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Requirements of Surrender Value Formulae

by
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Abstract

The factors usually considered when determining a suitable surrender value formula for traditional business are re-examined with respect to their appropriateness to modern savings contracts.

Keywords

surrender value; surrender penalty; investment account; investment-linked; equity.

Existing Research

The most recent thorough review of the theory of surrender values is by Taylor (1974). In this paper Taylor notes:

"It would seem, therefore, that there should exist a widely accepted set of principles for determining these [surrender and paid-up policy] values. Yet, curiously, papers on the subject are remarkably scarce."

Taylor summarises the few pre-1974 papers, these being predominantly British in origin. Since 1974, no further research on the topic has appeared in British or Australian actuarial journals and the sole American contribution is by Easton (1989). Easton provides some interesting insights into the calculation of surrender values, or cash values in the American terminology, for insured lives whose expected mortality changes significantly after the commencement of the policy, still entirely in the context of traditional business.

"The Practice of Life Insurance in Australia" (revised annually), also contains significant material on the topic. While most readers will know this book as the Institute's textbook for the life insurance subject, it should be noted that it contains new material which does not appear elsewhere in the literature.

Requirements of a Surrender Value Formula

Those who have studied the Institute's life insurance subject may recall memorising a list of requirements which should be considered when determining a formula for surrender and paid-up values. In this context, setting the formula is taken to include the process of setting the parameters used by the formula. That is, it includes the process of determining the basis. The typical list would be:

- Equity
- Solvency
- Stability
- Ease of Calculation
- Consistency
- Marketability

- Compliance with Statutory Minimum Values

The list given in Chapter 16 of "The Practice of Life Insurance in Australia" (1996) only mentions the first 6 items given above, though the relevance of the last item is mentioned elsewhere in the chapter. Older editions of the book do not mention marketability as a requirement. It was first included in the 1996 edition of this book at the suggestion of this author.

This list of requirements was first framed in the context of traditional policies. That is, the requirements were those deemed suitable for whole life polices, endowment assurances and pure endowments, plus a few minor variations of those policies. While recent editions of "The Practice of Life Insurance in Australia" have included some discussion as to how some of these requirements relate to modern savings contracts, the discussion is still very much biased towards traditional business.

In respect of traditional business, Taylor (1974) wrote

"The aim here is not to attack current surrender values which, in some cases, seem to have been set at quite appropriate levels. However, as the dearth of literature indicates, theory has not kept pace with practice."

It seems we are now in the same situation with respect to modern savings contracts as we were in 1974 with respect to traditional business. This paper aims to remedy the situation by providing a discussion as to how, or whether, the requirements identified above apply to modern savings contracts, and identifies one additional requirement not mentioned above. There will also be a few sidetrack discussions concerning how the treatment of surrender values on traditional business may have changed since Taylor's paper was published.

Modern Savings Products

Types of Modern Savings Product

The products to be considered in this paper are individual unbundled savings policies. For brevity, these will be called 'modern savings products' throughout this paper. The term is used to encompass both the single and regular premium forms.

Modern savings products exist in investment-linked and investment account forms. In the investment-linked form the value of the policy, determined by a unit pricing system, fluctuates in line with the value of assets backing the policy. In the investment account form, the policy is credited with interest annually, the interest rate being a smoothed rate which is guaranteed never to be negative. While sales of the investment account version were strong in the 1980's, few insurers now write new business in this form, most preferring to offer a "capital stable" investment option under their investment-linked products.

Modern savings products may also be subdivided into ordinary, superannuation and rollover forms, the rollover forms consisting of products such as approved deposit funds and the inaptly named deferred annuities and allocated pensions. The surrender decrement rates may vary significantly for these various types, due to the influence of such features as preservation requirements. However, it is suggested that the requirements of the surrender value formula are identical for all these types, so this subdivision will not be considered further in this paper.

It is also useful to subdivide these products into front-end load and back-end load products.

In Australia back-end load products almost always adopt a surrender penalty determined as a linear scale decreasing in either yearly or monthly steps. For example, a surrender penalty for a

single premium contract might be 5% if the policy is surrendered in its first year, 4% in the second year, 3% in the third year and so on, the penalty being zero after five years. That is, if the policy were unit-linked, the surrender benefit would be 95% of the value of units if it were surrendered in the first year, increasing in yearly steps until the full value of units is available after 5 years.

