

Do rankings affect universities' financial sustainability? – financial vulnerability to rankings and elite status as a positional good

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ABSTRACT

University rankings envision a level playing field between competing universities, particularly in higher education (HE) systems regulated along market lines. Drawing on social stratification theory, we argue that rankings exacerbate, rather than alleviate, resource inequalities between universities with historically consolidated reputations (elite universities) and all other universities (non-elite universities). We test this argument empirically by assessing the role of elite status in moderating the effect of rankings on universities' financial sustainability. Using a nationally representative longitudinal dataset with yearly organisational data on 102 English universities from 2008 to 2017, we find that the rank a university occupies in league tables affects all universities except elite universities, controlling for previous level of financial sustainability and institutional level differences. We further show that this relationship is partly explained by universities' income from tuition fees. The findings document universities' financial vulnerability to rankings in quasi-markets of higher education and the reinforcement of elite status as a positional good.

KEYWORDS

Financial sustainability; higher education; rankings; elite status; English universities

Since the 1980s, governments around the world, particularly in Anglo-Saxon and Western European countries, have envisioned a 'level playing field' between HE providers, where universities' financial sustainability depends on their competitiveness and performance across selected quality criteria. While performance frameworks take universities out of their historical and resource conditions (Marginson 2017), there has been little to no systematic empirical research on whether overlooked structural differences such as stratification by elite status are consequential for universities' financial sustainability. Such an investigation is crucial, as the expansion of HE markets has reportedly made it more difficult for non-elite universities to compete with elite universities (Davies and Zarifa 2012).

The UK HE system provides an ideal case study, as it has undergone several waves of market-oriented reforms which boosted the number of students and HE providers, while intensifying competition for financial resources. As of 2016/17, there were approximately 2.32 million students in HE in the UK, and an overall participation rate of 49.8%, compared to only 6% in the 1960s (Universities UK 2018; Wyness 2010). Tuition fees have become the main source of income for UK universities, accounting for over half of universities' total income (Universities UK 2018).¹ Since the 1990s, various league tables have compared universities to inform student choice, such as The Times

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and The Sunday Times Good University Guide first published in 1998, and the Complete University Guide founded in 2008. These frameworks rank UK universities across standardised performance criteria, overlooking the structural differences between prestigious universities, i.e. the two dozen universities collectively known as the Russell Group, and all other universities. In this paper, we document that such standardised approaches are indeed consequential for the financial sustainability of UK universities. However, a nuanced picture emerges when examining separately non-elite and elite universities, with ranking position driving the financial sustainability of the former group, but not of the latter.

The paper is structured as follows. We first provide an overview of financial sustainability and performance competition in the UK university sector, and we confront the assumption of a 'level playing field' between universities with theoretical and empirical accounts of structural stratification by elite status. These insights are used to inform hypotheses about how English universities' position in rankings may influence financial sustainability, and the role of elite status in moderating this relationship. In this sense, we differentiate between universities' position in rankings (sensitive to yearly updated performance indicators) and elite status (as historically consolidated reputation) (see also Soysal, Baltaru, and Cebolla-Boado 2022; Baltaru 2019). The findings show that performance in rankings is crucial for the financial sustainability of English universities, except for elite universities which seem to be financially 'immune' to changes in ranking position. We then discuss universities' financial vulnerability to rankings in HE quasi-markets and the role of elite status as a positional good.

Finally, note that in the UK, the regulation of higher education is devolved to England, Wales, Scotland, and Northern Ireland.² This has allowed for some distinct policies and uneven structural pressures e.g. the capping of student numbers in England from 2009/2010 to 2014/2015 (McCaig and Lightfoot 2019), and its implications for student intake in Wales (Jones 2014).³ Unlike the other two nations, Scotland took the opportunity afforded by the 1998 devolution to move away from the English financial policy, deciding not to charge tuition fees to the Scottish-domiciled students (Cubie 1999). While this paper provides an overview of the UK-wide market-oriented reforms (from performance-oriented frameworks to rankings and stratification by elite status across the sector), at the empirical level it is important that we account for the devolution of the UK higher education, as student demand and HE finances are not directly comparable. Thus, the hypotheses in this paper focus on England, which has been a frontrunner in the implementation of market-oriented reforms in HE (Keating 2005).

