

Presented to the Institute of Actuaries Students' Society

on 2nd April 1985

**RIDER BENEFITS AND OPTIONS ON
LIFE ASSURANCE CONTRACTS**

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INTRODUCTION

The addition of extra benefits to a basic life assurance contract is not a new idea. It has traditionally been possible to add a range of term assurance type benefits to a basic whole of life or endowment policy. Conversion options within term assurance policies have also been around a long time.

Within the last decade, the unit-linked sector of the market has discovered the value of the protection aspects of life assurance and offices have introduced increasingly complex insurability options and additional benefits into their product range. The purpose and value of adding these extras to a basic concept is twofold. The office can hope to achieve product differentiation - to make its product range new and different from what has gone before. Also, these extras can represent a useful additional source of profit. Competition is intense in achieving favourable comparisons of benefits available under a basic policy. This inevitably puts pressure on profitability, but this can be restored by increasing margins in the charges made for additional benefits where competition is not quite as fierce.

Following the removal of Life Assurance Premium Relief on 13 March 1984, increased attention has been paid to the protection element of life assurance. The relative position of life policies as a savings medium against other forms of saving was undoubtedly worsened by the removal of LAPR, and attention to this unique protection feature of life assurance is now more important in maintaining a competitive position. If more emphasis is to be placed on protection, then it is logical to enhance the nature of the protection being provided and it is this subject which this paper addresses.

The authors have set out to provide a description of the main types of additional protection orientated benefits available in the UK market today. Comments are offered on the design and underwriting considerations as well as the statutory reporting and regulation aspects. Impact on qualification rules is mentioned, where appropriate, but no attempt is made to provide a detailed exposition on this aspect of the problem. Taxation is, likewise, beyond the scope of the paper.

In addressing the subject of additional benefits (typically termed rider benefits), it is readily apparent that there are 2 broad distinct categories to consider:

- a) Additional benefits known immediately at the underwriting stage and very standardised from the outset. As such, having selected them at the proposal stage, the life assured has no means available to modify or influence them in reality during the term, and the underwriter has the ability to allow for their existence in much the same fashion as the main benefit. Whilst underwriting adjustment might be made at the outset for any special situations it is likely that there should be no special problems in the continuity of the risk. Additional benefits such as term assurances, family income benefits and waiver of premium clearly fall into this category. Whilst this paper will explore a number of these more interesting benefits, the authors do not, in essence, believe there are any contentious actuarial problems inherent in the risks.
- b) The second category is where we believe lies the most interesting and controversial actuarial considerations.

This is the area of options whereby a degree of selectivity is given to the life assured and the exercising of it will, in itself, possibly affect the experience. The degree of selectivity in any given option and the actuary's interpretation of the extra price to combat it does, of course, lie at the heart of the controversy. A section will be devoted at the end of the paper to exploring a little further such debate and it is this area where the authors hope an interesting discussion will ensue.

The authors believe that category b) above comprises the more interesting part of the paper and will commence with their considerations of this category in Section 3 leaving category a) to Section 4. Section 2 following is designed to put an additional current perspective on the topic.

GENERAL BACKGROUND

The paper covers benefits added to life policies, although mention is made of self-employed pensions contracts. PHI policies rarely carry any additional benefits, and where they do they are usually restricted to accidental death benefit.

A life company, or the life branch of a composite company, is able to offer insurance coverage which falls within General Business Classes 1 and 2 (Accident and Sickness) so long as it is subsidiary to a class of long-term business. The generally accepted meaning of 'subsidiary' is that less than half the total premium payable is applicable to the additional benefits. The main application of this provision is to Accidental Death Benefits which are always categorised as General Business Class 1, irrespective of any long-term rate guarantee which may be present. Thus, a life office can transact the types of business it is likely to want to transact but does not have the freedom to add any class of insurance as a minor benefit within a life assurance policy.

Throughout this paper we mention qualification considerations in product design. Since the demise of LAPR, it is probably true to say that qualification is not in the forefront of the actuary's mind. Many offices consider the broad spread of their likely policyholders and are more inclined than before to issue non-qualifying policies. If they identify a special need for higher rate taxpayers they can produce a special qualifying version of their product incorporating any limitations appropriate.

In our view this has thrown wide open a range of options which can be considered in a non-qualifying environment and the paper addresses itself later to this consideration.

3 POLICY OPTIONS

This Section covers a general summary of those benefits now commonly available under Category b) in Section 1.

