

# **SECURITISATION AND OTHER FINANCING OPTIONS AVAILABLE TO LIFE COMPANIES**

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## **ABSTRACT**

Until relatively recently life companies generally met their capital needs either from internal resources or by means of equity capital provided by shareholders. However, the financial pressures on life operations have led to more innovative alternatives being used. In response to these pressures different forms of capital support from reinsurers, banks or other group funds or companies have been developed. In April 1998 National Provident Institution (NPI) became the first life company to issue bonds to investors secured on the future profits expected to arise from part of its existing life business. This paper discusses:

- financing options available to life companies;
- the terms of NPI's securitisation;
- the relative merits of different financing and capital management alternatives;
- alternative forms of capital support;
- the implications for policyholders and their interests; and
- actuarial issues arising from the different forms of financing.

## **KEYWORDS**

Capital Support; Financing; Policyholder Interests; Reinsurance; Securitisation

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## **1. INTRODUCTION**

1.1 Until relatively recently, life companies generally met their capital needs either from internal resources or by means of equity capital provided by shareholders. However, the financial pressures on life operations have led to more innovative alternatives. In response to these pressures, different forms of capital support from reinsurers, banks or other group funds or companies have been developed. In April 1998 National Provident Institution (NPI) became the first life company to issue bonds to investors

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secured on the future profits expected to arise from part of its existing life business. This paper discusses:

- financing options available to life companies;
- the terms of NPI's securitisation;
- the relative merits of different financing and capital management alternatives;
- alternative forms of capital support;
- the implications for policyholders and their interests; and
- actuarial issues arising from the different forms of financing.

Many of the issues concerning securitisation discussed in this paper are also relevant to alternatives to securitisation, such as reinsurance financing or bank contingent debt.

1.2 Section 2 discusses in brief the capital requirements of life companies, and how they can be met. Section 3 considers the issues arising from taking a loan secured on the future profits from the existing business. Section 4 provides details of NPI's securitisation, and Section 5 discusses related issues of an actuarial nature. Section 6 covers alternative forms of finance, and Section 7 provides a brief conclusion.

## 2. CAPITAL REQUIREMENTS OF LIFE COMPANIES

2.1 Life companies have a need for capital. The most common reasons for this need are:

- *Financing of new business strain.* Most life products incur a higher level of expense and commission in the early period of the contract than the excess of premium income over other outgo and provisions, and therefore writing new business generates capital requirements which are not repaid until later in the life of the contracts.
- *Meeting regulatory solvency and asset admissibility requirements.*
- *Meeting the cost of adverse events.* Some events, such as the cost of rectifying mis-selling or meeting onerous guarantees, may need to be met out of free capital, rather than charged directly to policyholders.
- *Acquisitions, establishing new operations and other capital projects.*
- *Investment freedom for with-profits contracts.*

Details of assets that can count towards the European Union solvency margin requirements are set out in Appendix A. The current solvency margin requirements are based on very simple calculations. There is no attempt, at present, to calculate solvency margin requirements on a basis that tries to take into account the individual circumstances of a company, except in a very crude way. The requirements are currently under review. While, in the short term, there are not expected to be any major changes to the current treatment

of life business, it is proposed that a further more detailed review will follow.

2.2 With-profits business in the United Kingdom has developed to provide equity-backed investment with a measure of guaranteed return. Statutory valuation and solvency requirements generally have the effect of requiring higher levels of provisions for with-profits business backed by equity investment than that backed by fixed-interest investments. In consequence, additional capital is required for with-profits business with high equity backing. For most with-profits companies this poses a dilemma. The highest with-profits investment returns are likely to be achieved with high equity backing; however, meeting statutory solvency requirements, if conditions become adverse, is a significant concern. Moreover, a fall in market values of investments can give rise to a greater fall in free assets as a result of increased reserving requirements — notably, in the U.K., due to the impact on the resilience reserve of having to reallocate assets to liabilities. This can, in turn, result in pressure to sell at depressed levels assets that the company would otherwise wish to hold, such as low yielding equities, in order to reinvest in assets which generate lower reserving requirements. The other side of this coin is that increasing the amount of free assets by means of financing can result in a further increase to free assets, by enabling part of the reserves to be released. A related point is that an increase in free assets can enable a greater amount of assets to be reinvested into equities. For each £1 million of additional free assets, more than £1 million of additional investment may be made into equities, with some existing assets being switched from other categories. The extent of additional equity investment will depend upon how the Appointed Actuary and the company determine asset allocation, having regard to the level of free assets and the probability of financial difficulty. The interaction can be complicated, but the consequence is that the reinvested assets do not have to perform that much better than the replaced assets in order to meet the additional cost of the financing.

2.3 Although developments in product design have had the effect of reducing capital strains from writing new business, increased competition has reduced the opportunity to make the policyholder meet such strains — for example from early discontinuance values. Moreover, regulatory and consumer pressure has restricted companies' freedom of operation and increased the likelihood of capital being needed to put right past transgressions. A number of influences, including pensions mis-selling, low interest rates, guaranteed annuities, competitive pressures and increased shareholder expectations, have tended to reduce the amount of capital in the life assurance industry as well as diminishing the opportunities to replace capital. The introduction of stakeholder pensions, which can be seen as a form of personal pension subject to a low prescribed maximum level of charge, is another such development with similar consequences. As a result,

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companies and their advisors are spending increasing amounts of time and effort looking at ways of raising new capital or improving the use of existing capital.

2.4 Proprietary life companies can use equity and debt capital to meet these needs. They can also raise capital through a holding company, and pass the capital down to the life company subsidiary, leaving the subsidiary free of any obligation to repay the capital. Mutuals have a more limited range of options open to them. These include:

- utilising free assets not allocated to policyholders — the inherited estate;
- issuing subordinated debt or hybrid capital;
- raising capital secured on the future profits expected to arise from business in force, either by means of reinsurance financing, bank contingent debt or securitisation;
- other forms of reinsurance financing;
- taking advantage of the implicit items available under E.U. and U.K. legislation to meet the required minimum solvency margin; and
- demutualisation and other options involving raising equity capital from a third party or the market.

These options are, of course, also open to proprietary companies.

#### 2.5 *Subordinated Debt or Hybrid Capital*

2.5.1 Under E.U. legislation a company can meet up to one half of its required minimum solvency margin by means of subordinated debt or hybrid capital, subject to certain requirements. Subordinated debt or hybrid capital can be ignored as a liability up to this level. The requirements are set out in a Guidance Note (1994/1), issued by the Financial Services Authority and summarised in Appendix A. In view of the subordination to creditors and the other conditions, the debt is, in effect, regarded as permanent capital. The provider of the capital can be the market, by means of bonds issued to investors, or another company in the group. If the finance is provided by the market, then the issue needs to be of a minimum size, perhaps of the order of £100 million, in order to be viable. If the finance is provided by another company in the group, then the regulatory limits on transactions with connected parties need to be taken into account. Although a useful way to increase free assets, the limitation to one half of the solvency margin means that subordinated debt is usually only a partial solution to capital issues.

#### 2.6 *The Embedded Value of Business in Force*

2.6.1 A life company's business in force constitutes a valuable asset which, like other investments, is expected to produce a stream of future income. Of course, its value is dependent upon future experience, as applies to most other categories of asset. The embedded value of the business in force is clearly not marketable in the same way as quoted securities are,

although its value can sometimes be realised, for example, by sale of the portfolio or reinsurance financing. Under current E.U. and U.K. legislation, some allowance can be made for this asset by use of the implicit item for future profits.

2.6.2 To the extent that future profits from existing business constitute a hidden asset, the value of which is not allowed for regulatory purposes, then it can be attractive for a company to rearrange its affairs in such a way as to increase regulatory capital, or raise further cash assets, if that is what it requires. In this context, reinsurance financing or securitisation of the embedded value do not simply achieve regulatory arbitrage; there is a genuine transfer of risk, and the increased regulatory capital available reflects the changed and more certain position.

## *2.7 Implicit Items*

2.7.1 Under E.U. legislation, part of the solvency margin can be met by implicit items in respect of zillmerisation, future profits or hidden reserves. Implicit items in respect of zillmerisation are not generally used in the U.K., since companies can achieve the required result by allowing for zillmerisation directly in the liabilities. However, a number of companies do meet part of their solvency margin by means of an implicit item for future profits. An implicit item for future profits, in effect, gives credit for part of the embedded value of existing business, but also includes future profits arising for the benefit of policyholders from with-profits business. An implicit item in respect of hidden reserves has been used in the U.K., but is not common.

2.7.2 For all but very small companies all liabilities and at least one-sixth of the required margin of solvency must be covered by items which are not implicit items. The implicit item can, however, be greater than five-sixths of the required margin of solvency, but the solvency margin requirements are not met unless there are sufficient other assets to meet the one-sixth condition.

2.7.3 The implicit item in respect of future profits is currently subject to an overriding limit of 50% of the product of the annual profit and the average period to run on the relevant policies (maximum ten years). For this purpose, the annual profit is taken as the average annual statutory surplus over the most recent five years. The implicit item is also subject to a limit of the present value of future profits expected to arise on the business in force. Because the implicit item is calculated by this retrospective method, it may be considerably less than the value of future profits from the business in force. This will particularly be the case if the last five years' profits are significantly lower than expected future profits, for example if they have been based on lower volumes of business or reduced by new business strain or exceptional items. A similar situation arises for a new company, including one utilised for the purpose of receiving existing business of another company under a Court scheme of transfer, as there is no history of profits from which to

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generate an implicit item. The current method of calculating the implicit item for future profits, being retrospective, is therefore somewhat arbitrary, and may provide a much lower amount than by using a conservative prospective calculation.

2.7.4 Although use of an implicit item for future profits would seem to be an efficient use of capital, since otherwise further capital must be allocated to meet the required solvency margin, it has not been as extensively used in the U.K. as one might have expected. One reason for this is that, for with-profits companies which sell significant volumes of business through independent financial advisers, there has been a concern that an implicit item may be interpreted as a sign of financial weakness, which could impair the company's ability to attract new business. However, amongst other companies there has been increasing use of an implicit item for future profits. It is clearly one of the lowest cost options for meeting part of the required solvency margin.

2.7.5 At the time of writing it is unclear whether the implicit item for future profits is to be retained, following the review of the E.U. solvency margin regime, as some countries do not support it. If it is retained, however, it seems likely that the retrospective test will be removed, and replaced by a prospective test with appropriate conditions and limitations. Whereas it is appropriate for the regulators to place restrictions on the amount of the value of existing business that can be taken into account as an asset, to allow no value would seem unjustified. If no regulatory value can apply, then the attractions of securitisation or other forms of financing of the embedded value will be increased.

## 2.8 *Demutualisation*

Full demutualisation has been an option taken by an increasing number of life companies in recent times, both in the U.K. and worldwide, and is not discussed further in this paper. However, it is worth noting the option for a mutual of raising capital via a subsidiary, which has been used in the United States of America and in Europe (notably Austria), but not, to any significant extent, in the U.K. For this alternative the mutual remains as a holding company and raises capital via a subsidiary, perhaps keeping a majority stake in the subsidiary, and thereby retaining control. The mutual can transfer all or some of its business to the subsidiary, and can write new business through it. Policyholders can retain voting rights in the mutual holding company. This is, therefore, a way of raising capital without giving up control of the operations. One disadvantage in the U.K., however, is that mutuals are taxed more favourably than proprietary companies, and there may, therefore, be a tax disadvantage to a structure of this type, compared to remaining a mutual. Another issue is that if the mutual is attractive to predators a proposal along these lines may be seen as a sign of weakness. In consequence, it might attract a hostile bid, which may be successful if policyholders are offered sufficient additional cash and benefits.