Financial sustainability, competition, and rankings

The expansion of the UK HE sector was marked by concerns surrounding the financial sustainability of universities, as the increases in student numbers were not matched by proportional increases in university funding (Shattock 2012). This has prompted the reorganisation of the UK HE sector as a quasi-market along the New Public Management (NPM) principle of *performance competition*, whereby funding is allocated to HEIs based on their performance across predefined quality criteria (Jongbloed and Vossensteyn 2016). To this end, the UK was the first European country to distribute general research funding on a fully competitive basis via Research Assessment Exercises (RAEs) in 1986, 1989, 1992, 1996, 2001, and 2008, and the Research Excellence Framework (REF) in 2014 (Marginson 2017). The recent development of the Teaching Excellence Framework (TEF) as of 2015 has also proposed a performance competition logic to teaching.

UK universities have also assimilated performance competition by participating in league tables. The importance of university league tables in the UK should be understood in the context of growing popularity of rankings worldwide, especially since the early 2000s. According to a 2013 survey by the European University Association (EUA), 60% of surveyed universities said that they consider rankings in their institutional strategies and direct human resources to monitor their rank (EUA 2013). The popularity of rankings reflects the broader move towards quantitative assessments of performance across institutional sectors, and the pursuit of 'excellence' in higher education (Berman and Hirschman

2018). Despite league tables attracting criticism in terms of whether they accurately reflect quality, and concerns regarding their compatibility with the fundamental missions of HE (Amsler and Bolsmann 2012; Pusser and Marginson 2013), universities consider rankings in their organisational strategies, as they are believed to influence the choices of students and mobile researchers in the competitive HE market. The actual impact of rankings on university outcomes is up for investigation. Gibbons, Neumayer, and Perkins (2015) identify a small effect of rankings on student recruitment, while Soysal, Baltaru and Cebolla-Boado (2022) struggle to find an effect of rankings on the number of international students, having accounted for university prestige. Nevertheless, the presence of rankings shapes the conduct of universities, who start placing a higher emphasis on competition and accountability, re-inventing themselves as ‘financial bodies’ (Strathern 1996, 5). This has been interpreted as a reaction of universities to the purported impact of rankings on their ‘brand’ and finances (Espeland and Sauder 2007).

The systematic implementation of performance competition is evident in the UK HE sector, where universities’ outcomes at assessment exercises framed by the governmental and regulatory bodies often inform university rankings. As an example, two of the main university rankings in the UK (Complete University Guide and the Good University Guide) use REF results to measure research quality, and data from the National Student Survey (NSS) to measure student satisfaction. In addition, league tables use performance indicators supplied by the UK’s Higher Education Statistics Agency (HESA), such as entry standards, graduate prospects, student-staff ratios and expenditure per student. In the UK, rankings were expected to become consequential for universities as students started contributing to HE incomes. The Times and The Sunday Times Good University Guide provided the first university rankings in 1998, the same year in which tuition fees of £1,000 per year were implemented across the UK following the Dearing Report (1997), but later abolished in Scotland for the Scottish domiciled students (Cubie 1999). Now tuition fees at English universities can be up to £9,250 per year for UK and EU students (and up to £38,000 for international students), and account for about a half of universities’ total income (Universities UK 2018).⁴

Thus, our first hypothesis is that English universities improving their position in the rankings can signal greater quality of HE provision, which helps them attract fee paying students and appeal to talented research staff and external stakeholders such as charities and other third party organisations. Vice versa, we would expect those universities falling in the rankings to encounter more financial difficulties due to the lowering of their public appeal.

H1 *Ranking position affects universities’ financial sustainability.*

The quasi-market of the UK HE sector: a level playing field?

