USS

UNIVERSITIES SUPERANNUATION SCHEME

Actuarial Valuation Report
as at 31 March 2002

Universities Superannuation Scheme

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UNIVERSITIES SUPERANNUATION SCHEME LIMITED

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Actuarial valuation as at 31 March 2002

An actuarial valuation of Universities Superannuation Scheme has been carried out as at 31 March 2002 by the actuary, Mr E S Topper of Mercer Human Resource Consulting Limited.

Mr Topper's report on the 2002 actuarial valuation was accepted by the USS management committee at its meeting on 27 March 2003. The result of the actuarial valuation and the main features of the report were announced to delegates attending the annual meeting of USS institutions on 5 December 2002 (the full report of which can be viewed on the USS website www.usshq.co.uk).

The report on the 2002 actuarial valuation is being made available to all USS institutions and it is printed in full in this booklet. The result of the valuation may be summarised as follows:

1. The employers' contribution rate is maintained at 14% of annual salary.
2. The overall past service surplus of £162 million represents 1% of the past service liabilities of the scheme. There is a surplus of £75 million attributable to the supplementary section leaving a past service surplus of £87 million in the main section.
3. The institution contribution rate required for the future service benefits alone is 14.25% of salaries.
4. To fund the reduction of 0.25% below the institution contribution rate of 14.25% of salaries for the next 12 years will require the use of £82.5 million of the main section surplus. This period of 12 years is the average outstanding working lifetime of the current members.
5. The contribution rate will be subject to review at the next actuarial valuation which would normally take place at 31 March 2005.

Whilst asset values have declined since the valuation date, the conservative assumptions used in the valuation enable the actuary to be of the opinion that the scheme remains well funded. The fund continues to enjoy a positive cashflow with the aggregate of contributions and investment income exceeding benefit payments. In these circumstances the fall in the value of the fund's investments is not of immediate concern since USS has no requirement to sell investments to meet its pension liabilities.

The management committee considers that the funding objective, the valuation method and the assumptions underlying the valuation calculations represent a satisfactory basis for the long-term funding of the benefits provided by USS.

David Chynoweth

D B Chynoweth
Chief Executive
Universities Superannuation Scheme Limited

March 2003

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Highlights

1. **Funding plan**

   Using the valuation basis that I have agreed with the Trustee Company:

   - the Employer contribution rate in respect of future service only (the "normal contribution") is 14.25% of Salaries. This rate includes the cost of death benefits and allows for administrative expenses to be paid from the Scheme;

   - employee contributions are payable in addition to this rate;

   - on the assumption that the Scheme continues, the assets of the Scheme at the valuation date were 101% of the accrued liabilities based on projected Pensionable Salaries;

   - there is a past service surplus of £162m (of which £75m is in respect of the Supplementary Section);

   - the surplus in respect of the Main Section will allow the Employer contribution rate to be maintained at 14% of Salaries per annum for the average future working lifetime of the current members, a period of approximately 12 years.

2. **Minimum funding check**

   Contributions to the Scheme must be sufficient to satisfy the Minimum Funding Requirement (MFR) introduced by the Pensions Act 1995. The Scheme was 144% funded at the valuation date using the MFR prescribed assumptions and methodology. I confirm that, on signing this report, I will be able to certify an MFR Schedule of

Contributions based on contributions at the rate shown above unless there are significant changes to financial conditions in the interim.

3. **Maximum funding check**

Contributions may have to be restricted if there is an excessive surplus based on the prescribed assumptions under the Income and Corporation Taxes Act 1988 and if the Scheme is to remain fully tax-exempt. The valuation does not reveal an excessive surplus.

4. **Solvency**

If the Scheme had discontinued on the valuation date and the Trustee had decided to continue to operate the Scheme as a closed scheme, the assets would have been approximately 114% of the amount required. This figure includes an allowance for the ongoing costs of administration. This result is based on financial conditions at the date of the calculation only, and should not be used as a measure of the position at any other date. In practice, a small change in financial conditions can materially affect this result.

5. **Recommendations**

After discussion it has been agreed that the Employer contribution rate of 14% of Salaries is maintained pending review as at the next actuarial valuation. This rate includes the cost of death in service benefits and allows for administrative expenses to be paid from the Scheme.

This recommendation should be re-confirmed at the date of signing the MFR Schedule of Contributions, but, despite deterioration in the market since the valuation date, I envisage no difficulty in providing the necessary certification. The next actuarial valuation should have an effective date not more than 3 years from the date of this valuation.

Edwin Topper.

E S Topper
Fellow of the Institute of Actuaries
March 2003

Certification

1. I am the appointed scheme actuary to the Universities Superannuation Scheme ("the Scheme"). This is a report to the Trustee of the Scheme on my actuarial valuation of the assets and liabilities of the Scheme at 31 March 2002. The last actuarial valuation of the Scheme was at 31 March 1999. The purpose of the valuation is to review the Employers' contribution rate, taking account of the Trustee's funding objectives and statutory requirements.

2. The calculations in the report use methods and bases appropriate for the purpose described above. Figures required for other purposes, such as mergers, acquisitions, and other transfers, should be calculated in accordance with the specific requirements for such purposes and it should not be assumed that the figures provided here are appropriate. The report may be disclosed to other parties with the consent of the Trustee or under the disclosure legislation and regulations. Such parties may rely upon the results for the purpose described above or any other purpose agreed with the Scheme Actuary at the time of disclosure.

3. This report on the funding of the Scheme is intended:

- to meet the requirement of Regulation 30 of the Occupational Pension Schemes (Minimum Funding Requirement and Actuarial Valuations) Regulations 1996, for an ongoing actuarial valuation,

- to meet the requirement of Section 56(3) of the Pensions Act 1995 for a Minimum Funding Requirement valuation, and

- to be disclosed to Scheme members in accordance with Regulation 7 of the Occupational Pension Schemes (Disclosure of Information) Regulations 1996.

