SOLVENCY OF A PENSION SCHEME—A CASE HISTORY

BY P. R. FRANCIS, M.A., F.I.A.

I. GENERAL BACKGROUND

1.1. In the normal course the actuary to a pension fund recommends a rate of contribution which will enable the fund to continue to provide the benefits specified in the rules. A major purpose of the successive valuations will be to avoid sharp fluctuations in the rate of contribution required and to equalize the burden of cost over a long period of time. This purpose may, however, be achieved over a wide range of funding levels and, whereas one fund might on termination be in a position to provide little more than the preserved benefits specified by the Social Security Act, 1973, another might be able to provide substantially greater benefits. It would seem, therefore, that the normal actuarial valuation does not of itself determine a standard of solvency by reference to which a fund could be described as solvent or insolvent. Nevertheless the words solvency and insolvency are used from time to time in legal documents and it becomes necessary to attach a specific meaning to those words.

1.2. In this case history, holding company A agreed to sell its subsidiary company B to holding company C. The agreement between the holding companies included the clause set out in Appendix 1, from which it will be seen that it was necessary to determine not merely whether company B's pension scheme was insolvent but also the extent of such insolvency. Since company B had its own pension scheme there was no need to hive off any part of a group pension scheme. The agreement between the companies made no mention of any possible termination of company B's pension scheme after its change of ownership; it rather implied that the scheme would continue in operation. The assets of the scheme consisted of paid-up pension contracts with a large life assurance office, units in an exempt unit trust and cash. The life assurance scheme was insured and in addition it had been the practice to cover the cost of providing the widow's pension on death in service by annually renewable term assurance. The rules of the scheme are summarized in Appendix II.

1.3. Company A was advised by a company which also carried out the administration of the pension funds of both companies A and B. Actuarial advice was obtained from another firm which employed actuaries. Since the two firms advising company A were acting together, it is not easy to say how far their opinions were shared, since attention would not have been drawn to minor differences of view. In this case history an opinion expressed by either firm will be attributed to firm D and the actuary responsible for the reference will be referred to as actuary D. Company C
was also advised by a firm which employed actuaries. This firm will be referred to as firm E and the actuary responsible as actuary E. As we shall see the differences of opinion between the firms and their actuaries brought out a number of points of practical interest.

2. FIRM E’S REPORT

2.1. At the date when the solvency of the fund was to be tested, there were four retired members entitled to pensions in payment and two former employees who would become entitled to pensions when they attained normal pension age. All these pensions were covered by insurance contracts and by common consent were omitted from the calculations. There were 72 male and 6 female members contributing to the pension fund. In accordance with the agreement (Appendix I), firm E was to make the first assessment of any insolvency. Firm E had been supplied with an extract from part of firm D’s actuarial report on the previous normal valuation of the fund but not with the whole of that report.

2.2. In making their calculations firm E took account of a particular aspect of that report. Firm D had made provision for the partial commutation of pensions on the basis of a lump sum of £10.85 per £1 pension for males at age 65 and £14.10 per £1 pension for females at age 60. Firm E assumed that each member would take the maximum lump sum benefit and that the amount of the lump sum would be calculated by reference to these multipliers.

2.3. Dealing first with the assets, firm E brought the units in the exempt trust into the valuation at their bid price and cash at its face value. The insured paid-up pensions were valued by the same methods as were applied in the valuation of the liabilities.

2.4. Firm E took the view that non-profit deferred annuity contracts could be purchased on terms which would give a rate of return to the purchaser of 8–9%. Accordingly, they considered that a rate of interest of 9% would be an appropriate basis for the valuation. Firm E stated the rates of mortality used in their calculations. They assumed that 90% of male members would be married at retirement and that the age difference between husbands and their wives would be 3 years. They considered it inappropriate to make allowance for withdrawals in their valuation.