### 3. LOANS SECURED ON FUTURE PROFITS OF EXISTING LIFE BUSINESS

3.1 One way of bringing into account for regulatory purposes part of the embedded value is to obtain a loan secured on the profits expected to emerge from the existing business in force. In its purest form, repayment of both interest and capital on the loan is wholly dependent upon the emergence of these profits; if sufficient profits fail to emerge, then loan repayments and interest payments are not made.

3.2 For a proprietary company, the profits on which the loan is secured could be shareholders' profits only, with-profits policyholders' profits only, or shareholders' and policyholders' profits combined (although, in this case, the respective interests and obligations of shareholders and policyholders would need to be well defined).

3.3 An ordinary loan increases both assets and liabilities by the same amount, and, therefore, does not affect the amount of free capital. However, a loan for which repayment is dependent on the future profits arising from a portfolio of business can result in an increase in statutory free assets equal to the amount of the loan. While the assets of the company increase by the amount of the loan, the amount of the liabilities does not increase, because the liability to make payments under the loan only arises if an equivalent amount of future surplus also arises. Since no account is being taken of that future surplus in the regulatory assets, the net effect is that any potential loan outgo is offset by future surplus that is not being brought into account. Hence, there is no additional net liability, and the company's free assets are therefore increased by the amount of the loan.

3.4 In order for this treatment to apply in the U.K., it is necessary to obtain confirmation from the regulators that the liability for the loan counts as a long-term liability under insurance company regulations. As such, the liability can be taken into account by the Appointed Actuary in the statutory valuation of long-term liabilities, rather than it being a balance sheet liability. If the loan is treated as a balance sheet liability, then the accounting treatment might require full provision for the loan at its face value, making the whole transaction ineffective. This treatment may, in any event, apply to the reported financial statements, rather than to the regulatory accounts. However, for statutory solvency and asset matching purposes, it is the regulatory accounts that are relevant.

3.5 A loan of this type can be provided from a number of different sources. If a reinsurer provides the loan, then it would be in the form of reinsurance financing. If a bank provides the loan directly, then it would be as contingent debt, and if the loan is provided from the capital markets by means of the issue of bond securities, then that constitutes securitisation. In essence, the same broad effect can be achieved under all three alternatives. The insurer is replacing the original embedded value asset by cash, representing the proceeds of the loan, plus the residual embedded value,

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representing the excess of the embedded value over the amounts required to repay the loan. The proportion that the loan represents of the embedded value will be determined by the lender, and will depend upon the view taken of the amount of risk involved. The loan might typically represent between one-half and two-thirds of the present value of future profits, although the proportion will depend, amongst other things, on the sensitivity of future profits to the assumptions about future experience.

3.6 The lender will be taking part of the embedded value risk. If experience is slightly worse than anticipated, then this may not affect the lender, as interest and capital payments may still be covered. If, however, experience is significantly worse than anticipated, the lender may suffer a deferment of payment of interest and capital. If experience is sufficiently bad, then ultimately the lender may not receive even some of the interest and capital repayments. The lender is therefore taking a risk that experience will not be significantly worse than projected. As well as the loan, the lender can therefore be regarded as providing a form of catastrophe or excess of loss insurance on the embedded value.

3.7 A company can exploit a loan secured on future profits (either by securitisation, reinsurance financing, or bank contingent debt), as well as the other options of subordinated debt and the implicit item for future profits. Securitisation and subordinated debt provide cash, whereas the implicit item simply adds a notional asset to the balance sheet. Reinsurance financing may reduce liabilities, rather than increase assets, and will not, in general, provide cash, unless specifically required. As mentioned above, subordinated debt is only effective up to one-half of the E.U. required solvency margin; after that it counts as a liability. It does not interact directly with a financing loan or implicit item, in the sense that the full benefit of subordinated debt is received irrespective of whether a financing loan or the implicit item is being utilised. However, obtaining a financing loan secured on future profits might, in the long term, affect the position of the subordinated debt holders, since a part of future profits is no longer available to them, being earmarked for the lender. Against this, initially there is additional capital available, which strengthens the immediate security for the subordinated debt, and, if the capital raised is used effectively the security may also be improved ultimately.

3.8 A loan secured on the embedded value will affect the calculation of the implicit item for future profits. Projected future profits will be reduced by the expected loan outgo, and therefore the amount of future profits that may be taken into account in the implicit item is lower than it would be otherwise. However, there are a number of reasons why a significant implicit item for future profits may still be available after obtaining such a loan:

- The amount of the implicit item is limited to the minimum of the retrospective and prospective calculations outlined in Section 2, with the



retrospective calculation usually producing the lower amount; in consequence a reduction in projected future profits may not affect the amount of the implicit item greatly, or even at all.

- Not all of the existing business may have been used for the loan.
- As the projected loan outgo may represent, perhaps, one-half to two-thirds of the projected future profits arising from the relevant business, there will still be residual profits to count towards the implicit item.
- A financing loan can only take account of a relatively small proportion of surplus arising from with-profits business, because of policyholders' reasonable expectations (PRE) issues, as discussed below, whereas the implicit item may take into account a greater amount.

Therefore, a substantial implicit item in respect of future profits may still be available, even if financing has been obtained from all existing business.

3.9 Is it inappropriate for a company to utilise all of the options of subordinated debt, financing secured on the embedded value and the implicit item for future profits? Subordinated debt is, in a sense, permanent capital, and, provided that it meets the required conditions, it seems appropriate to regard it as such and ignore the liability. Financing of the embedded value is appropriately reflected as a more certain and lower risk asset; and the rules for calculation of implicit items are, and are likely to remain, conservative. So, there does not seem to be any reason why these options should not satisfactorily sit alongside each other, or for the regulators to have any concern in this situation.

### *3.10 Policyholders' Reasonable Expectations or Customer Interests*

3.10.1 In principle, finance can be raised on the future profits arising from any type of life insurance business. In practice, different types of business raise different issues affecting policyholders' reasonable expectations or customer interests.

3.10.2 For contracts under which benefits are determined at outset, without any discretionary element, such as term assurances or non-profit annuities, a loan is unlikely to raise any PRE issues. Future profits will depend solely on future experience, and there is no conflict of interest between the lender and policyholders.

3.10.3 For contracts where the benefits are, to some extent, discretionary, such as unit-linked contracts with discretionary charges or with-profits contracts, the company has the ability to influence to some extent the profits that will emerge. This raises the issue of whether policyholders' interests might come into conflict with the lender's interests.

3.10.4 For unit-linked contracts with discretionary charges the company could, in theory, amend charges and affect the ability of future surplus to repay the loan, either by increasing or lowering charges, or by changing their incidence. For example, current charges could be reduced at

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the expense of future charges. Clearly PRE has to be taken into account. The conflict is not significantly different to that which applies to a shareholder company; policyholder interests must be protected in relation to shareholders and the lender, rather than just shareholders. However, the lender may require protection that the incidence or level of charges, and hence surplus, cannot be altered to the lender's disadvantage, other than in conditions under which such alterations would have been expected. In the NPI securitisation, one protection provided to bondholders is that, if the pricing of units is amended from an offer price basis to a bid price basis, which would thereby result in a fall in unit prices and, in consequence, a reduction in the surplus available to meet payments to the bondholders, then the calculation of surplus for the purposes of the securitisation is based on an offer pricing basis. The result of this protection is that there are circumstances under which surplus for securitisation purposes is different from actual surplus.

3.10.5 With-profits business raises its own issues. Unitised with-profits and conventional with-profits business pose different, though related, questions, but there is one issue that is common to both. With-profits business is likely to generate a substantial amount of future surplus, most of which is destined for policyholders, and part of which is destined, in a proprietary company, for shareholders. In theory a loan could be raised secured on all of this future surplus. However, to place all of policyholders' future surplus at risk would, in normal circumstances be inconsistent with PRE unless, exceptionally, this possibility had been explained to them at outset. If the company were to lose the proceeds of the loan, then a large proportion of future policyholder surplus might accrue to the lender, leading to very low bonuses. Clearly this would be well outside of what would normally be expected from a with-profits policy.

3.10.6 While it seems clear that the proportion of with-profits surplus that can be placed at risk under a financing loan cannot be excessive, it is not obvious how much can reasonably be used without impacting on PRE. There are no such constraints on a loan secured on future shareholder surplus.

3.10.7 For unitised with-profits business, investment surplus emerges as the excess of the actual investment return over a guaranteed rate (generally 0% p.a. for modern contracts). The actual investment return will be earned on the underlying asset shares, whereas the guaranteed return will generally apply to the unit value (including guaranteed annual bonuses, but not any terminal bonus element). Investment surplus for financing purposes can, therefore, be defined as a percentage of actual surplus emerging, although there are other possibilities, one of which was used by NPI (see ¶4.10).

3.10.8 The approach for conventional with-profits business is less obvious. Surplus emerges from a number of sources — excess of office premiums over net premiums less expenses, excess investment return over

valuation interest rate, mortality, etc. In order to raise finance linked to this surplus, it is necessary to structure an arrangement that defines the terms of repayment without adversely affecting PRE.

3.10.9 The issue of what level of financing can be achieved without raising difficulties in this area is a matter of judgement. Under Section 45 of the Insurance Companies Act 1982 (ICA), the regulator may require a company to take such action as appears to be appropriate for the purposes of protecting policyholders or potential policyholders against the risk that the company may be unable to fulfil their reasonable expectations. Under Schedule 2A of ICA, a company is regarded as infringing the requirement to conduct its affairs in a sound and prudent manner if it fails to conduct its business with due regard to the interests of policyholders and potential policyholders. This legislation will be superseded by requirements currently being developed by the Financial Services Authority, which, at present, are drafted to impose a duty to pay regard to the interests of customers and treat them fairly. However, in practice it will remain a matter of considerable judgement as to how far the financing could go before it breached regulatory requirements.

### 3.11 *Risk*

3.11.1 Is there likely to be any increase in risk arising from such capital raising? The answer to that question depends upon the amount of capital and the purpose for which the capital is raised. If a proprietary unit-linked company raises capital for the purposes of making an acquisition of another company, then the risks borne by the organisation may well increase, since, although the embedded value on which the loan is secured will become subject to a lower level of risk (albeit at a cost), this may be outweighed by the risks attaching to the acquisition. Nonetheless, if the organisation has sufficient capital and the potential rewards are good, such a transaction may be attractive. What is relevant is the overall position of the company. In assessing the terms of capital raising, the directors will need to consider these issues in relation to their obligations for sound and prudent management under the ICA.

3.11.2 For a with-profits company, the overall picture again needs to be considered. For NPI the securitisation loan represented less than 3% of long-term funds, or less than 4% of with-profits funds. The loan has the effect of improving the published statutory free asset ratio. Although the realistic financial position of the company is perhaps not greatly altered, the improvement in the statutory solvency position can enable a more aggressive investment policy to be pursued. A multiple of the amount of capital raised can be reallocated from fixed-interest or cash investments to equities or property without necessarily increasing the solvency risk compared to that prior to the loan. The multiple will depend upon the asset/liability mix of the life company, the relative yields available on assets, and the regulatory reserving regime. The multiple used to achieve the same level of free assets as

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before the capital raising, which would however represent a higher level of risk, might, for example, be in the range two to three. Different actuaries would use different techniques for determining to what extent the equity backing ratio can be increased, using either deterministic or stochastic methods, and considering the impact on dynamic solvency testing.

