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The unintended consequences of the pandemic on non-pandemic research activities

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ABSTRACT

Research about the Covid-19 pandemic has taken center stage in shaping the work of many scholars, inter alia highlighting the importance of research in addressing the grand challenges humanity faces. However, the pandemic has also ushered in increased administrative, teaching and out of work commitments for many researchers, leading to concerns that academics will become less willing to invest time in obtaining resources to undertake non-Covid-related projects. Using a large-scale survey of business, economics and management researchers, coupled with their publication histories and additional institutional data, we examine how far individuals experienced the focus on the pandemic as ‘crowding out’ interest in, and undermining their confidence in applying for grants for work not focused on the pandemic. We found 40% of the sample agree that the pandemic has impaired their confidence in applying for non-pandemic-related grants and ‘crowded out’ other projects. Researchers with current and prior grants, particularly those with the most experience of holding grants, scholars whose work ‘impacted’ beyond academia, and early career researchers, disproportionately considered themselves to be most affected. We also found that researchers’ perceptions differed based on institutional characteristics. We discuss the implications of these findings for grant providers and national research agencies as well as for individual academic researchers and the institutions in which they work.

1. Introduction

The Covid-19 pandemic began as a healthcare emergency, but it rapidly became clear that it would have substantial political, economic, and social consequences. It confronted the world with an unexpected and far-reaching global crisis and led to the development of ‘Covid-related’ literatures (Lee and Haupt, 2020), with research communities and collaborations forming across academic domains. There was a surge of ‘special issues’ with editors and publishers fast-tracking Covid-19 related research to feed into live debates concerning, and relating to, the pandemic. At the same time, a number of grant-awarding bodies were swift to put in place ‘rapid response’ calls to fund work aimed at addressing and mitigating the effects of the pandemic (Prudêncio and

Costa, 2020). Existing grant holders were invited to pivot their work to Covid-19 projects away from the projects they were currently investigating (e.g., UKRI, 2020).¹ Some national funding systems highlighted the need to engage in Covid-19 research on several levels from the vital expansion of investment in virology, epidemiology, vaccines, and therapeutics to work examining the wider effects of the pandemic on economies and societies.²

While these shifts are a natural response to the research imperative of providing substantive help with the issues raised by the pandemic, a number of voices have pointed out that shifting the research and funding agenda too far towards pandemic-related issues may undermine the capacity of researchers to examine other relevant debates that they would like to contribute to (Matthew, 2020). Nobel Prize-winning

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¹ <https://www.ukri.org/opportunity/apply-to-switch-your-existing-funding-to-covid-19-priority-areas>, accessed 3/12/2020.

² While Covid-19 related funding initiatives have been ubiquitous, they have been coordinated in a number of ways using national and supra-national funding structures. An example at the national level is found in UK Research and Innovation, the organisation that convenes and invests in research collaboration through the UK’s nine research councils; and, at the supra-national level, the European Union has spearheaded funding initiatives (European Commission, 2020).

physician Peter Ratcliffe argues that scholars should maintain their focus on the issues they are motivated by, rather than singular problems such as the pandemic, since not doing so may undermine future work (Havergal, 2020). These views suggest that the pandemic has the potential to ‘crowd out’ other projects that researchers wish to contribute to and may undermine confidence in applying for non-pandemic-related grants by influencing their perceptions of likely grant success. This might be to the detriment of future knowledge generation, particularly through the impact upon those scholars who have proven track records, who are ‘experienced’ winners of grants and providers of impact research.

While these views are plausible, to date there is limited empirical evidence of the extent to which researchers’ decisions about what to work on are being influenced by the near-blanket coverage of the pandemic in their daily lives, nor how it is affecting their perception of the funding landscape (Rijs and Fenter, 2020). There is growing evidence that the pandemic has influenced researchers in various ways. For example, we know that early career researchers (ECRs) have been especially adversely affected (Levine and Rathmell, 2020). These differential effects could be exacerbated, with researchers who have been most adversely affected deciding not to invest effort in applying for resources to fund non-pandemic work, thus building-in future inequality.

As well as the individual agent, the ‘status’ literature highlights that individuals’ views and expectations about grants may be conditioned by the status of the organisations/HE institutions they work for (Brankovic, 2018). Previous research has highlighted that working conditions at universities are important factors, especially the support provided by the university for making research applications (Laudel, 2006) and that grant capture tends to be skewed, not only with a small number of individuals taking up grants, but also being skewed towards a small number of institutions who account for a disproportionate amount of grant capture (Ma et al., 2015). A relative lack of resources aligned with greater non-research related demands may also have disproportionately squeezed the time available for those at less research-intensive institutions who would have less capacity to engage in either applying for grant activity in new Covid-19 related research topics or in being able to carve out time to engage in pandemic debates. It is plausible therefore that the way researchers react may be to some extent determined by the research orientation of their institution. Some universities have a strong research orientation and track record of successful grant funding, whereas others are more focused on teaching or are industry-orientated, so the extent to which faculty within these different environments are affected may also differ.

