

GENERAL INSURANCE EXPENSESSUMMARY OF CONTENTSPage

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GENERAL INSURANCE EXPENSES

1. INTRODUCTION

1.1 BACKGROUND

The overall cost in expense terms of running an insurance operation is the total of the amount of management expenses incurred and of the commission paid to intermediaries. The commission offered by an insurance company in respect of a particular type of business is normally expressed as a fixed percentage of the charged (written) premium. It is straightforward to analyse commission by type of business and to forecast commission for an assumed future portfolio of business. This monograph is mainly concerned with management expenses exclusive of commission.

Management expenses cover the costs of such items as underwriting, claim handling, quotations, renewals and endorsements. The composition of management expenses and the balance between management expenses and commission depend partly on the marketing approach of the company - for example, whether the company operates through brokers, by using its own agents or, at one extreme, by direct selling without intermediaries. Some types of business need, for example, more careful and costly underwriting than others. The expenses associated with, say, a large portfolio of low premium business cannot be expected to be of similar size and composition in relation to premiums charged as in the case of a portfolio of large highly individual commercial risks. Generally commission and management expenses account for a much higher proportion of written premiums than is the case in life assurance and Table 1 shows some specimen commission and expense ratios.

Since management expenses form such a high proportion of premiums, it is clear that a proper subdivision of expenses is essential both for considering the profitability of different sectors of the individual company's portfolio and for incorporating expenses as a factor in premium rating. The allocation of expenses to different types of business is far less straightforward than in the case of commission, as will be seen below.

It might superficially seem not unreasonable to allocate expenses to classes of business in proportion to premium income and this practice was traditionally used by insurance companies.

(continued on next sheet)

COMMISSION & MANAGEMENT EXPENSES AS % OF WRITTEN PREMIUMS
(net of reinsurance ceded)

Source: DoT Returns for 1978

<u>Company</u>	<u>Liability</u>	<u>Marine, Aviation and Transport</u>	<u>Motor Vehicle</u>	<u>Pecuniary Loss</u>
1. Commission	16.6	-	12.4	12.7
Expenses	18.3	8.7	13.0	23.1
Total	34.9	8.7	25.4	35.8
2. Commission	15.2	-	13.5	13.2
Expenses	16.0	10.0	16.2	30.4
Total	31.2	10.0	29.7	43.6
3. Commission	14.6	-	11.8	16.4
Expenses	12.6	10.2	12.5	17.1
Total	27.2	10.2	24.3	33.5
4. Commission	10.0	-	10.0	28.8
Expenses	8.1	12.4	17.4	13.1
Total	18.1	12.4	27.4	41.9
5. Commission	13.6	-	8.6	2.9
Expenses	16.1	7.2	13.4	24.8
Total	29.7	7.2	22.0	27.7
6. Commission	14.1	-	10.6	17.5
Expenses	40.9	8.9	29.7	34.1
Total	55.0	8.9	40.3	51.6
7. Commission	15.6	-	11.5	16.6
Expenses	14.4	14.5	14.2	15.2
Total	30.0	14.5	25.7	31.1
8. Commission	15.2	-	14.5	17.4
Expenses	14.5	12.1	15.6	20.1
Total	29.7	12.1	30.1	37.5
9. Commission	12.8	16.1	11.0	9.9
Expenses	12.0	10.1	11.8	20.5
Total	24.8	26.2	22.8	30.4
10. Commission	14.9	12.8	15.3	24.8
Expenses	17.1	11.0	15.6	15.9
Total	32.0	23.8	30.9	40.7

Note: Before publication of the monograph, replace these figures with corresponding figures from 1981 DoT Returns. There will be 10 accounting classes, and the first 6 go on the first sheet, and the remaining 4 and a Total column go on the second sheet.

