-scale distribution -- hyper and supermarkets -- the company is paid cash by its customers and stock turnover is very rapid, but the company pays its suppliers only within 90 days. Likewise, when a press enterprise sells subscriptions, it receives the money front-up but has to deliver the product only three, six or twelve months later. The insurer also has negative working capital but this is not a measure of its insolvency.

D. An inverted production cycle

Table 2 illustrates the way the various components of the premium break down throughout the guarantee period and beyond:

- on the day the policy is written, the "loading for acquisition costs", *i.e.* the estimated costs of remunerating any intermediary and other marketing expenses such as advertising or new business booked in the portfolio or amendments to contracts, etc., are deducted from the premium.

- at the date of closure of year N, *i.e.* in the example, when half of the guarantee has elapsed, the administrative expenses for the six months have been made, and also a part of payments for claims and claims settlement expenses (2-3). For this period, payments in respect of claims and claims settlement expenses still have to be made (4). This is the purpose of the outstanding claims provision.

- the share of premium used to finance the period of guarantee from 1 January N+1 to 30 June N+1 also has to be credited to year N+1. This constitutes the unearned premiums provision, less acquisition costs pre-paid in N for this period (5).

- once the guarantee has run out, there remains from the initial premium the provision for outstanding claims and settlement expenses for events that have occurred between 1 July N and 31 December N, and that have occurred between 1 January N+1 and 30 June N+1 (4b and 5c) on the other hand.

E. The notion of cover

Table 3 explains this concept.

The problem of solvency being a long-term one, it is essential that any moment, and not just at the date of closure of the accounts, liabilities to policyholders, or technical provisions, *i.e.* customers' funds, be invested in assets that offer security, a return and liquidity.

Depending on the country and the regulations, this cover is calculated either on basis of gross or net reinsurance.

Conversely, reinsurers' deposits in cash, securities or collateral fund their share of the liabilities. Net assets or equity capital finance the bottom of the balance sheet, *i.e.* essentially debtors and available accounts.

We shall come back to these points later.

F. The main prerequisites for solvency

The following conditions are necessary, if not sufficient, to ensure solvency:

- tariffs must be adequate *i.e.* calculated on a reliable statistical, actuarial or accounting basis ;
- reinsurance must be in proportion to the risks underwritten and the size of the cedent, especially catastrophe cover by reinsurers with a high rating;
- technical provisions must be calculated on a reliable and prudent basis, by a combination of several methods if necessary;
- technical liabilities must be covered by an investment portfolio that offers security, returns, liquidity, a proper spread of assets and currency matching;
- own resources must be adequate to cover technical risks attaching to liabilities and the financial risks of assets.

These points will be dealt with later.

G. Structure of an insurer's accounting department

An insurer's accounting department can have the following structure:

Subsidiary Departments		Accounts
Insurance		
Direct insurance through intermediaries	agents brokers policyholders	premiums commissions claims subrogations
Direct insurance with no intermediaries	policyholders branches	(ditto)
Co-insurance ceded or received	co-insurers	(ditto)
Reinsurance accepted or ceded	reinsured, current account reinsurers, current account	(ditto) + Charges and financial income
Investments	investments deposits	investment income
Others Wages and social security contributions	Personnel Social security agencies	Personnel expenses
Other charges	Sundry creditors	Charges by nature or by class

1. Cost accounting

Breakdown of charges by class into charges by centre: contract acquisition costs, claim settlement expenses, administrative overheads, financial charges.

2. Financial accounting

The transactions booked under the various subsidiary departments will be "centralised" periodically in "general accounts". The latter services will also be responsible for inventory calculations, in particular the calculation of non-life technical provisions, value adjustments, depreciation, depreciation and loss provisions. It will also prepare the annual financial statements and documents for the Supervisory Authority.

H. Introduction of a national chart of accounts

For the presentation of accounts, many countries have not been content with laying down a uniform format for periodic financial statements but have introduced a national chart of accounts with a view to improving the standardisation of accounting and financial information.

In addition to a general chart of accounts, specific charts have been designed for sectors that do not fit into the basic mould, such as insurance and banking.

The chart of accounts is a list of accounts classified by major category. The classification is a decimal one. The list is accompanied by explanatory notes defining each account, its possible contra accounts and the nature of the transactions and movements recorded in it.

The advantage of such a system is that it ensures a uniform presentation of statements and tables which are more reliable in regard of both content and the processing of data, thereby facilitating the compilation of statistics. It provides those countries in which there is a scarcity of literature on insurance and insurance accounting with a set of essential rules to help accountants and managers.

For example, the following classification may be used.

Class 1: Capital and reserves

Class 2: Technical provisions

Class 3: Investments

Class 4: Debts and claims on insurance and reinsurance transactions

Class 5: Other liabilities

Class 6: Other assets

Class 7: Charges

Class 8: Income

Each of these classes is sub-divided into main and subsidiary accounts.

III. The recording of premiums in the accounts

A. Premium components

A premium receipt usually contains the following: (though not always the last two components)

- the commercial premium
- ancillary and policy costs
- taxes

The "commercial premium" can be broken down into a "pure premium", representing the statistical cost of the risk, *i.e.* the average cost of the claim multiplied by the probability of occurrence of the event covered and a "loading" to cover both the costs of acquisition of contracts and of settlement claims.

Overheads which cannot be charged directly or indirectly to acquisition or claims administration, or to investment management are also included.

Pure premium plus loading for claims settlement constitute the risk premium.

"Ancillary or policy costs" represent a progressive fixed cost or variable by step additional amount -- in principle a small one, which in some countries insurers can charge to cover the costs of the issuing the premium receipt. It used to be called the "addizionale" in Italy, where for historical reasons it represented, exceptionally, 10-13 per cent of the premium.

These ancillary costs are not ceded to reinsurers. However, like the commercial premium, they can be carried forward to the following year.

"Insurance taxes" are taxes which are added to commercial premiums and, possibly, ancillary charges. They are usually calculated as a percentage of premiums. Only nine out of twenty-four OECD countries levy a proportional tax on life insurance premiums, ranging from 15 per cent in Sweden for policies taken out with foreign insurers to 1.1 per cent in Portugal. Either the insurer or the policyholder has to pay the tax.

B. The concept of earned premiums

The table 2 showing the inverted production cycle shows how the premium is earned over time: from the first day, acquisition expenses are incurred, leaving the entire risk premium plus overheads. In the simple example given, in the middle of the period of guarantee, assuming that the premium is earned in linear fashion, half of the commercial premium less half of the acquisition expenses will be left; at the end of the guarantee period, the entire commercial premium will, by definition, have been earned, but not all of it will have been spent. There remains the share which will be used to pay claims that have occurred during the guarantee period.

This transfer of revenue, the premium, and of loading, the acquisition costs, results from the application of the "accounting principle of accruals", whereby the share of the premium need to cover any claims that may arise after the inventory date, and the claims settlement expenses and overheads, is carried forward, whereas the entire commercial premium was credited to the previous year and the acquisition costs were debited.

Table 4 gives a simplified breakdown of the premium. It divides it into two parts: the first is the premium earned in year N, and the second is the unearned part in N credited to N+1 by debiting N.

C. Calculating the provision for unearned premiums

Theoretically, this is very simple to calculate. One only has to calculate, premium by premium, the share of premium providing a guarantee after the inventory date, on the basis of the number of the days that still have to be covered relative to the number of days covered. With the advent of the computer this has become the standard method, since it takes exact account of the configuration of the portfolio.

If a company does not have the necessary computing resources, it can group together premiums by duration of cover and month of writing.

This method is the so-called "twenty-fourths" method. It is assumed that in any given month, premium receipts written will be distributed symmetrically around the middle of the month, and that thus each fortnight will have identical business. In other words, the average due date in the month is the 15th.

The following table shows, for the most frequent duration of cover and for each month of the year, the share of the premium expressed in fortnights that should be credited to the following year:

Month in which premium is written	Year	Half-year	Quarter
J	1	-	-
F	3	-	-
M	5	-	-
A	7	-	-
M	9	-	-
J	11	-	-
J	13	2	-
A	15	6	-
S	17	10	-
O	19	14	6
N	21	18	12
D	23	22	18

For example, an annual premium of FF 2 400 written on 25 July will be carried forward in the following proportions: 2 400 x 13/24 = 1 300

The table calls for a few remarks:

- It is based on the assumption that the average due date is the 15th of the month; however, at the start of the year or quarter some companies write a large part of their business on the first day of the month; this anomaly should be taken into account:
–

Example: in January 48 000 premiums are written, of which 36 000 on the first day of the month, with the remainder distributed in random fashion throughout the rest of the month:

The premiums to carried forward will be:

Annual number of premiums written on 1 January		0
Premiums written in the month:	12 000 x 1/24 =	500
Total		500
instead of 48 000 x 1/24 =		2 000

- Some premiums provide annual cover but are paid every half-year. The usual practice is to take account of each instalment as it falls due and not to issue two receipts at the main due date.
- It is easy to fill in the table for durations of cover other than those given. For example, for 5 months, 10 months, 24 months, we get the following number of 1/24ths:

Month in which premium is written	5 months	10 months	24 months
J	-	-	25
F	-	-	27
M	-	1.2	29
A	-	3.6	31
M	-	6.-	33
J	-	8.4	35
J	-	10.8	37
A	2.4	13.2	39
S	7.2	15.6	41
O	12.-	18.-	43
N	16.8	20.4	45
D	21.6	22.8	47

- A method derived from the twenty-fourths method is the so-called “eighths” method, in which the denominator corresponds to the number of half-quarters and not fortnights. It is often used in reinsurance.
- Some portfolios are characterised by annual or half-yearly premiums which are distributed fairly symmetrically around the middle of the annual or half-yearly period. By approximation, it can be said that, for annual premiums and the half-yearly premiums of the second half-year, there as many earned premiums as there are unearned premiums.
- When only the amount of annual sales for two successive years, by approximation the earned premiums in year N are considered to be roughly equal to: (premiums for year N-1 + premiums for year N) x 0.5.
- In the particular case of charges additional to premiums, one can:
  - count them along with premiums
  - or if they represent only a small percentage of premiums, divide them equally between the current year and the following year.
- To calculate the premiums to be carried forward, only premiums written at the beginning of the guarantee are taken into account. Premiums written only the guarantee has expired are therefore excluded. Receipts written after the years to which the premiums relate are obviously disregarded. Premiums cancelled in the current year are deducted.

D. Loading included in the unearned premiums provision, and the method of calculating it

First, a point of vocabulary needs to be cleared up.

In Latin countries like France or Spain, the “unearned premiums provision” traditionally denoted premiums carried over from one year to the next and, if necessary, an additional amount if the pure premium carried forward was insufficient because the rate had been set too low.

The concept of unearned premium has evolved over the years. Thus, in France before 1938 the minimum provision for unexpired risks was 33 per cent since it did not include loading for loss settlement. In 1938 it was raised to 36 per cent and corresponded to the risk premium. However, the law included a provision which allowed for the use of another method of calculation, which took account of an unequal distribution and/or incurred losses and overheads that was above the normal.

French insurance law has incorporated the provisions of Community Directives, whereby the risk premium and also administrative expenses are to be carried over; the new provision entitled “unearned

premiums provision" is based on the written premiums; the corresponding acquisition costs are now recorded separately as "deferred acquisition costs".

The additional amount carried forward in the event that the tariff was too low is called the "unexpired risks provision" and is shown separately among "other provisions" in the balance sheet.

This new presentation is modelled on that of the European Directive, which followed the English terminology of "unearned premiums provision" and "unexpired risks provision".

The Directive also provides for the possibility of combining the two provisions under a single heading. In our view, however, it is preferable to keep them separate since then one can see the additional amount carried over -- possibly indicating that the tariff was too low.

Table 5 outlines a method of booking loading as it is spent. The assumption is as follows: A commercial premium of 1 000 breaks down as follows:

Claims paid:	330
Outstanding claims :	330
Acquisition costs:	220
Expenses on claims paid:	35
Expenses on outstanding claims:	35
Overheads paid:	50

The various operations are numbered as follows:

1. Commercial premium is written
2. Unearned commercial premium carried over
3. Payment of advance on claims
4. Claims provision debited
5. Expenses on claims paid
6. Expenses on outstanding claims
7. Overheads paid
8. Acquisition costs paid
9. Acquisition costs carried over

The profit-and-loss account will be as follows:

	Debit	Credit
Premiums		500
Loss incurred and settlement costs	730	
Administration costs	50	
Acquisition costs	110	

The balance sheet will show:

	Debit	Credit
Unearned premiums provision		500
Claims provision		365
Acquisition costs carried over	110	

Table 6 illustrates the accounting mechanism used to carry forward the unearned premiums provision and acquisition costs over three accounting years.

E. Case of an inadequate unearned premiums provision: unexpired risks provision, stricto sensu.

If the tariff has been properly calculated, the sum carried forward to the next year (s) should be sufficient to pay after the inventory, outstanding and paid claims, and claims settlements expenses in respect of losses that occurred during the first half of N+1, and the balance of outstanding claims which occurred during the second half of N, unless the provision for outstanding claims at 31 December N is insufficient.

If the tariff is insufficient or, (see Table 7), if:

- the claims and claims settlement expenses ratio during the period of cover following the inventory date is higher than during the previous period: for example, in Sweden the rate of auto claims is higher during the first months of the year.

- or if the tariff has been raised during the year: an additional amount has to be calculated: this will be either an integral part of the main provision or, even better, a separate provision which the Directive calls an “unexpired risk provision”.

The additional amount is easy to calculate (see Table 8). First, we compare:

- the unearned premiums provision, net of acquisition costs carried forward, calculated on the basis of the tariff *pro rata temporis* and per contract;

- with the ratio, obtained from accounting or statistical data, of claims and settlement and administration costs to earned premiums for the year and,

- if the first result is lower than the second, then the difference will be charged to the unexpired risks provision.

Example: On the basis of the tariff (retrospective method), FF 220 are spent on acquisition costs per FF 1 000 of commercial premiums; on the basis of accounting data (prospective method), the incurred losses is 750 and administrative costs are FF 70 per FF 1 000 of earned premiums.

Solution: on the basis of accounting data, the share of the commercial premium allocated to the incurred losses and overheads should be:

750 + 70 = 820

whereas on the basis of the tariff we get:

1 000 -220 = 780

This means that the unexpired risk provision should be:

820 - 780 = 40

Another example:

The following data are taken, for a given category of business, from the profit and loss account for accounting years N and N+1:

Premiums written in N for insurance year n	1 000
" N+1 " n+1	1 200

Unearned premiums represent 50 per cent of the premiums for the current year.

The corresponding costs for N+1 are:

Incurred losses N+1 for losses occurred in n+1:	
Claims and settlement expenses paid	300
Outstanding claims provision	500
Acquisition costs	300
Administrative expenses	150
Total	1 250

Solution: premiums earned for n+1 at end N+1

1 200 - (600 - 500) = 1 100

Operating ratio 1 250 : 1 100 = 113.6 per cent

Hence the unexpired risks provision is 0.136 % x 600 = 81.6

F. Procedure for writing premiums

A premium is written in several stages:

- the policyholder applies for cover;
- the agent, if authorised to do so, or the company, issues a cover note (1);
- the premium receipt is issued and submitted for collection by the intermediary or directly by the company;

Normal mode of payment	Premium paid to: - agent - company	Risk covered (1)
Deferred payment	Premium rejected: - deferred payment is requested - receipt refused because: a) incorrect b) customer insolvent	- Deferral granted: collection handled by credit department. - Receipt returned to company : booked to returned receipts account (2) if: a) receipt is corrected and returned for collection, b) premium is cancelled or collected by legal means (3)

The table calls for the following remarks:

1. The starting point of the company's liability varies from one country to another"
   - in some countries it is conditioned by the issue of a cover note;
   - in others by the issue of a receipt by the company but also, depending on his licence, by the intermediary;
   - in others by the collection of the receipt.

   Some countries also provide for "tacit renewal", *i.e.* automatic renewal of the guarantee.

   The date at which the liability of both parties is booked will depend on which of the above-mentioned options is chosen.

2. The above-mentioned layout includes a suspense account "returned receipts" in which are recorded receipts that have not been accepted by the policyholder, either because there has been a mistake in the figures or cover, or because the policyholder has become insolvent or has asked for days of grace.

3. If the customer refuses to pay, and there is no error in the receipt, then:
   - if the amount of the premium allows it, legal action can be taken against the customer or the receipt can be cancelled and recreated by debiting a "bad debts" account; this last account will be settled if all the premium is collected.

   - if the amount is too weak or if only part of it is recovered, then the difference will be written off as an exceptional loss.

G. Recording contracts

Contracts are usually recorded in one or several stages in a sequential order, successive endorsements being added to the original contract. All the essential information about the contract is recorded: date of writing and duration, name of the policyholder or of the insured, name of the intermediary, currency and amount of cover provided.

The various operations involved in writing premiums and the consecutive operations are summarised in Table 9.

When the transaction is concluded via an intermediary, the writing of the premium implies the credit of a commission for him. However, the commission is payable only once the premium has been collected for him.

The commission is generally a percentage of the premium or capital guaranteed, and varies according to the involvement of the intermediary.