A major rationale for reorganising the UK HE sector along market lines was to move away from an elitist sector dominated by a small number of elite universities, to a competitive, ‘level playing field’ for HE providers (Raffe and Croxford 2015). First, the previously discussed funding reforms have imagined a rapport between universities as providers of HE services and two abstract customers: the student (positioned as customer via the introduction of tuition fees) and the government (positioned as customer on the behalf of the public). Second, performance frameworks imagined universities as comparable players (Marginson 2017, 16–17). Universities’ shared vulnerability to the market was expected to weaken historical hierarchies between universities and enable a fairer competition among HEIs. To this end, standardised performance indicators (employability, student satisfaction, research quality, etc) are compiled into university rankings which have become barometers for universities’ responsiveness to market demands. The market-oriented rhetoric that standardised performance competition can alleviate historical hierarchies has been subject to much criticism, some scholars arguing that rankings may have the opposite effect by shifting the definition of what constitutes ‘good’ and ‘meaningful’ education to mirror understandings shared by the elite networked universities (Amsler and Bolsmann 2012). This is also suggested by Hazelkorn (2007), who

reports that rankings are widening the gap between elite and mass HEIs, as elite universities are more likely to have historically consolidated ‘brands’ or to meet key ranking criteria. This is particularly relevant in the UK, considering the concentration of research activity among elite universities (Boliver 2015). Nevertheless, the UK government’s faith in the consolidation of a level-playing field and competitive HE environment is evident in the recent plans to closely monitor universities’ financial sustainability, with the expectation that underperforming universities who struggle financially will have to exit the HE market, while new providers join (OfS 2018).

The existence of a level-playing field in the UK HE sector has also been challenged by studies showing that historical hierarchies endure through market-oriented reforms, with elite universities flourishing as the HE market grows. Baltaru (2020) defines the UK’s elite universities as the typically older, research-oriented, most selective universities that have strengthened their reputations over time and/or are part of interest groups analogous to the Ivy League in the US. The Russell Group has been referred to as ‘UK’s Ivy League’ (BBC 2006). It consists of 24 research intensive universities which have been successful in promoting themselves as the UK’s ‘elite’ universities (Boliver 2013). The group includes, among others, the University of Oxford and the University of Cambridge as the oldest, wealthiest, and most prestigious two British universities.

Boliver (2015) finds that universities that are members of the prestigious Russell Group exhibit higher income from endowments and invested income, more favourable student-staff ratios, higher REF scores and higher research income compared to all other universities. Raffe and Croxford’s (2015) longitudinal analysis of student admissions data from 1996 to 2010, shows that Russell Group members score higher in terms of institutional selectivity and applicants’ qualification levels, compared to the other universities. Analyses of student participation between 2011 and 2016 reveal symptoms of a two-tier system, whereby student interest has shifted towards universities with stronger reputations, enhancing their ability to compete for high achieving candidates, while other universities ‘struggle to compete at all’ (UK’s National Audit Office 2017, 12). Marginson (2017) notes that research intensive universities such as those in the Russell Group have benefited the most from the significant growth in total funding for HE between 2001–2002 and 2013–2014, and argues that ‘market competition reinforces the pre-given hierarchy rather than subverting it’ (Marginson 2017, 15).

The presence of historical hierarchies between elite universities and all other universities is a reminder that the UK HE system is not a natural market, but a quasi-market simulating the conditions that fair competition requires. In this paper, we draw on social stratification theory to conceptualise the endurance of hierarchies by elite status through the expansion of the quasi-HE market.

Elite status as a positional good – a social stratification account

Social stratification theory has been traditionally used in HE and sociological research on horizontal inequality i.e. to understand why educational inequalities between groups of individuals persist despite increasing participation in higher education (Wakeling and Savage 2015; Boliver 2011). Towards this aim, sociologists have argued that socio-economically advantaged groups are in a better position to take the opportunities that educational expansion affords, leaving lower and middle classes prone to facing educational barriers until the upper-class demand for education reaches a saturation point (Raftery and Hout 1993). However, educational inequalities may endure even after enhanced access to education has been achieved across the board, as socioeconomically advantaged groups may orient themselves towards more selective or prestigious forms of education (Lucas 2001). Education is what Pierre Bourdieu and others refer to as a ‘positional good’: ‘what matters is not just how much education an individual has but how much relative to others’ (Goldthorpe 2016, 103). As an example, today more individuals from lower and middle classes can access higher education, but the perceived value of a degree is increasingly dependent on aspects such as the reputation of the HE provider (Marginson 2016). Indeed, the value placed by the public on the status of the university endures despite empirical research suggesting that other factors, such as the field of study, may bring graduates higher returns (Sullivan et al. 2018).