Although addressed to the Trustee, my report can be used by the Employers and Scheme members as a guide to the funding position of the Scheme. Mercer Human Resource Consulting does not accept liability to any other third parties in respect of the contents of this report.

4. This report complies with the requirements of the appropriate version of Guidance Note 9 - 'Retirement Benefit Schemes - Actuarial Reports' issued jointly by the Institute of Actuaries and the Faculty of Actuaries.

Signature	Edwin Topper.
Scheme Actuary	E S Topper
Date of signing	27 March 2003
Qualification	Fellow of the Institute of Actuaries

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Valuation Results

Funding basis

1.1 I show the results of the valuation below using both:

- actuarial assumptions based on financial market yields on the valuation date ("current yield basis"); and
- the longer-term actuarial assumptions I have used to develop the normal contribution rate ("nominal yield basis").

Future service

1.2 The calculations on the funding basis are used to determine the contributions required to satisfy the Trustee's long-term funding objective, ignoring statutory minimum and maximum funding restrictions.

	Nominal Yield Basis %
Contribution rate for:	
a. Projected pension benefits based on service for the year following the valuation (including life assurance costs)	20.4
b. Allowance for the cost of administrative expenses paid from the Scheme	0.2
Total contribution rate	20.6
Employee contribution rate	6.35
Employer normal contribution	14.25

Past service adjustment

1.3 I calculate an adjustment to the normal contribution rate to correct any imbalance between the assets of the Scheme and the Trustee's funding target.

	Current Yield Basis
Funding target:	£m
a. members in service	11,012
b. deferred pensioners	1,271
c. pensioners	7,493
All members	19,776
Actuarial value of assets	19,938
Surplus	162
Funding level	101%

1.4 Of the surplus identified, £87m is in respect of the Main Section and £75m is in respect of the Supplementary Section. The surplus in respect of the Main Section is sufficient to allow the current Employer contribution rate of 14% to be maintained for the next 12 years (the average future working lifetime of the current active members).

1.5 It is highly likely that future financial developments will not follow our assumptions, especially in the short term. The scope for variation in the funding level – and resulting contribution requirements – is substantial, depending on the various economic circumstances that could arise. As the funding basis is prudent and the statutory minimum levels of funding adequately covered, short term changes in financial markets can be considered over a longer time horizon. The funding level and Employer contribution rate should, however be monitored and subject to review at subsequent, three yearly, actuarial valuations.

Reconciliation to previous valuation

1.6 The previous actuarial valuation was carried out at 31 March 1999. On an ongoing basis, the value of the assets exceeded the value of the accrued liabilities, after making allowance for projected salaries and there was therefore a surplus in the Scheme of £1,442.8m.

1.7 The principal reasons for the change in the surplus position between the two valuations are as follows:

	£m's
Surplus at 31 March 1999	1,443
Benefit improvements following 1999 valuation	(150)
Employer contributions less than normal contribution	(220)
Investment return lower than assumed	(1,950)
Membership movements (ill health retirements, withdrawals and deaths)	30
Changes in demographic assumptions	(237)
Rises in interest rates	1,246
Surplus at 31 March 2002	162

Statutory constraints

Minimum basis

1.8 These calculations are required to ensure that the recommended contribution rate satisfies the minimum funding requirement (MFR) of the Pensions Act 1995.

	Prescribed assumptions £m
Present value of accrued benefits for:	
a. members in service	6,197
b. deferred pensioners	720
c. pensioners	6,698
All members	13,615
Expense provision	274
Market value of assets	19,938
Surplus	6,049
Funding level	144%

1.9 Further details of the MFR calculation are shown in Appendix C.

Maximum basis

1.10 Contributions may have to be restricted if there is an excessive surplus based on the prescribed assumptions under the Income and Corporation Taxes Act 1988. The valuation does not reveal an excessive surplus.

Solvency

1.11 The table below shows my estimate of the position if the Scheme had discontinued on the valuation date. The calculations assume that the Trustee continues to operate the Scheme as a closed fund. The provision for future expenses is based on our experience of the ongoing costs of administering a closed scheme. This should not be taken as an estimate or quotation of the likely costs.

	Closed scheme
Present value of projected benefits for:	£m's
a. members in service	8,461
b. deferred pensioners	1,271
c. pensioners	7,493
d. provision for future expenses	300
Total	17,525
Market value of assets	19,938
Surplus/(deficit)	2,413
Funding level	114%

Investment strategy

1.12 I have assumed that the Trustee will continue to invest a significant portion of the assets of the Scheme in UK and overseas equities and that these will produce a future investment return that exceeds the current yield available on bonds.

1.13 Alternative investment strategies could be followed that, at least in theory, would minimise the risk of deterioration in one of the measures of the Scheme's funding position. One such strategy would be to invest the assets of the Scheme primarily in long-term fixed and index-linked bonds. This strategy would substantially reduce the risk that changing economic conditions will cause a deterioration in the Scheme's solvency position. It would also tend to produce a more stable contribution rate but at an overall higher level.

1.14 A different strategy would be to hold investments corresponding to the MFR liability which would be based on a notional portfolio consisting of a mixture of UK bonds (gilts) and UK equities. This strategy would reduce (but not eliminate) the risk that changing economic conditions will lead to a deterioration in the Scheme's MFR funding level which would in turn lead to higher minimum contribution requirements. The Government intends to abolish the MFR in its present form, but the timing of this has not yet been announced.