Broadly speaking, there are two types of intermediaries:

- "general agents" who represent a company; they receive an acquisition and management commission. Commission is usually credited to the current account as premiums are written, and subsequently cancelled if necessary.

- "brokers" who are the agents of the policyholder; they receive a commission for bringing the company the business. Save exceptions, they do not have to do any administrative work or to make out receipts. Commission is usually paid every month on the basis of statements of premiums collected.

H. The various accounting and technical concepts underpinning the word "premium"

Hereafter N, N+1 etc. denote accounting years, and n, n+1, etc., the underwriting years that relate to each of those years.

By accounting concepts is meant those concepts that relate to the accounting year, technical concepts denoting those that relate to the underwriting year.

For premiums, the "underwriting year" corresponds to the year of the first day of cover. For non-life claims other than marine, aviation and transport, the year is the year in which the claim occurs. Thus, a premium written for 12 months from the first of July of year N will be recorded under n, whereas a claim will be recorded, depending on the date of occurrence, under n or n+1. For M.A.T. risks, the year is the year in which the premium was written, irrespective of when the loss occurs.

- The concept of "turnover" is an accounting concept which denotes the algebraic sum of the following items booked in year N:
  - Premiums written, including additional charges, net of cancellations and insurance taxes relating to cover provided for underwriting years n, n-1, n-2, etc.;
  - Open policy premiums for cover given for underwriting year n, which will be written on receipt of the declarations of interest from the insured (wages, turnover), *i.e.* in January or February N+1, also called "Premiums earned but not written".
  - Premiums to be cancelled: estimate of the receipts to be cancelled in N+1, out of the receipts in arrears at 31 December N, irrespective of the underwriting year.
- "Premiums earned in an accounting year": this is the sum of net turnover and changes in the provisions for unearned premiums. It will be the denominator of the loss ratio, the numerator being "claims incurred".

- **"**Premiums collected": this is usually a non-accounting concept. The transaction is entered into the accounts when both parties are committed, *i.e.* most often when the receipt is written. To know the premiums collected in year N, the algebraic sum of the following items is computed:

Premiums written net of cancellations, including ancillary charges, net of insurance taxes + decrease in "uncollected premiums" between 31 December N-1 and 31 December N.

- "Premiums earned in an underwriting year": This is a technical concept. Premiums earned in year n at 31 December N will be the sum of the following items:

Credit:

- Unearned premiums at 31 December N-1

- Gross premiums including additional charges but net of tax, written in N in respect of year n
  - Payable in advance

  - Payable at the end of the cover on the basis of an audit

Estimate of audit premiums to be written in respect of year n in at 31 December N

Debit:

- Unearned premiums at 31 December N (carried forward to N+1)
- Premiums including ancillary charges but net of tax, cancelled in N in respect of year n
- Estimate of cancellations to be made in respect of year n at 31 December N.

= Premiums earned in year n at 31 December N.

Note: this figure, *i.e.*, premiums earned in year n, can be adjusted after a year, *i.e.* at 31 December N+1; all one has to do is replace the estimates by the amounts actually booked for premium issues and cancellations in N+1 in respect of n, and if necessary to make new estimates at 31 December N+1. This amount will constitute the denominator of the loss ratio for any given underwriting year, the numerator being claims incurred in year n.

- "Gross premiums, net premiums". It should be specified what these terms include or exclude.

For example, it should be specified whether premiums are gross of reinsurance, *i.e.* before cessions to reinsurers. Or whether they are gross of cancellations or commission.

I. Technical provisions relating to premiums

The "provision for unearned premiums" is considered to be a premiums provision. It is used for transferring premiums from year N to year N+1, and is part of the concept of earned premiums.

The deferred "acquisition costs" on the assets side of the balance sheet are used to transfer the acquisition costs corresponding to unearned premiums, to the following year.

The provision for risks in force corresponding to the English concept of unexpired risk is considered to be an “other technical provision”, and not a premium or claims provision.

Both provisions are booked by cancelling the provision at end N-1 and creating a new provision at end N:

---------- ----------
Debit: Provision end N - 1 for...

Credit: Change in provision for....

(Cancellation at the reopening of balance sheet year N)
---------- ----------

Debit: change in provision for..

Credit: Provision at end N for...
(Creation of new provision at end-N).
---------- ----------

The estimate of premiums to be cancelled at the end of the year is a provision for depreciation of the “receivable from policyholders” account, the contra accounts being booked in the “changes in premiums to be cancelled” account. Similarly, the estimate of premiums earned but not written is added to the “receivable from policyholder” account, its contra account being “changes in premiums earned but not written” or “changes in premiums to be written”. These two book adjustments are a component of the turnover. Not being technical provisions, the estimates of cancellations do not have to be covered.

“Deferred acquisition costs” are matched by a charges account: “Change in deferred acquisition costs”.

IV. Accounting for claims and losses

A. Administrative and accounting procedure

1. Administrative procedure:

- when a claim is reported, and after the validity of the cover has been checked (there is sometimes a standard report for classes like motor, water damage), a “claims” file is opened. For straightforward claims, the present trend is to process them by computer, *i.e.* without actually opening a file;

- the file is given a number in a sequence attributed to the particular class and is assigned to an underwriting year, *i.e.* the year in which the claim occurred or the year in which the cover was taken out;

- the file is then examined with regard to the information in the report of the loss and in the policy. It is also checked whether a part of the cover has been ceded to a reinsurer;

- a preliminary estimate of the gross amount of the loss is made and, if necessary, of the split of liability;

– the following are progressively added to the file:
  - the respective estimates for the loss after correspondence has been exchanged or information has been received, or when the file is periodically re-examined;
  - payments made, either advance payments or accessory costs such as fees for doctors, lawyers, experts etc., or payments made in full and final settlement;
  - amounts the insurer hopes to recover or salvage -- estimates and payments;
  - the file is then closed for settlement or shelved;
  - a file that had been shelved may be reopened.

Files opened sequentially for each underwriting year are entered in a register or computer file in which all the movements affecting them are recorded.

2. Accounting procedure

The notification of loss has no accounting impact, the rule being that claims are booked when they are paid, just as for recoveries the operative event is the collection.

As for claims, payments can be made either by an agent if he is empowered to do so, or directly by the company's head office or one of its offices. Brokers are seldom authorised to manage claims on behalf of the insurer.

Some companies, although they examine the claims, send the check to the policyholder or to the third party via their representative.

The accounting procedures involved can be summarised as follows:

– Payment by the agent:

---

debit: Claims paid
(by underwriting years and class)

credit: Agent X ... , current account
(In practice, this entry will be merged with other entries when the company draws up the periodic current account on receipt of the discharges signed by the beneficiaries)

– check sent via the agent:

---

debit: Agent Y..., current account
credit: Bank
(when the check is sent)

---

then:

---

debit: Claims paid (by year and class)
credit: Agent Y..., current account
(on receipt of the discharge signed by the beneficiary)

Claims provisions will not be entered in the accounts as a permanent inventory. This can be obtained from the computer file. At year end, the following entry will be made:

---

debit: Change in claims provision account
credit: Outstanding claims provision

Entries made the previous 31 December, the "inventory entries", will be reversed when the balance sheet accounts are re-opened on the following 1 January:

---

debit: Outstanding claims provision
credit: Change in claims provision account

B. The "claims incurred" concept

It will be recalled that "claims incurred" constitute the numerator of the "loss ratio", the denominator being earned premiums. Like earned premiums (see paragraph III, H), the term can relate to an underwriting year or an accounting year.

Depending on national regulations, it can be gross or net of claims settlement expenses: in the former case, the amount of the risk premium in the commercial premium will be calculated, in the latter case, it will be the pure premium.

The various facets of the concept are described in section IV,D.

C. Calculating the provision for claims outstanding

Like the provisions for unearned premiums and unexpired risk, the provision for claims outstanding, can be calculated using a retrospective or prospective method.

1. Retrospective method

This method assumes that the tariff is adequate, and as when calculating premium provisions it involves deducting loading for acquisition costs and administrative expenses from the commercial premium in order to determine the risk premium or pure premium. Payments already made are deducted from this amount to obtain the minimum provision (see Table 10 for a worked example).

This minimum provision ensures that a profit which could become a loss is not shown, as a result of an over-optimistic valuation using the case basis method, particularly in long-tail classes such as third-party liability or marine, aviation and transport, when the amount of losses and/or split of liability for recent underwriting years is poorly known.

A similar method is used by Lloyd's of London.

2. Prospective methods

The most common methods are:

– The case basis method.

This is the basic method It is based on the experience of claims examiners in the Claims Department. It is usually mandatory in most countries, with the possible exception of classes that lend themselves to the use of reliable statistical methods, for example those in which the amount of losses varies only slightly.

– The accumulated payments method.

The average rate of payments made during the last five underwriting years is calculated from the previous five accounting years. Table 11 gives an example of the method; In accounting year N, average claims payments were for the underwriting year:

n:	15 per cent
n-1:	25 per cent
n-2:	35 per cent
n-3:	20 per cent
n-4:	5 per cent

Total:	100 per cent

This breakdown is applied to the payments made during the year that is the object of the inventory in order to calculate the estimated provisions for accounting years N+1, N+2, etc. For this method to be reliable, the company must have a stable claims policy and inflation must be low.

– Average claims cost method

This method is based on the average cost of losses during the previous year or two years. It can be used for classes in which the costs vary within a limited range. If necessary the cost can be updated.

Example: in year N the average cost was 1 000 units. It is estimated that this will increase by 5 per cent in N+1. Knowing that 2 000 claims files were opened in N+1, giving rise to an aggregate payment, either partial or in full and final settlement, of 1 200 000, what sum has to be set aside excluding loading for administration expenses and allowing for 20 loss reports being received in January N+2 in respect of year of occurrence n+1?

Solution:
The total updated cost of losses reported to the company is:
1 000 x 1.05 x 2 000 = 2 100 000
i.e. taking into account losses reported belatedly in January N+2:
2 100 000 x 2 020/2 000 = 2 121 000;
which, less payments already made, gives:
2 121 000 - 1 200 000 = 921 000

D. The various accounting and technical concepts underpinning the word "claim"

"Claims incurred for the accounting year" are divided by earned premiums to give the loss ratio. Claims incurred are calculated from the profit and loss account by adding claims paid, all underwriting years combined and net of recoveries and subrogations, to the claims provisions, net of recoveries and subrogations receivable. Depending on national legislation, they can include or exclude settlement expenses.

The amount of "claims incurred for underwriting year n" is obtained by adding claims payments net of recoveries and subrogations to claims outstanding net of recoveries and subrogations receivable.

Estimated claims incurred at the end of accounting year N can be reviewed at the end of N+1, N+2, etc., to determine whether the estimates made in the first years will be adequate as the underwriting year goes on. The observation period varies according to the category of risk, from two years for Fire, three years for Car Damage, five to six years for third party liability, and even longer in Marine, Aviation and Transport.

This can be illustrated as follows:

(Let Pn in N be the claims paid for the underwriting year n in accounting year N, and let O.Ln at end N be the outstanding loss in respect of underwriting year n at the end of N. The development of claims incurred as the year goes on is monitored)

Cost at end of N = Pn in N + O.Ln at end-N
Cost at end N+1 = Pn in N + Pn in N+1 + O.Ln at end N+1
Cost at end N+2 = Pn in N + Pn in N+1 + Pn in N+2 + O.Ln at end N+2, etc..

The comparison can made either gross or net of recoveries and subrogations.

The concept of profit or losses on claim estimates, or bonuses and rebates on claims provisions, can be derived from the previous table by comparing the provision at the end of the first underwriting year with subsequent payments for that year. Thus, assuming that an underwriting year n has practically stabilised at end N+4, the provision at the end of the first year will be adequate or sufficient if the following difference D:

D = O.Ln at end N - [Pn in N+1 + Pn in N+2 + Pn in N+3
+ Pn in N+4 + O.Ln at end N+4] > or = 0

Conversely, if D < O, the provision will be insufficient.

The surplus or shortfall of the provision is given by the ratio:

$$\frac{D}{\text{O.Ln at end N}}$$

Table 13 gives an example of a calculation of the "profit or loss on claims provision".

The concepts of "accumulated claims payments" and "loss ratio":

Table 12 gives an actual example taken from a company's motor vehicle third-party liability business. It shows accumulated claims payments and the development of the claims incurred/premiums earned ratio and the loss ratio.

This table contains a wealth of information, particularly regarding long-tail risks:

- it makes it possible to calculate the accumulated payments by analysing the last five or six tables for accounting years N-5 (or N-6) to N-1, this calculation, it will be recalled, being the basis of one of the methods of calculating claims provisions:

Thus, for the year of occurrence n, in this case 1989, the rate of payment was the following (amounts rounded to thousands):

Paid in N			166 or	23.7%
N+1	405 - 166 =		239	34.2%
N+2	486 - 405 =		81	11.6%
N+3	524 - 486 =		38	5.4%
N+4	547 -524	=	23	3.3%
N+5 >			152	21.8%
			------	------
Final estimated cost			699	100%

- it makes it possible to compute the surpluses or shortfalls on technical provisions. Analysis of the differences over a long period enables the trend of company's valuation policy to be determined.

For example, the provisions at the end of the second year (N+1) can be compared with subsequent payments and provisions:

	Provisions at end N+1	Subsequent payments	Last provisions	Difference
	(1)	(2)	(3)	(4)
for n	399	548-405=143	152	+26.1%
for n +1	383	537-422=115	210	+15.1%
for n +2	320	478-416= 62	236	+ 6.9%

(4) = [1 - (2+3)] : (1)

- it also makes it possible to monitor the trend of turnover from earned premiums:

  N-4 = 773
  N-3 = 779
  N-2 = 736
  N-1 = 711
  N 737

  since the trend of turnover mirrors very closely the trend of earned premiums.

- it also makes it possible to monitor the trend of the loss ratio:

  - changes in an underwriting year as the year goes on; in the example, it will be noted that the ratio, very high in N+1, N+2, etc., tends to fall.
  - changes from one accounting year to the next by comparing ratios of the same financial year: we have successively 105.84, 115.47, 110.16, 100.21 and finally 97.74.

Although this ratio did not ensure that the class was in technical balance, it did tend to improve between 1990 and 1993: from 97.4 to 115.47, or by nearly 18 points, while the loss experience for the first year was down by over 14 per cent (from 105.84 to 90.50), from which one would expect a ratio of about 84 per cent if the trend should continue.

However, it is clear that it is not possible to draw such a conclusion from a single table. In addition, it should be pointed out that as the class is a long-tail one, the size of the technical provisions should allow substantial financial gains to be credited to the class.

- "Claims incurred but not reported" (I.B.N.R.) refer to claims reported after the accounts have been closed, either for the purposes of information or because the successive cessions and retrocessions may concern the reinsurer. These claims should be included in the estimate of claims outstanding, on the basis of the insurer's experience: the percentage of claims occurring in underwriting year n reported in N+1, N+2 in relation to N.

- "Claims reported but not settled" (R.B.N.S) are those which have been reported to the company but the cost of which -- compensation and expenses -- has not been determined definitively, even when part or advance payments are made to the policyholder.

- "Settled claims" are those whose cost has been finalised. They have not necessarily been paid either in part or in total.

– The discounted claims provision is a provision which is adjusted to current value at the date of closure of the accounts. It is used in the United Kingdom but is not allowed in France. The Community Directive allows it only if it is shown explicitly in the notes on the accounts.

E. Content and adequacy of claims provisions

Claims outstanding are one of the largest liabilities on the balance sheets of non-life companies. It also has to be borne in mind that if the claims outstanding provision is inadequate, it often has a knock-on effect on the amount of the complementary provision for unexpired risks. For example, a non-life company with technical provisions representing about 2.5 times its turnover with a profit margin of 4 per cent would see its profit wiped out if its provision was 1.6 per cent too small.

Table 13 shows the minimum prerequisites for an adequate provision.

V. Reinsurance

A. Definition and role of reinsurance

Reinsurance could be described as insurance for an insurer.

It plays a technical role, which is:

– to help an insurer accept greater risks, by assuming a portion of the loss incurred on a single risk or a series of risks subsequent to a single event, thereby enabling the insurer to increase its revenue and spread its risks more satisfactorily;

– to smooth loss experience over a long period, so as to stabilise underwriting results.

It plays a financial role, which is:

– to lend financial assistance to start-up companies or reduce the amount an established insurer is required to set aside for its solvency margin.

It plays an advisory role, which is:

– to assist insurers with underwriting, settling major claims and training their staff.

B. Legal relationships between ceding companies and their reinsurers

Relationships between the two parties are generally governed by a contract or a “treaty”. If the contracting parties are located in different countries, it is generally the law of the ceding insurer’s country that is applicable, although an arbitration clause may also be included.

While the principle of the contracting parties’ good faith is the cornerstone of reinsurance, reinsurers do have a right to examine the business that is ceded to them and may require that information be reported at regular intervals. Errors and omissions do not affect the rights of the partners but need to be rectified as soon as possible. However, errors and omissions that arise out of gross negligence are an exception. A treaty can be arranged by a reinsurance broker, who places a primary insurer’s business and can also assume responsibility for administering it.

