



Responding to incentives or gaming the system? How UK business academics respond to the Academic Journal Guide

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ABSTRACT

Journal lists for the assessment of academic performance are widely used worldwide and inform many important decisions, such as, academic workload, salary, hiring, promotion, and tenure. The use of such lists, however, has long been a very controversial area in academia. Surprisingly, to date, there has been little empirical research investigating directly how journal lists have influenced publishing patterns by academics. This paper examines how the Academic Journal Guide (AJG) produced by the Chartered Association of Business Schools has influenced the publishing patterns of UK academics by observing the authorship of over 400,000 papers published between 1 January 2011 and 30 June 2021. In terms of the AJG ratings, UK researchers have improved the quality of their research outputs over the period. There is strong evidence, however, that researchers in subject areas primarily associated with business schools are targeting the ratings rather than other measures of research quality. In these areas, journals that have been promoted/demoted in the AJG list have a higher/lower proportion of papers by UK researchers than similar journals that have not changed status. In addition, journals that have been promoted unjustifiably by reference to other metrics attract particularly high proportions of papers by UK researchers whereas those that have been demoted justifiably attract particularly low proportions of papers by UK researchers. Overall, whilst researchers are responding to publishing incentives, one of their strategies for doing so seems to be to game the AJG list. I discuss the implications of my findings and ways in which the negative aspects could be reduced.

1. Introduction

Journal lists for the assessment of academic performance are widely used worldwide (Vogel et al., 2017). A specialist guide compiled by Prof. Anne-Wil Harzing, now in its 70th edition, currently details eleven important such ranking lists (Harzing, 2023). Many of these lists are associated with particular geographical regions and have a dominant influence in those regions (Bryce et al., 2020). For example, the Australian Business Dean's Council (ABDC) list is very influential in Australia and much of Asia, the National Centre for Scientific Research (CNRS) in France and the Academic Journal Guide (AJG) published by the Chartered Association of Business Schools¹ in the UK. The use of journal lists is even more widespread than one might deduce from the Harzing guide. This is because the guide covers formally compiled lists and so neglects the use of unofficial, but generally accepted, journal lists which are very influential in some subjects and regions. For example, a list of 5 key journals is extremely influential in Economics particularly in

the US (Heckman and Moktan, 2020). Similarly, many business schools in the US and increasingly worldwide are very focused on a short list of elite 'A' journals (Aguinis et al., 2020).

The research rankings derived from lists are often used by academic institutions to inform important decisions with tangible impacts on individual academics such as workload, salary, hiring, promotion, and tenure (Brooks et al., 2021; Gebreiter, 2022; Walker et al., 2019a; Bryce et al., 2020; Heckman and Moktan, 2020). They are also used to give guidance as to where research should best be submitted and to determine the perceived quality of individual researchers and, at a more aggregate level, that of departments and universities (Morris et al., 2011). These quality evaluations are also explicitly used to allocate resources in some university systems (Bloch and Schneider, 2016). It is important to note that the uses of journals lists encompass both passive assessments of research outputs and active alteration of the behaviour of researchers.

There is a considerable literature, based on general reasoning,

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¹ The guide is also known as the Chartered Association of Business Schools (CABS) guide and previously was called the Association of Business Schools (ABS) list. For convenience I will use the AJG abbreviation throughout.

discussing the likely effects of journal lists on the behaviour of academics (Mingers and Willmott, 2013; Aguinis et al., 2020; Heckman and Muktan, 2020). In addition, several survey-based papers report the views of academics about journal lists (Walker et al., 2019a; Brooks et al., 2021; Bryce et al., 2020). Surprisingly, however, given the importance of journal lists, there has been little empirical research investigating directly how they have influenced publishing patterns by academics. This lack of quantitative evidence about such a contested area seems a major omission. In a sense, it is important to look at what academics 'do' as well as what they 'say'.²

Given the foregoing, a major contribution of this paper is to make a comprehensive, empirical investigation of how UK academics have responded to the rankings in the Academic Journal Guide (AJG), which is the dominant UK journal list (Walker et al., 2019a). The UK is a good setting for this research as it has long been one of the leaders in the trend towards national evaluation of research quality (Mingers and White, 2015). The characteristics of the AJG are quite typical of journal lists as it divides journals into a small number of discrete quality categories and is periodically updated. Thus, the findings of this research are likely to be generalisable to other countries and research regimes.

The investigation covers a long period incorporating revisions to the guide by observing the authorship of all papers published in the journals featured at the 3 level or higher in the AJG between 1 January 2011 and 30 June 2021, a total of over 400,000 papers.³ It also looks at a substantial sample of the very large number of papers published in journals at the lower rated 1 and 2 level. The magnitude and breadth of the sample in this paper is much larger than that used in the most relevant previous study by Spiewanowski and Talavera (2021) and its comprehensive nature will provide an important factual input into debates around the use of journal lists.

As well as providing much needed, empirical information about the effects of journal lists the research contributes insights into several areas of research related to staff motivation. The percentage of publications by UK authors in journals which are highly rated in the AJG, has increased over the investigation period which is consistent with them being motivated by the ratings in the AJG. These findings provide evidence to contribute to the wider debates about intrinsic and extrinsic motivation by showing that publishing patterns of UK academics have altered in a way consistent with them being highly responsive to extrinsic motivation (Frey, 1997; Frey and Jegen, 2001; Kamenica, 2012). The nature of revisions to the AJG and its subject coverage also allows robust inferences to be made which show that, to a substantial extent, publishing behaviour is being driven by the ratings in the AJG itself rather than more general views about journal quality. This speaks to the research on performance management systems as the AJG ratings are often used in the systems used UK business schools. A related important contribution of the paper is to demonstrate how some UK academics are gaming the list and related performance management systems by targeting/avoiding particular journals that have AJG ratings which are not consistent with other measures of journal quality. Journals that have been promoted unjustifiably by reference to other metrics attract higher proportions of papers by UK researchers than those that have been promoted justifiably. In addition, journals that have been demoted unjustifiably attract higher proportions of papers by UK researchers than those that have been demoted justifiably. Overall, these results are consistent with a significant proportion of the relevant population of UK researchers gaming the AJG ratings. This is a new empirical finding distinct from the types of publication related gaming documented in previous research (Aboubichr and Conway, 2023) and adds to the

² In some research paradigms such as economics this would tend to be the strongly favoured approach with survey-based work often being considered less credible (see, for example, Boulter and Goldfarb, 1998).

³ The 3 level is a proxy for 'good' papers that are likely to attract some funding in the national Research Excellence Framework REF exercises.

literature on gaming performance management systems.

Overall, the research findings indicate that UK business school academics are strongly influenced by the journal ratings. To the extent that the ratings represent an accurate reflection of the underlying quality of journals this is not necessarily a bad thing as it helps academics to target the best quality outlets for their research and incentivises them to produce better research. The implications of academics targeting/avoiding journals which are rated unjustifiably well or badly are, however, potentially large and detrimental as they may distort management decisions and even the whole development of academic disciplines.

In the next section, I discuss the context of the research and prior research. Section 3 develops hypotheses. Section 4 describes and justifies the methodology used in the paper. Section 5 presents the results. Finally, Section 6 presents policy implications and conclusions.

2. Research context and prior research

In this section I discuss the AJG and the relevant institutional features of the UK academic system, prior research on how the AJG and other journal lists have impacted researchers and their publications and relevant research on how academics may respond to their research environment.

2.1. The AJG and the relevant institutional features of the UK academic system

The AJG first appeared in 2007 and has subsequently been periodically revised.⁴ The guide covers a comprehensive range of subjects researched in business schools split by subject area. In a 2011 paper the compilers of the AJG set out purposes of the guide as 'to provide an indication of where to publish', 'to inform staffing decisions', 'to guide library purchasing decisions' and 'to aid research reviews and audits' (Morris et al., 2011, p563).

The use of the guide is almost ubiquitous in business schools⁵ in the UK, and it is indeed extensively used formally or informally by staff for deciding where to submit their papers and for hiring, promotion and performance monitoring and decisions (Walker et al., 2019a). The guide and the way it is used have attracted much criticism. It has been accused of the 'commodification of academic labour and a narrowing of scholarship' (Mingers and Willmott, 2013, p.1052), disadvantaging emerging journals and areas of interest (Tourish and Willmott, 2015) and leading to a fixation on the number of publications in the best ranked journals (Hussain, 2015; Parker, 2014). From one perspective the sheer amount of criticism of the guide serves to confirm its importance to UK business and management academics.

The use of the AJG needs to be seen in the context of the UK academic system. In recent decades UK universities have been subject to greatly increased external monitoring which has led to a rise in managerialism in the sector (Shattock and Horvath, 2019). Universities are assessed on many dimensions including research, teaching quality, making an impact on society and the economy, widening access to higher education, and improving the employability of students. In response to these diverse pressures universities have tended to implement performance management systems. Such systems vary considerably between universities, faculties and departments but invariably factors relating to research form a crucial part of each system with academics subject to demanding publication targets with incentives/penalties for meeting/missing them.

⁴ A direct forerunner of the AJG was Bristol Business School's Classification of Academic Journals in the Field of Business and Management Studies or 'Bristol list' which appeared in 2004 (see, Hussain, 2010 for more details of the early evolution of the AJG).

⁵ For convenience, I subsequently use the term business school to cover both business schools and management schools.

In the UK the current system for assessing the quality of research in UK higher education providers is the national Research Excellence Framework (REF). The objectives of the REF are to produce evidence of the benefits of public investment in research and to provide benchmarking information for use in the higher education sector and by the public. The outcomes of the REF are currently used to make decisions about the allocation of around £2 billion per year of public funding for universities' research (UK Research and Innovation, 2023). Thus, universities, and by extension their staff, face quite explicit research incentives as the national Research Excellence Framework (REF) exercises are of great importance for funding and prestige. Achieving a good outcome in the REF exercises is generally given a very high priority in UK universities and business schools in particular (Clarke and Knights, 2015). This means that staff able to produce outputs likely to be favourably regarded in the REF is likely to attract substantial career benefits such as promotion, better work conditions and greater value on the labour market. Performance management systems in business schools normally have a substantial emphasis on guiding and motivate the academics concerned to produce work likely to be favourably assessed in the REF. This begs the vexed question of how to determine which work is likely to be well regarded. In practice, this is very frequently done with the aid of the AJG as its numerical quality rating of journals is highly compatible with the ratings used in the REF as explained below.

The REF assesses the quality of defined research outputs submitted by 'units of assessment' (broadly academic disciplines) by university. This is done by peer review panels within each discipline (Agyemang and Broadbent, 2015; Pidd and Broadbent, 2015). The number and nature of outputs to be submitted are closely specified and these requirements have changed over time.⁶ The most important measure in business and management related areas, however, has always been published research outputs, generally in the form of journal papers (books and book chapters are also used but tend to be much less important in these disciplines). In REF 2021 these outputs were graded on the following scale:

- 4* World-leading
- 3* Internationally excellent
- 2* Recognised internationally
- 1* Recognised nationally
- U Unclassified

(REF, 2023)

Now importantly, the funding provided from the exercise is highly dependent on the rating of the outputs and in a way that disproportionately favours what are considered the best outputs. So, U, 1* and 2* rated outputs attract no funding, and a 4* rated output attracts 4 times more funding than a 3* rated output. The actual grading of outputs in business and management is not mechanistic, for example, based on publication outlet or citations, but determined by members of the peer review panel reading and grading each output (Ashton et al., 2009). The results of the exercise are reported at the unit of assessment level, so the ratings given to specific outputs or academics are never explicitly known.

A practical issue with the REF is that it is only held periodically, approximately every six or seven years, and the quality of individual outputs is only known in retrospect and in very broad terms (the rating given to individual outputs is not revealed only an overall summary for each department). Given this, it is not very helpful for making

management decisions about academics, such as, performance evaluation, hiring and promotion. The AJG explicitly and pragmatically addresses some of these concerns and no doubt this has helped its rise to prominence in UK business and management schools. The categories in the AJG mirror the REF grades of 1 to 4 (there is also a subset of 'Journals of Distinction' classed as 4* within the 4 category).

There have been some exercises to assess how well the AJG proxies for the decisions of the REF panels. Pidd and Broadbent (2015), reporting on the work for the 2014 REF panel, mention that for a subsample of 1000 of the outputs submitted to the Business and Management studies sub-panel the REF grades were compared to the ranking of the journal in which they appeared in the ABS.⁷ They show a table that indicates that only about half the sample was awarded the same REF grade as their ABS rank. They caution that the 'dangers of sole reliance on the ABS or any other list for the full range of work covered by the sub-panel are very clear' (Pidd and Broadbent, 2015, p574). Having said that, their table shows a clear correlation between the REF grades and the ABS ranks. The AJG has been shown to proxy for the ultimate decisions of the Economics and Econometrics sub-panel of the 2021 REF exercise with a correlation level of 91% for the Grade Point Averages at the journal level (Linton and Xu, 2022).⁸ These exercises are someone problematic to interpret as it is not entirely clear what could be considered a good result in terms of a match between the REF outcomes and the journal list. As Pidd and Broadbent mention 'There is, of course, no known true state of nature for any of these papers' (Pidd and Broadbent, 2015, p574) so one is comparing two sets of somewhat subjective views. Also, if each output is evaluated individually, mathematically there cannot be a perfect match with outputs evaluated at the journal level if the journal in which it is published is not a perfect measure of quality.

There is the clear possibility of the format of the AJG and the methodology by which it is constructed leading to specific and important detrimental outcomes. The way that the categorisation mirrors the REF classifications is quite helpful to some actors within academia, such as research managers and deans, in that it simplifies matters of comparison. However, in a sense, the AJG categorisation is also very misleading in that it can easily be misinterpreted as implying that work in a journal in, say, category 3 in the AJG will be ranked as 3 in the REF which is not necessarily the case. The ranking system has very important implications for the value of publishing in particular journals which may have very negative consequences for some academics who tend to publish in less favoured journals. For example, the differences between a journal being ranked as 4 instead of 3 or as 3 instead of 2 is often of considerable importance given the way that funding for research is allocated in a non-linear way in the UK with a very high premium for the outputs judged to be of the highest quality. Marginal decisions about where a journal is placed in the list may skew the type of research that is done and promotion and hiring decisions. There seems little doubt that the consequences of changes in the list can be dramatic and certainly provide incentives for gaming. Another issue worthy of consideration is that the list is composed in a somewhat subjective way partly based on the opinion of experts rather than on verifiable factual statistics.⁹ This approach can be argued to be robust and, if applied correctly, to combine the best of both worlds but it does give the possibility of some journals being under or overvalued whether due to errors, some experts having idiosyncratic views or being overly swayed or even captured by interested constituencies.

⁷ The name then used for the AJG.

