

PENSION FUNDS AND LIFE INSURANCE COMPANIES

Note by John Walton

Formerly, Consultant to Eurostat, Units B1 and D2

This paper has been written in my personal capacity and the views in it
do not represent those of Eurostat¹

CONTENTS

	<u>Page</u>	<u>Paragraph</u>
I. Introduction	1	1
II. Classification	1	2
III. What is a pension fund? (In the UK situation)	1	
Employer funds	1	3
Funds for individuals	2	4
Social insurance and individual life insurance	2	5
Types of benefits from pension funds	3	7
IV. Pension funds and life insurance companies,		
who carries the risk?	4	9
Investment risk	4	9a
Mortality risk	4	9b
Survivorship risk	5	9c
Summary	5	10
V. Macro-economic aspects	6	14
VI. Valuation problems, defined benefits funds, assets	7	17
VII. Valuation problems, defined benefits funds, liabilities	9	23
VIII. Other estimation matters		
Transfers between funds	10	26
Transactions between pension funds and		
insurance companies	10	27
Annex :		
Illustrative Tables : subdividing net worth		
into volatile and non-volatile components		
(in the case of defined benefit pension funds)	12	

¹ I am grateful to Richard Dagnall, Anne Harrison, Philippe de Rougemont and Ingber Roymans for their comments on an earlier draft.

PENSION FUNDS AND LIFE INSURANCE COMPANIES

I. Introduction.

1. The purpose of this note is to look at the activities of pension funds and life insurance companies : how can their activities be distinguished, and how far do pension funds purchase the services of life insurance companies or of other financial intermediaries (S.123)?² It is largely based on the situation in the UK and on my personal association, up to 1995, with a UK “defined benefits” pension fund, but I have also drawn on the development in Europe of a harmonized system of business statistics for both life insurance undertakings and pension funds. I also look at some matters which are peripheral to these questions, such the valuation of the assets and liabilities of “defined benefits” pension funds and the macro-economic aspects of a greater or lesser degree of funding. Particularly in the case of “defined benefits” pension funds, practice probably varies from country to country, and I hope that this note may stimulate contributions from others.

II. Classification.

2. In ESA/SNA, the primary classification question is: S.125 or S.123? (“Units for Collective Investment in Transferable Securities: UCITS”, etc., in S.123.) Within S.125, the question – life insurance company or pension fund? – is secondary; sub-sectorisation does not take this form, but the boundary between the two certainly comes up in many other contexts – e.g. the distinction, in the EU’s Structural Business Statistics (SBS) Regulation, between Annex 5 (on insurance undertakings) and Annex 7 (on pension funds). While S.125 is not sub-categorised in ESA/SNA, the delineation between the activities of most pension funds and those of life insurance companies is essential for the measurement of social benefits, because most pension funds distribute social benefits but life insurance companies do not.

III. What is a pension fund?

3. Employer funds. The following is written from the point of view of the situation in the UK. In practical terms, UK pension funds are set up by employers for their employees, and occasionally by trade unions or professional associations for their members. The objective

² Unlike life insurance companies, pension funds set up by employers or by other sponsors such as trade unions are unlikely to purchase the services of brokers (financial auxiliaries, S.124), in order to acquire business; but they may employ financial auxiliaries as managers, acting as agents (see ESA 2.58h).

is to provide income in retirement on top of the basic and universal state pension scheme; and the UK direct tax system follows a definition of income, for tax purposes, under which contributions to a pension fund by employees are tax deductible (and so are contributions by the employer), but the pension is taxable, known as ‘deferral of income’. In order to qualify the employees’ contributions as being tax deductible, the sponsors of a pension fund are obliged to submit its rules to the Inland Revenue Department for approval, the principal requirements being that the fund must be segregated and about three-quarters of the moneys accumulated must be paid as a pension. (There is a concession that about one-quarter may be paid as a “tax free” lump sum at the time of retirement, provided that this is after the age of 50.)