3.1 Conversion Option

Options to alter the terms of a life assurance policy have long been a feature of business written in the UK. However, it is fair to say that until perhaps 10 years ago, this area has been largely confined to conversion options associated with term assurance type products. The standard approach to these options has been to permit replacement of the term assurance policy with a whole life or endowment assurance for the same or lesser sum assured with no further underwriting being carried out. This restriction on conversion into 'permanent' classes of business minimises many of the difficulties identified below in connection with renewable term business.

There is a suspicion that the options probably produce a different experience on Endowment conversions to those on Whole Life conversions. Lives converting to the former could be said to have the savings concept very much in the forefront of their minds and thus are "expecting to survive" to enjoy the proceeds. On the other hand, lives converting to a Whole Life Assurance are, in fact, buying a "long term Term Assurance" at the cheapest available conversion cost. Whilst this, in itself, is quite a legitimate exercise not necessarily demonstrating definite anti-selection, it could be argued that if only a small proportion kept the policy going at the cheapest cost "from their sickbed" there would be a marked effect on the mortality experience of the Whole Life group.

Allied to this suspicion is the fact that there is probably little follow-up to remind policyholders of the existence of the option and only those who want it urgently will take it. It is, of course, possible to argue this both ways as, although the authors generally believe that improved take-up rates are desirable, extra publicity could in itself remind those in failing health that their option is still available.

The authors would be interested in hearing opinions as to whether their suspicions have any practical foundation.

Conversion options are usually exercisable at any time, although some companies still disallow conversion within one or 2 years of expiry.

3.2 Renewal Option

An extension of the traditional conversion option is to permit the policy to be replaced by a further term assurance. The usual structure of a renewable term plan is to issue the policy for 5 or 10 years and then allow it to be continued beyond its natural expiry date at a revised premium rate.

Perhaps the single most important feature of a renewable term plan from an actuarial viewpoint is whether or not the scale of premiums on which the policy is issued is guaranteed for renewal. If this is so, then the anti-selection potential needs very careful consideration. There is undoubtedly an element of selective lapsing in ordinary level premium business. Healthy lives are probably more likely to allow their policies to lapse than the less healthy particularly in the environment of falling mortality assumptions in premium rates (the advent of non-smoker etc) and the intense competition of salesmen.

However, if policyholders are faced with a hefty premium increase at the renewal date in order to continue their coverage, this effect is likely to be enhanced as the good lives may leave and go elsewhere and only those with health problems, with the prospect of a rated up premium if they effected a new case, would find it advantageous to renew.

Naturally this is a somewhat purist view as it works on the assumption that policyholders will always do what the office does not want. The complexities of the market and the fact that policyholders are far from "logical" in such activities means that care should be taken not to overstress such problems but, at the same time, they must not be overlooked in pricing considerations.

One strategy to minimise the magnitude of the premium increase at renewal is to shorten the periods between optional renewal dates. Thus, many renewable term policies are issued for 5 year terms. At the extreme this strategy leads to a yearly renewable term. Here the impact of increasing rates is minimised and, indeed, it could be argued that the policyholder becomes accustomed to an annual increase in premium. Yearly renewable term business is not common in the UK market, so it is difficult to draw comparative conclusions.

It is probably worthwhile at this stage to comment on a type of policy which has been very popular in the United States, but so far as the authors are aware has not been widely offered in the UK. This is the Select and Ultimate yearly renewable term. New policyholders enter on a Select rate in year 1 and then pay an Ultimate rate in year 2, and subsequently. This product design presents the salesman with a perfect opportunity to replace the policy as the client will genuinely be better off if he can satisfy underwriting criteria and, if he cannot, he has lost nothing.

This presents serious anti-selection potential and, indeed, experience of this business has been very bad in the United States. Not only are lapse rates very high, resulting in difficulties in recovering initial expenses, but mortality experience under 'ultimate' business has been disastrous.

One final very important consideration under this latter product type is that of the highest age at which renewal will be permitted. If renewal rates are not guaranteed, then the office has some protection against deteriorating experience.

The problem is that if action is taken to increase rates, the selective non-renewal is likely to get worse rather than better and an increase in rates becomes self-defeating. This has been one of the problems facing insurers in the US with a portfolio of select and ultimate yearly renewable term business.

To limit this problem, it would always be advisable to impose a maximum age of perhaps 70 or 75, beyond which coverage may not continue.

3.3 Guaranteed Insurability Option

This option has been around for a long time, but mostly in a fairly unexciting form. It has commonly been possible for a small extra premium to obtain the right to take out additional sums assured under a whole life or endowment policy of 50% or 100% of the original face amount every 3 or 5 years. Perhaps also the policyholder could have additional increasability options on marriage or the birth of a child. Usually the highest age at which these options may be used is set at 45 or 50.