Front-end load policies do not incorporate a surrender penalty, the full value of units or investment account being available on surrender. Thus it may appear that the front-end load policies will be of no interest in an article concerned with determining suitable surrender values. This is not quite true. The product designer should still be testing whether the surrender value meets the requirements discussed below. If it doesn't, it is an indication that the other fees incorporated in the prototype product are not appropriate for a product lacking a surrender penalty. Either the fees need adjustment or a surrender penalty needs to be added.

The Major Difference Between Traditional Business and Modern Savings Contracts

From an actuarial point of view, there is a major difference between surrender values on traditional business and those on modern savings contracts. The difference is perhaps obvious, but of sufficient importance to warrant explicit statement. For traditional business, the surrender value formula may be altered throughout the life of the contract. By contrast, for investment-linked and investment account savings contracts, the surrender value formula is defined in the policy and cannot be altered after issue.

Hence the traditional business may be viewed as giving the actuary more freedom to adjust the surrender value formula with changing conditions, and the responsibility to do so in an appropriate manner. Modern savings contracts give the actuary less freedom, and thus entail more responsibility in getting the surrender formula correct at the outset, so that it will cope appropriately with changing conditions.

An alternative view of this point is that surrender values on modern savings contracts are considered as part of the product design process. Thus the surrender benefit formula is not varied in isolation but rather is one of the many parameters which can be adjusted in the search for a viable product. Once the policy is sold, no further adjustment is possible. This design phase also occurs for a traditional policy, but the traditional policy has the additional and possibly far more complex problem that, after its issue, the surrender value formula requires frequent monitoring to determine whether adjustment is required.

Term Certain Annuities

To avoid any possible confusion, it is stated explicitly that the modern savings contracts considered in this paper do not include term certain annuities. There is understandable disagreement amongst practitioners as to whether to regard this product as a "modern" savings contract or merely a traditional policy currently undergoing a resurgence of popularity.

LIASB Actuarial Standard 4.01 imposes a minimum surrender value for term certain annuities, but one which does not appear to be particularly stringent. The insurer is likely to pay a surrender value in excess of the statutory minimum. Thus the actuary again has the discretion and responsibility to determine an appropriate surrender value and to update the calculation basis over time. In this regard term certain annuities are more like traditional business than the modern savings contracts and this paper will treat them as such.

Term certain annuities weren't explicitly mentioned by Taylor (1974), since the form written then could not be surrendered. It is however suggested that the theory developed in Taylor's paper for traditional business can adequately deal with the product in its current form.

A Closer Look at the Requirements

The remainder of this paper considers each of the seven proposed requirements of a surrender value formulae in turn, adding one additional requirement.

Equity

The "Breach of Contract" Argument

In the early days of actuarial theory, a common view was that a traditional life insurance contract was a contractual obligation and that the act of surrendering a policy represented a "breach of contract". The logical conclusion was that the insurer should primarily be concerned with maintaining equity for the continuing policy owners, by ensuring that the surrendering policy owners did not deplete the surplus of the statutory fund, this surplus being determined on a realistic basis rather than the published conservative basis. That is, the surrender value should not include any share of the surplus in the statutory fund, even if the surrendering policies contributed to that surplus over their life. This practice lead to the accumulation of significant quantities of participating surplus in some statutory funds.

The result of this view is that the surrender value should be determined as the prospective policy value on a currently realistic basis. That is, it is the present value of expected future benefits and expenses less the present value of expected future premiums. The calculation is performed ignoring the surrender decrement. For those interested in pursuing the issue further, Easton (1989) raises some interesting questions as to whether the realistic mortality basis should be that for the "average" insured life or that of the surrendering life.

During the 1980's similar arguments were sometimes used to determine surrender values for back-end load modern savings contracts. The actuary would choose the maximum period over which the surrender penalty would apply. A surrender value could then be determined as the capitalised value of future death and maturity benefits assuming the policy "matured" at the end of this maximum period. Alternatively, a surrender penalty could be determined as the loss of asset charges which the office would incur if the policy surrendered before the end of this period. These approaches gave rise to surrender values based on the sell value of units or investment account multiplied by an assurance factor.