4. Pension funding for individuals, not as part of a group scheme. In the UK the same tax concessions have been available for a long time, under the same conditions, for funded pension provision for the self employed (known as “retirement annuity relief”); and, since the 1980’s, they became available on a new class of funded “personal pensions” which could be taken by those employees who did not have the opportunity to join an employer pension scheme³, or who exercised a new right to opt out of an existing employer scheme (thus usually forgoing the employer’s contribution). Personal pension funds had the advantage that the policy-holder could opt to defer taking an annuity up to age 75.

5. The ESA/SNA distinction between Social insurance and individual life insurance. *Employer sponsored pension funds* mostly accord with ESA/SNA rules as being within the boundary of “social insurance”. The British *personal pensions* are classified as part of “social insurance”⁴ – on the grounds that the employer makes an indirect contribution, through a higher social security contribution (as it would be when the employee was covered by SERPS, see footnote 3), and that the difference between this and a lower rate⁵ is paid by the Government into the personal pension fund. *Pension provision for the self-employed* is not part of social insurance, on the current rules. There is a question whether a sub-sector for pension funds, if this sub-sector were created, would only include pension

³ In which case the employee would already be a member of the unfunded “State Earnings Related Pension Scheme” (SERPS), now to be called the “State Second Pension” (S2P), which is intended to supplement the basic and universal pension. Previously SERPS was obligatory for such employees, but they were now given the chance to opt out of it in order to take out a personal pension.

⁴ Though there are some data difficulties due to the large number of schemes. Personal pensions in the UK have now been replaced, for new entrants, by “stakeholder pensions”, which do not benefit from the Government contributions described in paragraph 5.

⁵ The lower social security rate is for employers whose employees get their supplementary rights through an employer pension scheme and so are said to be “contracted out” of SERPS/S2P.

provision which is part of “social insurance” in the national accounts, or whether it would also include personal pensions and pension provision for the self employed.

6. In the UK, therefore, a principal criterion for distinguishing between pension funding (whether for a group or for an individual) and savings-type life insurance is the availability of income tax relief on contributions. Savings-type life insurance policies used to have limited tax relief on contributions (premiums) – less than that on contributions to approved pension funds – but this has been abolished. In consequence savings-type life insurance policies are now mostly policies set up to redeem, on maturity, a loan for house purchase. A more attractive alternative for ordinary savings has existed, since the mid-1980s, in the form of arrangements which do not give income tax relief on contributions, but allow the savings, up to an annual limit, to be held in special accounts, where the funds can be withdrawn at any time and both income and capital gains are free of tax – the reverse of the tax treatment of approved pension funds. (They are called “Personal Equity Plans”, PEPs, and, more recently, and in partial substitution, “Individual Savings Accounts”, ISAs).
7. Types of pension fund, types of benefit. Because of these features – segregated fund, contributions tax deductible, limited lump sum and taxable pension, it is relatively easy, in the UK, to determine what is a pension fund and what is not. Amongst pension funds, there are, broadly speaking, three types:
 - employer etc. schemes for groups with defined benefits,
 - employer etc. schemes for groups without defined benefits (known as “defined contribution” schemes), and
 - personal or stakeholder pensions, plus “retirement annuities” for the self employed; these are in the names of individuals and are always of the “defined contribution” type.The first two are social insurance according to the current SNA/ESA but the last group often is not.
8. In other countries where funding for pension provision is common, the situation may be different from that in the UK, e.g. in regard to the availability of income tax relief on contributions. Another possible criterion for distinguishing between funded or unfunded pension provision and other contractual savings, such as those with life insurance companies and UCITs, might be to classify as pension funding all arrangements where the explicit or implicit contract specifies that the major part of the eventual benefit must be

taken as an annuity, no earlier than (say) age 50, except in case of death or disability, and no later than (say) age 75⁶.