Having stated above that the extra premium was small, this is in comparison with the premium payable for the basic whole life, or more likely, endowment policy. In comparison with competitive term rates, the extra probably seemed high for what was, after all, only an option. Perhaps for this reason, or perhaps because offices never strongly promoted this benefit, these options were not widely purchased. On top of that, the take-up rates when they became available were generally very low and little or no encouragement was given to the policyholders to take additional coverage. This attitude was possibly based on, in the authors' view, the erroneous opinion that the take-up rate should ideally be as low as possible. An alternative view would be that the office's reluctance to promote options was related to the cost involved. With the development of computer based direct mailing techniques, this cost has now greatly reduced.

With the coming of high rates of inflation in the 1970s, increasability options linked to the Retail Price Index became an ever more common feature of product design. In the unit linked market the flexible unit linked whole life plan almost always includes increasability options and, indeed, as offices introduce this product or revise their existing product, this feature is seen as an essential part of the design.

The reason why the RPI linked increasability option is so popular in protection orientated products seems to be that it is an easy way to obtain future sales. Also, by providing a policy which keeps pace with inflation the office is more easily able to present its product as meeting the lifetime needs of the policyholder.

It is, of course, still necessary to consider anti-selection and, given an environment of competitive pricing, the most appropriate measures to counteract this are to adjust other, less competitive, features of product design and to encourage the maximum possible level of take-up of the optional increases.

Important product design features are:

- a) Maximum age at which options can be taken.

This is usually fixed at 60 or 65 and it does seem to be unwise to have any higher age, or no age limit at all.

- b) Frequency of the option.

The option is commonly available annually, but some offices apply it every 3 or even 5 years due mainly to the fact that RPI increases on an average size policy give absolute amounts smaller than the office's minimum chargeable premium.

An annual option is probably better to achieve a high take-up as the increase in premium payable is relatively small and policyholders are used to the idea of annual increases in household and motor insurance and, indeed, to prices (and incomes) generally.

- c) Effect of missing an option.

If an option is missed when it becomes available, the strictest treatment is to cancel all future options. Most offices are a little more flexible than this and allow one or two options to be missed without total cancellation.

Clearly, to allow a long period when the policyholder does not take options, but for them to remain available, increases the anti-selective effect and does not advance the objective of maximising take-up.

It is probably worth remarking on the pro's and con's of maximising take-up. If it is believed that the unhealthy lives are more likely to take these options than the healthy, then the more policyholders who do take them up the better will be the mortality experience of the portfolio of 'option business'. In the authors' view, there is an inversely proportional relationship between the percentage take-up and the additional mortality cost (ie option cost) of the 'option business'. In the extreme, a 100% take-up rate at every option date would mean that the 'option business' portfolio had exactly the same mortality experience as the basic portfolio.

If a high take-up rate is accepted as an objective, then the office should take all possible steps to achieve this. Action would include notifying the policyholder of the availability of the option and encouraging him to effect it.

A strategy adopted by several offices is to take this one step further and to automatically implement an increase in premium and sum assured unless the policyholder takes action to notify the office that he does not want this.

In addition to RPI linked options, it is increasingly common to see options to increase the sum assured by perhaps 50% or 100% of the sum assured at the time of marriage or birth of a child. An age limit would normally be imposed on the availability of these options and often a limit to the number of children - and marriages! - which can be taken into account.

The anti-selective potential of these options is considered to be very small with the safeguards mentioned above.

A further 'life event' option which is sometimes seen, is that of moving house. So long as the policyholder is required to actually change his residence, thus debarring re-mortgages and, for example, council house purchases, then the anti-selective potential of this is also probably very low. However, caution is needed before extending this facility to allow a policyholder to effect coverage on a spouse without underwriting.

No particular comment is offered on whether increases in coverage under options should be dealt with by issuing new policies or by endorsement. Administrative convenience is probably the most important consideration in this area. Qualification considerations may be important also, however.

3.4 Underwriting and Valuation

The existence of options of any nature must be taken into account by the underwriter in his initial assessment of the risk.

Without going into detail on underwriting aspects of options, it would generally be the case that the underwriter should adopt a more cautious attitude to proposers for policies containing options.

It might be sensible to reduce medical and PMA limits somewhat in anticipation of future projected increases in cover to afford extra underwriting protection.

In the RPI linked option area, for example, it is fairly common practice to reduce traditional limits by about one-quarter to one-third.

