Report to the University and College Union

Consideration of the impact on members' benefits in the USS of the changes in scheme design from 1 October 2011

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Introduction

This paper has been prepared for the University and College Union (UCU), on the instructions of Matt Waddup. We were asked to illustrate the effect on members of the reductions in benefits and increases in contributions in the Universities Superannuation Scheme (USS).

In this report, we have drawn on some of the example members used in our previous reports. In particular it is based on the specimen members of university staff in our report "A comparison of TPS with USS with and without a salary threshold" dated 29 November 2017. New specimen members have been created representing members on part time contracts. The specimen members are described in more detail in the appendix.

We were asked to model the effect of benefit changes and member contribution increases since the USS changed from a final salary scheme. Therefore the starting point is the 1/80ths final salary scheme with a 6.35% contribution. This closed to new entrants on 1 October 2011, so we assumed our specimen members joined the final salary scheme on 30 September 2011. We calculate what their benefits and contributions would have been had the final salary scheme not closed.

The final salary scheme closed to accrual on 31 March 2016. Our specimen members are moved from the final salary scheme to the career average scheme on that date. We calculate the benefits and contributions arising from the final salary scheme from 2011 to 2016 then the career average scheme from 2016, and observe the reduction in benefits and the increase in contributions relative to an unchanged final salary scheme.

Example member calculations

These example members have been selected from our previous reports. Further details of these members are provided in the appendix.

Member	Brief description	Years' service
M1	Researcher, works point 30 to 46	20
M4	Academic lecturer, works point 37 to 43	30
M6	Academic, works point 37 to 50	30
M7	Professor, works point 37 to 48 then band C	20
M10	Professor, works point 37 to 48 then band C to A	30
PT1	Part time member, 15 hours per week	20
PT2	Part time member, 20 hours per week	30
PT3	Part time member, 30 hours per week	30

Results of our calculations - member benefits comparison
2% real salary growth assumption

We have given the results of our calculations in tables of data. The 8 example members of university staff are labelled in the tables, and summarised above.

The results below show the cash and remaining pension after taking cash under the original final salary scheme, had it never closed. We then show the cash and remaining pension after taking cash resulting from the transfer to the career average scheme, and the loss to each of the 8 members.

We first show results using a CPI + 2% salary growth assumption, later we show results using a CPI + 1% salary growth assumption.

Benefits comparison, 2% real salary growth assumption

CPI+2% salary inflation	Final salary scheme remains unchanged			Final salary scheme then career average scheme up to cap, DC above cap			
Example member	Cash	Gross pension after taking cash	Net pension after taking cash	Cash	Gross pension after taking cash	Net pension after taking cash	Loss to member
M1	£98,400	£14,800	£12,600	£70,200	£10,500	£9,200	£120,000
M4	£155,300	£23,300	£19,400	£123,900	£18,600	£15,600	£134,000
M6	£192,300	£28,800	£23,800	£145,200	£21,800	£18,200	£198,300
M7	£110,500	£16,600	£14,000	£82,900	£12,400	£10,700	£116,700
M10	£351,600	£52,700	£40,600	£189,000	£25,400	£21,100	£689,100
PT1	£20,300	£3,000	£3,000	£17,900	£2,700	£2,700	£10,500
PT2	£49,400	£7,400	£6,700	£40,000	£6,000	£5,500	£41,800
PT3	£74,700	£11,200	£9,700	£60,500	£9,100	£8,000	£60,100

Results of our calculations - member contribution comparison
2% real salary growth assumption

The results below show the total contributions that would have been payable in the original final salary scheme, had it never closed, allowing for income tax relief. The third column (2017) shows the employee contributions payable following the contribution changes since 2011. Contributions in the future are assumed to follow those determined in the 2017 valuation. The fourth column (2018 Option 3) shows the impact of the proposed contribution changes following the 2018 valuation, using the trustee's Option 3.

Total contributions, 2% real salary growth assumption

CPI+2% salary inflation	Final salary unchanged cont. rate	2017 contribution rates	2018 Option 3 cont. rates	Loss 2018 Option 3 less Final salary
M1	£41,800	£65,800	£63,200	£21,400
M4	£68,900	£112,400	£108,200	£39,300
M6	£78,000	£122,900	£118,900	£40,900
M7	£46,400	£71,200	£68,500	£22,100
M10	£95,500	£144,900	£140,800	£45,300
PT1	£13,600	£21,600	£20,700	£7,100
PT2	£26,900	£44,700	£43,100	£16,200
PT3	£40,200	£66,900	£64,400	£24,200

Total loss to the member, 2% real salary growth assumption

The total loss to the member is the sum of the loss on benefits and the loss on contributions.

