Section A
THE INSURANCE BACKGROUND

Preamble

Before embarking on the methods and techniques for claims reserving, which make up the greater part of the Manual, it is important to establish the background to the work. Why is claims reserving such a vital topic in General Insurance, and what purposes does it serve in the industry? What are the characteristics of the main classes of business to which the reserving relates? And what is the place of the claims reserve within the technical reserves as a whole?

The present section provides answers for these questions, but in summary form only. The Manual is not, and cannot be, a study of the whole of general insurance. The crucial point to establish is that the methods do not operate in a vacuum. In themselves, they are but abstractions. The reserver should take as a starting point the concrete world of business which the methods are intended to serve, and keep such a view in mind. Claims reserving methods are of little value unless they become good practice as well as good theory.

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PURPOSE OF CLAIMS RESERVING

Claims reserving in General Insurance is an activity which is critical to the success of the insurer. Its basic purpose is to estimate the cost of claims ultimately paid out of the business written to date. As such, it is concerned with the outcome of future events, and must therefore remain part art and part science. The contribution of the actuarial profession is, and will continue to be, to strengthen the scientific part of the analysis to the utmost degree possible. To this end, the present Manual is dedicated. This systematic attempt to improve the reliability of claims estimates in general insurance is both a worthwhile task in terms of the profitability of the industry, and a necessary one in terms of helping to ensure its continuing solvency.

From such a general statement, one must turn to the particular. What are the specific aspects of the business which are affected by, or indeed founded upon, the claims reserving figures? At least five such aspects can be picked out. While they are related, each has its own special significance.

a) Accounting to Shareholders — Annual returns under Companies Act.
b) Accounting to the Inland Revenue — Returns for tax purposes.
c) Insurance regulation and solvency control.
d) Ratemaking — Financial basis for writing future business.
e) General Management Control — Claims control, market strategy, etc.

The remainder of this section will be given to expanding the needs and requirements for claims reserving under each of these main headings.

Accounting to Shareholders

We are here concerned with the annual returns which every company must make under the Companies Act. The information so disclosed will be of vital interest to shareholders, current and prospective, and to stockmarket analysts, investment managers and others. The key questions which they will be seeking to answer concern essentially the profitability of the company and its future prospects in the insurance sector. Its strength vis a vis takeover activity may also be at issue, and if times are bad its continuing viability as an independent entity. This is not the place to go into a full discussion of company analysis, however. Suffice to say that, for a general insurance company, the largest single balance sheet item will very frequently be the reserve for outstanding claims. Because of its size, a comparatively minor variation in the value set upon the reserve may have disproportionately large consequences for the declared profitability of the company.

To give an idea of the magnitude of the figure, at the end of 1985 the largest insurers in the UK set their claims reserves in the region of 80–110% of the written premium income for the year. Their net trading profits over the previous decade, however, had averaged only approximately 5–10% of the written premiums.

These figures tend to emphasise the intrinsic paradox which underlies all general insurance. To a large extent, the costs of the business lie in the future, and are unknown in their precise extent. The claims reserve is the main reflection of such future costs, yet in the balance sheet it has of necessity to be stated as a precise amount. The uncertainty which is the essence of the business cannot be welcomed as a formal element in the company's financial statements to shareholders and others.

What, then, is the solution to the paradox? An accountant's view might be that the *best estimate* of the outstanding claims must be made. This might be defined, perhaps, as the position in which there is a 50% chance that the estimated amount will be exceeded by the actual out-turn. But the course is an insecure one, since an adverse out-turn could soon push the company towards insolvency. More satisfactory would be to take as the claims reserve a figure sufficiently large, that is fairly unlikely to be exceeded by the actual cost — say with a chance of 10% only, rather than 50%. Such conservatism will dampen the amounts immediately available for distribution to shareholders, but is likely to be in the better long-term interests of the company.