1.15 Either of these alternative strategies would involve investing more significant portions of the assets in gilts or corporate bonds. This could lead directly to a higher recommended contribution rate since it may no longer be appropriate to anticipate the higher investment return that is generally achieved by UK equities. In common with most UK schemes, the Trustee has adopted a higher risk investment strategy in the hope of reducing long-term contribution requirements. Given the current financial position of the Scheme and the respective MFR and discontinuance funding levels, I consider that the Trustee's current investment strategy is appropriate for the liabilities of the Scheme although the strategy should be subject to periodic review.

2

Valuation Objectives and Method

Valuation objectives

2.1 The valuation has been undertaken on the instructions of the Trustee Company and in accordance with Rule 20.20 of the Scheme's trust deed and rules. Under the Rules of the Scheme the contribution rate is set by the Trustee Company. Their choice of contribution rate may be constrained by the minimum funding requirement or the maximum funding limits. The purpose of the valuation is to review the Employer contribution rate taking account of the Trustee's funding objectives and statutory requirements.

2.2 It is convenient to define a valuation objective in order to monitor the contribution requirement. This usually means setting a long-term funding target and adjusting the funding rate to meet that target (rather than setting a fixed contribution rate and allowing the funding target to vary). The Trustee has agreed to adopt the same target as was used for the 1999 valuation i.e.:

Funding target: assets equal to or above the present value of benefits based on completed service but with provision for the effects of future salary growth and inflation up to the assumed retirement age.

2.3 This valuation objective is designed to represent a balance between giving members a reasonable level of security in respect of accrued pension rights, and ensuring that the Employers' contribution to the Scheme is realistic without being excessive.

2.4 The Employers' contributions must also be at least equal to the minimum required by the Pensions Act 1995 (the "Minimum Funding Requirement"), and must not exceed the amount allowed by the Income and Corporation Taxes Act 1988. These are both statutory funding requirements with specified actuarial bases. While they are not generally appropriate for long-term funding, they may effectively override the long-term funding rate based on the chosen funding target.

Valuation method

2.5 I have continued to use the same actuarial method, namely the Projected Unit method, at this valuation. The Projected Unit method is consistent with the long term funding target and is in common use for funding pension schemes in the United Kingdom.

2.6 The recommended contribution under the Projected Unit method consists of two parts:

2.7 The **normal contribution** required to meet the cost of benefits accruing for service after the valuation. This is calculated as the value of benefits expected to accrue to the membership in respect of one year's service based on projected salaries,

plus

2.8 The **contribution adjustment** required to correct (over an agreed future period) any imbalance between the assets of the Scheme and the funding target.

2.9 For a given set of actuarial assumptions, the method has the following characteristics:

- if the membership profile remains stable in terms of age and sex, then the normal contribution rate (as a percentage of salaries) will remain stable. The method therefore implicitly allows for new entrants;

- if the supply of new entrants to the Scheme is cut off or declines, then the normal contribution rate will tend to rise at future valuations.

Selection of assumptions

Normal contribution

2.10 As described above, the normal contribution to the Scheme is calculated as the value of benefits expected to accrue to the membership in respect of one year's service based on projected salaries. Theoretically, this value should take account of the investment return and other financial conditions at the time the contributions are invested. However, these will not be known at the valuation date and the actuary must make appropriate assumptions.

2.11 There are two general approaches to setting the assumptions to be used for the calculation of the normal contribution:

- use the long-term yield available in the market at the valuation date ("current yield") as a "best estimate" of future market rates
- use a yield ("nominal yield") which is adjusted only gradually to reflect market movements. This may be thought of as an "average long-term yield".

2.12 I have agreed with the Trustee to use the second approach (nominal yield) since this is likely to produce a smoother funding pattern over the long-term. However, it is important to be aware that the true cost of benefits being earned currently may be more or less than the funding rate calculated using the nominal yield. These cost variations may average out over the long-term. In any event, trends towards higher or lower expected average costs will be taken into account when setting the nominal yield at future valuations.

Contribution adjustment

2.13 As described above, an adjustment is made to the normal contribution to correct (over an agreed future period) any imbalance between the assets of the Scheme and the funding target (i.e. the present value of benefits based on completed service but with provision for the effects of future salary growth and inflation up to the assumed retirement age). To determine the adjustment, assets and liabilities must be calculated on a consistent basis. Again, there are two general approaches:

- use the current yield to calculate the funding target and measure assets at market value (which is by definition consistent with this yield), or

- use a nominal yield to calculate the funding target and take the assets at a calculated value which is consistent with the nominal yield

2.14 I have agreed with the Trustee to use (as was the case in the 1999 valuation) the first of these approaches. This has the advantage of using an easily understood value for the assets.

3

Valuation Assumptions

3.1 The valuation results depend on the assumptions used. There are two broad categories of assumptions -

- financial assumptions - such as the investment return that will be earned in the future and the rates at which earnings and pensions will increase; and

- demographic assumptions - such as rates of mortality, retirement, and withdrawal from the Scheme.

3.2 The financial and demographic assumptions are considered separately below. A number of changes have been made to the assumptions used for the last actuarial valuation. These have been noted below.

Financial assumptions

3.3 I have derived the financial assumptions from the long-term yield on Government bonds in the market at the valuation date (the "current yield").

3.4 In setting any actuarial basis, it is important to appreciate that the differences between the financial assumptions, i.e. the real return above price and salary inflation, are more significant for the valuation result than the absolute rate of investment return or salary growth.