2.5. The result of firm E’s valuation is set out in the following valuation balance sheet:

\[
\text{Valuation Balance Sheet as at 14 November 1975}
\]

<table>
<thead>
<tr>
<th>Assets</th>
<th>£</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exempt trust units at market value</td>
<td>23,036</td>
</tr>
<tr>
<td>Cash in hand</td>
<td>10,017</td>
</tr>
<tr>
<td>Value of paid up pension contracts</td>
<td>13,100</td>
</tr>
<tr>
<td>Total assets</td>
<td>46,153</td>
</tr>
</tbody>
</table>
Liabilities

Present value of past service benefits to active members in respect of:

<table>
<thead>
<tr>
<th></th>
<th>£</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retirement pensions</td>
<td>47,818</td>
</tr>
<tr>
<td>Widows’ pensions on death after retirement</td>
<td>6,587</td>
</tr>
<tr>
<td>Widows’ pensions on death in service</td>
<td>7,366</td>
</tr>
<tr>
<td>Return of contributions on death</td>
<td>1,082</td>
</tr>
</tbody>
</table>

Known current liabilities 373

£63,226

Deficit £17,073

Based upon the information supplied it is our opinion that the fund was insolvent at 14 November 1975 to the extent of £17,073.

Firm E
April 1976

3. Firm D’s reply

3.1. Whilst firm D accepted some aspects of firm E’s report they objected strongly to others. In particular they considered that since the widow’s benefits on death in service were covered by term assurance contracts the liability in respect of them should be omitted. Firm D also objected to the use of actuarial assumptions and in particular to the rate of interest of 9%. They considered that “the only consistent method of determining the value of the scheme’s liabilities is to purchase in the open market from a leading reputable insurance company using deferred annuity rates on offer at the date when the assets were valued”. By the time firm D submitted their report, more than 7 months had passed since the completion date (14 November 1975) on which the solvency of the fund ought to have been tested. Firm D accepted that the calculations ought to have been made as at the completion date, but they considered that this was a somewhat academic exercise since:

(a) the purchase of relevant liabilities was not in fact made as at that date;
(b) units in the exempt trust continued to be held;
(c) relevant insurance company deferred annuity rates were not immediately available.

3.2. In these circumstances firm D obtained a quotation for the purchase of the required deferred annuities at the date of making their calculations, presumably not long before the date on which their report was submitted. The result of that valuation was set out in the following valuation balance sheet:
### Valuation Balance Sheet—July 1976

**Assets**
- Exempt trust units at market value: £26,822
- Cash in hand: £10,017
- Value placed on paid-up pension contracts: £10,627
- Refund of overcharged contributions (see note): £1,511

Total assets: £48,977

**Liabilities**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of securing past service benefits to active members in respect of:</td>
<td></td>
</tr>
<tr>
<td>Retirement pensions</td>
<td>£51,206</td>
</tr>
<tr>
<td>Widows' pensions on death after retirement</td>
<td></td>
</tr>
<tr>
<td>Return of contributions on death</td>
<td></td>
</tr>
<tr>
<td>Add known current liabilities</td>
<td>£373</td>
</tr>
</tbody>
</table>

Total liabilities: £51,579

Deficit: £2,602

**Note**

This item relates to a refund of contributions in respect of Mr Griffiths. This has been discussed between firm D and company C as a result of which the latter has agreed that the amount stated should be refunded. It has, therefore, been shown as an addition to current assets.

Firm D
July 1976

### 4. FIRM E'S COMMENTS

4.1. Firm E first drew attention to the fact that the net effect of basing the calculation on a life office quotation rather than upon the assumptions which they had made had turned out to be small. They held to their view that the value of the accrued widows' pensions on death in service should be included in the liabilities and they considered that the calculation must be made as at 14 November 1975, the completion date. They also suggested that interest at the rate of 9% per annum should be added to the amount due from 14 November 1975 up to the date of payment.

4.2. In view of these objections, firm D obtained a revised quotation from a life assurance office based on rates which might hypothetically have been charged for deferred annuities at 14 November 1975 and the results are set out in the following valuation balance sheet:
Solvency of a Pension Scheme—a Case History

Valuation Balance Sheet as at 14 November 1975

Assets

<table>
<thead>
<tr>
<th>Description</th>
<th>£</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exempt trust units at market value</td>
<td>23,036</td>
</tr>
<tr>
<td>Cash in hand</td>
<td>10,017</td>
</tr>
<tr>
<td>Value of paid-up pension contracts</td>
<td>9,630</td>
</tr>
</tbody>
</table>

Total assets £42,683

Liabilities

<table>
<thead>
<tr>
<th>Description</th>
<th>£</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of securing past service benefits to active members in respect of:</td>
<td></td>
</tr>
<tr>
<td>Retired pensions</td>
<td>47,192</td>
</tr>
<tr>
<td>Widows' pensions after retirement</td>
<td></td>
</tr>
<tr>
<td>Return of contributions on death</td>
<td></td>
</tr>
</tbody>
</table>

Deficit £4,509

Firm D

October 1976

4.3. Had the refund of £1,511 and the current liabilities of £373, mentioned in the previous and subsequent valuation balance sheet, been included here, the deficit would have been only £3,371. Firm D did not accept the view that the liability for accrued widows' pensions on death in service should be included.