⁸ Even though the ratings for individual outputs are not revealed in the REF process, the Linton and Xu (2022) paper uses an algorithm to infer the ratings given to individual journals in the REF. There is obviously a level of uncertainty in this process depending on the effectiveness of the algorithm.

⁹ See the guide to the methodology used to compose the AJG (CABS, 2021).

⁶ For example, measurements of esteem were used in the early exercises and then dropped, and measures of impact have been given substantial importance in the recent exercises. In REF 2021, outputs were given a weighting of 60%, impact a rating of 25% and environment a weighting of 15% (REF 2017/01, P14).

2.2. Prior research on the AJG and other journal lists

2.2.1. Influence of the AJG

There have been a number of studies about the influence of the AJG on academics and their research. Initially, a substantial survey of academics shows use of the list is very prevalent with over 89% of academics working in UK business schools indicating that they do use it (Walker et al., 2019a). The findings of the survey have been used in several papers and reveal a great deal of interesting information about various aspects of the attitudes of academics towards the AJG. There is substantial heterogeneity between the attitudes of different academics to the rankings with its greatest influence being on early to mid-career researchers within low and middle ranked institutions. (Walker et al., 2019a). Individuals who published in outlets that were upgraded in the AJG were more positive about the rankings than those who did not benefit from ranking changes, and individuals were also more positive about the rankings if outlets in their field had benefited from re-grading in list revisions (Walker et al., 2019b). Substantial differences have been found in the way the AJG is regarded in different subject areas with scholars in economics and finance being least critical of the AJG and those in organisational studies showing the greatest concern about the negative effects of the list (Brooks et al., 2021). In research based on another survey of 8000 UK business school academics, Bryce et al. (2020) find a large 'perception gap' between how the AJG ranks journals and how academics value journals. They asked academics to rank journals with which they were familiar and found that 39% of about 8000 subjective rankings from approximately 500 respondents differed from the AJG rankings.

Some related work investigates how the *content* of research publications may be affected by journal lists. Drivas and Kremmydas (2020) provide evidence that an increase in a journal's ranking in the AJG will increase citations to its papers. They argue that there may be two reasons for this finding. Firstly, an 'information effect' where more researchers learn about or review journals with high rankings and subsequently this results in increased citations. Secondly, a 'signalling effect' where researchers cite highly ranked journals as a signal that their paper is part of the literature in such journals. In any event, the authors view this as a negative unintended consequence of the strong influence of journal lists. Similarly, in the context of research published in the accounting field, Hussain et al. (2020) find evidence of journal ranking lists having increasing influence over patterns of citations. They find upward (downward) trends in the citation of high-ranked (un-ranked) reference sources and suggest this may be associated with signalling within the publication process.

2.2.2. The impact of journal lists on the number and quality of publications

Two pieces of research directly look at how lists have affected the number and quality of publications. Bloch and Schneider (2016) present data based on the research performance of Norwegian academics after the introduction of a performance-based research funding systems where publications are classified at two levels. They find evidence of an overall increase in the measured output of the Norwegian academic system which has been accompanied by changes in the collaboration patterns between academics indicating quite a complex response to the changed incentives. The paper that is most relevant to my research is one by Śpiewanowski and Talavera (2021). The authors investigate working papers, with a UK author, uploaded to the IDEAS/RePEc online repository before the 2015 AJG journal ranking revision. They show that these papers are less likely to end up being published in journals downgraded in the AJG revision, so the authors of the papers concerned seem to direct their publications away from these journals. Śpiewanowski and Talavera also find that this effect is not driven by change in the quality of these journals when this is measured using the SJR rating.

The Śpiewanowski and Talavera results are very interesting, however, the present study adds value in several important ways. My paper

allows the pattern of publications in all the journals covered in the AJG to be observed *before and after* the 2015 AJG revision. In contrast the Śpiewanowski and Talavera paper just examines the publishing patterns of a set of working papers *after* the 2015 AJG revision. My paper also investigates the possibility of academics purposely targeting or avoiding journals which have not been rated appropriately in the AJG list.

My approach using more comprehensive data will be more robust and will overcome some issues in the Śpiewanowski and Talavera study. The IDEAS/RePEc online repository, which is the source of data in the Śpiewanowski and Talavera study, is primarily focused on economics related papers so cannot be taken as representative of the whole academic community. In contrast my paper covers all relevant subjects. There may be elements of bias caused by using economics scholars for a sample. Economists are likely to be philosophically more sanguine about the use of incentives as an appropriate way to produce good outcomes than many scholars in other subjects given one of the fundamental assumptions of economics is that incentives are an appropriate and effective way to motivate people. In addition, economics is a highly quantitative field and Hussain et al. (2020) find evidence of substantial differences between quantitatively and qualitatively orientated scholars in the methodologically diverse field of accounting in their attitudes to journal lists. Brooks et al. (2021) empirically find economics scholars are particularly positive in their views of the AJG. The Śpiewanowski and Talavera study only includes papers that had been posted as working papers prior to 2015 whereas my study covers all papers published after the 2015 AJG revision. This coverage is reflected in the respective sample sizes, Śpiewanowski and Talavera cover 6294 papers ultimately published in AJG rated journals whereas the present study includes 40,599 papers published after 2015 with a UK author in journals that have been rated as 3 or above and also looks at a large sample of papers in journals rated 1 or 2. The approach in Śpiewanowski and Talavera may introduce various other biases. The papers they study *cannot* have been written with a view to targeting journals on the basis of the rating they had after the 2015 AJG whereas many of the papers appearing in the journals will have written to be targeted at specific journals on the basis of the known ratings in the 2015 AJG revision. It is also likely that papers that have been working papers for some time may not be an unbiased representation of the papers ultimately published in journals.

2.2.3. Criticism of journal lists

The use of journal lists has long been a very controversial area in academia. The level of worldwide concern is indicated by the fact that at the time of writing over 21,000 individuals and 3000 organisations from numerous countries had signed the San Francisco Declaration on Research Assessment (DORA) which, inter alia, advocates 'the need to assess research on its own merits rather than on the basis of the journal in which the research is published' DORA (2024). Many authors have pointed out flaws and disadvantages with the approach of evaluating research solely based on the journal in which it is published. Good research will sometimes be published in lower ranked journals and poor research in higher ranked ones (Willmott, 2011; Tourish and Willmott, 2015; Hussain, 2015; Heckman and Moktan, 2020). There may be misjudgements, errors or bias in the formation of lists with some journals or even subject areas being treated unduly favourably or unfavourably (Hussain, 2011; Hoepner and Unerman, 2012; de Jong and Veld, 2022). At some point journal lists may start to dictate research agendas (Hussain, 2015; Buehling, 2021). In addition, undue reliance on journal lists may incentivize careerism at the expense of creative scholarship (Heckman and Moktan, 2020).

2.2.4. The behaviour of academics

Any hypotheses about the effect of journal lists on publishing outcomes should be put in the context of theory and prior research about the behaviour of academics within their working environment. Performance systems are increasingly in use in universities worldwide as a result of the rise in managerialism (Melo et al., 2008; Bedeian et al.,

2010; Aboubichr and Conway, 2023). Clearly there are differences in the systems between countries but there is a great deal of commonality in respect of the way research is treated. There is a general focus on outcomes, and regarding research this is 'mainly based on the number of publications, particularly in high-impact journals and in the amount of acquired funding' (Graf et al., 2019, p754).

In terms of relevant theory, much of the rationale for academic performance management systems in general and journal ranking lists in particular is that academics will respond to the incentives facing them. This is very much in line with the mainstream approach in economics which focuses on the importance of extrinsic motivation, in the form of financial incentives, as the most effective way to motivate staff (Dohmen, 2014; Lazear, 2000). Some other academic traditions, however, take more nuanced perspectives on motivation. Psychologists and behavioural economists have often drawn attention to the existence of intrinsic motivation where people engage in an activity for their own sake, perhaps 'crowding-out' other motivation, (Frey, 1997; Frey and Jegen, 2001) and to various anomalies where the standard economic approach does not adequately explain individual behaviour (Kamenica, 2012). One might speculate that academics are likely to have quite high levels of intrinsic motivation and certainly some may tend to be somewhat disapproving of mechanistic ways to motivate them. This may particularly apply to academics in subject areas that are intellectually not aligned to the mainstream economics paradigm. As mentioned above, many academic papers have certainly been very critical of the use of journal lists likely indicating a substantial degree of hostility against them in the academic community. Overall, whilst it is a reasonable starting point that academics will respond to incentives it should not be taken as given that providing incentives will necessarily work well across academia.

Another relevant area of theory relates to gaming which can be considered to be responding to incentives in an unintended or undesirable way. A major and recurrent issue with performance management systems is that, as well as helping to produce the desired outcomes, the systems can also be gamed for career enhancement with undesirable results (Chandler et al., 2002). Several studies, in different national settings, have found gaming of different aspects of performance management systems by academics (Graf et al., 2019; Bedeian et al., 2010; Tourish and Craig, 2020; Alvesson and Spicer, 2017; Clarke and Knights, 2015; Aboubichr and Conway, 2023). In respect of publishing, it has been proposed that in the presence of performance targets and journal lists, academics may focus on the specific outputs measured rather than on the quality and importance of the underlying research (Agyemang and Broadbent, 2015; Biagioli and Lippman, 2020).

3. Hypotheses

In this section I derive several testable hypotheses. An initial objective is to determine whether there is evidence consistent with extrinsic incentives influencing UK academics in that research outcomes are improving, and I discuss this in Section 3.1 where I derive Hypotheses 1, 1.1, 1.2 and 1.3. Secondly, I check whether the AGJ ratings are specifically driving publication patterns as opposed to other incentives, such as anticipated REF outcomes, and this is covered in Section 3.2 where I derive Hypotheses 2, 2.1, 2.2 and 2.3. These findings contribute to research about performance management systems and journal lists. Thirdly, in Section 3.3 I investigate whether the AJG is being gamed and derive Hypotheses 3.1, 3.2 and 3.3.

The AJG has a number of features which enable important research hypotheses to be addressed. It gives only five possible ratings to journals so each rating potentially covers quite a wide quality range so there is the possibility of targeting the journals in which it is easiest to publish within a given rating. A change in rating when the AJG is revised indicates an abrupt and large, discrete change in the quality of a journal which often will not be a good reflection of the change in the quality of the journal as measured by other metrics which will usually tend to

evolve much more gradually. For some researchers there is also the possibility of directing their research towards subject areas, or specific areas of subjects, where it is potentially easier to publish.¹⁰ The assessments of journal quality in the AJG are also somewhat subjective and sometimes out of line with those of other authorities although presumably overall can be taken as a reasonable proxy for journal quality.¹¹ Some other features of the AJG enable the extent of its influence to be assessed. The direct influence of the AJG is primarily on UK researchers so if their behaviour is compared to that of non-UK researchers this gives a guide to the influence of the guide. Similarly, the AJG is largely used in business schools, but it covers a wide range of subjects some of which are dominated by academics who are not based in business schools. This allows the influence of the AJG on academics in business schools to be assessed. The changes in the assessment of the quality of journals when the AJG is revised allow its influence to be assessed quite directly especially if these changes do not seem to be justified by other journal ratings.

To assess how the AJG affects UK academics I consider the relationship between the number of UK academics publishing in a journal and its status in the AJG.¹² Many journals have expanded or contracted the number of papers they publish over time so to eliminate the distorting element of this I have looked at the proportion of articles with at least one of the authors based in the UK.

3.1. Extrinsic incentives in the UK academic environment

A large academic literature indicates that individuals will generally respond to extrinsic incentives (normally financial incentives or threats of punishment) indeed this is the basis of traditional labour economics (Dohmen, 2014; Lazear, 2000). However, there is some possibility that academics may not be entirely responsive to extrinsic incentives as they may be substantially intrinsically motivated (Frey, 1997; Frey and Jegen, 2001). In the UK academic system there are institutional level financial incentives associated with the official REF research funding system which, in business schools, are often operationalised at the level of the individual academic via the AJG ratings. The aim of the incentives provided is to motivate academics to produce 'better' research as judged in the REF. For the purposes of assessing overall research quality, we may reasonably take the AJG ratings as a rough proxy for the expected REF results. Within the rules of the REF only journals rated 3 or 4 in the REF system attract any funding and 4 rated journals attract considerably more funding than the 3 rated journals. These funding rules will clearly be a major factor affecting the incentives of academics. To test whether UK authors are responding in a way consistent with their extrinsic incentives, I propose:

Hypothesis 1. The rating of journals in the AJG is related to the growth in the proportion of papers by UK authors in those journals.

Hypothesis 1 is a rather general hypothesis that checks whether there is broad evidence that the decisions about journal outlets made by UK academics are affected by their extrinsic incentives. More specific subsidiary hypotheses can investigate this in more detail:

¹⁰ Redirection of research in this way is not something that can be directly confirmed with the analysis in this paper but some consequences of this would be seen as the proportion of UK researchers in some journals may be inflated if they are targeted for this reason. Checking this issue directly would be an interesting topic for future research.

¹¹ Relatively little is known about the exact way the AJG grades are allocated given the element of subjectivity involved. It is possible that there may be politics and lobbying involved with pressure on the compilers coming from (mainly) UK academics. Thus, there may be an element of reverse causality at play with the frequency of UK authorship in a journal affecting its rating at the margin. Again, this would be an interesting topic for future research.

¹² I define UK authors/academics as authors/academics with an affiliation to a UK institution.

Hypothesis 1.1. The proportion of papers by UK authors in journals which are considered to be ‘world elite’ research outlets, 4* rated in the AJG ratings, will have increased more than the proportion of papers by UK authors in journals rated 3 in the AJG ratings.¹³

Hypothesis 1.2. The proportion of papers by UK authors in journals which are considered to be in ‘top’ research outlets, 4 rated in the AJG ratings, will have increased more than the proportion of papers by UK authors in journals rated 3 in the AJG ratings.

Hypothesis 1.3. The proportion of papers by UK authors in journals which are 3 rated in the AJG ratings, will have increased more than the proportion of papers by UK authors in journals rated 2 or below in the AJG ratings.

It should be acknowledged that if these hypotheses are accepted it does not imply that intrinsic incentives are not in play but rather that if they are rejected the behaviour of academics is not in accordance with the extrinsic incentives they are being given.

3.2. Expected alterations in the behaviour of UK academics due to the change of status of journals in the AJG

The large literature on journal lists tends to assume that these lists will directly affect the behaviour of academics (see, for example, Morris et al., 2011; Walker et al., 2019a; Mingers and Willmott, 2013; Hussain, 2011). This assumption has, however, had little empirical confirmation. Academics may respond to other perceptions of journal quality, such as, their own or peer group views, or expected REF results which will not necessarily correspond to the ratings in the AJG. We can directly check whether the AJG ratings rather than other notions of journal quality are driving the publishing behaviour of UK academics. This can be done by examining journals that have changed status in the AJG. It is instructive to consider all journals collectively and then journals in non-business disciplines as outlined in the sub-Sections 3.2.1 and 3.2.2 below.