Current yield basis

3.5 The table below compares the key market yields on the valuation date with the corresponding yields at the last valuation:

	Valuation date	Previous valuation
Annualised yield on long-dated fixed gilts	5.0%	4.5%
Annualised yield on long-dated index-linked gilts	2.2%	1.9%
Long term expectation for annual inflation	2.7%	2.6%

Investment return

3.6 In considering the current investment return assumption I have taken into account:

- The return available on long dated gilts of 5.0% per annum.
- The expected out-performance over gilts in the long term from other asset classes, such as equities, held by the Scheme. It is a matter of judgement what the expected out-performance relative to gilts should be.
- For the purpose of determining the past service liabilities, the assumed out-performance over gilts has been taken as nil. This is consistent with the approach taken for the 1999 valuation and so represents the same degree of prudence relative to market conditions as in 1999.
- For the purpose of assessing the normal contribution rate for future service liabilities I have taken account of the fact that contributions will be invested on terms applying at future dates which are not directly linked to market conditions at the valuation date. I consider it appropriate, for future service, to make some allowance for expected out-performance over gilts. Taking a simplified and cautious approach I have allowed for out-performance of 1.0% per annum in setting the investment return assumption for future service.

3.7 In summary, the investment return has been assumed to be 5.0% per annum in respect of past service liabilities and 6.0% per annum in respect of future service liabilities.

Pension increases

3.8 In respect of the Main Section, the Scheme guarantees to increase the pension in payment (in excess of the GMP) in line with the provisions of the Pensions (Increase) Act (as modified by the Social Security Pensions Act 1975). [Statutory increases are also provided on the Guaranteed Minimum Pension (GMP)]. For the purpose of this valuation I have assumed that all pension increases (in excess of GMP) would be granted in line with price inflation. Current price inflation has been assumed to be the long-term rate implied by the market, i.e. 2.7% per annum. Statutory increases have been allowed for on the GMP elements.

3.9 Pension increases in the Supplementary Section are discretionary. However, as in 1999, the same allowance for pension increases has been made as for the Main Section.

Pensionable salary increases

3.10 I have assumed that increases in salaries will be 1.0% per annum above the assumed increase in price inflation of 2.7% per annum i.e. a total increase of 3.7% per annum. I have also allowed for a salary scale to reflect age and promotional increases in addition to general salary escalation. The same scale as adopted for the 1999 valuation has been used this time.

Current yield basis summary

3.11 In summary, the current financial assumptions adopted for the valuation (compared with those adopted for the previous valuation) are as follows:

	Valuation date	Previous valuation
Investment return – past service	5.0% pa	4.5% pa
Investment return – future service	6.0% pa	5.5% pa
Pensionable salary increases	3.7% pa	3.6% pa
Pension increases	2.7% pa	2.6% pa
Price inflation	2.7% pa	2.6% pa

Demographic assumptions

3.12 As well as the financial assumptions, it is necessary to make a number of assumptions regarding membership movements such as retirements and deaths and other matters. Similar assumptions to those adopted for the previous valuation have been adopted for this valuation although some changes have been made to reflect the inter-valuation experience of the Scheme. The most important demographic assumptions, and the changes made, are discussed below.

Assumed retirement age

3.13 For funding purposes it has been assumed in previous valuations that active members would retire on average at age 60, with no reduction to their benefits being applied. Deferred pensioners are also assumed to retire at age 60 but allowing for the appropriate reductions to benefits which would apply for most members retiring at that age.

3.14 USS Limited has informed me that the average age of active members retiring in the three years to 31 March 2002, excluding ill health retirements, was 60. I have therefore retained this assumption for this valuation. It should be noted that the Pension Schemes Office of the Inland Revenue would not normally allow advance funding for early retirements prior to age 60.

Ill health retirement

3.15 I have calculated the "expected" number of ill health retirements for the period 1999/2002, based on the 1999 valuation assumptions and compared this with the actual numbers occurring, as advised by USS Limited. The details are summarised below:

	1999/2002
Expected ill health retirements	562
Actual ill health retirements	435
100% x Actual/Expected	77%

3.16 The ill health retirement assumption was revised at the 1999 valuation to reflect the 1996/99 experience, during which period there were 503 ill health retirements.

3.17 Ill health retirements tend to cause a strain on the funding reserve and so the lower than expected numbers indicates conservatism in our allowance. Based on the above, I have maintained the same assumption as was adopted for the 1999 valuation.

Pre-Retirement Mortality

3.18 I have examined the mortality experience of current active members over the period 1999/2001. The actual number of deaths represented 56% of "expected", which is very similar to the previous valuation experience (1996/99) where actual deaths represented 54% of expected. Deaths at older ages lead to a release of reserves and thus generate surplus. The current active mortality table does appear, therefore, by overstating the number of deaths to understate the liabilities.

3.19 Taking into account the actual experience over the last two valuation cycles I have decided to revise the existing pre-retirement mortality assumption to reflect the experience exhibited, and likely continued longevity improvements.

3.20 Accordingly standard tables have been used as follows:

Pre-retirement mortality:	PA92 rated down 3 years

Use of this mortality table reflects more closely the actual USS experience and also provides an element of conservatism in the basis to allow for yet further improvements in pre-retirement mortality rates.

Post-Retirement Mortality

3.21 Analysis of experience over the last 3 years indicates that the total actual number of pensioner deaths was 2,070, which compares with 1,972 "expected" on the basis of the 1999 valuation assumptions. The pensioner mortality table put in place in 1999 was designed to fit the then USS experience. It has, broadly, done that, albeit actual pensioner deaths were some 5% in excess of the number expected, or predicted, by the 1999 pensioner mortality table. As pensioner deaths result in a release of funding reserves it is prudent not to overstate the number of pensioner deaths in the basis.

3.22 Furthermore, improvements in mortality are still expected, and it is the life expectancy of younger members that is projected to improve most significantly: each generation of pensioners is expected to live longer than the previous generation. Current projections indicate that, for future generations of pensioners, liabilities might increase by of the order of 1% or 2%. I have therefore decided to adopt a more modern mortality table for this valuation reflecting these anticipated future improvements. Accordingly, I have adopted the following table:

Post-retirement mortality:	PA92 (c=2020) for all retired and non-retired members.

Withdrawals

3.23 This assumption relates to those members who leave the Scheme with an entitlement to a deferred pension or transfer value.