5. APPEAL TO THE PRESIDENT

5.1. At this point it was clear that the differences of opinion in regard to widows' pensions on death in service were irreconcilable and, in accordance with the agreement between the companies, company A requested the President of the Institute of Actuaries to appoint an actuary who would act as an expert and not as an arbitrator and whose decision should be final. The distinction between an expert and an arbitrator is that an arbitrator is bound by the rules of arbitration as set out in the Arbitration Act, 1950. He may, and must if so directed by the Court (or if the Arbitration Agreement so provides), state in the form of a special case for the decision of the Court either any question of law or any award. An expert, on the other hand, need not proceed in a judicial manner and need not hear the parties in a formal way or confer with them. He need only read the documents and give his opinion or Certificate. While the parties cannot normally appeal against his decision it appears that he can be sued for negligence, particularly if he is exercising a valuation as opposed to a judicial function. The President appointed actuary F.

5.2. Actuary F discussed the issues involved with actuaries D and E. He supported the view of actuary E that the value of the accrued liability for widows'
pensions on death in service should be included. However, he also considered that it was relevant to know whether the preserved pension rights of a member who left the service would include a widow’s pension on death before normal retirement date. Although the announcement to members which described the amendments which were to take effect from 1 February 1974 was published after the passing of the Social Security Act, 1973, it made no specific reference to the preservation requirements of that Act. It turned out that no other announcement had been made and accordingly the members would have no claim to receive preserved benefits greater than those specified either in the Act or in the announcement and in particular a member who had left the service could not expect that a widow’s pension would be provided if he died before normal retirement date. In these circumstances actuary F gave his opinion that (a) it was reasonable to omit any allowance for withdrawals from service in the valuation of the pension benefits of the fund since these would ultimately become payable to a member who had withdrawn from service but (b) a different view had to be taken in the case of widows’ pensions on death in service. The three actuaries agreed that the life office should be asked to quote the cost of providing the accrued widows’ pensions on death in service and that a deduction should be made to allow for withdrawals.

5.3. Company A did not accept this ruling easily. Their financial director argued that the widows’ pensions were a separate scheme fully covered by insurance and he found it inconceivable that a scheme that was insured could be insolvent. Actuary F pointed out that even from the rather inadequate terms of the announcement it was evident that the widows’ pensions were essentially part of the pension scheme, unlike the life assurance benefit which was accepted as a separate scheme by all concerned. The term assurance contract effected to cover the widows’ death in service benefits was simply an asset of the trust and nothing more. The financial director argued that regard should be paid to the manner in which provision had been made hitherto for the widows’ pensions. Actuary F replied that he did not accept that the manner in which funding had been carried out was relevant to the question whether or not the scheme was solvent. On the contrary the solvency or otherwise of the scheme was a test which would be applied in any consideration whether the funding method was or was not adequate. In any event, if the funding method which had been adopted hitherto were a guide as to the extent of the insolvency, that argument should be pursued in all respects; since actuary D had made provision in the previous actuarial valuation for future increases in salary the application of that funding method would lead to a far greater liability than any which had emerged so far. Actuary F also pointed out that, if the funding method recommended by actuary D were continued, solvency would be achieved within a reasonable period of time. It was too much to expect that, only 2 years after extensive improvements in the benefits of the fund had been introduced, the full cost of those improvements would have been met without an injection of a substantial capital sum. The improvements were being financed over a 25-year period, at the end of which it was intended
that the reserves would include provision for future salary increases. Long before that time solvency in the sense that the assets would cover accrued benefits based on present salary would be achieved.