Some insurers did sell modern savings policies with surrender value formulae which incorporated assurance factors, but the practice was soon abandoned in favour of the linear scale of surrender penalties.

Surrenders as Common Practice

Returning again to traditional business, the practice of viewing a surrender as a breach of contract became less common over time. Two major causes of this change were:

- The recognition that sales material drew attention to the existence of surrender values, so that, in surrendering, the policy owner was merely exercising an option willingly offered by the insurer rather than breaching the contract.
- The realisation that surrender was the common practice rather than exception to the rule.

For example, Atfield (1974) noted that, of the total premiums discontinued on ordinary traditional business, 50% were due to surrender. More recently, The Practice of Life Insurance in Australia (1996) notes that the current surrender rates are such that, ignoring mortality and maturity, allowing only for surrenders and forfeitures, only about 60% of ordinary traditional policies survive 5 years and only about 40% survive 10 years.

If less than half the policies issued survive 10 years, it is hard to regard surrenders as anything other than the normal course of events. Once surrenders are regarded as normal, it becomes essential to have regard to equity between surrendering and continuing policy owners.

To allow for this, Taylor (1974) proposes a surrender value formula for traditional business which is a weighted average of a prospective and a retrospective policy value. The other key issue to consider is whether the surrender value should reflect the full acquisition expenses incurred by the policy or whether some proportion of these expenses should be borne by the continuing policies. This issue was discussed thoroughly by Taylor (1974) and the points he raised seem equally relevant today.

Mutual vs Proprietary Insurers

Taylor also took the view that equity should only be a consideration for mutual insurers. On this point, he states:

"In the case of shareholder offices, the management administers the fund for the purpose of deriving profits for shareholders. It has no obligation to the policyholders other than statutory or self-imposed ones."

In the subsequent discussion this view was refuted by several speakers, who claimed that shareholder offices should and did pay attention to equity in all aspects of life office management, including setting surrender values. For example, Atfield (1974) noted that if a shareholder office was really more concerned with profits for shareholders than with equity for policy owners, then:

"the advice to shareholders would be to sell the life company, which was not, generally, an attractive investment for shareholders."

In reply, Taylor noted that shareholder offices did often appear to be paying equitable surrender values, but

"he [Taylor] did not see that result as a consequence of any consideration of equity, but rather forced upon the offices by competition."

(In 1974, the discussion to sessional papers published in the Transactions was written in the third person.)

It is useful to restate the above views in their historical context. In 1974 the Australian life insurance industry was dominated by mutual insurers. In this environment, it is suggested that either:

- Competitive forces caused the remaining shareholder offices to pay equitable surrender values; or
- Shareholder offices may have regarded themselves as quasi-mutuals on the grounds that it was just not possible to produce the returns shareholders would normally demand.

Further, many of the insurers which were technically shareholder companies were then subsidiaries of overseas mutual insurers. It might be suggested that these Australian operations

were largely run as if they were mutual organisations themselves, rather than as subsidiaries which should be primarily concerned with maximising the profit remitted to their overseas parent mutual.

By contrast, in 1999 the Australian life insurance market is dominated by shareholder offices, mutuals having almost entirely disappeared from the landscape. Some of the local shareholder offices previously owned by overseas mutuals are now owned by shareholder offices, either due to the demutualisation of the overseas parent or sale of the subsidiary. Shareholder offices are now being run in a more cost-conscious manner. In this new, more competitive environment, the obvious question is: Does equity still rate as an important requirement when setting surrender values?

Traditional Business vs Modern Savings Contracts

I suggest equity remains a requirement in setting surrender values for traditional business, but that it is not a concern when setting surrender values for modern savings contracts.

For modern savings contracts, the surrender value formula is both fixed and fully disclosed at the outset. Since the customer is purchasing the policy with full knowledge of the formula, purchase of the policy can be taken as the customer's agreement to abide by that formula whether it be equitable or not. The *caveat emptor* or "let the buyer beware" principle applies.

