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# **Establishment of a unified international system of insurance statistics**

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**UNITED NATIONS**

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## Chapter I

### INTRODUCTION AND PRELIMINARY OBSERVATIONS

#### A. Terms of reference relating to the establishment of a unified international system of insurance statistics<sup>1</sup>

1. From the time they first began their work in the field of insurance, the United Nations Conference on Trade and Development and its permanent organs (the Trade and Development Board, the Committees and the UNCTAD secretariat) have been faced with a major practical obstacle, namely, the great shortage, not to say the complete lack, of reliable statistical information that could be used to draw conclusions on the state of the insurance market in the developing countries and on the influence of international insurance transactions on the economy of each individual country.

2. Once this situation was recognized, the hope was expressed in a number of UNCTAD documents that measures would be taken to correct it. The Conference, in its recommendation A.IV.23, on insurance and reinsurance, adopted at its first session, held at Geneva in 1964, recommended para. 6 that:

"The competent international organizations should examine the question of the adoption of:

...

"(b) Uniform criteria for the compilation of insurance and reinsurance statistics".<sup>2</sup>

3. At the first part of its first session, held at Geneva in December 1965, the Committee on Invisibles and Financing related to Trade tackled this problem in a more general context, and, in its programme of work in the field of invisibles, made the following decision:

Studies will be carried out (in close co-operation with the International Monetary Fund and with the Statistical Office of the United Nations) aimed at improving and refining the statistical data on invisible transactions, with special reference to shipping, insurance and reinsurance, and tourism. These studies will concentrate on statistical concepts and methodology and investigate possibilities of gathering more comprehensive, meaningful and internationally comparable data for, in the first instance, at least a number of selected developed and developing countries. On the basis of the studies, the Committee may then be able to recommend to Governments practical measures for improving and refining statistical data in this field.<sup>3</sup>

4. The same Committee, at its second session, held in New York in April 1967, welcomed the report of the Export Group on Reinsurance<sup>4</sup> as "a valuable contribution in an area of particular importance to the developing countries".<sup>5</sup> Chapter IV, paragraph 37 of that report contains the following recommendation:

The Expert Group recognizes the importance of internationally comparable insurance and reinsurance statistics and suggests that the UNCTAD secretariat in co-operation with the United Nations Statistical Office and other appropriate bodies should study the question of the method and the basis on which such statistics should be collected on a world-wide basis. The Group further suggests that a small group of insurance statisticians should be convened to assist the UNCTAD secretariat in this task.

5. At its second session, held at New Delhi in February-March 1968, the Conference confirmed the above decisions and recommendations, and emphasized the importance of the measures proposed in the field of insurance and reinsurance on behalf of the developing countries and forming part of the "continuing programme of work of the secretariat in this field" (resolution 13(II) of 24 March 1968).<sup>6</sup>

#### B. General observations on the choice of a unified system of insurance statistics, having regard to the purpose intended

6. Since the desirability of establishing a unified international system of insurance statistics is manifest, the question is what type of system should be created, bearing in mind the following two factors:

(a) The purpose intended, and hence the conclusions it is hoped to draw from application of the system;

(b) The actual situation in the various countries, including national regulations in force and the technical facilities available.

The first of these two factors taken by itself might steer the studies in the direction of a complicated statistical system of a perfectionist nature; the second factor, on the other hand, militates in favour of the simplest possible system, in other words, a skeleton system which can

<sup>1</sup> The word "insurance" as used in this report means both direct insurance and reinsurance; no distinction will be made except when necessary for the sake of clarity.

<sup>2</sup> See *Proceedings of the United Nations Conference on Trade and Development*, Vol. I, *Final Act and Report* (United Nations publication, Sales No.: 64.II.B.11), p. 55.

<sup>3</sup> See *Official Records of the Trade and Development Board, Third Session, Supplement No. 3*, (TD/B/42/Rev.1), annex I, (b).

<sup>4</sup> "Reinsurance policy and operations in developing countries: report of the Expert Group on Reinsurance" (TD/B/C.3/29).

<sup>5</sup> See *Official Records of the Trade and Development Board, Fifth Session, Supplement No. 3* (TD/B/118/Rev.1), part one, para. 2.

<sup>6</sup> See *Proceedings of the United Nations Conference on Trade and Development, Second Session*, vol. I and Cor. 1 and 3 and Add. 1-2, *Report and Annexes* (United Nations publication, Sales No.: E.68.II.D.14), annex I, p. 50.

be used even where the available technical facilities are very limited and which, above all, does not play havoc with the existing regulations.

7. It should be borne in mind that the authorities in a large number of countries already prescribe in a fairly detailed manner the statistical data that must be supplied to them by the insurance undertaking<sup>7</sup> under their jurisdiction. It would hardly be realistic to expect all these countries voluntarily to give up their own systems and adopt that of UNCTAD. On the other hand, it would be perfectly realistic to expect them to agree that a minimum common basis should be established and incorporated in the individual national statistical systems, which in addition would continue to include the other data regarded as necessary by the countries requiring such data. In other words, there would be no prior unification of national regulations governing insurance statistics, since the establishment of the minimum common system proposed below by UNCTAD would in many countries entail only supplementary measures of a marginal nature.

8. The choice of a minimum common system, as well as the statistical data it should include, would depend on the operations for which the data were used. For this reason, before the system and its constituent elements are selected, these operations, which must be in keeping with UNCTAD's objectives in the field of insurance in favour of the developing countries, will have to be defined more precisely.

9. One of the objectives that UNCTAD recommends to every developing country is the establishment of a true national insurance market; this is without any question an indispensable economic factor for any independent country. However, to determine the state of a country's insurance market, its structure, its strong points and its weaknesses, certain relevant statistical information must be available, e.g. information on the volume of actual insurance transactions, the classes of business covered, the number and type of insurance undertakings, their trading results, the technical and other resources involved, etc.

10. This list of essential information already gives some idea of the type of statistical data that must be included in the minimum common system. It also indicates that, from a methodological point of view, the system must be based essentially on data that can be supplied only by insurance undertakings. In principle, the supervisory authority in each country will thus have to obtain these statistical data and to check and publish them in a suitably succinct form (national monograph), the details of which will be described in the present report. In other words, two series of instructions should be drawn up, one for the insurance undertakings from which the initial data come, and the other for the supervisory authorities which will collect the data and compile the country monographs.

<sup>7</sup> By "insurance undertakings" is meant private undertakings as well as public or semi-public institutions but not social insurance bodies.

11. Another important observation should be made in this connexion. As one of the objectives of the unified system of statistics is the analysis of each national insurance market, and as each market is simply the sum of the portfolios insured by all undertakings (national and foreign) doing business in the country, the real units for checking the system are these individual country portfolios. In other terms, a country wishing to gain a precise picture of its national insurance market would have to select from among all undertakings (national and foreign) doing business there, the part corresponding exclusively to the domestic business of that country,<sup>8</sup> and thus obtain information on its total national portfolio. This method, which is very common in the developed countries, is all the more indispensable when the need is to reach conclusions concerning the state of the national markets in the developing countries and the influence of international insurance business on the economy of those countries.

12. This evaluation of the effect of international insurance business on the economy in general and, more particularly, on the balance of payments of developing countries is another UNCTAD objective of paramount importance. The statistical data required for this purpose are essentially the same as those mentioned above, provided they are broken down in such a way that a clear distinction can be made between domestic business, business which leaves the country and business which comes from abroad. It should be noted immediately that only two balances of all these transactions—the first at the national level and the second at the foreign level—are important in the final analysis; however, any additional information on the origin and composition of these balances may be regarded as most valuable.

13. Although closely related to the above two objectives, the problem of investments in the developing countries by insurance undertakings in general and particularly by those with their head offices in developed countries deserve special mention as a specific UNCTAD objective. The minimum common statistical system should therefore also provide all the information required for this purpose.

### C. Standardization of certain concepts relating to insurance methods

14. Although the establishment of a minimum common statistical system does not entail the prior unification of national insurance regulations, some alignment of technical concepts relating to the headings used in the minimum common system would seem indispensable. There is, first of all, the problem of technical terms, which often mean different things in different countries; here a common basis of multilateral comprehensibility and comparability must be established.

<sup>8</sup> A description of what is to be considered as domestic business of a country is given in paras. 29 to 31 of the present report. For the role of brokers, see paras. 44 and 45.

15. Apart from the question of technical terms, there is the problem of certain technical management practices which differ considerably from country to country. In so far as they affect the basic elements of a minimum system, these practices, too, should either be brought into line or at least rendered sufficiently compatible to enable them to be used rationally at the international level. Two areas where such differences are of particular importance are the allocation of the various technical items (premiums, losses and claims, etc.) to the year of occurrence and the definition of technical liabilities (reserves) at the end of a given year.

16. In the first of these two areas, there is fairly often a certain amount of confusion between book-keeping items proper (premiums paid, claims settled, etc.) and those valid only for statistical purposes (earned premiums, claims attributable to a given year, etc.). The evaluation of the real trading results, both technical and economic, of an insurance undertaking should obviously be based on statistical and not bookkeeping items. Annex A to this report illustrates in greater detail how different ways of regarding certain technical items (carry-over of premiums, premiums earned, etc.) may lead to quite contradictory trading results.

17. The problem of determining the technical liabilities (reserves)<sup>9</sup> of an insurance undertaking is extremely complex, particularly in classes of insurance business other than life policies, where the evaluation of this

<sup>9</sup> The terms "reserves" and "provision" are used interchangeably in this report to indicate technical liability, e.g. reserves for outstanding claims, or provision for outstanding claims, etc.

liability is the most notorious source of controversy. Since it would be futile to become involved in any way in this controversy, annex IV to the present report simply enumerates the various technical liabilities in a uniform manner, without seeking to produce a solution to the problem of their evaluation. In practice, this means that in this respect the proposed standardization will be confined to a common enumeration of technical liabilities, their evaluation being left for the moment to each undertaking acting in accordance with the instructions or approval of the supervisory authorities.

#### D. Group of Experts on Insurance Statistics<sup>10</sup>

18. In accordance with the suggestion made and accepted at the second session of the Committee on Invisibles and Financing related to Trade (see above, para. 4) a draft report<sup>11</sup> has been reviewed by a Group of Experts which met in Geneva from 7 to 15 October 1970. Fourteen insurance statisticians invited by the Secretary-General of UNCTAD were able to join the Group and their appreciation of the report is expressed in a letter reproduced in annex I below. The present report incorporates in an aggregate fashion the suggestions made by the experts. Advantage was also taken of valuable comments made by the United Nations Statistical Office. However, the responsibility for the final text is that of the UNCTAD secretariat.

<sup>10</sup> See also annexes I and II below.

<sup>11</sup> TD/B/C.3/AC.4/R.2.

## Chapter II

### UNIFIED SYSTEM OF INSURANCE STATISTICS

#### A. Definition of the elements of the unified system

19. Taking into consideration the comments made in chapter I above, it would be advisable to define at first the elements of which the unified system will be composed, particularly the statistical data themselves and the way of breaking them down. Regarding the statistical information to be retained, it seems obvious that the unified system, in so far as it constitutes a minimum common system, must inevitably be based on what is today the principle source of statistical information on insurance; namely the annual accounts of insurance undertakings as presented to the Control Office. Despite certain differences existing between one country and another owing to the use of different accounting schemes, the basis of the annual accounts remains nevertheless everywhere more or less the same. In fact, all countries base their annual accounts on the same fundamental documents, namely the company's annual profit and loss account and balance sheet.

20. To concentrate on these two fundamental accounting documents, which exist in every country, appears to be the best method of gathering all the required statistical data for the unified system. It seems advisable therefore to study to what extent these two documents can be drawn up so that they supply all the required statistical information, duly broken down, bearing in mind the aims set out in paragraphs 9 to 13 of the present report. It must be stressed, however, that the adoption of a uniform accounting scheme covering all the accounting headings should not be considered as an essential prerequisite to the launching of the unified system;

indeed, only the items defined below as part of the minimum system need be mentioned explicitly in the annual accounts, which could however, contain other headings, subheadings, etc., according to the accounting practice of the undertaking and the regulations which have to be complied with in the various countries.

#### B. Profit and loss account

21. In the profit and loss account of an insurance undertaking, two types of statistical element are usually distinguishable: the so-called technical data and the other trading data. In branches other than life, the split between these two types raises no problems and a schedule could be established, divided into two parts, one containing technical items and leading to a "technical result", and the other containing other trading items, which when added to the first, would provide the "total results for the financial year". All technical items of the scheme given hereafter must be considered as indispensable to the unified system of statistics. With regard to the non-technical items, in order to maintain the required flexibility, those items which are not expressly required may be grouped together under "Other income" and "Other expenditure", and it will be left to the users to fill them out and/or to break them down as they see fit.