3.2.1. All journals

If a journal has been promoted/demoted in a revision of the AJG its status will have changed substantially to UK users of the list and become more/less attractive as a publishing target. However, its status will not have changed to most non-UK academics. Accordingly, I propose:

Hypothesis 2. Promoted/demoted journals in the AJG have a higher/lower increase in the proportion of papers by UK academics than journals that have not changed status.

Hypothesis 2 generalises and extends the work of Śpiewanowski and Talavera (2021) who find that journals promoted/demoted in the AJG do appear to be more/less attractive to academics in economics.

A potentially important special case of a demotion is when a journal is demoted to 2 status. This is the level at which, assuming the AJG rating is valid, papers in that journal would not be expected to attract any funding in the REF. In the author’s experience many business school academics tend to avoid these journals. Accordingly, I propose:

Hypothesis 2.1. Journals in the AJG demoted to 2 status have falls in the proportions of papers in them by UK academics.

3.2.2. Non-business disciplines

Some of the subject areas in the AJG, whilst legitimate outlets for publications by scholars in business schools, are dominated by scholars from other disciplines who are likely to be much less affected by the AJG although they will still have their research outputs judged in the REF.

¹³ For funding purposes, the REF does not recognise a separate 4* category for the most elite journals but the fact that this is a feature of the AJG does allow us to obtain greater insights from the data.

Subject areas which will be dominated by scholars from non-business disciplines are Psychology (General), Psychology (Organisational), Public Sector and Health Care, Regional Studies, Planning and Environment and Social Science. Accordingly, I propose:

Hypothesis 2.2. Journals in subject areas not dominated by scholars from business schools will have a different relationship between the AJG list ratings and the publishing patterns of UK academics than journals in subject areas that are dominated by scholars from business schools.

Hypothesis 2.2 is a very general hypothesis, and we can gain further insights by investigating journals that have been promoted or demoted in the AJG. If journals in these subject areas are not affected by the AJG we would expect to see:

Hypothesis 2.3. Promoted/demoted journals, in subject areas not dominated by scholars from business schools, will not have a higher/lower increase in the proportion of papers by UK academics than journals that have not changed status.

3.3. Gaming the AJG

It is possible that some academics may try to game the system as has been observed in many other situations covered in the literature as discussed in Section 2.2.4. Aboubichr and Conway (2023) outline several ways that academics game the publications system. I propose a type of gaming that has not previously been tested in the literature by looking at whether journals that are overrated/underrated when they change categories in the AJG tend to attract a proportion of UK academics that differs from their peer journals. The logic behind this is that if journals are not rated appropriately by the UK based AJG relative to other international journal metrics they will be relatively attractive or unattractive to UK academics compared to their international peers. Given the foregoing, promoted journals which are overrated are particularly attractive to UK academics who wish to game the system due to the relative ease of publishing in a high-quality journal. In contrast, promoted journals which are correctly rated will not be especially attractive to UK academics as the ease of publishing in them is commensurate with their value. Accordingly, I propose:

Hypothesis 3.1. Unjustifiably promoted journals in the AJG have higher increases in the proportions of papers by UK academics than those for which promotion is justified.

Demoted journals which are underrated will be more difficult in which to publish than would be expected from their AJG rating but will have some attraction to academics who do not wish to game the system and are not unduly influenced by the AJG rating. Accordingly, I propose:

Hypothesis 3.2. Unjustifiably demoted journals in the AJG have lower decreases in the proportions of papers by UK academics than those for which demotion is justified.

Based on the premise that journals in subject areas not dominated by scholars from business schools will have a different relationship between the AJG list ratings and the publishing patterns of UK academics than journals in subject areas that are dominated by scholars from business schools, I propose:

Hypothesis 3.3. Journals, in subject areas not dominated by scholars from business schools, which have been unjustifiably promoted/demoted will not have higher/lower increases in the proportions of papers by UK academics than those for which promotion/demotion is justified.

4. Methodology and data approach

To test the various hypotheses, I take advantage of the properties of the AJG list which are discussed in Section 3 above. For robustness, as well as looking at the proportion of articles with at least one of the

authors based in the UK, I have also examined the proportion of articles with the first author from the UK and the majority of authors from the UK.

4.1. Data approach

I examine the publication patterns of papers in journals in the Academic Journal Guide between the revision of the Guide in 2010 and the revision in 2021. The Guide was also revised once in the period of the study in 2015 so the first portion of the data period will have been influenced by the 2010 version of the Guide and the second portion by the 2015 version of the Guide. Thus, we can determine the impact of the change in the ratings of journals that occurred in 2015.¹⁴ I consider all journals that have been ranked at 3 or over in the AJG at any point in the sample period and a sample of lower ranked journals. I examine all combinations of how the rating of these journals has changed over time and what can be implied from the results.

The data has been collected from the Web of Science database where possible but has been supplemented by a large amount of hand collected data. There is a strong connection between the rating of a journal in the AJG and whether it is covered in the Web of Science database. Most of the journals rated as 3 or over are covered to some extent. With the addition of a substantial amount of hand collected data from journal web sites it has been feasible to assemble a full set of data for these articles. In contrast, most journals rated as 1 or 2 in the AJG are not covered in the Web of Science database so collecting a full set of data for all papers published in these journals would involve spending an extremely large amount of time hand collecting data. However, it has been possible to hand collect full data on all papers with a UK author published in a random sample of 5% of the journals with these ratings with the random selection being proportionate to the number of journals in each subject area. This has allowed a sufficiently large sample to be assembled for useful statistical inferences to be made.

It is not possible to extract the appropriate data from the Web of Science database to carry out the robustness tests looking at articles with the first author being from the UK or the majority of authors from the UK, so this has been hand collected for 5% of all papers that have been rated 3 or higher at any point in the data sample.

4.2. Empirical tests

In this section I set out the empirical tests I undertake on the data to test the hypotheses. Three broad empirical approaches are used. Initially, tabulations of the number of papers published with and without UK authors are constructed over the investigation period. Simple statistical approaches are then used to test whether there is statistical support for the hypotheses. Secondly, an investigation is done of upgrades and downgrades in the AJG. This is done using the gross figures for the percentage increases in the proportion of UK authors in the upgraded/downgraded journals and the figures net of the percentage increase in the proportion of UK authors in the AJG category from which the journal was moved. The net figures will tend to isolate the effect of the change in the AJG rating from other trends affecting the proportion of UK authors in similar journals. The first two approaches whilst very indicative of broad trends, neglects the possible effect of heterogeneity between journals so they are supplemented with a third approach using regression analysis which is done at the journal level to control for this heterogeneity.

The regressions relate the proportion of UK authors in a journal after the 2015 AJG revision to the characteristics of the journal. Initially, I fit Eq. (1) below to investigate the data for all journals:

$$P_{Post2015i} = \gamma_1 D_{4^*i} + \gamma_2 D_{44i} + \gamma_3 D_{34i} + \gamma_4 D_{43i} + \gamma_5 D_{33i} + \gamma_6 D_{23i} + \gamma_7 D_{32i} + \varepsilon_i \quad (1)$$

where $P_{Post2015i}$ is the increase in the proportion of UK authors in journal i in the post 2015 period.

The independent variables are dummy variable where:

D_{4^*i} indicates journal i was classified as 4* in the 2015 revision.

D_{xyi} indicates journal i was classified as x before and y after the 2015 revision.

The constant term in the regression has been suppressed for clarity in interpreting the results.

To allow for the potentially different behaviour of business and non-business school related journals as covered in Hypothesis 2.2, I initially fit Eq. (2) which incorporates a dummy variable for journals in subject areas that are not primarily business school related.

$$P_{Post2015i} = \gamma_1 D_{4^*i} + \gamma_2 D_{44i} + \gamma_3 D_{34i} + \gamma_4 D_{43i} + \gamma_5 D_{33i} + \gamma_6 D_{23i} + \gamma_7 D_{32i} + \gamma_8 D_{NBS} + \varepsilon_i \quad (2)$$

The dummy variables are as defined for Eq. (1) with the addition of D_{NBS} where:

D_{NBS} indicates the journal is in an area that is not primarily business school related.

To investigate the effects of changes in the status of non-business school related journals I further fit Eq. (3)

$$P_{Post2015i} = \gamma_9 D_{4^*BSi} + \gamma_{10} D_{44BSi} + \gamma_{11} D_{34BSi} + \gamma_{12} D_{43BSi} + \gamma_{13} D_{33BSi} + \gamma_{14} D_{23BSi} + \gamma_{15} D_{32BSi} + \gamma_{16} D_{4^*NBSi} + \gamma_{17} D_{44NBSi} + \gamma_{18} D_{34NBSi} + \gamma_{19} D_{43NBSi} + \gamma_{20} D_{33NBSi} + \gamma_{21} D_{23NBSi} + \gamma_{22} D_{32NBSi} + \varepsilon_i \quad (3)$$

The independent variables are dummy variable where:

D_{4^*BSi} indicates journal i was classified as 4* in the 2015 revision and business school related.

D_{xyBSi} indicates journal i was classified as x before and y after the 2015 revision and business school related.

D_{4^*NBSi} indicates journal i was classified as 4* in the 2015 revision and non-business school related.

D_{xyNBSi} indicates journal i was classified as x before and y after the 2015 revision and non-business school related.

Next, I focus on the effect of journals being promoted or demoted in the AJG in the 2015 revision as covered in Hypothesis 2.1 by fitting Eq. (4).

$$P_{Post2015i} = \alpha + \gamma_{23} D_{Prom2015i} + \gamma_{24} D_{Dem2015i} + \varepsilon_i \quad (4)$$

The independent variables are dummy variables where:

$D_{Prom2015i}$ indicates journal i was promoted; $D_{Dem2015i}$ indicates journal i was demoted.

I then fit Eq. (5)

$$P_{Post2015i} = \alpha + \gamma_{25} D_{Prom2015BSi} + \gamma_{26} D_{Dem2015BSi} + \gamma_{27} D_{Prom2015NBSi} + \gamma_{28} D_{Dem2015NBSi} + \varepsilon_i \quad (5)$$

The independent variables are dummy variables where:

$D_{Prom2015BSi}$ indicates journal i was promoted and business school related.

¹⁴ To eliminate the distorting effects of lags due to the time taken for publishing and reviewing papers I eliminate all the papers actually published in 2015.

Table 1a

All Papers in journals in the AJG which have been rated 3 or above during the investigation period.

Journal category	Before 2015 revision			After 2015 revision			%age increase in proportion of papers with a UK author
	Total papers published	Papers with a UK author	%age of papers with a UK author	Total papers published	Papers with a UK author	%age of Papers with a UK author	
4* Throughout	9093	808	8.89%	13,963	1754	12.56%	41.28%**
4 Throughout	19,360	4044	20.89%	27,394	6499	23.72%	13.55%**
Journals upgraded from 3 to 4	9188	1548	16.85%	15,456	2951	19.09%	13.29%**
Journals downgraded from 4 to 3	2957	571	19.31%	3853	848	22.01%	13.98%**
Journals 3 throughout	56,333	10,413	18.48%	91,525	18,211	19.90%	7.68%**
Journals uprated to 3	38,738	4616	11.92%	70,271	9262	13.18%	10.57%**
Journals downgraded from 3 to 2	4221	879	20.82%	6170	1074	17.41%	-16.38%**
Totals	139,890	22,879	16.35%	228,632	40,599	17.76%	8.62%**

A Chi-square test of the actual increases by category compared to the overall average increase indicates there are extremely significant differences between categories with a p value of 8.12×10^{-45} .

** sig at 1% level compared to no change in the proportion of papers with a UK author.

$D_{Dem2015BSi}$ indicates journal i was demoted and business school related.

$D_{Prom2015NBSi}$ indicates journal i was promoted and not business school related.

$D_{Dem2015NBSi}$ indicates journal i was demoted and not business school related.

To test [Hypotheses 3.1 and 3.2](#), I compare the performance of journals that have been promoted or demoted in the 2015 revision to journals of similar quality. This gives rise to the question of how to measure journal quality which is necessarily not definitively known and varies depending on which metric is used.¹⁵ For robustness and to achieve a broad consensus view of journal quality I take account of several different metrics. I use the three numerical measures presented in the 2015 update of the AJG: (i) The Web of Knowledge (WoK) Journal Citation Report (JCR); (ii) the SCImago Journal Rank (SJR), and (iii) the Source Normalized Impact per Paper (SNIP). I also use metrics based on the ABDC Australian Business Deans Council Journal Rankings List (ABDC) list from Australia and the JOURQUAL 2015 compiled on behalf of the Association of Professors of Business in German speaking countries.

Initially, to determine whether a journal has been unjustifiably or justifiably promoted, I look at the average rank of the journal based on the three numerical measures in the 2015 update of the AJG and compare it to the journal with the lowest average rank in the category to which it was promoted. If its average rank is better than that of at least one of the journals in the category to which it was promoted I consider the promotion to be justified, if it is worse than that of all the journals in the category to which it was promoted, I consider the promotion to be unjustified. Similarly, to determine whether a journal has been unjustifiably or justifiably demoted, I look at the average rank of the journal based on the three numerical measures in the 2015 update of the AJG and compare it to the average rank of each of the journals in the AJG category to which it was demoted. If its rank is lower than that of at least one of the journals in the category to which it was demoted I consider the demotion to be justified, if it is better than that of all the journals in the category to which it was demoted, I consider the demotion to be unjustified. As mentioned above, to consider the sensitivity of the results to this measure I also use five other measures to determine justified/unjustified promotions and demotions.

I again run regressions at the journal level relating the proportion of

UK authors in a journal after the 2015 AJG revision to whether the journal was upgraded or denoted in the AJG but now I distinguish whether a journal changed status justifiably according to the three numerical measures in the 2015 AJG revision or according to some non-observable criteria. Thus, I fit regression (6):

$$P_{Post2015i} = \alpha + \gamma_{29}D_{UnProm2015i} + \gamma_{30}D_{UnDem2015i} + \gamma_{31}D_{JustProm2015i} + \gamma_{32}D_{JustDem2015i} + \epsilon_t \quad (6)$$

The independent variables are dummy variables where:

$D_{UnProm2015i}$ indicates journal i was unjustifiably promoted.

$D_{UnDem2015i}$ indicates journal i was unjustifiably demoted.

$D_{JustProm2015i}$ indicates journal i was justifiably promoted.

$D_{JustDem2015i}$ indicates journal i was justifiably demoted.