Applied at the structural level, in relation to stratification among HEIs, the theory can illuminate why, as HE markets expand, non-elite universities struggle to compete compared to elite universities. As an example, Davies and Zarifa (2012) approach national HE systems as stratified populations of organisations and argue that just as the expanded access to education has brought individuals incentives for differentiation at the horizontal level (e.g. socio-economically advantaged students orient themselves towards more prestigious forms of education), the expansion of the HE market has brought universities incentives for differentiation at the structural level (e.g. elite universities benefit from their historically consolidated reputations as an asset). The positional advantage of elite universities in a widening pool of HE providers is strengthened by their perceived ability to provide a ‘prestigious degree’ to the individuals seeking a positional advantage in a widening pool of university graduates. Indeed, the demand-led system appears to benefit elite universities more so than the less prestigious, newer universities (McCaig and Lightfoot 2019).

Elite universities become preceded by their reputation, possibly more so then by their yearly updated performance indicators (Baltaru 2019; Keith 2001). As the HE market expands, reputation helps them ‘stand out’ to fee-paying students, talented research staff and third party investors. The possibility emerges that rankings matter more for the financial wellbeing of non-elite universities, who are more vulnerable to the competitive logic of the market and the performance indicators it generates, compared to elite universities which can rely on their prestige to circumvent competition to an extent. Moving down the league tables can make non-elite universities less attractive to fee paying students and to investors, just as climbing up the rankings can make a noticeable positive difference to their financial wellbeing.

Hence, we formulate our second hypothesis around the unequal influence of university rankings for the financial sustainability of elite and non-elite universities, with league table rankings being essential for the latter, but not for the former.

H2 *Ranking position only affects the financial sustainability of non-elite universities as opposed to elite universities.*

Control variables and rationale

The effects of ranking position on financial sustainability are estimated controlling for institutional size (indicated by total income, total number of students, and total expenditure) income from various sources such as tuition fees, research and third-party funding, and time.

Institutional size is important from two points of view. First, larger universities are expected to handle a larger volume of financial resources. Second, the size of the organisation can directly affect its financial sustainability. Economies of scale postulate that large scale operations can generate cost advantages, i.e. the cost per student of providing education decreases with the growth in student numbers, as fixed costs are distributed over a larger output level, strengthening the financial sustainability of the organisation (Johnes 2019). At the same time, diseconomies of scale may arise, whereby the average cost of delivering education rises because of institutional growth, due to increases in the complexity of the operation and bureaucracy .

The inclusion of diverse income sources is important as non-elite HE institutions tend to be geared towards attracting increasing numbers of students to bolster their tuition fee income, as opposed to elite universities concerned with maintaining high entry standards (McCaig and Adnett 2009). We expect research income to be more important for the elite universities, who may capitalise on their ‘research-intensive’ reputations (Boliver 2015). Third party funding such as services rendered to industrial, commercial, and governmental bodies are an increasingly important source of income across the board, as universities are encouraged to become more entrepreneurial and diversify their revenues (Gjerding et al 2006).

The model will also control for dummy variables for years, to account for the impact of sector level events such as financial changes and reforms (consider the removal of the £3,290 cap on tuition fees as of 2012).

Data and method

The analysis is conducted using yearly data on 102 universities from England, between the academic years 2008–2009 to 2017–2018. Our sample includes all the universities for which data were available across all variables of interest. It includes elite and non-elite universities, with various sizes and levels of financial wellbeing, as shown in [Table 1](#).

Organisational data to operationalise all indicators have been collected from HESA, except data on rankings which has been extracted from the Complete University Guide (CUG). HESA is the official data collection agency for the UK HE sector, principally funded through the subscriptions of the HE providers. CUG rankings are among the main league tables in the UK according to the UK's Higher Education Policy Institute (HEPI) (Turnbull 2018). CUG has been chosen over other available rankings based on comprehensiveness and data availability, namely: (a) unlike Times Higher Education and The Guardian rankings, CUG considers how universities scored in the Research Excellence Framework; (b) CUG provides the widest time span of publicly accessible ranking data in the UK.

Variables and indicators

Financial sustainability is the dependent variable, and it has been operationalised as the net operating revenues to total income ratio, i.e. the percentage ratio of surplus/deficit for the year after tax to total income. Surpluses help universities compete nationally and internationally (as they enable universities to make investments), allow universities to settle unforeseen adverse circumstances, and can be used to meet student expectations and demands even during periods of financial hardship. This measure of financial sustainability is considered one of the key financial indicators of universities (OfS 2019; Knight and Harding 2016; Garland 2020).