22. For classes of insurance other than life, the schedule of items of the profit and loss account can be established as follows:

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<i>Technical income for the financial year</i>	<i>Technical expenditure for the financial year</i>
Written premiums less cancellations	Claims paid
Reserves brought forward:	Reserves carried forward:
For unexpired risks	For unexpired risks
For outstanding claims	For outstanding claims
Other technical reserves	Other technical reserves
	Commissions and management expenses
	Bonuses to policy holders
<i>Other trading income</i>	<i>Other trading expenditure</i>
Net investment income earned during the year	Allocation to free reserves
Profit on investments, less losses	Dividends to shareholders
Other income	Taxes
	Other expenditure

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In principle, it seems also acceptable that the net balance of each of the technical reserves at the beginning and at the end of the financial year should figure in the account in the form of an endowment, provided that an analysis of the final state of the reserves be shown on one of the other accounting documents, e.g. on the balance sheet.

23. In life insurance (as well as in some analogous classes, such as long-term sickness insurance, capitalization, etc.) the uniform definition of the technical elements runs into difficulties, especially concerning how far the total income from investments and the profit or loss invest-

ments may be regarded as technical in character. As there are other very good reasons which argue in favour of separate management for the life insurance class<sup>12</sup> it is suggested that a special profit and loss account be submitted for the life class, namely that this account be completely separated from the one covering the other classes of insurance. The items of the above-mentioned account can be defined as follows:

<sup>12</sup> Indeed, in a very large number of countries, insurance undertakings which write life business are not allowed, at the same time, to write other branches of insurance.

<i>Income for the financial year</i>	<i>Expenditure for the financial year</i>
Written premiums, less cancellations	Claims paid:
Reserves brought forward:	On maturity
Mathematical reserves	On death
Other technical reserves	Annuities
Net investments income earned during the year	Surrenders
Profits on investments, less losses	Reserves carried forward:
Other income	Mathematical reserves
	Other technical reserves
	Commissions and management expenses
	Bonus to policy holders
	Allocation to free reserves
	Dividends to shareholders
	Taxes
	Other expenditure

### C. Breakdown of the items in the profit and loss account

24. Having determined the items of the profit and loss account, the problem of their break-down has to be considered, bearing in mind the aims to be achieved by the introduction of the unified system as much on the national as on the international level. From the point of view of methodology, the problem of the break-down can be resolved by the definition of a few elementary series, the combination of which will lead, in any given case, to the desired result. Generally, the following three series may be adopted:

- Series A: Type of business carried on;
- Series B: Insurance classes underwritten;
- Series C: Domestic business and foreign business.

25. Each of the above elementary series will, of course, comprise a certain number of headings. The choice of these headings must be at the same time:

- Sufficiently *broad* to allow the system to provide the information required in a suitably differentiated form;
- Sufficiently *narrow* to keep the system manageable and prevent it from becoming weighted down by too many headings formed by various combinations of the elementary series; and

Sufficiently well *adapted* to the current practice of insurance undertakings to make it easy to apply.

In any event, since the headings of each of these three series are important parts of the system, they call for detailed analysis.

#### *Series A — Type of business carried on*

26. In the foregoing discussion, the terms "insurer" and "insurance" related both to direct insurance and to reinsurance. Series A introduces a distinction based on the type of insurance carried on. Since the series A headings constitute factors in the breakdown of the statistical information to be supplied, and since this breakdown should be kept to a minimum, the following three headings are suggested as a common minimum:

- (a) Direct insurance (gross amount);
- (b) Reinsurance ceded (gross amount);
- (c) Reinsurances accepted (gross amount).

These three headings are sufficient to determine the net balances remaining for own account. However, no distinction is made between cessions arising out of direct business and retrocessions. In practice, it has often been proved useful to distinguish between ordinary cessions and retrocessions and it is recommended that all countries wishing to obtain a more precise picture of their market, should maintain this distinction.

#### *Series B — Classes of insurance carried on*

27. It seems desirable that series B should comprise a sufficient number of headings, such as, for example, the following six:

- (a) Life insurance;
- (b) Accident insurance;
- (c) Fire insurance;



- (d) Motor vehicle insurance;
- (e) Transport insurance;
- (f) Other insurances.

This list, which may not correspond to the usual breakdown practised in a very large number of countries, is only given as an illustration. In fact, if one country deems it necessary to break down the classes of insurance underwritten there in some other way, it may do so without thereby being prevented from introducing the unified system. There is, however, one condition: that the life class remains separate from the other classes, for the reason given in paragraph 23 above.

28. This freedom in the choice of classes does not, however, eliminate another problem caused by certain types of policy, especially the so-called combined policy, which covers various risks belonging to different branches. Wherever the statistical elements (premiums, claims, expenses, etc.) of a combined policy can be separated without difficulty, there is an advantage in attributing them to their respective branches. If this is not possible, or too involved, it would then be better to proceed as follows:

(a) Wherever one branch predominates in a combined policy, the whole policy should be assigned to that branch;

(b) When no single class predominates, it is better to class the whole policy under "Other insurances".

#### *Series C — Domestic business and foreign business*

29. A breakdown by geographical areas was at first contemplated for this series. But attempts to delimit the geographical regions and to make rational use of the information broken down in this way came to nothing. It was found that the compilation of statistics on reciprocal flows of business between various countries would have entailed a very detailed breakdown of active and passive insurance operations, for example by country of origin and destination, and this raised innumerable practical obstacles. For this reason, only the following two headings were finally adopted, reducing the breakdown to the strict minimum:

- (a) Strictly domestic insurance business;
- (b) Foreign insurance business.

If they thought it necessary, national authorities would, of course, be at liberty to undertake a more detailed breakdown by subdividing item (b) in an appropriate manner.<sup>13</sup>

30. To define more accurately each of the two headings of elementary series C, it is necessary to deal separately with direct business on the one hand and reinsurances ceded and accepted on the other. In direct business, every policy written in a given country P, whether at the head office of a national undertaking of that country, or a branch office or agency of a foreign undertaking established there, should be considered as belonging to the

"domestic business" of country P, namely, to what we call the "national portfolio of the country of reference P". It is obvious that this definition does not always correspond to the theoretical notion of where the risk belongs. However, in view of the practical possibilities of recording the policies, a solution based on the supervision of the undertakings by country of activity seems realistic and has accordingly been adopted (see above para. 11). It is to be hoped that as a consequence of the development of the national insurance markets, cases where the risks of one country find cover directly in another without being recorded in the first country, will become more and more rare. (See also below, paras. 44-45, referring to the role of brokers.)

31. For reinsurances ceded, viewed from a given country P, it is the location of the office of the reinsurer accepting the risk which determines whether it is "domestic business" or "business going abroad". Reinsurances ceded to a branch office of a foreign reinsurer to be transferred directly to the head office should be considered as "business going abroad", those kept by the branch office as "domestic business". The nature of the ceding company (national undertaking of country P or branch office of a foreign undertaking established in P) is of no importance under the circumstances. For reinsurances accepted by a company—national or foreign—established in country P, it is the location of the ceding company which determines the distinction between "domestic business" and "business coming from abroad". To complete the picture, it is necessary to state that a branch office or agency of a national undertaking of the given country P established abroad must follow the criteria of distinction of the foreign country and not those of country P. For them the terms "domestic business" and "business with foreign countries" have another meaning: consequently, when such a branch office or agency presents its accounts to its country of origin P, it must not proceed to the breakdown proposed in paragraph 29 above, this breakdown being of use only to the authority of its country of residence abroad.

#### **D. Breakdown according to the three criteria in combination**

32. Reverting to the statistical data defined in paragraphs 22 and 23 above, it has to be considered which items lend themselves to breakdown according to all three criteria, because it seems at first sight very unlikely that all the data contained in the profit and loss account, without exception, will be suitable for such a breakdown. In classes other than life it seems essential for the technical items (both income and expenditure) to be completely broken down according to the three criteria (by insurance class, direct business and reinsurances, domestic business and business with foreign countries). Breakdown of the non-technical items seems neither possible nor essential. It would be sufficient, then, for the items in this second part of the profit and loss account for classes other than life to be shown as a single figure for all classes together, without distinction between direct business and reinsurances or between domestic business and business with foreign countries.

<sup>13</sup> See, for example, the distinction made in the Philippines between United States insurers and other foreign insurers.

33. In life insurance (and similar classes) it is necessary to break down as completely as possible nearly all the items of the profit and loss account. In a modern conception of life insurance, with emphasis on the spirit of mutuality, the strictly technical elements, and nearly all the other elements of the trading accounts, are dealt with in a way which generally allows their exact allocation to the different headings which concern them. As for the few elements which are by their nature indivisible (for example, allocations to capital and free reserves, dividends

to shareholders, etc.) they will of course, be shown as a whole, without any breakdown.

#### E. Balance sheet of the insurance undertakings

34. Among the items usually appearing in the balance sheet of an insurance undertaking there are a few which are of particular importance to the unified system of statistics and they must be retained as essential elements of the minimum system. These are the following:

<i>Assets</i>	<i>Liabilities</i>
Investments in state securities and bonds, etc.	Capital and free reserves (paid-up capital and free reserves)
Investments in real estate	Technical reserves, life insurance: Mathematical reserves Other reserves
Investments in mortgages	Technical reserves, other classes: For unexpired risks For outstanding claims Other reserves
Investments in private securities with fixed interest	Reserves for bonuses to policy-holders: Life insurance Other classes
Investments in stocks and similar securities	Tax debts
Life Policy loans	Owed to insured
Cash in hand, in bank, etc.	Owed to insurers/reinsurers
Tax credits	Other liabilities
Outstanding premiums	
Due from insurers/reinsurers	
Other assets	

35. The balance sheet of an undertaking is a single and indivisible document and it is desirable to preserve its unity, avoiding horizontal breakdown of its items. However, bearing in mind the aims to be achieved by the institution of the unified system of statistics, it is necessary to break down a few of these items. To obtain such a breakdown without deviating from the classical form of the balance sheet, it is proposed to leave the balance sheet as it stands and to annex to it a special schedule recapitulating the appropriate items duly broken down. The following items are concerned:

(a) Breakdown of investments according to the kind of assets they represent (national securities of the country of reference or foreign securities);

(b) List of deposits belonging to the company, shown separately according to the place of deposit (in the country of reference or abroad);

(c) List of foreign deposits kept by the company, shown separately according to their origin (from insurers/reinsurers of the country of reference or abroad).

36. Apart from the information given by the profit and loss account, by the balance sheet and by the annex to the balance sheet mentioned in paragraph 35 above, there is in insurance business a multitude of other very useful information needed for a full understanding of the size and growth of a portfolio, the structure of a national market, etc. To keep the unified system of statistics at the level of a common minimal system, this report has deliberately refrained from prescribing a uniform collection of such additional information, leaving it to each country to proceed, in this respect, according to its own particular needs and practical possibilities.

### Chapter III

## APPLICATION OF THE UNIFIED SYSTEM OF STATISTICS BY INDIVIDUAL INSURANCE UNDERTAKING

### A. Set of forms to be employed to facilitate the uniform presentation of the statistical information

37. The principles of the unified system having been established in the two preceding chapters, it is now time to elaborate on the two series of instructions for application of the system, one for the use of the insurance undertakings producing the basic data, and the other for the supervisory authority, receiver of the data and author of the national monograph (see above, para. 10). This chapter deals with the first of the two series of instructions mentioned above, namely, the one for the use of the insurance undertakings and tries to find a model which, whilst remaining simple and easy to operate, takes into account all the requirements of the unified system. It is, of course, a minimum solution which could, none the less, serve as a guide even where the need is felt for a more extensive system.

38. The model is composed of a set of forms to be filled in by each insurance undertaking, accompanied by some directions for their completion. For two reasons, it is highly desirable to have uniformity in the presentation of these forms at the national level in each country: first, any supervisory authority entrusted with the preparation of the national monograph for its country (from now on called the country of reference) would certainly appreciate statistics which could be directly aggregated; and secondly, the existence of some common rules of presentation would reduce the risk of misunderstanding as far as the real intent of the proposals contained in this report is concerned.

39. However, uniformity in the presentation of the forms at the national level in each country cannot be absolute, in view of the fact that in most countries there are different types of insurance undertakings, in particular some with their head office in the country of refer-

ence (hereafter called "independent undertakings") and others with head office abroad ("branch offices" or "agencies of foreign undertakings") and, among the first, undertakings which only operate in the country of reference, and others which also operate abroad. It is obvious that the annual reports which all these undertakings will submit to the supervisory authority of the country of reference, will duly take into account all the peculiarities characteristic of their type (independent or non-independent) and their field of operation (domestic only, or both domestic and foreign).

### B. Form for use by independent undertakings only, operating in the country of their head office

40. This, is, of course, the simplest case, but also the most common in the developing countries. It seems advisable to point out that independent undertakings with head office in the country of reference can be State institutions, semi-State institutions, private national undertakings, or even subsidiaries of foreign undertakings. For the purposes of the unified system, no distinction whatsoever will be made between these types of undertakings with regard to the forms they will have to present, which will be the following:

*Form No. 1:* Profit and loss account for life insurance;

*Form No. 2:* Profit and loss account for all other classes;

*Form No. 3:* Technical results for each of the classes other than life (one page per class);

*Form No. 4:* Balance sheet of the undertaking;

*Form No. 5:* Analysis of investments and deposits.

On the following pages are shown models of the five forms mentioned above, each accompanied by directions for use.