The question cannot be answered with any finality, however. It will depend on the particular circumstances of the evaluation, and on the expert opinion present. What is important is that there should be conscious consideration. The matter of the reliability of the claims reserve and the protection to be afforded against possible adverse experience should be addressed explicitly by those concerned.

Accounting to the Inland Revenue

It might be thought that the Companies Act returns (as discussed in a) above) would suffice for tax purposes as well. That is not necessarily the case: the Inland Revenue are not concerned with profitability or even solvency as such, but rather as to whether tax requirements as laid down by statute and regulation have been properly met. The tax regime controlling the insurance companies is a complex one, and a specialist subject in its own right. For reserving purposes, it is sufficient to note that there is no hard and fast right to tax exemption for the whole of the claims reserve declared in the annual company return. What may appear as common prudence to the finance director or the policyholder may be deemed overprovision by the tax inspector.

In contrast with paragraph a) above, the tax authorities may wish to require that allowable reserves be established only with strict regard to the "best estimate" principle. Margins to allow for possible adverse circumstances may well be ruled out of court, as being a device adopted for the postponement of taxation properly due. This may seem unfortunate and negative from the insurer's point of view, but one should appreciate that a different, legitimate stance can be taken by the tax inspector. The position may well need to be developed to its conclusion by cases at law — there is already some history in this regard.

Insurance Supervisory Authority

Insurance regulation and solvency control are important matters which have been high on the agenda since the collapse of the Vehicle & General in the early 1970s. By now, there is a well-established system of regulation, based on the obligatory provision by the insurers of annual returns to the insurance supervisory authority. These returns require greater detail than that brought out by the Companies Act returns. In particular, claims reserves have to be shown broken down both by class of business and by year of origin. (This has resulted in the building up of a considerable bank of statistics. Their usefulness for general analysis, however, is marred by lack of consistency in the data-class definitions by different insurance companies and by the limited availability to the public at large.)

The supervisory authority is concerned essentially to protect the interests of the *policyholder.* Hence its emphasis is not on profitability or tax integrity, but on solvency itself. It follows that the conservative view of reserves described in a) above is entirely appropriate when compiling figures for the returns. The contrast with the best estimate view required for tax purposes could not be more evident — while the supervisory authority is looking for ample reserves to support solvency, the Revenue is demanding a paring down of those same reserves so as to maximise taxable income.

The existence of two contradictory requirements on the part of the Government apparently poses a dilemma when it comes to reserving. The truth that emerges, however, is a highly relevant one. It is that there can be no absolute *right value* for a claims reserve. The value will depend on the purpose for which the reserve is needed, and even then there will be room for a margin of error. Probability and uncertainty will always be present in an honest appraisal.

Ratemaking

Every company must establish and maintain a sound financial basis for writing future business, by sound underwriting and by setting premiums at an appropriate commercial level having regard to the three major elements of estimated claims costs, expenses and investment income. If premium rates are set and kept too low, then eventual insolvency will follow. If they are too high, then market share will be consistently lost to more aggressive competitors. The information that will allow a realistic setting of the rates comes from past and present experience. The level of the market as a whole needs to be looked at, in conjunction with the particular experience of the company. For the most recent view of the latter, the claims reserve on each past tranche of business will be needed. This, taken together with the claims already paid out, will provide an estimate of the incurred claims costs so that any inadequacy or oversufficiency in the premium rate will be detected at the earliest opportunity. The claims reserve is thus an essential part of the control mechanism which every efficient insurer requires.

What sort of estimate will be appropriate in this case? Should it be conservative in nature, or use the best estimate principle? The latter is more likely to be correct, since we are here considering the company very much as a going concern. In general, it cannot afford to be over-cautious in its ratemaking, or it will lose market share. Of course, the prevailing conditions of the market must also be taken into account. In a hard market, comfortable margins can be built in, whereas in a soft market they will be pared to the bone, with some policy lines

even becoming effective loss-leaders. Thus, reserve estimates do not absolutely determine premium rates, but they are a vital input. As such, their realistic assessment is a key task.