We examine the extent to which researchers consider that the pandemic has ‘crowded out’ other projects that they would like to contribute to and undermined their confidence in applying for non-pandemic grants. We also analyze the determinants of their perceptions. In particular, we pose the following research questions:

- (1) Are researchers who have more grant ‘experience’ or who are ‘societally impactful’ researchers more likely to consider that non-pandemic issues are being ‘crowded out’?
- (2) Are researchers who are at different points in their careers or are employed in different institutional contexts more or less likely to experience that non-pandemic interests are being ‘crowded out’?
- (3) Would individuals based at less research-intensive institutions be more or less willing to apply for non-Covid-19-related grants as a result?

To explore these questions, we build on status theory (Merton, 1968a; Podolny, 1993; Sauder et al., 2012; Bloch and Mitterle, 2017), which suggests that individuals’ status can be driven by personal motivations and by the organizational context in which people work. In particular, we propose that individuals who have already obtained grants may be more concerned by a shift in focus by grant bodies as they will perceive that pivoting towards new projects makes it more costly for

them to maintain their status over others. Similarly, the theory suggests that individuals may consider focussing on contemporary debates to further reinforce their status, and to sustain their status advantage over others. Conversely, those who have had limited time to develop their status, such as early career researchers, or those in institutions with lower grant capability/contribution to important debates, may feel less confident in applying for non-pandemic grants or may feel that research has shifted from other important debates.

In this article, we draw upon four different sources of data, focused on UK business, economics and management academics, combining samples from business schools and economists from more traditional social science environments. Our sample includes researchers from the humanities (e.g., business history) and more scientific (e.g., IT) and interdisciplinary domains (e.g., innovation studies) and we linked evidence from surveys with information on websites, individuals’ publication records in Scopus (the classification scheme provided by the Academic Journal Guide), the Research Excellence Framework (REF) 2014 and other sources, to identify predictors of individuals’ behaviours. The institutional context is particularly relevant to the current study as while ‘societal impact’ is widely relevant and by no means limited to the UK, it is formally embedded and core to the foundations of the UK research environment. The UK research environment relies on the public grant funding system with, since 2007, research agencies requiring applications to delineate ‘pathways to impact’, and a plan describing how the funded research would make a demonstrable contribution to societal impact, with the initiative being extended to play a significant role in block funding since the REF 2014 (Martin, 2011; RCUK, 2015). The analysis is based on both a descriptive account and several ordinal logistic models.

Our study makes two important contributions. First, it enhances our understanding of how maintenance of status shapes academics’ attitudes to exogenous change ‘crowding out’ activities. Second, this study advances our knowledge about which individuals are most likely to experience pressures on the basis of their prior grant achievements and contribution to debate and where they work, highlighting the self-reinforcing nature of grant success, status and professional aspiration. In doing so, this study helps to enrich our understanding of how scholarly norms are altered by a substantive exogenous shift in institutions’ priorities. Further, we examine the implications of these findings for grant providers and national research agencies as well as for individual academic researchers and the institutions in which they work.

2. Factors determining researcher perceptions of pandemic vs. non-pandemic research activities

Social status refers to the “extent to which an individual or group is respected or admired by others” and, within a community, there is often a social hierarchy leading to the “ordering of individuals and groups according to the amount of respect accorded by others” (Magee and Galinsky, 2008; p. 352). Where people ascribe expertise and competence to those with high-status, status hierarchies are self-enforcing and so able to reinforce relative status in relation to others (Merton, 1968a; Podolny, 1993; Sauder et al., 2012; Bloch and Mitterle, 2017). Perhaps most famously, Merton (1968a) developed this argument in the sociology of science. He posited that small differences in initial status amplify over time to generate cumulative advantages. These status dynamics operate in part through the so-called Matthew effect that “consists in the accruing of greater increments of recognition for particular scientific contributions to scientists of considerable repute and the withholding of such recognition from scientists who have not yet made their mark.” (Merton, 1968b, p.58).

In the context of academia, the aspiration for status can be powerful, motivated by the desire of individuals and groups to gain respect from their peers for their contribution to knowledge, and also to obtain the benefits associated with such status, such as higher pay, greater resources for research, promotion, higher institutional rankings, or more

favourable work conditions. Although it can be expected that the aspiration for higher academic status may be strong among all academics, individuals may have different preferences in terms of how to earn these rewards, perhaps conditioned by their career stage and organisational context. [Simcoe and Waguespack \(2011\)](#) illustrated that when high-status names and institutional affiliations from computer science proposals are included in proposals these had a powerful effect on publication outcomes. [Azoulay et al. \(2013\)](#) examined the impact of a major status-conferring prize that shifts actors' positions in a prestige ordering, showing that proposals by lower status participants have a lower probability of success, while [Salandra et al. \(2021\)](#) draw upon status theory and use choice-set design to demonstrate that the willingness to forgo citations to publish work in relatively 'higher status' journal outlets is strongest among academics who have already published in those outlets.