Form No 1

Country of reference: \_\_\_\_\_

Name of the undertaking: \_\_\_\_\_

Profit and Loss Account  
for the financial year : \_\_\_\_\_

National Portfolio of the country of reference

Life Insurance :

a	b	c	d	e	f	g	h	i
	Direct business (gross)	REINSURANCES						Net Total (b+e+f- c-d-g-h)
		Ceded		Accepted		Retroceded		
		Domestic- ally	abroad	Domestic- ally	from abroad	Domestic- ally	abroad	
1. Premiums written (received and receivable, net of taxes and cancellations)								
2. Reserves brought forward								
a) mathematical reserves								
b) other technical reserves								
3. Net investment income earned during the year								
4. Profits on investments less losses								
TOTAL A								
5. Claims paid :								
a) Claims on maturity								
b) Claims on death								
c) Annuities								
d) Surrenders								
6. Reserves carried forward								
a) mathematical reserves								
b) other technical reserves								
7. Commissions and management expenses (including reinsurance commissions)								
8. Bonuses to policyholders for the year								
TOTAL B								
9. Result (A - B)								
10. Other income								
11. Other expenditure								
12. Total result for the financial year (9 + 10 - 11)								
13. Taxes								
14. Allocations to free reserves (capital and free reserves)								
15. Dividends to shareholders								
16. Other allocations								
17. Balance (12-13-14-15-16)								

#### How to use form No. 1

- Columns *g* and *h* Countries which prefer not to distinguish between cessions coming from direct business and retrocessions may leave out columns *g* and *h* and enter all cessions under *c* and *d*.
- Lines 1-8 It may sometimes be useful to distinguish between individual and collective life insurance by introducing an appropriate subdivision in the corresponding lines.
- Line 1 Premiums written during the financial year must be shown on this line.
- Line 3 Net investment income after deduction of taxes and other expenditure directly affecting these investments.
- Line 4 In principle, only the profits actually realized should be shown on this line. However, in the case when a country's system provides for a periodic revaluation of assets, the change in value should also be shown here.
- Line 5 Claims actually paid during the financial year must be shown here.
- Line 7 A distinction between commissions and other management expenses is, in principle, useful although it does not always give figures comparable as between one company and another, owing to the different systems of commission employed (agents depending on head office and independent agents).
- Lines 10 and 11 These two headings contain miscellaneous items of income and expenditure such as for example, interest due on deposits made by reinsurers, etc.
- Lines 13-17 When a company is writing both life and non-life business, it is possible, indeed likely, that the separate handling of these two categories of insurance will stop at line 12 and that headings 13 to 17 will have to relate to the whole of the business. In this case, it is recommended that Form No. 1 should be completed up to line 12 and then the contents of that line transferred to Form No. 2, adding a line 12(*b*) entitled "Result of life insurance for the financial year".

Form No 2

Country of reference: \_\_\_\_\_

Name of the undertaking : \_\_\_\_\_

Profit and Loss Account  
for the financial year : \_\_\_\_\_

National portfolio of the country of reference

All Classes other than Life

a	b	c	d	e	f	g	h	i
		REINSURANCES						Net Total (b+e+f -c-d-g-u)
	Direct business (gross)	Ceded		Accepted		Retroceded		
		Domestic- ally	abroad	Domestic- ally	from abroad	Domestic- ally	abroad	
1. Premiums written (received and receivable, net of premium taxes and cancellations)								
2. Reserves brought forward								
a) for unexpired risks								
b) for outstanding claims								
c) other technical reserves								
TOTAL A								
3. Claims paid								
4. Reserves carried forward								
a) for unexpired risks								
b) for outstanding claims								
c) other technical reserves								
5. Commissions and management expenses (including reinsurance commissions)								
6. Bonuses and dividends to policyholders declared for the year								
TOTAL B								
7. Technical results (A-B)								
8. Net investment income earned during the year								
9. Profits on investments, less losses								
10. Other income								
11. Other expenditure								
12. Total result for the financial year (7+8+9+10-11)								
13. Taxes								
14. Allocation to free reserves (capital and free reserves)								
15. Dividends to shareholders								
16. Other allocations								
17. Balance (12-13-14-15-16)								

### How to use form No. 2

- Columns *g* and *h*** The countries which prefer not to distinguish between cessions coming from direct business and retrocessions may leave out columns *g* and *h* and enter all cessions under *c* and *d*.
- Line 1** Premiums written for the financial year must be shown here. To evaluate the earned premiums of that year, it is necessary to add the reserve for unexpired risks brought forward at the beginning and deduct the one carried forward at the end of the financial year.
- Line 3** Claims actually paid during the financial year must be shown here. To evaluate the claims incurred in the financial year, it is necessary to take into consideration the reserves for outstanding claims at the beginning and at the end of the financial year.
- Line 5** A distinction between commissions and other management expenses is, in principle, useful, although it does not always give figures comparable as between one company and another owing to the different systems of commission employed (agents depending on head office and independent agents).
- Line 9** In principle, only the profits actually realized should be shown on this line; however, in the case where a country's system provides for a periodic revaluation of assets, the change in value should be shown here also.
- Lines 10 and 11** These two headings contain miscellaneous items of income and expenditure, such as for example interest due on deposits made by reinsurers, etc.

Form No 3

Country of reference: \_\_\_\_\_

Name of the undertaking : \_\_\_\_\_

Technical result for the financial year : \_\_\_\_\_

National portfolio of the country of reference

Class : \_\_\_\_\_

a	b	c	d	e	f	g	h	i
		REINSURANCES						Net Total (b+e+f-c-d-g-h)
	Direct business (gross)	Ceded		Accepted		Retroceded		
		Domestic-ally	abroad	Domestic-ally	from abroad	Domestic-ally	abroad	
1. Premiums written (received and receivable, net of taxes and cancellations)								
2. Reserves brought forward a) for unexpired risks b) for outstanding claims c) other technical reserves								
TOTAL A								
3. Claims paid								
4. Reserves carried forward a) for unexpired risks b) for outstanding claims c) other technical reserves								
5. Commissions and management expenses (including reinsurance commissions)								
6. Bonuses to policyholders for the year								
TOTAL B								
7. Technical result (A-B)								



### How to use form No. 3

- Columns *g* and *h* Countries which prefer not to distinguish between cessions coming from direct business and retrocessions may leave out columns *g* and *h* and enter all cessions under *c* and *d*.
- Line 1 Premiums for the financial year must be shown here. To evaluate the earned premiums of that year, it is necessary to add the reserve for unexpired risks brought forward at the beginning and deduct the one carried forward at the end of the year.
- Line 3 Claims actually paid during the financial year must be shown here. To evaluate the claims incurred in the financial year, it is necessary to take into consideration the reserves for outstanding claims at the beginning and at the end of the financial year.
- Line 5 A distinction between commissions and other management expenses is, in principle, useful although it does not always give comparable figures as between one company and another owing to the different systems of commission employed (agents depending on head office and independent agents).

#### *Other remarks:*

For the breakdown by classes in the case of combined policies, see paragraph 28 of the present report.

Reinsurances accepted and retrocessions sometimes do not refer to a definite class (comprehensive cover, etc.). In that case it would be suitable to treat all such acceptances or retrocessions as a special class, "Unclassified acceptances and retrocessions" and to show them separately on a special page attached to Form No. 3.

In principle, the figures shown in lines 1-9 of form No. 2 should represent the aggregation of the corresponding items in all copies of form No. 3 (one for each class of insurance).

Form No 4

Country of reference : \_\_\_\_\_

Name of the undertaking : \_\_\_\_\_

Balance sheet at : \_\_\_\_\_

a	b	c	d
<p style="text-align: center;"><u>ASSETS</u></p> <ol style="list-style-type: none"><li>1. Investments in State securities and bonds, etc.</li><li>2. Investments in real estate</li><li>3. Investments in mortgages</li><li>4. Investments in private securities with fixed interest</li><li>5. Investments in stocks and similar securities</li><li>6. Life policy loans</li><li>7. Cash in hand, bank, etc.</li><li>8. Tax credits</li><li>9. Outstanding premiums</li><li>10. Due from insurers/reinsurers</li><li>11. Other assets</li><li>12. TOTAL</li></ol>		<p style="text-align: center;"><u>LIABILITIES</u></p> <ol style="list-style-type: none"><li>1. Capital and free reserves (paid up capital and free reserves)</li><li>2. Technical reserves life class<ul style="list-style-type: none"><li>- mathematical</li><li>- other reserves</li></ul></li><li>3. Technical reserves other classes<ul style="list-style-type: none"><li>- for unexpired risks</li><li>- for outstanding claims</li><li>- other reserves</li></ul></li><li>4. Reserve for bonuses to policyholders<ul style="list-style-type: none"><li>- life branch</li><li>- other branches</li></ul></li><li>5. Tax debts</li><li>6. Owed to insured</li><li>7. Owed to insurers/reinsurers</li><li>8. Other liabilities</li><li>9. TOTAL</li></ol>	

#### How to use form No. 4

- Column *a* When a company is writing both life and non-life business, and provided that separate investments are held as guarantees for the technical reserves of life insurance, it is advisable to split column *a* into two, i.e.
- Assets*
- A. *Of life insurance:* 1, 2, etc, to 11.  
B. *Other assets:* 1, 2, etc, to 11.
- Column *a*, item 4 Distinction should be made between private securities negotiable on the Stock Exchange and private debts non-negotiable, whenever such debts are permitted as investments for an insurance undertaking (problem of liquidity, also the problem of collusion when the debtor is related to the undertaking).
- Column *a*, item 10 Deposits made in respect of reinsurances accepted belong under this heading. The same applies to sums due from subsidiaries.
- Column *a*, item 11 When non-amortized commission in life business is taken into account as an asset, it is preferable to show it under a special heading.
- Column *c*, item 1 When it is the practice to show the nominal authorized capital in the balance sheet, a heading "part of capital not paid-up" should appear in the assets.
- Column *c*, item 6 Only debts other than those resulting from outstanding claims, which are already mentioned in column *c* item 3, should be shown here.
- Column *c*, item 7 Deposits retained in respect of reinsurances ceded should appear under this heading. The same applies to sums due from a subsidiary to its head office.

Form No. 5

Country of reference: \_\_\_\_\_

Name of Undertaking: \_\_\_\_\_

Analysis of the investments shown in the balance sheet  
and of the deposits

	a	b	c	d	e	f	g
Investments		Investments		Deposits made by the undertaking		Deposits in the undertaking belonging to third parties	
		In national securities	In foreign securities	In the country	abroad	from the country	from abroad
1. In State securities and bonds etc.							
2. In real estate							
3. In mortgages							
4. In private securities with fixed interest							
5. In stock and similar securities							
6. In cash and currency							
7. In other investments							
8. Total							

#### How to use form No. 5

Column *a* When a company is writing both life and non-life business, and provided that separate investments are held guarantees for the technical reserves of life insurance, it is advisable to divide column *a* into two, i.e.:

*Assets*

A. *Of life insurance*: 1, 2, etc. to 7

B. *Other assets*: 1, 2, etc. to 7

Columns *b* and *c* National securities comprise: real estate situated in the country of reference, and all government and private bonds by which investments in that country are financed. With regard to cash and currency, these are comparable to national securities when located in the said country, namely, in a bank or as deposits.

Columns *d* and *e* All deposits made by the undertaking, whether belonging to itself or to third parties (insurers/reinsurers) must appear in these columns.

Columns *f* and *g* Means deposits belonging to third parties (insurers/reinsurers) and retained by the undertaking, including those which it had to deposit elsewhere (see the two preceding columns). Their place of origin is determined by the place of establishment of the owners of these deposits.

**C. Forms for use by independent undertakings which, in addition to their domestic business, also operate abroad as branch offices or agencies**

41. Such companies will, of course, have to complete in full Forms Nos. 1 to 5 above as well as the two additional forms printed below relating to the portfolios insured abroad, in life insurance (form No. 1 b) and in classes other than life (form No. 2 b). These additional forms Nos. 1 b and 2 b will be the special trading statements concerning the business written by the branch offices and agencies abroad, forms Nos. 1 and 2 referring only to the business written by the head office in the country of reference. Bearing in mind that the portfolios insured abroad are controlled in detail by the authorities of each host country, a simplified presentation to the authority of the country where the head office is situated (country of reference), covering in the aggregate all the countries of activity abroad and without breakdown into classes (except the distinction life/non-life) seems sufficient. With regard to the balance sheet (form No. 4), it is in any case related to the entire business of the undertaking and does not distinguish between the national portfolio of the country of reference and those portfolios insured abroad; therefore, there is no need to add any new forms.

42. Taking into consideration the foregoing, and also the point made in paragraph 31 above concerning the omission of a breakdown as between domestic business and business with foreign countries in the case of branch offices and agencies operating abroad, the two additional forms Nos. 1 b and 2 b will be set out as shown on pages 21 and 22.

**D. Form for use by non-independent undertakings (branch offices and agencies of foreign undertakings) established in the country of reference**

43. In the unified system, each branch office or agency established in the country of reference P should supply the competent authority of the said country with an annual report in all aspects similar to that of a strictly domestic independent company (see above, para. 40), i.e. limited exclusively to the portfolio insured in that country. For this purpose, the same forms Nos. 1-5 may be used, taking into account the following:

(a) Forms Nos. 1 and 2: the branch offices and foreign agencies should stop at line 12, as the items following do not apply to them;

(b) Form No. 3 can be used exactly as it stands (one form for each class written);

(c) Form No. 4 (Balance sheet) should be headed "Statement of the assets and liabilities of the branch office or agency" and should only comprise items relating exclusively to the domestic portfolio. In particular, the investments must be exclusively those maintained in the country of reference.