Logically the underwriter should evaluate the full potential sum assured which could be created under these policies. This is impossible in practice and, when considering the amount of medical evidence required at the outset, the underwriter would assess only the level sum assured at inception. When deciding the acceptance terms the underwriter has the following alternatives:

- a) Accept all options with no restrictions.
- b) Limit options to an age lower than that stated in the policy conditions.
- c) Decline all options.
- d) Impose an extra premium basis which would also apply to all future increases.
- e) Impose an increasing scale of extra premium based on the advancing age of the policyholder.

The last method is complex and unlikely to be carried out, although it is relevant for risks such as coronary artery disease and diabetes where risk increases substantially with age.

As for valuation, if an element of the premium being paid is a charge for the cost of options available in the future then it is logical that such charges be reflected in the establishment of a reserve, which in due time may be drawn upon to meet the cost of adverse mortality experience expected within the 'option business' portfolio. This reserve could be a specific accumulation of charges while options are available to be released as the portfolio runs off. Other methods of properly dealing with this question could be devised, but there is no well established common practice on this matter and it is perhaps a suitable subject for further research.

4 BENEFITS ON SICKNESS OR DISABILITY

This Section covers those additional benefits identified under Category a) in Section 1 above.

4.1 Waiver of Premium

This benefit is becoming more popular and has had its scope extended from applying solely to the temporary sickness of the policyholder to applying, in a modified form, to unemployment following redundancy.

The traditional form of waiver relates to the temporary disability of the policyholder. In principle, therefore, the benefit is a form of Permanent Health Insurance. In contrast to PHI, however, an overriding feature of a waiver benefit is simplicity of administration for what is usually, by PHI standards, a very low level of benefit.

The usual deferred period for a waiver benefit is 6 months, although 3 months has been used, and a fairly strict definition of disability is adopted. Typically, this would refer to an inability to follow the claimant's own occupation or any other for which he is suited by training and experience. These provisions serve to keep costs of both benefits and claims administration down to manageable levels. The use of an occupation related definition of disability brings in the need for consideration of occupation at the underwriting stage. Occupational underwriting is an extensive subject and again there is a need to keep its application to waiver benefits relatively simple. Normally, only the obviously more specialist or hazardous occupations are considered unsuitable and in these cases the normal practice is to exclude the benefit altogether rather than to attempt to apply loadings to the normal rates.

A further problem arises from an occupation related definition of disability.

This is how to treat those proposers who are not in gainful employment at the time of application, for example housewives or students. Clearly, one alternative course of action is to exclude the benefit in these cases. However, offices may wish to offer something in order to obtain the business. It is, therefore, necessary to add to the normal definition of disability a provision for those not in gainful occupations at the outset.

An occupation related definition of disability has two useful attributes. The claimant has a financial incentive to return to work and thereby cease his claim, and the establishment of the validity of the claim is to a reasonable extent based on objective assessment. For non-employed people, it would be the aim to achieve both these advantages from an extended definition. A commonly used clause refers to being "confined to the claimant's usual place of residence" which goes some way, at least, towards achieving incentive and objectivity. As an alternative, if an office wished to write business on housewives as a specific marketing strategy it could use a definition referring to "inability to carry out normal household duties".

One interesting aspect of the waiver of premium benefit is its application to personal pensions contracts which are designed in a very flexible way. Under many such contracts, the policyholder has almost total discretion as to when his contributions may be paid and what the amount of contribution may be. The problem then arises of what amount should be waived in the event of a claim. If a 'basic premium' is defined in the contract, then this figure could be used as a basis for both charging and benefit.

However, this may not meet the need of the policyholder who has, for some years, been contributing substantially more than the basic premium. In these circumstances, it is necessary to devise a formula for calculating waiver benefit based on average contributions over a reasonable period - say 2 or 3 years - prior to the date of the claim.

A further factor which needs to be taken into account in the charge made for waiver benefit is any guaranteed insurability options which are available under the contract. The simple solution to this potential problem is to cancel guaranteed insurability options as they occur while waiver of premium benefit is being paid. This course of action also reduces the cost of claims, of course, and removes the uncertainty over the likely magnitude of RPI linked guaranteed insurability options.

However, while this cancellation of options is generally desirable there are strong arguments against it in the case of RPI linked options. Here the policyholder may feel that the benefit is not giving the protection it should. This is particularly true under pensions contracts where RPI linking is necessary to provide the policyholder with his prospective benefits in real terms. To state the obvious, a waiver providing indexation in benefit must be charged for at a higher rate than a waiver providing level benefits.

The need for simplification arises again in the area of pricing, where it is very common to charge a level percentage of the premium to be waived, irrespective of age at entry. Sometimes variation is made in premium rate according to broad age bands. The practice of charging a premium irrespective of age at entry is not as unsound as it might appear at first sight.