As a rule, treaties take effect on 1 January and are concluded for an indefinite term, with each party having an option to cancel as of 31 December, on three months' notice. From an accounting standpoint, it is considered that treaties are cancelled at the close of each financial year and reactivated at the beginning of the next.

A treaty's scope of application defines the class or categories covered and the countries or areas in which risks are situated. The classic "obligatory" contract requires the primary insurer to cede, and the reinsurer to assume, all risks falling within the scope of the treaty. Under "facultative-obligatory" or "fac-ob" or "open-cover" treaties, the cession of business is optional, but reinsurers are required to assume whatever liability is ceded to them. "Facultative" reinsurance is administered risk by risk, with each partner free to accept or refuse the cession of business.

A treaty is said to be "for common account" if the primary insurer reinsures not only its retention, but also the risks assumed by its obligatory reinsurers, to whom the ceding company is bound by a treaty, which is generally proportional.

Some countries have instituted compulsory cessions to State-controlled reinsurance authorities, requiring companies that operate in those countries to cede a portion (generally a fixed percentage) of their domestic business.

C. The various types of treaties

Treaties are usually classified as either "proportional" or "non-proportional".

Under proportional treaties, premiums are ceded as a fixed percentage of direct business, and the primary insurer is indemnified against losses in the same proportion. A quota-share treaty applies the same percentage to all premiums and all losses, whereas an excess of loss treaty stipulates the proportion of premium ceded and the proportion of loss indemnified for each individual policy, based on the ratio of the amount ceded to the total amount covered.

Under non-proportional treaties, there is no relationship between premiums ceded and losses recovered, since reinsurance premiums are not calculated as a function of direct premiums but are based on the "risk premium" resulting from the ceding insurer's statistics. Since the reinsurance premium is a risk premium, there is no need, as there is with proportional reinsurance, to refund a portion of its operating expenses to the ceding company in the form of a reinsurance commission.

1. Proportional reinsurance: quota-share treaties

Under these treaties, a fixed percentage is applied over the entire term of the contract to all premiums and all losses in respect of each policy falling within the scope of application of the agreement (see Table 14).

This type of reinsurance is simple to manage, using accounting data that are broken down by underwriting year. It is used in treaties that assist newly established companies by granting them a "reinsurance commission bonus". It can also make it easier for such a company to constitute its solvency margins by reducing the insurer's retention or "own account".

Conversely, reinsurance commissions can also be reduced in order to shift profits between companies belonging to the same group. Quota-share treaties are also used in co-reinsurance pools.

The disadvantage of this type of cession is that while it reduces the primary insurer's share of underwriting losses it does not allow for a ceding company's need to adjust its recourse to reinsurance according to the type of risk involved: certain minor risks are ceded to the same extent as peak risks which are not smoothed.

2. Proportional reinsurance: excess of line treaties

In this type of proportional reinsurance, the rate of cession applicable to premiums and losses alike varies with the degree of risk. Reinsurers assume business only if the amount insured or the "probable maximum loss" in "industrial risks-fire" coverage exceeds the retention limit (see Table 15).

"Probable maximum loss" refers to the greatest loss that could be sustained on an industrial risk if the most unfavourable possible conditions were actually to prevail.

The "retention lines" designates the amount of liability that a primary insurer feels it can keep in its own account. The total amount that an insurer can underwrite with the help of reinsurers is its underwriting line; the difference between these two lines is the amount ceded.

A "lines table" is established for each category of risk, indicating the respective ratios between the retention line and the total number of lines that the firm can underwrite if assisted by its reinsurers. A so-called "20 lines" treaty would be one with an underwriting capacity of 21 lines and a retention of 1 line.

The ratio, in each instance, between the number of lines ceded and the number of lines that the firm can underwrite gives the rate of cession to be applied to that particular contract. Such treaties are often split into an initial excess and then, above that, a second excess. Tables 16 and 17 illustrate first and second excesses.

The advantage of this type of treaty is that it is perfectly suited to the needs of reinsurance: it reduces discrepancies and cedes premiums in the most appropriate possible proportion, given the characteristics of each risk. It is awkward to administer, however, since it requires underwriting departments to appeal constantly to the reinsurance unit to set cession quotas. Similarly, this unit has to monitor claims files, in order to keep reinsurers constantly abreast of developments.

It is most frequently used in fire insurance, and industrial risks in particular, as well as in coverage for other damage to property.

3. Proportional reinsurance: reinsurance commissions

In proportional reinsurance, ceded premiums are a percentage of direct premiums, *i.e.* of gross premiums before operating expenses. To make the cession fair, the reinsurer must compensate the ceding company for a prorated share of the expenses the primary insurer incurred to acquire and manage its business.

Consequently, some of these treaties provide for fixed-rate commissions; other contracts call for so-called "sliding scale commissions" or "profit-sharing", the purpose of both arrangements being to give the ceding company an interest in the reinsurer's results.

The size of fixed-rate commissions can vary between 20 and 40 per cent. This commission can be considered to be the price of reinsurance (see Marcel Grossmann, *Rückversicherung, eine Einführung*) and thus as something that is subject to the law of supply and demand, *i.e.* to market capacity—overcapacity or supply shortages—but also to the quality of the product proposed: a quality cession, all else being equal, should fetch a higher commission than a cession of mediocre policies. In addition, commissions can

perform a financial role, insofar as the difference between the rate of commission refunded to the ceding company and the rate of operating expenditure incurred thereby, together with the magnitude of the rate of cession, makes it possible, as seen above, either to subsidise a company that is starting out or to tap some of the profits of a going concern.

It can therefore be said that the bonus or penalty on reinsurance commission is as follows, where C is the rate of reinsurance commission, E is the rate of operating expenses and r is the rate of cession:

$(C - E)\, r > 0$ = bonus and $(C - E)\, r < 0$ = penalty

See Table 26 which depicts this mechanism.

As an illustration, the following rates are commonly found in fire insurance:

Quota-share	40.0	per cent
1st excess	37.5	per cent
2nd excess	35.0	per cent
Open cover	30.0	per cent
Facultative	15.0	per cent

It will be noted that commission rates are higher in treaties that offer indemnification for a greater number of risks.

To illustrate how sliding scale commissions vary with the loss ratio, we shall describe a scale known as the "1/2 for 1" scale, wherein each percentage point rise in the loss ratio results in a 1/2-point rise in the rate of commission:

Loss ratio %	Commission %	Margin %
65 or more	30	5.0
60	32.5	7.5
55	35	10
50	37.5	12.5
45	40	15
25 or less	50	25

If the loss ratio falls outside the limits of the above table, the rate differential is applied to earned premiums to determine the surplus or deficit to be carried forward to the following year, thereby smoothing results from one year to the next.

Under the formula for the sharing of reinsurance profits, a profit and loss account is established for ceded business by debiting the account by a flat percentage—*e.g.* 4 per cent—which is applied to premiums and represents administrative expenses. As a result:

Profit/loss = Premiums - [Fixed-rate commissions + losses + flat-rate administrative charge]

A set percentage of any profit is credited as profit-sharing; a clause might call for any losses, or a portion thereof, to be carried forward to future years.

The introduction of an element of profit-sharing into treaty provisions lessens the proportional nature thereof.

4. Proportional reinsurance: "premium portfolios"

It was seen above that a premium written in advance in an accounting year N, thus in respect of underwriting year n, may be concerned by claims arising in either N or N+1 if coverage spans two accounting years, *i.e.* is in respect of underwriting years n and n+1.

Under proportional treaties, a reinsurer's interest in the ceding company's business is on an underwriting-year basis. This means that if a reinsurer either withdraws from or enters into an agreement, premiums received will not correspond to losses chargeable thereto.

Accordingly, a reinsurer A who withdraws from a contract at the end of N will have received premium n in full, whereas it will not be liable for claims arising after the end of year N and thus in respect of n+1.

Conversely, the new reinsurer B who enters into a contract at the beginning of N+1 will be liable for losses in respect of n+1, even though some of them may correspond to premiums in respect of n (*i.e.* written in N).

To be fair, the portion of risk premiums needed to indemnify these losses in respect of n+1 but corresponding to premiums of n should be transferred.

Treaties generally adopt a flat-rate formula:
- The risk premium is deemed equal to P - C.
- The carry-forward is 50 per cent.
- The portfolio is therefore equal to 0.5 [P - C].

Outgoing reinsurer A will be assessed a "portfolio exit" charge, whereas incoming reinsurer B will receive a "portfolio entrance" credit. If B's percentage interest in the treaty is equal to A's, this transfer will have no effect on profit or loss, since the amounts of the exit charge and the entrance credit are identical.

Example: Take a class of insurance with a premium volume of 10 000. In N, 60 per cent of the business is ceded with a reinsurance commission of 30 per cent. In N+1, 5 per cent cannot be placed. The reinsurers' interests change as follows between N and N+1:

		N	N+1
Reinsurer	A	10	5
"	B	20	–
"	C	–	20
"	D	30	30
(Not placed		–	5)
(Own account		40	40)
		100	100

Portfolio movements will be as follows:

Calculation of the portfolio on a 100 per cent basis (including own account): [10 000 - 30 per cent of 10 000] 0.5 = 3 500.

Therefore:

	Out	In
A	350	175
B	700	–
C	–	700
D	1 050	1 050
	2 100	1 925

The accounting entries are as follows:

Debit: Premiums ceded, portfolio		1 925	
Credit:	Reinsurer A		175
	Reinsurer C		700
	Reinsurer D		1 050

Portfolio entry

Debit:	Reinsurer A	350	
	Reinsurer B	700	
	Reinsurer D	1050	
Credit:	Premiums ceded, portfolio		2 100

Portfolio exit

In the above example, the entries do have a net effect on the results, since 5 per cent of the business could not be placed and the corresponding liability therefore remains with the ceding company, which consequently becomes its own reinsurer.

5. Proportional reinsurance: "loss portfolios"

In short-tail classes in which claims are settled rapidly and thus the results of a given year can be ascertained without the risk of fluctuations between estimated outstanding claims and losses actually incurred thereafter, the so-called "clean-cut" technique is used. This technique is used primarily for fire insurance.

In the interest of simplicity, the accounts make no distinction in respect of claims paid out during the accounting year between events that occurred in the current year and those that occurred in the previous year. However, in order to match premiums with losses, reinsurers are given a "loss portfolio entry" credit equal to loss provisions at the end of the previous year, and they are assessed a "loss portfolio exit" charge in the amount of the new loss provisions to be carried forward to the following year.

6. Non-proportional reinsurance: excess of loss treaties

(see Table 18)

Commonly abbreviated as "X-L".

This type of coverage is tending to develop.

Here, premiums are not determined by applying a cession rate to the amount of commercial premiums written by the insurer, but are calculated like direct premiums, *i.e.* on the basis of statistics provided by the ceding company.

Three limits are stipulated:

- The "priority" or franchise, which represents the maximum claim the insurer is willing to pay out per policy for a given term of coverage (*e.g.* per year) or per event; in the latter case, the contract is a "catastrophe treaty" and the guarantee applies to all policies affected by the same event, within the geographical areas stipulated in the contract and for a limited period of time, *e.g.* 72 hours for a storm.

- The "scope", which defines the extent of the reinsurer's liability.

- The "ceiling", which sets the upper limit of the reinsurer's indemnity.

This first-excess treaty may be supplemented by a second, then a third, while the final tranche may be unlimited.

The premium covering the liability is calculated on the basis of the "burning cost", *i.e.* the losses incurred over the previous five years plus a loading factor—which is tantamount to calculating the risk premium. This premium is expressed as a function of the annual premium base.

Such contracts are particularly well suited to third-party liability guarantees, which may be unlimited. Their administration requires the existence of a reinsurance unit in the Claims Department but has proven less costly than to administer surplus line treaties. They offer the advantage of eliminating peak losses.

Their primary drawback arises in inflationary periods: the ceding company's priority diminishes. Lastly, the insurer's results are not linked to that of its reinsurers.

7. Non-proportional reinsurance: excess of annual losses treaty

Also known as "stop-loss" or "excess of loss" ratio treaties. These are very simple to administer, since their application is based on accounting data. They are used for risks of a cyclical nature that show particularly disastrous results every five to seven years.

Various thresholds are stipulated for the loss experience, which, once again, is equal to the ratio of "losses incurred" to "earned premiums". These thresholds, in order, are:

Ratio 1: Break-even loss experience.

Ratio 2: The maximum loss experience the company can bear; this constitutes the lower limit of the reinsurer's involvement.

Ratio 3: The maximum loss experience covered by the treaty.

Coverage is provided between Ratio 2 and Ratio 3, although it may be reduced by a percentage for which the ceding company must remain its own reinsurer.

It is often difficult to price this type of treaty; there are no controls during the course of the year, and the results of the contracting parties are not tied to one another.

D. Accounting for cessions

Table 19 summarises the main accounting entries.

Accounting relationships between a ceding company and its reinsurer are funnelled through two accounts:

- The "current account", to which underwriting transactions are posted: this account records premiums ceded on the basis of direct invoices, whereas losses are entered only on the basis of payments made by the ceding company; it follows that outstanding claims are debited only later, at the time of disbursement, thereby creating a risk for the ceding company which according some national law could be offset by guarantees: cash deposits, pledged securities, bank guarantees. Depending on the treaty, unearned premiums may be guaranteed in a similar fashion; if so, the term "premium deposits" is used, as opposed to "loss deposits" in the previous case.

- The "deposit account", in which financial operations are recorded. Premium or loss deposits are credited to this account, which is offset by:
  - the current account, if its balance so allows;
  - a cash account to constitute or supplement the deposit.

In the event that securities are pledged with no transfer of ownership, off-balance-sheet commitment accounts are used.

Cash deposit accounts earn interest, usually at a fairly low rate; their advantage is that they are very simple for reinsurers to administer. The ceding company must calculate accrued interest quarterly and credit it to the current account. To simplify matters, some companies systematically calculate this interest on the basis of the deposits that should have been set up and not those actually constituted.

It is standard practice, at the end of each quarter, to cancel that quarter's deposit and to reconstitute a new one:

The corresponding entries are therefore:

Debit: Deposit account	
Credit: Current account	
Cancellation of the deposit set up for the 1st quarter.	
and	
Debit: Current account	
Debit: Bank (if additional cash is needed)	
Credit: Deposit account	
Constitution of the deposit required for the 2nd quarter on the basis of provisions at the end of the 1st quarter.	

If guarantees take the form of pledged securities, the following off-balance-sheet accounts are used:

To constitute the guarantee:

Debit: Pledged securities remitted	
Credit: Reinsurers, owners of the securities	

At the end of the quarter, this entry is reversed and a new guarantee constituted.

E. Accounting for acceptance operations

Unless prohibited by law, a direct insurer may conduct reinsurance business as a sideline, in particular if it is linked to another direct insurer through a reciprocity treaty—a type of contract that is often used to improve compensation for risks.

Table 20 illustrates the main accounting entries.

VI. Management expenses

In the following presentation, we shall understand management expenses as being all internal and external expenses other than claims and commissions, including value adjustments such as depreciation or depreciation or loss provisions. These expenses can be booked either "by type", *i.e.* from the standpoint of financial or management accounting, or "by cost centre", *i.e.* from the standpoint of analytical or cost centre accounting.

A. Expenses classified by type

Expenses can be classified as follows:

- Staff expenses, such as wages, fringe benefits, social security, retirement and unemployment contributions and payroll taxes.

These expenses can be broken down using the monthly payroll records prepared by the company's computer department. In Western European countries, staff expenses can account for 60 to 65 per cent of operating expenses.

- Expenses incurred by individual employees or groups of employees, such as travel and entertainment expenses, expenses for company cars, including insurance and depreciation.

Each employee will file a monthly statement of these expenses that will make it possible to assign these costs later to specific employees or groups of employees.

- Expenses related to business premises that are owned or rented by the company, such as rent paid, imputed rent of buildings belonging to the company that are used for the insurer's business, maintenance and repairs, leasing of equipment, cleaning, energy costs, premiums for the insurance of premises, depreciation of premises and equipment, and property taxes.

These expenses may be allocated to entities or individuals according to the surface area occupied.

- Expenses related to investments and interest paid, such as maintenance and repairs of investment property, capital losses, exchange losses, depreciation or depreciation or loss provisions, interest on deposits or bank overdrafts and taxes paid on these assets.

These expenses will be allocated to the investment management function.

- Other expenses, which will mainly comprise external expenses, such as supplies, transport and delivery, advertising, documentation, services provided, various fees (those that cannot be allocated to the claim settlement function), insurance premiums (except for buildings and staff vehicles), various taxes (with the same reservations as for insurance premiums), depreciation and depreciation or loss provisions (same reservations).

Once the user department has authorised payments, these expenses are generally "centralised" by a "purchasing" entity, which, if the company is large enough, will carry out internal billing.

B. Expenses classified by cost centres or sections

On the basis of its organisational chart, the enterprise will be divided into sections for the purpose of analysing costs. A distinction will be made between "operational sections" that are involved in producing the product, *i.e.* insurance cover, and "functional sections", which provide services to the operational sections.