General Management Control

Apart from the ratemaking process, claims reserving is vital to many other aspects of management control. An essential matter will be to monitor the company's premium writing capacity in relation to its free reserves after providing for expected claims and other costs. Other problems to be tackled will be those of claims control, market strategy and the identification of the relative profitability of different lines of business. As with ratemaking, it will be right to take reserves on a best estimate rather than a conservative basis. The matter of discounting will also be an important one to face. Although it has not been customary in the industry to discount estimates of outstanding claims, the evidence suggests that for purposes of management control it is a very desirable practice. The reason is that unless discounting is applied the pattern of future financial flows will be distorted, and give a different view of the relative profit and loss on given lines of business.

Another point at issue will be the subdivision of the data from the various classes of business. Modern data systems should allow the insurance manager to obtain finer detail concerning the lines under their control, and perhaps to isolate subclass characteristics which may enhance profit or loss. But there will be a limit to the process, in that statistical estimation of the reserves for very small classes becomes unreliable. (The matter is taken further in B2, dealing with the grouping of data.)

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TYPES OF BUSINESS — THE PRIMARY MARKET

General insurance embraces a wide variety of contracts and covers. For practical reserving purposes it may be prudent to be aware of the effects of these variations, but the present discussion is confined to the chief types of business and their main characteristics, and how the reserving process may be affected by them. To begin with, it is useful to have a general classification of the field. The categories specified for solvency returns, in respect of all companies (primary and reinsurance) other than Lloyd's, make a good starting point. They are:

1) Accident & Health
2) Motor Vehicle
3) Aircraft
4) Shipping
5) Goods in Transit
6) Property Damage
7) General Liability
8) Pecuniary Loss
9) Non-proportional Treaty Reinsurance
10) Proportional Treaty Reinsurance

Classes 2) 3) & 4) include both physical damage and liability aspects. Classes 9) & 10) apply specifically to treaty reinsurance business. Facultative reinsurance is placed in with the direct business in Classes 1) – 8).

In general, the main classes will not be homogeneous in the range of risks they cover, although this will vary with the particular business mix of the company in question. An important issue with all classes, therefore, is whether it is necessary to subdivide for reserving purposes, and if so how the subdivision should be made. In some respects the returns require the main categories to be subdivided into risk groups.

Other dimensions are also important, which cut across the above classification. Thus, it is useful to separate personal and commercial lines; and to distinguish the primary, or direct, market from reinsurance written at Lloyd's (which is subject to special treatment under the returns) or on the London Market. In this section, we shall consider briefly the main primary classes listed above, with reference to the direct insurers. The next section (§A3) then looks at reinsurance and the London Market.

1) Accident & Health

Formerly designated "Personal Accident" in the statutory classification, this is essentially a personal rather than commercial type of insurance. Typical examples in the class would include holidaymakers taking out travel insurance, or families buying cover for private medical treatment. From the statistical point of view, personal lines have useful characteristics — i.e. a large number of policies are issued on relatively similar risks, which gives homogeneity to the class. However, as with life assurance the pattern of claims can be upset by atypical individual policies for particularly large sums insured.

2) Motor Vehicle

In spite of its ready familiarity, motor insurance is not a simple type. Thus, a UK comprehensive policy will cover property damage, third party liability, and possibly consequential loss as well. If homogeneity of data is the aim, the reserver may wish to analyse comprehensive business separately from third party only. They may also wish to isolate the physical damage from the liability element in the comprehensive class. Such refinements are not always possible in practice, however, and it is more important to make the most of the available data than to chase theoretical perfection.

Another source of heterogeneity in motor insurance is the difference between private cars and commercial vehicles. This is of great importance, and it would be usual to analyse the two groups separately. Again, there is the wide range in the vehicle types which can be covered, from motor scooters through private saloon cars to buses and heavy duty goods wagons. Such categories as motor cycles (private or commercial) and car or lorry fleets (commercial) may well need separate treatment.