By contrast, for traditional business the customer is purchasing the contract having seen illustrative surrender values accompanied by warnings that the basis may be changed at any time. Given the uncertainty involved in this situation, most would agree that the customer has a clear moral right to demand equitable treatment in determination of that surrender value.

In some cases, the traditional policy owner's claim to equity may be further strengthened by statements in the Customer Information Brochure or policy which may encourage the view or even state explicitly that surrender values will be determined in an equitable manner.

Participating vs Non-participating Business

Another view sometimes expressed, though apparently not in the published literature, is that equity should be a consideration when determining surrender values for participating business, but that it need not be a consideration for non-participating business.

The argument for this view usually runs as follows. Participating policies are entitled to a bonus which was described as an equitable distribution of the surplus arising from those policies, though we would now probably say "profit" rather than "surplus". The bonus declared cannot be regarded as truly equitable unless the surrender value of the bonus is also determined in an equitable manner. Non-participating policies do not have any right to share in the profits arising from them, and thus, at least in the shareholder office environment which now predominates, the purpose of selling these policies is to maximise profits. It can also be argued that in the environment of a mutual office, the purpose of writing non-participating contracts is to make further profits which can be passed back to the participating policy owners. This purpose applies to all aspects of the product design, including the surrender value, and so equity need not enter into consideration.

Since most whole life and endowment policies are participating and most modern savings policies are non-participating, the viewpoint that "equity is only an issue for traditional business" has a significant overlap with the viewpoint that "equity is only an issue for participating business". However, I suggest that the first viewpoint can be seen to be more appropriate if we consider the policies in the non-overlapping range.

Firstly, consider the rare non-participating whole life and endowment policies. The policy owner may not share in the profits, but is still buying a policy where the surrender value is not clearly defined, and which thus carries a moral right for that value to be determined fairly, perhaps backed up by more formal guarantees of this right in the policy documentation.

Secondly, consider the participating investment account contracts. (Most insurers classify their investment account business as non-participating. However, a small number of insurers, including some of the larger companies, wrote this business as participating business.) The declared interest on such a contract is claimed to be an equitable distribution of (smoothed) investment earnings. One might argue that for this claim to be true, the surrender value of that declared interest must also be determined with equity as a prime consideration. However, given that the scale of surrender penalties cannot be altered after the policy is issued, I suggest that it would seldom be possible to determine the declared interest rate in such a way that the resulting credited interest is equitable for both a young policy which is then surrendered incurring a surrender penalty and for an old policy which is then surrendered without penalty. There are simply not enough adjustable parameters to allow the actuary to achieve equity for all. In this situation, I suggest the best the actuary can do is aim to declare interest rates which achieve equity for those who keep their policies long enough to avoid surrender penalties. Those who surrender early will incur a penalty which might or might not be equitable, but it is the penalty they willingly agreed to when they purchased the policy.

Thus, I argue that the question of whether equity is relevant in determining surrender values depends on whether the surrender formula was fixed at the outset, not on whether the policy is participating or non-participating.

Solvency

Surrender values should not be so generous that the solvency of the statutory fund is threatened. For simplicity of explanation, this section refers only to solvency requirements, though similar points can be made in respect of capital adequacy requirements if the amounts differ.

An overly generous surrender value may threaten solvency on two fronts.

- Payment of a surrender value in excess of the solvency requirement depletes the surplus, possibly eventually leading to a situation where the remaining assets do not cover the solvency requirement for the remaining policies.
- Since the surrender value feeds into the calculation of the solvency requirement, an excessive surrender value boosts the solvency requirement.

A special case of the second point mentioned above is that an overly generous surrender value also boosts the solvency requirement at issue. That is, it contributes to new business strain. An excessive surrender value formula on a policy which unexpectedly sells in large quantities may cause insolvency if the insurer has insufficient capital to cover the new business strain. Indeed, the excessive surrender values could assist in causing the large sales.

