

Higher Education Institutions (HEIs) Free Cash Flow Model for risk capacity

A pre-COVID estimate of the Higher Education (HE) sector's risk capacity calculated in support of the covenant assessment

7 September 2020

Risk capacity is the financial ability of USS employers as a group to withstand risk. In particular, it reflects the amount of money that we, the Trustee, could call on to respond to risks if we need to.

'Available risk capacity' is the most that employers could pay to secure all the pension benefits already promised to members in an extreme downside scenario as well as absorbing other risks to the sector. There is more discussion of risk capacity and these downside scenarios in our document ['A consultation with Universities UK on the proposed methodology and assumptions for the Scheme's Technical Provisions'](#).

Quantifying risk capacity is not a precise science and depends on a number of external factors and parameters that must be estimated based on data and judgement.

This note sets out the basis of calculation for one approach to estimating risk capacity. This approach involves calculating the net present value of aggregate free cash flows projected to be generated by the institutions participating in the Scheme.

The outcome of this work was published in our [Discussion Document](#) published in March 2020. The value is anticipated to have changed since this work was undertaken, not least because:

- The impact of the global pandemic will be to reduce risk capacity by threatening near term – and possibly long-term – revenue growth assumptions
- Our assumption for cost-savings was prudent, reflecting what most institutions had indicated was achievable. It was consistent with there being limited impact on the revenue generation growth rate. We expect to have a clearer view of actual cost reduction plans as we go into the new academic year, including the upfront costs of achieving cost reductions
- Future debt levels may be higher and cash balances lower than assumed as institutions use cash reserves or debt to fund restructuring resulting from COVID
- These and other factors will impact individual institutions to varying degrees
- Market comparables, debt costs and equity premia may all now be different.

We will be revisiting our assessment of risk capacity in the autumn as part of the work we plan to undertake to complete the valuation.

Institutional data

The starting point for the calculation is data published by the Higher Education Statistics Agency (HESA). This data is submitted by HEIs and is analysed by HESA who make it publicly available.

Colleges of Oxford and Cambridge universities do not submit data to HESA. We have used data from the published accounts of each of the college who participate in the Scheme.

There are other USS employers that support the covenant but are not HEIs and do not therefore submit data to HESA. The share of the Scheme's total liability in respect of all such employers is less than 5%. We have excluded these employers from this calculation given the challenges around collating consistent data for these institutions, which results in an understatement of the risk capacity. We do not expect this to be material.

Cash flow projections

This model is concerned with projections for the participating employers in aggregate over the long term. As such the performance of individual institutions and short-term deviations from long-term projections are not the main focus of this approach. We group the institutions into the seven 'segments' (or HE 'sub-sectors') which EY Parthenon, one of our advisors, uses for its analysis of the HE sector.

The model calculates the net present value of the free cash flow generated by each of the EY Parthenon segments over the period of the covenant horizon (20 years for a 'tending to strong' covenant and 30 years for a 'strong' covenant). The net present value for each sub-sector is then summed to determine the total risk capacity.

The latest available data at the time of the calculation was for the financial year ending 31 July 2018. We have used the net cash inflow from operations for each included institution reported for the year to 31 July 2018 together with the same data from the two years previously.

The net cash inflows have been averaged over three years of historical data in order to smooth the effect of year-on-year fluctuations to generate a 'year zero' figure for net cash inflow from operations. The net cash inflow from operations was then adjusted to arrive at an estimate of adjusted free cash flow by:

- Adding back USS pension contributions paid in the year; and
- Deducting average annual depreciation over the period FY16-FY18.

In the derivation of free cash flow, depreciation is used as a proxy for capital expenditure which we aim to further explore in the future. The capital expenditure at an aggregate segment level has been assumed to grow in line with the income growth rates set out below.

The result of this calculation for 'year zero' free cash flow was then projected forward for each year using the growth assumptions in Table 1.

Table 1: Nominal growth rates for the HE sector

Sub-sector	Years 1-5 growth (% pa)	Years 6-15 growth (% pa)	Years 16-20 growth (%pa)	Years 21-30 growth (% pa)
Broad-based research, Oxbridge colleges, Scotland Research	5.3%	3.3%	3.2%	Inflation (CPI)
Cusp	3.5%	2.8%	2.7%	Inflation (CPI)
Teaching	2.2%	2.4%	2.5%	Inflation (CPI)
Teaching International	3.2%	2.5%	2.5%	Inflation (CPI)
Specialist Research	2.8%	3.5%	3.3%	Inflation (CPI)
Specialist Teaching Arts and Music	3.3%	2.5%	2.5%	Inflation (CPI)
Scotland Teaching	2.5%	2.2%	2.2%	Inflation (CPI)

Although these assumptions were developed as revenue growth projections, it has been assumed that free cash flow grows in line with revenue i.e. that institutions maintain consistent margins at a sub-sector level.