TABLE 1 (continued)
COMMISSION & MANAGEMENT EXPENSES AS % OF WRITTEN PREMIUMS
 (net of reinsurance ceded)

Source: DoT Returns for 1978

<u>Company</u>	<u>Personal Accident</u>	<u>Property</u>	<u>Treaty</u>	<u>Total</u>
1. Commission Expenses	26.7 17.5	16.5 26.9	32.7 4.4	14.5 16.6
Total	44.2	43.4	37.1	31.1
2. Commission Expenses	23.5 18.7	15.8 27.6	45.3 5.7	13.5 20.0
Total	42.2	43.4	51.0	33.5
3. Commission Expenses	18.7 13.5	19.3 14.3	32.8 5.1	14.5 13.2
Total	32.2	33.6	37.9	27.7
4. Commission Expenses	19.5 24.8	19.9 20.0	21.1 1.3	13.8 13.7
Total	44.3	39.9	22.4	27.5
5. Commission Expenses	7.0 17.9	16.1 24.0	34.9 3.2	12.1 16.0
Total	24.9	40.1	38.1	28.1
6. Commission Expenses	15.6 42.5	15.9 28.9	28.5 3.0	13.4 27.5
Total	58.1	44.8	31.5	40.9
7. Commission Expenses	27.5 10.0	19.2 17.9	31.7 7.9	16.7 15.1
Total	37.5	37.1	39.6	31.8
8. Commission Expenses	20.8 22.3	15.1 23.3	23.5 10.0	15.7 17.1
Total	43.1	38.4	33.5	32.8
9. Commission Expenses	20.8 17.8	14.2 19.3	33.5 2.9	16.7 12.3
Total	38.6	33.5	36.4	29.0
10. Commission Expenses	13.5 21.9	18.4 14.9	35.2 2.0	17.7 14.6
Total	35.4	33.3	37.2	32.3

Such a basis can give a false appreciation of the profitability of different classes and can also give opportunities to other companies to gain profitable business by charging lower premiums for those risks which are over-priced elsewhere as a result of a false expenses allocation. Most companies now realise that such a basis of expense allocation can be most unsatisfactory and have adopted what they consider to be some more suitable method of allocation, for example in the accounting class breakdown in their Returns to the Department of Trade.

It must be admitted that the analysis of expenses by class, by type of risk and by size of risk has not been fully developed and much work remains to be done in this area - this is probably as true of long-term business as it is for general insurance.

Much of this monograph is based on Ian Rushton's authoritative paper "Analysis of Insurance Expenses" presented to the Institute of Actuaries Students' Society in November 1977 and available in the library of the Institute of Actuaries.

Some additional material has been drawn from the chapter on expenses in Professor Bernard Benjamin's book "General Insurance".

1.2 EXPENSES BEING FIXED IN THE SHORT TERM

Before looking at the problems of analysing and allocating expenses we consider the nature of expenses in general insurance. The traditional accountancy approach to expenses, geared to manufacturing industry, subdivides them into fixed and variable expenses. The latter are incurred in the production of goods and are normally considered to include raw materials and the wages and other expenses of the labour force actually involved in manufacture. This arises from the traditional practice of laying off people at times when production is low and increasing the labour force level when high production is required. Fixed expenses, or "overheads" include factories, plant and machinery and the cost of employees not normally laid off for short-term considerations, e.g. management and office staff. In pursuing the aim of maximising long-term profit, management in manufacturing industry are trying to maximise the difference between money received from sales and expenses of handling the business. However, in the

short term ~~their~~ aim will rather be to maximise the difference between sales and variable expenses which after taking account of fixed expenses gives a gearing effect to profit.

Applying the above concepts to general insurance it is clear that premiums are akin to sales and claims and commission are akin to variable expenses. Since, in practice, insurance companies do not have raw materials to make into goods as does manufacturing industry, and since they tend to treat all personnel on a "staff" basis, i.e. they do not vary numbers in line with the volume of business over the short term, expenses can all be considered as fixed expenses for pricing policy purposes.

1.3 MAXIMISING PROFIT WHEN EXPENSES ARE FIXED

The argument in the previous paragraph produces the corollary that the more business that can be acquired within handling capacity and without leading to a reduction in the margin between premiums and claims (assuming commission to be a constant percentage of premiums), the more profitable will be the business overall. In practice, with the market for general insurance being a virtually saturated one, acquiring more business without reducing underwriting standards is a difficult matter.

It may still be beneficial to take on extra business even if the margin between premiums and claims reduces, provided premiums less claims less commission is positive. In these circumstances we say that there is a positive "contribution" (defined as sales less variable expenses in the case of manufacturing industry) from the extra business.