(d) The remark made under (c) above is also valid as regards form No. 5, which should be completed by non-independent companies.

**E. Information on certain insurance business dealt with by brokers, particularly business which they place directly abroad**

44. Insurance business coming from the country of reference which brokers operating there place with independent or non-independent undertakings of that country, does not need to be accounted for at broker level, because it is included in the accounts of the undertakings in question as business written by them. However, in certain countries, brokers can place business directly abroad, and it thus escapes the control of the country of reference. In such cases it seems appropriate for the authorities to ask for information concerning this business, failing which they will have an incomplete picture of their national market.

45. The difficulties encountered in obtaining data concerning business placed directly abroad by brokers are considerable. They are due to a variety of reasons, amongst others the regulations applicable to the accounts between the broker and the insurer, which more often than not deal only with the balance of the net commercial premium after deduction of the commissions. Furthermore, brokers do not usually have any information concerning the cost of the claims, the build-up of the technical reserves, etc. and are, therefore, not able to supply details of the business they have been dealing with. With all these difficulties in mind, no uniform model is proposed within the minimal system. It is left to each country interested in recording the business dealt with there by brokers to find its own most suitable solution. For instance, a country may oblige brokers to obtain from companies abroad all necessary data, or it may even prefer to request complete information from these companies direct, this last course being particularly appropriate where business transacted in this manner by brokers absorbs a large share of the local market.

Form No. 1 b

Country of reference: \_\_\_\_\_

Name of the undertaking: \_\_\_\_\_

Trading Result for the financial year : \_\_\_\_\_

Portfolios insured abroad by branch offices and agencies, (Total figures) Life Insurance

a	b	c	d	e
	Direct business (gross)	REINSURANCES		Net Total (b + c - d)
		Accepted	Ceded	
1. Premiums written (received and receivable, net of taxes and cancellations)				
2. Reserves brought forward				
a) mathematical reserves				
b) other technical reserves				
3. Net investment income earned during the year				
4. Profits on investments less losses				
TOTAL A				
5. Claims paid :				
a) Claims on maturity				
b) Claims on death				
c) Annuities				
d) Surrenders				
6. Reserves carried forward				
a) mathematical reserves				
b) other technical reserves				
7. Commissions and management expenses (including reinsurance commissions in the proper columns)				
8. Bonuses to policyholders for the year				
TOTAL B				
9. Result (A - B)				
10. Other income	<div style="border: 2px solid black; width: 100%; height: 100%; display: flex; align-items: center; justify-content: center;"> <span style="font-size: 48px; font-weight: bold;">X</span> </div>			
11. Other expenditure				
12. Total result for the financial year (9 + 10 - 11)				

Form No. 2 b

Country of reference: \_\_\_\_\_

Name of the undertaking: \_\_\_\_\_

Trading Result for the financial year : \_\_\_\_\_

Portfolio insured abroad by branch offices and agencies, (Total figures)

All classes other than Life

a	b	c		d	e		
		Direct business (gross)	REINSURANCES			Net Total (b + c - d)	
			Accepted				Ceded
1. Premiums written (received and receivable, less taxes and cancellations)							
2. Reserves brought forward							
a) for unexpired risks							
b) for outstanding claims							
c) other technical reserves							
TOTAL A							
3. Claims paid							
4. Reserves carried forward							
a) for unexpired risks							
b) for outstanding claims							
c) other technical reserves							
5. Commissions and management expenses (including reinsurance commissions in the proper columns)							
6. Bonus and dividends to policyholders declared for the year							
TOTAL B							
7. Technical results (A-B)							
8. Net investment income earned during the year	<div style="font-size: 4em; font-weight: bold;">X</div>						
9. Profits on investments, less losses							
10. Other income							
11. Other expenditure							
12. Total results for financial year (7 + 8 + 9 + 10 - 11)							



### How to use forms Nos. 1 b and 2 b

#### *General remarks*

In addition to the remarks made on the subject of forms Nos. 1 and 2, which apply here also, it is advisable to mention the following: In order that the profit and loss accounts forming the object of forms Nos. 1 and 2 may be complete, it is necessary to add the net trading results of the portfolios insured abroad as they appear in column *e*, line 12 of forms Nos. 1 b and 2 b. For this purpose it is sufficient to subdivide line 12 of forms 1 and 2 respectively, as follows:

#### *Form No. 1*

12. Total for the financial year:

- (a) Of the national portfolio (9 + 10 - 11);
- (b) Of portfolios insured abroad (form 1 b).

#### *Form No. 2*

12. Total result for the financial year:

- (a) Of the national portfolio (7 + 8 + 9 + 10 - 11);
- (b) Of portfolios insured abroad (form 2 b).

Reinsurances accepted abroad in the name of, and transferred directly to, the head office in the country of reference already appear in forms Nos. 1 and 2 and should not be included in forms Nos. 1 b and 2 b. If, in exceptional cases, these acceptances are entered in forms Nos. 1 b and 2 b, then they must be included under both "Acceptances" and "Retrocessions", the net total "Business for own account" in column *e* remaining unchanged.

## Chapter IV

### APPLICATION OF THE UNIFIED SYSTEM OF STATISTICS BY INDIVIDUAL COUNTRIES

#### A. Manner of preparation of the "national monographs"

46. Before going into the problem of the application of the system by individual countries, it would be as well to remember that it is precisely at the national level that the real value of this unified system lies, more particularly in the assembly of statistics relating to the whole national insurance market and in the assessment of the influence which international insurance transactions have on it. In other words, it is important that each country should produce its annual "national monograph" along the lines proposed below. Chapter III above dealt with the production of the relevant statistical data by individual undertakings, necessary for the preparation of such a "national monograph" through a centralized system. But there are no doubt other ways of producing the same result and the competent supervisory authority of each country should decide for itself if the statistics are to be furnished in accordance with Forms Nos. 1-5 as proposed in the present report, or in some other form, provided that the national monograph produced is sufficiently detailed, and complete, and yields results as listed in tables 1-11 below.

47. Leaving those countries which prefer not to follow the proposals contained in the chapter III above to act as they see fit, it can be assumed for purposes of illustration that it is in fact forms Nos. 1 to 5 which will be submitted by each undertaking to the competent supervisory authority of the country of reference. On the basis of these forms, the authorities will produce general statistics giving only total figures, obtained by adding together, item by item, the data submitted. The data themselves, as well as their breakdown, will be (with some exceptions, mentioned in the following paragraphs) essentially the same as for individual undertakings, but, bearing in mind the purpose of the national monograph, the presentation will not always follow the line taken at the level of the individual undertaking. For this reason, another form of presentation must be prepared and described in this chapter. The name "forms" has been adopted for the documents for use by individual undertakings, to distinguish them from the "tables" used for the national monographs.

#### B. Breakdown according to type of undertaking

48. One of the characteristics of the tables will be the additional breakdown between different types of undertakings. In each national market the insurance undertakings (including professional reinsurers, i.e. those who

do not transact direct business) generally take the following form:

(a) Institutions under public or semi-public law, in other words, State or semi-State bodies;

(b) National institutions under private law, in other words, national private undertakings;

(c) Subsidiaries of foreign undertakings set up independently in the country;

(d) Branch offices and agencies of undertakings with head office in another country.

The undertakings under (a), (b) and (c) are those which have been defined as "independent undertakings" in chapter III above. Item (d) comprises the "non-independent undertakings", i.e. those which represent only part of a larger undertaking whose main field of operation is to be found outside the country.

49. Among the headings covering the group of independent insurers, those under item (a) are characterized by the fact that, in their case, it is the State which, by its participation in the capital or under special legislation, has a controlling hand. Item (b) covers all those independent undertakings which do not belong under items (a) or (c), in other words, all private insurance undertakings with head office in the country which are not subsidiaries of foreign undertakings. However, it is necessary to emphasize in this connexion that it is not always easy to distinguish between items (b) and (c). Apart from cases where the name of an undertaking shows that it is a subsidiary of a foreign concern, it could be very difficult for the authorities of a country to establish beyond any doubt the foreign character of a company having its head office in the country, especially when there is no compulsory register of shareholders or the issue of bearer shares is authorized.

50. Bearing in mind these difficulties, the unified system, inasmuch as it is a minimum system, will only retain, under the category of independent undertakings, State and semi-State institutions on the one hand, and private undertakings (national and subsidiaries) on the other. Countries wishing to maintain the additional distinction between private national undertakings and subsidiaries of foreign undertakings—a distinction which in a number of them might be of considerable importance—should, of course, do so. The following criteria might be used to determine whether an insurer having his headquarters in the country is a "subsidiary of a foreign company" or otherwise foreign owned:

(a) Where the trade name of the insurer mentions a foreign company;

(b) Where over 50 per cent of the capital is held by foreigners;

(c) Where the undertaking in question was formed as a result of the transformation of what was previously an agency of a foreign company into a firm under the law of the host country without any substantial change in its management;

(d) Where the top management of the company is in fact subordinate to a foreign company as regards its main transactions.

### C. Synoptic tables relating to the national insurance market (national portfolio) of the country of reference

51. It is appropriate to deal with the problems (general and specific) of each national insurance market separately from those concerning the size and the results of international transactions. A national insurance market is generally characterized by:

(a) The number and type of undertakings operating in it;

(b) The volume of business and its distribution by insurance class;

(c) The total trading results as well as the technical results for each class;

(d) The size of the technical reserves (provisions) in total and by class and the capital reserves (share capital and free reserves) in total;

(e) Investments relating to the insurance operations in the country of reference.

52. On the basis of forms Nos. 1, 2 and 3 as submitted by all undertakings operating in a given country, it is easy to construct synoptic tables covering in an appropriate way the first three items enumerated in paragraph 51 above. For item (d), reference must be made to forms Nos. 3 and 4 jointly. With regard to item (e), the synoptic table will be based on the information contained in form No. 5. The model given below is composed of the following tables to be completed for each financial year:

Table 1: Trading results for life insurance

Table 2: Trading results for all other classes of insurance

Table 3: Technical results for each insurance class and capital reserves

Table 4: Technical reserves by insurance class and capital reserves

Table 5: Analysis of investments relating to insurance operations.

For a better understanding of the headings of tables 1-5 below, reference may be made to the explanations following each of the forms in chapter III above.

Table No. 1

National portfolio of the  
country of reference

## Trading results for life insurance

Direct business (gross figures) and  
Net business retained for own account \*

Financial year .....

a	b	c	d	e	f	g	h	i
Type of undertaking	State institutions etc.		Independent private undertakings**		Foreign branch offices and agencies		Total	
Number of undertakings								
	Gross direct business	Net retained business	Gross direct business	Net retained business	Gross direct business	Net retained business	Gross direct business	Net retained business*
1. Premiums written (received and receiv- able, less taxes and cancellations)								
2. Reserves brought forward								
a) mathematical reserves								
b) other technical reserves								
3. Net investment income earned during the year								
4. Profits on investments, less losses								
TOTAL A								
5. Claims paid :								
a) Claims on maturity								
b) Claims on death								
c) Annuities								
d) Surrenders								
6. Reserves carried forward								
a) mathematical reserves								
b) other technical reserves								
7. Commissions and manage- ment expenses (including reinsurance commissions)								
8. Bonuses to policyholders for the year								
TOTAL B								
9. Results (A.- B)								
10. Other income								
11. Other expenditure								
12. Trading results (9 + 10 - 11)								

\* Net business retained for own account is defined as follows : direct business plus reinsurances accepted less reinsurances ceded and retrocessions.

\*\* Regarding further breakdowns, see paragraphs 49-50 of text.

Table No. 2

National portfolio of the  
country of reference

## Trading results for all classes other than life

Direct business (gross figures) and  
Net business retained for own account \*

Financial year.....

a	b	c	d	e	f	g	h	i
Type of undertaking	State institutions etc		Independent private undertakings**		Foreign branch offices and agencies		Total	
Number of undertakings								
	Direct business	Net retained business	Direct business	Net retained business	Direct business	Net retained business	Gross direct business	Net retained business*
1. Premiums written (received and receivable, less taxes and cancellations)								
2. Reserves brought forward								
a) for unexpired risks								
b) for outstanding claims								
c) other technical reserves								
TOTAL A								
3. Claims paid								
4. Reserves carried forward								
a) for unexpired risks								
b) for outstanding claims								
c) other technical reserves								
5. Commissions and management expenses (including reinsurance commissions)								
6. Bonuses to policyholders for the year								
TOTAL B								
7. Technical results (A - B)								
8. Net investment income earned during the year								
9. Profits on investments less losses								
10. Other income								
11. Other expenditure								
12. Trading results (7+8+9+10-11)								

\* Net business retained for own account is defined as follows: direct business plus reinsurances accepted less reinsurances ceded and retrocessions.

\*\* Regarding further breakdown, see paragraphs 49-50 of text.

**Table No. 3**

**National portfolio of the country of reference**

**Technical results by class of business**

Direct business (gross figures)

Class.....