Now we can also consider the effect of whether journals are business school related on justified and unjustified changes in journal status by fitting Eq. (7):

$$P_{Post2015i} = \alpha + \gamma_{33}D_{UnProm2015BSi} + \gamma_{34}D_{UnDem2015BSi} + \gamma_{35}D_{JustProm2015BSi} + \gamma_{36}D_{JustDem2015BSi} + \gamma_{37}D_{UnProm2015NBSi} + \gamma_{38}D_{UnDem2015NBSi} + \gamma_{39}D_{JustProm2015NBSi} + \gamma_{40}D_{JustDem2015NBSi} + \epsilon_t \quad (7)$$

The independent variables are dummy variables where:

$D_{UnProm2015BSi}$ indicates journal i was unjustifiably promoted and business school related.

$D_{UnDem2015BSi}$ indicates journal i was unjustifiably demoted and business school related.

$D_{JustProm2015BSi}$ indicates journal i was justifiably promoted and business school related.

$D_{JustDem2015BSi}$ indicates journal i was justifiably demoted and business school related.

$D_{UnProm2015NBSi}$ indicates journal i was unjustifiably promoted and not business school related.

$D_{UnDem2015NBSi}$ indicates journal i was unjustifiably demoted and not business school related.

$D_{JustProm2015NBSi}$ indicates journal i was justifiably promoted and not business school related.

$D_{JustDem2015NBSi}$ indicates journal i was justifiably demoted and not business school related.

5. Results

5.1. Descriptive statistics and initial results

[Table 1a](#) gives descriptive results for the full set papers in all journals

¹⁵ Some metrics can be regarded as more objective as they are based on measurable quantities such as citations. For example, [Śpiewanowski and Talavera \(2021\)](#) use the SCImago Journal Rank (SJR) as a measure of quality in their paper on AJG journal rankings and publication strategy.

Table 1b

All papers in a sample of Journals in the AJG that were 2 or 1 Throughout the investigation period.
Based on a Sample of 5% of Journals.

Journal category	Before 2015 revision			After 2015 revision			
	Total papers published in sample	Papers with a UK author in sample	%age of papers with a UK author	Total papers published in sample	Papers with a UK author in sample	%age of papers with a UK author	%age increase in proportion of papers with a UK author
2 Throughout	3012	386	12.82%	4374	470	10.75%	−16.2% (−24.9%, −6.3%)
1 Throughout	780	117	15.00%	1601	155	9.68%	−35.5% (−41.9%, −27.6%)

Figures in brackets give 5% confidence intervals for change in proportion of UK authors.

A Chi-square test of the increases in the proportion of papers with a UK author that are 1 or 2 rated compared to the overall increase in the proportion of papers with a UK author for journals that have been 3 rated or above shows that there are extremely significant differences with a p value of 5.40×10^{-18} .

in the AJG which have been rated 3 or above during the investigation period. [Table 1b](#) gives descriptive results for all papers in a sample of 5% of the journals in the AJG that were rated 2 or 1 throughout the investigation period.

For the journals in [Table 1a](#) the differences between journal categories are extremely significant according to Chi-square tests.¹⁶ Thus, we see clear support for [Hypothesis 1](#). All the percentage increases in the proportion of papers with a UK author are significantly different from 0. The statistics in the table indicate a broad and significant improvement in the share of UK scholarship in the journals, rated 3 and above, which would be expected to attract positive funding in the REF. The most prestigious 4* category has seen by far the largest increase which gives strong support for [Hypothesis 1.1](#). Journals that were rated as 4 throughout have seen larger increases than those rated 3 throughout which gives support for [Hypothesis 1.2](#). All the categories rated 3 or above throughout have seen a significant and positive increase. In terms of promoted and demoted journals the evidence is mixed. The journals that have been upgraded show a larger increase in the proportion of UK authors than journals that have remained at the same status and journals downgraded from 3 to 2 show a substantial fall in the UK proportion of UK authors. On the other hand, journals downgraded from 4 to 3 show a substantial increase in the proportion of UK authors. Thus, we see mixed evidence in support of [Hypothesis 2](#) but strong evidence supporting [Hypothesis 2.1](#).

It is possible that results may be sensitive to the composition of the authorship team on each paper, and I have done some robustness checks to test this possibility. I have re-run the analysis for [Table 1a](#) using the share of articles whose first author is from the UK, as first authors may have a greater say in the decision of where to publish a paper. Similarly, I have also re-run the analysis using the share of articles with a majority of authors from the UK. This is interesting both because the majority of authors are likely to have a substantial say in the decision over where to publish a paper and because general changes in the size of authorship teams may alter the likelihood of a paper having a UK author. I report the results of these investigations in [Appendix 2](#) and also present some figures on how authorship teams have changed over my investigation period. In summary, the results for both robustness tests are qualitatively similar to those in [Table 1a](#) although there are inevitably some differences which are discussed in the appendix. Interestingly, authorship teams have tended to increase in size over the investigation period, but the number of UK authors has not increased as much as the total number of authors, and this may have been caused by incentives in the REF regulations for UK authors not to co-author papers with academics

¹⁶ To conserve space only the p value of the overall test that the categories all increase at the average rate is reported in the table and this has a negligible value.

from their own institution. These matters are discussed further in [Appendix 2](#).

Another related issue is that some academics have joint affiliations with UK and overseas universities. In most cases, the papers of these academics can be submitted to the REF. This has caused controversy, as some universities have paid high profile academics, with very prestigious publications, to join their staff on a part-time basis with the aim of boosting the REF submission of the university. Another factor is that the REF rules penalise authors working jointly with other authors from the same institution as a paper can only be submitted from an institution in the name of one author at that institution. Thus, it might be advantageous for authors to work with authors whose prime affiliation is to a non-UK university and may not find it important to make a REF submission in their own name. Given this it is interesting to check whether the analysis is robust to the presence of academics with joint affiliations, and this is done in [Appendix 3](#). In summary, in qualitative terms the results of the analysis are quite robust to removing authors with joint UK and overseas affiliations. The proportion of papers when only UK authors without overseas affiliations are considered is inevitably less than when all UK affiliated authors are considered although the differences for many categories are not significant. Interestingly, the difference is very small and not statistically significant for the most prestigious 4* journals so the differences are more driven by moderate researchers than the higher profile 'star' academics.

We can now turn our attention to [Table 1b](#) which we use to check [Hypothesis 1.3](#). This table reports a sample of the full population rather than the full population, so it is necessary to make statistical inferences about the true population values. For journals that were 2 rated throughout, the sample percentage increase in the proportion of papers with a UK author was −16.2% with a confidence interval at the 5% level of between −24.9% and −6.3%. For journals that were 1 rated throughout, the sample percentage increase in the proportion of papers with a UK author was −35.5% with a confidence interval at the 5% level of between −41.9% and −27.6%. Given the confidence intervals are not overlapping and also do not include 0% there is strong evidence that the journals rated 1 throughout have had lower increases in the proportion of papers with a UK author than those rated 2 throughout and both categories have had lower increases in the proportion of papers with a UK author than all the categories in [Table 1a](#) except the journals downgraded from 3 to 2. This constitutes strong evidence supporting [Hypothesis 1.3](#).

In [Appendix 1](#), the results in [Table 1a](#) are broken down by academic area. There is substantial heterogeneity in the extent to which journals in different academic areas changed their proportion of UK participation and Chi-square tests show these differences to have extremely high levels of statistical significance. To give some examples, for the journals rating 4 and 4* throughout, journals in Accounting have performed quite poorly compared to those in Finance. For journals upgraded from 3

Table 2
Journals which are Business School Dominated.

Journal category	Before 2015 revision			After 2015 revision			
	Total papers published	Papers with a UK author	%age of papers with a UK author	Total papers published	Papers with a UK author	%age of papers with a UK author	%age increase in proportion of papers with a UK author
4* Throughout	8210	766	9.33%	12,633	1672	13.24%	41.91%**
4 Throughout	10,216	2408	23.57%	15,247	4064	26.65%	13.07%**
Journals upgraded from 3 to 4	8212	1070	13.03%	14,240	2433	17.09%	31.16%**
Journals downgraded from 4 to 3	2257	328	14.53%	2590	437	16.87%	16.10%**
Journals 3 throughout	45,255	7309	16.15%	70,627	13,155	18.63%	15.36%**
Journals uprated to 3	22,978	2903	12.63%	42,824	6435	15.03%	19.00%**
Journals downgraded from 3 to 2	3829	676	17.65%	5330	679	12.74%	-27.82%**
Totals	100,957	15,460	15.31%	163,491	28,875	17.66%	15.35%**

A Chi-square test of the actual increases by category compared to the overall average increase indicates there are extremely significant differences between categories with a p value of 9.76×10^{-56} .

A Chi-square test of the increases by category compared to the increases in Table 1a indicates extremely significant differences between the tables with a p value of 1.04×10^{-32} .

** sig at 1% level compared to no change.

Table 3
Journals which are Not Business School Dominated.

Journal category	Before 2015 revision			After 2015 revision			
	Total papers published	Papers with a UK author	%age of papers with a UK author	Total papers published	Papers with a UK author	%age of papers with a UK author	%age increase in proportion of papers with a UK author
4* Throughout	883	42	4.76%	1330	82	6.17%	29.62%
4 Throughout	9144	1636	17.89%	12,147	2435	20.05%	12.04%**
Journals upgraded from 3 to 4	976	478	48.98%	1216	518	42.60%	-13.02%**
Journals downgraded from 4 to 3	700	243	34.71%	1263	411	32.54%	-6.26%
Journals 3 throughout	11,078	3104	28.02%	20,898	5056	24.19%	-13.65%**
Journals uprated to 3	15,760	1713	10.87%	27,447	2827	10.30%	-5.24%
Journals downgraded from 3 to 2	392	203	51.79%	840	395	47.02%	-9.20%
Totals	38,933	7419	19.06%	65,141	11,724	18.00%	-5.55%

A Chi-square test of the actual differences by category compared to the overall average increase indicates there are extremely significant differences between categories with a p value of 1.90×10^{-24} .

A Chi-square test of the increases by category compared to the increases in Tables 1a, 1b indicates extremely significant differences between the tables with a p value of 4.76×10^{-77} .

** sig at 1% level compared to no change.

to 4, journals in the Management Development and Education category have performed very well whereas those in the Human Resource Management and Employment Studies have performed poorly.

Only a limited number of journals feature for some changes in journal categories. For example, only seven journals in total have been demoted from 4 to 3 so some of the subject areas do have only one or two specific journals. In these cases, it can be argued that the results can be viewed as journal-specific as much as they are subject-specific. There are inevitably going to be some outliers amongst individual journals. For example, the very large increase for General Management is entirely due to Harvard Business Review. Given this, in these cases, the results must be interpreted carefully. When the results are combined for all demotions from 4 to 3, as in Tables 1a, 1b to 3, the individual journal effects are mitigated, and this is even more the case where the regressions are concerned which allow for heterogeneity between journals.

It is interesting to compare the results for Economics and Finance journals in Appendix 1 with the results of Spiewanowski and Talavera (2021) which primarily used journals in Economics and Finance. The figures are not entirely comparable as my results include all publications in Economics and Finance whereas Spiewanowski and Talavera only look at papers that had previously been released as working papers. Broadly speaking, however, my results for Economics and Finance seem quite consistent with those of Spiewanowski and Talavera as journals in

these subjects that have been upgraded in the AJG exhibit large increases in the proportion of UK authors, particularly in the Finance area, and those that have been downgraded in Economics show decreases or very small increases in the proportion of UK participation (no Finance journals were downgraded in the 2015 revision of the AJG).

As mentioned above, some of the subject areas in the AJG are dominated by scholars from other disciplines who are likely to be much less affected by the AJG. This in terms of testing the hypotheses it is instructive to exclude these areas from our statistics which has been done in Table 2 and to focus on them in isolation which has been done in Table 3. The figures in these tables allow Hypotheses 2.2 and 2.3 to be tested.

For the journals in Table 2 the difference between journal categories is again extremely significant according to Chi-square tests.¹⁷ with a negligible p value which is reported in the table. Thus, we see clear support for Hypothesis 1. All the percentage increases in the proportion of papers with a UK author are significantly different from 0. The broad pattern of the results is similar to that in Table 1a as one would expect if

¹⁷ As for Table 1a, to conserve space only the p value of the overall test that the categories all increase at the average rate is reported in the table and this has a negligible value.

Table 4
Journals that have been upgraded or demoted in the AJG.

	%age increase in proportion of papers with a UK author	%age increase in proportion of papers with a UK author net of % age increase of papers with a UK author with the same AJG rating before 2015 and subsequently
Panel A: Journals rated 4 before 2015 then downgraded to 3		
All Journals in the AJG	13.98**	0.43
Business School dominated journals	16.1**	3.03
Non-Business School dominated journals	-6.26	-18.3*
Panel B: Journals rated 3 before 2015 then upgraded to 4		
All Journals in the AJG	13.29**	5.61*
Business School dominated journals	31.16**	15.8**
Non-Business School dominated journals	-13.02**	0.63
Panel C: Journals rated 3 before 2015 then downgraded to 2		
All Journals in the AJG	-16.38**	-24.06**
Business School dominated journals	-27.82**	-43.18**
Non-Business School dominated journals	-9.2	4.45

* sig at 5% level.

** sig at 1% level.

the academics publishing in both the underlying groups of journals are heavily influenced by the AJG. All the categories have seen a significant and positive increase except for journals downgraded from 3 to 2 which has seen a substantial decrease in the proportion of UK authors. The most prestigious 4* category has again seen the largest increase. On average the categories other than those downgraded from 3 to 2 have seen larger increases than in Table 1a which provides strong support for Hypotheses 1.3 and 2.1. Another Chi-Square test shows with a high degree of significance that the connection between the AJG journal category and the increase in the proportion of papers with a UK author differs from that in Table 1a. This provides evidence supporting Hypothesis 2.2.

The statistics in Table 3 relate to subjects which are not dominated by business school scholars, and which are consequently less likely to be affected by changes in the AJG although presumably academics in these subjects will have some knowledge of the generally perceived quality of journals and how this may be evolving over time. A Chi-Square test shows with a high degree of significance that the connection between the AJG journal category and the increase in the proportion of papers with a UK author differs from that in Table 1a. This again provides evidence supporting Hypothesis 2.2. The pattern of results in the table is quite different from that in Tables 1a and 2 which also offers support for Hypothesis 2.2. The most highly rated journals in categories 4* and 4 show substantial increases but all other categories show falls although not always to a statistically significant degree. The most prestigious 4* category has again seen by far the largest increase. One might speculate that in business schools the influence of the AJG ratings provides some reassurance that journals outside the most elite categories are still

worthwhile places in which to publish. In contrast to Tables 1a and 2, journals downgraded from 3 to 2 do not show a significant decrease in the proportion of UK authors which is not in accord with Hypothesis 2.1. Overall, the pattern of results in Table 3 is clearly quite different from those in Tables 1a and 2 which does indicate that subject areas not dominated by scholars from business schools are less influenced by the AJG.