3.11.3 Clearly, if a with-profits company raises capital on fixed-interest terms and then invests the proceeds in government stocks, it will make a loss, since it will pay a higher rate of interest on the loan than it receives from the government stocks. NPI's securitisation bonds paid interest at around 1.5% p.a. more than the corresponding government stock, and the annual loss if the proceeds were re-invested in that government stock would therefore be 1.5% p.a. However, if, as a result of the financing, it is possible to reallocate twice the amount of the loan from government stocks to equities, then, provided that equities achieve an overall return over the duration of the transaction in excess of 0.75% p.a. more than the relevant gilt (i.e. one-half of 1.5% p.a.), then the transaction will prove to be advantageous to policyholders. Clearly this strategy would have been very beneficial over most past periods, during which equities have outperformed government stocks by a substantial margin. This analysis ignores the expenses involved in arranging the transaction, which would increase the hurdle rate of additional return slightly. It also ignores the different tax treatment of interest paid out and investment returns received, but illustrates the principle that the financing can be beneficial to policyholders if it results in enhanced overall investment returns. Clearly also the relative risks involved in the different investment strategies, and the potential rewards, need to be taken into account in determining the amount of capital to be raised and the changes to asset allocation.

3.11.4 The choice of fixed-interest or LIBOR-related interest payments on the loan is largely an investment consideration. For a with-profits fund, a LIBOR-related loan is arguably a better match for the underlying risks, as high interest rates are likely to be associated with high nominal equity returns in the long run. In contrast, fixed-interest terms may prove onerous in a low inflation environment if interest rates and equity returns turn out to be low, and these conditions may be adverse in any event if there are guarantees provided. The risks and rewards of the different options can be examined using standard actuarial techniques — with deterministic, stochastic or other investment models.

3.11.5 The issue of risk again depends upon the overall position of the company and the scale of the loan. The proportion of with-profits investments allocated to equities and property in the U.K. is typically in the range 60% to 85%. If a company were to borrow under 5% of with-profits assets for the purpose of increasing its equity backing ratio within this range, this would not seem to represent a radical departure from the normal operation of the with-profits business, and PRE would be unlikely to be adversely affected. The

transaction can be seen as an investment transaction, rather than a 'gearing-up'. If, however, a company were to adopt a more extreme strategy, and borrow a much larger amount, for example 25% of with-profits assets, with a view to increasing its equity backing ratio to more than 100%, then that would clearly be operating in a way that policyholders would not reasonably expect, unless, exceptionally, this possibility had been fully disclosed to them at the commencement of the contracts. For a company whose with-profits investment flexibility is being constrained by solvency, but which has a significant embedded value of non-profit business, the issues seem reasonably clear. There are powerful arguments in favour of releasing the value of the non-profit business — and a loan secured on the embedded value is an attractive way of achieving this result.

3.11.6 The regulatory regime arguably impacts more heavily on with-profits companies than on other life companies or on other types of financial institutions. For a with-profits company the required solvency margin typically represents around 3% to 4% of total assets, whereas for a unit-linked company 1% to 2% would be more typical, and some companies have very much less. The E.U. solvency margin regime imposes a high solvency margin requirement for the provision of guarantees, irrespective of the severity of those guarantees. This impacts heavily on with-profits offices, even if the overall risks borne by the company may not be obviously any greater, and may be argued to be less, than those taken by unit-linked companies or other financial institutions. The level of guarantees being provided by with-profits offices' current products is arguably relatively low, even though past guarantees are proving costly. In addition, the reserving requirements for a traditional with-profits company are also substantial. It could be argued that the U.K. resilience reserve requirements represent an additional burden which is not imposed in most other European countries, and for which allowance is already made in the more onerous solvency margin requirements for with-profits business. The severity of U.K. capital requirements is perhaps illustrated by the size of the unattributed assets (the inherited estate) on a realistic basis of NPI and Scottish Amicable, which were in both cases around £1 billion, or 7% of total assets. For both these companies shortage of capital was a significant contributing factor to the decision to demutualise. Would other types of financial institution consider themselves short of capital if they had excess assets at this level?

#### 4. THE TERMS OF NPI'S SECURITISATION

4.1 NPI raised a total loan of £260 million, repayable over 25 years. The loan was effected through an intermediate special purpose vehicle (SPV), incorporated in Ireland, Mutual Securitisation, which raised the capital from investors by means of bond securities, and then lent the proceeds on to

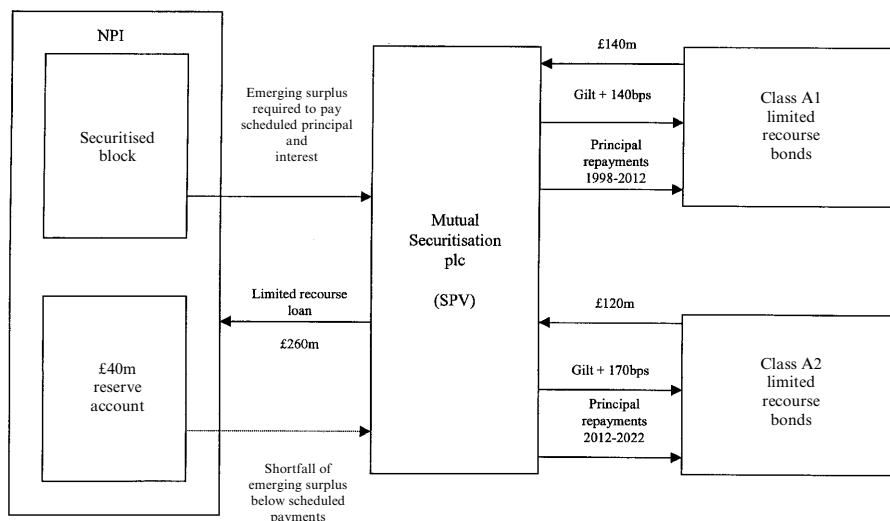


Figure 4.1 NPI securitisation structure

NPI. Mutual Securitisation issued £140 million of Class A1 bonds repayable over 15 years, and a further £120 million of Class A2 bonds repayable between 15 and 25 years. The two separate tranches were intended to appeal to shorter-term and longer-term investors, respectively. The bonds were rated A– by Standard and Poor’s and A3 by Moody’s. The Class A1 and Class A2 bonds paid fixed interest at 1.4% and 1.7% p.a. more, respectively, than the government stock of comparable mean term. Payments due under the bonds are limited in recourse to amounts received by Mutual Securitisation from NPI under a loan agreement. The transaction structure is shown in Figure 4.1. There is a bond trustee who has certain responsibilities to represent the interests of the bondholders.

4.2 It would have been possible for a £30 million higher loan to be made available at the same rating, but in the event market conditions were not supportive of this size. Demand for these bonds depends upon the appetite of investors at a particular time, and is influenced by whether there is a good supply of other comparable bonds being issued at the same time. There was provision for NPI to issue £30 million further bonds at a later stage, but this has not happened.

4.3 The legal construction of the arrangement is achieved by means of a series of agreements, of which the principal one is the loan agreement between NPI, Mutual Securitisation, the bond trustee and various other

parties. The loan agreement is a complex and lengthy legal agreement, which sets out in detail the terms and conditions applicable to the loan and the obligations of the various parties. It includes a number of representations and warranties which were given by NPI. It is, inevitably, extremely complicated, since it is necessary that all contingencies are encompassed at outset. It runs to some 155 pages, and it is necessary to read some of the sections many times in order to get a full understanding of the implications. As for any lengthy legal agreement, the complexity gives rise to a concern that there may be adverse and unforeseen consequences in circumstances which were not envisaged in advance.

4.4 NPI pays interest and capital payments to Mutual Securitisation, and, in turn, Mutual Securitisation pays interest and capital payments to bondholders out of surplus (emerging surplus) arising from the securitised block of business, which is broadly equivalent to actual surplus arising, and is legally defined in the loan agreement. Certain items, such as liabilities in respect of pensions mis-selling, are excluded from emerging surplus, which is rigidly defined by formulae and words. If there is insufficient emerging surplus in a year to meet the scheduled payments then there are other sources available (notably the reserve account, which is described below), but if there is still a shortfall outstanding payments are deferred and become due in the following period. The amount of the loan, and the scheduled repayments of capital each year over the 25-year period, were derived from the amount and pattern of emergence of emerging surplus. The rate of interest NPI pays to Mutual Securitisation is marginally greater than that payable by Mutual Securitisation to bondholders. For simplicity, I will generally ignore the SPV, Mutual Securitisation, and assume that NPI makes payments direct to bondholders, although the legal position is more complicated.

4.5 Future emerging surplus arising from NPI's securitised block was projected on a variety of assumptions. A comparison of emerging surplus under the central set of assumptions (the 'base case') with the scheduled capital and interest payments is shown in Figure 4.2. It can be seen that, over the period, emerging surplus on the base case assumptions amounts to roughly twice the scheduled loan payments. Whereas the interest payments are dependent upon the loan outstanding, the scheduled repayments of capital are derived as part of the structure design. Any excess of emerging surplus over scheduled loan repayments is in normal circumstances retained by NPI. The increase in coverage after 2012 is related to the fact that Class A1 bonds are due to mature by 2012; the supply of investors for long-term bonds is less than for short-term bonds, and also the risks are arguably greater, requiring more security. Although the scheduled payments finish after 2022, emerging surplus continues beyond that date, and would be available to service the loan if emerging surplus in earlier years had been insufficient and scheduled payments had had to be deferred.

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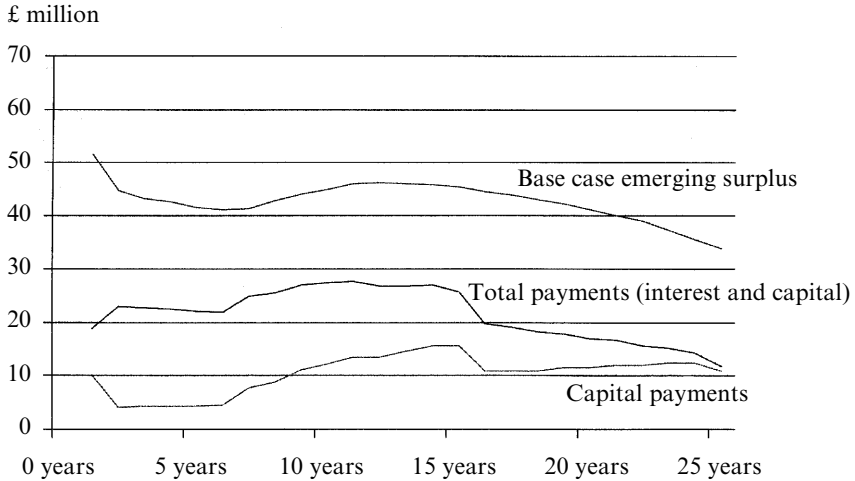


Figure 4.2. NPI securitisation; comparison of base case emerging surplus with scheduled loan interest and capital repayments

4.6 The securitised block of business consisted of some 500,000 unit-linked and unitised with-profits policies, with funds of around £4 billion. Conventional with-profits and non-profit business were not included. The non-profit business was relatively small, and was excluded for practical reasons. The conventional with-profits business posed certain technical issues that were difficult to resolve in the required timescale.

4.7 The sensitivity of emerging surplus to the principal assumptions was also examined. The effect on the discounted present value of emerging surplus is shown in Table 4.1.

Table 4.1. Discounted present value of future emerging surplus

	% of base case
Base case	100.0
Mortality + 25%	98.4
Early termination rates + 25%	92.5
Investment returns – 25%	81.0
The above mortality, early termination and investment return variations combined	74.5
Market crash – 20% fall in market values (except cash investments) in year 1 followed by recovery over the following five years	98.2
Expense inflation + 1% p.a.	96.9



It can be seen that the performance of the bond is most at risk from low investment returns and high termination rates.