Financial year.....

a	b	c	d	e
Type of undertaking	State Institutions etc.	Independent private undertakings*	Foreign branch offices and agencies	Total
Number of undertakings				
1. Premiums written (received and receivable, net of taxes and cancellations)				
2. Reserves brought forward				
a) for unexpired risks				
b) for outstanding claims				
c) other technical reserves				
TOTAL A				
3. Claims paid				
4. Reserves carried forward				
a) for unexpired risks				
b) for outstanding claims				
c) other technical reserves				
5. Commissions and management expenses				
6. Bonuses to policyholders for the year				
TOTAL B				
7. Technical result (A - B)				

\* Regarding further breakdown, see paragraphs 49-50 of text.

Table No. 4

National portfolio of the country of reference

Technical reserves by class of insurance and capital reserves\*

Statement as at .....

a	b	c	d	e
	State instituti- ons etc	Independent private under- takings	Branch offices and agencies of foreign undertakings	Total
<u>TECHNICAL RESERVES</u>				
A. <u>Life Class</u>				
1. Direct business (gross)				
2. Reinsurances ceded				
3. Reinsurances accepted				
4. Retrocessions				
5. Net technical reserves (1 + 3 - 2 - 4)				
B. <u>Accident Class</u>				
1. Direct business (gross)				
2. Reinsurances ceded				
3. Reinsurances accepted				
4. Retrocessions				
5. Net technical reserves (1 + 3 - 2 - 4)				
C. <u>Class . . .</u>				
Q. <u>All Classes together</u>				
1. Direct business (gross)				
2. Reinsurances ceded				
3. Reinsurances accepted				
4. Retrocessions				
5. Net technical reserves (1 + 3 - 2 - 4)				
<u>CAPITAL RESERVES</u>				
R. <u>All classes together</u>				
1. Paid up capital and free reserves etc.*				

\* Foreign branch offices and agencies show only their free reserves in the country of reference.

**Table No. 5**

**Analysis of the investments shown in the balance sheet  
of the independent undertakings and those kept in the country of  
reference by the branch offices and agencies of foreign undertakings**

	a	b	c	d	e	f	g
		Independent undertakings				Branch offices and agencies of foreign undertakings	
		State institutions <small>etc</small>		Private undertakings*			
		National securities	Foreign securities	National securities	Foreign securities	National securities	Foreign securities
	1. In State securities and bonds etc.						
	2. In real estate						
	3. In mortgages						
	4. In private securities with fixed interest						
	5. In stocks and similar securities						
	6. In cash and currency						
	7. In other investments						
	8. Total						

\* Regarding further breakdown, see paragraphs 49-50 of text.



**D. Tables reflecting the role played by international insurance transactions in each country**

53. As viewed from a given country (country of reference), international insurance transactions consist of the following:

(a) Reinsurance acceptances coming from abroad and cessions going abroad in connexion with the national portfolio of the country of reference;

(b) Activities in the country of reference to branch offices and agencies of foreign undertakings;<sup>14</sup>

(c) Activities abroad of independent undertakings of the country of reference through a branch office or agency established outside the country.

54. As regards item (a) above, reference should be made to forms Nos. 2 and 3 submitted by the undertakings, whose columns *d*, *f* and *h* give figures for reinsurance ceded or retroceded abroad as well as for reinsurance accepted from abroad. Tables 6 and 7, given below, show the data building up to the level of the technical results, respectively for life insurance (table 6) and for the other classes of insurance (table 7) in total and individually. Table 8, based on the data supplied on form No. 5 by the undertakings, will complete the picture by showing the deposits belonging to insurers and reinsur-

<sup>14</sup> Subsidiaries whose head offices are situated in the country are regarded as national undertakings, but their figures may be shown in a separate column (see above paras. 49-50).

ers established abroad and administered by companies of the country of reference.

55. As regards item (b) above, concerning the activities in the country of reference of branches and agencies of foreign undertakings, it will be noted that their gross direct business as well as their net business retained for own account are already sufficiently analysed in tables 1, 2 and 3, and their foreign reinsurance business is shown in the tables 6 and 7. By use of all this information, it should be possible to draw conclusions concerning the volume of international transactions without having to prepare specific tables.

56. Last we come to item (c) above, relating to the activities abroad of the independent undertakings of the country of reference. Forms Nos. 1 b and 2 b contain exactly the information required, which can be added together to provide national totals as shown in tables 9 and 10 below. Let it be emphasized once more, that the reinsurances accepted on behalf of the head office and transmitted to it direct, are already included in the tables 6 and 7 under "Reinsurances accepted" and should not appear in tables 9 and 10. If, however, in exceptional cases, such acceptances are, shown in these tables, they should be included under both Accepted and Ceded, the balance "Business for own account" remaining unchanged. A final table, 11, shows the total investments abroad effected by way of deposits by national undertakings of the country of reference, obtained from data in Form No. 5 (column e) submitted by the undertakings.

57. The models of tables 6-11 are given below.

Table No. 6

## Reinsurance business with foreign countries

## Technical results for life insurance

National portfolio of the  
country of reference

Financial year .....

a	b	c	d	e	f	g	h	i
	REINSURANCES ACCEPTED				REINSURANCES CEDED AND RETROCEDED			
	State Institu- tions etc.	Independ- ent private under- takings*	Foreign branch offices and agencies	Total	State Institu- tions etc.	Independ- ent private under- takings *	Foreign branch offices and agencies	Total
1. Premiums written (received and receiv- able, less taxes and cancellations)								
2. Reserves brought forward								
a) mathematical reserves								
b) other reserves								
3. Net investment income earned during the year								
4. Profits on invest- ments, less losses								
TOTAL A								
5. Claims paid								
a) Claims on maturity								
b) Claims on death								
c) Annuities								
d) Surrenders								
6. Reserves carried forward								
a) mathematical reserves								
b) other reserves								
7. Commissions and management expenses (including reinsur- ance commissions)								
8. Bonuses to policy- holders for the year								
TOTAL B								
9. Results (A - B)								

\* Regarding further breakdown, see paragraphs 49-50 of text.

Table No. 7

Reinsurance business with foreign countries

Technical results for insurance other than life\*

National portfolio of the country of reference

Financial year .....

a	b	c	d	e	f	g	h	i
	REINSURANCES ACCEPTED				REINSURANCES CEDED AND RETROCEDED			
	State institutions etc	Independent private undertakings **	Foreign branch offices and agencies	Total	State institutions etc	Independent private undertakings **	Foreign branch offices and agencies	Total
1. Premiums written (received and receivable, net of taxes and cancellations)								
2. Reserves brought forward								
a) for unexpired risks								
b) for outstanding claims								
c) other technical reserves								
TOTAL A								
3. Claims paid								
4. Reserves carried forward								
a) for unexpired risks								
b) for outstanding claims								
c) other technical reserves								
5. Commissions and management expenses (including reinsurance commissions)								
6. Bonuses to policyholders for the year								
TOTAL B								
7. Technical results (A - B)								

\* One page per insurance class then one summary page for all classes other than life.

\*\* Regarding further breakdown, see paragraphs 49-50 of text.

Table No. 8

Deposits belonging to foreign insurers/reinsurers  
managed by the undertakings of the country of reference  
(held by them or deposited by them)

Statement as at: \_\_\_\_\_

a	b	c	d	e
Deposits managed by:	State Institutions etc.	Independent private undertakings*	Foreign branch offices or agencies	Total
Investments:				
1. In State securities and bonds, etc.				
2. In real estate				
3. In mortgages				
4. In private securities with fixed interest				
5. In stocks and other similar securities				
6. In cash and currency				
7. In other investments				
8. TOTAL				

\* Regarding further breakdown, see paragraphs 49-50 of text.

Table No. 9

Portfolios insured abroad by the branch offices and agencies of domestic undertakings of the country of reference

Trading results for life insurance

All domestic undertakings together transacting such business abroad

Financial year .....

a	b	c	d	e
	Direct business (gross)	Reinsurances		Net Total (b+c-d)
		Accepted	Ceded	
1. Premiums written (received and receivable, less taxes and cancellations)				
2. Reserves brought forward				
a) mathematical reserves				
b) other technical reserves				
3. Net investment income earned during the year				
4. Profits on investments less losses				
TOTAL A				
5. Claims paid				
a) Claims on maturity				
b) Claims on death				
c) Annuities				
d) Surrenders				
6. Reserves carried forward				
a) mathematical reserves				
b) other technical reserves				
7. Commissions and management expenses (including reinsurance commissions)				
8. Bonuses to policyholders for the year				
TOTAL B				
9. Result (A - B)	X			
10. Other income	X			
11. Other expenditure	X			
12. Total result for the financial year (9+10-11)	X			

Table No. 10

Portfolios insured abroad by the branch offices and agencies of domestic undertakings of the country of reference

Trading results for all classes other than life

All domestic undertakings together transacting such business abroad

Financial year .....

a	b	c	d	e
	Direct business (gross)	Reinsurances		Net Total (b+c-d)
		Accepted	Ceded	
1. Premiums written (received and receivable, less taxes and cancellations)				
2. Reserves brought forward a) for unexpired risks b) for outstanding claims c) other technical reserves				
TOTAL A				
3. Claims paid				
4. Reserves carried forward a) for unexpired risks b) for outstanding claims c) other technical reserves				
5. Commissions and management expenses (including reinsurance commissions)				
6. Bonuses to policyholders for the year				
TOTAL B				
7. Technical result (A - B)				
8. Net investment income earned during the year	X			
9. Profits on investments less losses				
10. Other income				
11. Other expenditure	X			
12. Total result for the financial year (7+8+9+10-11)				

Table No. 11

Deposits made abroad by the domestic undertakings of the country of reference

Statement as at .....

a	b	c	d
Deposits managed by:  Investments:	State institutions etc	Independent private undertakings*	Total
1. In State securities and bonds etc.			
2. In real estate			
3. In mortgages			
4. In private securities with fixed interest			
5. In stocks and other similar securities			
6. In cash and currency			
7. In other investments			
8. Total			

\* Regarding further breakdown, see paragraphs 49-50 of text.

**E. Summary tables showing the development of the national insurance market**

58. In order to follow in detail the evolution of a given insurance market, all that is needed is a series of monographs relating to the country in question and covering a fairly long sequence of years. It would no doubt be useful to supplement each individual country monograph by tables summarizing certain figures from previous years for purposes of comparison with the figures for the financial year to which the monograph relates. It is rather difficult, however, to draw up models of such summary tables, owing to the large number of combinations of

headings involved. It would therefore seem appropriate that each country should decide whether summary tables should be incorporated in its monographs and, if so, which.

59. To illustrate how such a table might be designed, an example of a summary table is given below reflecting the evolution of premiums written on direct business (gross figures), taking into account the classes of insurance carried on in the country. The statistical information in tables 1-11 allows for a very large number of summaries; their design will depend in each instance on the type of comparison desired and the type of results sought.

<i>Premiums written</i>							
<i>Financial year</i>	<i>Life insurance</i>	<i>Accident</i>	<i>Fire</i>	<i>Motor</i>	<i>Transport</i>	<i>Other risks</i>	<i>All classes</i>
Year T							
Year T - 1							
Year T - 2							
Year T - 3							
etc.							



## Chapter V

### USE OF THE UNIFIED SYSTEM OF STATISTICS FOR THE PURPOSE OF ECONOMIC AND TECHNICAL STUDIES

#### A. General information on the use of the unified system

60. Tables 1-11 introduced and described in chapter IV above constitute what we have called the "national monograph" for a given country, called "country of reference". This monograph contains a collection of statistical information which could serve as a basis for studies leading, for example, to the preparation by the control office of the country of reference, of an "annual report on insurance". The national monograph constitutes only a common basis for the insurance reports of the various countries; it is therefore obvious that there will be quite a difference from country to country so far as the remaining parts of the annual reports are concerned. In practice, each country will use in its own way the statistical material contained in its national monograph which will, in principle, be determined by the matters of particular interest to that country.

61. Leaving it to the authorities in each country (or indeed to the different economists specializing in insurance matters) to decide, having regard to the content of their national monograph, the particular features which should be studied in their annual report, the object of the present report is to demonstrate, by means of some general suggestions, how a rational use of tables 1-11 permits conclusions to be drawn concerning the size of the national insurance market, its financial and technical results, the capital engaged and the investments resulting from it, the dependence of the said market on foreign insurers and, last but not least, on the influence of international insurance transactions on the country's balance of payments.

#### B. Volume of insurance transactions of the national market

62. The written premiums in a given financial year for the gross direct business of a country can be considered as an acceptable index of the size of the national insurance market of that country. Tables 1 and 2 give explicitly the amounts of written premiums respectively for life business and for all other classes of insurance together (column *h*, line 1 of each of the tables). If a more detailed breakdown by insurance classes is desired, reference may be made to table 3, which gives the written premiums for each class separately (column *e*, line 1). By means of a series of national monographs of a country, covering a sequence of years (see above para. 58-59), it is possible to follow the development of a market and to reveal

the long-term trends of written premiums in total and in the various classes.