5.2. Investigation of upgrades and demotions in the AJG

We can focus on the effects of upgrades and demotions in the AJG. Table 4 shows how the proportion of papers with UK authors has changed for journals that have been upgraded and demoted in the AJG. In this table we show both the gross percentage increases in the proportion of papers with a UK author and the percentage increases net of the equivalent percentage increases in the AJG category from which the journal was upgraded/downgraded. The net percentages will be a good guide to the effect of the AJG grade change in isolation from other trends affecting the percentage of UK authors. Panel A shows the situation for journals that were rated 4 before 2015 and then demoted to 3 in the 2015 revision of the list. The second column of the table shows the raw increases in the proportion of papers with UK authors. In this column we see significant increases for all journals in the AJG and for business school dominated journals which is not what is expected under Hypothesis 2. There is an insignificant increase for non-business school related journals which is in accord with Hypothesis 2.3. The third column shows how the proportion of papers with UK authors in the demoted journals changed compared to the journals that were rated 4 throughout. Interestingly, this column shows little change either numerically or statistically when all the journals and those in business school dominated journals were considered which is not in accord with Hypothesis 2. In contrast, there is a substantial reduction for journals that are not business school dominated which is in accord with Hypotheses 2 and 2.2 although not Hypothesis 2.3. One can speculate that for users of the AJG list these journals may still be regarded as quite prestigious 3 rated journals whereas for academics in subjects that tend not to use the AJG they may be perceived as journals broadly in decline.

Panel B shows the situation for journals that were rated 3 before 2015 and then moved to 4 in the 2015 revision of the AJG. In the second column we see significant increases for all journals in the AJG and for business school dominated journals but significant decreases for journals which are not business school dominated. In the third column of the table, we can see a substantial increase in the proportion of UK authors when all the journals are considered and a very substantial increase when primarily business-related journals are considered. In contrast there is no significant change in the proportion of UK authors in the journals that are not primarily used by business school academics. So, this can be interpreted as strong support for Hypothesis 2 but only in the case of subjects that are dominated by business school researchers and also strong support for Hypotheses 2.2 and 2.3.

Panel C shows the situation for journals that were rated 3 before 2015 and then demoted to 2 in the 2015 revision of the list. In the second column we see significant decreases for all journals in the AJG and for business school dominated journals but statistically insignificant decreases for journals which are not business school dominated. In the third column of the table, we can see a very substantial decrease in the proportion of UK authors when all the journals are considered and an extremely large and significant decrease when primarily business-related journals are considered. In contrast there is no significant change in the proportion of UK authors in the journals that are not primarily used by business school academics. So, this can be interpreted as strong support for Hypotheses 2 and 2.1 but only in the case of subjects that are dominated by the AJG and strong support for Hypotheses 2.2 and 2.3.

Overall, the results in Table 4 provides substantial but not complete support for Hypotheses 2 and 2.1. They also generally indicate that

Table 5

Regressions relating the increase in the Proportion of Papers with UK authors to the status of a journal in the AJG over the investigation period and whether it is business-school related.

Coefficient	Associated dummy	Eq. (1)	Eq. (2)	Eq. (3)
α	–	–	–	–
γ_1	D_{4^*i}	48.24**	50.00**	
γ_2	D_{44i}	23.13**	30.76**	
γ_3	D_{34i}	29.47**	31.17**	
γ_4	D_{43i}	3.85	9.19	
γ_5	D_{33i}	15.58**	18.72**	
γ_6	D_{23i}	31.69**	38.14**	
γ_7	D_{32i}	–12.83	–10.75	
γ_8	D_{NBS}		–18.71**	
γ_9	D_{4^*Bsi}			50.58**
γ_{10}	D_{44Bsi}			24.43**
γ_{11}	D_{34Bsi}			31.85**
γ_{12}	D_{43Bsi}			12.51
γ_{13}	D_{33Bsi}			18.20**
γ_{14}	D_{23Bsi}			41.64**
γ_{15}	D_{32Bsi}			–13.71
γ_{16}	D_{4^*NBSi}			25.67
γ_{17}	D_{44NBSi}			21.25*
γ_{18}	D_{34NBSi}			5.63
γ_{19}	D_{43NBSi}			–17.81
γ_{20}	D_{33NBSi}			2.60
γ_{21}	D_{23NBSi}			12.76
γ_{22}	D_{32NBSi}			–5.79

Notation for Eqs. (1) and (2)

D_{4^*i} indicates that journal *i* was classified as 4* in the 2015 revision.
 D_{xyi} indicates that journal *i* was classified as *x* before and *y* after the 2015 revision.
 D_{NBS} indicates the journal is in an area that is not primarily business school related.

Notation for Eq. (3)

D_{4^*Bsi} indicates journal *i* was classified as 4* in the 2015 revision and business school related.
 D_{xyBsi} indicates journal *i* was classified as *x* before and *y* after the 2015 revision and business school related.
 D_{4^*NBSi} indicates journal *i* was classified as 4* in the 2015 revision and non-business school related.
 D_{xyNBSi} indicates journal *i* was classified as *x* before and *y* after the 2015 revision and non-business school related.

** sig at 1%.
 * sig at 5%.

business school dominated journals behave quite differently to non-business school dominated journals which provides strong support for [Hypothesis 2.2](#) and some support for [Hypothesis 2.3](#).

5.3. Regression results

As discussed above, regressions have been fitted which take account of the heterogeneity between journals to revisit the hypotheses. The results of the regressions based on Eqs. (1), (2) and (3) are shown in [Table 5](#).

When all journals and categories are considered in Eq. (1), we see a substantially similar pattern of results to [Tables 1a, 1b](#). There are large differences between the different categories of journal with the journals rated 4* throughout having the largest increases and all the journals that have not been demoted seeing significant positive increases. The journals that have been demoted do not have significant increases and the journals that have been demoted from being 3 rated to 2 rated have a negative, albeit not significant coefficient. Thus, the troubling feature of [Table 1a](#) that the journals demoted from 4 to 3 saw significant increases in the proportion of UK authors is an artifact of the heterogeneity between journals. The journals upgraded from 3 to 4 see a larger increase in the proportion of UK authors than those that remained at 3 throughout. Overall, the results of fitting Eq. (1) provide support for [Hypotheses 1 and 2](#).

In Eq. (2) a dummy variable is introduced indicating journals dominated by non-business school academics. This dummy shows a negative and significant coefficient. The coefficients of the various other

Table 6

Regressions relating the increase in the Proportion of Papers with UK authors to whether a journal was unjustifiably or justifiably promoted or demoted in the AJG.

Coefficient	Associated dummy	Eq. (4)	Eq. (5)	Eq. (6)	Eq. (7)
α	–	21.07**	21.07**	21.07**	21.07**
γ_{23}	$D_{Prom2015i}$	10.30*			
γ_{24}	$D_{Dem2015i}$	–29.23**			
γ_{25}	$D_{Prom2015Bsi}$		17.86**		
γ_{26}	$D_{Dem2015Bsi}$		–28.53**		
γ_{27}	$D_{Prom2015NBSi}$		–8.80		
γ_{28}	$D_{Dem2015NBSi}$		–32.86		
γ_{29}	$D_{UnProm2015i}$			13.65*	
γ_{30}	$D_{UnDem2015i}$			–19.72	
γ_{31}	$D_{JustProm2015i}$			7.44	
γ_{32}	$D_{JustDem2015i}$			–34.57**	
γ_{33}	$D_{UnProm2015Bsi}$				22.61**
γ_{34}	$D_{UnDem2015Bsi}$				–12.44
γ_{35}	$D_{JustProm2015Bsi}$				14.20*
γ_{36}	$D_{JustDem2015Bsi}$				–36.58**
γ_{37}	$D_{UnProm2015NBSi}$				–8.50
γ_{38}	$D_{UnDem2015NBSi}$				–45.18
γ_{39}	$D_{JustProm2015NBSi}$				–9.02
γ_{40}	$D_{JustDem2015NBSi}$				–20.55

Notation for Eq. (4)

$D_{Prom2015i}$ indicates journal *i* was promoted; $D_{Dem2015i}$ indicates journal *i* was demoted.

Notation for Eq. (5)

$D_{Prom2015Bsi}$ indicates journal *i* was promoted and business school related.
 $D_{Dem2015Bsi}$ indicates journal *i* was demoted and business school related.
 $D_{Prom2015NBSi}$ indicates journal *i* was promoted and not business school related.
 $D_{Dem2015NBSi}$ indicates journal *i* was demoted and not business school related.

Notation for Eq. (6)

$D_{UnProm2015i}$ indicates journal *i* was unjustifiably promoted.
 $D_{UnDem2015i}$ indicates journal *i* was unjustifiably demoted.
 $D_{JustProm2015i}$ indicates journal *i* was justifiably promoted.
 $D_{JustDem2015i}$ indicates journal *i* was justifiably demoted.

Notation for Eq. (7)

$D_{UnProm2015Bsi}$ indicates journal *i* was unjustifiably promoted and business school related.
 $D_{UnDem2015Bsi}$ indicates journal *i* was unjustifiably demoted and business school related.
 $D_{JustProm2015Bsi}$ indicates journal *i* was justifiably promoted and business school related.
 $D_{JustDem2015Bsi}$ indicates journal *i* was justifiably demoted and business school related.
 $D_{UnProm2015NBSi}$ indicates journal *i* was unjustifiably promoted and not business school related.
 $D_{UnDem2015NBSi}$ indicates journal *i* was unjustifiably demoted and not business school related.
 $D_{JustProm2015NBSi}$ indicates journal *i* was justifiably promoted and not business school related.
 $D_{JustDem2015NBSi}$ indicates journal *i* was justifiably demoted and not business school related.

** sig at 1%.
 * sig at 5%.

categories of journal are similar in pattern to those in Eq. (1) but generally have larger coefficients. Overall, the results from this regression indicate that journals dominated by researchers from business schools have seen greater increases in UK authorship and thus strongly support [Hypothesis 2.2](#).

In Eq. (3) dummy variables are introduced to indicate the various categories of journal ratings for non-business school dominated journals. Generally, these dummies have insignificant coefficients except for the one for non-business school related journals that have been 4 rated throughout our investigation period. For the journals promoted from 3 to 4 this is more in accordance with expectations than the significant negative increase in [Table 3](#) and again shows the importance of allowing for the heterogeneity of journals. The results for Eq. (3) contrast with the generally significant coefficients for the business school related journals again providing support for [Hypotheses 2.2 and 2.3](#).

5.4. Direct investigation of changes in the AJG

The results of the regressions relating to Eqs. (4) to (7) are shown in Table 6. The results relating to Eq. (4) show that there is strong evidence that promotion or demotion of a journal in the AJG has a substantial effect on the proportion of papers published in it with a UK author. As one would expect, if Hypothesis 2 holds, promotion in the guide leads to a significant increase in the proportion of papers with a UK author. Conversely, demotion in the guide leads to a significant reduction in the proportion of papers with a UK author. As well as being highly statistically significant the results are substantial in magnitude. There appears to be a degree of asymmetry with demotions having a greater effect than promotions and this is likely substantially explained by the large negative influence on UK researchers of journals being demoted to 2 status. Thus, we see strong support for Hypothesis 2.

When the journals dominated by business school and non-business school academics are considered and compared in the results for Eq. (5), the effects are stronger for the business school dominated journals with the dummy variables having the same signs as in Eq. (4) but with larger coefficients. The non-business school dominated journals have insignificant coefficients. These results are supportive of Hypothesis 2 for business school dominated journals. When the journals in the AJG which are not dominated by business school academics are considered, there is little evidence of the AJG having any great influence as the coefficients of the dummy variables are no longer significant thus giving evidence in support of Hypotheses 2.2 and 2.3.

Overall, the results of the regressions relating to Eqs. (4) and (5) give strong support to Hypothesis 2 that UK business school academics are influenced positively/negatively by the promotion/demotion of journals in the AJG and are substantially able to translate these feelings into their published paper outputs.

The results of the regression relating to Eq. (6) show strong evidence of gaming in the positive and significant coefficient relating to the unjustifiably promoted journals. This is based on the premise that it will be easier to publish papers in these journals than their AJG status would suggest. There is a positive coefficient for the justifiably promoted journals, but this is not significant reflecting the fact that their AJG rating is likely to broadly reflect the difficulty of publishing in these journals. All the demoted journal categories have a negative coefficient reflecting the unattractiveness of targeting these journals but only the coefficient for justifiably demoted journals is significant. Overall, the results from fitting Eq. (6) show support for Hypotheses 3.1 and 3.2. For robustness, given there is no definitive way of measuring the quality of a journal, I have re-estimated Eq. (6) using the five other metrics of journal quality outlined in Section 4.2 to determine whether a journal has been unjustifiably promoted/demoted. Looking at the results from a range of metrics should mitigate the effects of idiosyncratic bias in any particular metrics. Such areas of bias have been found in, for example, the AJG ratings where Hussain (2015) showed that large discrepancies between the ratings and other metrics are a more severe problem in some subject areas than others. The results of the robustness tests are shown in Appendix 4. The pattern of results for each metric is broadly similar with positive coefficients for both types of promotions and negative coefficients for both types of demotion. The coefficient for unjustifiably promoted journals is larger than that for justifiably promoted journals for four of the six metrics and is significant for two of the metrics so we see moderate support for Hypothesis 3.1. The coefficient for justifiably demoted journals is always large in magnitude and significant in all but one case so there is quite strong support for Hypothesis 3.2. In conclusion, as one would expect, there are differences between the findings from the different metrics, but the overall pattern of results is recognizably similar across them.

The results of the regressions relating to Eq. (7) enable the effect of justified and unjustified promotions to be evaluated for both business school dominated, and non-business school dominated journals. For business school dominated journals, we see a large and very significant

Table 7
Summary of whether hypotheses supported.