Ranking position is the central predictor and has been operationalised based on the university rankings provided by the Complete University Guide. CUG rankings are calculated based on research quality (based on the REF results), students satisfaction (based on the NSS results), as well as entry standards, student-staff ratios, research intensity, expenditure on academic services, expenditure on facilities, good honours degrees, graduate prospects, and degree completion. The indicator ranges from '1' (highest ranked university) to '128' (lowest ranked university). In the analyses the scale was reversed so that one unit increase in rank can be interpreted intuitively as a higher rank.

Universities are classified according to their *elite status* enabling us to assess the relationship between rankings and financial sustainability separately for elite and non-elite universities. Elite status has been operationalised based on membership of the prestigious Russell Group which includes the research-intensive universities successful in promoting themselves as the UK's 'elite' universities (Boliver 2013; Baltaru 2020). Several studies exploring the stratification of UK HE by elite status have utilised Russell Group membership to identify enduring hierarchies within the sector (Boliver 2015; Raffe and Croxford 2015; Marginson 2017). Elite status is a binary, time invariant indicator. Universities that are members in the Russell Group are coded '1' and all other universities are coded '0'.

Universities' incomes from *fees*, *research* and *third parties* are included as they are expected to influence the financial sustainability of elite universities and all other universities, with research funds being primarily important for the former (Boliver 2015), income from tuition fees for the latter (McCaig and Adnett 2009), and third party income for all (Gjerding et al 2006). *Fees income* is operationalised as the income from tuition fees and education contracts; *research income* is operationalised as the income from research grants and contracts; and *third-party income* is operationalised as the income from services rendered to outside bodies. All income variables are measured in millions of pounds.

Institutional size is a control variable which accounts for possible cost advantages due to economies of scale (Johnes 2019). We have operationalised institutional size as a multiple item indicator based on total income, total number of students, and total expenditure. The indicator meets the

reliability threshold (Cronbach's Alpha > .70) and is generated via factor analysis (FA). FA confirmed that all three items are important in explaining variance in one underlying dimension (Eigenvalue > 1), which we interpret as institutional size. We also introduce a square term for institutional size (*Institutional size*²) to account for the possibility of non-linear associations between size and financial sustainability. For example, organisational expansion may strengthen financial sustainability up to a point, and then have the opposite effects due to growing costs (Johnes 2019).

Table 1 provides the descriptive statistics for the variables.

Table 1. Descriptive statistics.

Variables	Mean	Standard Deviation	Min	Max
Ranking position	61.01	36.00	1	128
Russell Group membership	.19	.39	0	1
Net operating revenues to total income (% ratio)	4.87	5.04	-11.98	22.35
Institutional size (Factor variable)	.02	1.04	-1.32	6.75
Fees income (£ millions)	100.88	74.77	3.33	521.15
Research income (£ millions)	37.83	84.77	0	600.63
Third party income (£ millions)	40.42	82.57	0.95	1025.88

Note: ¹Values are rounded to the second decimal. ²We use the original ranking positions as presented in the CUG tables, but reversed such that an increase in the rank represents an improvement.

Analytical technique

The analysis is run on a longitudinal, balanced dataset of 102 English universities with yearly data from 2008/2009 to 2017/2018 ($T = 10$). A multivariate regression model including university and year fixed effects is utilised to assess the relationship between ranking position (our central predictor) and financial sustainability (dependent variable), controlling for previous levels of financial sustainability (the lagged dependent variable), and for institutional size.^{5,6}

We then re-run the model including universities' income from tuition fees, research grants and contracts, and third parties. This will help us assess both their individual effects on the financial sustainability of elite and non-elite HEI, and the extent to which income from these sources helps explain the hypothesised relationship between rankings and financial sustainability. To assess whether the relationship between rankings and financial sustainability differs by elite status (**H2**), we run the above models separately for elite universities (Russell Group) and for all other universities.⁷

To assess whether moving up the rankings influences financial sustainability for universities, we lagged independent variables by one year ($T-1$). However, we do not lag the income variables (fees income, research income, third party income) as we do not expect their effect on financial sustainability to be contemporaneous with the effect of rankings. In other words, it should take at least one year for rankings to impact the income of HE providers, via shaping the choices of fee-paying students, talented staff, and third parties.