Using grant and evaluation score data, [Bol et al. \(2018\)](#) examined whether status effects related to earlier grant success led to reduced grant success in the future funding and found that grant capture that is aligned to public funding tends to be skewed, with a small number of faculty accounting for a disproportionate amount of grant capture. [Bloch et al. \(2014\)](#) quantitative analysis supplemented qualitative commentary and highlighted the status enhancing effect of grants in individuals' careers. More senior researchers have higher rates of grant success than their early career counterparts ([van de Besselaar and Sandström, 2015](#); [Bloch et al., 2014](#); [Bol et al., 2018](#)), because there is a greater likelihood that they have run more developed projects, as well as them having established track records in delivering the promised outputs in previous funding and so being seen as a 'safe pair of hands'. For example, using a qualitative approach, [Laudel \(2006\)](#) found that researcher reputation was an important prerequisite for successful acquisition of funds. Together, these facts explain how a small group of researchers tend to have the greatest grant capture and are able to leverage this in order to further reinforce their prestige amongst their peers ([Sauder et al., 2012](#)).

Different elements may determine whether those who have more grant 'experience' are more likely to consider that their non-pandemic interests are being 'crowded out'. On the one hand, experienced researchers will typically have made a significant 'sunk cost' investment in establishing their projects, with their status being aligned to their body of work, and would therefore perceive it to be more risky to alter their agenda and thus are more sensitive to shifts in the funding landscape. Research is a highly specialised career where scholars make considerable investments in their earlier work. Given these early investments, experienced scholars will consider that in the 'longer-term' their research topics will remain relevant to the economy and society and that it would be unwise and risky to alter the agenda in which they are embedded and have established their status. Further, individuals who have already obtained grants may sustain their status advantage over others ([Sauder et al., 2012](#)). It is also the case that those who have developed higher grant status via their 'experience' are more sensitive to shifts in the funding landscape which placed a substantive emphasis on pandemic related research, suggesting that the likelihood of work in other domains would be less likely to be funded and that experienced researchers' confidence in applying for non-pandemic grants would be further undermined.

Alternatively, it is possible that experienced grant winners may be better able to navigate the funding landscape confidently and successfully. Experienced grant winners may have developed a specific competence in dealing with the grant application process and obtaining grants. Such competence could give them the confidence to both keep applying for non-pandemic grants despite the shift in the funding landscape; and to pivot their projects' bids toward new pandemic-related projects.

However, consistent with the primacy of status in academia we propose that:

H1a. *Researchers who have more grant 'experience' are more likely to consider that the pandemic undermined their confidence in applying for grants that are not focused on the pandemic.*

Ultimately, the aim of academic research is to derive new knowledge and understanding that will 'impact' scholarship within academe ('scholarly impact'), for example through obtaining greater citations for their work, or more broadly upon actors outside academia in wider society ('societal impact'). Indeed, there has been an increased focus on how impact is the imperative to raise the economic, environmental, and social rate of return of publicly funded research by inducing research to engage more with non-academics ([Cohen et al., 2002](#); [Perkmann et al., 2021](#); [UKRI, 2020](#)). That is consistent with the literature looking at the engagement of academics beyond academia, which suggests an individual's status in the academic hierarchy is robustly related to the engagement of academics beyond academia ([Abreu and Grinevich, 2013](#); [Lawson et al., 2019](#)). There is also evidence that 'academic age' (typically proxied by the time since a researcher acquired a PhD or academic publication) also has a positive influence on academic engagement beyond academia ([Schuelke-Leech, 2013](#)). [Lawson et al. \(2016\)](#) suggest that academic engagement often works as a cyclical process with engagement being engendered by previous experiences, with repeat rates from 55% to 94% depending on the types of activity. Furthermore, work has shown that researchers have a strong taste for 'societal impact' relative to more traditional research outputs ([Salter et al., 2017](#)). While 'societal impact' is valued across academe, it is particularly evident in the UK context where large financial rewards are linked to impact case study work, and the associated league table positions based on 'impact excellence' provide public recognition of scholar's status within the social hierarchy. The shift towards 'social impact' has led to considerable resources in the form of institutional support from impact teams, financial incentives to develop and enrich case studies, prizes and events being put in place to highlight societally impactful work, and the use of externally paid reviewers being engaged to evaluate cases. Where individual's status, and the privileging that status brings, is aligned to being 'societally impactful' research, more impactful researchers may consider that they should maintain their focus on the issues they are motivated by, as opposed to singular problems such as the pandemic. Furthermore, high impact status of individual's position in the status hierarchy is embedded in their prior work. Given their social awareness and the current pressing nature of the pandemic, there is a possibility, though less likely, that scholars with high 'societal impact' may consider that work on the pandemic is paramount. Nevertheless, given the profile and status of more 'societally impactful' researchers, we hypothesize that:

H1b. *Researchers who are more 'societally impactful' are more likely to consider that research efforts are being shifted away from other debates that researchers would like to contribute to.*

As well as being active in looking to shape research debates, public funding bodies have also sought to engage researchers at different career points to perpetuate and deepen research capability through targeted grant schemes with a particular focus on the development of early-career researchers.³ [Bloch et al., 2014](#) find that a central effect of grant funding worked through the increased status and recognition as researchers which in turn gave greater opportunities for undertaking top level research and for career advancement. The literature highlights ways through which the willingness to apply for, and ability to win, grant funding - and particularly prestigious career grants - has potential benefits for individual researchers by feeding into evaluation and promotion procedures ([Bloch et al., 2014](#); [van de Besselaar and Sandström,](#)

³ For example, in the UK the ESCR, like all other Councils, provide new Investigator grants for early career researchers (<https://www.ukri.org/opportunity/esrc-new-investigator-grant/>).

2015), and by enhancing the ability of researchers to obtain outside offers in the research labor market (van Arensbergen et al., 2012; Bol et al., 2018). There is also evidence that grants have positive effects on ‘scholarly impact’ (Jacob and Lefgren, 2011; Gaughan and Bozeman, 2002), and may also indirectly benefit the careers of ECRs by enhancing their collaborative networks (Melin and Danell, 2006; Pina et al., 2019), or by providing project management experience. ECRs may perceive that if they change their research focus and apply for grants on pandemic-related research, they will have a better chance of obtaining funding, given the large number of calls associated with pandemic research. However, while there are considerable benefits to obtaining grant capture for early career researchers, their applications are less likely to be successful (Murray et al., 2016) and ECRs will have a smaller portfolio of projects that can be related to or pivoted towards, pandemic related issues. Viewed through the lens of status theory, ECRs thus may feel less confident in applying for non-pandemic grants. Hence, we hypothesize:

H2a. *Early career researchers would be less willing to apply for grants that are focused on issues other than the pandemic.*

It is unclear whether ECRs would consider that work is being pulled away from other important debates, since, unlike high status researchers, they have less ‘skin in the game’. Indeed, ECRs are much less likely, almost by definition, to have had the time to contribute to important debates, so are less likely to worry that research has shifted from other important debates. This is supported by evidence from analysis of a sample of impact case studies which found average length of service for the longest serving key researcher was over 15 years of age (Kellard and Silwa, 2016). They will have a smaller portfolio of ongoing projects that could be repurposed for a pandemic-related grant application. Furthermore, ECRs are more likely to experience job insecurity, often associated with fixed-term contracts (Paula, 2020) where time will be limited, and they may feel pressured to deviate from their existing research projects to pandemic-related research where they may feel that more research jobs (post-docs) will have a focus on the pandemic, rather than on their research topics. Hence, we hypothesize that:

H2b. *Early career researchers are more likely to consider that the pandemic shifted research efforts away from other debates that researchers would like to contribute to.*

As well as the individual agent, the ‘status’ literature highlights that individuals’ views and expectations about grants may be conditioned by the status of the organisations/HE institutions they work for (Brankovic, 2018). Preparing grant applications is part of a research process that requires time and resources, so the working conditions at universities are important factors, especially the support provided by the university for applying for research applications (Laudel, 2006). Furthermore, grant capture aligned to public funding tends to be skewed, not only with a small number of individuals taking up grants, but also being skewed toward a small number of institutions who account for a disproportionate amount of grant capture. For example, using grant submissions data to a UK Research Council, Viner et al. (2004) found evidence that institutional status had an impact upon grant success, while Enger and Castellacci (2016) also found institutional reputation was a contributor to the success of Horizon 2020 bids. Ma et al. (2015) observed a rising inequality in the distribution of funding and that its effect was most noticeable at the institutional level, finding these lead universities formed a ‘rich club’ whose membership played an important determining factor for their research success. In effect, high status in the core ‘over-attracted’ resources, but also rewarded both research breadth and depth, placing ‘lower status’ institutions at a disadvantage. Thus, analogous to the discussion of ECRs, we argue that individuals working in ‘lower status’ organisations are less likely to have a large breadth and depth of research projects, thus being more likely to perceive that they are less able to be successful in applying for grants that are focused on issues other than the pandemic. Hence:

H3a. *Researchers at lower status institutions would be less willing to apply for grants that are focused on issues other than the pandemic.*

It is unclear whether researchers working in lower status institutions would consider that work is being pulled away from other important debates, since, unlike ‘high impact’ researchers, they have a less developed portfolio of work to draw upon. Nevertheless, like ECRs, their sparser portfolio allows them fewer opportunities to repurpose their research for a pandemic focus. Individuals in lower ranked universities, are not only less likely to receive funding in the first place due to the status of their organisations (Enger and Castellacci, 2016), but are also more likely to have higher teaching and administration workloads, which suggests they may have less time to repurpose their research to analyze pandemic related debates. We posit that:

H3b. *Researchers at lower status institutions are more likely to consider that the pandemic shifted research efforts away from other debates that researchers would like to contribute to.*

3. Materials and methods

The context for our study is the population of business, economics, and management academics working in the UK, in business schools and academic departments. Our research approach combined information from four independent sources: (1) university websites, (2) data on university and business school/ economics departments/ other departments where academic economists are employed, taken from public sources such as the REF2014 and Higher Education Statistics Agency (HESA), (3) individuals’ publication records in Scopus and (4) a large-scale survey. The initial stage of the data collection involved capturing data from UK universities’ websites that included gender and academic rank. Our database contains all those working in business schools in the UK, including economists. It also includes economists working outside business schools in stand-alone economics departments, or in other areas of universities (such as departments of education, agriculture, and development studies).

The pandemic led to ‘lockdowns’, and an immediate switch to ‘working from home’ that was replicated across the globe at varying times over the course of the pandemic. In the UK this occurred on 16th March 2020. The development of the survey took an iterative approach, with the initial survey being piloted on two occasions with eight scholars each time. The on-line questionnaire was launched on 15th April 2020. The launch was outside the teaching term time to minimize the potential for conflicting with online teaching preparation. By the launch of the survey the public and policy discourse had moved on from a view that the pandemic may be resolved quickly. It was thought this was long enough to enable respondents to be able to take stock and have a reasonable assessment of the impacts of the pandemic on their research activities and for many to engage in pandemic related research activities. Recipients were sent an email explaining the purpose of the study, inviting them to participate and including a link to the survey. The survey was sent out in two batches in order to examine whether there were any changes over the course of the data collection period. The first wave of the survey was concluded on 8th May 2020. The second survey wave ran from 4th – 26th May 2020.

To link the survey data with public information from websites, we followed a multi-stage protocol to ensure the de-identification of the data, explained to respondents on the project website. First, we replaced personal names and institutional affiliation information in the survey data with a randomly assigned token number: pseudonymisation. Second, we created another set of random tokens for individual names and institutional affiliations to be used to capture information about individuals. Third, we linked the two sets of tokens via separate files. All files were individually password protected and held on secure servers. This approach ensured that the survey data and other personal information were never combined on a single file, and therefore the data used for analysis contained no personal identifying information.

We received responses from 2,660 participants. The total population for the survey was 13,048, so the response rate was over 20%. Of that response, 2,287 provided usable responses (17%) and from this sample, after excluding teaching-intensive faculty, responses for non-item response and completing matching across the various sources of data, we were left with a sample of 1,604 individuals for the analysis. An advantage of using a specified sample frame is that it enables us to test the representativeness of our response pool against a number of characteristics. Specifically, we looked for sources of difference between the original population and our final sample. The sample was consistent with the original population with respect to gender, academic titles, and type of institution. We found that the sample is broadly representative although it does have a slightly higher proportion of women, and a somewhat lower proportion of professorial participants.

3.1. Measures

3.1.1. Dependent variables

Since the issue of how academics perceive the pandemic has ‘crowded out’ other research had not been addressed in the previous literature, it was necessary to develop new factual based questions. The first examines grants as substantial input to undertaking research activity, asking for the individual’s perceptions of how the pandemic has “has undermined your confidence in applying for grants that are not focused on Covid-19” [using a five-point Likert scale listing 1. ‘Strongly disagree’, 2. ‘Somewhat disagree’, 3. ‘Neither agree nor disagree’, 4. ‘Somewhat agree’, 5. ‘Strongly agree’]. The second ‘crowding out’ element explores the extent to which “Covid-19 shifted research efforts away from other debates that researchers would like to contribute to” and thus the pandemic’s effects on the outputs of research activity. Responses were recorded on the same 5-point scale. To simplify the analysis and interpretation of the coefficients, we transformed the ordinal rating into two points – those who ‘disagree’ or ‘neither agree nor disagree’, and those who ‘agree’⁴.