CPI+2% salary inflation	Loss on benefits	Loss on contributions	Total loss
M1	£120,000	£21,400	£141,400
M4	£134,000	£39,300	£173,300
M6	£198,300	£40,900	£239,200
M7	£116,700	£22,100	£138,800
M10	£689,100	£45,300	£734,400
PT1	£10,500	£7,100	£17,600
PT2	£41,800	£16,200	£58,000
PT3	£60,100	£24,200	£84,300

Results of our calculations
1% salary growth assumption

We give three further tables, based on a salary growth assumption of CPI + 1% pa.

Benefits comparison, 1% real salary growth assumption

CPI+1% salary inflation	Final salary scheme remains unchanged			Final salary scheme then career average scheme up to cap, DC above cap			
Example member	Cash	Gross pension after taking cash	Net pension after taking cash	Cash	Gross pension after taking cash	Net pension after taking cash	Loss to member
M1	£88,300	£13,200	£11,300	£68,300	£10,200	£8,900	£84,800
M4	£126,300	£18,900	£15,900	£115,200	£17,300	£14,600	£46,200
M6	£156,400	£23,500	£19,500	£133,300	£20,000	£16,700	£98,700
M7	£99,100	£14,900	£12,600	£81,000	£12,100	£10,500	£74,800
M10	£285,900	£42,900	£34,700	£157,900	£23,700	£19,700	£533,000
PT1	£18,200	£2,700	£2,700	£17,500	£2,600	£2,600	£3,400
PT2	£40,200	£6,000	£5,600	£37,000	£5,600	£5,200	£14,000
PT3	£60,800	£9,100	£8,000	£55,900	£8,400	£7,500	£18,400

Total contributions, 1% real salary growth assumption

CPI+1% salary inflation	Final salary unchanged cont. rate	2017 contribution rates	2018 Option 3 cont. rates	Loss 2018 Option 3 less Final salary
M1	£41,400	£65,400	£62,800	£21,400
M4	£65,300	£109,200	£104,800	£39,500
M6	£72,000	£115,400	£111,300	£39,300
M7	£45,200	£69,600	£67,000	£21,800
M10	£86,700	£134,000	£129,900	£43,200
PT1	£14,000	£22,200	£21,300	£7,300
PT2	£24,800	£40,900	£39,300	£14,500
PT3	£37,200	£61,300	£59,000	£21,800

Total loss to the member, 1% real salary growth assumption

The total loss to the member is the sum of the loss on benefits and the loss on contributions.

CPI+1% salary inflation	Loss on benefits	Loss on contributions	Total loss
M1	£84,800	£21,400	£106,200
M4	£46,200	£39,500	£85,700
M6	£98,700	£39,300	£138,000
M7	£74,800	£21,800	£96,600
M10	£533,000	£43,200	£576,200
PT1	£3,400	£7,300	£10,700
PT2	£14,000	£14,500	£28,500
PT3	£18,400	£21,800	£40,200

The total loss to the member is the sum of the loss on benefits and the loss on contributions.

Notes on our calculations

We have worked in real terms relative to CPI.

We have assumed that members join the final salary scheme immediately before its closure to new entrants in 2011. We compare the final salary benefits which could have been earned had there been no scheme benefit changes in 2016 with the actual benefits built up under the new scheme structure (i.e. final salary benefits from 2011 to 2016, then career average benefits thereafter).

In putting a simple total on the benefits paid, we assumed an average of 27 years life expectancy of the member and potential partner. We allowed for income tax on the pensions, having first allowed for tax free cash to be taken. For example, were a pension to be wholly taxed at 20%, the value placed on the retirement benefits would be calculated as: Pension x 27 x 80% + Cash. By neither inflating benefit payments by the annual increases nor discounting, we have implicitly assumed a discount rate equal to the benefit inflation rate. We assumed that the personal income tax allowance and the basic rate income tax band grow in line with CPI. This is in fact current Government policy.