Traditional Business

For traditional business, where the surrender value basis for in-force business is routinely adjusted for significant changes in market conditions, it is unlikely that solvency could become endangered by the surrender value basis. Theoretically, difficulties may occur if the surrender value basis cannot be adjusted to fully reflect the changed conditions. This could occur if, for

example, the statutory minimum surrender value was not appropriately adjusted for the changed conditions. In the past, when the minimum statutory basis was prescribed in an Act of Parliament, or subsequently in regulations to the Act, it was difficult to adjust the basis at short notice. Now that the minimum basis is prescribed by an LIASB standard which can be changed more easily, such difficulties should not recur.

Also, for traditional business, the risks arising from new business strain are negligible, since there is negligible new business.

Investment Account Business

Since investment account business provides a capital guarantee, it may involve significant risk to solvency. This is particularly the case when the assets backing the business involve considerable holdings of equities or property, as was the case in Australia in the early 1980's. If the equity or property market slumps, a run of surrenders may endanger the insurer's solvency. Curiously, surrender value design on investment account business seldom seemed to counter this risk. Perhaps the risks inherent in these contracts became more evident to insurers following the October 1987 crash. Certainly, from that time fewer insurers offered this type of contract, replacing it by a "capital stable" investment option under an investment-linked contract. Gradual realisation of the level of reserves necessary to allow for the mismatching risk under investment account business, eventually formalised in the Resilience Reserves required under LIASB Actuarial Standard 2.01 and 3.01, may also have hastened this trend.

By contrast to the individual contracts discussed above, group investment contracts carrying a capital guarantee usually gave the insurer either the option to impose a penalty if the contract was terminated when the market values were low and/or an option to pay out the contract in instalments over a number of years, thus allowing the market time to recover. These options were clearly inspired by the need to protect solvency.

Profitability

Discussions of the effect of surrender values on solvency sometimes refer to the risk of making a "loss" on a policy. The use of the term "loss" rather than "depletion of surplus" should alert us that we have wandered from the topic of solvency into the separate though related issue of profitability.

Profitability did not appear in our list of requirements given above. Its omission in earlier research may arise from two causes.

- As previously noted, the industry used to be dominated by mutuals, for which profitability was of lesser concern. In a life insurance market now dominated by shareholder offices, it is not sufficient to stay solvent; one must also make a reasonable profit.
- The industry's historical reporting structure concentrated on solvency and surplus and ignored profit. Now that the Life Insurance Act 1995 has given us tools to separately report on solvency and profitability, both those aspects can be considered when framing surrender values.

Relationship Between Profitability and Solvency

Solvency and profitability should be considered separately, since they do not necessarily run in the same direction. For example, an insurer may go insolvent from writing profitable business if it doesn't have sufficient capital to cover the new business strain. Also, an insurer could make losses for many years in a row without endangering solvency if there is sufficient capital. This

could occur for example if it has a rapidly declining block of traditional business releasing plentiful capital.

However, while solvency and profitability need not march in the same direction, they often do. Most of the unfavourable events which can befall an insurer will be unfavourable to both profitability and solvency, which will probably lead to these two factors being considered simultaneously when assessing the suitability of surrender values.

As an example of this, consider the risk to solvency and profitability arising from poor investment performance on back-end load unit-linked savings contracts. In terms of cash flow, these policies experience a deficit at the outset, since the initial fees levied are less than the initial expenses incurred. This deficit is gradually recovered due to the ongoing fees exceeding the ongoing expenses. To be more specific, for most modern savings products, the bulk of this catch-up arises from the asset fee significantly exceeding the asset-related expenses. That is, there is a mismatch between fees and expenses, the former being far more strongly influenced by the size of the assets than the latter.

If the unit growth rate for the current year is lower than expected, the amount of assets in both the current year and all future years will be lower than expected. Hence the asset fees earned in the current and future years, being a proportion of those assets, will be lower than expected and the amount of catch-up achieved is lower than expected. Further, the surrender penalty "earned" when a policy surrenders is usually also a proportion of the value of units, so the surrender penalties are also lower than expected, exacerbating the problem.