3.1.2. Independent variables

To examine ‘societal impact’, we captured publications data from each individual’s Scopus records that provide information on whether individual publications were supported by a grant, and the grant provider. From these data we defined two variables to capture grant experience. First, we checked whether individuals had a publication that was supported by a public UK Research and Innovation body, such as the Economic and Social Research Council, that required explicit ‘impact’.⁵ We do not have information on when each specific grant ran and assume that publications from 2009 will have been influenced by impact pathways’ requirements (the proportion of outputs supported by UKRI grant-funded since 2009).⁶ Second, we checked the proportion of output

⁴ We also transformed the dependent variables into a three-point scale examining those who agree compared to those who did not or neither agreed nor disagreed running an identical ordinal logit specifications. We obtained qualitatively equivalent findings to the logit models detailed later in the paper in Table 3.

⁵ The following public funding organisations were included: Art and Humanities Research Council, Biotechnology and Biological Sciences Research Council, Economic and Social Research Council, Engineering and Physical Sciences Research Council, Medical Research Council, Natural Environmental Research Council, Research Councils UK, Science and Technology Facilities Council.

⁶ The robustness assumption is that there is a two-year lag between the grant scheme change and output being obtained. The choice of a two-year lag reflects the relatively long time-horizon often associated with publication in the social science and was checked by comparing one and three and four-year lags, but the findings remain qualitatively identical, no change.

supported by grant funding relative to each individual’s full set of publications.⁷ We were able to supplement this historical information as participants were explicitly asked in the survey whether the participant was ‘involved in a research grant that is currently being funded’.

We also measure ‘societal impact’ via the impact case study involvement details that were provided by a minority of those submitted to the REF process. Specifically, two impact case studies were required for every staff member up to 19.99 FTE (Full Time Equivalent), three case studies for 20 to 34.99, four cases for 35 to 49.99, five for 50 to 64.99, six cases for 65 to 79.99, seven for 80 to 94.99, eight cases for 95 to 109.99, nine for 110 to 159.99 and, for 160 or more staff, 10 cases plus one additional case per additional 50 FTEs. With fewer case studies needing to be submitted, and due to the increased importance of ‘impact’ to the outcomes of REF2021, institutions had high incentives to identify and develop cases from only those faculty members who were able to demonstrate their work to have been of tangible impact, enabling us to provide a plausible proxy for the concept. We also included a binary variable – ‘involved in an impact case study’ – set to 1 if the individual was ‘lead researcher’ in a case study for the REF2014 for Economics and Econometrics (Unit of Assessment 16), Business and Management (Unit of Assessment 19), and 0 otherwise. In the REF, impact case studies needed to be based on research undertaken in the home organization and thus were an immobile resource with case studies based upon research and impact developed in the previous 15 years (REF2014, 2011).⁸

Academic rank was gathered from websites, creating a dummy variable distinguishing between the three most common ranks of Professors/Chairs; Associate Professor/Reader/ Senior Lecturer/Principal Lecturer; and Lecturer/Assistant Professor. Research Fellow, Senior Research Fellow, and ‘Other’ titles make up the remaining 11% of scholars. We aggregated the research-intensive Research Fellow and Senior Research Fellow roles for the analysis.

Segmentation and other institutional characteristics vary between universities in the UK, so we distinguished ‘pre-1992’ and ‘post-1992’ universities, measuring the grant capture of each institution (in 2018/19 terms. Source: HESA). Pre-1992 universities are likely to require more, and offer more support for, research. To address the institutions’ orientation towards research, we considered their Grade Point Average (GPA) calculated from the REF2014 Summary for each unit of assessment (e.g. Unit of Assessment 16 – Economics and Econometrics and Unit of Assessment 19 – Business and Management).

3.1.3. Additional variables

Involvement in pandemic research was measured by asking individuals whether or not they are involved in coordinating pandemic-related research and/or opinion pieces or pandemic-related media participation.

‘Scholarly impact’ is captured in two ways. First, we measured academic influence by examining the total number of citations, adjusting for the number of years since the year of their first publication (their ‘academic age’), using their Scopus record. However, in business and management and economics, the literature suggests that academics are focused upon the journal outlets (Heckman and Muktan, 2020; Walker et al., 2019), and that some researcher’s trade-off between journal publication and external impact (Salter et al., 2017). Given this, we also utilize the journal ranking as a measure of academic influence that complements the citation measure. The AJG list ranks journals on a five-point scale with the highest ranking for ‘Journals of Distinction’ (4*

⁷ We used Scopus rather than Gateway to Research as it provided a means to examine a wider set of grants beyond UKRI.

⁸ Impact case studies were accessed via the REF2014 Impact Case Study portal found at <https://impact.ref.ac.uk/casestudies/Search1.aspx>.

journals), followed by 4–1 rated journals.⁹ Using the listing, we counted the number of outputs per individual in each category, summing these for categories above 3-rating, adjusting for their academic age.