A high proportion of the premium will relate to costs of claims administration, which are high in relation to the level of benefit. Also, it is usual to find quite a high profit margin built into waiver terms. Thus, by charging a level rate, the office is really accepting a lower profit margin at higher ages but achieving the objective of simplicity of administration.

To admit a claim, an office will require a certificate from the policyholder's doctor, and will usually require further certificates every 3 to 6 months.

Additional evidence may be requested in suspicious cases. It is usually stated in the policy document that the costs of producing satisfactory evidence will be borne by the policyholder.

A final comment on waiver of premium due to sickness relates to unclaimed benefits. Many offices find this business very profitable and it is usually the case that claim rates are well below what might be expected in comparison with PHI experience. This implies that a significant number of policyholders who would be eligible for the benefit simply do not claim it. From a profitability viewpoint, this situation is very satisfactory while it lasts. However, it would be dangerous for the industry to reduce rates taking account of waiver claims experience in isolation. The rates are guaranteed long-term and public awareness could easily change - especially if, as seems likely, waiver of premium benefits become much more common. There have been instances in Europe, in particular the Netherlands, where waiver of premium clauses in policies were given prominence in Government literature at a period of high economic uncertainty leading to a substantial increase in levels of claims.

4.2 Unemployment Waiver

Several offices have introduced a form of waiver benefit applicable if the policyholder remains unemployed following redundancy. This is not altogether comparable with a sickness waiver, however. A sickness waiver effectively continues to pay premiums under the policy and ultimately would provide a full maturity or surrender value, if applicable. The Unemployment Waiver merely permits the suspension of premium payments, with continuation of life cover being charged for from the accumulated policy value. Thus, ultimately the policy could lapse as funds ran out and, in any case, future maturity or surrender values will be impaired as the result of a period of claim under this benefit.

A genuine Unemployment Waiver could not be written as part of a long-term contract as it does not fall within General Business Classes 1 or 2.

A composite company could offer a supplementary policy offering a genuine Unemployment Waiver if it wished, but the difficulties of pricing and underwriting this type of business have made it a rather specialist market.

Returning to the Unemployment Waiver offered by life companies, a few more comments can be made. An office may restrict the period of claim permitted either in total or in a specified period, say 6 months in every 2 year period. This restriction may be necessary to protect the profitability of the basic contract. It is important for the restriction to be imposed that the unemployment must be caused by a preceding redundancy. This will reduce claims, and the consequent administration costs and limit the extent to which the benefit can be used as a voluntary 'premium holiday'.

4.3 Disability Benefits

The most common form of disability benefit available in the UK life assurance market is, of course, Permanent Health Insurance, providing an income on temporary or permanent disablement. This is not commonly offered as an additional benefit on life assurance contracts, except in the form of waiver of premium. The reason for this is mainly potential complications within the qualification rules, although other product design problems may arise in the area of integration of benefit types and standardisation of claims control techniques.

For reasons given earlier, the authors believe that qualification rules no longer occupy the minds of product designers as they once did and, consequently, we would expect the emergence of a whole range of products on a non-qualifying basis incorporating a major PHI rider to a life product particularly in the area of the Unit Linked Flexible Whole Life policy which will incorporate a deduction process for morbidity similar, in principle, to that currently used for mortality.

An increasingly common additional benefit is the payment of the whole sum assured on total and permanent disability, in lieu of payment on death (and terminating the contract). It is possible to provide partial payments for a variety of specified reasons, although this causes difficulties with qualification. However, there is at least one qualifying life policy on the market which contains provisions for partial payment of the sum assured.

Of course, qualification aside, it is perfectly possible to design contracts which permit the death benefit to continue unimpaired following a disability claim.

This could create claims control difficulties, however, and generally it is desirable to treat disability benefit payments as accelerated payments of the death sum assured.

In the North American market, there is a wide variety of disability benefit structures. Often rather macabre schedules of payments can be found relating to the loss of various important parts of the anatomy. Whether this would be attractive in the UK life market is open to question, but the authors believe there is a lot of scope for product development in this area, perhaps along the lines developed in the Personal Accident market.

An immediate problem which arises with this benefit is the definition of disability which is to be used. The most common would refer to 'inability to follow the claimant's own occupation or any other for which he is reasonably suited by way of training and experience'. This avoids underwriting problems with specialised occupations while, at the same time, providing a worthwhile benefit to policyholders. A more restrictive alternative definition would refer to 'any occupation' but, while this could cost less, it would require a very serious level of disability before a claim would be admitted and is, therefore, of less value to the policyholder.