To avoid multicollinearity, highly correlated variables such as total number of students, total income and total expenditure have been combined into one indicator of *university size* (see section 'Variables and Indicators' for details). The Open University was excluded from the analysis as it is an outlier compared to the other universities; due to the nature of online provision, the student body in the Open University is almost ten times as larger than the national average.

The full model estimated in our panel regression analysis is presented in Equation (1).

The financial sustainability of university i in year t (*Financial sustainability* _{i,t}) is modelled as a function of the one-year lagged ranking position of university i (*Rank* _{$i,t-1$}), the one-year lagged institutional size of university i (*University Size* _{$i,t-1$}), the one-year lagged square term of institutional size of university i (*University Size*² _{$i,t-1$}), the fees income of university i (*Fees Income* _{i,t}), the research income of university i (*Research Income* _{i,t}), and the third party income of university i (*Third Party Income* _{i,t}). The model also includes university fixed effects (u_i), year fixed effects (v_t),

and accounts for the financial sustainability of the university in the previous year i (*Financial sustainability* _{$i,t-1$}).

$$\begin{aligned}
 \text{Financial sustainability}_{i,t} = & \alpha + \beta_1 \times \text{Financial sustainability}_{i,t-1} \\
 & + \beta_2 \times \text{Rank}_{i,t-1} + \beta_3 \times \text{University Size}_{i,t-1} \\
 & + \beta_4 \times \text{University Size}_{i,t-1}^2 \\
 & + \beta_5 \times \text{Fees Income}_{i,t} + \beta_6 \times \text{Research Income}_{i,t} \\
 & + \beta_7 \times \text{Third Party Income}_{i,t} + u_i + v_t + \varepsilon_{i,t}
 \end{aligned} \tag{1}$$

Results and discussion

Table 2 illustrates the results.

Table 2. Fixed effects regression models with lagged dependent variable predicting English universities' financial sustainability (ratio of surplus/deficit to total income) for 2008–2017.

	Model 1 All universities	Model 2a Russell Group = 0	Model 2b	Model 3a Russell Group = 1	Model 3b
Financial sustainability (T-1)	.247*** (.046)	.249*** (.055)	.250*** (.059)	.098 (.088)	.073 (.083)
Ranking Position (T-1)	.031+ (.016)	.036* (.016)	.029+ (.016)	-.105 (.083)	-.078 (.087)
University Size (T-1)	1.444 (1.634)	1.588 (1.644)	-1.081 (2.132)	-7.916+ (4.477)	-7.927+ (4.387)
University Size ² (T-1)	-.320 (.382)	-4.411* (1.817)	-4.934* (2.217)	1.545** (.559)	.843 (.655)
Fees Income	.004 (.010)		.026+ (.014)		-.028 (.020)
Research Income	.049* (.024)		-.033 (.103)		.059* (.023)
Third Party Income	.008+ (.004)		.062 (.067)		.004 (.003)
Year (Base = 2009)					
2010	2.055*** (.573)	2.055** (.667)	2.171** (.700)	2.321* (.880)	2.841** (.916)
2011	.410 (.555)	.384 (.629)	.375 (.653)	1.941* (.977)	2.780* (1.166)
2012	.584 (.618)	1.089+ (.654)	.683 (.747)	1.610 (1.032)	2.483+ (1.389)
2013	.093 (.690)	.544 (.638)	-.329 (.838)	2.337+ (1.240)	3.562+ (1.816)
2014	-2.755** (.843)	-2.625*** (.697)	-3.839*** (.994)	3.975 (2.421)	4.562 (2.870)
2015	-.113 (.862)	.260 (.651)	-1.312 (1.091)	6.417** (1.970)	8.298** (2.756)
2016	-1.577+ (.917)	-1.623* (.692)	-3.215** (1.114)	7.410** (2.523)	10.614** (3.274)
2017	-3.200** (.998)	-2.820*** (.720)	-4.512*** (1.223)	5.622+ (2.869)	9.074* (3.742)
F-Test	13.26***	11.82***	10.54***	5.37***	6.73***
Within R ²	.259	.250	.260	.330	.428
N	102	82	82	20	20
N*T	749	599	588	167	161

Note: ¹Robust Standard Errors are presented in parentheses. ²* $p < .05$; ** $p < .01$; *** $p < .001$; + $p < .10$. ³Coefficients and Standard Errors are Rounded to the Third Decimal.