IV. Pension funds and life insurance companies.

9. At a practical level, the interaction between pension funds and life insurance companies takes many forms. The question arises, therefore, who acts as Principal and who acts as Agent. It is useful to look at this in terms of another question – who carries the risk? The risks are of three kinds:-
 - a. The risk that the invested fund at normal retiring age will be insufficient to fund the benefits. This is wholly “investment risk” and is carried by the employer or sponsor of a “defined benefits” scheme⁷. So far as I know, in the UK it cannot be reinsured with life insurance companies – they will not cover risks of insufficient funding of defined pension benefits (which are often based on final salary)⁸. It may be, of course, that the task of managing the investments is delegated, by appointing a financial institution to perform this task – not necessarily a life insurance company (it could be an institution which manages UCITs, in S.123); but, if so, the employer or sponsor still carries the investment risk and the financial institution acts as his Agent under a contract which can be terminated. When the benefits are not defined, the employer or sponsor carries no investment risk; it is the employees who, unwittingly, carry the investment risk. They do not know in advance what level of pension they will get⁹.
 - b. The risk of death or disability before normal retiring age, if the scheme offers enhanced benefits at that time (e.g., the same level of benefits as would be available at normal retiring age, where these include benefits for surviving spouses). This is “mortality risk” and may

⁶ See paragraphs 20 and 21 of my paper “Pension Schemes : Social Insurance and Social Protection”.

⁷ Provided that the employer remains in business up to an employee’s normal retiring age. There are, however, different levels of cover of the employer’s liability, in the case of a “defined benefits” scheme – see Section VII of this paper.

⁸ But, in the USA, “safety net” funds exist which have become a model for the UK Government’s recent announcement (on June 11 2003) of proposals to establish a “pensions protection fund”. It will be financed by (? compulsory) premiums which will vary according to the level of deficit in the fund whose members are being protected. At the time of writing, it is far from clear whether this fund will benefit from an explicit or implicit guarantee from the Government or from the banking system (none is intended, it seems) and so whether or not it will be appropriate to classify it to S.125. In the Netherlands, it appears the Regulator requires funds to hold assets in excess of the actuarial value of liabilities (a kind of ‘second-line reserve’, it seems); and in Germany, where the assets of defined benefit funds set up by employers are not segregated (known as “non-autonomous” pension funds”), there is reinsurance with special funds of the risk of insufficiency of assets, which includes the investment risk.

⁹ I believe that in some other European countries the employer or sponsor may guarantee a minimum rate of return on the invested funds, so that in effect a minimum level of benefits is defined but not the actual level; in consequence, Eurostat D2 provides for a ‘hybrid’ type of pension fund, in Annex 7 of the SBS Regulation. Guaranteed minimum rates of return must be offered by life insurance companies in Japan.

apply to a defined contribution scheme as well as to a defined benefit scheme. Often it is reinsured with a life insurance company either in whole, or in part (e.g., for a defined benefits scheme, part of the associated investment risk may remain with the employer or sponsor).

- c. The risk that retired employees and their spouses will survive, on average, longer than expected after retirement – the “survivorship risk”. This is coupled with investment risk, as retirement can last a long time and the benefits (pensions) sometimes rise by fixed percentages annually¹⁰. Sometimes the survivorship risk is fully laid off to a life insurance company, by purchasing an annuity on retirement. But often the pension fund, if it is for a group, prefers to carry the survivorship risk itself: the variation in survival periods around average are quite small as soon as there is a “pool” of, say, 10 or more pensioners; and, at least until recently, it was thought that the rate of return on a pension fund’s assets was likely to be higher than that assumed by a life insurance company when quoting for an annuity. Pension funds may be obliged to carry the survivorship risk when it is coupled with a relatively high level of investment risk (see footnote 10). In the case of a UK personal pension, the pensioner has the option of withdrawing capital, mainly as taxable income, up to age 75 when an annuity must be purchased; if so, the pensioner opts to carry the investment risk himself.
 10. In summary, therefore, in the case of a pension fund offering defined benefits, the investment risk before retirement is carried by the employer; there is no equivalent investment risk in the case of a fund not offering defined benefits; after retirement the employer may choose to carry the investment risk, for both types of fund, but may opt not to do so, by purchasing annuities from a life insurance company (in effect reinsuring these risks). The mortality and survivorship risks, in the case of pension funds for groups, may be carried by the employer or sponsor or they may be reinsured with a life insurance company; if the fund is for an individual these risks, if covered at all, are always covered by a life insurance company but, to a degree, an individual may opt to carry the associated investment risk.
 11. These principles – ‘who carries the risk’ – determine what is the pension funding activity proper and what activities are a service provided by a life insurance company acting as
-