Diversity of disciplines and outputs was captured from Scopus and from how individuals classified themselves in the survey. Specifically, we extracted Scopus records, i.e. the publications of all individuals in the population, and utilised that information to derive the number of extramural publications both within business and management disciplines, and outside those disciplines. To examine within business and management, we used the Academic Journal Guide (AJG) classification of journals into 22 disciplines.¹⁰ The AJG is used as it has the broadest coverage of business, economics, and management journals, being extensively used in the UK and captures the broad set of fields of expertise in business, economics and management (Walker et al., 2019). Using each individual's publication record, we capture the number of disciplines that business and management researchers have published in. To examine publications beyond business, economics and management in individual's portfolios of publications, we used Scopus's All Science Journal Classification Codes (ASJC) distinguishing between four broad categories outside 'social science' – 'science', 'mathematics', 'decision science' and 'arts and humanities'. We also identified the number of monographs that individuals publish, which tend to be more complex outputs than individual papers in terms of the breadth of ideas they encompass.

Other individual-level variables were collected from websites. We created a dummy variable to capture gender, equal to 1 for male and 0 for female academics. Drawing on the survey, we capture childcare through a binary variable equal to 1 if the individual had children under 5 and 0 if they did not. To capture the amount of time devoted to research we use information on the proportion of time allocated to research (%) over the lockdown period as a percentage of total activity. We also captured the extent of involvement in administrative activities: 'How would you characterize your administrative workload since measures were taken in response to the Covid-19 Lockdown' on a 5-point scale (1. 'decreased significantly', 2. 'decreased', 3. 'did not increase nor decrease', 4. 'increased', 5. 'increased significantly').

We included discipline dummies for discipline-specific heterogeneity in research methodology and other dimensions such as difference in the extent that different disciplines pivoted towards pandemic related research activities (Shapira, 2020). This information was based on a question asking respondents to indicate their primary area of expertise using the subject classifications in the AJG 2018.

4. Results

Descriptive statistics of the two dependent variables (the pandemic reducing confidence in applying for non-pandemic-related grants; and moving research efforts away from other research), and independent and control variables are given in Table 1. As Table 1 shows, a plurality (32%) of respondents were Associate Professors. Reflecting the study's overlapping sample groups, economics and econometrics is the largest area, making up 24% of the sample. Table 1 also provides pairwise correlations between the variables relating to each of the dependent variables. It illustrates that the two variables are correlated, as we would expect, but also that they are distinct, with a correlation coefficient of 0.384. It is also apparent that there are quite different patterns of correlation across the independent and control variables in relation to the two dependent variables.

Table 2 shows that a significant minority of the participants (39.8%) agreed that the pandemic undermined their confidence in applying for

grants that are not focused on the pandemic, with 25.2% disagreeing. In terms of shifting effort away from other debates that researchers would like to contribute to, a similar proportion (40.1%) considered that the pandemic had led to other important research efforts being 'crowded out', with 23.3% disagreeing. The answer to our first research question is clear: many researchers are concerned about the effects of the pandemic on other important issues that they consider need researching. We also found that over 20% of individuals had pivoted toward engaging in pandemic related research activities suggesting that, while our survey was conducted a month after a complete lockdown, academics had already adjusted their research activities.

Table 3 reports the results of the logit analysis for the two dependent variables located side by side. The results table reports the odds-ratios (OR) of perceptions of the degree that the pandemic 'crowded out' grant applications for non-Covid-19 work or from other debates scholars should be contributing to. $OR < 1$ and $OR > 1$ indicate that a unit change in the predictors respectively increases or lowers the odds relating to researcher's confidence in applying for non-pandemic related grants, and whether those researchers considered their research efforts were shifted away from other debates.¹¹

We found that those currently holding grants were 1.73 times more likely to feel undermined in their confidence in applying for grants that were not pandemic related. We also found that prior publicly funded grant success occurring after the shift to the 'impact' policy agenda from 2007 (measured by the proportion of output supported by UKRI grant funded in relation to individual's complete portfolio of outputs since 2009) reduced respondents' confidence in applying for non-pandemic related grants, which supports H1a.

We also found that individuals with prior impact outside academia, captured by whether or not individuals were named in a 2014 impact case study, were also 1.09 times more likely to be dissuaded from applying for non-pandemic related grants. Those who held grants were also more likely to consider that the pandemic was skewing the research efforts away from other important debates. However, the coefficient of 1.04 suggests that the effects are small. Scholars involved in work that has been aligned to 'societal impact', whether via their being providers of impact case studies or having outputs aligned to grants, were also more likely to consider that non-pandemic related research work meant research they would like to contribute to was being underemphasised. For example, those with impact case studies were 1.15 times more likely to consider that other debates that researchers would like to contribute to are being undermined. Grant-holding and impactful researchers are most likely to feel that the pandemic has shifted research away from important non-pandemic-related research areas. These findings support H1b.