3.24 Higher than anticipated withdrawals (those who leave active service and become deferred pensioners or take a transfer value) generally have a positive financial impact. This is because a reserve held for an active member anticipates future salary increases that are generally more valuable than the benefits available on withdrawal (which are linked to inflation).

3.25 Investigations have shown that the actual number of withdrawals was more than double that assumed in the 1999 valuation - approximately 133% higher.

3.26 Our analysis at the previous valuation at 31 March 1999, showed withdrawal rates in the preceding three years to be 129% higher than assumed. At that time, it was agreed that the withdrawal assumption would not be modified, in part in recognition of the fact that the USS participates in the Transfer Club. This is because the Scheme incurs losses in respect of Club transfers in, and so it is prudent to restrict the anticipated profits arising on future withdrawals from the Scheme to make an implicit reserve for the losses on Club transfers in.

3.27 For this valuation I have, however, decided to assume 50% more withdrawals than was assumed in 1999 to take account of the large difference between the actual and expected number of withdrawals. This new assumption still contains a margin for prudence compared with the actual experience.

Promotional salary scale

3.28 An additional allowance has been made for increases in Salaries due to age and promotion, above the general allowance of 1.0% in excess of price inflation. The same salary scale as adopted for the 1999 valuation has been retained for this valuation.

4

Valuation Data and Trends

4.1 The valuation is based on three key items of data:

- the membership of the Scheme at the valuation date;
- the benefits promised by the Scheme as set out in the Trust Deed and Rules and any subsequent amendments; and
- the amount of assets held by the Scheme on the valuation date.

Membership

4.2 Data in relation to members in service, former employees with deferred pensions and current pensioners were provided by USS Limited. I have carried out such reasonableness checks as are practicable on this data.

4.3 The following is a summary of the membership data I have used for processing the valuation calculations, with figures at the previous valuation date, shown for comparison.

4.3.1

Members in service	**Valuation date**	**Previous valuation**
Number of members	94,557	81,593
Total Salaries (£m’s)	2,910.4	2,353.3
Average Salary (£ pa)	30,779	28,842
Average age	42.8	42.5

The active membership has increased by approximately 16% since 1999. The average Salary of Scheme members increased by 6.7% over the period since the last valuation (i.e. just over 2% per annum over the period).

4.3.2

Former employees	Valuation date	Previous valuation
Number	48,050	37,991
Total deferred pensions* (£m’s pa)	85.6	70.2
Average deferred pension* (£ pa)	1,782	1,848

* including 2002 pension increase

4.3.3

Pensioners and Dependants	Valuation date	Previous valuation
Number of pensioners	28,833	24,487
Annual pensions* (£m’s pa)	459.7	366.7
Average pension* (£pa)	15,942	14,976
Number of dependants	5,633	4,620
Annual pensions* (£m’s pa)	46.2	34.9
Average pension* (£ pa)	8,201	7,543
Number of children	698	696
Annual pensions* (£m’s pa)	2.2	2.8
Average pension* (£ pa)	3,119	4,093

* including 2002 pension increase

4.4 Pensions in payment and deferment under the Scheme were increased each year on 1 April at the following rates:

- 1999 – 3.2%
- 2000 – 2.1%
- 2001 – 3.3%
- 2002 – 1.7%

Benefits

4.5 The Scheme commenced on 1 April 1975 and is exempt approved under Chapter I, Part XIV of the Income and Corporation Taxes Act 1988. The Scheme is contracted out of the State Earnings Related Pension Scheme (SERPS). A reference scheme test certificate (confirming that scheme benefits satisfy the statutory comparison with minimum benefits provided by a reference scheme in accordance with sections 12A and 12B of the Pension Schemes Act 1993) is in force and a certificate T (confirming that scheme funding is adequate to meet certain priority liabilities). I know of no reason why either of these two certificates should no longer be valid.

4.6 The benefits valued are those provided by the Scheme as set out in the Trust Deed and Rules and allow for the changes in benefits granted following the 1999 valuation. A summary of Scheme benefits is included as an Appendix.

4.7 UK and European law require pension schemes to provide equal benefits to men and women in respect of service after 17 May 1990 (the date of the "Barber" judgement). There is still no general agreement on whether this applies to inequalities caused by guaranteed minimum pensions (GMPs) and, if it does, what adjustments have to be made to scheme benefits to correct these inequalities. The valuation makes no allowance for equalisation of these inequalities. It is consequently possible that additional funding will be required for equalisation once the law has been clarified. I recommend that the Trustee seeks further professional advice if it is concerned about this issue.

Assets

4.8 Details of the assets held by the Scheme and audited accounts covering the period ended 31 March 2002 were supplied by USS Limited. A summary of the assets held is shown in Appendix B.

4.9 Following the last valuation it was agreed that the Employers would pay a contribution rate of 14% of Salaries to the Scheme. Members' contributions are payable in addition. The audited accounts confirm that contributions have been paid at this rate.

4.10 The Scheme's assets are invested in equities and bonds in both UK and overseas markets using investment managers who invest either directly in stocks or via pooled funds investing in such stocks. The Scheme also holds other investments such as property.

4.11 During the period, the investment return achieved by the Scheme has been approximately 1.5% per annum which compares with 4.5% per annum assumed at the last valuation.

4.12 The Scheme has an additional voluntary contribution (AVC) facility with the Prudential to which members may choose to pay additional contributions to secure additional benefits under the Scheme. As the assets under this arrangement are used solely to meet (and match precisely) the AVC liabilities, they have been ignored for the purposes of this valuation. Where AVC's are paid into the Scheme to secure additional service, the additional liabilities arising have been allowed for as part of this valuation.