Agent (e.g. managing investments for a pension fund) or acting as Principal (when the life insurance company takes on the mortality/survivorship risk, or the associated investment risk, after annuities are purchased).

12. It seems clear in principle how to apply them, in the case of “defined benefits” funds. However, in the case of “defined contribution” funds, where the investment risk is carried by the individual member (just as with unit linked life insurance policies), the criteria would only apply, if at all, to the mortality and survivorship risks. If these risks are covered by the employer, e.g., through reinsurance with a life insurer, that would be a sufficient criterion, I suggest, for classification as a pension fund. In other circumstances, one is left with the question, are the investments managed collectively on behalf of the members? In that case it is still a pension fund, it seems. Or can the members opt out and manage the investments themselves? In that case the classification is difficult, as the savings arrangements are individual but hardly “individual life insurance” unless the individual chooses to go to a life insurer.
13. Some comments about the macro-economic aspects, certain valuation problems and other estimation matters.

V. Macro-economic aspects.

14. There is a debate about the relative advantages and disadvantages of relatively far reaching unfunded systems, on the one hand, and of systems where funding is used to supplement a basic universal pension, on the other hand. Often this debate misses the point, in my opinion, by suggesting that in some sense funding is more secure. But the demographic problem – the number of economically active persons per retired person – applies to both systems. Funding could only increase the output of the whole economy, available to support consumption by both active and retired persons, by very indirect means.
15. The primary effect of funding, in the macro-economic sense, is to disperse decisions about savings rates to a large number of pension funds acting on behalf of individuals. The funds may take action to address the demographic problem at an earlier stage than Governments or other central sponsors of wide ranging unfunded systems; funding, at least when

¹⁰ Or in line with a fixed percentages or inflation, whichever is the lower, or in line with inflation, either up to a cap or of any amount; these higher levels of investment risk cannot usually be reinsured (by purchasing annuities with these features): but even this may be possible if index-linked government guaranteed bonds are available on the stock market.

schemes are of the “defined benefits” type, necessitates a formal system of actuarial reviews, which therefore requires the demographic problem to be explicitly addressed at regular intervals. Does this process have an impact on the level of economic activity, through influencing the process of establishing equilibrium between *ex-ante* saving and *ex-post* capital formation, perhaps by reducing long-term interest rates? This is a fascinating topic, but not one which I will attempt to address here.

16. The only other way in which funding might help to address the demographic problem is when saving by pension funds is invested in the Rest of the World (ROW), thereby securing a higher level of national income from the ROW than might otherwise be the case.