Hypotheses	Empirical approach		
	Analysis of distribution data (based on Section 5.1 and Tables 1a, 1b to 3)	Grouped analysis of upgrades/downgrades (based on Section 5.2 and Table 4)	Regression analysis (based on Section 5.3 and Tables 6 and 7)
Related to incentives			
1	✓	–	✓
1.1	✓		
1.2	✓		
1.3	✓	–	–
Related to AJG influence			
2	?	?	✓
2.1	✓	✓	✓
2.2	✓	✓	✓
2.3	✓	?	✓
Related to gaming			
3.1	–	–	✓
3.2	–	–	✓
3.3	–	–	✓
H1. The rating of journals in the AJG is related to the growth in the proportion of papers by UK authors in those journals.			
H1.1. The proportion of papers by UK authors in journals which are considered to be in ‘world elite’ research outlets, 4* rated in the AJG ratings, will have increased more than the proportion of papers by UK authors in journals rated 3 in the AJG ratings.			
H1.2. The proportion of papers by UK authors in journals which are considered to be in ‘top’ research outlets, 4 rated in the AJG ratings, will have increased more than the proportion of papers by UK authors in journals rated 3 in the AJG ratings.			
H1.3. The proportion of papers by UK authors in journals which are considered to be in research outlets, 3 rated or above in the AJG ratings, will have increased more than the proportion of papers by UK authors in journals rated 2 or below in the AJG ratings.			
H2. Promoted/demoted journals in the AJG have a higher/lower increase in the proportion of papers by UK academics than journals that have not changed status.			
H2.1. Journals in the AJG demoted to 2 status have falls in the proportions of papers in them by UK academics.			
H2.2. Journals in subject areas not dominated by scholars from business schools will have a different relationship between the AJG list ratings and the publishing patterns of UK academics than journals in subject areas that are dominated by scholars from business schools.			
H2.3. Promoted/demoted journals, in subject areas not dominated by scholars from business schools, will not have a higher/lower increase in the proportion of papers by UK academics than journals that have not changed status.			
H3.1. Unjustifiably promoted journals in the AJG have higher increases in the proportions of papers by UK academics than those for which promotion is justified.			
H3.2. Unjustifiably demoted journals in the AJG have lower decreases in the proportions of papers by UK academics than those for which demotion is justified.			
H3.3. Journals, in subject areas not dominated by scholars from business schools, which have been unjustifiably promoted/demoted will not have higher/lower increases in the proportions of papers by UK academics than those for which promotion/demotion is justified.			

✓ indicates hypothesis supported.
 ? indicates hypothesis partly supported.
 – indicates hypothesis not tested using that empirical approach.

positive coefficient for unjustifiably promoted journals. We see a much smaller but still significant positive coefficient for justifiably promoted journals. We see negative coefficients for both justified and non-justified demotions although the coefficient is larger and significant for justified demotions. For non-business school related journals, none of the coefficients are significant which is consistent with a lack of influence of the AJG on the academics primarily concerned with these journals and supportive of Hypothesis 2.2. Overall, the results presented and Eq. (7) are again supportive of Hypotheses 3.1 and 3.2 in respect of unjustified promotions/demotions for business school dominated academics and also Hypotheses 2.2 and 3.3.

5.5. Overall summary of the results of the hypothesis tests

Quite a number of hypotheses have been tested using several different approaches so for clarity Table 7 has been compiled to illustrate the results of the various tests. The three results columns of the table show the results of the hypotheses tested using each of the empirical approaches in the paper. Not every approach has been used to test every hypothesis but overall, each of the hypotheses is supported by at least one of the approaches and none of the hypotheses have been completely rejected by any of the approaches.

6. Implications and conclusions

6.1. Theoretical implications of the results

The results give a comprehensive picture of the full effects of the AJG list on publishing outcomes in the UK where it is dominant. In doing this, it expands on the very limited prior empirical work connecting publishing outcomes to journal rankings such as the papers by Bloch and Schneider (2016) and Śpiewanowski and Talavera (2021). The findings broadly contribute to the literature on motivation in various ways. The results show an increase in the UK share of articles in good business-related journals as defined in the AJG which indicates that UK academics do act in a way consistent with being extrinsically motivated which speaks to the literature about the relative levels of extrinsic and intrinsic motivation (Frey, 1997; Frey and Jegen, 2001; Kamenica, 2012). The results further show that publishing behaviour is being driven to a substantial extent by the ratings in the AJG itself rather than more general views about journal quality. This confirms the supposition made in much prior work on journal lists (see, for example, Morris et al., 2011; Walker et al., 2019a; Mingers and Willmott, 2013; Hussain, 2011) and also confirms the potential effectiveness of performance management systems in universities which is a topic of increasing research interest (Melo et al., 2008; Bedeian et al., 2010; Aboubichr and Conway, 2023). There is also evidence of gaming behaviour amongst academics based on apparent anomalies of the ratings of journals in the AJG. This is a new finding in the literature but adds to previous findings about how academics may game performance management systems in general and journal lists in particular (Aboubichr and Conway, 2023).

6.2. Practical implications of the results

The results have clear practical implications for universities, academics and for the compilation and use of journal lists and these are discussed in the sections below.

6.2.1. Practical implications for universities

Given the research in this paper shows that the AJG does influence the research strategies of business school staff, to the extent that the guide has been used as part of successful performance management systems and guided some academics towards better outlets it may well have contributed positively to the quality of aggregate research outputs. Thus, in this sense, universities may have reason to view the AJG quite favourably.

The research in this paper shows evidence of gaming the AJG rankings and this is potentially problematic for universities. In some circumstances, gaming performance management systems can be positive for the institutions involved when it produces outputs that are very well aligned with the outcomes desired by the institution (Kelman and Friedman, 2009). This is unlikely to be the case to any great extent here. The ultimate benefit for UK universities of 'good' publications would be

a better score in the REF and hence more prestige and research income. Now, the gaming involves journals that have had large discrete changes in their AJG status and are given unjustified ratings in the AJG. It is likely that the ratings given to such journals will not be a good reflection of the underlying quality of the papers in the journal. If the AJG ratings for a journal are biased according to a variety of other measures then, on average, the papers in that journal are unlikely to be given that rating by the REF panel which cannot be expected to have the same idiosyncratic bias as the AJG. Thus, we can deduce that such papers are likely to be given a rating in the REF which differs from the journal's AJG rating. Consequently, publications based on gaming by targeting overvalued journals are likely to be scored disappointingly in the REF. From the point of view of a university this introduces unnecessary noise and bias into the system.

In aggregate, subjective and idiosyncratic assessments of journal quality can potentially distort the balance of research between and within academic disciplines if some areas of research are relatively overvalued by the AJG. There is also the possibility of substantial resources being wasted on lobbying or otherwise influencing the compilers of the AJG.

6.2.2. Implications of the results for academics

The general problems associated with judging individual research outputs simply by reference to where they are published have been much debated in the past and many academics are not happy with this approach. This findings in this paper add empirical support to the mainly theoretical arguments about the likely outcomes of reliance on journal lists and confirms previous survey work that has indicated the list has substantial influence over academics. It also shows that resistance to the use of journal lists has not been entirely successful in the UK.

The nature of the construction of the AJG and other similar journal lists introduces a considerable element of uncertainty into academic careers with a real possibility of an individual's research area suddenly becoming undervalued although conversely academics might hope to strike lucky with a favourite journal or set of journals being promoted.

There is also the potential opportunity for academics to take a gaming approach and target their papers where they will be most valuable in career or prestige terms. This aspect of gaming is an issue which has not been researched previously. Gaming, of course, will have varying levels of appeal to different academics depending on their attitudes and level of intrinsic or extrinsic motivation.

The possibility of excessive influence falling into the hands of certain editors, journals or publisher who control access to key journals introduces some threats and opportunities for individual academics. There is the possibility of becoming such an insider or a 'club' member with preferential access to some journals with the considerable benefits that would be obtained from such a position or alternatively the serious risk of not being in such a favourable position.

6.2.3. Implications for the compilation and use of journal lists

It is interesting to consider whether journal lists such as the AJG are necessary or could be improved. As discussed above, journal lists have always attracted considerable criticism and a substantial number of academics would, no doubt, be happy for them to be discontinued. However, they are very well embedded in academic practice and culture in many countries because they fulfil several important practical needs so complete discontinuance seems unlikely and perhaps not desirable. There are, however, various ways in which they could be improved. Many of the problems highlighted by this paper stem from the fact that the ratings are discrete. This means that, at the margin, the AJG and similar journal lists give very different status to journals that are very

similar in quality according to other measures. It would be possible to make the ratings less discrete by either moving to a fully continuous scale or having a larger number of discrete ratings, for example, in the AJG having a rating of 3.5 for journals that are at the margin between 4 and 3 ratings. In the UK, however, a move to a less discrete system would mean that the AJG ratings would be longer mimic the REF outputs and so such a change would probably meet some resistance.

In fact, although it is convenient that the current AJG ratings mimic those of the REF this is potentially quite misleading as the actual REF outcomes are unknown *a priori*. Similar problems may occur in other academic systems where funding mechanisms and/or performance management systems do not fully correspond to influential journal lists.

There are obvious problems with journals that have ratings that do not seem justified by reference to other metrics or journal valuation list as this encourages gaming and also can be very inequitable to journals that are not well treated and the academics that publish in them. It is very desirable for journal rankings to be done very impartially and carefully although there will inevitably be some divergences between different journal rankings. It would give much more confidence to users if the rationale for the ratings of journals was not subjective and the for the reasons for rating decisions to be made more transparent. It would also be very beneficial for rating updates to be made frequently so the effects of any problems/anomalies are not allowed to persist for a long period of time and any changes in the underlying quality of journals to be recognised in a timely way.

6.3. Limitations and suggestions for future research

One limitation of the research is that it takes a quantitative approach so there is less ability to question the motivations for the actions of the subjects involved than a more qualitative approach would provide. For example, the research does not directly measure intrinsic/extrinsic motivation but makes informed deductions about this based on the observed publishing outcomes. On the other hand, the methodology employed does allow quantification of the issues involved which was advocated by [Aboubich and Conway \(2023\)](#) in their qualitative analysis of gaming by UK academics.

There are some empirical limitations with the research. Ideally it would be better to obtain complete data sets for all the empirical studies as has been done for the main investigation of journals which have been rated as 3 or above in the AJG but this presents severe challenges for data collection. It has, however, been possible to collect large enough data samples for appropriate statistical estimation. For AJG categories in some subject areas the number of journals is rather limited which does present some problems for the precision of statistical estimates. For the investigations of gaming there can be no precise estimate of the quality of a journal, so it has been necessary to use a variety of different estimates of journal quality to get some idea about the sensitivity of this measure. Finally, there is a general issue in determining the relative influence on publishing behaviour of the AJG compared to other relevant factors such as changes in underlying journal quality although some of the experimental design in the paper, such as, looking at non-business school dominated journals has had the aim of casting light on this issue.

There are various potential avenues for future research in this area. It would be interesting to elicit the attitudes of academics, via surveys or interviews, about how they approach publication strategies given the influence of the AJG, performance management systems and the REF. An interesting aspect of this is the extent to which different academics are influenced by extrinsic or intrinsic incentives. One might speculate,

for example, that some may take a very careerist approach and are very influenced by material incentives whereas others are primarily interested in the intrinsic incentives provided by their work. It would also be interesting to consider the reasons for the heterogeneity between different research areas in the responses they have exhibited to similar incentives, for example, to see if the philosophical underpinnings of the subject or the extent to which the subject employs quantitative analysis are important. It would also be a worthwhile and informative exercise to analyse publication data at the level of the individual researcher to deduce how researchers respond to the various incentives with which they are faced. For example, if they attempt to write fewer but higher ranked papers, form research teams with incentive structures in mind or direct their research towards subject areas or specific areas of subjects where it appears to be easier to publish in higher ranked journals.

It would also be interesting to conduct empirical work to investigate the connections between the classification of journals in the AJG and the REF process. For example, it would be very informative to see the extent to which outputs in over/under-rated journals are submitted into the REF and how such outputs are ultimately valued.

Some issues regarding the compilation of the AJG are certainly worthy of future consideration. It would be interesting to see, either quantitatively or qualitatively, if there is any evident effect of politics or lobbying whereby particular groups, such as UK academics, publishers, institutions, editors or professional bodies influence the ratings.

The research reported in this study can also be revisited to consider the effects of future revisions of the AJG. Finally, it would be instructive to consider findings from similar research exercises carried out in different countries using other systems for assessing research and journal quality to confirm the robustness and generality of findings of this study.

6.4. Overall conclusions

The results make it very clear that the journal ratings in the AJG affect the publication patterns of UK academics. There are potentially positive and negative aspects to this. To the extent that the ratings are a reasonable proxy for journal research quality, the ability to motivate academics to produce better research and target more prestigious journals is to be applauded. On the other hand, there is strong evidence that the ratings are being gamed to a substantial extent which will have a variety of negative consequences. The findings of this work should aid understanding of the implications of the use of journal lists and perhaps encourage a more informed debate about this issue and a more nuanced use of lists.

CRediT authorship contribution statement

Robert Hudson: Writing – review & editing, Writing – original draft, Validation, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation.

Declaration of competing interest

The author declares that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Appendix 1. Descriptive statistics and results by academic category

Table A1.1

All Journals in the AJG rated 4 And 4* Throughout.

Journal category	Before 2015 revision			After 2015 revision			
	Total papers published	Papers with a UK author	%age of papers with a UK author	Total papers published	Papers with a UK author	%age of papers with a UK author	%age increase in proportion of papers with a UK author
Accounting	923	84	9.10%	1378	118	8.56%	-5.91%
Business History and Economic History	727	439	60.39%	794	436	54.91%	-9.06%*
Economics, Econometrics and statistics	5128	800	15.60%	7692	1580	20.54%	4.94%**
Entrepreneurship and Small Business Management	384	56	14.58%	545	99	18.17%	24.56%
Finance	1709	206	12.05%	2691	405	15.05%	24.86%**
Gen. Management, Ethics and Social Responsibility	1200	227	18.92%	2090	548	26.22%	38.61%**
Human Resource Management and Employment Studies	934	383	41.01%	1328	590	44.43%	8.34%
Information Management	450	26	5.78%	633	33	5.21%	-9.77%
Innovation	919	176	19.15%	1068	276	25.84%	34.94%**
International Business and Area Studies	207	30	14.49%	393	83	21.12%	45.73*
Management Development and Education	-	-	-	-	-	-	-
Marketing	1374	74	5.39%	1720	126	7.33%	36.02%*
Operations & Technology Management	161	13	8.07%	201	27	13.43%	66.36%
Operations Research and Man. Science	1021	75	7.35%	2066	219	10.60%	44.30%**
Organisation Studies	1245	285	22.89%	1704	544	31.92%	39.46%**
Psychology (General)	3117	396	12.70%	3350	483	14.42%	13.49%**
Psychology (Organisational)	1550	132	8.52%	2144	237	11.05%	29.80%**
Public Sector & Health Care	695	32	4.60%	901	69	7.66%	66.33%**
Regional Studies, Planning & Environment	385	176	45.71%	450	174	38.67%	-15.42%*
Sector Studies	1679	271	16.14%	2867	565	19.71%	22.10%**
Social Sciences	4280	942	22.01%	6632	1554	23.43%	6.46%*
Strategy	365	29	7.95%	710	87	12.25%	54.23%*

**, * sig at 1% level, 5% level compared to no change in the proportion of papers with a UK author.

A Chi-square test of the actual differences by subject compared to the average increase indicates there are extremely significant differences between subjects with a p value of 2.38×10^{-26} .