Maximising general insurance profit in the short term is achieved by maximising the total contribution from the various classes of business.

1.4 NOT ALL EXPENSES ARE FIXED IN THE LONG TERM

While, for pricing policy purposes, expenses can be regarded as fixed, in the longer term a company is liable to alter the scale of its operations to allow for changing trends in type and volume of business or as a consequence of a major change in

marketing policy. Over this longer timescale staff volumes are liable to change and not all expenses can be taken as fixed.

2. A RANGE OF EXPENSE ANALYSES

2.1 REASONS FOR ANALYSING EXPENSES

(a) CONTROL

In general insurance a balance needs to be kept between cost and service in order to maximise profit. The importance which policyholders place on service may vary over the years, according to both fashion and economic circumstances.

At a particular point of time it may be considered that policyholders will prefer to have, say, smaller premium rises combined with reduced service rather than larger premium rises with expenses not curtailed.

In all circumstances it is necessary to exercise control over expenses to keep wastage as low as possible and to improve efficiency. Three main areas of expense control are set out below.

- (i) Decisions by top management affecting overall salary and other costs. Included here is the annual review of salary levels.
- (ii) Monitoring current levels of expenses overall and in specific parts of the organisation to see whether expenses are reasonable. This area might include the setting of expense targets and the use of budgeting control techniques.
- (iii) Reviews of specific elements of expenses to see whether savings can be achieved.

(b) PROFIT ANALYSIS

In order to judge the profitability of different operations we need to have accounting results and projected accounts with the expenses subdivided by class of business. We might

also need a subdivision by branch or regional office although in many cases the individual offices will not be true "profit centres" if they do not have full responsibility for premium rates, underwriting standards and other policy matters. We shall wish to see that expenses are allocated by class of business on a reasonable basis and, as was indicated in the introduction, this will normally preclude a simple split of expenses in proportion to written premium.

(c) PREMIUM RATING

Each premium charged should include some element of expenses and the total expenses must be contained within the total premiums charged. We shall look later/at how expenses might be incorporated in premiums. We should seek to avoid incorporating expenses in premiums on one basis and subsequently analysing profit on a different basis of expense allocation.

2.2 SOURCES OF INFORMATION

Expense information will be available from a number of sources but the prime source will be the accounting system which will be supplemented from a variety of other sources including special investigations. The raw expense data will need to be classified and analysed in a range of ways as we shall see below.

2.3 TYPES OF EXPENSE BREAKDOWN

The main expense breakdowns we might need are as follows:

- A by class of business;
- B by size of risk within class of business;
- C by type of expense, e.g. salary, rent, postage;
- D by source of expense, i.e. branch or department;
- E by "profit centre", i.e. again branch or regional office;
- F by function, e.g. claims, selling, underwriting, computer (including associated salaries).

We now consider briefly each of these types of breakdown.

A BREAKDOWN BY CLASS OF BUSINESS

This is of primary importance and is required both for profit analyses and premium rating. The required expense figures are not available directly from the accounting system and

special investigations are needed. Section 3 considers expense analysis by class of business in detail.

B BREAKDOWN BY SIZE OF RISK

This information is of potential use in premium rating within a class of business (considered in Section 4) and again special investigations are needed to produce the breakdown.

C BREAKDOWN BY TYPE OF EXPENSE, E.G. SALARY, RENT, POSTAGE

This information is available directly from the accounting system and the figures are useful in the control of costs. For a typical company, salaries and wages, together with other staff costs will be around 70% of all expenses, the percentage varying according to the type of company and its method of marketing. It is important that staff numbers and costs are firmly controlled while offering a sufficiently attractive salary package in order to retain quality staff. The various types of non-staff costs are of a lower order of significance but still need controlling.

D BREAKDOWN BY SOURCE OF EXPENSE

By source is meant a grouping such as branch or head office department under a clear single operational control. Each manager is unlikely to control salary levels but can exercise managerial effort to contain expenses and staff numbers. A breakdown of expenses by source, subdivided by type, is generally available from the accounting system and can be used in controlling expenses by way of monitoring them to see whether they are reasonable. The figures will be required if the company uses a budgetary control system. Under this system each manager must forecast his expenditure for the coming year, agree this with his own superior and then seek to minimise expenses, working within the agreed level wherever possible. The total proposed budgets can be useful in overall control of expenses.