Appendix A

Outline of Benefits and Contribution Structure at 31 March 2002

A.1 Eligibility

Employees of the Institutions on 1 April 1975 in academic, senior administrative and comparable occupations who were then members of the Federated Superannuation System for Universities (FSSU), the Teachers Superannuation Scheme (TSS), the National Health Service Superannuation Scheme (NHSSS) or a Local Government Scheme (LGS), were eligible to transfer to USS up to 5 April 1980.

Employees in the above category and where specified by the employer in any other University employment subsequently joining the pensionable service of an Institution are eligible to join USS provided they are not within five years of Normal Retirement Age, although the Trustee Company has power to waive this condition.

A.2 Definitions

(a) NORMAL RETIREMENT AGE means, for both male and female members, age 65.

(b) PENSIONABLE SERVICE is broadly the time during which a member has been engaged in academic or similar employment with an Institution and may include periods of service before the start of USS. Pensionable service is, however, limited to a maximum of forty years.

An employee who transferred before 29 August 1992 from employment in an Institution other than academic or related employment had service in such employment counted in USS on a year-for-year basis.

An employee who transferred before 6 April 1980 from FSSU, TSS, NHSSS or a LGS had pensionable service in that scheme transferred to USS on a year-for-year basis.

(c) SCHEME SERVICE is the total period of Pensionable Service which the member would have completed if the member had remained in the employment of the Institution until Normal Retirement Age.

(d) SALARY is the total annual fixed salary of the member, including fixed allowances but subject to the Finance Act 1989 cap for those joining the Scheme after 31 May 1989. With the agreement of the Trustee Company, the Institution can determine that fluctuating emoluments be included in Salary.

(e) PENSIONABLE SALARY is normally the member's highest Salary, as defined above, received for a period of twelve months during the last three years before Normal Retirement Age or before leaving service (whichever is the earlier) or, if greater, the highest yearly average of the member's total Salary for any three year period ending in the last ten years. For this purpose, Salary for any year, except the last before the date of calculation, is increased in proportion to the rise in the Index of Retail Prices from the last day of that year up to the date of calculation.

A.3 Contributions

Members pay contributions at the rate of 6.35 per cent of Salary.

Members may, within certain limits, pay additional voluntary contributions in order to secure additional benefits.

Members cease contributions on reaching Normal Retirement Age or completing forty years' Pensionable Service, whichever occurs first, provided that if the member has not completed forty years' Pensionable Service at Normal Retirement

Age and remains in service, contributions may be continued so as to provide further benefits on actual retirement.

The balance of the cost of the benefits is met by the Institutions which pay such rate of contribution as the Actuary recommends to be appropriate. This has been 14.0 per cent of Salaries since 1 January 1997.

A.4 Pension payable on Normal Retirement Age

On retirement at Normal Retirement Age, or after age $63^1/_2$, a pension is payable to the member at the rate of one-eightieth of Pensionable Salary for each year of Pensionable Service with allowance for completed days.

A.5 Retirement before Normal Retirement Age on grounds of ill-health or incapacity

On such retirement, provided two years' Pensionable Service has been completed, a member is normally entitled to an immediate pension calculated as one-eightieth of Pensionable Salary for each year of Scheme Service.

If an ill-health withdrawal takes place after less than two years' Pensionable Service has been completed then the member is entitled to normal leaving service benefits as outlined in paragraph A14.

A.6 Retirement before Normal Retirement Age on grounds other than ill-health or incapacity

A member who has reached age 50 and completed five years' Pensionable Service and who retires before Normal Retirement Age either at the request of the employing Institution or on account of redundancy or a member who has reached age 60 and completed five years' Pensionable Service and who retires with the consent of his Institution receives an immediate pension. The amount of the pension is one-eightieth of Pensionable Salary for each year of Pensionable Service up to the date of retirement.

A.7 Retirement after Normal Retirement Age

On retirement after Normal Retirement Age a member is entitled to the pension which would have been received at Normal Retirement Age, increased by such an amount as the Trustee Company, acting on actuarial advice, decides is appropriate.

A.8 Lump sum benefits on retirement

On retirement on pension a lump sum retirement benefit also becomes payable. The usual scale for this benefit is three times the annual amount of the pension. A member may request that a higher or lower amount should be payable, in which case the member's pension is reduced or increased appropriately.

A.9 Lump sum benefits on death in service

On the death of a member in service before Normal Retirement Age a lump sum is payable equal to three times the Salary being paid to the member at the date of death.

A.10 Spouses' pensions payable on death in service

On the death of a member, a spouse's pension is payable at the same rate as the deceased member's Pensionable Salary at the date of death but reducing after three months' payments have been made to one-half of the pension which would have been payable had the member retired because of ill-health on the day before the death.

The pension is payable until the death of the spouse. Where the member does not leave a spouse, the Trustee Company has discretion to pay the pension to a dependant.

A.11 Spouses' pensions payable on death after retirement

On the death of a member after retirement whilst in receipt of a pension leaving a spouse, a spouse's pension is payable at the same rate as that previously payable to the member (before any reduction because of an allocation to provide an additional dependant's annuity) but reducing to one half that amount (before any adjustment because of a conversion of pension for lump sum or vice versa at retirement) after three months' payments have been made. The pension is payable until the spouse's death. Where the member does not leave a spouse, the Trustee Company has discretion to pay the pension to a dependant.

A.12 Children's allowances on the death of a member before or after retirement

In addition to spouses' pensions, children's allowances are payable in respect of each qualifying child subject to a maximum of two (as defined in the rules) on the death of a member in service. The children's allowance for each qualifying child is calculated at the rate of three-eighths of the pension that would have been payable to the member on ill-health retirement on the day before the death. Where, however, there is no spouse's pension payable then the rate of the children's allowance is one-half (instead of three-eighths) of the corresponding member's pension.