Thus, the following operational sections can be defined:

- contract acquisition: on-site inspection, underwriting department;

- contract management: management of insurance portfolios, monitoring quality of contracts, reinsurance, auditing, overdue premium recovery;

- management of claim settlement: claims adjusters, claim settlement department, disputed claims;

- investment management: management of investment property, securities and loans, cash and cash equivalents;

- other technical functions: prevention centre, underwriting for another company, making available management staff or facilities;

- non-technical functions: distribution of banking products, sale of used equipment or waste material.

Functional sections will either be actual entities, such as the accounting and statistics departments, the computer department, personnel or human resources department, or notional entities or "calculation centres". For example, an entity such as "operating premises" might be created in order to allocate expenses related to premises on the basis of the number of square metres occupied; similarly, even though it does not exist physically, the "purchasing" entity might be an internal billing centre for users of external expenses.

Lastly, the “general management” entity could be considered either as an operational or functional entity.

C. Transferring expenses by type to the various sections and allocating them to categories of products

This transfer will be carried out in the following order:

- expenses that can be attributed directly to operational or functional sections will be charged to them; these will primarily be staff-related expenses, such as wages and fringe benefits and costs itemised in monthly individual expense accounts, and investment-related expenses.

- expenses coming under a cost centre will then be allocated to these sections; they will comprise costs related to surface area occupied or resulting from billing by the “purchasing” entity.

- expenses charged to functional sections will then be paid to operational sections using a “cost sharing formula”; for example, the personnel department will transfer these expenses in proportion to the staff employed by each of the operational sections. For some other entities, such as accounting and statistics, it may be difficult to apportion costs. In such cases, it is best to adhere to the principle of choosing a simple and inexpensive method rather than sophisticated and costly procedures. In some cases, a rough calculation of the time spent by various users or a pro rata allocation based on a previous allocation of costs may be adequate.

- the expenses charged to operational sections are then allocated to insurance classes in proportion to the number of units of work expended:

    - for example, the expenses of the claim settlement function may be allocated in accordance with the number of claims notified during the year in the various classes, using coefficients of equivalence, *i.e.* 1 fire insurance claim = x motor vehicle claims;
    - the acquisition function may be allocated according to new business;
    - the unit of allocation for the contract management function might be the average number of policies in a portfolio;
    - the investment management function will deduct its expenses from financial revenue, and the net revenue will be allocated in accordance with the average value of technical provisions. (Value at 31 December N -1 + value at 31 December N) 0.5.

The transfer of expenses by type to cost centres and then to products is normally carried out at the end of each quarter.

Table 21 illustrates this method of processing expenses.

VII. Investment accounting

A. The principle of cover

In accordance with the principle that technical liabilities must be covered by certain categories of investments and other admissible assets, each national legislation prescribes a list of admissible assets and lays down maximum and minimum amounts to ensure a suitable balance in the light of the market situation (primarily, the real estate and financial markets) and to avoid concentrating risks on a specific individual or corporation or in a single economic sector or geographical area.

Ideally, investments should combine the following characteristics:

- they should have a high rate of return: this is particularly necessary in the field of life insurance in order to prevent cut-throat competition;

- they should have safety guarantees: for example, preference was long given to "gilt-edged securities", *i.e.* securities guaranteed by central or local governments. Similarly, mortgage-secured loans are preferred to ordinary loans.

- they should have a certain degree of liquidity, *i.e.* some assets should be convertible on demand; there is no restriction on listed securities other than the rule of a proper spread of assets, since they are readily realisable. On the other hand, there is generally an overall ceiling on real estate, irrespective of the limit imposed by the rule governing the spread of assets;

- they should be spread so as to avoid concentrating risks: the European Directive lays down the maximum amount that may be invested in a single entity. A variety of investments -- loans, shares or holdings -- may be held in a company up to an overall ceiling of 5 per cent of technical provisions;

- liabilities in a given currency should be matched by assets denominated in or convertible into that currency. Under some countries' legislation, as much 80 per cent of investments must be covered by matching assets. As regards the location of investments, the "single licence" directive allows risks located in the EU to be covered by assets located in any member state (Table 22 presents a summary of admissible assets).

As regards the quality of this cover, it is preferable for 100 per cent of technical liabilities to be covered by investments and interest-bearing deposits. Nevertheless, some companies encounter difficulties in this regard and must rely on the assets constituted by their equipment and inventory. This option is not legal in the United States. Similarly, the use of future receipts from policyholders is limited to premiums falling due within three months, excluding commissions.

Under some country's legislation, cover must be ensured on a gross basis; this is natural given that default by a reinsurer is not a valid reason for not paying a claim. However, in the transport class, future receipts from reinsurers may be allowed under certain conditions.

The supervisory authorities generally require companies to provide a table in their annual report showing that technical provisions are covered by assets that are admissible under the legislation in force.

B. Book value of investments

Depending on the country, the presentation of investments in the annual accounts conforms to the following rules and principles:

The valuation of investments in the balance sheet is based on one of the following principles:

- the "historical cost" principle, *i.e.* the "purchase price" or "cost price", together with "value adjustments" for depreciation or sudden loss in value;

- the principle of realisable value, *i.e.* the market value on real estate or financial markets.

The "market value" of land and buildings refers to the price at which these assets would be sold under a private contract between a voluntary seller and buyer if placed on sale on the open market under normal conditions of supply.

This market value must be determined separately for each asset at least every five years using methods approved by the supervisory authorities.

If following this valuation the market value should fall, a value adjustment will be carried out through a depreciation provision. This lower value may not subsequently be raised unless a new estimate of the market value is made.

If a quoted value on the market is not available, the acquisition price or the cost price will be considered to represent the current value.

Nevertheless, fixed-income assets having a redemption value (bonds) are generally valued as follows:

- one of two values is used, *i.e.* the value of the purchase or subscription price or the redemption value at maturity, the difference between these values being apportioned in equal amounts in the annual accounts (profit or loss) until the redemption date, or,

- the realisable value or the value prevailing on the stock exchange is used.

Assets covering unit-linked contracts, the financial risk of which is borne by the policyholder, are always valued at the realisable value or the market value.

If an asset has been disposed of or must be relinquished, the value entered on the balance sheet will be the realisable value, excluding actual or estimated costs.

C. Booking real estate and fixed investments

It should be noted that real estate and acquisition costs are generally booked separately, since the depreciation period is different for real estate (from 25 to 50 years depending on the type of construction) and for acquisition costs (from 3 to 5 years).

An entry will be created for the imputed rent that the company would pay if it did not own its business premises, the counterpart entry being a "financial revenue" account. This entry is intended to ensure the comparability of the accounts of two companies having the same investment portfolio when one rents a portion of its buildings while the other owns the buildings it uses for its operations.

The method of entering interest on fixed-income investments should be noted: for these investments, interest may only be included on a pro rata basis over the time the security is held. Consequently, the interest earned must be entered into the accounts at the end of the accounting year.

VIII. Annual statements

There are two types of annual statements:

- financial statements intended for shareholders and the public;
- financial and technical statements intended for the supervisory authorities.

The number, form and content of statements vary from one country and legislation to another.

A. Financial statements for shareholders

The most frequently requested statements are:

- the balance sheet as at the last day of the financial year;
- the profit and loss account. or income statement for the year which is ending;
- notes to the annual accounts containing various information, varying from one country to another.

The following statements may also be provided:

- a funds statement, or source and use of funds statement for the accounting year. In many countries, the law does not require insurers to provide this statement;
- a table showing the allocation of profits or losses for the year.

These various statements are presented, depending on the country, either in the form of an account, *i.e.* horizontally, or a list, *i.e.* vertically. The Community Directive requires the balance sheet to be presented as an account, with assets on the left and liabilities on the right, whereas the list presentation has prevailed for the profit and loss account, the advantage of this presentation being that it brings out clearly the successive margins that make up the year's income.

1. The balance sheet

The balance sheet gives a snapshot of the company's actual assets and liabilities, the difference between the two constituting its net assets *i.e.*, capital and reserves, or equity.

Assets are generally listed in increasing order of liquidity, and liabilities in increasing order of liability. However, some countries show net assets, *i.e.* capital and reserves, at the bottom and not the top of the balance sheet.

The outline of accounts in the Community Directive is, subject to numerous possible options, the following:

Assets

- capital subscribed but not paid up (including called-up capital)
- intangible assets (formation costs and goodwill)
- investments (land and buildings, associated enterprises and participations, other financial investments and deposits with cedents)
- investments covering life unit-linked contract liabilities
- debtors (direct insurance, reinsurance, other claims)
- other assets (tangible assets excluding land and buildings, available assets, other)
- prepayments and accrued income (accrued interest and rent, deferred acquisition costs, other)

Liabilities

- capital (subscribed capital, share premium account, revaluation reserve, reserves, profit or loss brought forward, year's profit)
- subordinated liabilities (rights which can be exercised, in the event of bankruptcy or liquidation, only after other creditors; they are often regarded as quasi-equity)
- technical provisions

These can be booked to liabilities either net of reinsurance or gross; in the latter case the share of reinsurers is booked to assets after investments).

  (It is essential to detail reserves by: unearned premiums, life insurance, claims, profit participation, equalisation, other)
- technical provisions for unit-linked contracts
- provisions for other risks and charges
- deposits from reinsurers
- creditors
  (direct insurance, reinsurance, bond loans, credit institutions, other)
- accruals and deferred income

2. Profit and loss account

There are two separate schedules (see tables 27 and 28), one for life, the other for non-life, the main difference relating to the presentation of the results of investment management. Both presentations are divided into a technical part for insurance transactions, and a non-technical part for other transactions. In the case of life insurance, net investment income is included in the technical part, while for non-life it is included in the non-technical part.

However, the part which does not contain the net investment return is credited with part of it, on the basis of the following ratios (in France):

- in life insurance, an allocation equal to:

$$\text{net financial return} \times \frac{\text{capital and reserves}}{\text{capital and reserves + net technical provisions}}$$

is transferred from the technical part to the non-technical part.

- in non-life insurance, in contrast, the amount given by the net financial return multiplied by the ratio:

$$\frac{\text{net technical provisions}}{\text{capital and reserves + net technical provisions}}$$

is transferred from the non-technical part to the technical part.

The technical part of the accounts shows the gross and net results of reinsurance cessions. Tables 27 et 28 show a summary of profit and loss accounts according to the EEC directives.

B. Statements for the supervisory authorities

Some of the data submitted to the supervisory authorities duplicate information given in the notes to the annual accounts.

1. Profit and loss account, technical part, broken down by product category:

Products can be broken down as follows:

- Detailed non-life technical accounts:
  - by category of product: accident, motor third-party liability and other, aviation and transport classes, fire, other property damage, third-party liability, etc.
  - by direct business and accepted reinsurance business;
  - by accounting items: earned premiums, claims paid, claims incurred, operating costs, including commission;
  - by gross business and cessions;
  - by country or geographical area.
- Life technical accounts broken down by type of contracts or products.

2. Statements relating to investments and assets covering technical provisions

Investments generally have to be listed as at the last day of the year, by type of investment, line by line, with the number of shares held or the location of buildings and the various values: historical cost, sale price, redemption value, shown gross and net of value adjustments (depreciation or sudden loss of value). Other assets which are admissible for covering technical provisions must also be listed.

Liabilities at the same date shall also be listed.

3. Statements relating to claims provisions and loss ratio

In non-life insurance, and especially for long-tail categories, tables shall be provided showing the trend of claims incurred and loss ratio over five or six years and the profits and losses on the claims provisions of previous years. Other technical provisions may also require specific schedules.

4. Statement relating to the company's solvency

This statement shows that the company's capital resources meet the current statutory requirements.

5. Statement of operating expenses

A statement showing the breakdown of the following costs by type and cost centre could be requested: acquisition costs, claims adjustment, general administration, investment management, other technical and non-technical costs.

6. Miscellaneous information

Often, it is necessary to complete a standard questionnaire concerning the company's shareholders, board of directors, reinsurers, commitments other than for insurance given or received.

C. A few significant ratios

1. The following ratios can be derived from the balance sheet:

1.a. Technical provisions cover ratio: $\frac{\text{investments + other admissible assets}}{\text{gross technical provisions}}$

1.b. Quality of cover: $\frac{\text{investments}}{\text{investments + other admissible assets}}$

2. Reinsurers' funding ratio:

$$\frac{\text{Reinsurers' deposits + reinsurers' off-balance sheet commitments}}{\text{Reinsurers share in technical provisions}}$$

3.a. Solvency margin cover

Accounting margin and intrinsic margin: see example in IX,B below.

3.b. Margin cover: $\frac{\text{Total admissible assets - net technical provisions}}{\text{accounting margin}}$

(can be positive or negative)

3.c. Margin liquidity: $\frac{\text{liquid assets}}{\text{book value of the margin}}$

4. Origin of funds:

4.a. Shareholders:

$$\frac{\text{Equity}}{\text{total liabilities - reinsurers' share in technical provisions}}$$

4.b. Policyholders:

$$\frac{\text{gross technical provisions - reinsurers' share in technical provisions}}{\text{total liabilities - reinsurers' share in technical provisions}}$$

2. Ratios derived from the profit and loss account

1. Loss ratio:

$$\frac{\text{claims incurred}}{\text{earned premiums}}$$

2. Operating expenses ratio :

$$\frac{\text{operating expenses}}{\text{premiums written}}$$

3. Operating ratio: Ratio 1 + ratio 2.

n.b.: The above three ratios can be calculated on a gross basis, for cessions, and net of reinsurance.

4. Ratio showing the impact of reinsurance

4.a. On premiums:

$$\frac{\text{net earned premiums}}{\text{gross earned premiums}}$$

4.b. On claims:

$$\frac{\text{net claims incurred}}{\text{gross claims incurred}}$$

4.c. On operating expenses:

$$\frac{\text{net operating expenses}}{\text{gross operating expenses}}$$

4.d. Cession rate:

$$\frac{\text{net premiums written}}{\text{gross premiums written}}$$

4.e. Rate of recovery of charges:

$$\frac{\text{net charges 4 b + 4c}}{\text{gross charges 4b + 4c}}$$

4.f. Claims commissions in proportional treaties, see Part V,C,3.

5. Financial income :

$$\frac{\text{net financial income}}{\text{gross premiums written}}$$

6. Annual profit or loss

6.a. Technical part: $\frac{\text{technical part balance}}{\text{gross premiums written}}$

6.b. Total profit or loss: $\frac{\text{profit-and-loss account balance}}{\text{gross premiums written}}$

3. Other ratios

1. Investment return: $\frac{\text{net financial income}}{\text{(financial investments n-1 + financial investments n) 0.5}}$

2. Technical provisions: $\frac{\text{(technical provisions end n-1 + technical provisions end n) 0.5}}{\text{gross premiums written}}$

3. Average cover of gross technical provisions by investments:
denominators of 1

_____
numerators of 2.

Note: ratio 5 in *2.* "Financial income" can be analysed as follows:

$$\frac{\text{Net financial income}}{\text{gross premium written}} = \text{ratio 1 x ratio 3 x ratio 2}$$

4. Uncollected premiums

$$\frac{\text{premiums in arrears as at 31 December}}{\text{gross premiums written in year}} \times \frac{1}{365} = \text{number of days}$$

IX. Capital resources and the solvency margin

As said earlier, in order to avert the risk of the insurer becoming insolvent, in some countries the legislator required insurers to have capital resources that were adequate in relation to the company's business. The purpose of these resources was to cushion a possible inadequacy of technical provisions. The solvency margin is this cushion. The margin set by the European Directive for non-life companies is described below.

A. Components of the margin

Capital resources denote the company's net assets subject to a few minor adjustments:

[Paid-up capital, reserves, after allocation of profits and losses for the year] - costs to be depreciated and other intangible assets = Net book assets.

The following adjustments then have to be made:

- plus half of the capital still to be paid up. This adjustment is made to take account of the different situations of two companies with the same paid-up capital but one of which can count on the shareholders paying up the remaining capital rapidly while the other has to make a capital increase.

- plus also the positive difference between the estimated sale value of investments on the last day of the year and the book value. This underlying capital gain is the only one allowed and has to be reported explicitly in the annual accounts. However, it is an extremely volatile item and immediately affected by any market turbulence. Underlying capital gains resulting from technical provisions being overestimated are not admissible.

B. Measuring the company's activity

A company's activity can be measured using two methods, the method giving the highest result being the one adopted.

1. On the basis of turnover

Turnover, *i.e.* the volume of premiums written, including reinsurance acceptances net of cancellations but gross of ceded reinsurance, is adjusted by a coefficient which takes account of the support given to claims incurred by reinsurance cessions.

This coefficient is obtained by comparing claims incurred after reinsurance with claims incurred before reinsurance, on the basis of the last accounting year.

It may be noted that the measure of support from reinsurance could have been gauged directly from turnover after reinsurance. In fact, a consequence of the increasing trend to use non-proportional treaties is that reinsurers' support is measured on the basis of claims.

Disregarding the first layer of 18 per cent up to 10 million euros, the minimum amount on the basis of premiums will be: premiums (as defined above) x coefficient of the impact of reinsurance x 0.16.

2. On the basis of claims

We shall take average gross claims incurred over the past three accounting years as the reference.