E BREAKDOWN BY PROFIT CENTRE

By profit centre is meant any individual operating unit whose profitability can usefully be assessed. We are thinking especially of regional branches which are allowed a reasonable degree of financial independence. In addition to

the expenses incurred directly by the profit centre, which should be obtainable from the accounting system as remarked in D above, a share of head office costs will have to be allocated to the profit centre to measure the profitability of the latter.

An analysis of expenses and of profit, together with detailed knowledge of the composition of the business transacted at each branch, can be a powerful management tool to bring the efficiency of the separate branches up to that of the best. It must be stated, however, that the judging of profit from one branch to another must be treated with great caution. If a branch's profit is low this may be explained by any of the following: random fluctuations might have distorted the claims experience, especially if claims are shown gross of reinsurance; the degree of competition might be greater than elsewhere; the premiums for that area, possibly dictated by head office, might be on the low side; the branch might have used discretion allowed by head office to pare premiums in too many cases in order to retain an insurance connection. In practice it is often found to be extremely difficult to draw positive conclusions from inspection of profit analyses of separate regional branches.

F ANALYSIS BY FUNCTION (REASON FOR BEING INCURRED)

For general insurance a suitable broad functional breakdown might be:

- Selling
- Underwriting
- Administration
- Claims

A number of smaller subdivisions are of value, e.g. computer. For some functions the costs might be categorised as profit centres. costs./ We note here that the analysis by type of expense in

C above did not link staff, buildings and other costs for each function, so a separate exercise is needed to aggregate the expenses of each function. Given the total costs for a function, more cost-effective approaches can be considered, e.g. in-house printing and making greater use of recent technology. An analysis of expenses by function might also be useful in one aspect of premium rating: seeking to determine

an economic level of minimum premium for a particular type of business. (see section 4.3)

2.4 PAST AND FUTURE EXPENSES

In looking at expenses we shall be interested in different time horizons, the two main ones being the recent past - especially the latest financial year - and the immediate future - in particular the next year or the next two or three years. The two main time horizons can be relevant whether we are looking at expenses for the purpose of expense control, profit analysis or premium rating.

Expenses of the recent past are needed as a record of the expenses which have been incurred. These can be analysed in the various breakdowns listed in 2.3. Expenses in a future period are needed especially for premium rating and for projecting accounting results.

As regards premium rating, the starting point for incorporating expenses in rating bases is the expected total amount of expenses in the period covered by the new rates. We are likely to need also the same expected total for at least one year following the period of the new rates since it will be twelve months after the last policy has been written at the new rates before all the policy years will have expired and in the meantime the level of profitability in published and management (internal) accounts will be affected by the premiums charged at the new rates.

The total expenses can be forecast from the latest expense figures with allowance for trends in staffing levels, anticipated salary increases and any other changing features of the company's operations. Unless the overall expected change in portfolio size is significant, total expenses will not be affected by the rating change. The total forecast expenses then need to be allocated to life business (in the case of a composite company) and to the individual classes of general business. We consider in section 3.1 the split of expenses between life and general business. We are assuming so far that each class of business is expected to meet

its apportioned share of expenses; the alternative approach of marginal costing is considered in section 3.3. The forecast expenses for each class can be incorporated in accounting projections comparing the premiums earned or written in future periods with the corresponding outgo by way of claims, expenses and commission.

We have so far considered the need to project expenses for the purposes of rating and profit projection by class of business. Similarly we may wish to project profit for each profit centre. Much of the work of profit analysis will concern results for the recent past, and care will be needed in interpretation especially to take account of the inherent variability of the claims experience.

For purposes of expense control we are interested particularly in the latest figures of expenses incurred although in any budgeting and in assessing the effect of, say, a proposed increase in staff remuneration we need to forecast costs up to a year ahead.