When a member dies after retirement, children's allowances are payable at the same rates as apply for a member dying in service, as described above, except that reference to the member's ill-health pension is to be taken as referring to the member's actual pension (before any adjustment because of a conversion of pension for lump sum or vice versa at retirement or because of the provision by allocation of an additional dependant's annuity).

A.13 Lump sum benefits payable on death after retirement

On the death of a pensioner there is a lump sum payable normally calculated as the excess, if any, of the amount payable if the member had died in service less, except in the case of ill-health retirees, the actual amounts received by the member by way of pension and lump sum retirement benefits.

A.14 Benefits on leaving service

Where a member withdraws from service before Normal Retirement Age without becoming entitled to an immediate pension but having completed two years' qualifying service, the member will be entitled to a deferred pension payable from Normal Retirement Age. This is calculated as one-eightieth of Pensionable Salary for each year of Pensionable Service to the date of leaving. There will also be a lump sum payable at eventual retirement on the scale set out in paragraph A.8.

A member who leaves with less than two years' qualifying service may take a refund of contributions plus interest subject to certain deductions. Alternatively, such a member may elect to take a deferred pension and lump sum retirement benefit equal in value to the contributions, with interest, less the member's share of the cost of the Contributions Equivalent Premium which is payable to the State.

On the death of a former member with a deferred pension before the pension starts to be paid, a lump sum of three times the annual rate of the deferred pension is payable, together with a spouse's pension, if applicable, of one-half of the amount of the deferred pension and children's allowances calculated by the same method as for a member who continues in service. In such a case, once the pension has started to be paid, benefits will be payable on the scales set out in paragraphs A.11, A.12 and A.13.

In lieu of the benefits described above, the Trustee Company is able to pay a transfer value to another pension scheme which is empowered to accept such transfers or a "buy-out" policy issued under the provisions of Section 591(2)(g) of the Income and Corporation Taxes Act 1988 or a personal pension scheme.

A.15 Premature retirement terms

In accordance with Rule 8.2(g) an employer may pay additional contributions in order to grant a member additional benefits on premature retirement. The additional contribution is determined in accordance with tables approved by the Trustee Company.

A.16 Pension increases

Pensions in payment from the Main Section of the Scheme (see A.18 below) and in the period of deferment and pensions from annuities are increased in line with the provisions of the Pensions (Increase) Acts as modified by the Social Security Pensions Act 1975. Pensions in payment from the Supplementary Section of the Scheme have in practice been increased to the same extent.

A.17 Pension Schemes Act 1993

From 6 April 1978 to 5 April 1997, the members of USS have been contracted-out of the State Earnings-Related Pension Scheme (SERPS). As a consequence the appropriate benefits are guaranteed to be not less than the Guaranteed Minimum

Pension (GMP) or the spouse's GMP as the case may be. With effect from 6 April 1997 members have been contracted-out on the Reference Scheme Test basis.

As the State Pension Scheme will pay all or part of the pension increases (as provided for under the legislation) on both the GMP and the spouse's GMP, the pension increases required in USS under the Pensions (Increase) Acts will be correspondingly reduced.

A.18 Main and supplementary Sections

The levels of benefits described above are the total benefits from the Scheme. The principal benefits are provided under the Main Section whilst the Supplementary Section provides additional benefits payable when a member retires on the grounds of ill-health or incapacity or dies in service. From the member's contribution of 6.35 per cent of Salary (referred to in paragraph A.3) 6 per cent is paid to the Main Section and 0.35 per cent to the Supplementary Section. The whole of the contributions payable by the Institutions is paid to the Main Section.

Appendix B

Asset Value Summary

	£m	%
Bonds:		
Fixed gilts	454.5	2.3
Index linked gilts	397.6	2.0
Overseas bonds	933.1	4.7
Equities:		
UK-listed	11,200.2	56.1
Overseas-listed	4,470.9	22.4
Property	1,666.9	8.4
Life Assurance policies	183.4	0.9
Cash including stockbroker balances	463.7	2.3
Net current assets	185.7	0.9
Total	£19,956m	100.0
Note: AVC investments are excluded from the above figures.		

Subsequent to finalisation of the accounts, a decision was taken to surrender policies held with Equitable Life, at a surrender penalty of 10% of the asset share. For the purpose of the actuarial valuation, we have made allowance for the surrender and have therefore taken the assets of the Scheme into account at £19,938 million.

Appendix C

Minimum Funding Requirement

C.1 The Pensions Act 1995 introduced the Minimum Funding Requirement (MFR). The Trustee is obliged to obtain regular actuarial valuations using the MFR methodology and assumptions as set down in regulations and is also required to obtain regular funding certificates.

C.2 If the funding level on the MFR basis is less than 90%, the Employer must make additional contributions so that the MFR coverage is restored to 90% within a 3-year period and then up to 100% over the next 7 years. If the funding level on the MFR basis is between 90% and 100%, future contributions must be such that the MFR funding level is projected (on this specified actuarial basis) to increase to 100% or more within 10 years. If the funding level on the MFR basis exceeds 100%, future contributions must be such that the MFR funding level is projected (on this specified actuarial basis) to remain above 100% for the 5 years following certification of the contribution schedule. In each of these 3 cases, the actual funding level at the end of the relevant period will depend on the experience of the scheme over the period and the conditions prevailing at that date.

C.3 The assumptions are laid out in Regulations and under professional guidance from the Institute and Faculty of Actuaries. The principal assumptions are:

Investment return - before retirement	9.0 % pa
- after retirement	8.0 % pa
Pension increases (other than fixed)	3.5% pa for Limited Price Indexation
Assets	Market value

Market value adjustments (MVAs) are applied to the liabilities based upon how the market conditions at the valuation date compare with the market conditions assumed under MFR. Since the above assumptions were set, there have been substantial changes in long-term market rates of interest as measured by bond yields and the MVAs now have a significant effect on the calculations.