The problem referred to above of people not in gainful employment arises again in this area. Indeed, it is unavoidable because, although the policyholder may be employed at the time of proposal, this need not necessarily be the case at the time of a claim. It is, therefore, worth including a provision to cover this situation in the standard policy wording.

As with waiver, one solution is to relate benefit to 'confinement to normal place of residence' although this may be considered somewhat over-restrictive.

The comments in the above paragraph raise the question of notification of change of occupation. It would be desirable to have this as a requirement, although it would usually be acceptable to require notification only if the occupation changed to something very hazardous. Logically, this requirement should be extended to cover pastimes and, indeed, place of residence. In practice, few policyholders will remember to carry out this requirement and in the majority of cases the change will have little effect on the disability risk. If an office has included this requirement, it must be flexible in claims assessment and only seek to avoid a claim on the grounds of non-disclosure where the change in activities was the proximate cause of the disability.

Occupational underwriting is very important for this benefit. It is more important than for waiver benefits because of the larger claim amount involved, but less important than for PHI because no temporary disablement is being covered. There is usually no need to have the range of occupation types found in PHI underwriting, but loadings or exclusions must be made in respect of particularly hazardous occupations. In addition, care must be exercised with highly skilled activities requiring refined and precise senses of sight, hearing, or touch.

An alternative approach is to use a non-occupation related definition of disability. This is used by at least one office but is not common. Its main advantage would come in the area of claims control.

In considering a claim, it is necessary to consider each case on its own merits.

In certain cases with disabilities such as spinal cord severance, the benefit may be payable immediately. Where the disability is total in nature, but not necessarily permanent, it is desirable to set a maximum deferment period - perhaps 12 months from receipt of initial independent medical assessment. At the end of this deferment period, the office must make a decision to accept or reject a claim. This may be a difficult decision to make and requires the judgement of an experienced underwriter or claims manager. Many offices, particularly those which do not have extensive experience of this type of benefit, will consult their reassurer who would be expected to have a wider knowledge of this area.

An important element of claims control is the exclusions adopted for disability benefits. Exclusions have largely disappeared in ordinary life business. The only remaining ones commonly seen are suicide within the first year and war risk exclusions in business aimed at overseas markets. It is generally accepted that more exclusions are justified for disability benefits, and important ones which should usually be applied are:-

- a) Wilful self-inflicted injury.
- b) Disability arising from or aggravated by the taking of alcohol or drugs, other than as medication taken in an agreed manner and prescribed by a medical practitioner.
- c) Disablement arising from failure reasonably to seek or follow medical advice.
- d) Disablement arising from any form of racing, other than athletics or swimming.

- e) Disablement arising from engaging in aviation or any other form of aerial flight other than as a fare-paying passenger in a commercially licensed aircraft.
- f) Disablement arising from involvement in a breach of the law (unless an innocent party), war, riot, civil commotion, or membership of an illegal organisation.
- g) Disablement arising from a mental or psychosomatic disorder.

Of these exclusions, only g) would be considered particularly disadvantageous to the policyholders, although private or service fliers may wish to pay an extra premium to remove the aviation exclusion. Market pressures may cause offices to reduce or amend the exclusions if this benefit becomes more prominent. If mental disorders were to be removed from the list, then not only would the price of the coverage need to be substantially increased, but a whole new set of claims control problems would arise. This would place an even greater emphasis on the need for experienced judgement in assessing the validity of disability claims.

As far as the pricing of disability benefits is concerned, there appear to be two schools of thought. Many companies, particularly in Europe, charge a flat rate irrespective of age as is normal practice for accidental death benefit. This may be reasonable for definitions of disability covering specific injuries but is not considered appropriate - certainly in the UK - for occupation related disability benefits.

In the absence of any generally accepted statistics for disability claims, pricing of the benefit is on somewhat uncertain ground.

However, one common practice is to express the price as a level percentage of the mortality rate. The magnitude of the percentage varies according to the definition of disability. Another variation sometimes used is to make small adjustments for the age at which the benefit ceases. It is considered necessary to have a maximum age as beyond normal retirement date occupation related definitions become inapplicable. There is a body of opinion which considers that the percentage of mortality should be lower at young ages and higher at the higher ages. This leads to the conclusion that if rating is to be applied as a level percentage of mortality, then that percentage should be a little lower if the expiry age is 55, say, than would be appropriate for an expiry age of 65.

There are other opportunities to reduce the cost of disability benefits to the office. The office can, for example, reduce the benefit levelly to zero over the last few years of the benefit period. Again, the benefit can be paid in a number of equal annual instalments.