Table A1.2

All Journals in the AJG uprated from 3 to 4.

Journal category	Before 2015 revision			After 2015 revision			
	Total papers published	Papers with a UK author	%age of papers with a UK author	Total papers published	Papers with a UK author	%age of papers with a UK author	%age increase in proportion of papers with a UK author
Accounting	196	10	5.10%	449	21	4.68%	-8.33%
Business History and Economic History	488	69	14.14%	546	86	15.75%	11.40%
Economics, Econometrics and statistics	1647	225	13.66%	2594	413	15.92%	16.54%*
Entrepreneurship and Small Business Management	79	14	17.72%	150	30	20.00%	12.86%
Finance	645	83	12.87%	1346	269	19.99%	55.31%**
Gen. Management, Ethics and Social Responsibility	143	16	11.19%	174	29	16.67%	48.96%
Human Resource Management and Employment Studies	110	58	52.73%	257	111	43.19%	-18.09%
Information Management	286	20	6.99%	465	38	8.17%	16.86%
Innovation	-	-	-	-	-	-	-
International Business and Area Studies	224	55	24.55%	354	114	32.20%	31.16%*
Management Development and Education	188	20	10.64%	227	60	26.43%	148.46%**
Marketing	331	22	6.65%	586	60	10.24%	54.05%*
Operations & Technology Management	619	90	14.54%	1271	222	17.47%	20.13%
Operations Research and Man. Science	2791	335	12.00%	4844	799	16.49%	37.42%**
Organisation Studies	114	11	9.65%	206	32	15.53%	60.99%

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Table A1.2 (continued)

Journal category	Before 2015 revision			After 2015 revision			
	Total papers published	Papers with a UK author	%age of papers with a UK author	Total papers published	Papers with a UK author	%age of papers with a UK author	%age increase in proportion of papers with a UK author
Psychology (General)	–	–	–	–	–	–	–
Psychology (Organisational)	153	12	7.84%	212	27	12.74%	62.38%
Public Sector & Health Care	395	148	37.47%	428	102	23.83%	–36.39%**
Regional Studies, Planning & Environment	–	–	–	–	–	–	–
Sector Studies	351	42	11.97%	771	149	19.33%	61.51%**
Social Sciences	428	318	74.30%	576	389	67.53%	–9.10%*
Strategy	–	–	–	–	–	–	–

** , * sig at 1% level, 5% level compared to no change in the proportion of papers with a UK author.

A Chi-square test of the actual differences by subject compared to the average increase indicates there are extremely significant differences between subjects with a p value of 2.39×10^{-33} .

Table A1.3

All Journals in the AJG downgraded from 4 to 3.

Journal category	Before 2015 revision			After 2015 revision			
	Total papers published	Papers with a UK author	%age of papers with a UK author	Total papers published	Papers with a UK author	%age of papers with a UK author	%age increase in proportion of papers with a UK author
Accounting	–	–	–	–	–	–	–
Business History and Economic History	333	167	50.15%	626	203	32.43%	–35.34%**
Economics, Econometrics and statistics	880	128	14.55%	1344	201	14.96%	2.82%
Entrepreneurship and Small Business Management	–	–	–	–	–	–	–
Finance	–	–	–	–	–	–	–
Gen. Management, Ethics and Social Responsibility	1044	33	3.16%	620	33	5.32%	68.39%*
Human Resource Management and Employment Studies	–	–	–	–	–	–	–
Information Management	–	–	–	–	–	–	–
Innovation	–	–	–	–	–	–	–
International Business and Area Studies	–	–	–	–	–	–	–
Management Development and Education	–	–	–	–	–	–	–
Marketing	–	–	–	–	–	–	–
Operations & Technology Management	–	–	–	–	–	–	–
Operations Research and Man. Science	–	–	–	–	–	–	–
Organisation Studies	–	–	–	–	–	–	–
Psychology (General)	614	222	36.16%	1100	384	34.91%	–3.45%
Psychology (Organisational)	–	–	–	–	–	–	–
Public Sector & Health Care	86	21	24.42%	163	27	16.56%	–32.16%
Regional Studies, Planning & Environment	–	–	–	–	–	–	–
Sector Studies	–	–	–	–	–	–	–
Social Sciences	–	–	–	–	–	–	–
Strategy	–	–	–	–	–	–	–
Totals	–	–	–	–	–	–	–

** , * sig at 1% level, 5% level compared to no change in the proportion of papers with a UK author.

A Chi-square test of the actual differences by subject compared to the average increase indicates there are extremely significant differences between subjects with a p value of 4.29×10^{-19} .

Table A1.4

All Journals in the AJG rated 3 throughout.

Journal category	Before 2015 revision			After 2015 revision			
	Total papers published	Papers with a UK author	%age of papers with a UK author	Total papers Published	Papers with a UK author	%age of papers with a UK author	%age increase in proportion of papers with a UK author
Accounting	1706	490	28.72%	2948	834	28.29%	–1.50%
Business History and Economic History	872	120	13.76%	916	143	15.61%	13.44%
Economics, Econometrics and statistics	12,381	1852	14.96%	17,665	2975	16.84%	12.59%**

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Table A1.4 (continued)

Journal category	Before 2015 revision			After 2015 revision			
	Total papers published	Papers with a UK author	%age of papers with a UK author	Total papers Published	Papers with a UK author	%age of papers with a UK author	%age increase in proportion of papers with a UK author
Entrepreneurship and Small Business Management	712	154	21.63%	1633	378	23.15%	7.02%**
Finance	4531	898	19.82%	6642	1506	22.67%	14.40%**
Gen. Management, Ethics and Social Responsibility	3137	449	14.31%	7321	1503	20.53%	43.44%**
Human Resource Management and Employment Studies	1650	471	28.55%	2374	697	29.36%	2.85%
Information Management	7094	529	7.46%	7066	641	9.07%	21.65%**
Innovation	371	68	18.33%	555	135	24.32%	32.71%*
International Business and Area Studies	1013	281	27.74%	1523	455	29.88%	7.70%
Management Development and Education	822	436	53.04%	1777	763	42.94%	-19%**
Marketing	1809	355	19.62%	3195	679	21.25%	8.30%
Operations & Technology Management	4158	482	11.59%	6413	1038	16.19%	39.63%**
Operations Research and Man. Science	3108	399	12.84%	6137	699	11.39%	-11%*
Organisation Studies	380	150	39.47%	631	208	32.96%	-16.49%*
Psychology (General)	2498	544	21.78%	4879	859	17.61%	-19.15%**
Psychology (Organisational)	1103	161	14.60%	1599	244	15.26%	4.54%
Public Sector & Health Care	948	358	37.76%	1715	500	29.15%	-22.80%**
Regional Studies, Planning & Environment	2461	624	25.36%	4293	1043	24.30%	-4.18%
Sector Studies	1422	149	10.48%	3539	428	12.09%	15.42%
Social Sciences	4068	1417	34.83%	8412	2410	28.65%	-17.75%**
Strategy	89	26	29.21%	292	73	25.00%	-14.42%
Totals							

** , * sig at 1% level, 5% level compared to no change in the proportion of papers with a UK author.

A Chi-square test of the actual differences by subject compared to the average increase indicates there are extremely significant differences between subjects with a p value of 2.45×10^{-125} .

Table A1.5

All Journals in the AJG updated to 3.

Journal category	Before 2015 revision			After 2015 revision			
	Total papers published	Papers with a UK author	%age of papers with a UK author	Total papers published	Papers with a UK author	%age of papers with a UK author	%age increase in proportion of papers with a UK author
Accounting	437	163	37.30%	545	190	34.86%	-6.53%
Business History and Economic History	87	23	26.44%	135	29	21.48%	-18.74%
Economics, Econometrics and statistics	6467	826	12.77%	10,439	1579	15.13%	18.43%**
Entrepreneurship and Small Business Management	84	3	3.57%	94	8	8.51%	138.30%
Finance	1888	225	11.92%	3658	676	18.48%	55.07%**
Gen. Management, Ethics and Social Responsibility	-	-	-	-	-	-	-
Human Resource Management and Employment Studies	112	10	8.93%	206	31	15.05%	68.54%
Information Management	2351	157	6.68%	4635	555	11.97%	79.31%**
Innovation	-	-	-	-	-	-	-
International Business and Area Studies	682	117	17.16%	1001	266	26.57%	54.90%**
Management Development and Education	-	-	-	-	-	-	-
Marketing	353	59	16.71%	527	116	22.01%	31.70%*
Operations & Technology Management	480	49	10.21%	697	90	12.91%	26.49%
Operations Research and Man. Science	4775	321	6.72%	10,145	870	8.58%	27.57%**
Organisation Studies	151	31	20.53%	361	80	22.16%	7.94%
Psychology (General)	1720	170	9.88%	3124	398	12.74%	28.90%**
Psychology (Organisational)	3288	330	10.04%	5086	554	10.89%	8.53%
Public Sector & Health Care	983	114	11.60%	2031	227	11.18%	-3.62%
Regional Studies, Planning & Environment	9769	1099	11.25%	17,206	1648	9.58%	-14.86%**
Sector Studies	1969	196	9.95%	5241	758	14.46%	45.29%**
Social Sciences	3009	695	23.10%	4819	1111	23.05%	-0.19%
Strategy	133	28	21.05%	321	76	23.68%	12.46%
Totals							

**, * sig at 1% level, 5% level compared to no change in the proportion of papers with a UK author.

A Chi-square test of the actual differences by subject compared to the average increase indicates there are extremely significant differences between subjects with a p value of 1.01×10^{-91} .

Table A1.6

All Journals in the AJG downgraded from 3 to 2.

Journal category	Before 2015 revision			After 2015 revision			%age increase in proportion of papers with a UK author
	Total papers published	Papers with a UK author	%age of papers with a UK author	Total papers published	Papers with a UK author	%age of papers with a UK author	
Accounting	–	–	–	–	–	–	–
Business History and Economic History	226	61	26.99%	244	48	19.67%	–27.12%*
Economics, Econometrics and statistics	1344	249	18.53%	1654	280	16.93%	–8.63%
Entrepreneurship and Small Business Management	–	–	–	–	–	–	–
Finance	–	–	–	–	–	–	–
Gen. Management, Ethics and Social Responsibility	–	–	–	–	–	–	–
Human Resource Management and Employment Studies	126	17	13.49%	174	15	8.62%	–36.11%
Information Management	1127	72	6.39%	1717	96	5.59%	–12.48%
Innovation	–	–	–	–	–	–	–
International Business and Area Studies	–	–	–	–	–	–	–
Management Development and Education	–	–	–	–	–	–	–
Marketing	323	191	59.13%	388	114	29.38%	–50.31%**
Operations & Technology Management	–	–	–	–	–	–	–
Operations Research and Man. Science	365	50	13.70%	698	74	10.60%	–22.61%
Organisation Studies	143	17	11.89%	204	22	10.78%	–9.28%
Psychology (General)	–	–	–	–	–	–	–
Psychology (Organisational)	–	–	–	–	–	–	–
Public Sector & Health Care	251	129	51.39%	561	242	43.14%	–16.07%*
Regional Studies, Planning & Environment	141	74	52.48%	279	153	54.84%	4.49%
Sector Studies	–	–	–	–	–	–	–
Social Sciences	–	–	–	–	–	–	–
Strategy	175	19	10.86%	251	30	11.95%	10.09%
Totals							

**, * sig at 1% level, 5% level compared to no change in the proportion of papers with a UK author.

A Chi-square test of the actual differences by subject compared to the average increase indicates there are extremely significant differences between subjects with a p value of 4.91×10^{-7} .

Appendix 2

In this appendix, for robustness, I have repeated the analysis using the share of articles whose first author is from the UK, with the results shown in [Table A2.1](#) and using the share of articles with a majority of authors from the UK, with the results shown in [Table A2.2](#).

It is not possible to extract this data automatically from the Web of Science database so collecting a full set of relevant data would involve spending an extremely large amount of time hand collecting data. However, it has been possible to hand collect full data on all papers published in a random sample of 5% of the journals in the AJG that have ever been rated as 3 or higher in the investigation period. The random selection is being proportionate to the number of papers in each subject area. This has allowed a sufficiently large sample to be assembled for useful statistical inferences to be made.

Two issues may be at play here. Initially, the nature of the authorship team of a paper may affect which journal outlets are favoured for potential publication. In particular, first authors may have a greater say in the decision of where to publish a paper and, if they are from the UK, they may be more influenced by the AJG than other authors. Similarly, if the majority of authors are from the UK the AJG list is likely to have a particularly big influence on where a paper is submitted.

Another issue, however, is that the nature of authorship teams may have changed over time. For the present study, the relative presence of UK authors is very material. One might speculate that the size of authorship teams might tend to increase over time as research studies become larger and more challenging. However, the proportion of UK authors may not have increased in line with the total average number of authors and there are incentives in the REF rules that might have encouraged this tendency. According to the REF rules in place during the investigation period a paper with multiple co-authors from the same UK university could only be submitted on behalf of one of the authors so there were definite incentives to avoid researching with authors at the same UK university. This may have contributed to a fall in the relative proportion of UK authors on papers. These matters are empirically investigated in [Table A2.3](#).

[Table A2.1](#) gives descriptive results, for papers with the first author being from the UK, for the full set of papers in journals in the AJG which have been rated 3 or above during the investigation period and thus corresponds to [Table 1a](#). The pattern of results in [Table A2.1](#) is quite similar to those in [Table 1a](#) although there are some important differences. The most prestigious 4* category again has the largest increase. All the categories involving journals which have been rated 4 or above during the investigation show substantial increases and statistical tests show the rates of increase are not

significantly different from the corresponding categories in Table 1a. In contrast, the categories for journals which were rated 3 throughout and journals uprated to 3 only show very modest increases in the proportion of papers where the first author is from the UK. Statistical tests show the rates of increase for these categories are significantly different from the more substantial increases in the corresponding categories in Table 1a. Finally, for the category for journals which have been downgraded from 3 to 3 there are even larger decreases than for the corresponding category in Table 1a and the difference between the figures in the two tables for this category is statistically significant.