5.4. Meanwhile, actuary D had undertaken an analysis of the withdrawals experience. The numbers involved were very small and could hardly be expected to provide an adequate statistical base. There was also the possibility that employees might have withdrawn from service on account of the impending takeover bid. After some debate actuary F selected a set of male withdrawal rates, which was one of 76 sets in current use by his firm in making actuarial valuations. He considered that this set of withdrawal rates was consistent with the actual experience of company B in regard to withdrawals and he found himself unable to accept the somewhat heavier withdrawal rates advocated by actuary D. In reaching this view actuary F was influenced by the fact that it is normal actuarial practice to use conservative withdrawal rates and by the admittedly speculative possibility that the actual experience might have been influenced by the impending takeover bid. In the end actuary D accepted the scale put forward by actuary F. Actuary E had accepted from the first.

5.5. At this point actuary F became aware that some months earlier actuary E had expressed doubts about the deferred annuity rates which were being quoted by the life office. Although the office concerned was described by firm D as ‘a leading office’, it was in fact a small office with a small pensions business and it had only recently joined the Life Offices Association. Actuary F was unable to find from records within his own office deferred annuity rates quoted in November 1975 which would have been helpful, but he was able to establish that both before and after November 1975 two large and long established life assurance offices transacting a substantial volume of pensions business were quoting deferred annuity rates on terms somewhat cheaper than those quoted by the small office. Actuary E dropped his objections to the office concerned.

5.6. The previous quotations had been based upon deferred annuity contracts with return of the premium on the death of the deferred annuitant. Since the new quotation was to provide for widows’ annuities on death before normal retirement date, it became appropriate to modify the deferred annuity quotations so that provision was made only for the return of the member’s own contributions in the event of his death.

5.7. The quotation did not make provision for the lump sum multipliers 10.85 for males age 65 and 14.10 for females aged 60 which had been included in firm E’s report. It was, however, established in discussions with actuary D that these multipliers had been used simply as a means of stiffening his basis when he made the previous valuation of the fund and that the multipliers were not at any time made known to the members of the fund and no members had retired since 1 February 1974 when the right to commute part of the pension first became available. In these circumstances actuary F did not accept firm E’s view that the multipliers should be included in the assessment of the liabilities and he considered that a valuation for solvency should properly be made on the basis that any
lump sum would be no greater than the value of the pension given up.

5.8. In the meantime actuary D was making the revised calculations in regard to the widow's death in service benefits and the results are set out in the valuation balance sheet which follows. This balance sheet includes a correction which was suggested by actuary E.

Valuation Balance Sheet as at 14 November 1975

<table>
<thead>
<tr>
<th>Assets</th>
<th>£</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exempt trust units at market value</td>
<td>23,036</td>
</tr>
<tr>
<td>Cash in hand</td>
<td>10,017</td>
</tr>
<tr>
<td>Value placed on paid-up pension contracts</td>
<td>9,630</td>
</tr>
<tr>
<td>Refund of overcharged contributions (see note)</td>
<td>1,511</td>
</tr>
</tbody>
</table>

Total assets                                      44,194

<table>
<thead>
<tr>
<th>Liabilities</th>
<th>£</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of securing past service benefits to active members in respect of:</td>
<td></td>
</tr>
<tr>
<td>Retirement pensions</td>
<td></td>
</tr>
<tr>
<td>Widows' pensions on death after retirement</td>
<td>47,192</td>
</tr>
<tr>
<td>Return of members' contributions on death before age 65</td>
<td></td>
</tr>
<tr>
<td>Accrued widows' pensions payable on death before age 65</td>
<td>6,470</td>
</tr>
<tr>
<td>Add known current liabilities</td>
<td>373</td>
</tr>
</tbody>
</table>

54,035

Deficit                                         9,841

Note
This item relates to a refund of contributions in respect of a Mr Griffiths. This has been discussed between firm D and company C as a result of which the latter has agreed that the amount stated should be refunded. It has, therefore, been shown as an addition to current assets.

Firm D
July 1977

The deficiency as at 15 November 1975 of £9,841 needed to be increased to allow for the delay in payment and actuary D suggested a sum of £10,789 payable in July 1977. It is understood that settlement was completed on that basis.
6. POSTSCRIPT

6.1. The Occupational Pensions Board are currently (summer 1979) engaged in two inquiries concerned with pension rights on change of employment and the solvency of occupational pension schemes. These two inquiries are linked because an important reason why occupational pension schemes do not provide higher standards of preservation and transferability than those required by the Social Security Act, 1973, is that so many schemes are funded to a standard which barely covers the requirements of that Act.