Disregarding the first tranche of 26 per cent up to 7 million euros, the method of calculation is as follows:

Average gross claims incurred x coefficient of the impact of reinsurance x 0.23.

The coefficient of the impact of reinsurance has a lower limit of 0.5.

It may be noted that the three sets of figures valid for all companies, namely the 10 million and 7 million euros limit of the first tranche, the percentages 0.16 and 0.18 applicable to premiums and the percentages 0.23 and 0.26 applicable to claims incurred, are all in the ratio of 7 to 10. This means that during a period of monetary stability, a 70 per cent claims ratio will give the same result whichever of the two methods is used.

This is true only during periods of monetary stability since in the premiums-based method premiums are calculated annually, whereas claims are calculated over three years, the effect of which is to smooth the trend. Actually, the purpose of calculating claims over three years is to ensure that companies whose turnover is falling maintain a minimum solvency margin.

Table 23 gives an example of a situation that actually occurred a few years ago. As the company's hidden reserves on its investments had been practically wiped out, its capital resources were less than the minimum margin required.

C. The solvency margin and insurance supervision

The following scenarios are possible:

- the company is above the statutory minimum margin, so everything is all right;

- the company is below the margin but its capital resources are not less than a third of the margin. It must submit a recovery plan to the supervisory authorities spread over two or three years. It must detail the measures it intends to take to restore its margin. For example, it can:

    - increase its cession rate insofar as it existing rate allows it;

    - make an additional, but not yet called up, capital payment, or increase subscribed and/or paid-up capital.

    - proceed to a portfolio selection or raise tariffs, etc.

- the company is below a third of the statutory margin: it must propose a short-term financing plan, *i.e.* it must find funds within the following two or three months so as to bring its margin up to the statutory level, after financial consolidation.

D. Company growth and quality of performance

The margin mechanism operates in such a way that the company can grow only by improving the quality of its results. The Table 24 illustrates how this works.

Let there be a company which at the end of year n-1 has a sufficient margin. For a turnover adjusted for the impact of reinsurance of 10 000, it has a margin of 1 600.

Assuming that rate of profits tax is 33.3 per cent with growth of 5 per cent, the company will have to make a pre-tax profit of 1.14 per cent.

With a 30 per cent growth, specified at the bottom line of the table, pre-tax profit should reach 5.50 per cent.

E. Inadequate technical provisions and solvency margin

Table 25 shows a company which at the end of a given year has the statutory minimum margin, *i.e.* 16 per cent of turnover adjusted for the impact of reinsurance.

If we assume that the technical provisions are 1 per cent too small, *i.e.* 1 per cent of 200 = 2, this means that the margin is reduced by 2 to 14 per cent. The company would therefore need to increase its rate of cessions from 20 per cent to 30 per cent to restore its margin (situation B). A 2 per cent inadequacy of the margin would oblige it to cede 40 per cent, while a 3 per cent inadequacy would oblige it to cede 50 per cent, the maximum rate allowed.

These examples illustrate the crucial importance of adequate technical provisions.

F. Minimum margin required for life companies

For simplicity's sake, it may be considered that the minimum margin should generally be equal to the sum of:

1) 0.04 [gross mathematical provisions x coefficient of the impact of reinsurance]

and:

2) 0.003 [insured capital - gross mathematical provisions] x coefficient of the impact of reinsurance.

The coefficient of the impact of reinsurance has a lower limit of 0.85, obtained either by comparing net and gross mathematical provisions (1) or by comparing net and gross sum insured (2).

X. Risk based capital

A. Background

The concept of risk-based capital (RBC) was tested in the United States for two years and then made applicable to life and health insurance companies in 1993. It was extended in 1995 - not without certain difficulties having to do with the underwriting risks - to property and casualty insurers.

This new, more comprehensive approach to solvency stemmed from a resurgence of insurer bankruptcies in the late 1980s, as well as from the deficiencies of existing capital adequacy standards, which in many cases were unrelated to risks and, above all, did now allow for swift and appropriate responses to critical situations.

In addition, since each State in the Union had its own regulatory authorities and its own rules, there was a great diversity of practice which made it imperative to achieve some degree of harmonisation with regard to financial requirements. Accordingly, the National Association of Insurance Commissioners (NAIC) called for enactment of legislation to address these concerns. One such bill, the Insurers' Rehabilitation and Model Liquidation Act, was adopted by a majority of states. It was inspired by the principle behind the Cooke ratio, which is applicable to banks: each category of asset is assigned a risk factor whose weighting increases with the degree of risk attaching to the assets in question.

If one state in the union adopts this legislation, it applies equally within that state to insurers and reinsurers from other states and foreign countries.

B. Factoring in risks

In life and health insurance, the applicable risk categories are: risk with respect to assets; risk of adverse insurance experience with respect to liabilities and obligations; interest rate risk; and all other business risks.

In property and casualty insurance, a distinction is made between risks with respect to the following:

– investments in securities and real estate (R1)

– investments in subsidiaries and other affiliates (R2)

For both these categories, the regulatory authorities weight the risk factors, which vary with the volatility of an investment's market value as well as with its marketability. However, investments in US subsidiaries and affiliates in the insurance or reinsurance business fall outside the scope of application in that those entities are subject to their own risk-based capital requirements.

In addition, for R1 and R2, the ten largest investments have double weighting. Conversely, an adjustment is made to allow for the degree of diversification of the investment portfolio.

– receivables (R3)

These consist primarily of reinsurance recoverables. All of these receivables have a risk factor of 10 per cent, with no distinction for a company's quality or nationality. However, no risk factor is applied to recoverables from affiliated reinsurers.

Examples of other items included in this category are interest and dividends receivable.

– loss and loss adjustment expense provisions (R4)

Here, the following elements are taken into account:

- the extent to which loss provisions and loss settlement expenses might be exceeded in a worst-case scenario;
- the provision's worst development year for the past ten years;
- the possibility of upward or downward adjustment for concentration or diversification of risks, a multiple-line insurer having a lower risk factor than a single-line company;
- growth in written premiums, with a risk factor applying if average annual growth exceeds 10 per cent over the preceding three years.

– written premium risk (R5)

This is determined by:

- the possibility that premiums written during the following year may be insufficient to pay future claims;
- the insurer's diversification or concentration;
- whether or not average annual growth has exceeded 10 per cent over the preceding three years.

– off-balance-sheet risk (R0).

Examples of risks not appearing on the balance sheet include parent-company guarantees to meet the commitments of subsidiaries.

C. Calculating risk-based capital

All of the risk factors applied to the various items above are added together, but an adjustment is necessary to allow for the fact that it is virtually impossible that all of these risks would actually occur at the same time. However, on the other hand they might compensate each other. The effect of this adjustment is to reduce the amount of required capital by approximately 40 per cent. (Covariance adjustment).

The amount of this risk-based capital is given by the formula:

$$C = R0 + \sqrt{(R1^2 + ... + R5^2)}$$

This does not really constitute a minimum solvency margin, since regulators intervene before capital is reduced to this level. As soon as an insurer's capital falls below this amount, the regulatory authorities request the company to submit projections of its financial results, along with additional information. Next come the following thresholds:

- 0.75 x RBC: The insurer must submit a recovery plan. The commissioner will then prescribe a plan for remedial action.
- 0.50 x RBC: The insurer must submit a recovery plan and the company is placed under the control of the commissioner.
- 0.36 x RBC: The insurer is directly placed under control.

D. Comments on risk-based capital

This system for measuring the amount of capital needed to cover risks constitutes a new and broader approach to capital adequacy in the insurance industry. It does, however, seem complex and difficult to apply, and it makes no allowances for differences between solvent companies. It can constitute a management tool for an insurer, in particular for choosing among investment options on the basis of their respective risk factors.

XI. The international harmonisation of accounting standards

At international level, accounting harmonisation has been on the agenda for a long time, it being unanimously recognized that it is in everybody's interest that as many users as possible should be able to use the accounting documents published by firms. Accounting is a language in its own right, and has its own rules. The best definition of it is the ordered treatment of economic facts, ultimately producing accounts that describe, as accurately as possible, the performance of a firm over a given period and its situation at the end of that period. The big cross-border debate hinges on a question of usefulness: to whom does the firm owe information? Countries, and their regulations, often tend to favour specific users: either creditors and employees, or investors and securities markets, or the tax authorities…

Two experiments with international harmonisation have been going on for more than twenty years now, one concerning the European accounting directives and the other the International Accounting Standards Committee (IASC).

A. Two experiments

1. The object of the European directives was to find a compromise between those Member States that look upon accounting as being part of the choice and those that refuse (the Anglo-Saxon countries). Two general Directives, one dating from 1978 on annual accounts and another from 1983 on consolidated accounts, were reinforced where insurance is concerned by the specific Directive 91/647/EEC of 19 December 1991.

Despite their limitations, notably concerning multiple options and misunderstandings over certain basic concepts such as prudence, true and fair view, realised profits, etc., these Directives have become a reference in both the European Union and the countries of central and Eastern Europe.

2. The IASC is not, like the EU, a supranational legislator whose texts have to be applied. Conformity with IASC standards presupposes that they are not in contradiction with local regulations, whence the possible need for pre-harmonisation in some instances.

The general purpose of IASC standards is the preparation of financial statements that meet the shared need for information of a great many users, including present and potential investors, staff, lenders, suppliers and other creditors, customers (eg. the insured), governments and their agencies (supervisors and regulators), the public at large…

3. In fact:

- The IASC Steering Committee states clearly that it is not one of the objectives of accounting standards to guarantee that an insurer holds sufficient assets to cover his liabilities. Financial statements intended for the supervisors and tax authorities are not one of its concerns.

- The IASC claims to serve commercial enterprises worldwide. Its main concern is with the consolidated accounts of multinational firms, to which end it seeks a broad international consensus and the disappearance of the national barriers erected by the market supervisory authorities.

The IASC system would nowadays appear to be too well suited to the big, listed multinationals to meet the real needs of the emerging markets.

4. The need to standardise insurance accounting is obvious, but harmonisation must not create more drawbacks than the present situation of heterogeneity, which is attributable to cultures that differ across regions and corresponds to users that vary depending on the size of the firm.

B. The point of view of the IASC Steering Committee:

The following lines sum up the point of view of the IASC Steering Committee on a few essential points:

1. Insurance liabilities and insurance assets have to be valued on a prospective basis, for which two methods are proposed:

"(a). Entity-specific value represents the value of an asset or liability to the enterprise that holds it, and may reflect factors that are not available (or not relevant) to other market participants.
The entity-specific value of a liability is the present value of the costs that the enterprise will incur in settling the liability in an orderly fashion over the life of the liability.

(b) Fair value is the amount for which an asset could be exchanged or a liability settled between knowledgeable, willing parties in an arm's length transaction.
The fair value of a liability is the amount that the enterprise would have to pay a third party at the balance sheet date to take over the liability."
Table 30 of the annex summarises the differences between entity-specific value, fair value and the deferral and matching approach (at present the most common approach).

2. Present value

- general principle:

"The starting point for measuring insurance assets and insurance liabilities should be the expected present value of all future pre-tax cash flows arising from the closed book of insurance contracts.
Those cash flows include estimates of future:
(a) payments to policyholders under existing contracts, and related claim handling expenses;
(b) premium receipts from policyholders under existing contracts, including retrospective adjustments to premiums;
(c) premium taxes and levies relating to existing contracts;
(d) future loans to policyholders, and repayments by policyholders of principal and interest on future loans;
(e) policy administration and maintenance costs; and
(f) recoveries, such as salvage and subrogation, on unsettled claims and potential recoveries on future claims covered by existing insurance contracts."

The assumptions for the estimates of future cash flows should reflect all future events that may affect the amount and the timing of future cash flows under an insurance contract, including changes in legislation, technological change…

3. Provisions for equalisation and catastrophe

"*An insurer should not recognize catastrophe provisions relating to possible future claims beyond the end of the contracts included in the closed book. Similarly, an insurer should not recognize equalization provisions to cover random fluctuations of claim expenses around the expected value of claims*."

" *No provision is made for low frequency/high cost losses to be incurred in future years, except to the extent that the probability of such losses is reflected in the provision for unexpired risks."… " However the company maintains as a part of shareholders' equity a Catastrophe reserve which is an amount set aside to cover exposures to catastrophe in future years*."

4. Adjustments for risks and uncertainty

"The entity-specific value and fair value of insurance liabilities and insurance assets should always reflect risk and uncertainty."

"An adjustment for risk and uncertainty is not intended to eliminate the possibility that the amount of claims actually paid may exceed the amount previously assumed in measuring the liability".

" This (the possibility that the amount of claims actually paid may exceed the amount previously assumed) is not a reason to argue for including more conservative adjustments for risk and uncertainty in general purpose financial statements. It is not the objective of accounting standards to ensure that an insurer holds sufficient assets to meet its liabilities."

C. Comments by the OECD experts

The OECD Insurance Committee and its Group of Governmental Experts on Insurance Solvency praised the steps taken by the IASC to develop new accounting standards applicable to insurance, and are grateful to the IASC representatives for the information regularly received on the work of that body.

The Insurance Solvency experts expressed various reservations regarding the Steering Committee's proposals, and in particular concerning the:

1. Fair value of assets

This type of valuation is difficult to apply to investments that cannot be traded on an active market: unlisted shares, loans, real estate…

Insurance is a long-term activity, short-term fluctuations in securities not being relevant as a way of describing it.

In order to limit balance sheet window-dressing, methods of valuation have more generally to be rigorously defined and clearly publicised. The fair value approach cannot really guarantee sufficient reliability in this context.

1 bis Fair value of insurance liabilities:

There is no liquid and transparent market capable of serving to reform the accounting measurement of insurance liabilities. Transfers of contract portfolios including liabilities and assets are not an adequate valuation instrument: their characteristics are confidential; business assets, including invoiced premiums and the quality of the portfolio are taken into account, as is the purchaser's interest in expanding on a given market. These data are one-off and cannot, it would seem, be applied generally.

2. Assumptions concerning future flows of liquidity and investments have to take into account the fact that the insured are likely to make their redemption and cancellation decisions in the manner least favourable to the insurer.

3. Provisions for equalisation and catastrophe are, in many OECD Member countries, looked upon as liabilities and are sometimes regulated. Abolishing them would cause tax and solvency problems which insurance undertakings might be tempted to remedy by less transparent, or even illegal means, such as financial reinsurance.

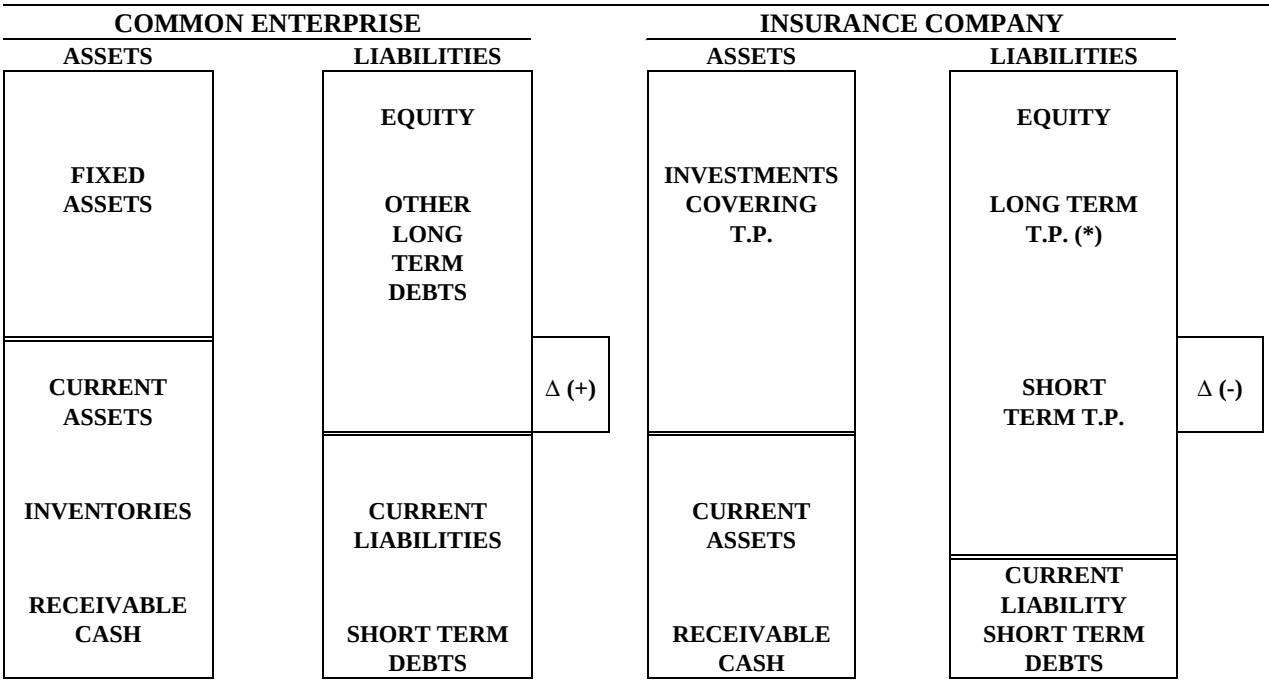
Compensation over time is an essential characteristic of certain categories of risk.