3. EXPENSE ANALYSIS BY CLASS OF BUSINESS.

3.1 THE COMPOSITE COMPANY

Most composite insurance companies are proprietary companies in which the whole of the profits of the general business belong to the shareholders but only 10%, say, of the life profits belong to the shareholders, the other 90% of life profits being allocated to the life policyholders. The remaining composites are mutual in nature, or nearly so in practical terms; that is, the profits generated by the life and general branches are applied wholly or predominantly for the benefit of the policyholders.

Whether the composite company is proprietary or non-proprietary it is important to provide an equitable split of expenses between the life and general branches. In practice a proportion of the expenses does not relate directly to either life only or general

only, and such expenses have to be apportioned between the two branches on some reasonable basis. If the life and general businesses were run entirely independently there would be increased total expenses combined with possible reduced opportunities to acquire new business. A reasonable allocation of expenses between life and general should produce a lower expense figure for both life and general than would have arisen if the two businesses had operated independently.

However, there is liable to be a range of expense allocations which might be regarded as reasonable and it is a matter for consideration by management as to what is the optimal allocation. As in other areas of expense allocation it is important to be reasonably consistent from one year to the next in one's method of allocation between the life and general branches.

3.2 DIRECT AND INDIRECT EXPENSES

Direct expenses are those arising directly from the handling of an individual class of business. As an example, they will include the costs of staff involved with the class of business, including salaries and pension fund and national insurance contributions. They will also include the cost of providing the facilities for their work including the office space, their desks, an element of computer support and many other factors. In practice only some staff will spend their whole time on a specific class of business, but many others will work on a range of classes. It thus becomes necessary to produce a system to allocate their expenses to different classes.

Indirect expenses cover all other types of expense and comprise those which cannot be directly related to handling specific classes of business. The expenses of many layers of management fall into this category, a prime example being that of the branch manager who is related to types of business only through the work of those beneath him. A similar but even more remote category of indirect expenses will be that of general management, but other examples include such varied items as prestige advertising, directors' fees and subscriptions to industry bodies, many of which are not related to individual classes of business.

The balance left after deducting from earned premiums the incurred claims, commission and direct expenses can be seen to be the profit from the actual insurance business. Indirect expenses can be looked upon as "overheads" which need to be deducted before arriving at what is normally called the underwriting profit. While in the short term the expenses as a whole will tend to be fixed in nature, in the long term the direct expenses will vary somewhat with volume of business whereas the indirect expenses will be relatively unaffected by changes in volume of business.

3.3 MARGINAL COSTING

Section 3.5 will consider how the indirect expenses might be allocated to classes of business in the absence of any competitive pressure on any particular class. However the expenses are allocated by class, the total expense element in premiums charged for all classes must be sufficient to cover total expenses.

Subject to this last remark it may be appropriate or necessary to reduce the expense loadings when rating certain types of business where there is strong competition from other insurance companies, in order to avoid being priced out of the market. In such circumstances extra expense loadings need to be incorporated in the premiums charged for other classes to compensate for the reduced loadings. For any class the direct expenses should always be covered in the premiums charged.

The system described in the last paragraph is known as marginal costing or the contribution method of costing. Each class must make a non-negative contribution to meeting the indirect expenses, the contributions varying among classes in an endeavour to maximise overall profit. There is a danger that an argument for paring rates will be used for all classes. This must be overcome so that indirect expenses are covered in total and also an adequate underwriting result is achieved.

It is in considering the position of a single large block of business that marginal costing can be especially important. Under the pressure of competition it may prove necessary on occasion to shade the premium rate downwards to retain a significant large connection and in such cases the margin available can be seen to be the total of the charge for indirect expenses and profit. However,

in practice the picture for an individual risk will be far from clear on the necessary premium to cover the claims element so it would be false to assume that an adjustment is made only on expense grounds. Shading of premium for an individual large risk will tend to be by the underwriter on his "feel" for the risk which will include his subjective view on both claims and expenses.

3.4 ALLOCATION OF EXPENSES TO CLASSES OF BUSINESS

An example of a subdivision of general insurance classes into broad groupings is as follows:

- Commercial fire
- Household
- Consequential loss
- Personal accident
- Liability
- Motor fleets
- Other motor
- Marine
- Other classes

The above categories have distinct characteristics which justify an attempt to allocate expenses to each category. The exact subdivision chosen by the company will depend on the composition of the business it transacts. The greater the level of breakdown the more inaccuracies are liable to creep into the analysis. A significantly more detailed breakdown than the example shown above begins to meet problems of achieving a reasonable level of accuracy.