Inflation has been assumed to be 2% per annum for the purposes of the model.

To arrive at a net present value, these projections were then discounted at an estimated weighted average cost of capital per sub-sector. This is discussed in more detail in the next section.

Discount rates

Discount rates are one of the more subjective areas of the calculation to establish the risk capacity. Our choice of discount rates is based on our understanding that the sector has relatively stable future cash flows, which are not influenced as much by the economic cycle as compared to many commercial sectors of the UK economy.

Discount rates were estimated using a Capital Asset Pricing Model (CAPM), which is a model typically used to determine required rates of return for business or market sectors based on their level of risk. The model includes a number of subjective assumptions. For example, in the absence of publicly available benchmarks for the HE sector, we have assumed the lowest risk USS institutions could reasonably be compared to UK utilities/infrastructure assets in terms of the volatility of their cash flows.

We have set out in Table 2 some of the key assumptions for the CAPM. We acknowledge that a range of assumptions could be appropriate.

Table 2: Key assumptions for the CAPM

Sub-sector	Risk-free rate	Asset beta	Equity market risk premium	Cost of debt	Rounded mid-point WACC (%)
Broad based research, Oxbridge colleges, Scotland Research	1.2%	0.5	7.8%	1.5%	5.0%
Cusp	1.2%	0.6	7.8%	1.7%	6.0%
Teaching and other	1.2%	0.75	7.8%	2.0%	7.0%

For groups of USS institutions where there was assessed to be slightly greater volatility associated with their future cash flows, we attributed varying premiums over the base discount rates, driven mainly by higher assumed asset betas.

The discount rate assumptions used were then as follows:

- Broad based research, Oxbridge colleges, Scotland research 4% - 6%
- Cusp 5% - 7%
- Teaching and others 6% - 8%

Net cash and financial investments

A free cash flow valuation does not normally add on any additional capital value for the assets used in producing those cash flows to avoid double counting. We have not in this model therefore ascribed any value to assets such as land and buildings, student accommodation, research facilities etc over and above their contribution to the net cash flows.

However, in arriving at the risk capacity for the HE sector we consider it appropriate to recognise the additional value of net cash and financial investments in addition to the value of the free cash flow.

We have assumed:

- a) the available cash will not be directly required for the ongoing operation of the institution after paying down debt
- b) the market value of long-term investments where we have not already taken account of the income they generate; whilst there may be restrictions over the use of these assets, the income generated is generally available to support ongoing operations. We therefore assume the market value of the investments as reported in the accounts to be a proxy for their available future income, discounted at an appropriate market rate (since it is not subject to operational risk).

The additional value is derived from HESA/college accounts according to the following methodology:

- Cash and cash equivalents; plus
- Short-term investments; plus
- Long-term financial investments; less
- External borrowing: defined as bank loans and external borrowing plus bank overdrafts plus loans repayable to funding council plus obligations under finance leases and service concessions.

Pension costs

Having noted above that USS contributions have been removed from the cash flow projections, we then need to recognise that ongoing operations will require ongoing retirement provision to all staff.

It is our objective to maintain a sustainable scheme and this implies that current contributions to the Scheme should continue into the long term, however, in evaluating sector risk capacity – in the context of supporting the USS – we believe it is appropriate to consider the cost of providing an alternative market-competitive pension proposition. For the purpose of this calculation, we have assumed that alternative pension provision could be provided at a future service cost of 15% per annum.

We have assumed that payroll costs will remain a consistent proportion of total costs over time and hence that USS contributions grow in line with the revenue growth rates set out above (and discounted the costs using the discount rates set out above). We note that this is an area of the valuation we will look to develop further in the autumn review.

Cost savings

Having carried out interviews with a sample of employers covering a cross section of the HE sector and data analysis, we have assumed that a cost saving of 2% of total expenditure is achievable for the majority of HEIs without having a major impact on their operating model and have factored this into total available risk capacity.