Claims in respect of infrequent, high-cost events are really difficult to assess, so that a provision for claims pending calculated on a fair value basis can easily be inappropriate. In this event, a company that has not made any provision for catastrophe is at risk of insolvency in the event of such claims.

4. The IASC's rejection of risk adjustment procedures capable of bolstering the technical reserves can but result in the decrease of the said reserves, without the rules of calculation being better harmonised in exchange.

A large majority of the OECD's Group of Governmental Experts on Insurance Solvency believe it preferable that solvency should rest primarily on prudent technical reserves covered by appropriate assets, the margin of solvency being only a further condition. They deem this approach preferable to one which, under the guise of accounting harmonisation designed for investor comfort, would "liberalise" the calculation of technical reserves and their cover at the cost of a possible increase in solvency margin requirements.

Table 1 **The notion of working capital: Δ**



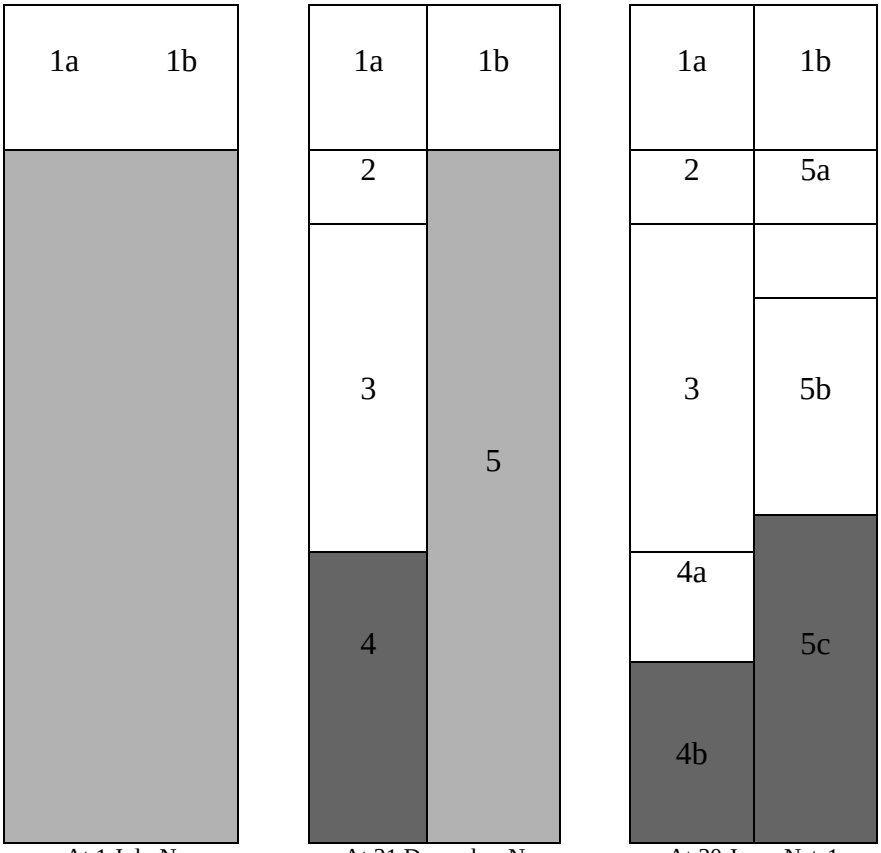
Remarks: 1. Long term TP + short term T.P. = INVESTMENT COVERING T.P.

2. Short term TP = unearned premium + outstanding losses to be paid during the following financial year

(*) T.P. = Technical Provisions

Table 2 **The inverted production cycle**

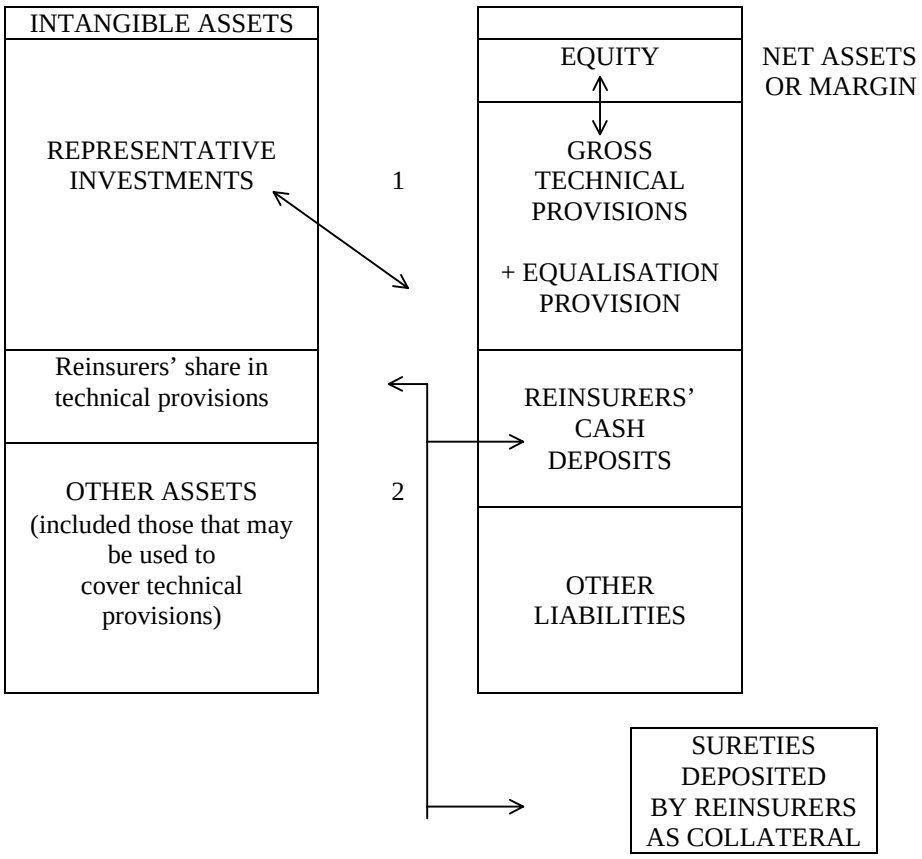
Breakdown of a premium written and collected on 1 July N for 12 months
(excluding policy costs and insurance taxes)



1: Loading for acquisition costs incurred from 1 July N.
a: part earned in year N +1. b: part carried forward to year N +1
2: Administrative costs incurred from 1 July N
3: Claims paid and settlement and administrative loading on occurrence N (2nd half of year)
4: Claims outstanding and settlement and administrative loading on occurrence N (2nd half of year)
a: part paid in N +1. b: part to be paid at 30 June N + 1
5: Provisions for unearned premiums, net of deferred acquisition costs
5a: Administrative costs
5b: Claims paid and settlement and administrative loading on occurrence N + 1 (1st half of year)
5c: Claims outstanding and settlement and administrative loading on occurrence N + 1 (1st half of year)

net unearned premiums provision
claims outstanding provision

Table 3 **The notion of cover**



1 Cover of technical provisions on gross basis.
2 Cover of part ceded to reinsurers by cash deposits or sureties without any transfer of ownership (off-balance sheet commitments).

Table 4 **Unearned premiums and deferred acquisition costs**

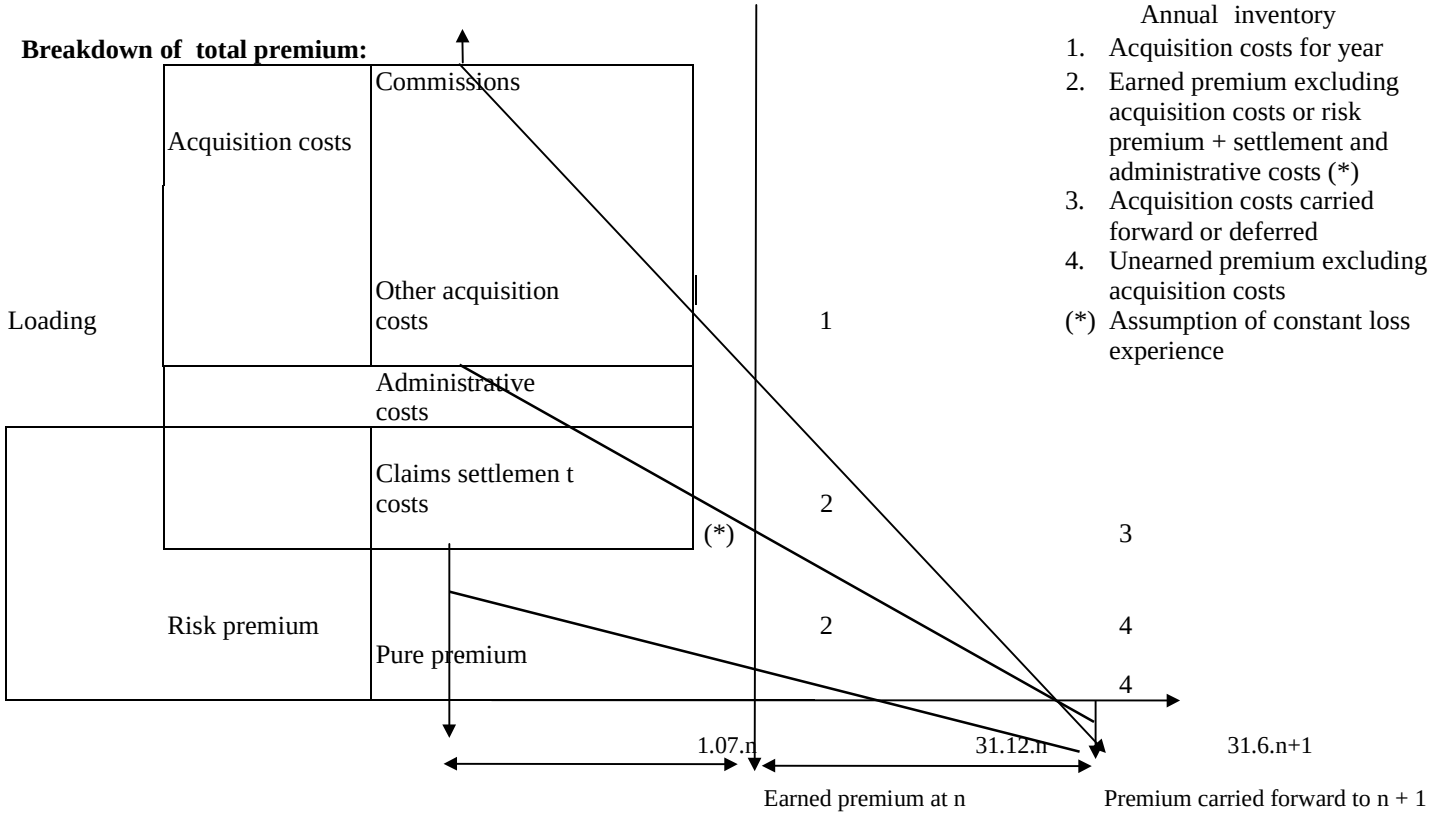


Table 5 **Accounting treatment of loading**

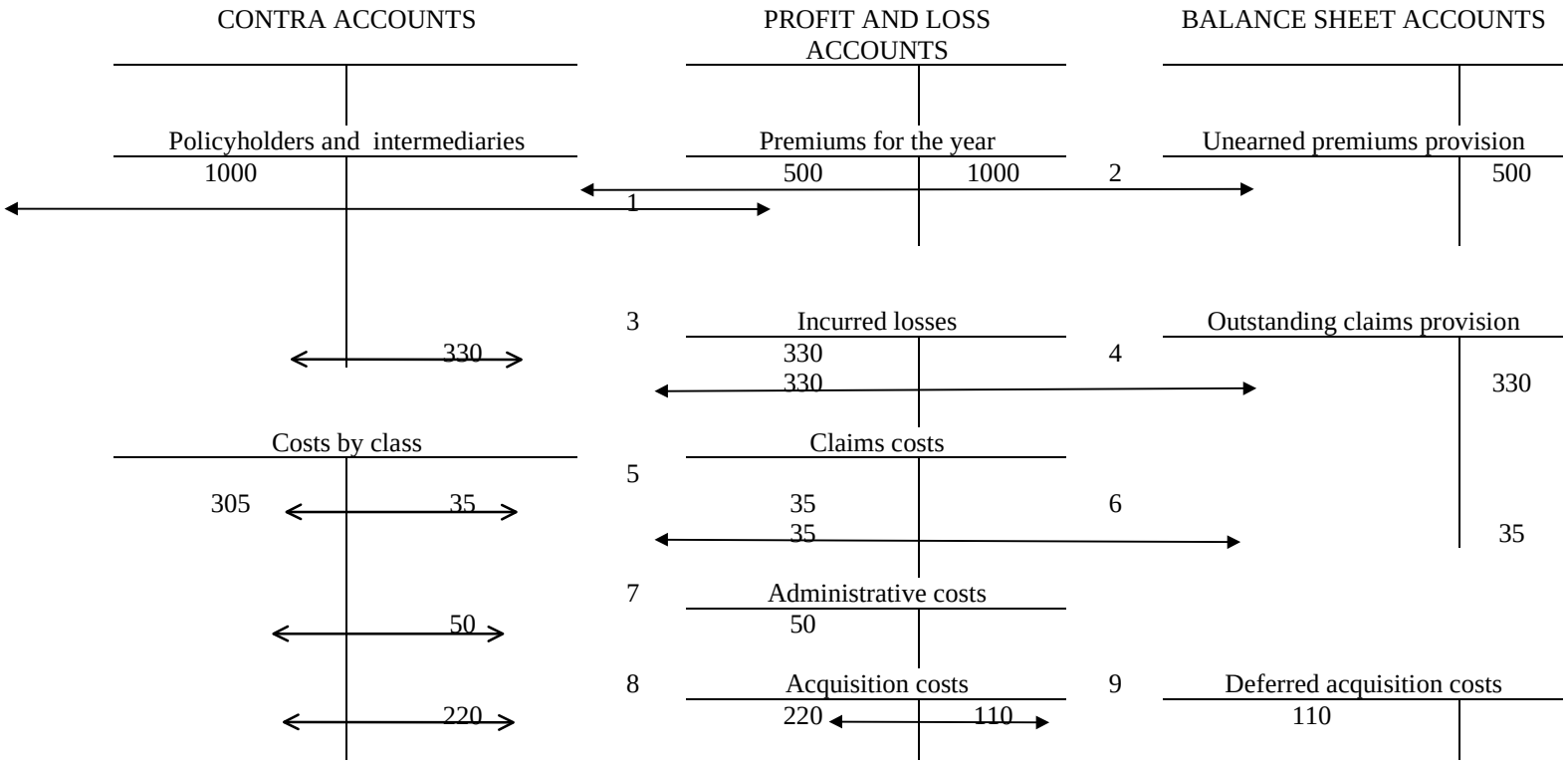


Table 6 **Unearned premium provisions**

Example: Annual Written Premium - Inception Date 1.07
Acquisition Costs 0.3 X P = C $P_N = 800$ $P_{N+1} = 1.000$

FINANCIAL YEAR	N		N+1		N+2	
	P	C	P	C	P	C
P_N	800	240				
TRANSFER N -> N + 1	-400	-120	+400	+120		
P_{N+1}			1.000	300		
Transfer N+1 -> N+2			-500	-150	+500	+150
+ Earned premiums			900	270		
- Acquisition costs incurred					270	
Net earned risks premium				630		

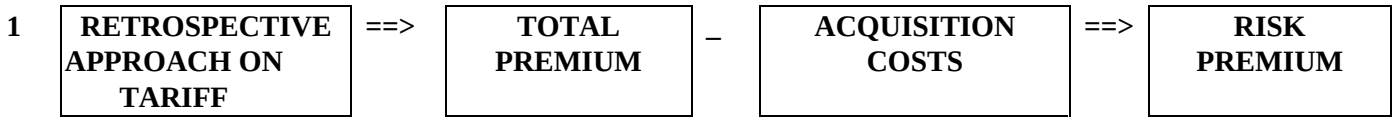
	Balance sheet 31.12.N		**Balance sheet 31.12.N+1**		**Result N+1**	
Deferred costs	120		150			
Unearned premium provisions		400		500		
Earned premiums						900
Acquisition costs incurred					270	

Table 7 **Premium provision: Risks of inadequation**

<table>
<tr><th></th><th>UNEARNED PREMIUMS</th><th>UNEXPIRED RISKS</th></tr>
<tr><td>Recommended methods</td><td>1/365th</td><td>Prospective method
Loss incurred + loading
----
earned premium</td></tr>
<tr><td rowspan="2">methods with risks i.e., non fully reliable</td><td colspan="2">Lump-sum methods of calculating unearned premium + unexpired risks (36%, 40%, etc.)</td></tr>
<tr><td>Periodical grouping of premiums:
1/24th 1/8th</td><td>Retrospective method
- tariff too low
- claims undervalued
Loss ratio unevenly distributed (*)
Tariff increase during the year which has not yet taken full effect