METHODS OF ANALYSIS

A PROPORTIONAL TO WRITTEN PREMIUMS

This is the simplest form of allocation and can be either gross or net of reinsurance.

B TWO OR THREE MAIN GROUPINGS ONLY

The detailed analysis might be into fire, motor and other accident, the further subdivision of each of these categories being in proportion to written premiums.

Both methods A and B are likely to produce wildly inaccurate results. Before considering more satisfactory methods than

the above we note that the majority of the company's staff will be directly concerned with the undertaking of insurance business. The first need, therefore, is to analyse the time they spend on each class of business and thus obtain a suitable allocation of their salaries to the different classes. For some staff, e.g. motor engineers and fire surveyors, it may seem relatively clear that the whole of their time is spent on a particular class of business though even here problems can arise since, for example, motor engineers' time needs to be allocated between motor fleets and individual vehicle insurance. For staff working in departments dealing with several classes of business the following methods are ways of allocating salaries to individual classes.

C **WORK MEASUREMENT TECHNIQUES**

For a company which employs work measurement techniques in controlling clerical work, a spin-off is to facilitate an analysis of salary costs of handling the different classes of business. Other costs also need to be allocated to classes and this is considered in section 3.5.

D **ALLOCATION OF TIME SPENT**

This is useful where work measurement is not employed, the time spent on each class being weighted by salary. The two bases generally used are to ask supervisors to make subjective assessments, usually at frequent intervals such as monthly, or to ask for either all or a sample number of staff to complete time sheets showing how they spent their time over representative periods.

E **FUNCTIONAL COSTING**

The previous method of allocating expenses to classes can absorb a considerable amount of effort by staff and, therefore, becomes difficult to undertake on a regular basis. In addition, if repeated annually, say, it is quite likely that there will be variations between the results obtained which would be too large to be acceptable for allocating expenses in practice. Such variations can arise from sampling errors and regularly repeating the costing process can be expected to lead to a falling off in the level of importance attached to it by staff which in turn can produce

inaccurate results. An additional problem is that staff will tend to round off estimates of time. This practice has a significantly distorting effect where small amounts of time are involved and this generally leads to an over-estimate of the expenses for the smaller classes. These problems in using an allocation of time spent (method D) largely apply also in using work measurement techniques (method C).

In order to avoid these problems a system of functional costing can be used which will ensure reasonable stability in the allocation of expenses from year to year. The objective is to express the various costs in total, by a function of one or more easily monitored parameters. The total direct costs of each line department (i.e. department dealing with classes of insurance) need to be allocated between the classes of business written by the line department.

To accomplish this an index system is set up incorporating such items as numbers of renewals, new proposals, claims paid, endorsements, enquiries, etc. Each constituent is weighted in some agreed manner which may well vary between classes and the share of the expenses borne by any class of business is

$$(\text{total expenses of department}) \times \frac{I_c}{\sum I_c}$$

where I_c is the numerical value of the index for class of business c , and the summation is over all classes.

The construction of the index, including the weightings, may be somewhat subjective but will be based on a full investigation of expenses incurred by classes for the various functions. The method has the advantage of consistency since once the index system is set up the subjectiveness will not change in character from year to year. The figures comprising the constituent elements of the index system should be readily available, especially if the company's records have been computerized.

3.5 NON-SALARY EXPENSES AND EXPENSES OF OFF-LINE DEPARTMENTS

We have seen in the previous section that either by apportioning a representative sample of time spent working on classes of general insurance business (using the results of work measurement studies if available) or by a system of functional costing we can apportion to the individual classes the salary element of the direct expenses. We still need to consider the non-salary elements of direct expenses, as well as both the salary and the non-salary elements of the indirect expenses.

The non-salary elements of direct expenses can be apportioned using a method akin to functional costing. For example, pension fund and national insurance contributions can be allocated to classes in proportion to salaries. Rent, rates, heating, lighting and other property expenses might be allocated by floor area or, perhaps on grounds of simplicity, in proportion to staff numbers. Telephone and various other costs might also be allocated according to staff numbers. Some direct costs such as removal and travelling expenses might justify individual consideration if the amounts are significant.