6.2. If the deliberations of the Occupational Pensions Board were to lead to legislation which required that preserved pensions granted to members who leave the service should be increased at specified rates during the period before the pensions become payable, then it could be argued that a pension scheme which was not in a position to meet the new standard of preservation for each of its members on simultaneous termination of service was ipso facto insolvent. The standards of solvency described in this case history existed before the passing of the Social Security Act, 1973, and that Act specified requirements for preservation which were consistent with those existing standards. A statutory requirement for improved standards would in itself call for higher standards of solvency and make this article obsolete.

APPENDIX I

AGREEMENT BETWEEN THE HOLDING COMPANIES

(a) Full Disclosure has been made of all pension schemes and funds for the benefit of directors and employees of the Company; apart from pension and other benefits adequately funded and fully secured by such schemes and/or funds the Company is not under any legal liability or voluntary commitment to pay to or provide for any person any pension superannuation allowance retirement gratuity or like benefit.

(b) All amounts due to the trustees of every pension scheme or fund of the Company as aforesaid or to any insurance company in connexion therewith have been paid and no payments fall to be made in respect thereof in respect of periods of employment prior to entry into effect of any such scheme or fund.

(c) During the period of 6 months following Completion full co-operation will be given to Firm E to enable them to prepare an actuarial report of such schemes and/or funds as at the Completion Date. In the event that such report reveals any insolvency in such schemes or funds as at that date to repay to the Purchaser a sum equal to the amount of such insolvency with 42 days of delivery by the Purchaser to the Vendor of a copy of such report PROVIDED THAT the Vendor may within 7 days of receipt of such report elect to have the same reviewed by an actuary of its own choice and that in the event of any dispute as to the measure of
Solvency of a Pension Scheme—a Case History

insolvency which reflects a difference of £1,000 or more the further right to refer
the matter to an independent Actuary to be appointed by the President for the
time being of the Institute of Actuaries (acting as an expert and not as an
arbitrator) whose decision shall be final, such review or decision to be concluded
within the said period of 42 days (or such later date as the parties may mutually
agree).

APPENDIX II

COMPANY B PENSION, LIFE ASSURANCE AND WIDOWS’ SCHEMES

Outline of Rules

Earliest date of entry

1 February following the attainment of age 21 and the completion of 2 years’
service.

Definitions

‘Pensionable salary’ means basic yearly remuneration excluding bonus, com-
mersion, overtime earnings or similar fluctuating emoluments and will be ascer-
tained at each fund anniversary on 1 February.

‘Final pensionable salary’ means the average of the highest three pensionable
salaries during the last 10 years of service up to normal retirement date.

‘Normal retirement date’ is the 65th birthday for men, 60th birthday for
females.

‘Pensionable service’ means years of membership of the pension fund.

Members’ contributions

Three per cent of pensionable salary. Contributions cease on 1 February
preceding normal retirement date.

Normal retirement pension

One eightieth of final pensionable salary for each complete year of pensionable
service.

Early retirement pension

Reduced pension payable; amount not stated in the rules.

Commutation for cash

Permitted, but terms not stated.
Death in service
A cash payment is provided from the life assurance scheme. The amount is £1,000 on death before admission to the pension fund or three times pensionable salary on death whilst a member of the pension fund.

Death after retirement
On death within 5 years after retirement a lump sum equivalent in value to the difference between 5 years' payments of pension and the instalments of pension already paid.

Widows' pension
On death in service before normal retirement date the member's widow would be entitled to half the amount of his pension based on pensionable salary at the date of death and total prospective service. On death in retirement the pension is equal to half the member's pension. The amount of widows' pension is reduced if the widow is more than 10 years younger than the member.

Leaving service
Although the published rules do not take account of the restrictions on refunds of contributions for which the Social Security Act, 1973, provides, the benefits are broadly those required by the Act.

Pension increases
Pensions in payment to members and widows increased by 3% per annum compound.

Documentation
Rules and booklet dated December 1970; amendments with effect from 1 February 1974 described in announcement to members. The announcement to members was not clear in all respects but the foregoing outline is in keeping with the description of relevant plan benefits contained in § 3 of firm E's report. That description was accepted by all concerned and in any event there was no dispute as to the entitlement of each individual member of the Fund.