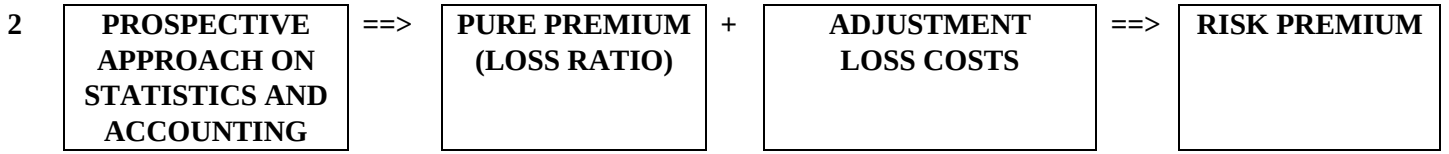
Special cases:
- premiums paid in instalments:
last instalments not taken into account</td></tr>
<tr><td colspan="3">(*) Example: higher loss ratio during the period to which premiums are unearned.</td></tr>
</table>

Table 8 **Unexpired risks provisions**



EXAMPLE: 100% **20%**

80%



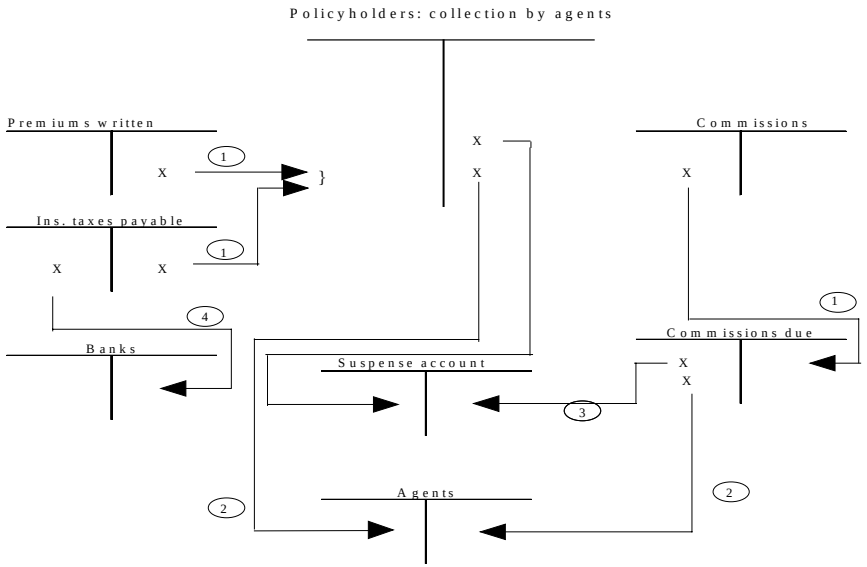
EXAMPLE: 80% **10%**

90%

UNEXPIRED RISKS PROVISIONS = NET UNEARNED PREMIUM (*) x (2 – 1)

(*) on a prorata basis

Table 9 **Premiums collected by agents**



① When receipt is issued
② When receipt is paid to the agent
③ When receipt is returned to the company
This account will be balanced by:
- cancellation of receipt
- collection by legal means
- return to the agent
④ Payment of taxes by the company

Table 10 **Claims provisions: Retrospective method**

		Financial Year N-1		Financial Year N	
+	**EARNED PREMIUMS**		12.000		15.000
	written premiums		2.000		3.500
	-change in unearned premium provision		_____		_____
			10.000		11.500
-	**OPERATING COSTS**		2.500		3.000
			_____		_____
=	**RISK PREMIUM**		7.500		8.500
-	**CLAIMS AND ADJUSTMENT COST PAID SINCE THE BEGINNING OF THE INSURANCE YEAR**				
	First Insurance Year	n-1:	2.500	n:	2.000
	Second Insurance Year	n:	3.000		-
			_____		_____
			5.500		2.000
	_____		_____		_____
			2.000		6.500
Δ = minimum provision for n and n-1 at end of N					

N, N+1 = Financial Year; n, n-1 = Insurance year
The tariff is supposed adequate.

Table 11 **Accumulated claims paid method**

Average percentages of accumulated payments (*)			Factors to apply				PAYMENTS IN N		PROVISION FOR LOSS AS AT 31.12.N	
in	n	15	15				n	2.500	85/15	14.167
	n+1	25		25			n-1	2.000	60/25	4.800
	n+2	35			35		n-2	5.000	25/35	3.575
			85	60						
	n+3	20			25	20	n-3	500	5/20	125
	n+4	5				5	n-4	1.000	0	-
		100	100	85	60	25				
							n-5	500	0	-
								11.500	-	22.667

(*) Observed in the five preceding financial years

N = Financial year; n = insurance year

Table 12 **Example of loss ratio development**

Non-life company

	Accounting year	Occurrence year				
		1989	**1990**	**1991**	**1992**	**1993**
1989	Payments	166 019				
	Outstanding claims	652 467				
	Loss incurred	818 487				
	Earned premiums	773 307				
	Loss ratio	105.84				
1990	Payments	405 165	206 542			
	Outstanding claims	398 861	693 355			
	Loss incurred	804 027	899 897			
	Earned premiums	773 360	779 359			
	Loss ratio	103.97	115.47			
1991	Payments	486 674	422 692	205 856		
	Outstanding claims	261 289	383 544	604 999		
	Loss incurred	747 963	806 236	810 855		
	Earned premiums	773 360	785 185	736 059		
	Loss ratio	96.72	102.68	110.16		
1992	Payments	524 451	502 537	416 703	202 986	
	Outstanding claims	188 429	273 371	320 350	510 058	
	Loss incurred	712 881	775 909	737 054	713 044	
	Earned premiums	773 360	785 185	739 437	711 548	
	Loss ratio	92.18	98.82	99.68	100.21	
1993	Payments	547 932	537 109	478 454	391 544	206 325
	Outstanding claims	151 950	210 451	236 451	280 958	514 120
	Loss incurred	699 882	747 560	714 906	672 503	720 445
	Earned premiums	773 360	785 185	739 437	706 310	737 137
	Loss ratio	90.50	95.21	96.68	95.21	97.74

Table 13 **Claims provisions: Prerequisites**

TYPE OF METHOD	DESCRIPTION OF METHOD	CONDITIONS
Basic method (almost always mandatory)	File by file	Claims examined thoroughly, specialised risks handled by specialised examiner. Allow for risk management costs
Other technical methods -- accumulated claims paid	For a given insurance year N, apply the accumulated claims paid percentage in n, n+1, n+2, etc.	Stable claims payment policy. It is not always easy to measure the impact of inflation
-- average claims cost method	Average costs observed in past, adjusted for inflation	May be used if the range of cost variations is clearly bounded
Accounting methods -- risk premiums - paid claims	Claims paid for an insurance year, deducted from the corresponding premiums	Defines only a minimum provision in the absence of full information on the current or preceding year: in particular, marine risks, third-party liability, etc.

Table 14 **Quota share reinsurance**

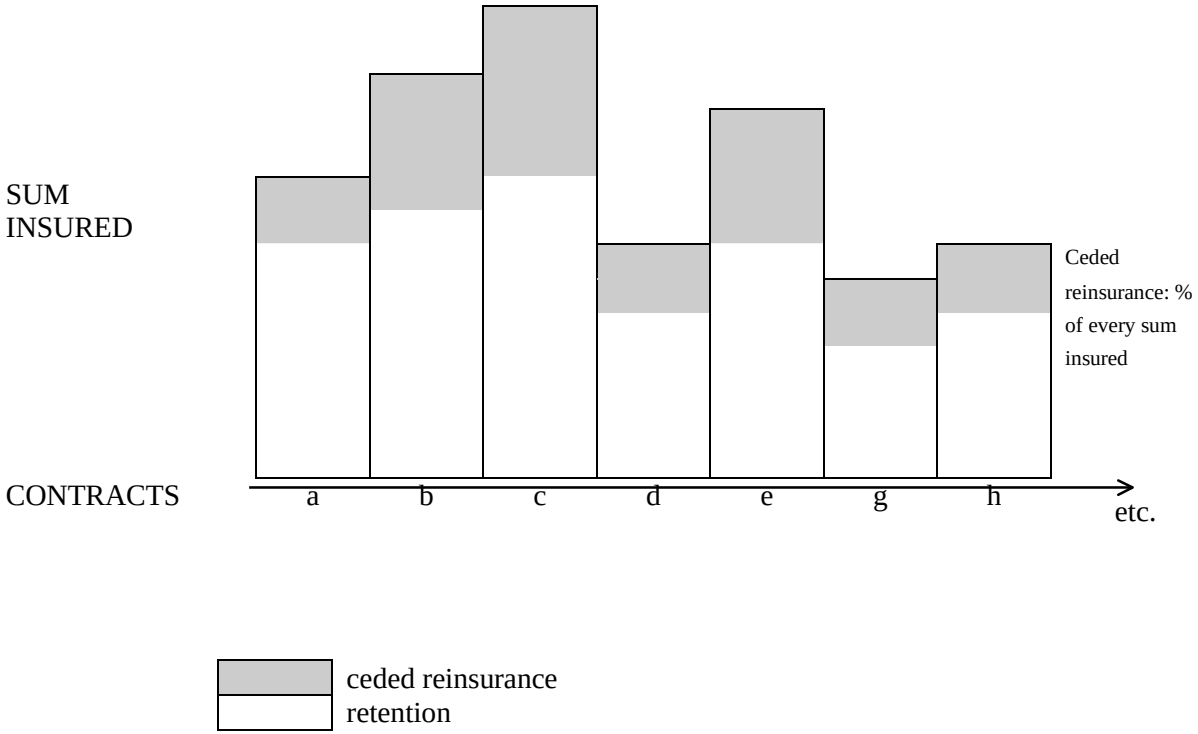


Table 15 **Surplus reinsurance**

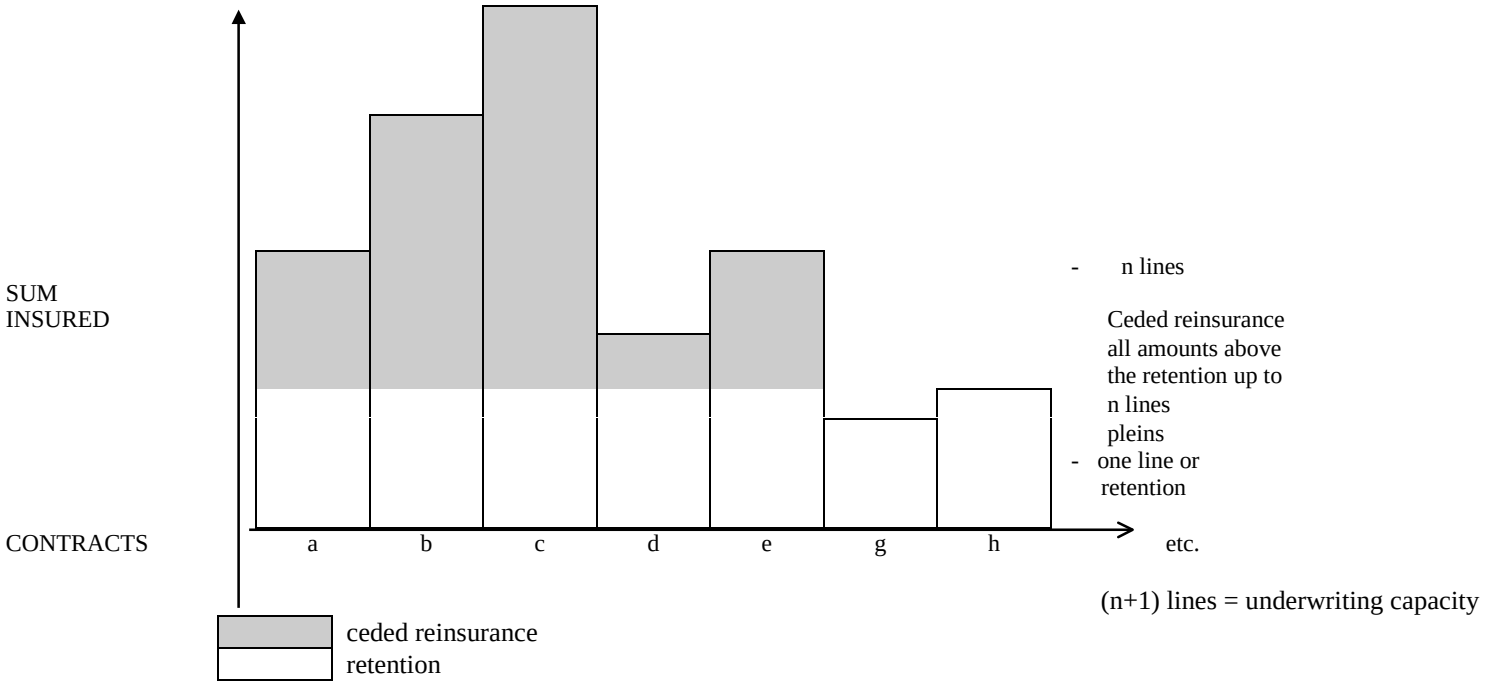


Table 16 **Example of a surplus treaty mechanism**

A. PREMIUMS

Policy recording number	Category of risks	Insurer rate of premium $x^0/_{00}$	Insured amount (1)	Net retention (2)	Reinsured amount (3)	%		Reinsurance premium (4) = (3) * $x^0/$
						2/1	3/1	
1	a	1	21.000	1.000	20.000	4.8	95.2	20.0
2	b	2.5	12.000	800	11.200	6.7	93.3	28.0
3	b	3	16.000	800	15.200	5.-	95.-	45.6
4	c	2	6.000	700	5.300	11.7	88.3	10.6
5	a	1.2	3.500	1.000	2.500	28.6	71.4	3.0
6	a	1	2.000	1.000	1.000	50.-	50.-	1.0

B. LOSSES:
If policies 3, 4 and 6 suffer losses:

Policy	Total amount of loss	Insurer share		Reinsurer share	
		%	Amount	%	Amount
3	16.000	5	800	95.0	15.200
4	4.000	11.7	458	88.3	3.532
6	500	50.-	250	50.-	250

Table 17 **Example of a second surplus mechanism**

A. PREMIUMS

Policy recording number	Insured amount	Category of risks	Insurer rate of premium $x^0/_{00}$	Original premium	Net retention	First surplus			Second surplus		
						%	Reinsured amount	Premium	%	Reinsured amount	Premium
10	31.000	c	2	62	1.000	64.5	20.000	40	32.2	10.000	20
11	22.000	b	3	66	800	72.7	16.000	48	25.6	5.200	15. 6
12	11.000	c	3	33	700	43.7	10.300	30.9	-	-	-

B. LOSSES:

If policies 11 and 12 suffer losses:

Policy number recording	Total amount of loss	Insurer share	First surplus		Second surplus	
			%	amount	%	amount
11	800	29	72.7	582	25.6	189
12	4.000	252	43.7	3.748	-	-