VI. Valuation problems : assets (“defined benefits” funds).

17. For 25 years, through family connections, I was a “Trustee” (member of the managerial board) of a small defined benefits pension fund sponsored by a UK company with only some 50 employees. The fund was not “mature”, meaning that current pension payments were far lower than the contributions and investment income needed to secure future pensions, using estimates of future survivorship. Actuarial valuations took place every three years and, in my experience up to 1995, were always based on the value, discounted to the present, of the cumulation of estimated future flows of both income (for assets) and pensions payable (for liabilities). Market values of investments were not used¹¹.
18. The assumptions about the long-term evolution of both real interest rates and inflation, used for discounting, were common to both sides of the valuation. The critical assumptions, therefore, were those about future rates of increase of real income (dividends and interest), on the assets side, and future rates of increase of real salaries, on the liabilities side. (The fund’s assets were mainly shares or holdings in UCITSs.) Therefore the figure of surplus or deficit, on which operational decisions about the employer’s funding rate were taken, did not have the same definition as the “net worth” of a defined benefits pension fund in ESA/SNA, which compares the market value of assets with the actuarial value of liabilities.
19. The justification for this valuation method was primarily internal consistency, but the actuarial advisers also said that actuarial valuations of assets had the advantage of being less volatile than market values. However, the UK actuarial profession still got it wrong – in the

¹¹ As I recall, however, market values were lower than actuarial values only in the 1970’s. Recent comments in the British press suggest that decisions about funding rates now often take account of the risk that, at any time, market values may be lower than actuarial values. This needs investigation – also see section VII of this paper.

mid 1970s, admittedly in an exceptional situation when real interest rates were negative in the UK, we and others with “immature” funds were being advised, when taking a 30 year view, that funds had large deficits, so that the employer’s contribution rate needed to be increased from a ‘normal’ level of, say, 10% of salaries (plus 5% from the employee) to around 15% (making 20% in all); but only 6 or 9 years later we and others were being told that funds had large surpluses, so large that the employer’s contribution rate could be dropped to nil – the so called “contribution holiday”¹². Currently it is again the reverse – large deficits, not helped by the decision taken in the 1997 UK Budget to abolish tax relief on income received as a dividend (as opposed to income received as interest)¹³.

20. What went wrong? Funds were heavily invested in shares rather than in bonds. With the advantage of hindsight, I believe the basic problem was largely that dividends are also cyclical, even though cyclical fluctuations in dividends have a smaller amplitude than those in share prices. In the mid-1970s, actual dividends, used as the base for the projections, were cyclically low, by an unusual amount (and real interest rates were negative); and in the next 6-9 years dividend levels jumped sharply (and real interest rates returned to being positive). By contrast, the decisions of the mid 1980’s, to take a “contributions holiday”, were being based on an actual level of dividends which was then cyclically high.

21. It should be noted that income based estimates of the present value of assets, in the case of a scheme which is not “mature”, are seeking wholly or partly to avoid taking snapshots, either of the present or of the future (but see footnote 11). In so far as they are based, in the first instance, on the idea that the employer’s business will remain solvent, they have similar features to estimates of the secular trend. For an illustration of the possible effects of the separate short- and long-term elements of the difference between the market value of assets

¹² The periods over which employers’ contributions were to be increased or reduced were not three years, but of the order of 10-15 years, given the degree of “maturity” of this fund.

¹³ There are other problems which are making British companies currently wary of commitments to defined benefit pension schemes, as follows:

- longer survival periods – not specifically a difficulty for “defined benefit” schemes, but in the case of “defined contribution” schemes inadequate funding is masked;
- new views about the prospects for equity shares being less favourable than those for bonds, but bad conditions for switching from one to the other (including a short supply of government issued bonds);
- the abolition of tax relief on dividends;
- the recent announcement of proposals for compulsory premiums to a protection fund and for an obligation to pay promised benefits so far accrued in full on the occasion of wind-up of the employer’s business; and
- the insistence of the UK accountancy profession, under the new Accountancy Standard FRS17, that the surplus or deficit of a pension fund should no longer be treated as a contingent asset or liability, but should be included in the balance sheet of the employing company, coupled with a requirement to use the market values valuation basis for this purpose (which seems to me appropriate only for a ‘wind-up’ situation). Currently this basis is unfavourable by comparison to an actuarial basis such as that which I have described.

and the actuarial value of liabilities, which together make up the “net worth” of a defined benefits pension fund as in ESA/SNA, see the Annex to this note¹⁴.