C.4 The liabilities under the MFR test are determined as:

Members in service and deferred pensioners	Value of accrued rights (based on leaving service at the valuation date for members in service), using prescribed assumptions.
Pensioners	Amount needed to secure pensions in payment by matching assets in a closed fund or by purchasing annuities.

C.5 The liabilities exclude any discretionary pension increases and ignore any enhanced benefits only payable with the employer's consent e.g. on early retirement. The liabilities will also include an allowance for the expenses of winding up, which generally are 4.0% of the liabilities but are on a sliding scale the larger the pension fund.

C.6 Assets are based on audited market values (with modifications for insured assets).

C.7 On completion of this valuation, the Trustee and the Employers have twelve weeks to draw up and agree a schedule of contributions. The contributions shown on the schedule must be sufficient to retain (or attain) an MFR funding level of 100% across (or within) the lifetime of the schedule. Importantly, the regulations require the actuary to take into account investment conditions 7 days prior to the date of certification of the schedule of contributions, so the final MFR contribution requirement will not be known for certain until that time.

C.8 The cost of each extra year's service for members in service on the MFR basis is the value of the increase in leaving service benefits during the year. This reflects the extra pension earned from the year's service together with the cost of increasing benefits previously accrued in line with salary growth in the year. The cost on this basis tends to be high for older members with substantial past service and low for young members with little past service.

C.9 The items which are likely to have greatest effect on the MFR position going forward, are:

- how actual asset performance compares with the performance of a notional fund of UK equities and UK long dated gilts in proportions determined by the liability profile.

- how the actual level of dividend income and dividend yield on the FTASI compare with the assumptions underlying the MFR basis.

- how actual contributions compare with the cost of accrual on the MFR assumptions. This cannot be determined fully in advance as it depends on the level of the items referred to above.

- the actual level of salary increases compared with the assumed basis under MFR.

- other general experience items such as early retirements, ill health retirements, deaths, withdrawals and so on.

C.10 The prescribed methodology for determining the minimum contributions does not guarantee that the MFR position will not fall below 100% but does seek to minimise the risk.

Certificate A

Ongoing Funding Statement

Actuarial Statement made for the purposes of Regulation 30 of the Occupational Pension Schemes (Minimum Funding Requirement and Actuarial Valuations) Regulations 1996

Name of Scheme	Universities Superannuation Scheme
Effective date of valuation	31 March 2002

1. **Security of prospective rights**

   In my opinion, the resources of the scheme are likely in the normal course of events to meet in full the liabilities of the scheme as they fall due. This statement assumes the scheme continues and does not mean that should the scheme wind up there would be sufficient assets to provide the full accrued benefits.

   I have made assumptions consistent with market values, prospective investment returns and economic conditions at the effective date. Variations in markets may mean divergence from those assumptions and changes in values of assets such that this statement would no longer be true unless different assumptions are made or contributions increased at or before the next valuation. The Institutions' abilities to meet future contribution requirements are outside the scope of my investigation. In giving this opinion, I have assumed that the following amounts will be paid to the scheme:

Description of contributions

Employer contributions: 14% of Salaries per annum
Member contributions: 6.35% of Salary per annum

Subject to review at future actuarial valuations.

2. Summary of methods and assumptions used

Valuation method	Projected unit
Investment return - past service	5.0% per annum
- future service	6.0% per annum
Salary growth	3.7% per annum
Pension increases	2.7% per annum

Further details of the methods and assumptions used are set out in my actuarial valuation addressed to the Trustee dated March 2003.

Signature

Name E S Topper

Date of signing **27 March 2003**

Address Mercer Human Resource Consulting Limited,
Clarence House, Clarence Street,
Manchester, M2 4DW

Qualification Fellow of the Institute of Actuaries

Certificate B

Minimum Funding Requirement Statement

Actuarial Statement made for the purposes of Regulation 14 of the Occupational Pension Schemes (Minimum Funding Requirement and Actuarial Valuations) Regulations 1996

Name of Scheme	Universities Superannuation Scheme
Effective date of valuation	31 March 2002

1. **Compliance with minimum funding requirement**

In my opinion, on the effective date the value of the assets of the scheme exceeds 120% of the amount of the liabilities of the scheme.

2 **Valuation principles**

The Scheme's assets and liabilities are valued in accordance with section 56(3) of the Pensions Act 1995, the Occupational Pension Schemes (Minimum Funding Requirement and Actuarial Valuations) Regulations 1996 and the mandatory guidelines on minimum funding requirement (GN27), prepared and published by the Institute of Actuaries and the Faculty of Actuaries.

Signature	
Name	E S Topper
Date of signing	**27 March 2003**
Address	Mercer Human Resource Consulting Limited, Clarence House, Clarence Street, Manchester, M2 4DW
Qualification	Fellow of the Institute of Actuaries

Note:

The valuation of the amount of the liabilities of the scheme does not reflect the cost of securing those liabilities by the purchase of annuities, if the scheme were to have been wound up on the effective date of the valuation.

Surplus Certificate

The certificate is given to the Commissioners of Inland Revenue for the purposes of paragraph 2 of Schedule 22 to the Income and Corporation Taxes Act 1988.

Name of Scheme Universities Superannuation Scheme

Inland Revenue Reference No. SF21/1526

A. I hereby certify that:

1. In my opinion as at 31 March 2002 the value of the assets of the Scheme did not exceed 105% of the value of the liabilities of the Scheme;

2. The assets and liabilities to which paragraph (1) refers have been determined in accordance with principles and requirements prescribed by the Pension Scheme Surpluses (Valuation) Regulations 1987.

Edwin Topper.

Signature

Name E S Topper

Date of signing **27 March 2003**

Address Mercer Human Resource Consulting Limited,
Clarence House, Clarence Street,
Manchester, M2 4DW

Qualification Fellow of the Institute of Actuaries