In general, motor business is amenable to statistical treatment, with a large number of similar policies entering the reckoning. As such, it makes a good test ground for the development of systematic reserving methods.

3)–5) Aircraft/Shipping/Goods in Transit

Like motor, these classes of insurance are hybrid types, comprising both physical damage and general liability. They are particularly (though not exclusively) associated with Lloyd's and the London Market. Since there are key differences in procedure, e.g. the slip system tends to be used, and accounts are drawn up on a 3-year rather than a l-year basis, the group is better left until the next section (§A3).

6) Property Damage

This is a major class of insurance, in which the central cover is given against damage by fire. But the cover will normally be extended to many other perils, such as explosion, storm, flood, theft and riot. The important characteristic from a reserving point of view is that the run off of claims will be relatively brief in elapsed time. Thus, within 24 months of the accident year end one would expect the great majority of the outstanding claims to have been settled. The reason is

that property damage is very evident in its nature, and relatively straightforward to assess. Classes of business with such a short run-off period are commonly described as *short tail* lines.

Within property damage, it will be necessary to separate out the personal from the commercial business, as the two types have very different characteristics. Once again, the personal business, mainly householders' policies, will consist of a large number of relatively similar units. These will be amenable to statistical treatment. The commercial side, however, may be more difficult to encompass, since the buildings and plant insured are likely to make a very heterogeneous collection. Reserving is most likely to be based on individual estimates for the various claims in question, as at the accounting date. Such case estimates will be made by expert assessors, either company employees or external loss adjusters.

However, this does not mean that statistical methods are ruled out for commercial property reserving. In the first place, the case estimates may need to be adjusted for bias. Second, an analysis of the claim size distribution and its development over time may give added insight about the incidence of large claims.

7) General Liability

For the reserver, it is in the liability class that the most profound problems are likely to arise. If property damage is taken as the typical short tail line, then general liability exemplifies the *long tail* side. Nowadays it is not uncommon to find liability run-offs extending for 15, 20 or even 25 years and more. The most notorious example is that of industrial disease claims resulting from exposure to asbestos. At the time that much of the insurance was written, the danger was unknown. But the subsequent claims have been upheld at law, particularly in the USA, and have resulted in a serious drain on the free reserves of the insurers concerned.

Apart from the emergence of previously unknown causes, other influences consistently work to extend the liability tail. Thus, the litigation required to establish liability in disputed cases may be a long drawn out process. Again, it may take years for the effects of bodily impairment or disease to become fully apparent. Until the ultimate condition of the injured party is known, damages cannot be properly assessed. During this time, the insurer must keep an appropriate reserve on the books. A case estimate, based on the most recent information, can be used. But given the timescales involved, a more realistic assessment is likely to come from combining the case estimate data with techniques of statistical projection.

Moving to the subdivision of liability business, employers' liability is likely to be analysed separately. Then the remaining aspects such as public and product liability will be taken together, in what has to be admitted is a very heterogeneous subclass. Professional indemnity, if such cover is given, will need to be treated as a further separate category for reserving purposes.

8) Pecuniary Loss

Pecuniary Loss is a very heterogeneous class of business. The main risk classes include mortgage indemnity guarantee, fidelity insurance, and the unemployment peril in creditor insurance. It may also include consequential loss (e.g. following fire damage to property), according to individual company practice.

In general, the experience is likely to be affected by the state of the overall economy. Claims may therefore exhibit behaviour consistent with that generated by a catastrophic event, rather than as an accumulation of independent risks. Setting reserves in some classes can be complicated by a lack of information provided by the insured, and by the long drawn out nature of the claim trigger (for example, in mortgage indemnity individual claims may not manifest themselves until 2–3 years after the borrower first falls into arrears with repayments).