22. A further process of allowing for the risk of a shortfall of assets, upon break-up or merger, could introduce the idea of a permanent safety margin between trended values of assets and actual market values; the latter might be lower than actuarial values in a break-up situation. (No similar allowance would be made for the situation when the market values were the higher.) This raises the question whether, in economic terms, the present value of liabilities to pay future pensions should include such safety margins, or whether the extra assets should be regarded, in effect, as a separate fund representing second line reserves. If the latter, there is the further question, especially relevant in a break-up or merger situation, of whether the assets representing second line reserves belong to the employer or to the present and future pensioners¹⁵. I discuss this question in more detail in the next section.

VII. Valuation problems : liabilities (“defined benefits” funds).

23. In the case of a “defined contributions” pension scheme for a group, the liability to individual members is simply the present market value of the units bought previously with the contributions attributable to his employment and with the investment income on them. In the case of a funded “defined benefits” scheme the present value of the promises to pay to all the members in the future is estimated actuarially (see Section VI, paragraphs 17-19). It will change: as funds approach maturity; when the hierarchy becomes more or less peaked (if pensions are based on final salary); and when benefits are enhanced, e.g. by introducing a degree of inflation proofing of pensions in payment, or the reverse. Also, when benefits are enhanced, the effects on liabilities depend on whether or not back service or only future service counts. All these affect the level of assets, at their actuarial value, which is needed to make the scheme fully funded.
24. The actuarial value of liabilities will also depend on the degree of security of the funding to meet the promised benefits. There are a number of levels of coverage of the investment risk, in the case of “defined benefits” pension funds. For instance, funds sufficient to cover the employees’ expected pension at normal retiring age, on the assumption that the employer remains in business up to that time, are usually less than funds sufficient to cover the purchase of an deferred annuity equivalent to the accrued rights at any time – that is, sufficient to cover the risk, from the point of view of the employee, of wind-up or merger of

¹⁴ Which also appear in pages 5 and 6 of the exchange of correspondence between Anne Harrison and myself.

the employer's business before normal retiring age, given that the market value of assets might then be below the actuarial value. (Or that assets, even when valued on the actuarial basis, might then be insufficient to cover liabilities, even though increased contributions were being made to remedy this deficit over a period.)

25. Cover for these risks can be obtained by holding additional segregated assets within the fund; or can be reinsured if appropriate arrangements exist. The UK Government recently announced the establishment of a pension protection fund, to cover the risk of insolvency of the employer at a time when funding is incomplete, to which (? compulsory) premiums will be payable (see footnote 8). It appears from the announcement that the funding target, the level of assets at which a scheme is to be regarded as fully funded, will be the higher one – full cover of accrued rights at any time. If so, some employers' contributions will need to be set at a higher level, in addition to the requirement to pay premiums to cover the risk of insolvency; but the higher the funding level which is achieved, the lower the premium, it seems.

VIII. Other estimation matters

26. Transfers between pension funds. An evident disadvantage of employer pension schemes, especially those of the defined benefits type, is that they are best suited to the employee whose entire career is with one company, or one company group. Employees who change jobs can take back their contributions (subject to tax), can leave their accumulated rights in the pension scheme of the 'old' employer, or can negotiate a transfer value to the pension fund of the 'new' employer. The tendency was for these transfer values to be calculated, by the actuarial adviser of the 'old' employer, on very conservative (= unfavourable) assumptions, which acted as a disincentive to job mobility. In consequence, transfers in and transfers out must be recorded in economic statistics as a special category of revenue or expenditure of each pension fund, as they are not the same as ordinary contributions or contributions. In principle the economy-wide total should balance out, unless some transfers relating to people changing employer are with ROW. (If so, they are not the same as transfers of ordinary contributions or pensions within a multi-national group which has centralised the location and administration of its pension funding.)
27. Transactions between pension funds and insurance companies. Transactions between pension funds and life insurance companies (see paragraph 9) also need to be distinguished,

¹⁵ See footnote 8, regarding the situation in the Netherlands.

in order to have an accurate record of transactions across the boundary of S.125. They are similar to reinsurance, but the difference is that administrative data for insurance companies distinguish transactions with reinsurers, but not those with pension funds. The best source, therefore, for these intra-sector transactions is from the pension funds, who are more likely to separate the relevant information in their internal accounting.