The above scenario adversely affects both profitability and solvency. The loss in asset fees and surrender penalties in the current year and the expected loss of future fees cause a reduction in both the current year's profit and expected profit for future years. The balance between current and future year losses will be affected by whether a change in basis is necessary and, if the change is extreme enough, whether the dreaded loss recognition rules come into play. Also, the loss in this year's fee income reduces the assets available to meet solvency requirements, while the expected loss in future year's fee income increases the size of the solvency requirement, both these factors adversely affecting the solvency of the insurer.

Assessing and Mitigating Risks to Profitability and Solvency

The risks to both profitability and solvency can be examined by sensitivity analysis. That is, projections can be run on various scenarios involving low rates of unit growth and the effect on profitability and solvency can be assessed.

If these investigations show the risk is too high, the product designer may attempt to remedy the problem by adjustments to the surrender value. For example, at least one product has been sold where the surrender penalty was not based on the value of the units but rather was a multiple of the monthly dollar fee, the multiple declining linearly over time. That is, if the unit growth rate was lower than expected, the surrender penalty was unchanged, so the mismatch between fees and expenses was reduced. However, anecdotal evidence suggests that the preferred methods for reducing the risk will extend beyond tinkering with the surrender value and will also incorporate serious attempts to reduce the shortfall between initial fees and initial expenses.

Stability

In the context of traditional business, two reasons are usually cited for the desirability of stability of surrender value formulae.

The Loan Collateral Reason

The surrender value of ordinary traditional life insurance policies may be used as collateral for a loan, or alternatively the policy owner may simply take out a loan with the insurer against the policy. Significant reductions in surrender values could cause the undesirable situation where the surrender value of the policy falls below the outstanding loan.

This argument does not apply to modern investment contracts. Firstly, it is an argument against frequent changes to the surrender formula for an existing policy, while as we have noted, the surrender formula for a modern savings policy is set at issue. Secondly, it makes little sense to use modern savings contract to secure a loan when it is possible to withdraw funds from the policy, eliminating the need for the loan.

The Cost of Change Reason

In respect of traditional business, when the surrender formula is changed for in-force business the insurer incurs additional expenses, such as the cost of altering the computer systems which determine surrender values. However, as noted previously, the surrender value formula for an investment-linked or investment account savings contract cannot normally be altered after issue of the policy, so these costs are not relevant to these contracts.

There are however also significant extra costs incurred if the surrender value formula is changed for new business, and these costs are encountered whether we are dealing with traditional business or modern savings contracts.

All benefit illustrations which sales staff provide to prospective clients must be updated. This expense is not insignificant, as a few examples will illustrate.

- The Customer Information Brochures (CIBs) will contain benefit illustrations. New CIBs must be produced. The existing CIBs become obsolete, even if they have not yet reached the “use by” date printed on them. They must be retrieved from all sales staff. Inevitably, not all CIBs are successfully retrieved and some proposals will be received from the obsolete CIBs, generating customer ill-will when the proposals are rejected. For these reasons, if a change in surrender value formula for new business becomes necessary, one of the first questions the cost-conscious actuary will ask is: “Can we delay the change until the expiry date of the current CIB?”
- Sales staff will usually be equipped with laptop computers able to produce benefit illustrations tailored to a particular potential client. Usually the programs which produce these illustrations reside on the laptop, so all such computers need to be updated, a sizeable task. However, the difficulty of this task will decline when it becomes more common for sales staff to use laptop computers combined with a mobile phone modem to remotely connect to the head office computer to obtain quotes and benefit illustrations. Then, only the program on the head office computer need be updated.

Also, changing the surrender formula for modern savings contracts effectively means creating a new variety of the policy. While marketing staff may delight in turning out new varieties with alarming frequency, staff concerned with expense control attempt to minimise new varieties. Each new variety represents additional expense in terms of training sales staff, training administrative staff and updating computer programs.

In short, the expenses involved in frequently changing surrender formula remain significant for modern savings contracts. That is, stability remains an important requirement.

Ease of Calculation

Traditional Business

Ease of calculation has long been a desirable quality of a surrender value formula for traditional business, though the reasons for its desirability have changed considerably over time.

Prior to computers, calculations of surrender values for traditional business were carried out "by hand" with the assistance of hand-calculators or, earlier in the history, log tables. In those days, the savings in calculation time which might arise from a well-chosen approximate formula were regarded as drastically outweighing the loss in equity which may result.