63. For determining the size of the market in life business, there is, apart from the indication provided by the volume of written premiums, another valid index, namely the mathematical reserves held by the undertakings. The total mathematical reserves, which represent the part of the premiums accumulated over the years through a process of capitalization, reflect exactly the volume of savings in the country by way of life insurance, a form of savings very favourable for investments, because of its contractual and long-term nature. Table 1 of the monograph (column *h*, line 6 (*a*)) gives the total amount of the mathematical reserves emanating from direct gross business at the end of the financial year under consideration. A series of national monographs covering a sequence of several years would give in this case also a very interesting picture of the development of these savings.

#### C. Net trading results and technical results

64. Tables 1 and 2 give, in line 12, the net trading results respectively of life insurance and all other branches of insurance together, of the national portfolios of the country of reference. The fact that these results are shown separately for State institutions (column *c*), private independent undertakings<sup>15</sup> (column *e*) and the branch offices and agencies of foreign undertakings (column *g*), as well as in total (column *i*), allows a number of comparisons to be made and conclusions to be drawn. The results for portfolios insured abroad by the branch office and agencies of independent undertakings of the country of reference are shown in a similar way, but without breakdown by type of undertaking, in line 12 of tables 9 and 10 of the national monograph.

65. For technical results it is usually the gross figures for direct business which are of most interest. Table 1 (for life insurance) and table 3 (for individual classes other than life) provide all the information required for arriving at conclusions of a technical nature, especially on the technical profits and losses, on the claim ratio in classes other than life (for which claims incurred in the financial year must be related to earned premiums, in compliance with the instructions given in annex IV), on

<sup>15</sup> In this connexion, see paras. 49-50, proposing additional breakdown.

the size of the commissions and management expenses, etc. In life insurance special attention should be paid to the bonuses granted to the policy holders which, when they are large, generally prove the prosperity of the branch.

#### D. Capital engaged and investments resulting therefrom

66. Table 4 shows, in column *e*, under Q-1, the technical reserves for gross direct business and, under Q-5, the net technical reserves for all branches of insurance of the national portfolio of the country of reference. According to the type of analysis desired, and taking into consideration the regulations of the country of reference concerning the localization of assets corresponding in amount to the gross or net reserves in the country, it may be desirable to refer to one or other of these two figures. In the case of a developing country which accepts very little reinsurance business from abroad, but cedes abroad a large part of its domestic business, the gap between the two figures might be fairly big. For such a country, from the point of view of the security of its national portfolio and of its economy (investment of the technical reserves in the country where the revenue from premiums is collected), the first figure, showing the technical reserves for gross direct business, is by far the more important.

67. To appreciate the size of the total amount of capital engaged in the insurance business, it is necessary to add to the figures representing the technical reserves of the portfolio of the country, the capital reserves (authorized capital, free reserves, etc.) of its independent undertakings and, where appropriate, the capital reserves (guarantees non-attributable to technical reserves, etc.) kept in the country by branch offices and agencies of foreign undertakings. Table 4 contains the required information appropriately broken down. A comparison between the total of all these commitments (liabilities) and the total investments (assets) of insurance undertakings, such as they appear in table 5, allow very interesting conclusions to be drawn concerning the part played by insurance as a source of funds for investment in the various sectors of the country's economy.

68. Reverting to the question of covering the technical reserves of the insured portfolios in a given country by appropriate investments in that country, it is advisable to underline that only analysis "undertaking by undertaking" permits valid conclusions to be drawn on the degree of local security offered to the portfolios in question. In fact, as any shortfall of local cover in the case of one undertaking may not be compensated by the excess of local cover in another undertaking, combined totals for all undertakings or for categories of undertakings, as given in tables 4 and 5, are inadequate from the security point of view. It is necessary for the control authority to check, by means of the forms presented by the undertakings, the solvency of each of them, before drawing conclusions by category of the undertaking or in total.

#### E. Dependence of the national market on foreign insurers

69. This dependence shows up mainly in two places in the statistics: in the reinsurance abroad of too large an amount of domestic business and in the predominance in the national market of branch offices and agencies of foreign undertakings. In both cases, it is the volume of business ceded to foreign undertakings which determines the degree of dependence, rather than the trading results, whether favourable or unfavourable. The classical way of measuring this dependence is by reference to the written premiums or to the claims paid (in life insurance, the criterion of the mathematical reserves may be more significant in certain cases).

70. The volume of business which independent undertakings of the country of reference cede abroad, shown as written premiums, appears on line 1, total of the two columns *f* and *g* of table 6 for life insurance, and table 7 for the other branches of insurances. As these figures contain both cessions and retrocessions, it is necessary to compare them with the total premiums written by the said independent undertakings, namely, the total of their direct gross business (line 1, columns *b* and *d* of tables 1 or 2), plus the business accepted by them from abroad (line 1, columns *b* and *c* of tables 6 or 7), plus the balance of reinsurance business exchanged with branch offices and agencies of foreign undertakings on the local market. Business exchanged on an internal basis between independent undertakings (State and private) balances out and does not affect the calculation.

71. To illustrate this calculation, one can take as an example all classes other than life, and proceed as follows:

	Table	Line	Columns
1. Gross direct business of independent undertakings . . . . .	+2	1	<i>b + d</i>
2. Reinsurance accepted from abroad by independent undertakings . . .	+7	1	<i>b + c</i>
3. Balance of reinsurances exchanged by independent undertakings with foreign branch offices and agencies on the local market . . . . .	+2 -7	1 1	<i>f - g</i> <i>h - d</i>

The calculation under item 3 means that from the total balance of exchanges in reinsurances of foreign branch offices and agencies (table 2, line 1, columns *f-g*), it is necessary to subtract the balance of their exchanges with foreign countries (table 7, line 1, columns *h-d*) in order to ascertain the balance of their exchanges on the local market.

72. With regard to the predominance in the national market of branch offices and agencies of foreign undertakings, a similar calculation could be made, but in most cases comparison of the volume of direct business written by them with that written by independent undertakings of the country makes it possible, to arrive at the necessary conclusions. In this connexion, it is advisable to remember that in the unified system, which is a minimum system, no distinction has been made between independent national undertakings and subsidiaries of foreign under-

takings. In all of the foregoing, subsidiaries of foreign undertakings have been treated as independent undertakings of the country, which may lead to wrong conclusions.<sup>16</sup>

#### F. The influence of international insurance transactions on the balance of payments

73. While it is possible to analyse the statistical data contained in the "national monograph" according to the System of National Accounts adopted by the Statistical Commission of the United Nations,<sup>17</sup> which defines insurance as a sub-sector and prescribes in detail how its various items (cost of risks, charges, interests, savings, etc.) are to be recorded, no such attempt will be made here. There will be no attempt here either to make a comparison between the "national monograph" and the *Balance of Payments Manual* of the International Monetary Fund.<sup>18</sup> Instead, a method of approximation of the net magnitude of the influence of insurance transactions on the balance-of-payments position of a given country will be shown below. The elements to be taken into account for this purpose are the following:

(a) Net trading results of branch offices and foreign agencies established in country P, in life insurance (table 1, line 12, column g), and in other classes (table 2, line 12, column g).

(b) Net trading results abroad of branch offices and agencies of independent undertakings of country P,

<sup>16</sup> See above paras. 49-50, recommending an additional distinction between private national undertakings and subsidiaries of foreign undertakings. See also paras. 44-45, referring to the activities of brokers.

<sup>17</sup> Department of Economic and Social Affairs, Statistical Office of the United Nations, *A System of National Accounts, Studies in Methods, Series F, No. 2, Rev. 3* (United Nations publication, Sales No. : E.69.XVII.3).

<sup>18</sup> International Monetary Fund, *Balance of Payments Manual*, 3rd ed. (Washington, D.C., 1961).

in life insurance (table 9, line 12, column e) and in other classes (table 10, line 12, column e).

(c) Technical results of reinsurances accepted from abroad in life assurance (table 6, line 9, column e) and in other insurance classes (table 7, line 7, column e).

(d) Technical results of reinsurances ceded and retroceded abroad in life assurance (table 6, line 9, column i) and other insurance classes (table 7, line 7, column i).

It is necessary to point out that, when the results are positive, (a) and (d) constitute debits, and (b) and (c) credits in the balance of payments of country of reference P.

#### G. Other possibilities of use of the national monographs—international comparisons

74. These few examples do not, of course, exhaust all the possibilities of economic and technical analysis offered by the national monographs. It will be left to each competent authority to concentrate its studies on subjects of direct interest to it, first making full use of the suggested tables and then supplementing them if necessary. It is worth repeating at the end of this report, that the unified system of insurance statistics is proposed only as a minimum common system, which countries may supplement if necessary, by means of other data they consider essential, taking into account the nature of the conclusions they wish to draw from it.

75. Last but not least, it should be pointed out that the application of the unified system by as many countries as possible would lead to the publication of insurance statistics, based on similar data and presented in a comparable form. This would permit very interesting international comparisons to be made especially between countries experiencing similar stages of development, and might, therefore, facilitate the adoption by such countries of policies aimed at improving the efficiency of their national insurance markets.

## ANNEXES

### Annex I

#### Letter dated 15 October 1970 from the Group of Experts on Insurance Statistics addressed to the Secretary-General of UNCTAD <sup>a</sup>

Sir,

You asked us to form a Group of Experts, acting in a personal capacity, to help you to prepare a report on the establishment of a unified international system of insurance statistics.

The great importance of statistics in insurance can hardly be doubted. More than any other economic activity, insurance depends on the quality of statistics, since statistics are both a method of retrospective computation and the raw material basic to any operation. While this observation is of prime importance so far as each insurance undertaking is concerned, it is no less so with respect to an insurance market as a whole, that is to say a national insurance market as defined in your draft report.

UNCTAD has noted the great shortage, not to say the complete lack, of reliable statistical information relating to insurance in a large number of countries and is trying to fill this gap by proposing to all countries, in which this is found necessary, the introduction of a statistical system devised by UNCTAD itself, which, even though it is a minimum system, may supply an answer to the main questions arising in such countries. Our Group appreciates the motives underlying it, the more so because it is the first move of this kind made at the international level. We are certainly convinced that the results of the establishment of a minimum international system of statistics will be beneficial to the entire insurance industry. We were therefore very happy to place ourselves at your disposal to help you develop an adequate statistical system.

A preliminary examination of the draft report <sup>b</sup> made available by your secretariat and the discussions within our Group have shown clearly that a satisfactory solution of the problem can be offered to the developing countries. However, its implementation may have to be made progressively and with a measure of flexibility according to the regulations in the different countries.

In addition to this general agreement on the objective and the main outlines of the draft report, there was a fairly marked consensus

<sup>a</sup> See also chap. I, para. 18 of the foregoing report.

<sup>b</sup> TD/B/C.3/AC.4/R.2.

on the great majority of the points of detail. Since the secretariat, which alone is responsible for the final version of the report, has been able to adopt the convergent views of the experts on almost all these points, the problems connected with them could be settled forthwith by common agreement. This does not, of course, mean that there was unanimous agreement on all the points debated during the Group's discussions. The reason why the experts' opinions differed on some essential points was the difference in accounting systems of the various countries. However, we believe that sufficient information has been made available for the preparation by the secretariat of a minimum international insurance statistical plan.

In concluding our task we must tell you how conscious we have been of the honour you have done us in turning to us for help in your important work. We certainly hope that our contribution, actuated as it has been by a fervent wish to be of use to you in the manner you wished, has been what you expected of us. We must emphasize, however, that we could not have succeeded in performing our task without the steady support and advice of the members of your secretariat responsible for this project, invariably making for conciliation, and without the collaboration of the secretaries and interpreters, to whom we wish to pay the tribute they so well deserve.

Accept, Sir, the assurance of our highest consideration,  
The members of the Group,

(signed)

C. S. Anantapadmanabhan,  
J. P. Bouquin,  
A. M. Danish,  
K. Darul,  
S. Karpovitch,  
J. S. Kizito,  
S. H. Newman,

P.-F. Niquille,  
Y. Paul-Depasse,  
P. Reiner,  
W. Rohde-Liebenau,  
S. M. Siddique,  
C. M. Stewart,  
L. E. Torén.

## Annex II

### List of participants at the Meeting of the Group of Experts on Insurance Statistics

(Geneva, 7-15 October 1970)

- Mr. C. S. Anantapadmanabhan, Controller of Insurance, Ministry of Finance, New Delhi, India.
- Mr. J. P. Bouquin, Commissaire-Contrôleur des assurances de la CICA, Paris, France.
- Dr. A. M. Danish, Secretary General, Federation of Afro-Asian Insurers and Reinsurers, Cairo, Egypt.
- Mr. K. Darul, Director, Warta Insurance and Reinsurance Co., S.A., Warsaw, Poland.
- Mr. S. Karpovitch, Chairman of INGOSSTRAKH, Foreign Insurance Department of the USSR, Moscow, USSR.
- Mr. J. S. Kizito, General Manager, National Insurance Corporation, Kampala, Uganda.
- Mr. S. H. Newman, Vice President and Actuary, American International Group, Inc., New York, USA.
- Mr. P.-F. Niquille, Directeur adjoint, Schweizer Rückversicherungsgesellschaft, Zurich, Switzerland.
- Mr. Y. Paul-Depasse, Directeur Général Adjoint, Les Assurances générales de France, Paris, France.
- Mr. P. Reiner Vamos, Director, Comisión Nacional de Seguros, Mexico, D.F. Mexico.
- Mr. W. Rohde-Liebenau, Fondé de pouvoir, Münchener Rückversicherungsgesellschaft, Munich, Federal Republic of Germany.
- Mr. S. M. Siddique, Manager (Finance and Accounts), Pakistan Insurance Corporation, Karachi, Pakistan.
- Mr. C. M. Stewart, Principal Actuary, Government Actuary's Department, London, England.
- Mr. L. E. Torén, Vice President, Kungl. Försäkringsinspektionen, Stockholm, Sweden.