The expenses of off-line departments are predominantly indirect in nature. Clearly, though, unless postage is charged direct to each originating department, there will be the costs of the postal department to allocate to the individual classes of business: postal costs might be allocated according to the number of policies unless certain classes generate a great deal of correspondence.

As we have already seen in the section on marginal costing it is important to see that the indirect expenses or "overheads" are fully covered in the expense allocation. Subject to this constraint, some classes might, on grounds of competition, need to be allocated less than their "share" of overheads, although any shortfall must be made up by other classes. Precision is not possible in allocating the indirect expenses by class. We should normally seek consistency in allocation from one period to the next, subject to adjustment for particular classes in times of severe competition.

The following gives examples of bases which may be appropriate to some departments.

Staff department

Numbers of male/female staff in each class of business may provide a basis. We might wish to treat each sex separately as the staff turnover of females is usually the greater.

Data processing

It is likely that machine usage (including depreciation) of the company's own computer can be directly costed. If not, numbers of renewals might be used. Salaries of staff and other expenses can then be spread by machine usage but the cost of special projects such as setting up a new system ought to be known and should be directly allocated.

Investment department expenses and general management expenses

The expenses incurred in the investment department are clearly directly attributable to investments and it is, therefore, reasonable to charge these expenses against investment income. General management expenses will be partially in respect of work in the investment area and partially in respect of controlling the organisation. An allocation between the time spent on investment matters and the rest is probably best obtained by an ad hoc assessment of how the management are spending their time. The breakdown of the balance of general management expenses to individual classes of insurance can be only on a completely arbitrary basis, although again we should generally seek consistency from year to year.

3.6 CLAIMS EXPENSES

The expenses incurred in handling claims need separate consideration. The practice adopted by the individual company in handling claims will vary depending on its size and method of operation and also by class of business. It is traditional within the general insurance market for most of the larger claims in the fire and consequential loss market (including the fire section of household business) to be handled by independent loss adjusters and it is normal for their expenses to be included as part of claims. Similarly, legal fees incurred in connection with claims in any class of business are treated as part of claims rather than

expenses. Where companies depend on services provided from outside the company the expenses thereof will again be charged to claims. Companies employ their own claims staff, including motor engineers, and generally a transfer to claims is made in respect of some or all expenses incurred in handling individual claims. If all such expenses are charged to claims then they are on a comparable basis between classes. The estimate of the right claims expense transfer to make can be derived from costing exercises.

4. EXPENSES WITHIN A CLASS OF BUSINESS

4.1 EXPENSE LOADINGS: THEORY AND PRACTICE

Within a class of business the risks will differ both by size and by level of risk. The method of spreading expenses for rating purposes over the individual policies in a class of business should, in theory, follow the way expenses are incurred. Some expenses will be incurred irrespective of the size of the policy whereas other expenses will increase with the size of the policy though not necessarily in proportion. It would seem logical to charge part of the expenses in proportion to the size of the risk and part on a policy fee basis.

In practice this does not seem to be done in the UK general insurance market and the normal approach is to use the same proportion of premium to cover expenses irrespective of the size of the premium (though some shading down of the premium on this account usually arises under competitive pressure for large commercial risks). That is, the expense ratio for the class of business appears to be used in deciding premium rates for all risks in that class. The corollary of this is that the larger risks are probably subsidising the expense contribution of the smaller risks.

The expense of putting new business on the books is likely to be greater than the expense of renewals, and this might indicate a loading on the first premium. However, in practice this approach is not followed by the market and new business expenses, together

with expenses of making policy changes, are averaged over all policies in the portfolio.

The problems of charging a policy fee are highlighted in the case of UK private motor insurance. In this case is it reasonable to assume that expenses related to the handling of claims will be proportional to claims costs (and thus to the risk premium) while all policy handling expenses, including underwriting, could be charged on a "per policy" basis. In practice, the need to allow for a no claim discount (NCD) means that the policy fee will have to be either added to the premium net of NCD for each risk - with considerable problems in explaining the method used to the insured or added to the premium gross of NCD, in which case the policy fee will be subject to NCD which looks inequitable. A further difficulty in incorporating expenses on an equitable basis, requiring the showing of the policy fee separately, is the public relations problem which would arise from the likely high proportion of premium absorbed by expenses for the full NCD, low risk policy.