However, computers have now drastically cut calculation times. From the 1970's, precise surrender and paid-up formulae for traditional business could be generated by computer programs with minimal cost. The precise formula could also be used in the programs which produced benefit illustrations. In spite of this, ease of calculation continues to be cited as an important factor for surrender values for traditional business, seldom with a clear explanation of the reasons, and simple approximate formulae continue to be used.

I suggest the following reasons for continuing to regard ease of calculation as important for traditional business surrender values.

- As noted above, stability is also a requirement of a surrender value. Hence, for example, the interest rate assumption in the surrender value basis changes infrequently and thus is often slightly out-of-date. It can be considered a case of spurious accuracy to adopt a complex precise surrender value formula if the interest rate assumption being employed in that formula is itself somewhat approximate.
- While it may be easy to automate surrender and paid-up value calculations, many other types of alterations may be made to traditional business. Premiums may be altered causing a change in sum insured, or the reverse may occur. Maturity dates may be altered, giving rise to a corresponding change to premiums or sum insured or perhaps both. Endowments may be altered to whole life or vice versa. Partial surrenders or partial cashing of bonus may occur with the aim of producing sufficient funds to repay a debt on the policy. The range of possible alterations is sufficiently wide that it is usually thought simpler to continue to deal with them manually on a case-by-case basis rather than developing a computer program to deal with them. Simpler approximate formula are thus still an advantage for these alterations and it is then inconsistent to use more complex formula for the related surrenders and paid-up conversions.
- In addition to the above, there may be some policy types for which even surrender values are still calculated by hand, due to there being sufficiently few policies of that type to justify the up-front costs of computerising the process. This may occur for example with older policy types for which few policies remain, "bad idea" policy types which just never sold well, or rare variations such as special policies involving extra premiums or exclusions which were sold to substandard lives. Again, ease of calculation remains important for these policies.
- Some of the simple approximations such as Sprague adjustments and proportionate paid-up sums insured are used in the minimum statutory surrender value. If the insurer adopts the same approximate formula for their surrender values, then provided the parameters all move in the "right direction", such as lower interest rate and higher expenses than the statutory basis, then the actuary can be sure the insurer's surrender values will always exceed the statutory minimum surrender values without having to check all cases individually.

In addition to the above, some further points can be made to justify not bothering to alter an approximate surrender formula which was adopted some years ago when ease of calculation was regarded as far more important.

- Perhaps the simpler easy-to-calculate approximations are a very good approximation to the more theoretically precise formula.
- Often the above is not true at all durations. However, many of the approximations introduced in the name of "ease of calculation" still essentially involve calculating surrender values using some form of prospective policy value. Such approximations have the property that errors relative to a more theoretically precise formula tend to be greatest at issue and decline over the life of the policy. Many insurers no longer sell traditional business and have not done so for some years. Perhaps such insurer's portfolios of traditional business no longer contain any short duration policies for which the approximation errors could be significant.
- However, the above point cannot be used to justify use of the "proportionate paid-up sum insured" approximation. Taylor (1974) shows that for this approximation, depending on the age at entry and term of the policy, errors may continue to grow or reverse direction until quite late in the life of the policy.

Modern Savings Contracts

Ease of calculation is one of the primary determinants of surrender penalty formulae for modern savings policies. This is so because a surrender penalty constitutes an exit fee. ISC Circular G.I.1 requires the customer information brochure to clearly explain any exit fees. It is generally accepted that anything more complex than a linear scale is beyond the mathematical capabilities of many potential clients. Therefore, for modern savings contracts, it would be clearer to identify this requirement as "ease of explanation" rather than "ease of calculation".

(By contrast, for traditional business the CIB is not required to explain the surrender value formula, so for those products ease of calculation remains the key issue rather than ease of explanation.)

There is also some anecdotal evidence that in many front-end load policies, the initial fees do not always quite cover the acquisition expenses, resulting in some losses on surrender at early durations. In such cases profitability considerations could justify a small surrender penalty, but the insurer chooses not to impose one so as the make the policy simpler to explain. In this situation the ease of explanation requirement (eliminate surrender penalty) and the marketability requirement (sales being sensitive to small reductions in the initial fee) have overridden the profitability requirement.