4.8 As well as from emerging surplus, scheduled loan payments can be made from certain other sources:

- warranty amounts;
- adjustment event amounts;
- voluntary amounts; and
- the reserve account.

Warranty amounts reimburse the bondholders in respect of any misrepresentations that NPI may have made to them. Adjustment event amounts fulfil a similar function in relation to any inaccurate figures presented to the bondholders, for example if the projected base case emerging surplus disclosed in the offering circular provided to bondholders prior to issue was found to contain errors. Voluntary amounts are just that — NPI can voluntarily make payments, even if legally they are not due, for example if there is insufficient emerging surplus.

4.9 Since the block of business being securitised does not constitute all of NPI's business, in defining emerging surplus it is necessary to specify in detail how certain elements will be calculated during future years, such as:

- the investment return attributable to securitised unit-linked contracts (the securitised block of business being only part of the total unit-linked business of NPI);
- the investment return attributable to securitised unitised with-profits contracts;
- the expenses attributable to the securitised contracts;
- the mortality and discontinuance experience attributable to each product type;
- the basis for calculation of sterling reserves; and
- taxation.

Certain approximations or estimates are made in order to avoid an excessive volume of calculations. Expenses are defined on a per benefit basis, increasing in the future with inflation. Expenses are not linked, therefore, to actual future experience, except in relation to general inflation. The bondholders are therefore taking only a very limited expense risk, and are not exposed to NPI's actual future expense experience.

4.10 For unitised with-profits business, it was necessary to define emerging surplus for securitisation purposes. As indicated in Section 3, only a relatively small part of the total statutory surplus can be used for this purpose. Where the unitised with-profits contract can be switched to a unit-linked contract, and back again, making securitisation surplus dependent on actual surplus arising, carries the disadvantage that such switches will affect securitisation surplus, since unit-linked surplus arises in a different way to

unitised with-profits surplus. An alternative is to define securitisation surplus by reference to the unitised with-profits contract charges, together with a notional managed fund charge applied to the asset share of the contract, i.e. securitised surplus is defined as the surplus that would have arisen had the contract been a unit-linked contract, with the value of units taken as the asset shares. This was the approach adopted for the NPI securitisation. Using this definition, the amount of surplus emerging is not significantly affected by switches from the unitised with-profits fund to unit-linked funds or vice versa, which is obviously desirable. A disadvantage is that the loan liability is no longer directly dependent on actual surplus emerging, and the reserving implications of this need to be considered. Another consequence is that asset shares for this purpose have to be rigorously calculated, although this may also be the case if securitisation surplus is based on a proportion of actual surplus. These asset shares may not necessarily line up exactly with the office's asset shares used for other purposes, such as bonus declarations. For example, if non-profit surplus is periodically added to asset shares for bonus declaration purposes, it may not be appropriate to do so for securitisation purposes, and this was the approach adopted for the NPI securitisation. It should be noted that the proportion of total unitised with-profits surplus attributable to the NPI securitisation, being based solely on charges and not including investment surplus, is relatively low, as shown in Figure 4.3. The PRE issues discussed above are, therefore, capable of satisfactory resolution.

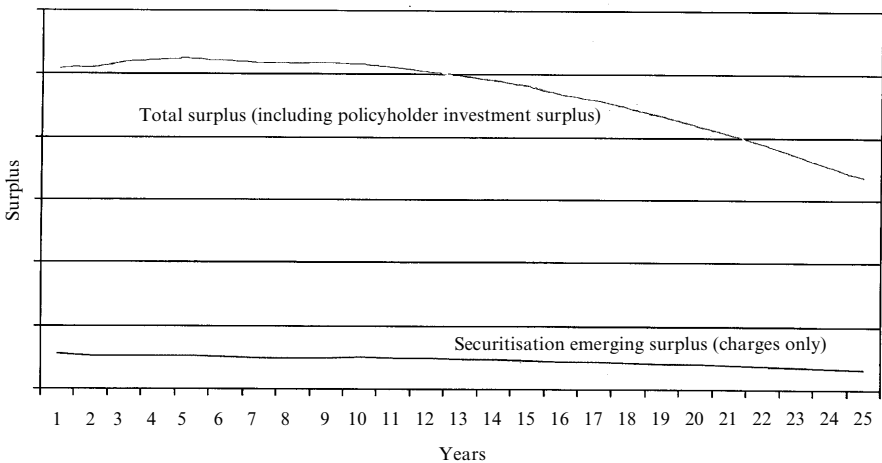


Figure 4.3. Unitised with-profits business

4.11 The basis for establishing sterling reserves for unit-linked policies in the calculation of emerging surplus was restricted so that changes from the initial basis can only be made if justified by changes in law, regulation, professional guidance, actuarial practice, or actual or expected experience (including interest rates and taxation). However, no restriction was, or could be, placed on the basis used by the Appointed Actuary in the statutory actuarial valuation. The purpose of this restriction is to prevent manipulation of emerging surplus by arbitrary changes to the statutory valuation basis (although such changes are, in any event, not allowed under U.K. insurance company legislation).

#### 4.12 *The Reserve Account*

4.12.1 The reserve account is a notional ledger account, which is drawn upon if emerging surplus and the other sources referred to above are insufficient to meet scheduled payments. At outset the reserve account balance was £40 million. If it is not drawn upon, then in normal circumstances it remains £40 million. If it is drawn upon, then it reduces by the amount drawn down. It does not accrue interest. However, it can be topped back up to £40 million in future years out of any excess of emerging surplus (and the other sources listed above) over that required to meet scheduled loan payments. Under certain adverse circumstances, which constitute a ‘trigger event’, the reserve account is topped up by all excess emerging surplus (subject to a much higher limit), even if this results in it exceeding £40 million. Ultimately, when the bondholders have received their payments in full, the reserve account is released back to NPI.

4.12.2 The reserve account can be seen as a ‘buffer’, which enables payments to continue to be made, even if there is insufficient emerging surplus available. Its main function is to provide liquidity support, so that an isolated adverse year does not give rise to default on payments to bondholders. It can be regarded as similar to a banking facility, which can be drawn upon when surplus is insufficient to meet scheduled payments, but which should then be repaid when circumstances improve. There are other ways of achieving this objective, and this aspect of the securitisation design would not necessarily be appropriate in other circumstances.

4.12.3 An alternative, which was not used for NPI’s securitisation, is to find a third party which will effectively guarantee that the payments will be met. The third party would have a higher credit rating than the insurer — typically being rated AAA. The guarantor requires a fee for providing the guarantee, but the rate of interest payable on the bond will be lower, due to the higher credit rating. Overall, the net cost to the insurer might end up higher or lower than without the guarantee, depending upon how the fee charged compares with the reduced rate of interest payable. Even if the overall cost is higher, it may be a price worth paying if the demand for the

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higher rated bond is likely to be more than with the lower rating. There are credit enhancing organisations which specialise in providing these kinds of guarantees for all kinds of businesses, not specifically just insurance. Reinsurance companies are probably best placed to fulfil this role for a life assurance securitisation, due to their greater understanding of the financial dynamics of life assurance.

### 4.13 *Calculation Confirmation Agent*

4.13.1 Under the provisions of the loan agreement there is required to be a calculation confirmation agent. The role of the calculation confirmation agent is:

- to review the amounts calculated by NPI each year, including the amount of emerging surplus, and the present value of future emerging surplus for the relevant period;
- to review the assumptions made in determining the calculated amounts; and
- to provide comfort on certain other aspects of the securitisation.

As well as providing an independent review of NPI's assumptions and calculations at the end of each year of the loan, the calculation confirmation agent also fulfilled this role at outset, giving comfort on the projections provided in the offering circular which was provided to prospective bondholders shortly before the bonds were issued. A report by the calculation confirmation agent was included in the offering circular, and is included as Appendix B. A longer report was also prepared, which was made available to the parties to the transaction, and was also made available for public viewing for a short period — though I understand that nobody actually came to see it.

4.13.2 Under the loan agreement, the calculation confirmation agent is required to confirm that the relevant amounts have been calculated in accordance with the loan agreement, and, in particular, with Schedule 5 of the agreement, which sets out the legal definition of emerging surplus. This schedule is complex, and seeks to define emerging surplus rigidly, in order to eliminate any inappropriate flexibility of interpretation.

4.13.3 Schedule 5 of the loan agreement:

- defines unit-linked and unitised with-profits emerging surplus separately;
- sets out the data items and assumptions on which calculations of emerging surplus depend;
- defines the computer model used for making the calculations (a copy of the software is held on disk as part of the loan agreement), and sets out procedures for its amendment or upgrade; and
- sets out guidance on the considerations to be taken into account in determining the underlying assumptions.

Under the loan agreement the assumptions in general have to be determined “on the basis of a reasonable estimate made in accordance with best actuarial practice and on the basis that such estimate gives equal weight to the interests of the borrower and issuer” (the borrower being NPI and the issuer being Mutual Securitisation). There is also a requirement for consistency with the previous calculation period or, for the first period, with the initial assumptions, taking into account NPI’s historic experience as well as relevant life industry trends. The calculation confirmation agent therefore has to be satisfied that the calculations have been carried out in accordance with these requirements before certifying the relevant amounts.

4.13.4 The role of calculation confirmation agent is a new one to actuaries. It has some similarities with the role carried out by actuaries providing an independent opinion on the embedded value of a life operation for financial reporting purposes. The obligations of the calculation confirmation agent are formally and precisely set out in the loan agreement and in a separate calculation confirmation agency agreement. The role is akin to that of an auditor, the main objective being to provide an independent view on whether the obligations of the loan agreement in relation to the emerging surplus and other calculations have been properly carried out by the company, and whether, where exercises of judgement are required, for example in assessing future experience assumptions, they are made in an unbiased way. The existence of the calculation confirmation agent is a protection for the bondholders, to ensure that the obligations imposed on NPI in relation to the calculations of emerging surplus are fulfilled in accordance with the loan agreement.

#### *4.14 Additional Protections for Bondholders*

4.14.1 There are certain protections for bondholders included in the loan agreement, with the objective of improving their position if NPI gets into difficulties or if the security for their payments is weakened.

4.14.2 In severe circumstances, NPI may be obligated to repay the loan in full, together with the discounted value of all of the excess future interest over the corresponding government stock (i.e. the discounted value of future payments at the corresponding government stock redemption yield, rather than the underlying yield on NPI’s bond). These circumstances include default on scheduled payments and material misrepresentation. The repayment is, therefore, on penal terms, and the bondholders will be able to achieve their required return by re-investing in government stock, at a lower level of risk.

4.14.3 Certain other adverse circumstances constitute a ‘trigger event’, and give rise to a change in the terms applicable to the bond. In these circumstances, it may be necessary for certain assets to be earmarked as collateral. The maximum level of the reserve account may be increased substantially from £40 million, thus preventing any excess surplus arising

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being released back to NPI until the bondholders have been, or are reasonably certain to be, fully repaid. The consequences will depend upon the exact combination of circumstances and are somewhat complicated. Events which would constitute a trigger event include default of obligations under the loan (or other related) agreement, mis-representation, inability to pay debts, ceasing to be authorised to carry on insurance business, certain regulatory actions, insolvency and a significant downgrade in rating from the rating agencies. In addition, there are certain tests on the amount of surplus projected to emerge in the future compared to the outstanding loan payments, and if these tests show that the coverage for the loan has been weakened below certain levels, then a trigger event will result. If the circumstances that have given rise to the trigger event are subsequently reversed, then, in some instances, the trigger event can cease to apply.