[A3]
TYPES OF BUSINESS — REINSURANCE & THE LONDON MARKET

Coming to reinsurance as opposed to direct writing, commercial operations are focused on the London Market. This is a distinct market from that of the direct insurers, but the separation is not absolute. At its centre, the London Market has the unique institution of Lloyd's. The broking, underwriting and accounting system which has evolved at Lloyd's gives the market its modus operandi, and distinguishes it clearly from the practices of the main direct writing offices. But Lloyd's itself should *not* be equated with the London Market, of which it is only a part. Institutions other than Lloyd's which typically participate in the market are:

Specialist reinsurance companies, both UK and foreign
Reinsurance subsidiaries of large broking firms
Home foreign departments of the large direct writing companies
Overseas branches and subsidiaries of foreign companies

A simple but incomplete definition of the London Market might be that it comprises all business which comes to be placed through the agency of Lloyd's brokers, using the Lloyd's slip system. This would be fine except that it does not allow for the considerable amount of business placed directly between reinsurers and other companies, without the agency of a broker.

Another point is that though the London Market is particularly associated with reinsurance, it also underwrites an appreciable amount of direct business. Direct marine and aviation insurance, comprising hull, cargo and liability covers are typically placed at Lloyd's, or with other London market firms. Lloyd's syndicates write a good deal of motor business, and indeed may take on direct risks in any of the other main insurance categories already described.

With these provisos, we may look at reinsurance, and its main types as transacted in the London Market. Three levels of classification are needed:

I) Type of Primary Business requiring Reinsurance

a) Marine
b) Aviation
c) Non-Marine (i.e. everything else)

II) Type of Reinsurance Cover

a) Facultative
b) Proportional Treaty
c) Non-Proportional Treaty (Excess of Loss/Stop Loss)

III) Length of Claims Run-off

a) Short Tail
b) All Other (including Medium and Long Tail)

The three classification levels are discussed very briefly below. For a full exposition of reinsurance on the London Market and the system by which it is written, the reader is referred to Craighead's papers and Kiln's book (details in §O).

I) Type of Primary Business requiring Reinsurance

Unfortunately, it is difficult to generalise about the sub-types under this heading. The mix of business will vary a great deal between different syndicates and reinsurance firms, and each will develop its own groupings for analysis. The three main subheads of Marine, Aviation and Non-Marine are essential in that they must be distinguished under the system of Lloyd's Audit Codes. That is the traditional division of the market, with different underwriters working in each area.

II) Type of Reinsurance Cover

The basic technical types of reinsurance are complex. Thus, facultative reinsurance can itself be proportional, or relate to an excess layer of loss on a given risk. It can comprise fleet covers (in aircraft, shipping or motor) as well as individual risks. Proportional treaties can be for quota share on a full portfolio, or on designated lines of business only. They can be in favour of a direct office, or of another reinsurer. Non-proportional treaties can be for excess of loss protection on given classes of business, and written in a number of distinct layers. They can be applied as a further safeguard to existing proportional treaties, and can also take the form of Stop Loss contracts on a whole portfolio. The position is thus an elaborate one, and the following is probably a minimum classification for the Lloyd's syndicate or London Market reinsurer:

a) Direct written business
b) Facultative reinsurance
c) Proportional treaties
d) Excess of loss/Stop loss treaties

Individual excess of loss risks are perhaps better taken as b), facultative business, than under d). In addition, Craighead (1979) recommends that excess of loss

treaties should be split according to their origin, i.e. whether from the London Market or from the direct writing companies.

III) Length of Claims Run-off

Of major importance for reinsurance reserving is the length of the claims run-off. Whether the business is marine, aviation or non-marine, and irrespective of its technical form, it is likely to contain both property and liability elements. The general rule is that property damage will lead to a short tail in the run-off, and liability to a medium or long tail. Thus, given a particular reinsurance contract, it will always be useful to estimate the split of the risk between the short tail and the long tail elements. The claim amounts which actually emerge can then, if possible, be monitored over time to test their adherence to the original long/short estimate.