28. The relevant information is insurance premiums payable by pension funds, for preference distinguishing 'single' premiums to purchase annuities, and claims receivable. If there were to be a full sub-sector split between insurance companies and pension funds, the question of attributing property income and recording premium supplements between the sub-sectors would arise on any transactions where the insurance company acts as Principal – but this is unlikely to be practical. Where the insurance company merely acts as Agent, e.g., as manager of investments, the property income accrues directly to the pension fund – the legal owner of the investments – not to the insurance company which may receive the actual income; and in the ordinary way it is attributed by the pension fund (not by the life insurance company) to the policy-holder, employee or pensioner, in the household sector, who returns it as a contribution supplement to the pension fund, not to the pension fund's Agent which manages the investments.
29. Annex 7 of the EU's SBS Regulation includes transfers in and out, and premiums payable and claims receivable, in the standardised form of the income and expenditure account of pension funds.

John Walton

London

1 July 2003

ANNEX

ILLUSTRATIVE TABLES, SUBDIVIDING NET WORTH INTO VOLATILE AND NON-VOLATILE COMPONENTS

(In the case of defined benefits pension funds)

Assumptions for the illustrations.

Actuarial valuations of assets are “correct” in the sense that the projections of income start from a non-cyclical (or cyclically smoothed) base.

The given actuarial valuation of liabilities is always 100.

The designations in the illustrations as under- or over-funded are based on a comparison of the actuarial values of both assets and liabilities.

Situation A : Fully Funded

1. Market values of assets above trend

<u>Assets</u>		<u>Liabilities</u>	
At market values	120	Technical liabilities	100
		Net worth:-	
		a. Under/overfunding	Nil
		b. Excess of market value over actuarial value	20
	120		120
<u>Memo. Item</u>			
Actuarial value of assets	100		

2. Market values of assets below trend

<u>Assets</u>		<u>Liabilities</u>	
At market values	80	Technical liabilities	100
		Net worth:-	
		a. Under/overfunding	Nil
		b. Excess of market value over actuarial value	-20
	80		80
<u>Memo. Item</u>			
Actuarial value of assets	100		

Situation B : Underfunded1. Market values of assets above trend

<u>Assets</u>		<u>Liabilities</u>	
At market values	110	Technical liabilities	100
		Net worth:-	
		a. Under/overfunding	-10
		b. Excess of market value over actuarial value	20
	110		110
<u>Memo. Item</u>			
Actuarial value of assets	90		

2. Market values of assets below trend

<u>Assets</u>		<u>Liabilities</u>	
At market values	70	Technical liabilities	100
		Net worth:-	
		a. Under/overfunding	-10
		b. Excess of market value over actuarial value	- 20
	70		70
<u>Memo. Item</u>			
Actuarial value of assets	90		

Situation C : Overfunded1. Market values of assets above trend

<u>Assets</u>		<u>Liabilities</u>	
At market values	130	Technical liabilities	100
		Net worth:-	
		a. Under/overfunding	10
		b. Excess of market value over actuarial value	20
	130		130
<u>Memo. Item</u>			
Actuarial value of assets	110		

2. Market values of assets below trend

<u>Assets</u>		<u>Liabilities</u>	
At market values	90	Technical liabilities	100
		Net worth:-	
		a. Under/overfunding	10
		b. Excess of market value over actuarial value	- 20
	90		90
<u>Memo. Item</u>			
Actuarial value of assets	110		