Table A2.2 gives descriptive results, for papers where the majority of authors are from the UK, for the full set of papers in journals in the AJG which have been rated 3 or above during the investigation period and thus corresponds to Tables 1a and A2.1. The pattern of results in Table A2.2 is quite similar to both those in Tables A2.1 and 1a showing an element of robustness across the findings. As in the other tables, the most prestigious 4* category has the largest increase. Statistical tests show the rates of increase for journals which have been rated 4 or above during the investigation are not significantly different from the corresponding categories in Table 1a. The categories for journals rated 3 throughout and journals uprated to 3 show small decreases in the proportion of papers where the majority of authors are from the UK. Statistical tests show the rates of increase for these categories are significantly different from the increases in the corresponding categories in Table 1a. Finally, for the category for journals which have been downgraded from 3 to 3 there are larger decreases than for the corresponding category in Table 1a and the difference between the figures in the two tables for this category is statistically significant.

In summary, the results for Tables A2.1 and A2.2 are qualitatively fairly similar to those in Table 1a for the more highly rated journals but tend to show smaller increases or larger decreases in the influence of UK researchers for less well rated journals. This pattern can be partly understood by examining how the average number of authors by journal category and author origin has changed over time and these figures are outlined in Table A2.3. In general, for all categories of journal, the average number of authors has increased quite substantially over the period of the investigation but in almost all cases the number of UK authors has increased to a lesser extent. For the journals downgraded from 3 to 2 the average total number of authors has declined by 17.74% but the average number of UK authors has declined by an even greater 20.32%.

We can speculate that the incentives facing UK researchers have combined to produce the observed results. For relatively high ranked journals, the strong incentive to publish in these journals has broadly offset the incentive to reduce the number of UK co-authors. For lesser ranked journals the incentives to publish in these journals have been more than offset by the incentives to reduce the number UK co-authors so we see less UK influence in these journals.

Table A2.1

Estimated figures for papers with first author from UK based on 5% sample of papers.

Journal category	Before 2015 revision			After 2015 revision			
	Total papers published	Papers with a UK author first	%age of papers with a UK author first	Total papers published	Papers with a UK author first	%age of papers with a UK author first	%age increase in proportion of papers with a UK author first
4* Throughout	9093	353	3.86	13,963	892	6.26	62.43
4 Throughout	19,360	2471	12.77	27,394	3986	14.55	13.98
Journals upgraded from 3 to 4	9188	1060	11.54	15,456	1785	11.55	0.11
Journals downgraded from 4 to 3	2957	467	15.80	3853	701	18.18	15.08
Journals 3 throughout	56,333	7482	13.28	91,525	12,280	13.42	1.01 ^a
Journals uprated to 3	38,738	3663	9.46	70,271	6759	9.62	1.70 ^a
Journals downgraded from 3 to 2	4221	735	17.42	6170	667	10.80	-37.99 ^a
Totals	139,890	16,231	11.60	228,632	27,070	11.84	2.05

^a Significantly different from corresponding figure for just having a UK author at the 5% level.

Table A2.2

Estimated figures for papers with majority of authors from UK based on 5% sample of papers.

Journal category	Before 2015 revision			After 2015 revision			
	Total papers	Papers with a majority of UK authors	%age of papers with a majority of UK authors	Total papers published	Papers with a majority of UK authors	%age of papers with a majority of UK authors	%age increase in proportion of papers with a majority of UK authors
4* Throughout	9093	255	2.78	13,963	575	4.04	44.94
4 Throughout	19,360	2078	10.73	27,394	3456	12.61	17.52
Journals upgraded from 3 to 4	9188	993	10.80	15,456	1621	10.49	-2.92
Journals downgraded from 4 to 3	2957	381	12.87	3853	608	15.79	22.65
Journals 3 throughout	56,333	6734	11.95	91,525	10,776	11.77	-1.51 ^a
Journals uprated to 3	38,738	3102	8.01	70,271	5393	7.68	-4.15 ^a
Journals downgraded from 3 to 2	4221	556	13.17	6170	481	7.80	-40.77 ^a
Totals	139,890	14,099	10.07	228,632	22,910	10.02	-0.06

^a Significantly different from corresponding figure for just having a UK author at the 5% level.

Table A2.3

Estimated average number of authors on papers with at least one UK Author based on a 5% sample of papers.

Journal category	Before 2015 revision			After 2015 revision		
	Total	UK based	Joint UK and overseas affiliation	Total (% increase)	UK based (% increase)	Joint UK and overseas affiliation (% increase)
4* Throughout	2.36	1.68	0.14	2.95 (24.96%)	1.90 (13.47%)	0.19 (33.79%)
4 Throughout	2.52	1.58	0.11	3.00 (18.78%)	1.89 (19.07%)	0.20 (76.74%)
Journals upgraded from 3 to 4	2.35	1.59	0.19	3.03 (29.09%)	1.72 (8.13%)	0.14 (-23.17%)
Journals downgraded from 4 to 3	2.61	1.85	0.06	2.96 (13.45%)	2.02 (9.37%)	0.26 (330.43%)
Journals 3 throughout	2.36	1.68	0.14	2.95 (24.96%)	1.90 (13.47%)	0.19 (33.79%)
Journals uprated to 3	2.51	1.75	0.14	3.35 (33.15%)	1.94 (10.55%)	0.24 (65.11%)
Journals downgraded from 3 to 2	3.10	1.80	0.10	2.55 (-17.74%)	1.43 (-20.32%)	0.09 (-15.52%)

Appendix 3

In this appendix, for robustness, I have considered the effect of authors with joint affiliations to UK and overseas universities. I have used the affiliation data reported in Table A2.3 and used this to recalculate Table 1a removing the expected number of authors in each category with UK and overseas affiliations. The resulting numbers are reported in Table A3.1 below.

Two factors may be important here. Some UK institutions have bought in 'big name' academics from overseas, particularly the US, in order to bolster their REF submission. This might have significantly boosted the percentage increase in papers with a UK affiliated author particularly for the most prestigious journals. Another factor is that the REF rules penalise authors working jointly with other authors from the same institution as a paper can only be submitted from an institution in the name of one author at that institution. Thus, it might be advantageous for authors to work with authors whose prime affiliation is to a non-UK university and who may not be particularly personally motivated to be included in a REF submission. This would apply to many overseas academics who were not necessarily stars but were willing to affiliate themselves to a UK university.

If Table A3.1 is examined, we can see that the percentage increase in the proportion of papers when only UK authors without overseas affiliations are considered tends to be somewhat less than when all UK affiliated authors are considered although the differences for many categories are not significant. Interestingly, the difference is very small and not statistically significant for the most prestigious 4* journals so the differences are more driven by moderate researchers than the higher profile 'star' academics.

Table A3.1

All Papers in Journals in the AJG which have been rated 3 or above during the investigation period with expected number of authors with join UK and overseas affiliation removed.

Journal category	Before 2015 revision			After 2015 revision			
	Total papers published	Expected papers with only UK authors	%age of papers with only UK authors	Total papers Published	Expected papers with only UK authors	%age of papers with only UK authors	%age increase in proportion of papers with only UK authors
4* Throughout	9093	741	8.15%	13,963	1579	11.31%	38.80%
4 Throughout	19,360	3762	19.43%	27,394	5811	21.21%	9.16%*
Journals upgraded from 3 to 4	9188	1363	14.83%	15,456	2711	17.54%	18.23%
Journals downgraded from 4 to 3	2957	552	18.68%	3853	739	19.18%	2.63%*
Journals 3 throughout	56,333	9545	16.94%	91,525	16,390	17.91%	5.68%
Journals uprated to 3	38,738	4247	10.96%	70,271	8116	11.55%	5.36%**
Journals downgraded from 3 to 2	4221	830	19.67%	6170	1006	16.31%	-17.06%
Totals	139,890	21,041	15.04%	228,632	36,352	15.90%	5.71%

** sig at 1% level, * sig at 5% level compared to the percentage increase in the proportion of papers with a UK author including those jointly affiliated to a non-UK university as shown in Table 1a.

A Chi-square test of the increases over the categories compared to the percentage increase in the proportion of papers with a UK author including those jointly affiliated to a non-UK university indicates there are highly significant differences with a p value of 1.59×10^{-8} .

Appendix 4

In this appendix, for robustness, I consider different definitions of unjustified promotions/demotions and how these may change the results. I do this by fitting Eq. (6) using the different definitions.

In the main results I use the following methodology to consider whether a promotion/demotion is justified. I take account of several different metrics. The metrics used are the three numerical measures presented in the 2015 update of the AJG: (i) The Web of Knowledge (WoK) Journal Citation Report (JCR); (ii) the SCImago Journal Rank (SJR), and (iii) the Source Normalized Impact per Paper (SNIP).

To determine whether a journal has been unjustifiably or justifiably promoted, I look at the average rank of the journal based on the three numerical measures in the 2015 update of the AJG and compare it to the journal with the lowest average rank in the category to which it was promoted. If its average rank is better than that of at least one of the existing journals in the category to which it was promoted I consider the promotion to be justified, if it is worse than that of all the journals in the category to which it was promoted, I consider the promotion to be unjustified. Similarly, to determine whether a journal has been unjustifiably or justifiably demoted, I look at the average rank of the journal based on the three numerical measures in the 2015 update of the AJG and compare it to the average rank of each of the journals in the AJG category to which it was demoted. If its rank is lower than that of at least one of the journals in the category to which it was demoted I consider the demotion to be justified, if it is better than that of all the journals in the category to which it was demoted, I consider the promotion to be unjustified. For ease of identification, I denote this method the $AJG_{Mean,2015}$ method.

Initially, in this appendix, I repeat the regression with each of the individual numerical measures presented in the 2015 update of the AJG denoted the $AJG_{JCR,2015}$, $AJG_{SJR,2015}$ and $AJG_{SNIP,2015}$ methods respectively. So, in these cases, for promotions, I look at the rank of the journal on the relevant numerical measure and compare it to the journal with the lowest rank in the category to which it was promoted. If its rank is better than that of at least one of the existing journals in the category to which it was promoted I consider the promotion to be justified, if it is worse than that of all the journals in the category to which it was promoted, I consider the promotion to be unjustified. Similarly, to determine whether a journal has been unjustifiably or justifiably demoted, I look at the rank of the journal based on the relevant numerical measure and compare it to the rank of each of the journals in the AJG category to which it was demoted. If its rank is lower than that of at least one of the journals in the category to which it was demoted I consider the demotion to be justified, if it is better than that of all the journals in the category to which it was demoted, I consider the promotion to be unjustified.

I also consider comparisons with other journal ranking lists. It is important to use lists which are quite comprehensive in coverage and cover a large proportion of the journals in the AJG. It is also important to use lists that are contemporaneous with the revision of the AJG in 2015. Thus, I look at the 2013 version of the ABDC Australian Business Deans Council Journal Rankings List (ABDC) list from Australia and the JOURQUAL 2015 compiled on behalf of the Association of Professors of Business in German speaking countries in 2015. Like the AJG these lists classify journals into discrete quality categories. This is not a precise science, and the lists employ descriptive text to convey the meaning they attach to the classifications they give as shown below in [Tables A4.1, A4.2 and A4.3](#). Given the descriptions of the categories I equate the quality categories in [Table A4.4](#). In these cases, for promotions I look at the AJG rank of the journal after promotion and compare it to the equivalent ranks on each of the other journal lists. If its AJG rank is better or equal to the equivalent rank on the other list under consideration, I consider the promotion to be justified. If the AJG rank is worse than the equivalent rank on the other list under consideration, I consider the promotion to be unjustified. Similarly, for demotions I look at the AJG rank of the journal after demotion and compare it to the equivalent ranks on each of the other journal lists. If its AJG rank is equal or worse than that on the other list under consideration I consider the demotion to be justified. If the AJG rank is better than that the equivalent rank on the other list under consideration, I consider the demotion to be unjustified.

The results of fitting Eq. (6) using the measure for unjustified promotions/demotions in the main paper and the five other measures detailed above are shown in [Table A4.5](#). The pattern of results for each measure is broadly similar with γ_{29} and γ_{31} being positive, representing the coefficients for unjustifiably and justifiably promoted journals respectively and γ_{30} and γ_{32} being negative, representing the coefficients for unjustifiably and justifiably demoted journals respectively. The coefficient for unjustifiably promoted journals is larger than that for justifiably promoted journals for four of the six measures and is significant for two of the measures. The coefficient for justifiably demoted journals is always large in magnitude and significant in all but one case.

Table A4.1
Rank Interpretation for AJG 2015.

4*	A world elite journal
4	A top journal
3	A highly regarded journal
2	A well-regarded journal
1	A recognised journal

Source: [Harzing \(2023\)](#).

Table A4.2
Rank Interpretation for ABDC 2015.

A*	Best or leading journal in its field - publishes outstanding, original, and rigorous research that will shape the field. Acceptance rates are typically low, and the editorial board is dominated by leading scholars in the field or subfield, including from top institutions in the world. Where relevant to the field or subfield, the journal has the highest impact factors or other indices of high reputation.
A	Highly regarded journal in the field or subfield - publishes excellent research in terms of originality, significance, and rigour, has competitive submission and acceptance rates, excellent refereeing process and where relevant to the field or subfield, has higher than average impact factors. Not all highly regarded journals have high impact factors, especially those in niche areas
B	Well regarded journal in the field or subfield - publishes research of a good standard in terms of originality, significance and rigour and papers are fully refereed according to good standards and practices but acceptance rates are higher than for Tiers A* and A. Depending on the field or sub-field, will have a modest impact factor and will be ISI listed.
C	A recognised journal - publishes research that is of a modest standard and/or is yet to establish its reputation because of its newness. This tier is more inclusive than the others but only includes refereed journals.

Source: [Harzing \(2023\)](#).

Table A4.3
Rank Interpretation for JOURQUAL 2015.

A+	World leading
A	Leading
B	Important and respected
C	Recognised
D	Peer-reviewed

Source: Harzing (2023)

Table A4.4
Equating the quality categories in ABDC and JOURQUAL 2015 to those in AJG.

AJG	ABDC	JOURQUAL 2015
4/4*	A*	A*/A
3	A	B
2	B	B
1	C	C/D

Table A4.5
Results of Regressions based on Eq. (6) using different measures for unjustified promotion/demotions.

Coefficient	Associated dummy	As in paper	JCR	SJR	SNP	ABCD	JOURQUAL NR
α		21.07**	21.07**	21.07**	21.07**	21.07**	21.07**
γ_{29}	<i>DUnProm2015i</i>	13.65*	13.13	7.58	5.24	11.33	29.13*
γ_{30}	<i>DUnDem2015i</i>	-19.72	-30.60	-35.89	-22.23	-33.32**	-30.81*
γ_{31}	<i>DJustProm2015i</i>	7.44	8.68	10.80*	11.55*	9.41	8.51
γ_{32}	<i>DJustDem2015i</i>	-34.57**	-29.11**	-27.96**	-31.43**	-23.07**	-26.41

** sig at 1%.

* sig at 5%.

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