(It should be noted that reinsurance, of its nature, will lead to longer run-offs for all classes than will the writing of direct business. The reason is simply that there are more steps in the chain to be completed before accounts can be finally settled. Delays in the original reporting of claims, in the communications between broker and underwriter, and in the completion of complicated settlements across international boundaries, all add to the effect.)

Taking all the above classifications together there will be a number of separate reserving categories for each portfolio. Other distinguishing factors, for example currency, may increase the number of categories. However, practical limitations may make it necessary or justifiable to amalgamate some of the categories.

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NOTE ON TECHNICAL RESERVES

While the subject of the Manual is Claims Reserving, other kinds of technical reserve will be encountered in General Insurance. Some of these are effectively special aspects of the main claims reserve, e.g. the IBNR reserve, and as such fall within the scope of the Manual. Others, however, in particular the unearned premium reserve, are outside its ambit. For convenience, this note briefly distinguishes the various types of technical reserve.

Reserve for known outstanding claims

At any given accounting date, there will be a number of claims on the books which have not yet been settled, or at least not finally settled. The insurer's estimated liability in respect of such claims may be referred to as the reserve for known outstanding claims. It forms part of the overall claims reserve. (See also note on p. A5.1).

IBNR Reserve

IBNR stands for *Incurred but not reported.* It refers to claims whose date of occurrence lies in the period on or before the accounting date, but which for some reason have not yet reached the insurer's books. Damage and liability can take time to become manifest, and there will be delays in the reporting and recording of claims even under the best of circumstances. Hence the need for the IBNR reserve, which relates to the claims which are effectively hidden from view. Apart from outstanding claims, IBNR forms the other main portion of the overall claims reserve.

Unearned Premium Reserve

At the accounting date, for each policy which remains open on the insurer's books, a part only of the contracted risk period is likely to have elapsed. If a premium was payable, say, on 1 October for one year's cover, then nine months will remain when the accounts are drawn up on 31 December. A proportionate part of the premium must be retained as a reserve to cover the period of risk from 1 January onward. (In this case, ignoring inflation, the portion would be 75%, less some allowance for initial expense.)

Such a reserve, for risk periods subsequent to the accounting date is known as the *unearned premium reserve* (UPR).

Unexpired Risk Reserve

The UPR, being based on the premium, may be inadequate if the premium itself is insufficient to cover the cost of the risk and expenses. Hence an upward adjustment may be needed, and this increment is known as the *unexpired risk reserve*.

Catastrophe Reserve

With an event such as a severe earthquake or hurricane, a large number of connected claims for personal accident, property damage, consequential loss and general liability will inevitably arise. In such cases, the normal provision for future claims, based on the concept of independent events, may be entirely inadequate. Hence, where the type or geography of the risks written indicates the insurer's susceptibility to catastrophe loss, an additional cushioning of the reserves may be considered.

Fluctuation Reserve

It is in the nature of things that an insurer's claims experience will fluctuate from year to year. Even without the occurrence of an identifiable catastrophe, random variation may throw up one, or even a series, of lean years. For protection against such an out-turn, the insurer may wish to establish a fluctuation reserve. In practice there may be little conceptual difference between a fluctuation reserve and a catastrophe reserve; and it is unusual for companies to show them explicitly in the UK where they are not allowable for tax purposes.

Claims Equalisation Reserve

For certain defined categories of business, UK insurance companies have from the end of 1996 been required to hold a fluctuation reserve, knows as a *claims equalisation reserve* (CER). The maximum amount of the CER, and the amounts to be transferred to and from the CER, are specified by statute. A transfer to CER is treated as a deduction from pre-tax profits, while a transfer from CER is treated as part of the taxable income of the company in the year in which it is made.