As for female lives, similar attitudes prevail as in the PHI market and a loading of perhaps 50% is usually applied to the risk element of the premium.

It is, at this stage, perhaps worth making a general comment about loadings for female lives in relation to these sickness benefits. The question of unisex rating was a significant topic at the International Congress of Actuaries in 1984 particularly amongst actuaries from the US where, in some States, unisex rates are mandatory. Whilst the authors would take the view that there are grounds for female loadings for PHI risks being significant in some circumstances (dependent on the section of the female population covered), the situation of long-term permanent disablement is of a different nature to the short-term sickness elements of PHI.

So the position is by no means clear. In any case, consumerist pressures in the area of unisex ratings may well affect the issue over the years to come.

Another feature of the relating of permanent disability rates to a mortality premium is in the area of non-smoker products. The trend has been to base the proportions on the separate smoker/non-smoker subdivided rates rather than the aggregate. This means, of course, that an office derives smoker/non-smoker permanent disability rates.

The correctness of this approach could, of course, constitute a paper in itself. The authors intuitive feelings are, however, that it is reasonable to use a lower rate for the non-smoker and, certainly with relatively modest discounts, offices are reasonably well protected.

However, it is necessary to be very careful not to be too cavalier about this as the whole area suffers from a dearth of statistics and benefits of different types are probably not correlated precisely to a smoker/non-smoker division.

Readers will have appreciated that in the option costing areas a similar feature would have been demonstrated on a smoker/non-smoker rating basis if the actuary had used an extra loading for the option expressed as a percentage of the appropriate mortality rate. The same considerations apply as to those stated above for permanent disability.

5 OTHER BENEFITS

This section covers accidental death benefits which are becoming increasingly common and comments on medical expenses and hospitalisation benefits which could, in theory, be included in a life policy but, so far as the authors are aware, never have been.

5.1 Accidental Death Benefits

This benefit is usually offered as an additional amount equal to the basic sum assured if death is due to 'accident'. The usual definition of this refers to 'violent, external and physical cause of death'. The office needs to be aware of the precise scope and meaning of this, of course. A version of the benefit common in North American and Europe offers double the amount (ie a total of 3 times the sum assured) on death while travelling on public transport.

This benefit has an obvious marketing appeal as the salesman can offer double the coverage for what the prospect would normally see as the most likely cause of his death in the short-term, at a modest increase in premium. However, underwriters and actuaries are usually very cautious about it, because of the difficulty of establishing the need for such coverage. Why should a person need a certain amount of benefit on death by accident but only half that figure on death by natural causes? Although it is easy to over-emphasise the point, it is by no means unknown for people to effect life cover with a view towards killing themselves or someone else and collecting the proceeds. The use of accidental death benefit cuts the cost of this exercise and appeals greatly to the more budget conscious criminal.

As a result of these considerations, offices are quite happy to sell such cover on a profitable basis - perhaps obtaining income which would not have been received for full life cover - but only on a limited scale.

In the UK a common limit on Accidental Death Benefit would be £250,000 and, in any case, no more than the underlying full life cover.

Under the current legislation this benefit, even if it is long-term on guaranteed rates, is classified as General Business Class 1 and must be reported separately to the DTI.

The pricing structure for ADB is usually a level premium irrespective of age. Analysis of the population mortality studies show that the experience is not uniform by age but, in fact, is high at the younger ages and the very old ages. As a practical mechanism, however, and bearing in mind that population statistics do not necessarily apply to an assured lives population, a level premium rate is not unreasonable. This assumes, of course, that a maximum age is in use, as is the practice generally. No loading is made for females and, indeed, it could be argued that females should be charged less. However, it is not usually considered worthwhile to make this distinction.

The question of a smoker/non-smoker subdivision is interesting. Whilst it is usually ignored for ADB, US statistics have demonstrated in the past a much higher accident rate for smokers in an assured lives portfolio. The authors feel that there could potentially be a logical argument for a subdivision, but the differences in premium are probably minimal given the contingency loadings applied to the experience.

5.2 Medical Expenses

The authors believe that this benefit could be offered by a life office as an additional benefit as it could be classified as General Business Class 2, short-term sickness benefit. The definition of sickness would be 'the need to obtain medical treatment'. However, several problems would arise as a result of following this course of action and, so far as is known, no life office does this.

Firstly, the whole area of medical expenses is a specialist one fraught with problems of claims control. Most life offices do not have the expertise to enter this market.