The models provide a robust estimation for the relationship between rank and financial sustainability, controlling for the previous level of financial sustainability and university size, income from tuition fees, research and third parties, as well as university and time fixed effects. We first run the

model for all universities (**Model 1**) and then we provide a finer grained, nested model analysis by elite status (**Models 2a&b** and **Models 3a&b**). The models explain between 25% and 43% of within variation in universities' financial sustainability, which indicates a very good fit.

In **Model 1** we identify a positive association between university rank and financial sustainability ($\beta = .031, p < .10$), controlling for all other variables (**H1** confirmed). Next, we document that this relationship is stronger among non-elite universities (**Model 2a**: $\beta = .036, p < .05$), while being unapplicable to the elite, Russell Group universities (**Model 3a**: $\beta = -.105, p > .10$) (**H2** – confirmed). On average, non-elite universities climbing one place in the rankings may expect approximately 3.6% increase in the percentage ratio of surplus to total income, controlling for previous levels of financial sustainability and for size. Vice versa, sliding down the university rankings is damaging for these universities' financial sustainability. In **Model 2b** we can see that part of this relationship is explained by the income generated from different sources one year after the university has been ranked, notably fees income ($\beta = .026, p < .10$). As expected, controlling for income variables, decreases the magnitude and statistical significance of the coefficient of ranking position (**Model 2b**: $\beta = .029, p < .10$). In **Model 3b** we can see that ranking position does not matter for elite universities. Moreover, we note that elite universities' financial sustainability is rather responsive to income derived from research funding ($\beta = .059, p < .05$).

We can also see that previous levels of financial sustainability are consequential for universities' financial sustainability, but only for the non-elite universities (**Model 2b**: $\beta = .250, p < .001$). This supports the argument that while for non-elite universities it is important to achieve a surplus each year, elite universities can rely on their prestige to maintain their financial wellbeing. The presence of a negative and statistically significant squared term for university size in **Model 2b** additionally shows that the financial sustainability of these universities declines at particularly high levels of growth in university size ($\beta = -4.934, p < .05$). Note also that while in 2010 all universities were significantly more financially sustainable than in 2009, towards the end of the time under investigation the financial sustainability of non-Russell Group universities declines significantly, while elite universities thrive.

Further checks have been done to ensure the robustness of results.⁸ First, while our dependent variable based on surplus/deficit relative to total income is a key financial sustainability indicator in England (OfS 2019), we have additionally run the model with an alternative indicator, the percentage ratio of total net cash inflow from operating activities to total income (Scottish Funding Council 2020). Our results were replicated, as rankings were only consequential for the net cash inflow of non-elite universities as opposed to the elite universities. Second, we considered potential non-linearity in the relationship between rank and financial sustainability and tested a squared term for rank, but this was not statistically significant. Third, while our models show that ranking affects financial sustainability with a lag of one year, we did explore wider time frames (e.g. two years lag). Statistically significant effects were observed with a one-year lag.

The unequal distribution of financial vulnerability to rankings

The findings bring to the fore empirical evidence to document the unequal distribution of financial vulnerability to rankings by elite status, in the context of quasi-markets of HE. The imaginary of a HE market in the English universities has become real in its consequences insofar as universities' position in rankings does affect their financial sustainability (**H1**). However, while competition was expected to level the playing field for universities by ensuring that universities' resources are subject to their performance across standardised quality criteria, only non-elite universities are financially vulnerable to rankings (**H2**).

Indeed, market competition appears to have reinforced hierarchies between universities rather than alleviating them (Marginson 2017; Amsler and Bolsmann 2012; Hazelkorn 2007). In **Table 2** we saw that while in 2010, when the Browne Review was published, all universities were thriving, in subsequent years financial sustainability registered points of significant increase for the elite universities, while decreasing for the non-elite universities.