[A5]
NOTE ON TERMINOLOGY

Rather unfortunately, there are several terms of central importance in claims reserving which can be given quite different meanings by different users. It is important to be aware of the ambiguities, and to be sure of the meaning intended in a given context. The chief problems arise with the terms *Outstanding Claims, IBNR, Incurred Loss* and *Chain Ladder Method,* and are described below. (The list is not supposed to be exhaustive.)

Outstanding Claims

The term has often been used to refer to claims on the insurer's books by the accounting date, but not by then settled — in other words, to the known outstanding claims. When this practice is adopted, *IBNR* claims are specifically excluded. The totality of claims for which reserves must be held then consists of *Outstanding Claims* plus *IBNR Claims*, although since the term *Outstanding Claims* is often used to refer to this totality there is obviously scope for confusion.

Unfortunately there is no universally agreed nomenclature. In the Manual we will use the following terminology —

a) *Open Claims* means claims which have been reported to the insurer and which are not yet settled.

b) *IBNR Claims* means claims which have been incurred but not yet reported to the insurer in question (see next paragraph).

c) *Outstanding Claims* means the total of a) and b).

IBNR

A further ambiguity arises with the term *IBNR* itself. It is often used as such to refer to the reserve as well as to the group of *IBNR* claims. That in itself is no problem: at the accounting date one has a set of open claims and an open claims reserve, plus a set of hidden claims and an *IBNR* reserve. But the ambiguity arises once one begins to consider the progress of claim settlements subsequent to the accounting day. Taking the group of open claims, the actual payments will not precisely match the reserve previously set — there will be a development, which may be upward or down. One definition of *IBNR* is such as to ignore this development, and it is the sense that will usually be taken in the Manual. The

alternative definition of *IBNR*, however, deliberately *includes any development in the open claims.* In other words, the meaning of the *IBNR* reserve becomes:

IBNR = Estimated ultimate loss on all outstanding claims
less Reserve at accounting date for open claims

This seems less natural than the first definition, but it has real point in some circumstances. It is used in this sense in the London Market with particular reference to reinsurances. The Manual will specify where appropriate the sense in which the term *IBNR* is being used in the particular context.

Incurred Loss

There are two distinct definitions of the term Incurred Loss depending upon the context. The first arises when one is considering the insurer's portfolio of business as a whole, or perhaps a given class within the portfolio. Interest lies in the progress of the portfolio or the class over the course of the accounting year, and *Incurred Loss* is defined as:

Incurred Loss = Claims paid during course of year
less Claims reserve held at 1 January
plus Claims reserve established at 31 December

The second use arises equally naturally when one looks at a particular tranche of business which has its origin in a given policy year or a group of claims originating in a given accident year (normally referred to in actuarial work as a *cohort).* It is interesting to follow the progress of the cohort, and at each subsequent accounting date to assess the losses attaching to it. The estimate, omitting the IBNR element, is again called the *Incurred Loss.* It is:

Incurred Loss = Amounts paid to date on settled or partly settled claims
plus Reserve held for open claims

In the Manual, *Incurred Loss* will be used exclusively in this second sense. That is because the reserving methods discussed are very generally applied on a cohort by cohort basis. The overall picture for the portfolio or class is later found by adding up the parts, and is less commonly in question.

Chain Ladder Method

The term is a very familiar one to claims reserving practitioners. The problem is that it is sometimes used in a particular sense, and at other times very generally. In the latter case, it describes a wide range of reserving methods, which operate through comparing the claims development of cohorts of different years of origin, and which tend to employ triangular arrays of data. This usage leaves something to be desired. It obscures the important question as to what data are actually being used — many different possibilities exist. Also, it tends to suggest:

a) that a triangular array must be used, and
b) anything that is in triangular form must necessarily be a chain ladder.

Neither of these propositions is true.

In its particular sense, *Chain Ladder Method* is used to describe one means, and one means only, for evaluating the triangular array (see §E8).

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