### 4.15 *Investors*

4.15.1 The bond was offered to investors by means of an offering circular, which includes a lot of detail about the arrangements and legal conditions. Drafts of the offering circular were provided to potential investors in advance and when sufficient support had been achieved, the bonds were placed. The terms and amount that can be raised depend upon market conditions at the time, and are not therefore certain until achieved.

4.15.2 What type of investors buy a bond of this type? Figures 4.4 and

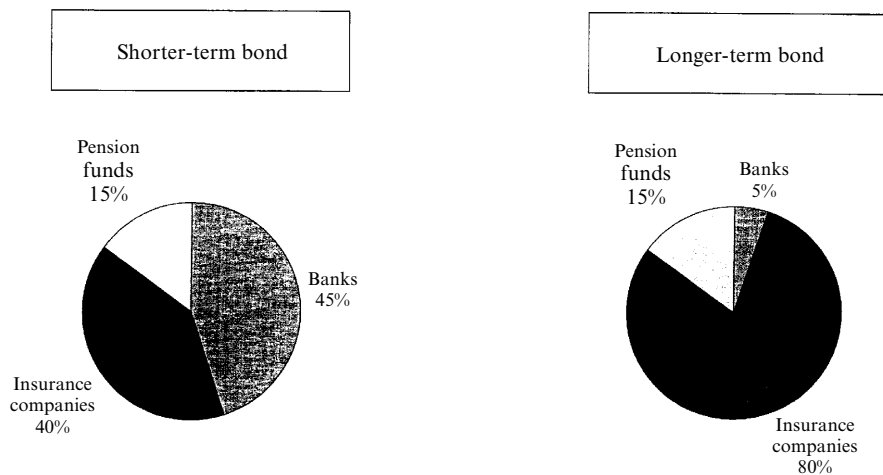


Figure 4.4. NPI securitisation; institutional distribution of investors

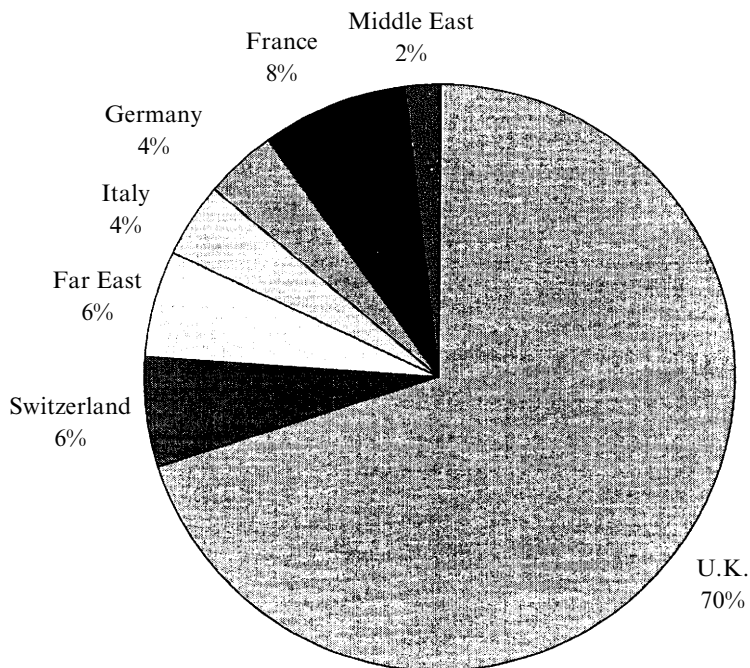


Figure 4.5. NPI securitisation; geographic distribution of investors

4.5 show the make-up of investors in NPI's bond. It can be seen that insurance companies, banks and pension funds purchased NPI's bonds, with insurance companies taking the majority of the longer-term bonds. In fact, life insurance companies were clearly in a better position than other investors to understand the risks associated with the bond. Some life companies, however, were not willing, in principle, to provide a loan to a competitor. Although the majority of investors were U.K. based, there were a significant number of overseas investors. The bonds can be traded, although, in practice, most investors are likely to hold them.

4.15.3 Where the bonds are held by other insurance companies, admissibility under the insurance companies regulations needs to be considered. The admissibility regulations are complex, and are not discussed in this paper. It was agreed with the regulators that NPI's securitised bonds were admissible, but this might not necessarily apply to another securitised bond if its characteristics were more of a derivative than of a loan nature.

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### 4.16 *Other Securitisations*

4.16.1 It is believed that, to date, NPI's securitisation of existing life business is the only example of its type worldwide. Whether life securitisation is achievable in other countries will depend on the regulatory treatment. At the time when NPI securitised part of its existing business, it was intending to remain a mutual; the securitisation loan was seen as a form of long-term capital that would aid it in that strategy. However, within a fairly short space of time NPI decided to demutualise. The securitisation loan has subsequently been carried over into the company to which NPI's business has been transferred, and can continue to the end of its term. It is, perhaps, unfortunate that the subsequent demutualisation of NPI may have given rise to a perception that obtaining a securitisation loan is a sign of financial weakness, which could discourage other companies from pursuing this route.

4.16.2 There have, however, been some transactions with similar characteristics:

- In 1998 Hannover Re arranged a facility with Interpolis Re, an Irish company and part of the Rabobank group, to assist in the financing of life acquisition expenses of up to DM100 million for European companies. Although this arrangement is a reinsurance financing arrangement, with Rabobank as the provider of capital, it was stated that ultimately the capital might be obtained from the markets by a securitisation programme.
- In 1995 Dignity Partners Inc, a U.S. company which purchases life insurance policies from terminally ill patients, raised \$50 million of securitised debt secured on cash flows arising from the purchased contracts.
- Securitisation of books of existing mortgage business has been quite common amongst banks and building societies. This represents a comparable form of lending secured on future cash flows arising from a financial product.
- A number of securitisation transactions involving non-life risks have taken place. Catastrophe bonds have been issued, where the performance of the bond depends upon external indices, and arrangements have also been developed linked to the performance of a particular insurance portfolio.

## 5. ACTUARIAL ISSUES ARISING FROM NPI'S SECURITISATION

5.1 Securitisation and financing of life business give rise to a substantial number of issues of an actuarial nature:

- consideration of feasibility and comparison of alternatives;
- determination of terms, including the repayment structure;



- asset allocation of with-profits business;
- regulation;
- emerging surplus definition, assumptions and calculations;
- the role of the calculation confirmation agent;
- actuarial reserving; and
- PRE.

Some of these issues have been covered earlier in the paper. The remaining issues will be discussed in this section, mainly in the context of securitisation, although a number of the issues are general.

5.2 Consideration of the financial impact of the financing and comparison with alternatives involve standard actuarial techniques, and are not discussed further. However, it is perhaps worth observing that the organisations involved with the various options inevitably are likely to present the alternative which is beneficial to them in the most favourable light, and obtaining an objective view of the relevant merits and disadvantages of each alternative is not always straightforward.

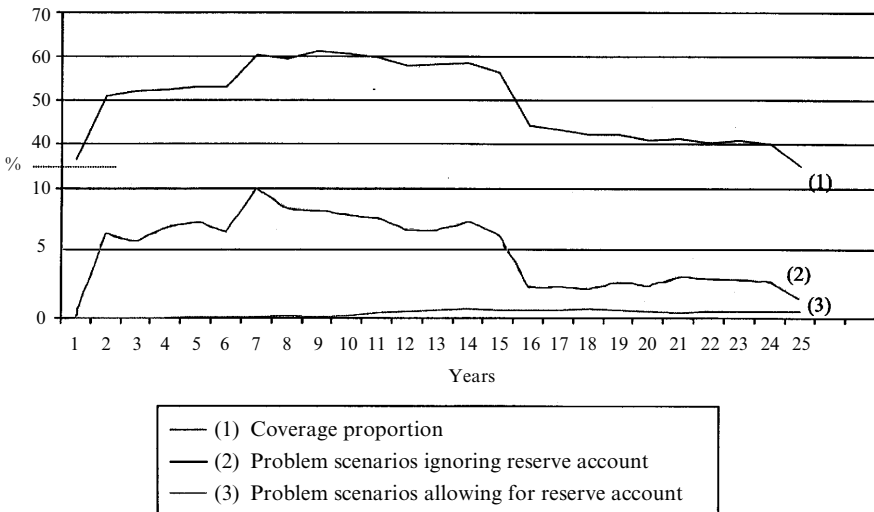
5.3 Where capital is being raised to increase investment flexibility, then it is necessary to demonstrate that the additional cost of the capital is likely to be outweighed by the potential benefit to policyholders. Again, standard actuarial techniques — deterministic or stochastic — can be used to demonstrate the range of possibilities in relation to with-profits asset allocation and the potential investment outcomes. With-profits funds are relatively weak on a statutory basis when compared with the past. However, the proportion of business with limited guarantees will increase in the future, and, if investment conditions are favourable, then the position may improve. There may, therefore, be a good case to be made for temporary capital support. Future projections are required in order to examine the issue and to try to optimise returns to policyholders.

#### *5.4 Design of the Repayment Structure*

5.4.1 Where financing is repayable out of annual surplus, as for NPI's securitisation, the repayment structure needs to be designed so that the maximum loan can be obtained on acceptable terms and the risk of default is minimised. The schedule of loan repayments over the period of the loan should be structured so that the risk of payments failing to be met in individual years is low and, to some extent, reasonably uniform. However, management, the rating agencies and the advisors will be particularly concerned that no difficulties emerge in the relatively short term. For NPI's securitisation, this involved a trial and error process of adjusting both the maximum amount of the reserve account and the scheduled payments year-by-year over the 25-year term. The assumptions were then 'stress-tested', in order to examine how the repayment of the bond is affected under different scenarios of investment, lapse and mortality experience.

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5.4.2 For NPI's portfolio the most significant items of experience were investment performance and lapse experience. Stochastic asset modelling was used to examine the investment circumstances under which surplus would be insufficient to meet the scheduled payments, and the scheduled payments and the amount of the reserve account were adjusted in order to try to minimise the numbers of occasions where there were shortfalls in particular years, and the amounts of the shortfalls. For a given level of reserve account, the objective was to optimise the structure and minimise the number of problem scenarios that arose under the stochastic modelling.



### Notes:

- 1 Line (1) shows the ratio of scheduled loan payments to projected emerging surplus on base case assumptions.
- 2 Line (2) shows the proportion of scenarios under the stochastic modelling in which emerging surplus is insufficient to meet scheduled payments for each year, if there is no reserve account (excluding any deferred payments brought forward from previous periods).
- 3 Line (3) is as for line (2), except that the reserve account (as calculated for each stochastic projection) and any deferred payments from previous periods are taken into account.

Figure 5.1. NPI securitisation; stochastic asset model results

5.4.3 Figure 5.1 illustrates the type of results that can be obtained using stochastic modelling and shows:

- the ratio of scheduled payments to emerging surplus, on the central base case assumptions;

- the proportion of problem scenarios each year (i.e. those in which emerging surplus in a year is insufficient to meet scheduled payments), if the ability to draw upon the reserve account is ignored; and
- the proportion of problem scenarios each year, taking into account the reserve account and any past shortfalls (i.e. if emerging surplus in a year is sufficient to meet that year's scheduled payments, but not shortfalls brought forward from previous years, then that constitutes a problem scenario).

As well as the number of problem scenarios, the amount of shortfall each year for each problem scenario was also considered and taken into account in structuring the repayments. By examining the results for different structures, the design can be improved to reduce the likelihood of deferment or default of scheduled payments.