Table 18 **Excess of loss reinsurance**

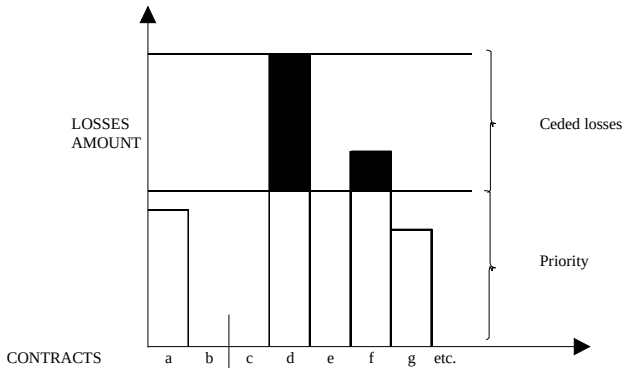


Table 19 **Ceded reinsurance accounting**

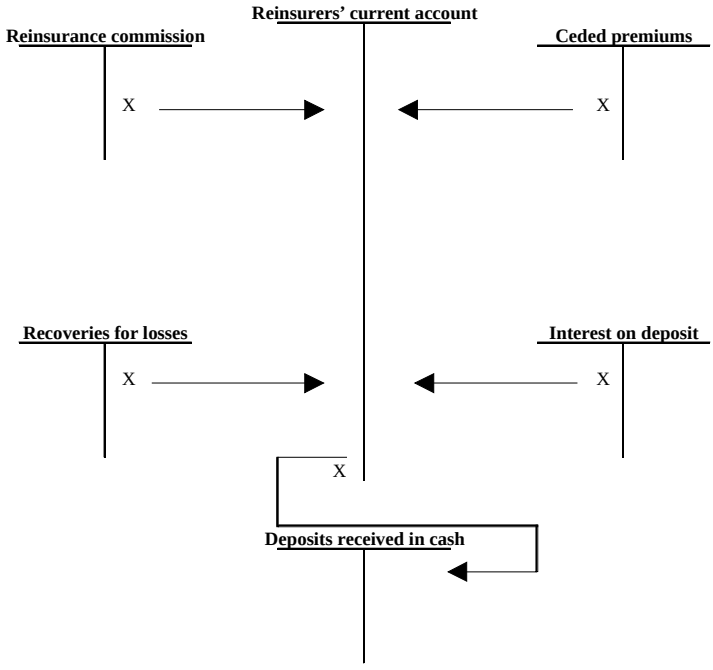


Table 20 **Assumed reinsurance accounting**

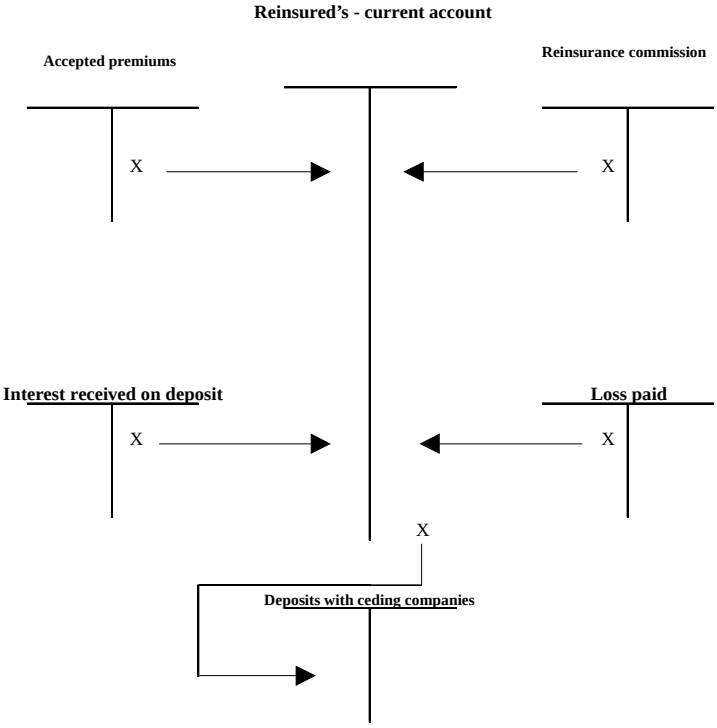
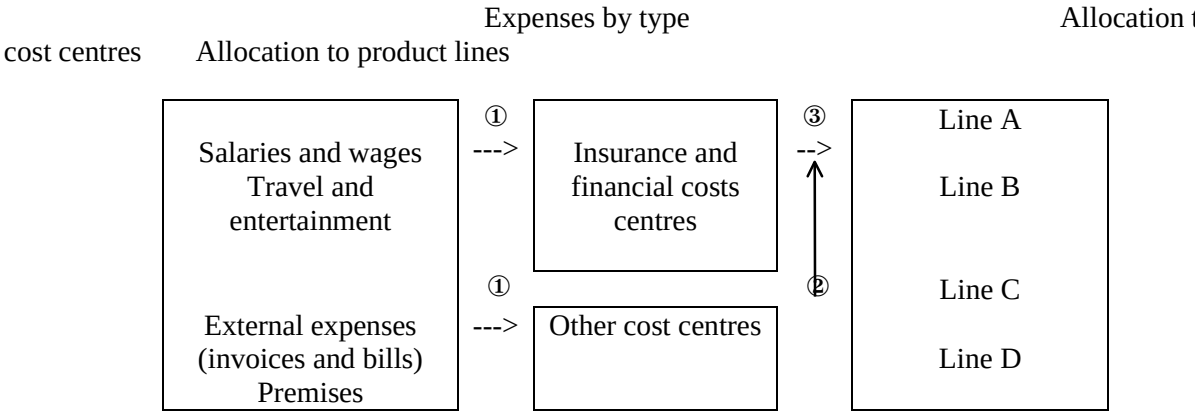


Table 21 **Operating expenses accounting**



1. Transfer of expenses by type to cost centres
2. Transfer of expenses of other centres to insurance and financial cost centres
3. Transfer of expenses of insurance and financial cost centres to product lines on cost unit basis.

Table 22 **Assets admissible to cover T.P. (E.E.C.)**

		SPREAD OF INVESTMENTS (4)
INVESTMENTS	• Money and capital market instrument • Secured loans (1) • Shares and variable yield participation (2) • Investment funds • Land, buildings and immovable property rights (3)	5% by enterprise or borrower 10%
DEBTS AND CLAIMS (3)	• Debts owed by: policyholders & intermediaries reinsurers and cedents • Salvage and subrogation • Tax • Guarantee funds	
OTHERS	• Tangible fixed assets other than land and buildings (3) • Cash at hand • Cash at bank and deposits with bank • Deferred acquisition costs (against unearned premiums) • Accrued interest and rent and other accrual income and repayments	3%

(1) 1% if unsecured loan within a total limit of 5%
(2) 10% for the whole, if not dealt in on a regulated market
(3) Valued on the basis of prudent amortisation or depreciation
(4) Upper limit for each element of assets as a percentage of T.P.

Table 23 **Solvency margin - Non-life**

Available margin			**Required margin**	
ASSETS	**LIABILITIES**		**PREMIUM BASIS**	
Capital unpaid: 500 Intangible: 100	NET ASSETS (*) = 10.000	Balance sheet margin	Gross turnover: 100.000 Net incurred loss: 80% Gross incurred loss	(100.000x0.8) x 0.16 (**) **= 12.800**
Investments Book value 100.000 (Market value) 150.000		10.000-(0.5x500)-100 **= 9.650** Intrinsic margin	**LOSS BASIS** Average gross incurred loss over 3 years: 65.000	(65.000x0.8)x0.23 (**) **= 11.960**
		9.650+(150.000 -100.000) **= 59.650**	Available margin 59.650 ---------- = --------- = **466.0%** Required margin 12.800 Balance sheet margin 9.650 ---------- = --------- = **75.4%** Required margin 12.800	

(*) After appropriation of profit

(**) We have ignored the first layers (0.18 and 0.23)

Table 24 **Change in turnover and margin (Non-life)**

Increasing rate of the year n	Net written premiums (NWP)	Minimum Solvency Margin	Increase of Solvency Margin	Profit before tax (1)	Profit / NWP (2)
0	10 000	1 600	-	-	-
+ 5	10 500	1 680	80	120	1.14%
+ 10	11 000	1 760	160	240	2.18%
+ 15	11 500	1 840	240	360	3.13%
+ 20	12 000	1 920	320	480	4.00%
+ 25	12 500	2 000	400	600	4.80%
+ 30	13 000	2 080	480	720	5.50%

(1) We supposed a tax rate of 33%

(2) Minimum rate of profit requisite on net written premiums

(*) Hypothesis: at the end of n-1, the Solvency Margin is equal to the required minimum

Table 25 **Mechanism of solvency (Non-life)**

Balance Sheet	Insufficiency rate of technical **provisions**	Cession rate	Share-holders Funds	Net written premium	Solvency margin	Financial Situation A	B	C	D
as at 31.12.n	**0.01**	0.2	14	100	0.14			x	
Assets (tangible) 250		**0.3**	14	87.5	**0.16**		x		
Liabilities 234		0.4	14	75.0	0.187	x			
T.P. (net) 200 (**)									
Other 34		0.5	14	62.5	0.224	x			
	0.02	0.2	12	100	0.12			x	
Shareholders funds 16 (*)		0.3	12	87.5	0.137			x	
-----		**0.4**	12	75.0	**0.16**		x		
250		0.5	12	62.5	0.192	x			
Gross written premium 125	**0.03**	**0.5**	10	62.5	**0.16**		x		
Cession rate 0.2	0.04	0.5	8	62.5	0.128			x	
Profit of the year 0	0.05	0.5	6	62.5	0.096			x	
No hidden reserves	0.05333	0.2	5.33	100	0.0533				x
		0.5	5.33	62.5	0.0853			x	

(*) 16 / ---------- = 16%
125 - (1-0.2)

A = Adequation of Solvency Margin
B = Minimum of Solvency Margin
C = Insufficiency of Solvency Margin
=> long term plan for the restoration of financial situation
D = Minimum Guarantee Fund
=> lower limit: short term finance scheme

Table 26 **Reinsurance commissions**

	Gross	**Cession rate**	**Cessions**	**Net**	**Net risk premium**	**Profit or loss**
P = Premiums	10.000	40%	4.000	6000		
D = commissions and other acquisition costs	3.000					
Net	7.000	40%			4.200	
C = commissions credited by reinsurers						
1) 30% of Px0.40			1.200	1800	4.200	0
2) 35% of Px0. 40			1.400	1600	4.400	+ 200
3) 25% of Px0.40			1.000	2000	4.000	- 200

Profit or loss on reinsurance commission = (C - D) x Cession Rate

Table 27 **E.E.C. P & L account: Main technical items**

NON-LIFE		LIFE	
+	**EARNED PREMIUMS**	+	**EARNED PREMIUMS**
	ALLOCATED INVESTMENT RETURN (CREDITED)		**INVESTMENT INCOME**
-	**CLAIMS INCURRED**	-	**CLAIMS INCURRED**
	Change in other T.P.		**Change in other T.P.**
			BONUS AND RELATES
-	**OPERATING EXPENSES**	-	**OPERATING EXPENSES**
-	**CHANGE IN EQUALISATION PROVISION**	-	**INVESTMENT CHARGES**
			ALLOCATED INVESTMENT RETURN (DEBITED)
-	**TECHNICAL BALANCE**	-	**TECHNICAL BALANCE**

Table 28 **E.E.C. P & L Account: Main non-technical items**

	NON-LIFE		LIFE
	TECHNICAL BALANCE		**TECHNICAL BALANCE**
+	**INVESTMENT INCOME**	+	**ALLOCATED INVESTMENT RETURN (CREDITED)**
-	**INVESTMENT CHARGES ALLOCATED INVESTMENT RETURN (DEBITED)**		
+ -	**OTHER ITEMS**	+ -	**OTHER ITEMS**
	PROFIT OR LOSS OF THE YEAR		**PROFIT OR LOSS OF THE YEAR**

Table 29 **Evolution of profit or loss on claims provision**

At the end of	Cost evolution of n from N to N+3 (*)		Percentage of accumulated payments			SUCCESSIVE PROFIT OR LOSS ON CLAIMS PROVISIONS	%
			Amounts	%	Δ		
N	P 1.000 C 9.000	10.000	1.000/12.500	8%	8%	9.000-(12.500-1.000)=-2.500	-27.8%
N+1	P 3.000 C 8.000	11.000	3.000/12.500	24%	16%	8.000-(12.500-3.000)=-1.500	-18.8%
N+2	P 6.000 C 7.000	13.000	6.000/12.500	48%	24%	7.000-(12.500-6.000)=+500	+7.2%
N+3	P 8.000 C 4.500	12.500	8.000/12.500	64%	16%	4.500-(12.500-8.000)= -----	0
To be paid after 31.12.N+3			4.500/12.500	36%	36%		

(*) P = Loss paid; C = Outstanding claims
N = Financial year; n = insurance year

Note: We have considered that in the fourth year (N+3) the cost of n is definitive

Annex 30 **Overview of Different Approaches (IASC Issue papers, updated November 2000)**

This table gives an overview of three approaches to accounting for insurance contracts.
(a) Deferral and matching -- - This is the most common form of approach found today. There are a number of different ways of implementing such an approach. The Steering Committee has tentatively rejected deferral and matching approaches.
(b) (i) Entity- specific value -- - This column shows the Steering Committee's tentative proposals under an asset and liability measurement approach, if entity- specific value is adopted as the measurement objective.
(b) (ii) Fair value -- - This column shows the Steering Committee's tentative proposals under an asset and liability measurement approach, if fair value is adopted as the measurement objective.
The table does not consider specific issues relating to participating contracts and reinsurance contracts.

Topic (Basic Issue or Sub-issue in parentheses)	**(a) Deferral and matching**	**(b) Asset and liability – tentative Steering Committee proposals**	
		(i) (entity-specific value)	**(ii) (fair value)**
Objective (4)	Defer income and expense so that they can be matched with each other	Measure assets and liabilities that arise from insurance contracts at entity-specific value	Measure assets and liabilities that arise from insurance contracts at fair value
Measurement of investments held by insurers	In practice, usually a mixture of cost basis and fair value	Assumed to be fair value (will be determined by future standard on financial instruments)	Assumed to be fair value (will be determined by future standard on financial instruments)
Does measurement of assets affect measurement of insurance liabilities? (5)			
• General insurance	No	No	No
• Life – unit-linked and similar	Yes	Yes	Yes
• Life - other	In practice, often yes (see discussion of discount rate)	No (see also 11G below on future investment margins)	No (see also 11G below on future investment margins)

Assumptions (6B-E)	Various. May be: • locked-in at inception • locked-in at inception, but subject to loss recognition test • current best estimate • long-term trend • mandated by supervisor • some combination of the above	Current best estimate of all future events that will affect amount and timing of cash flows (including legislation and lapse)	Current best estimate of all future events that will affect amount and timing of cash flows (including legislation and lapse)
Whose assumptions (6E)?	In practice, usually insurer's own	Insurer's own, based on characteristics of the actual portfolio (for example, reflecting actual underwriting)	Market, based on characteristics of the actual portfolio (for example, reflecting actual underwriting). In practice, use insurer's own assumptions, unless evidence that market's assumptions would be different
Expense levels (6D)	In practice, usually the insurer's own expense levels	Insurer's own expense levels, but do not allow unrealistic assumptions.	Reflect the insurer's own cost strategy, consistent with lapse assumptions. In principle, use the expense levels that the market would expect, given the insurer's cost strategy. In practice, use the insurer's own expected expense levels, unless there is clear evidence that this is out of line with market expectations, given the insurer's cost strategy
Risk reflected in measurement of general and life insurance liabilities? (6F)	Usually May exceed market value margin[1]	Yes – market value margin, reflecting insurer's assessment of the risk profile of future cash flows, but priced using market's risk preferences	Yes - market value margin, reflecting market assessment of the risk profile of future cash flows, priced using market's risk preferences

[1] **Market value margin** = risk that would be reflected in the price of an arm's length transaction between knowledgeable, willing parties.

Measurement reflects insurer's own credit standing:			
• At inception of contract?	Yes (may be implicit in transaction price)	Yes (may be implicit in transaction price)	Yes (may be implicit in transaction price)
• Subsequent changes? (11I)	No	No	Conceptually, yes. However, in practice may not be a significant issue for regulated insurers. Consider further when responses to the Joint Working Group proposals become available.
Changes in carrying amount of insurance liabilities (6G)	Generally recognised immediately in the income statement	Recognised immediately in the income statement (assuming same basis for financial instruments)	Recognised immediately in the income statement (assuming same basis for financial instruments)
General insurance liability includes:			
• claims payable, including IBNR? (7B)	Yes	Yes	Yes
• expected claim handling costs? (7B)	Yes	Yes	Yes
• deferral of unearned premium for unexpired part of contract period? (7C)	Yes (amount deferred may exceed present value of claims)	No (but see unexpired risk)	No (but see unexpired risk)
• provision for unexpired risk? (7C)	Yes (if unearned premium is not enough to cover claims during unexpired part of contract period)	Yes (present value of expected claims for unexpired part of contract period)	Yes (present value of expected claims for unexpired part of contract period)
• catastrophe and equalisation reserves? (7H)	Possibly	No	No
Acquisition costs (7D)	Generally deferred, subject to loss recognition test	Not deferred	Not deferred
Discounting used:			
• general insurance? (7I)	Usually not in current practice	Yes	Yes

• life insurance? (8A)	Yes	Yes	Yes
Discount rate (7J / 11G)	Often based on expected long-term earnings on actual or notional investments backing the liability	Risk-free, adjusted for any risk not reflected in cash flows (asset based rate may be appropriate for some unit-linked and participating contracts)	Risk-free, adjusted for any risk not reflected in cash flows (asset based rate may be appropriate for some unit-linked and participating contracts)
Income from long-term contract (7C / 8A / 11F)	Emerges based on predetermined attribution pattern.	Some income or loss may emerge at the point of sale. Rest emerges as the insurer is released from risk and as actual experience differs from expected experience.	Some income or loss may emerges at the point of sale. Rest emerges as the insurer is released from risk and as actual experience differs from expected experience.
Include cash flows from future renewals: (8B)			
• if current contract grants policyholder renewal rights that are potentially valuable (typical life insurance contract)?	Possibly	Yes	Yes
• if current contract does not grant policyholder renewals that are potentially valuable (typical general insurance contract)?	No	No	No
Basis for measuring liability for a life insurance contract that has an explicit or implicit account balance (8D)	Practice varies. Liability may or may not be less than the account balance.	Liability is based on future cash flows, and may be less than the account balance.	Liability is based on future cash flows and may be less than the account balance.

Future investment margins affect measurement of insurance liabilities? (5 / 11G)			
• General insurance	No (except where loss recognition is reduced by future investment returns)	No[2]	No[2]
• Life	In practice, often yes (see discussion of discount rate).	No[2]	No[2]
Premium revenue (19)	Recognised as earned – unearned premium is deferred.	Recognised when due, whether or not earned. Recognise a separate expense for lapse during the current premium period.	Recognised when due, whether or not earned.[3] Recognise a separate expense for lapse during the current premium period.
Claims expense (19)	Estimate recognised as insured events occur. Additional amounts recognised when there is a premium deficiency.	Estimate recognised when premium is received. Changes in estimate recognised when they occur.	Estimate recognised when premium is received. Changes in estimate recognised when they occur.

[2] Except in participating (with profits) and unit-linked contracts

[3] In a fair value model, some may favour reporting just a net change in fair value, without separate reporting of premium and claim information.