*Were excused:*

- Mr. M. A. Bidjocka, Chef du Service de Contrôle des Assurances, Ministère des Finances, Yaoundé, Cameroon.
- Mrs. A. da Fonseca, Secretario General do Concelho Nacional de Seguros Privados, Rio de Janeiro, Brazil.
- Mr. M. S. Hasjim, Director of Insurance, Ministry of Finance, Djakarta, Indonesia.

### Annex III

#### Carry-over of premiums, earned premiums and classification of claims, by financial year of occurrence

In insurance some confusion often exists between certain book-keeping items (premiums paid, claims settled, etc.) and those valid for statistical purposes (earned premiums, claims attributable to a given year, etc.). The evaluation of the real trading results, both technical and economic, of an insurance undertaking should obviously be based on statistical and not on bookkeeping items. In order to clarify this point, as well as to show the extent of distortion resulting from the confusion of elements not belonging together, some examples will be given in this annex. However, these examples should not be considered as exhaustive nor as prescribing the precise methods to be employed in connexion with the unified system of insurance statistics.

##### 1. The carry-over of premiums

Periodical insurance premiums are normally payable at the beginning of the period, this generally being the year of insurance.

The start of the insurance term in each contract does not coincide with the insurer's accounting year. In order to ensure that only the amount of premiums earned during a particular accounting year is credited to that year, the insurance enterprise calculates a temporary liability item called the "carry-over of premiums".

When the insurance undertaking closes its balance sheets, the carry-over of premiums is, in principle, the aggregate of the pre-

miums paid during the past financial year in respect of fractions of subsequent insurance periods. The temporary liability item "carry-over of premiums" must be shown on every proper balance sheet.

Among the various methods of calculating the carry-over of premiums, there is one, the so-called "weighted proportional method". This method takes into account the exact distribution of the premiums due over the months of the financial year. For this purpose the insurance company must have monthly statistical data on the premiums due, for the following insurance periods:

- (a) 1 to 10 days;
- (b) 11 to 30 days;
- (c) 31 to 90 days;
- (d) 91 to 180 days;
- (e) 181 to 359 days;
- (f) 1 year.

The carry-over can be calculated as follows, on the basis of the gross or net premium, for a financial year ending on 31 December, in the case of a company to which premiums are due throughout the month, assuming an average due date falling on the 15th of each month:

= 1/24 P.I.f.	+ 3/24 P.H.f	+ 5/24 P.III.f	+ 7/24 P.IV.f
+ 9/24 P.V.f	+ 11/24 P.VI.f	+ 13/24 P.VII.f	+ 15/24 P.VIII.f
+ 17/24 P.IX.f	+ 19/24 P.X.f	+ 21/24 P.XI.f	+ 23/24 P.XII.f
+ 1/18 P.IV.e	+ 3/18 P.V.e	+ 5/18 P.VI.e	+ 7/18 P.VII.e
+ 9/18 P.VIII.e	+ 11/18 P.IX.e	+ 13/18 P.X.e	+ 15/18 P.XI.e
+ 17/18 P. XII.e			
+ 2/9 P.IX.d	+ 4/9 P.X.d	+ 6/9 P.XI.d	+ 8/9 P.XII.d
+ 1/4 P.XI.c	+ 3/4 P.XII.c		
+ 1/3 P.XII.b			

where P.I.f. represents the premiums due in January in category *f* (insurance term, 1 year), P.XI.d represents the premiums due in November in category *d* (3 to 6 months, average 4 to 5 months) and so on.

Even allowing for the fact that premiums in category *f* are the most numerous, that those in categories *e* and *d* are less numerous, and that those in categories *a* to *c* are numerous only in transport and miscellaneous risk insurance, the fully weighted proportional method is obviously rather cumbersome to apply. In practice preference is given to a simplified form, based on a weighting, calculated once for every five or ten financial years, of the distribution of premiums due, recorded in a particular financial year.

As long as the volume of premiums due each month remains fairly stable, the carry-over of premiums calculated by the weighted proportional method is a relatively stable percentage of the pre-

miums due in the financial year. The percentage is close to that for the carry-over calculated by the constant rate proportional method described below.

On the other hand, if there is a seasonal movement in the pattern of due dates, the carry-over percentage calculated by the weighted proportional method will vary according to the length of time between the months when most premiums fall due and the date when the accounts are closed.

The simplified numerical example given below will give some idea of the extent of this variation.

Let us suppose that an insurance undertaking's premiums due comprise only net annual premiums distributed over the year in the following pattern, and that the carry-over of premiums is calculated on the basis of an average due date falling on the 15th of each month; we then have:

TABLE 1

Month	Premiums due	Carry-over	
		Share	Amount (in francs)
January . . . . .	120	1/24	5
February . . . . .	108	3/24	13.50
March . . . . .	114	5/24	23.75
April . . . . .	126	7/24	36.75
May . . . . .	132	9/24	49.50
June . . . . .	126	11/24	57.75
July . . . . .	120	13/24	65
August . . . . .	108	15/24	67.50
September . . . . .	96	17/24	68
October . . . . .	90	19/24	71.25
November . . . . .	108	21/24	94.50
December . . . . .	120	23/24	115
Total . . . . .	1,368		667.50

The carry-over of fr. 667.50 represents 48.8 per cent of the total premiums due.

Let us suppose that following a reorganization, for example, the undertaking introduces combined policies and tries to concentrate its due dates in January and July with considerable success as far as January is concerned but little for July. The table showing the due dates and the carry-over will then be as follows:

TABLE 2

Month	Premiums due	Carry-over on 31 December	
		Share	Amount (in francs)
January . . . . .	360	1/24	15
February . . . . .	96	3/24	12
March . . . . .	96	5/24	20
April . . . . .	96	7/24	28
May . . . . .	96	9/24	36
June . . . . .	96	11/24	44
July . . . . .	120	13/24	65
August . . . . .	96	15/24	60
September . . . . .	84	17/24	59.50
October . . . . .	84	19/24	66.50
November . . . . .	72	21/24	63
December . . . . .	72	23/24	69
Total . . . . .	1,368		538

The carry-over of fr. 538 is in this case only 39.3 per cent of the total of premiums due.

In order to improve the distribution of its administrative work, the undertaking may consider it desirable to close its accounts at the end of March. In this case, the carry-over table will be as follows:

TABLE 3

Month	Premiums due	Carry-over on 31 March	
		Share	Amount (in francs)
April . . . . .	96	1/24	4
May . . . . .	96	3/24	12
June . . . . .	96	5/24	20
July . . . . .	120	7/24	35
August . . . . .	96	9/24	36
September . . . . .	84	11/24	38.50
October . . . . .	84	13/24	45.50
November . . . . .	72	15/24	45
December . . . . .	72	17/24	51
January . . . . .	360	19/24	285
February . . . . .	96	21/24	84
March . . . . .	96	23/24	92
Total . . . . .	1,368		748

In this example, the carry-over will amount to fr. 748 or 54.7 per cent of the total of premiums due.

Supervisory authorities are often rather reluctant to approve the calculation of the carry-over of premiums by the weighted proportional method, because of the difficulty of checking the amount of the carry-over. However, this method is indispensable for judging the correctness of the carry-over calculated according to any other more global method, and for checking thus the hidden income or expenditure which affects the total premium earnings for the financial year and, hence, the trading account. It also enables some useful inter-institution comparisons to be made.

Another method of calculation called "the constant rate proportional method", is based on the assumption that the average due date of the premiums falls midway between the beginning and the end of the accounting year. When the accounting year begins on 1 January and ends on 31 December, the average due date is 1 July. The carry-over is thus 50 per cent of the aggregate of the net premiums due.

In the case of elementary insurance, the supervisory authorities define the carry-over of premiums, not in terms of net premiums, but in terms of gross premiums due, thus making it possible indirectly to set a limit to management expenses, and particularly to new business commissions. The carry-over of premiums is thus normally fixed at 35, 40 or 42 per cent of the gross premiums. The percentage varies according to the class of insurance and the country concerned.

## 2. Premiums earned during the financial year

The premiums earned during the financial year are the premiums due in the year plus the carry-over of premiums at the beginning minus the carry-over of premiums at the end of the year.

Let us take as an example an insurance institution whose ratio of net to gross premiums is 68.4 per cent.

The carry-over percentage calculated by the weighted proportional method will be found in the tables shown above.

Calculated according to the constant rate method, the carry-over percentage would be 0.5 of 68.4 per cent, that is, 34.2 per cent.

Table 4 below shows, for four successive and identical financial years, the total of premiums earned during the financial year in relation to the total premiums due. In the third year, the distribution of the premiums due changes from that of table 1 to that of table 2.

TABLE 4

	1st year	2nd year	3rd year <sup>a</sup>	4th year
Total gross premiums due . . . . .	2,000	2,000	2,000	2,000
Distribution according to . . . . .	Table 1	Table 1	Table 2	Table 2
<i>(a) Carry-over calculated by weighted Proportional method</i>				
At the beginning of the financial year . . . . .	(667.50)	667.50	667.50	538
At year end . . . . .	667.50	667.50	538	538
Premiums earned during the financial year . . . . .	2,000	2,000	2,129.50	2,000
<i>(b) Carry-over calculated by constant rate method</i>				
At the beginning of the financial year . . . . .	(684)	684	684	684
At year end . . . . .	684	684	684	684
Premiums earned during the financial year . . . . .	2,000	2,000	2,000	2,000

<sup>a</sup> This example presupposes that in the third year the insured persons are, in general others than those insured in the previous years. Otherwise, premiums would have been paid back in connexion with the advance of the due dates, which would have reduced the amount of premiums earned.

It can be clearly seen that the premiums earned in the financial year, i.e. those available to cover costs and losses during the year, remain stable when the carry-over is calculated by the constant rate method, even when the seasonal distribution of due dates changes. With the weighted proportional method, some variations can appear, but they are mostly rather small because of the highly static nature of the seasonal distribution of due dates for a single institution's premiums.

We have so far assumed a constant total of premiums due only in order to simplify this explanation. In practice, however, the total is not constant, being modified by a number of factors such as growth of business, economic recession, legislation and "devaluation".

The following example, based exclusively on the constant rate method using a rate of 35 per cent, will show how "premiums earned during the financial year" vary when the total of premiums due fluctuates.

Table 5 shows that the ratio of earned premiums to premiums due can vary quite considerably in an unstable market, such as is often to be found in countries where severe currency devaluation takes place.

Unfortunately, some economists are known to base their conclusions on the ratio of certain factors to the premiums due. This is a methodological error which will have more serious consequences the less stable the market considered, as the following example, based on figures from table 5, will demonstrate.

Let us assume that commission, expenses and claims together account for exactly 100 per cent of each premium paid, commission and expenses taking 30 per cent and claims the remaining 70 per cent. With this assumption the institution will, in fact, have shown neither profit nor a loss. If, however, we compare total costs (claims and expenses) with premiums due, the results appear to be quite different, namely as shown in table 6 below:

TABLE 5  
Example of variations in total premiums earned  
in financial year with a changing amount of premiums due

Financial year	Premiums due	Carry-over at end of financial year	Premiums earned during financial year	
			Amount	Percentage of premiums due
1st . . . . .	1,000	350	650	65
2nd . . . . .	3,000	1,050	2,300	77
3rd . . . . .	6,000	2,100	4,950	82
4th . . . . .	10,000	3,500	8,600	86
5th . . . . .	15,000	5,250	13,250	88
6th . . . . .	14,000	4,900	14,350	102
7th . . . . .	12,000	4,200	12,700	106
8th . . . . .	18,000	6,300	15,900	88
9th . . . . .	16,000	5,600	16,700	104
10th (last) . . . . .	—	—	5,600	—



TABLE 6

Financial year	Premiums due	Premiums earned	Total costs	Results on:	
				premium due	premium earned
1st	1,000	650	650	+ 350	0
2nd	3,000	2,300	2,300	+ 700	0
3rd	6,000	4,950	4,950	+1,050	0
4th	10,000	8,600	8,600	+1,400	0
5th	15,000	13,250	13,250	+1,750	0
6th	14,000	14,350	14,350	- 350	0
7th	12,000	12,700	12,700	- 700	0
8th	18,000	15,900	15,900	+2,100	0
9th	16,000	16,700	16,700	- 700	0
10th	—	5,600	5,600	-5,600	0
	95,000	95,000	95,000	0	0

It is obvious from table 6 above that, during a period such as that illustrated, when premiums due are increasing, use of the premiums due basis may show sizable profits, although the institution may actually be only just in balance or may even be operating at a loss. Hence, it is particularly important for developing countries, where the relative increase in premiums due is more erratic than in the industrialized countries, especially in elementary insurance, to establish their statistical data and make their over-all economic studies on the basis of earned premiums, since adoption of premiums due as the basis will in their case be particularly dangerous and lead to inappropriate decisions.