Consistency

There are several consistency aspects to consider when dealing with traditional business, most of which do not arise or can be safely ignored for modern savings policies.

Traditional business may be subject to a range of alterations, the most common being conversion to paid-up status, causing a reduction in the sum insured. In all such alterations there is a need to ensure the surrender values before and after conversion are consistent. If a particular conversion caused the surrender value to significantly increase, astute policy owners wishing to surrender their policy could take advantage of the situation by implementing the

conversion and then surrendering. A more realistic viewpoint is that few policy owners would be aware of such an option, but that astute agents could certainly draw their attention to it.

"The Practice of Life Insurance in Australia" (1996) notes that the minimum statutory surrender value can in some cases cause difficulties in this area in respect of policies converting to paid-up status prior to being surrendered.

The range of alterations possible for traditional business do not occur for modern savings contracts, so no consistency problems arise.

Discussions of the consistency aspect sometimes seem to degenerate into statements of the obvious. For example, for traditional business it may be said that the surrender values should approach the maturity value as the policy approaches maturity. Modern savings contracts usually have no fixed maturity date and surrender penalties seldom apply for more than 10 years. Thus the analogous statement for modern savings contracts would be that the surrender penalty should decline to zero and stay there, a statement which is so obvious that it need not be stated.

It is thus suggested that consistency need not be mentioned as a requirement for surrender value formulae for modern savings contracts.

Marketability

It is often said that life insurance is sold rather than bought. However, it appears that purchasers of modern savings contracts tend to take a more proactive approach and will compare products from several life insurance companies. Some will also compare these products with unit trust products.

Comparing fee structures of competing products is difficult for the consumer unskilled in compound interest theory. Rarely would a product be found to charge a lower amount than a competing product for every single fee type. More commonly product X may be found to have a lower up-front fee but a higher asset fee than product Y. In this situation, the customer will tend to focus on benefit illustrations to compare the products, using either general benefit illustrations supplied in the customer information brochure or personalised illustrations produced via the intermediary's computer.

We may prefer policy owners to view savings policies as long-term investments and concentrate on the benefit illustrations for periods of 10 years and longer. However, there seems to be a general feeling that many customers, even those planning to hold their policies for many years, still place considerable weight on the illustrated surrender values at shorter durations. Thus there is still a need to ensure that surrender values appear marketable, even at short durations.

The product designer is walking a tightrope on this issue. This is particularly the case for products for which losses occur on surrenders at short durations. If the surrender values at short durations look too competitive the risk is that the insurer may attract customers who intend to surrender the policy at those short durations.

Compliance with Statutory Minimum Values

Compliance with statutory minimum surrender values is, by definition, a requirement. This point remains as relevant for modern savings contracts as for traditional business. It is however suggested that for modern savings products, currently at least, a scale of surrender value which

satisfies the marketability requirement is unlikely to encounter difficulties with the statutory minimum prescribed by LIASB Actuarial Standard 4.01.

Summary

When developing suitable surrender values for modern savings contracts, it is alleged that:

- **Solvency** and **Profitability** are key issues. However, if the risks to solvency and/or profitability are excessive, then it will probably not be possible to remove the risks solely by making adjustments to the surrender values. It may be necessary to also adjust other parameters of the product, such as the shortfall between the initial expenses and the initial fees.
- Ease of calculation is important, primarily due to the need for **Ease of Explanation** of the surrender penalty in the customer information brochure.
- **Stability** remains an important issue. Frequent changes to the product design are costly.
- The continuing emphasis on benefit illustrations ensures that **Marketability** remains a key issue.
- Compliance with **Statutory Minimum Surrender Values** is by definition still a requirement. However, in practice it tends not to be a key issue, since the marketability requirement will usually ensure payment of surrender values in excess of the statutory minimum.
- Equity is not an issue, since the surrender formula is fixed at the outset and is clearly described to the policy owner prior to sale.
- Consistency is not an issue. The consistency issues which arise for traditional business either do not arise for modern savings contracts or are so obvious as not to require comment.

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