5.4.4 Stochastic asset and liability modelling is arguably the best way to develop the design of the repayment profile and reserve account, as it is not obvious in advance what type of scenarios are likely to jeopardise the bondholder's payments to the greatest extent, and thereby lead to deferral or loss. As stochastic modelling incorporates a full range of future investment scenarios, the adverse scenarios are automatically examined, whereas using a deterministic approach runs the risk of failing to identify the worst conditions.

## 5.5 *Rating Agencies*

5.5.1 Stochastic modelling was used in the initial design of the repayment structure. However, the rating agencies — Standard & Poor's and Moody's — used their own separate stress tests, on a deterministic basis, in order to satisfy themselves on the likely performance of the bond under adverse conditions. They looked at how the bond would have performed had investment conditions mirrored various historic periods, and also examined how it would perform under a range of future investment and other conditions. The structure of the bond was further modified in the light of the views of the rating agencies. Achieving the optimal rating is important, in order to minimise the rate of interest payable and to ensure the widest market for the bonds. Minimising the risk of default of the bond is, therefore, of paramount importance. The success of the bond depends upon achieving, and continuing to achieve after issue, an acceptable rating from the rating agencies.

5.5.2 For a securitisation other than for a life company, a rating can be obtained for the SPV which is not dependent upon the primary company's rating. It is possible to divert cash flows to the SPV, for example by assignment, which would otherwise go to the primary company, thereby separating the security of the SPV from the primary company. However, assignment of premiums or other income is not possible for a life operation. The regulators will not allow premiums or other cash flows to be diverted

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in this way, as it would undermine the security to policyholders. In consequence, unless there is a guarantee from a third party, the rating of the SPV is closely linked to that of the primary life company.

### 5.6 *Reserving Issues*

5.6.1 In principle, if the loan payments are payable out of actual surplus emerging, no reserving issues would arise. A payment of interest or capital would only be made if future surplus arose; hence no actuarial investigations would need to be carried out and no additional reserves would need to be held by the Appointed Actuary. In practice, lenders are unlikely to be prepared to undertake all the risks inherent in existing business. There are a number of areas where emerging surplus for the NPI securitisation differs from actual surplus:

- expense assumptions are fixed per benefit at outset, increasing with inflation, and independent of the actual expenses incurred by NPI;
- unitised with-profits emerging surplus is calculated as if the business was unit-linked, with a fund management charge based on asset shares;
- there are restrictions on the changes that can be made to the sterling reserve basis used to calculate securitisation surplus (but not to the actual sterling reserve basis for the statutory actuarial valuation);
- securitisation unit-linked emerging surplus is always based on an offer pricing basis; and
- securitisation definitions of emerging surplus involve a number of approximations.

5.6.2 The implication of these areas for reserving needs to be considered. The approximations are unbiased, and no explicit account needs to be taken of them, except, perhaps, in the margin taken for prudence. The other areas can all give rise to additional reserves. Whereas the expense assumptions initially reflected actual levels of maintenance expenses, if these assumptions ultimately become lower than actual experience then additional reserves may need to be held, since a liability for payments under the securitisation can occur without there being any surplus to meet it.

5.6.3 Where actual surplus and securitisation emerging surplus differ, then it is necessary to project the securitisation payments on the statutory valuation basis and allow for the projected payments in calculating reserves. For example, for sterling reserves it is necessary to allow in the valuation projections for any item of outgo to bondholders which will arise on the valuation assumptions. If valuation expense assumptions are greater than securitisation expense assumptions, then account needs to be taken of this difference in the valuation cash flows. Similarly for unitised with-profits business, if a liability to bondholders will occur under the valuation

assumptions, then reserves need to be held to meet this liability. Clearly, it is very much more straightforward to avoid this situation by lining up actual and securitisation surplus, but this may require the lenders to accept risks that they are unwilling to take.

### *5.7 Reserving for the Reserve Account*

5.7.1 The reserve account raises its own particular reserving issues. It constitutes a notional account, initially of £40 million for the NPI securitisation, which is drawn upon if emerging surplus proves inadequate. It represents the minimum amount that bondholders will definitely receive. If no future emerging surplus arises, bondholders will still receive £40 million of payments. The most conservative treatment is, therefore, to reserve for £40 million in full, or perhaps slightly reduced to reflect the short period over which it would be paid out in these extreme circumstances, and for any relief of tax.

5.7.2 However, a less cautious approach can be argued as prudent. At outset on a best estimate basis, future loan payments will be met from future emerging surplus, and the reserve account will not be drawn upon at all. On a 'true and fair' approach, rather than on a conservative valuation approach, no provision would be required. Projections on the statutory valuation basis, ignoring early terminations and assuming lower future investment returns, may show that the future loan payments are still covered by projected emerging surplus. Alternatively, projections might show that on the valuation basis the reserve account might be drawn upon to a partial extent many years in the future. In order to determine an appropriate level of reserve, projections might be carried out on the valuation basis:

- ignoring terminations;
- allowing for a prudent level of terminations; and
- assuming all contracts surrender immediately.

The projections would indicate to what extent, and when, the reserve account would be drawn upon on these assumptions. It would be necessary to apportion any liability arising from the reserve account to the underlying contracts, in order to establish the level of reserves that would need to be held. In the light of these calculations a prudent reserve would be established, which could in some circumstances be less than the full amount of the reserve account. In particular, if, for unitised with-profits business, the basic reserve held is higher than would be payable if all contracts surrender immediately, or if there are other reserves released which are not included in securitisation emerging surplus (e.g. resilience), then some offset to the liability for the reserve account would be available from the excess of the reserves released over surrender values payable.

5.7.3 Although the above reserving issues are specific to the particular structure of the NPI securitisation, there is a more general issue about the

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allowance that should be made for early policy discontinuances when establishing reserves. Under U.K. and European legislation, prudent assumptions are required to be made, including provision for adverse deviation. Also under U.K. and European legislation, there is a requirement that individual policy reserves be at least equal to any minimum guaranteed surrender value. Under U.K. legislation (Regulation 74 of the Insurance Companies Regulations 1994), allowance must not be made in the valuation for voluntary discontinuance if the amount of liability would be reduced. If the liability would be increased by voluntary discontinuance, then the overriding requirement for prudent assumptions makes it necessary for some allowance to be made. It would not seem to be required, or desirable, for an unrealistically extreme assumption to be made, such as immediate total surrender of the whole portfolio of contracts. Nonetheless it would be appropriate to test that there would be sufficient reserves to meet outgo in these circumstances, taking into account any other reserves released, such as resilience reserves, and the ability of the company to take fairly drastic measures under these extreme conditions. As for other actuarial assumptions, an allowance based on best estimate discontinuance assumptions, together with a prudent allowance for adverse deviations, would appear to be reasonable and consistent with both the spirit and the letter of the legislation.

#### 5.8 *Systems*

At a practical level, systems and procedures for making the required calculations need to be developed to a high level of reliability, comparable to the level required for embedded value or achieved profits for the accounts of a public quoted company. If the systems are not already in place, there may be a considerable amount of work required in order to achieve this requirement. The systems will need to be maintained for a long time, in view of the commitment to carry out the calculations periodically — 25 years or more for NPI.

## 6. OTHER FORMS OF FINANCE

6.1 Securitisation of existing business is one means of raising capital to support life business. In this section other options are discussed.

#### 6.2 *Loans Secured on the Embedded Value*

6.2.1 Reinsurance finance and contingent debt from a bank, holding company or other financial institution can be structured to achieve a similar effect to securitisation of the embedded value. Where the underlying structure is similar, comparisons of cost between the alternatives will be one of the main factors in determining the relative attractiveness. Securitisation is

likely to involve greater administrative costs, both initial and ongoing, but, for larger loans (for example in excess of £100 million), the interest rate payable is likely to be lower. Securitisation also is likely to take longer to develop, involves greater disclosure, and is not as flexible as the alternatives. If it is desirable to change the terms, this is much easier to achieve by renegotiating with reinsurers or banks than by trying to do so with securitisation bondholders.

6.2.2 Reinsurers and banks, typically, are only prepared to take into account a limited number of years of future surplus — perhaps no more than ten — whereas NPI's loan takes into account 25 years of surplus. In principle, therefore, where surplus emerges over the long term the amount of loan obtainable from securitisation may be expected to exceed that available from the alternatives. In practice, reinsurers and banks may be prepared to lend a similar overall amount to that available under securitisation, by lending a higher proportion on fewer years of surplus. They may also require the loan to be repaid more quickly, although if all goes well they may subsequently be quite happy to extend the terms.

6.2.3 Reinsurance finance is, in general, more flexible than a securitised loan. The business to be reinsured and the incidence can be varied. Legally it is likely to take the form of a reinsurance of liabilities, which are recaptured as surplus emerges, rather than a loan.

### 6.3 *Capital Support*

6.3.1 Scottish Amicable's initial demutualisation proposals included £350 million of reinsurance financing secured on the future profits from existing business. However, these initial proposals were superseded in 1997 by an offer from Prudential Assurance which included capital support, initially of £1.3 billion. This is provided from a separate account within Prudential's long-term fund. The Scottish Amicable business was transferred into a separate sub-fund of Prudential. The charge for this capital support is 1% p.a. The capital support represents a comparatively new form of finance, effectively provided by the with-profits fund of the acquiring company, Prudential Assurance. The scheme of transfer set out the terms under which the amount of capital support available in the future is determined, the applicable charges, and the conditions under which it is drawn upon and, if appropriate, subsequently repaid. Principles of financial management were included, which gave guidance on the investment and bonus policy, and on the policy for smoothing payouts. The risk taken by the capital support is not directly related to future surplus, but is that the with-profits fund proves insufficient to support the ultimate liabilities.

6.3.2 Clearly the possibility of a with-profits fund being unable to meet its liabilities is very dependent upon the investment and bonus strategy adopted. In consequence, the principles of financial management are key to the arrangement. Under these principles, the bonus and investment policies

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of the Scottish Amicable with-profits sub-fund are determined as if the capital support represented free assets of that sub-fund. The investment policy is to be substantially the same as for other long-term Prudential funds, having regard to the nature of the liabilities. It provides for the maximum equity backing ratio possible, subject to such constraints as are necessary to reduce the risk of statutory solvency to a similar level to other long-term Prudential funds, except that the capital support is to be ignored to the extent that it permits a higher equity backing ratio than the greater of that of the other long-term Prudential funds and 85%.

6.3.3 The bonus policy is to be determined as if the capital support represents free assets of the Scottish Amicable sub-fund, and so as to distribute all the assets of the sub-fund (but not including the capital support). It should aim to distribute surplus assets as a uniform percentage enhancement to projected claim values (subject to adjustment for policies in force for less than ten years). There is also a requirement to smooth payouts consistent with the investment policy, and the need to reduce to acceptable levels (determined on bases and assumptions no more cautious than apply to the other long-term Prudential funds) the expected cost of the smoothing policy. Payouts are to be targeted at 100% of asset shares plus the enhancement for surplus assets. A smoothing account is maintained, which represents the excess of claim payments over asset shares, excluding the enhancement for surplus assets. The charge for smoothing is determined as a percentage of asset shares, and is levied against, or credited to, asset shares, and is credited or debited to the smoothing account. The smoothing charge is determined with the objective of eliminating any deficit or surplus on the smoothing account over the future lifetime of the policies, but subject to a maximum charge, determined at outset, such that the expected cost to the other long-term Prudential funds is equal to the greater of the present value of:

- 75% of the fees payable by the Scottish Amicable sub-fund in respect of the capital support, less the expected cost to other Prudential funds of any restrictions on investment freedom arising from the capital support; or
- 35% of the fees payable for capital support.

Once the Scottish Amicable sub-fund falls below a certain minimum size, the requirement to maintain a sub-fund ceases, subject to certain conditions.