4.2 FORMULAE FOR EXPENSE LOADINGS

In theory, expense loadings can take the following form:

- (a) Claims expenses We can regard these as roughly proportional to the risk and, therefore, to the risk premium.
- (b) Other costs proportional to the premium (including commission)
- (c) Per policy expenses
- (d) Additional expenses incurred for new business We have seen in section 4.1 that in practice these expenses are averaged over all policies in the portfolio. That is, we can ignore (d) as a separate loading, assuming these expenses to be incorporated in (b) and (c).
- (e) A contribution towards overheads (indirect expenses)
We have seen earlier that the total overheads must be covered in the premiums charged for the total of the company's business. Subject to this, there is scope for varying the amount of overheads borne by an individual class in the light of competitive pressures, provided the share of overheads is never negative. Once a class has been allocated its share of overheads these overheads can then be allocated to the policies within the class. It might be argued that the overheads should,

in theory, be allocated on a per policy basis. Alternatively it might seem reasonable to expect a large risk to bear a greater share of overheads than a small risk, which might point to a loading proportional to the risk premium.

We can now equate the premium to the risk and expenses thus:

$$P = R (1 + j) + k$$

where P = premium to be charged,
 R = risk premium and
 j and k are constants, j including an allowance for commission and j and/or k including an allowance for a share of overheads.

While the above formula is of a simple nature it is, in practice, further simplified by the general practice referred to in section 4.1 of not charging a policy fee, that is, of putting $k = 0$. Thus all the expenses of the class are allocated in proportion to the individual risk premiums and our formula becomes:

$$P = R (1 + j').$$

4.3 MINIMUM PREMIUMS

What is the minimum premium which should be charged to cover expenses? A general branch policy is essentially an annual one, though since most of the contracts are renewed, we can regard new business expenses as being incurred in the first year only. Since we cannot rely on the policy being renewed, the premium must be sufficient to protect the office against early lapse or cancellation. Some estimate of the costs involved in writing a policy can be obtained from an investigation on the following lines. We shall assume that we have a figure for the total expenses allocated to the class of business involved (say £1,000). Commission and claims expenses will be ignored in the analysis as these items are best dealt with separately.

Suppose we classify the main operations on our class of business into lapses, cancellations, endorsements, new business and renewals. We can estimate, perhaps on a sample basis, the relative times spent

on each single operation and the frequency of such operations. Hence the estimated cost of lapses, cancellations, etc. can be arrived at as shown in Table 2.

TABLE 2

Operation	Relative time spent per unit of operation (t)	Frequency per policy (f) (%)	Relative cost (t x f)	Absolute cost (£)
Lapses	1	10	0.1	20
Cancellations	2	5	0.1	20
Endorsements	5	40	2.0	400
New business	10	20	2.0	400
Renewals	1	80	0.8	160
			<u>5.0</u>	<u>1000</u>

If we know the number of policies currently in issue (say 100), we can calculate the cost per movement as the absolute cost/100 x f. To calculate minimum premiums we need to know how much of this cost is independent of the premium charged (per policy cost). This will obviously be a lower limit for the minimum premium, applicable to risks where the premium is negligible. Clearly for lapses all the expenses will be independent of premium whilst new business expenses will be partly dependent on the premium as the more risky cases are more expensive to underwrite. Here the underwriter may be able to provide an estimate of the amount of time spent on the various types of risk with which he deals. By comparing these estimates with the premiums he charges it should be possible to form a view of how much of the expenses incurred on new business are per policy costs. Table 3 shows the per policy cost per movement derived by multiplying the total cost per movement by an estimate of how much of the cost is independent of the premium.

TABLE 3

Operation	Absolute cost	Total cost per movement	Percentage of cost independent of premium (estimated)	Per policy cost per movement (c)
Lapses	20	2	100	2.0
Cancellations	20	4	80	3.2
Endorsements	400	10	50	5.0
New business	400	20	60	12.0
Renewals	160	2	100	2.0

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