It will rightly be objected that the statistics of elementary insurance published by some of the industrialized countries are based on premiums due. This does not detract in any way from the validity of the argument, but merely proves that habits are hard to break, and that the assumption of a stable market which has long prevailed in the field of insurance techniques, has tended to ignore the fact that to use premiums due as reference is not the same as to use premiums earned. The same results will only be obtained in the rare cases where the amount of premiums due and the distribution of due dates remain constant over a given period.

3. Classification of claims in relation to the appropriate premiums

In setting up a scheme of insurance statistics which will enable an insurer both to analyse his trading results correctly and to check his tariffs, it is essential to classify claims settled each year in such a way that they can be related to the appropriate premiums. This is particularly important in what is called "long tail" business, such as third party motor vehicle insurance, in which settlement of claims may be delayed for several years pending the outcome of legal proceedings. The principal methods are:

(a) Classifying claim payments according to the year of occurrence of the event which resulted in the claim, and comparing the total of claims so classified with the premiums earned in the year.

(b) Classifying claim payments according to the year in which the policy premium was due, and comparing the total of claims so classified with the premium due in the year.

The second of these is the standard method used by marine insurers (and by Lloyd's) but it is the first method which is appropriate to the generality of non-life insurance business and which underlies the forms and tables described in the present report. The simple table below shows how the claim payments made in year T (item 3) may be classified according to the accounting year in which the claim occurred, and added to payments in previous years (item 2) and the current reserves for claims outstanding (item 4) similarly classified, in order to arrive at the local claims incurred in year T, T-1, etc. These totals are then divided by the premiums earned in order to obtain the claims/premiums ratio for the particular year of account. This ratio will be a provisional figure until all the claims which occurred in a particular year have been finally settled.

Financial years of occurrence	T	T - 1	T - 2	T - 3
1. Earned premiums	=====	=====	=====	=====
2. Claims paid before year T	—			
3. Payments made during year T				
4. Reserves for claims at the end of year T				—
5. Total (2 + 3 + 4)				
Ratio of claims to premiums, by year (Percentage) (5/1)				

It should be noted that a four-year period for final settlement of all claims has been assumed in establishing this method. In classes of business with a "longer tail", more columns would be necessary.

## Annex IV

### Technical liabilities (reserves) in insurance

Insurance has the unenviable distinction of having completely misnamed its technical liabilities. Just as the mathematical reserves of life assurance do not in any sense represent funds belonging to the life companies, so reserves for unexpired risks, reserves for outstanding claims and other technical reserves are, for non-life insurers, "technical debts" which can be classified for accounting purposes as "temporary liabilities" or "provisions".

Technical reserves are not undistributed profits from previous financial years which have been earmarked for specific purposes. This unfortunate label of "reserve" is responsible for many misunderstandings. Since "technical reserves" are in fact "technical debts", an insurance undertaking whose balance sheet shows large "technical reserves" is not necessarily in a better financial situation than a competitor with smaller technical reserves. Technical reserves are similar to the "customers' advances" of industrial and commercial undertakings. They add to the "cash items" but have no effect on the financial position.

Objective assessment of the "technical reserves" is complicated by the fact that the methods used to estimate them internally vary in strictness and hence a portion of the reserves may be "undisclosed". In fact, they may be an undisclosed margin, where the technical reserves are over-valued or an undisclosed loss (undisclosed negative margin), when technical reserves are insufficient. On this subject, even the governing bodies of insurance undertakings sometimes have great difficulty in obtaining accurate and objective information. For a third party, outside the undertaking, it is practically impossible to make a valid judgement of the extent and fluctuations of the undisclosed margins included in the technical reserves. At all events, there is certainly no technical or experimental norm of general application to the ratio of technical reserves to earned premiums. Both at the level of the insurance undertaking and at that of the whole national group of insurance undertakings, this ratio ultimately depends on the structure of the portfolio from the standpoint of the kind and size of risks assumed and on administrative constraints such as the time taken to assess claims, the regulations laid down by the supervisory authority or the tax authorities, etc.

#### 1. Reserve for unexpired risks

The reserve for unexpired risks is often called the premium reserve. It then represents, at the end of the financial year, that part of the premium not pertaining to the financial year, and is identical to what is called the "carry-over" of premiums. This conception of the reserve of unexpired risks is indicative of confidence in the rates applied, and generally prevails where rates are kept under continuous supervision. Annex III deals with the various methods of calculating the carry-over of premiums.

There is, however, another conception of the reserve for unexpired risks—the only conception that fits where the rates applied are obviously or probably too low. The reserve of unexpired risks ~~must then be calculated, not from the scale of rates, but on other,~~ firmer technical bases which reflect better the real cost of the risks assumed. Some countries, in particular those which do not supervise the premium rates charged, show a clear preference for this solution. The method generally applied is based on a prospective formula including *inter alia* the number of risks insured and a

mean cost per risk, the latter being evaluated on the basis of past experience and corrected, in order to take into account observed systematic trends. Both main components are, however, difficult to determine: the number of risks on account of the absence of a clear definition of a "risk unit", and the mean cost owing to the fact that the past experience is to a great extent outdated by the time it becomes available.

#### 2. Reserves for outstanding claims

Reserves for outstanding claims—that is, for losses sustained but not yet fully settled—are in general very difficult to evaluate. In most classes of non-life insurance, the time required for filing claims, assessing the damage, awarding benefits and so on, prevents any rapid settlement of claims and makes it difficult to estimate their ultimate cost. The most classical method of evaluation is an estimation "claim by claim" but its results depend a great deal on the ability of the persons examining the files in order to estimate the probable final amount of each claim. Another method of estimation, which can be applied in certain cases, is to start with the provisional total of the claims filed, add an increment in the light of experience to allow for claims not yet filed, and then reduce the total to allow for payments already made and for cases in which the insurer will pay less than full benefits or nothing at all. In other cases, this reserve can be evaluated on the basis of data produced in previous periods and classified by financial year of occurrence, leading to a certain rate of earned premiums. Even this method has its hazards in periods when the risk assumed varies in size, or when the time taken to process claims for benefit is longer or shorter than usual. Hence it is not surprising to find that the reserves for outstanding claims, expressed e.g. as a proportion of the earned premiums of the last financial year, vary widely from class to class of insurance, from country to country and from undertaking to undertaking.

The reserve for outstanding claims is thus highly variable, and reflects the time-lag between the loss and the settlement of the insured person's claim. In so far as this time lag is dictated by circumstances, the insurer will strive as a matter of business policy to make it as short as possible, and if he is successful this will reduce the relative size of the reserve for outstanding claims.

#### 3. Mathematical reserve

A prominent feature of all legislation on the supervision of insurance is the method of accounting applied to life assurance transactions, and more particularly to the calculation of the mathematical reserves, because of the very long time spanned by most life assurance transactions. Apart from considerations of time, another factor is the part played by savings operations in the traditional life transactions of endowment assurance and annuities, which make life assurers the administrators of large funds. What follows is a review of the methods of estimating the technical reserves of life insurance. It reveals, *inter alia*, the strictness of actuarial techniques.

##### (a) Principle of equivalence and technical bases

The calculation of a life assurance premium is based on the principle known as that of "equivalence", which requires that the payments to be made by the assured (the benefit) and those to be made in return by the assurer (the benefit) shall be equal, taking into account the rate of interest chosen when the assurance is effected

a rate of mortality considered adequate for the life which is being assured, and the necessary loadings for expenses.

The formula giving the mathematical reserves on a current policy is based on the same principle of equivalence: it reflects the state of the account of premiums and benefit at the time of the calculation. For instance, the mathematical reserve on an ordinary endowment assurance for annual premiums represents the present discounted value of the sum which will be due when the assurance eventually becomes a claim, plus the present value of the expenses which will be incurred in managing the assurance, and minus the present value of premiums not yet due, regard being had, in calculating all these present values, to the influence of mortality. The mathematical reserve on any life assurance combination is in fact precisely expressed by an appropriate actuarial formula.

The following are therefore used to calculate the premium on a life assurance for a given portfolio:

- (i) an appropriate actuarial formula based on the principle of equivalence and containing all the relevant factors in the form of symbols;
- (ii) values corresponding to these factors, some of which are fixed data (age of life assured, duration of policy, sum assured, etc.) and others are extrapolated (mortality table, technical rate of interest, acquisition and management expenses).

The extrapolated data, which are presumed valid at the time the assurance is effected, are called the "technical bases" for the calculation of premiums.

In order to estimate the mathematical reserves on the same policy at any given time,<sup>a</sup> extrapolated values must also be used in order to allow for the future influence of mortality, rate of interest and expenses of management on the gradual formation of the sum which will eventually be due. These values may be calculated from the same original technical bases used in calculating premiums or on any other technical bases which seem more appropriate.

In the former case, and so long as the original technical bases are still valid, there is no problem, as the growth of the mathematical reserves calculated on these bases and established through the successive annual premiums will unfailingly provide the sum due when the policy becomes a claim. If, on the other hand, owing to adverse circumstances, the original forecasts are not borne out, mathematical reserves calculated in this way will not yield the sum due when the policy becomes a claim.

To avoid this danger, an attempt is made to choose the original technical bases in such a manner that they remain really valid throughout the duration of the contract, ensuring an adequate mathematical reserve at all times. This method often results in relatively high premiums, as a result of the various margins which have to be included. However, this disadvantage is generally offset by the fact that the assured participate in the profits, in other words, by the fact that the safety margins are returned to them as they become available, circumstances permitting.

(b) *Choice of the formula for calculating the mathematical reserves*

The office premium contains a loading for acquisition expenses, a loading for collection expenses and a third loading for management expenses. If the first two are left out, we have the "inventaire" premium: eliminating all three loadings leaves the net premium. The mathematical reserves are generally calculated prospectively on one of these three premiums, with corresponding present values on the benefits side of the formula. Where the office (or gross) premium method is used, provision is made on the benefits side of the formula for the value of future collection expenses and management expenses on as realistic a basis as possible, allowing, if desired, for increases in future and with an appropriate adjustment to provide

<sup>a</sup> Although it is possible to calculate it individually, the mathematical reserve on a single policy is significant only as part of an aggregate of operations within which the necessary adjustments can be made.

the degree of Zillmerisation (see below) desired. If the "inventaire" premium method is used, we assume that the value of future management expenses remains constant over the whole term of the policy at the amount included in the premium. When the net premium method of evaluation is used, no specific provision is made for the value of future expenses in the formula, and the net premium is calculated on the technical bases, which in most countries are those used to calculate the premium rates. Where this is so, the net premium value is that defined above and if the premiums are payable for the duration of the contract, calculation on either the net premiums or the "inventaire" premium gives the same result, since in this case the annual loading for management expenses in the office premium is absorbed as each successive premium is received, being reflected on the premiums and benefit sides of the formula simultaneously and by an equal amount. In the case of an assurance which has become paid up, only the reserve on the basis of the "gross" or the "inventaire" premium can validly be taken into consideration, whereas the reserve on net premium has to be augmented by the present value of expenses of management each successive year during the remaining term of the contract.

The problems raised by the loading for acquisition expenses are more complex. The concern pays the new business commission at the commencement of the contracts and recoups itself gradually by collecting the loading contained in the office premium. In respect of this commission, therefore, the concern is the insured person's creditor and not his debtor and, consequently, is theoretically entitled to deduct its present value in calculating the mathematical reserve. This is known as "Zillmerising" the mathematical reserves. In connexion with "Zillmerising" the following observations can be made:

- (i) the immediate amortization of acquisition expenses (not Zillmerising), which is accomplished through the investment of substantial sums from the concern's own resources, gives a supplementary safety margin;
- (ii) no valid technical arguments can be put forward against the application of Zillmerising, so long as the debt recoverable by the concern is not taken into account as to more than a reasonable limited amount.

The surrender value on policies is undoubtedly a factor determining the limits beyond which it would be imprudent to go in applying the second method.

#### 4. *Other technical reserves*

The three main types of technical reserves (for unexpired risks, outstanding claims and mathematical reserves) are defined as expectation values of net liabilities. However, through prudent evaluation they may contain also sufficient safety margins to act as a protection against fluctuations. We have already mentioned this as being generally the case in life insurance, where the prudent choice of technical bases leads to mathematical reserves with implicit safety margins. Another way to solve the problem of safety is to constitute additional explicit equalization or contingency reserves, a method usually applied in non-life insurance. Contingency reserves are generally intended to buffer risks in excess of those for which provision has been made within the main technical reserves enumerated above. In pure risk life insurance they are designed to cover important adverse fluctuations in mortality.

Revaluation reserves are a typical feature of the balance sheets of French institutions, but in principle they may be met in the accounting system of any country in which a heavy currency devaluation has justified revaluation of investments in objects of real value. The accounting aspect of such reserves is quite straightforward, but its economic significance for insurance institutions is more difficult to define. The revaluation reserve was originally conceived as an accounting device to enable industrial and commercial undertakings to renew their capital goods at the new market prices without, in practice, making it necessary to reduce profits tax by the amount required to cover the price increases.