In order to calculate the 2% saving, we have considered 2% of total expenditure (excluding pension costs paid in the year) for the years FY16-FY18 and taken an average over the three years.

Expenditure is assumed to grow in line with revenue growth assumptions.

Terminal value

We also considered the residual value that may be expected to remain in the sector beyond the covenant horizon (be this 20 or 30 years) by calculating a terminal value. We have not included this amount in the calculated risk capacity, given the levels of uncertainty around sector size and growth rates beyond the covenant horizon. However, we note that this could provide some upside potential beyond the covenant horizon.

Results for risk capacity

Table 3 summarises the employers’ risk capacity based on the discounted value of their free cash flow for covenant horizons of 20-year and 30-year.

Table 3: Risk capacity for covenant horizons of 20 and 30 years

Components of the calculation	20-year period (£bn)	30-year period (£bn)
Net present value of free cash flow*	43	57
Net cash and long-term investments	20	20
2% cost savings	11	15
Future service pension costs at 15%	(20)	(27)
Illustrative risk capacity*	54	65

*Note risk capacity has been calculated as net present value of free cash flow plus net cash and long-term investments plus 2% cost savings minus future service costs at 15%.

The following charts were included in our discussion document of March 2020 and provide further detail of the components which make up the illustrative risk capacity.

Figure 1: NPV of free cash flow as an approach to quantifying risk capacity and risk appetite. This assumes a “Strong” covenant. (‘FSC’ is future service cost and ‘FCF’ is free cash flow.)

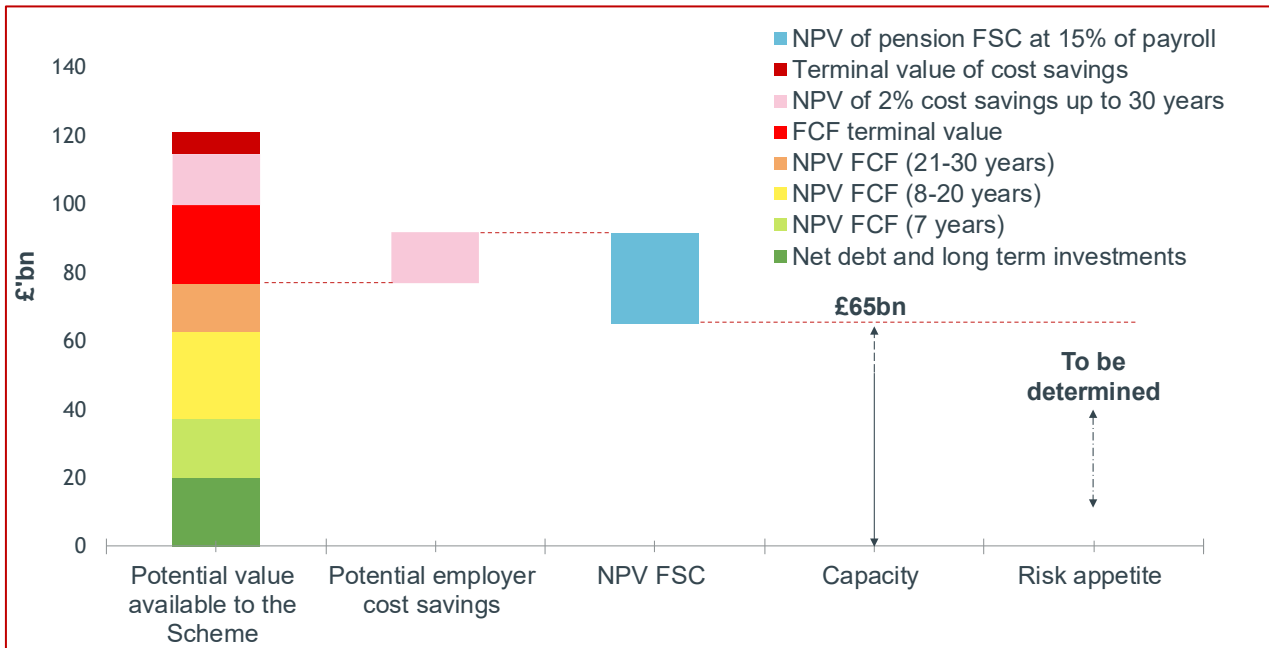


Figure 2: NPV of free cash flow as an approach to quantifying risk capacity and risk appetite. This assumes a “Tending-to-Strong” covenant.