6.3.4 This arrangement represents one of the most sophisticated and comprehensive attempts to define the future financial management principles of a with-profits fund. Although, inevitably, there remains considerable discretion, there are very specific requirements on future management of the Scottish Amicable sub-fund. Some of the requirements can only be addressed by actuarial investigations, possibly incorporating stochastic asset and liability modelling. An independent monitoring actuary is specifically required under the scheme, in order to ensure that the requirements are met.



6.3.5 Capital support of this type from another with-profits fund is, however, of relatively limited application. It is only available where a company has a strong with-profits fund, and considers that it is an appropriate use of the excess assets to provide long-term capital support to another group of with-profits policyholders.

6.3.6 Another example of this form of capital support occurred when, in 1999, NPI demutualised, and made use of capital support of £800 million from AMP, at a charge of 1.75% p.a. Initially the capital support is in the shareholders' funds of National Provident Life, the company to which the existing business of NPI has been transferred. No new business (other than that associated with the existing business) is to be written in National Provident Life. Again the scheme of transfer sets out the terms of the capital support, and includes principles of financial management. If a deficit arises, or there are insufficient assets to meet PRE, as determined by the Appointed Actuary, then the deficit is met either from a transfer of shareholder assets or by a contingent loan. The investment and bonus policies are determined as if the capital support represents free assets of NPI's transferred with-profits fund, and are subject to PRE, as modified by the scheme. Reversionary bonuses, however, are determined ignoring the capital support. Payouts are targeted at 100% of asset shares, with the objective that surplus assets (but not the capital support) are distributed over the remaining life of the policies. A smoothing account is maintained.

6.3.7 It should be noted that, where the terms for capital support are determined by means of a scheme of transfer under a demutualisation, they are not necessarily directly comparable with arms length transactions; they are just one part of the overall transaction.

6.3.8 The acquisition of Scottish Widows by Lloyds TSB in 1999 extended the principle of capital support provided by shareholder capital. As part of the demutualisation arrangements, Lloyds TSB acquired around £3 billion of free assets of Scottish Widows, at slightly less than face value; some of these assets are to be used as capital support for the Scottish Widows with-profits fund. Initially the capital support, which is retained in the non-profit fund, consists of 10% of asset shares, although there is provision for further support under certain adverse operating circumstances. There is no explicit charge for the capital support, although the acquisition of the assets at slightly less than face value might be regarded as providing some recompense to shareholders. If the Scottish Widows with-profits sub-fund becomes statutorily insolvent, then the capital support can be made available on a contingent basis. If, however, the Scottish Widows Appointed Actuary determines that there are insufficient assets to meet PRE, then assets are transferred into the with-profits sub-fund, to be repaid ultimately if and when the situation reverses. Again, principles of financial management are set out in the scheme.

6.3.9 In the above examples there are a number of common elements to

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the different principles of financial management — payouts based on asset shares plus enhancement, smoothing, capital support — but the details vary. In particular, there are different approaches as to how far to predetermine the action to be taken in certain circumstances, and how much to rely on actuarial judgement at the time, for example in relation to smoothing and PRE. There is a dilemma between trying to be very specific, with the danger that what is prescribed becomes inappropriate, and being very general, and running the risk that the range of possible interpretation is too wide. There is also a danger that failure to be too specific on the principles to be adopted for smoothing bonus and investment policy could lead to a conflict between the interests of the providers of the capital support and policyholders. This will be most acute if, as the policies mature, key decisions have to be taken between significant reductions in bonus rates and the risk that part of the capital support will be irrevocably required to support policyholders' benefits. PRE is an ill-defined concept — particularly in adverse circumstances for which there is no precedent. To leave too much discretion in these areas may place the Appointed Actuary in an invidious position when difficult decisions have to be taken.

#### 6.4 *Contingent Debt*

6.4.1 Contingent debt can also be structured in a variety of forms. Instead of the repayment being contingent on surplus emerging, it can be contingent on a given level of free assets. For example, a loan can be provided from a holding company to a life company subsidiary, under which interest and capital repayments are only made while the free assets exceed a certain level. The contingent debt could therefore not count as a liability while the assets are below the trigger level. Care needs to be taken to ensure that such a loan has the required regulatory treatment.

6.4.2 When AMP transferred its U.K. business, which included the London Life Fund, to London Life Managed Funds, in 1997, there would have been a deficit in some of the sub-funds created. A contingent loan was therefore to be made available by AMP (U.K.) Holdings in order to meet the shortfall. The interest payable under the loan was equal to that available on a five-year government stock for the first five years, followed by three month LIBOR thereafter. No repayment of principal could be made for five years, and no payment of principal or interest could be made:

- if the relevant sub-fund had any outstanding inter-fund loans;
- if there were insufficient assets in the sub-fund to meet the sum of the expected future value of transfers to the shareholders' fund and the greater of the value of the statutory liabilities of the sub-fund and the amount necessary to meet PRE; or
- unless the company, as a whole, had sufficient assets to meet liabilities, solvency margin and PRE, under "a range of investment conditions deemed to be reasonably foreseeable" by the actuary.

6.4.3 The regulators can have concerns about any intra-fund arrangements, such as capital support or contingent debts, unless they are part of a scheme of transfer, on the grounds that, otherwise, there is no contractual or other obligation. An intra-fund arrangement of this type is not an agreement between two parties, but is an internal arrangement within one company, and has no legal status unless it is part of a scheme of transfer.

## 6.5 *Other Reinsurance Options*

6.5.1 Reinsurers have offered financial reinsurance in a variety of forms, including:

- original terms reinsurance, with the payment of high initial commissions and relief of solvency margin requirements; and
- deficit financing, where a short-term loan is repayable out of future surplus, generally from short-term cash flows, such as front-end loads.

6.5.2 More recently, a new form of financial reinsurance has been developed, of particular relevance for with-profits business. Under this form of reinsurance the reinsurer assumes the liability on a 'stop-loss' basis for an amount in respect of the claims arising for a portfolio of business. For example, for a portfolio with valuation reserves of £5,000 million, maturing over 30 years, the reinsurer might assume liabilities of £200 million. In consequence, the insurer's liability is reduced by £200 million. If no future surplus emerges, and experience is in accordance with the valuation assumptions, then the reinsurer will pay for the final £200 million of liabilities, i.e. when the company's current valuation reserves have been exhausted. However, provided that surplus emerges from the portfolio, the reinsurer's liability will be reduced each year by a recapture of the reinsurance. For this purpose, surplus must be defined as the excess of surplus over the surplus already anticipated in bonus loadings within the net premium valuation, since allowance is already made for this surplus in the statutory actuarial valuation. The reinsurer makes a charge for taking the risk. The reinsurance is usually with an overseas reinsurance company, subject to less onerous reserving requirements than those applying in the U.K.

6.5.3 The reinsurance is effective, because, on the valuation basis, the liability will be met by the reinsurer. In consequence, the insurer's liabilities are reduced. On a realistic assessment, however, surplus is likely to arise which will extinguish the liability, so that the cost of the reinsurance can be relatively low. There is a limited supply of this form of reinsurance, both in terms of the number of reinsurers prepared to offer the facility and the amount of cover available. The counterparty risk with the reinsurer needs to be taken into account; in the event of the reinsurer's insolvency the reserve relief would disappear.

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6.5.4 These arrangements can be put in place quite quickly. Some modelling will be required, often deterministic if the required timescale is short. The documentation, while it is still somewhat complex, is much less extensive than for a securitisation.

6.5.5 The PRE issues referred to in Section 3 need to be considered; it is likely that the maximum amount of reinsurance that a reinsurer will be prepared to offer will be a relatively low proportion of the present value of future surplus, and, provided that the reinsurance reduction each year is not too rapid — typically, the expected duration of the reinsurance will be at least ten years — the arrangement can be structured so that it is satisfactory in this respect.

6.5.6 Another possible use of reinsurance is to reduce the amount of the reserves held to meet adverse market movements — the resilience reserve. One example of this type of arrangement is contingent reinsurance financing, where the reinsurer agrees to provide financing if the market moves adversely, for example on a 20% fall in the FTSE All Share Index. The financing is not provided at outset, but an agreement is put in place for it to be provided automatically if the relevant event occurs. If structured properly, the Appointed Actuary will be able to allow for this finance in resilience reserve calculations, thereby decreasing the amount of reserves held. A further variation is for the reinsurer to provide a general option for the insurer to receive reinsurance financing, which is not dependent on any contingency.

### 6.6 *Other Aspects*

6.6.1 All of these financing arrangements are inevitably somewhat complex, and the insurance company regulations need to be studied in detail, in order to be sure that the arrangement is effective.

6.6.2 The tax treatment of the different arrangements can be quite complicated. The implications need to be taken into account and specialist tax advice obtained. Interest payable will normally be deductible from interest receivable; hence, for life business, the interest cost may effectively be net of tax relief. Reinsurance arrangements can sometimes be structured to reduce the liabilities for life rather than for pension business, and, in consequence, can reduce taxable income apportioned to life business, and thereby generate a tax benefit. While tax issues will not normally be a major consideration in determining which option to select, structuring the arrangement in the most tax efficient way is desirable.

6.6.3 Whereas a securitisation loan will provide cash proceeds which will need to be invested, the other forms of finance do not necessarily involve the transfer of cash, but may result in a reduction in liabilities or, alternatively, a paper asset. Where cash is not provided, a deposit back arrangement may be required, in order to reduce counterparty risks.

6.6.4 The options discussed so far in this section are all effectively

secured on the future profits expected to arise from existing business. Rather than obtaining finance secured on the embedded value of existing business, a company can consider raising capital by selling blocks of business. The business would be transferred to the acquiring company by means of a Court scheme of transfer. This is not particularly common in the U.K., as the demand for such business is limited to a few specialist companies, and the capacity is not very large. In addition, companies continuing to sell new business are not usually keen to give part of their customer base to another company.

6.6.5 There are, of course, many other ways that a life insurer can improve its capital management. These are not discussed in this paper, but would include:

- the use of derivatives, for protection against market falls or guarantees;
- improved asset/liability management, and potential consequent release of reserves;
- securitisation or sale and leaseback of property, in order to limit exposure or to avoid admissibility issues;
- sale of inadmissible assets, including debts due from agents, to another company;
- new product design; and
- changes in bonus policy.

## 7. CONCLUSION

7.1 During the course of NPI's securitisation, a range of issues arose which it seemed would be of interest to a wider audience and could usefully be recorded and debated. The objectives of this paper have been to set out details of various forms of capital support available to life insurers and, in particular, the securitisation of NPI's life business, and also to provide an opportunity for discussion on the various issues that arise from these arrangements, including:

- the merits of the different options, and their interaction with solvency and reserving requirements;
- the professional issues raised for actuaries involved with these forms of finance;
- the implications for policyholders and their interests; and
- the technical reserving issues.

7.2 Various factors have made it difficult for U.K. companies to continue to offer with-profits contracts on attractive terms — competition, regulation, the impact of guarantees, a generally hostile press, and scarcity of capital being some of the more significant. The regulatory regime places a much lower value on future available profits arising from with-profits business than do commercial entities, such as banks, reinsurers or the market. With-

profits companies can, therefore, improve their management of capital by arrangements with these commercial entities. Whereas one would expect the regulatory regime to be more cautious than commercial organisations in placing a value on assets, if the gap between the two is unreasonably large, this imposes a cost on life companies and ultimately to policyholders in effecting these financing arrangements. It could be argued that the regulatory burden on this type of business is currently excessive, and does not recognise the ability of companies to manage their with-profits business in a radical way if conditions become very adverse.