Another difficulty is that the premium would need to be reviewed every year which would cause potential qualification problems and also administrative complications. It would, indeed, be a brave company (some would say foolish) which offered a long-term rate guarantee on medical expenses business. One final point is that the level of premium for the usual type of medical expenses cover is relatively high, and if this were to form less than half the total premium (as is necessary), the office would be offering a contract with a relatively very high minimum premium, thus reducing its marketability and bringing into question the value of the whole exercise.

5.3 Hospitalisation Benefit

This is a much lower cost benefit than full medical expenses coverage, and most of the claims control problems are eliminated. Benefit is expressed as a fixed monetary amount for each day spent in hospital, usually excluding the first one or more days.

Thus, the validity and amount of any claim are relatively straightforward to establish.

The cost of the benefit is relatively low and could easily be accommodated in addition to a premium for full life cover.

Some underwriting problems arise and it would usually be the practice to exclude pre-existing conditions in a similar manner to full medical expenses insurance.

The value of this benefit to the policyholder is open to question as the duration of most in-patient treatment can be measured in days rather than weeks. This may not detract from the marketability of the benefit, but may raise the possibility of criticism from consumer organisations.

OPTION PRICING

Traditionally the early options, particularly convertible term assurances, were charged for by either a small percentage loading to the normal premium, a flat loading or a years to age addition. Some of the larger offices have probably by now established a reasonably large data base and been able to discern trends although, to our knowledge, little has been produced for public consumption.

The new areas outlined in this paper do, however, highlight the fact that for many of the options intuitive judgements are made without statistical detail where the office has, at all times, one eye on the competition. Such intuition has often emerged from the area of the office's (and reassurer's) interpretation of the administration and control of the option and its potential selectivity.

This is not necessarily a healthy state of affairs and the authors believe that the time may be fast approaching where the profession should engage in more detailed technical research and statistics gathering.

Such further thoughts are beyond the scope of this particular paper except to make the following points:

- a) Any option cost in any year is a product of the following:
 - i) The probability that a life has a mortality loading in that year of nil, +50%, +100% and so on up to decline (which would need to incorporate an arbitrary figure, say +1000%).

- ii) The probability that for each mortality group in i) above the life will take the option (combining actual individual ability to do so with the office's allowance for this to happen under its policy conditions).
 - iii) the present value at the appropriate mortality level and an appropriate interest rate of the option benefits so taken.
 - iv) A discounted summation over all possible years and a subsequent equation to an extra premium structure.
- b) a(i) and a(ii) above are, of course, highly subjective.
- c) Nevertheless, with inexpensive computing techniques simulations under various assumptions can be performed on varying bases and assumptions and results compared. Not unnaturally the answers would be widely divergent and inconclusive but might help to give an actuary a suitable spectrum from which a commercial judgement could be made.

One final comment is worth making. The impact of options should be considered against the ability of the life to pay for all the extra cover he buys under an option. For example, in the Unit Linked Whole Life area the cost of life cover goes up with each year of age, of course, and to keep the level of life cover in line with inflation at all times means that the premium increase runs considerably faster than inflation.

Under these circumstances, the ability of the life assured to afford the costs of continually increasing sums assured becomes an important factor offsetting tendencies to knowingly exercise anti-selection against the office.

CONCLUSION

This paper has attempted to survey the present scene of additional benefits added to ordinary life policies - with a few comments about pensions contracts. It is our belief that the demand for disability benefits, in particular, will grow as the life assurance industry moves in emphasis towards protection.

There is tremendous scope for development in this area to make products more appealing to the public and, at the same time, provide them with worthwhile and valuable protection. Care is needed in the construction of plans, needless to say, and it will be necessary to pay more attention to risk selection - a reversal, if anything, of trends in the past. From an underwriting viewpoint, the past decade has seen the influence of underwriting areas dramatically reduced until an all time 'low' was reached with the introduction in 1983 of Guaranteed Acceptance for mortgage related business. However, with a potential change in direction away from a predominance of investment linked products, the need for skilled underwriting becomes more important. Some offices may find they now lack sufficient resources and expertise. With fewer skilled underwriters in the industry, a heavier responsibility falls on the reinsurance market to provide technical assistance in the construction of contracts, underwriting of substandard risks and the training of junior underwriters. The trend of smaller offices to dispense with the services of a Medical Officer should be reversed as qualified medical assistance is seen as vital in the assessing of life and disability risks and in the administration of disability claims. It cannot be stressed strongly enough that with the introduction of some, or all, of the additional benefits covered in this paper, offices should have clearly thought out the underwriting and claims procedures before the product launch.

Finally, the authors wish to express their thanks to colleagues who have assisted in the preparation of this paper.