Our findings reveal important by-products of HE markets: the unequal distribution of financial vulnerability to rankings, and the precarious position of non-elite universities as HE markets grow, and funding is diversifying (Jongbloed and Vossensteyn 2016). At the same time, elite universities become more financially sustainable and can capitalise on their reputations.

Implications for theory and policy

A social stratification account enabled us to challenge the policy rhetoric that HE markets subvert historical hierarchies between universities and argue, instead, that it is precisely the intensification of competition that reinforces elite status as a *positional good*. How the interplay between rankings and elite status maintains these resource inequalities is remarkable. Rankings do not advantage elite universities by effectively shaping their financial sustainability; it is rather the *absence* of an impact, i.e. the financial immunity of elite universities to rankings, that makes them less financially vulnerable to the logic of market competition compared to all other universities.

Our analysis echoes the usefulness of social stratification processes described by sociologists at the horizontal level to inform research explorations at the structural level by conceptualising universities as a stratified population of organisations (see also Davies and Zarifa 2012). However, we appreciate that the language of ‘inequalities’ and ‘disadvantage’ (encountered in sociological analysis of social stratification) may stop short of addressing the possibility that structural differences can naturally occur between universities and thus such differences are not necessarily ‘unfair’. Therefore, the financial sustainability of universities should be discussed relative to policy aims and expectations in each HE system. In HE systems that have reorganised HE provision along market lines, one can expect financial sustainability to be driven by universities’ performance in rankings for all universities irrespective of elite status, given the purported role of performance competition in alleviating historical hierarchies between universities. Where this expectation is contradicted by empirical evidence, governments may acknowledge differences in universities’ vulnerability to rankings as a case of ‘unfair inequalities’ (Platt 2011). From 2019 onwards, a governmental approach to supporting universities that are not able to cope financially is vital, as the Coronavirus pandemic may lead to a decline in student enrolments which could mean that some universities will go bust (Coughlan 2020).

Whether governments should cater to the financial needs of non-elite HE providers (as opposed to prioritising elite HEIs) is not only a question of equity among universities who access the HE market, but also a question of equity among individuals who access higher education. If we consider that disadvantaged students disproportionately enter lower status HEIs (Wakeling and Savage 2015; Boliver 2011), catering for the financial needs of disadvantaged universities is to cater for the educational access of disadvantaged individuals.

Limitations and further research

Up to the present there has been little to no systematic empirical evidence to confirm that universities’ financial sustainability is determined by their competitiveness in rankings, as opposed to determinants that are beyond universities’ control such as their reputations. While this paper is a first in providing such an investigation for the English universities, further research may aim to replicate our findings in other HE sectors. As an example, it would be interesting to see if the elite status moderates the relationship between rankings and financial sustainability in HE sectors where performance competition has not been implemented to the same extent. Further research may also explore different operationalisations of elite status. Over longer periods of time and/or in HE sectors that do not have a consolidated group of elite universities, a time variant indicator of reputation may be more suitable.

Finally, as more data becomes available, longitudinal research on a larger time frame may explore whether rankings also become consequential for elite universities over time. However, we argue that

markets reinforce elite status as a positional good, thus we expect that elite status will continue to be positional good as more HE providers join the market, and even more so as competition intensifies.

Notes

1. This is not the case for Scottish universities, who rely on tuition fees for about a third of their total income (Audit Scotland 2019).
2. In 1998 general governance powers, and social, health, and economic functions, were devolved to the Scottish, Welsh, and Northern Ireland governments.
3. By 2012, student number controls were adopted in Wales and Scotland too (Strike 2020).
4. The estimate for international students does not consider medical degrees, where international student fees are typically higher than the average.
5. Fixed effects regression was preferred over ordinary least squares regression because of significant differences between universities as illustrated by the Breusch and Pagan Lagrangian multiplier test for random effects ($\text{Chi}^2 = 227.57, p < .05$). The Hausman test has confirmed that unique errors (u_i) are correlated with the regressors, thus a FE model is preferred over the random effects alternative ($\text{Chi}^2 = 147.68, p < .05$).
6. The dependent variable has been winsorised to address outliers, at 0.5% observations in each tail. Winsorising refers to converting values in each tail to the next inward value and is a widely used procedure in social research (Cox 2013).
7. Descriptive graphs on the dependent variable by elite status are available at request.
8. The robustness analyses are available at request.

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