7.3 The various forms of financing and capital support that have been developed to date for life assurance business have mainly been concerned with the provision of additional capital, rather than with transferring risk to the provider of capital. This, in general, reflects the requirements of life assurers, whose principal motivation has not been to reduce risk by these means. This contrasts with non-life business, where transfer of risk has been a more significant consideration. Nonetheless, life companies do assume a wide range of risks — mortality, investment, policy discontinuance, expenses — and it will be interesting to see if there are any developments in this direction. One possibility is immediate annuity business. This business is capital intensive, and there is potentially a limited capacity for absorbing mortality risk. There are a limited number of companies offering such contracts. Reinsurers are not very keen on accepting longevity risk. Raising capital from the market may be a possible solution.

7.4 NPI's securitisation of the embedded value of its life business was a ground-breaking transaction, which has not yet had a successor, although there has been a lot of interest, both in the U.K. and Europe. There may be a number of reasons for this; for example, concerns that securitisation may be seen as a sign of financial weakness, a preference for lower profile solutions with a shorter timescale, or a need for capital support rather than cash. Nonetheless, securitisation can represent an attractive long-term financing option in the right circumstances. The pressures on life companies to use capital more efficiently in future are unlikely to decrease. We can look forward to seeing further developments providing new and ever more innovative ways of addressing the financial issues facing the life assurance industry.

## REFERENCES

- FINANCIAL SERVICES AUTHORITY INSURANCE DIVISION. Prudential Guidance Note 1994/1-Hybrid capital: admissibility for solvency.
- MUTUAL SECURITISATION — offering circular for issue of limited recourse bonds.
- SCOTTISH AMICABLE — demutualisation and transfer policyholder circular and Court scheme.
- NATIONAL PROVIDENT INSTITUTION — demutualisation and transfer policyholder circular and Court scheme.
- SCOTTISH WIDOWS — demutualisation and transfer policyholder circular and Court scheme.

## APPENDIX A

### EUROPEAN UNION SOLVENCY MARGIN REQUIREMENTS: AVAILABLE ASSETS

#### A.1 *Minimum Solvency Margin*

A.1.1 Article 18 of the E.C. First Life Directive requires a life operation to establish a minimum solvency margin, representing the excess of assets over liabilities. For this purpose assets can include:

- paid-up share capital;
- half of unpaid share capital, provided that at least 25% has been made paid-up (although this is not available to new U.K. companies);
- for mutuals only, members' accounts, subject to certain conditions;
- cumulative preferential share capital and subordinated debt, subject to certain restrictions on the amount and form it can take;
- accumulated profits and free reserves; and
- an allowance for future profits, zillmerisation or hidden reserves, by means of an implicit item.

A.2 The amount of minimum solvency margin, and the assets that can be used to meet the solvency margin, are currently under review by the E.C. At present it is expected that no major changes will be made to the current requirements for life business, although there is debate over whether the allowance for future profits should be continued. However, a further, more radical, review may then take place.

A.3 The conditions applicable to members' accounts, preferential share capital and subordinated debt are to ensure that the capital can be regarded as core capital which cannot readily be repaid when it is needed. Details of the U.K. requirements are set out in Prudential Guidance Note 1994/1 issued by the DTI.

A.4 Subordinated members' accounts are loans made to a mutual by its members, which are subject to certain conditions:

- the subordination is to all creditors of the mutual;
- no payments of interest or capital can be made if this would cause the required margin of solvency to be breached; and
- the memorandum and articles of association must stipulate that the regulators be notified at least one month prior to any proposed payment, except in respect of individual termination of membership, and no amendments to the memorandum and articles can be made without HM Treasury approval.

Subordinated members' accounts have not been utilised within the U.K.

A.5 Similarly, cumulative preferential share capital or subordinated debt — ‘hybrid capital’ — must be subject to comparable conditions:

- payment and rights on winding up must be subordinate to other creditors;
- there must be no rights of set off; and
- the loan must not constitute a liability of the long-term fund of the insurer.

Undated hybrid capital meeting these conditions can be ignored as a liability up to 50% of the required margin of solvency, while the maximum for dated hybrid capital is 25%. In consequence, a company can meet up to one-half of its required margin of solvency from subordinated loans.

A.6 Future profits expected to arise from business in force generally constitutes a hidden asset for regulatory purposes. The value of those future profits is not reflected as an asset or as a reduction in liabilities. However, on application under Section 68 of the Insurance Companies Act 1982, account can be taken in the U.K. of implicit items in respect of future profits, zillmerisation of acquisition costs or hidden reserves.



APPENDIX B  
NPI SECURITISATION  
ACTUARIES' REPORT

7 April 1998

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Dear Sirs

Terms used in this letter have the same meaning as the terms defined in the offering circular dated 7 April 1998 (the "Offering Circular") of which this report forms part.

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### *Introduction*

- 1 It is proposed that Mutual Securitisation p.l.c. (the “Issuer”) issues £140,000,000 Class A1 Bonds and £120,000,000 Class A2 Bonds and that the Issuer makes a Class A1 Advance of £140,000,000 and a Class A2 Advance of £120,000,000 to National Provident Institution (“NPI”) pursuant to the Loan Agreement. Payments of interest and repayments of principal on the Bonds are payable out of payments of interest and repayments of principal on the Initial Advances; interest and principal on the Initial Advances are financed from the surplus emerging, as calculated in accordance with the Loan Agreement, from the Securitised Block, being a portfolio of NPI’s unitised with profit, capital account and unit-linked business in force at 4 July 1997. We have been asked by the Issuer, NPI and SBC Warburg Dillon Read to report on certain aspects of the proposed transaction, and in particular:
  - the Base Case Assumptions used to project the Future Emerging Surplus in respect of each Calculation Period and the Aggregate Emerging Surplus which will be available to fund scheduled interest and principal payments and the relationship between the Base Case Assumptions and any relevant historical experience, in particular for rates of discontinuance and mortality;
  - the projections showing Future Emerging Surplus, Aggregate Emerging Surplus and certain components of them in respect of the Securitised Block for each Calculation Period using the Base Case Assumptions;
  - the additional projections showing the effect on the Aggregate Emerging Surplus and on certain coverage ratios of different investment scenarios and variations in other Base Case Assumptions; and
  - the methods and bases used for the calculation of statutory reserves for the Securitised Block in the published statutory actuarial valuation of NPI as at 31 December 1996 and for the calculation of statutory reserves as at 4 July 1997 for the purpose of projecting Future Emerging Surplus.

### *Emerging Surplus*

- 2 A summary of the transaction and details of the Securitised Block are set out in the sections of the Offering Circular headed “Transaction Summary”, “Summary of principal documents” and “Description of the Securitised Block” and further details are included in the Loan Agreement. In addition, a description of Emerging Surplus is included in the Offering Circular and the legal definition of Emerging Surplus is set out in Schedule 5 to the Loan Agreement.
- 3 Projections of Future Emerging Surplus and certain components of it, made on the Base Case Assumptions and otherwise in accordance with

the Loan Agreement, are set out on pages 63 to 70 (inclusive) and in Appendix 2 of the Offering Circular. In addition, a sensitivity analysis has been carried out by varying certain of the Base Case Assumptions as described in the section headed “Sensitivity analysis and coverage ratios” in the Offering Circular, and the effect of the relevant variations on the projection of Aggregate Emerging Surplus and certain coverage ratios is shown in that section.

*Opinion*

- 4 We have reviewed the Base Case Assumptions used by NPI in making projections of Future Emerging Surplus, Aggregate Emerging Surplus and certain components of them, as detailed on pages 64 to 70 (inclusive) of the Offering Circular, having regard to NPI’s recent experience, to economic conditions and to our knowledge of the U.K. life insurance industry. In the light of our work (including our review of the relationship between the Base Case Assumptions and the historical experience of NPI and such other matters as are appropriate) we consider that the Base Case Assumptions are reasonable as at 4 July 1997 and have been made in accordance with best actuarial practice.
- 5 In this context, it should be noted that investment conditions have changed since 4 July 1997. In particular, gilt and fixed interest yields are lower now than at 4 July 1997, and actual equity capital gains for the period to date are likely to have exceeded the assumed rate of capital gains. Changes in gilt yields do not affect the investment return that will ultimately be achieved on gilts held in respect of the Securitised Block at 4 July 1997, since it is only necessary to continue to hold those gilts to redemption in order to achieve the return applicable at 4 July 1997. Lower gilt yields will affect the returns on future investments in gilts, but the effect on the overall investment return is relatively minor. The overall investment return achieved to date is likely to have exceeded that assumed in the Base Case Assumptions. Another relevant point is that consideration is being given by the Government to the tax treatment of capital gains made by companies in the light of proposed changes to be made for individuals. Taking these and other relevant considerations into account we consider that the Base Case Assumptions (which are long term assumptions), taken as a whole over the period to the expected final repayment of the Initial Advances, are reasonable at the date of this Offering Circular.
- 6 We have carried out extensive checking of the programs used to prepare the Base Case and the sensitivity analysis set out on pages 73 to 75 (inclusive) of the Offering Circular, including the Model. This process included:

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- checking the assumptions input into the computer programs;
- checking the formulae used in the computer programs for calculating Emerging Surplus and Future Emerging Surplus for the principal products, being the Personal Pension Plan, the Executive Pension Plan, the Group Money Purchase Plan, the With-Profit Bond and the Capital Investment Bond; and
- checking the results produced for the principal products.

In the light of our work, which we consider to be sufficient for the purposes of providing this opinion, we are satisfied that:

- the Base Case projections have been made on the basis provided in the Loan Agreement for the calculation of Future Emerging Surplus and Aggregate Emerging Surplus;
- the sensitivity analysis has been calculated on the basis provided in the Loan Agreement for the calculation of Future Emerging Surplus and Aggregate Emerging Surplus but using the relevant Sensitivity Assumptions as described on pages 73 to 75 (inclusive) of the Offering Circular;
- the pattern, amount and timing of Future Emerging Surplus and certain components of it as set out in the Base Case are reasonable; and
- the Model is appropriate to perform the calculations of Emerging Surplus, Future Emerging Surplus and other matters required to be calculated by it as described in the Loan Agreement.

- 7 We have examined the methodology and bases used to establish statutory reserves for the Securitised Block at 31 December 1996 and 4 July 1997 for the purposes of the calculation of Emerging Surplus and Future Emerging Surplus. In our opinion the methodology and bases are reasonable, comply with the relevant current legislation and guidance, and are consistent with the terms set out in the Loan Agreement applicable to the determination of Emerging Surplus and Future Emerging Surplus arising from the Securitised Block.

#### *Reliances and limitations*

- 8 The above opinions are subject to the reliances and limitations set out below.
- 9 In carrying out our work we have relied without independent verification upon the accuracy and completeness of the data and information provided to us, both in written and oral form, by NPI. Where possible, we have reviewed the information provided for reasonableness and consistency with our knowledge of the U.K. life insurance industry, but we have not carried out independent checks on

the data and other information supplied to us. We have not checked all the programs and parameter files used to project Future Emerging Surplus.

- 10 We have not attempted to assess the suitability or quality of the assets of NPI. We have also not investigated, or made allowance for, any claims against NPI other than those made by policyholders under the normal terms of life and pensions business. No investigation has been made into the accuracy of NPI's unit pricing and unit allocation procedures.
- 11 Assumptions are made about future experience, including taxation, early termination rates, paid up rates, mortality, reinsurance and legislation and other factors beyond NPI's control. Actual future experience is likely to differ from that assumed in the calculation of the Base Case, and such variations may be material and could have a significant effect on the results and conclusions relating to the Base Case Assumptions, the Base Case and the calculations of amounts of Future Emerging Surplus referred to in this letter.

Yours faithfully