The headline design of the USS is annual accrual of 1/75 of salary pension plus 3/75 of salary cash, but members in fact have the option to exchange some pension for more cash up to the HMRC limit, or to exchange the 3/75 cash for additional pension. We have prepared benefits in the scenario that the maximum tax free cash is taken, first from the DC pot (if there is one) and second by commutation of DB pension.

We have assumed that, in the first instance, cash is taken from the DC pot (if the member has one). On one hand, if the DC pot is not large enough to provide all the tax-free cash allowance in relation to the DB pension, then some DB pension will be commuted at the member's age-related commutation factor. On the other hand, if the DC pot is large enough to provide the maximum amount of tax-free cash in relation to the DB pension, then the balance of the DC pot will be used to provide further cash, 25% tax free, 75% taxed at 20%.

We have used the cash commutation factors in force for the USS at the time of writing.

The value of a final salary pension depends on how salary grows over a career. The specimen members each have a specified career path along the pay spine. We have made two alternative assumptions for the inflation of the pay spine and the hourly rates of the part time members of CPI + 1% and CPI + 2%.

There a number of reasons supporting the choice of CPI + 2% as an assumption for salary inflation:

- It is a reasonable representation of average historical general salary growth, at least before 2009.
- It is the assumption which USS has used since 2011 in its actuarial valuations (counting the actual assumption of RPI + 1% as broadly equivalent to CPI + 2%).
- Because CPI + 2% is the assumption used by USS in its actuarial valuations, from which derive the contributions, the loss on benefits to the member is also representative of the saving to the employers in contributions upon switching from final salary to career average.

On the other hand, some people might regard CPI + 2% as being optimistic about the future, and overstating the recent past (i.e. since 2009). We have also supplied calculations based on CPI + 1% salary growth.

We have assumed that DC investments earn a return before retirement of 1.5% more than general salary inflation. In the case of a salary inflation assumption of CPI + 2%, which USS uses, the return assumed on the DC account is CPI + 3.5%, an assumption which is at the top end of USS's opinions of the best estimate returns on different kinds of assets.

By working in real terms relative to CPI and using a fixed USS defined benefit salary cap of £58,590, we have in effect assumed that the salary cap grows with CPI inflation.

The sum of each member's contributions is net of income tax relief. Therefore, the total contribution is the total deduction from take home pay. We calculated the tax relief due on each year's contribution, allowing for standard and higher rates of tax.

Actuarial standards

I confirm I have complied with the requirements of the Technical Actuarial Standard 100: Principles for Technical Actuarial Work.

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30 August 2019

Appendix: Example members

Member 1

Age at joining:	47
State pension age:	67
Service:	20 years
Pay progression:	Join at spine point 30, reach spine point 48 and remain there

Member 4

Age at joining:	37
State pension age:	67
Service:	30 years
Pay progression:	Join at spine point 37, reach spine point 43 and remain there

Member 6

Age at joining:	37
State pension age:	67
Service:	30 years
Pay progression:	Join at spine point 37, reach spine point 50 and remain there

Member 7

Age at joining:	47
State pension age:	67
Service:	20 years
Pay progression:	Join at spine point 37, reach spine point 48 for 5 years, Prof C lower quartile £62,843 for 5 years, Prof C upper quartile £69,143 for remaining service

Member 10

Age at joining:	37
State pension age:	67
Service:	30 years
Pay progression:	Join at spine point 37, reach spine point 48 Prof C lower quartile £62,843 for 5 years, Prof C upper quartile £69,143 for 5 years Prof B lower quartile £72,500 for 2 years, Prof B upper quartile £88,968 for 2 years Prof A lower quartile £88,968 for 1 year, Prof A upper quartile £110,217 for remaining service

Part time member 1

Age at joining:	47
State pension age:	67
Service:	20 years
Hours per week	15
Pay progression:	£11.40 per hour for first three years, £14.90 per hour thereafter

Part time member 2

Age at joining:	37
State pension age:	67
Service:	30 years
Hours per week	20
Pay progression:	£11.40 per hour for first three years, £14.90 per hour thereafter

Part time member 3

Age at joining:	37
State pension age:	67
Service:	30 years
Hours per week	30
Pay progression:	£11.40 per hour for first three years, £14.90 per hour thereafter