Models 1 and 2 show that researchers at various stages of their career display different sets of preferences. Holding all the other variables at a fixed value, the odds of being less confident in submitting a non-pandemic related grant were higher for junior ranked lecturers, 1.45 times more likely to have been dissuaded from such grant applications than the plurality of associate professors (the reference group). Thus, early career researchers are less willing to apply for non-pandemic related grants as a result, which supports H2a. However, we did not find evidence that ECRs were more likely to consider their non-pandemic interests are being 'crowded out', hence, H2b was not supported.

It was also the case that professors were less likely to be put off applying for non-Covid-19 grants. However, we did not find that career stage impacted upon perceptions that the pandemic had shifted research efforts away from other debates that researchers would like to contribute to.

⁹ The methodology for the AJG is found at <https://charteredabs.org/academic-journal-guide-2018/>, accessed 3/12/2020.

¹⁰ Available at <https://charteredabs.org/academic-journal-guide-2018/>, access 3/12/2020.

¹¹ We also ran a series of estimations using the population weights for gender and rank given the sample and populations differed marginally each of these characteristics but did not find the results differed qualitatively.

Table 1
Summary Statistics including pairwise correlations with the Dependent Variables.

		Mean	Standard Deviation	Min	Max	Pairwise Correlations	
						(Dependent Variable: Grants)	(Dependent Variable: Debates)
Dependent variables	Undermined confidence in non-Covid-19 related grants	2.36	0.78	1	3	1.000	
	Shifted research efforts from non-Covid-19 debates	2.38	0.76	1	3	0.384*	1.000
Grants (current)	Current grant funded research	0.37	0.48	0	1	0.087*	-0.027
Grant Supported Outputs	Proportion of output supported by grant funding	0.16	0.21	0	1	0.039	0.020
	Proportion of output supported by UKRI grant funded since 2009	0.06	0.13	0	1	0.053*	-0.001
Impact	Impact case study in REF 2014	0.04	0.15	0	1	0.031*	0.036*
Involved in Covid-19-related research	Coordinating Covid-19-related research	0.08	0.27	0	1	0.081*	0.005
	Involved in Covid-19-related research	0.21	0.41	0	1	0.083	0.070*
	Opinion piece or media participation related to Covid-19	0.18	0.39	0	1		0.062*
Academic Rank (Ref. Professor)	Lecturer	0.26	0.44	0	1	0.081*	-0.008
	Associate Professor	0.32	0.47	0	1	0.041	0.031
	Professor	0.30	0.42	0	1	-0.216*	-0.159*
	Research Fellow/ Senior Research Fellow	0.09	0.28	0	1	0.062*	0.039*
	Other	0.02	0.15	0	1		0.051*
Multidisciplinarity	No. of disciplines published in within business and management	2.93	2.51	0	13	-0.100*	-0.071*
	Proportion of output published outside own discipline in business and management	0.37	0.34	0	13	-0.005	-0.054*
Publication topics (Reference Social Science)	Science	0.12	0.19	0	1	0.001	
	Mathematics	0.02	0.15	0	1	-0.029	-0.044
	Decision Science	0.06	4.95	0	1	-0.060*	-0.042
	Arts and Humanities	0.01	0.07	0	1	0.005	-0.009
Type of output	No. of books published	2.00	5.05	0	69	-0.101*	-0.045
Academic influence	Citations (age adjusted)	15.97	145.61	0	5723	-0.026	-0.010
	Number of publications in '3-rated' journals or above	7.99	12.28	0	131	-0.120*	-0.030
	Demographic	Gender	0.54	0.50	0	1	-0.054*
Activities	Child under the age of 5	0.16	0.43	0	1	0.025	-0.034
	Administrative workload over pandemic	2.28	0.98	0	4	-0.097	-0.110*
	Proportion of time devoted to research (%)	40.66	28.01	0	100	-0.113	-0.099*
Institutional environment	"New" universities	0.44	0.50	0	1	0.082*	0.037*
	Departmental Research Intensity (REF 2014)	47.09	43.88	1	100	0.032	0.046
	Surplus of deficit of institution (% of total income)	-11.17	8.38	-27.5	10.641	0.029	0.033
	No. Post-Graduate Students (000 s)	5032	2473	345	15,325	-0.020	0.021
	Total Income (£000 s)	5,27,324	4,92,980	34,764	24,50,136	-0.052*	0.015
	Grant capture of university	1,43,480	1,92,936	449	7,98,366	-0.057*	0.006
	Business Schools	0.74	0.44	0	1	-0.058*	-0.005
	Economist in economics departments	0.16	0.31	0	1	-0.007	-0.005
	Economists in other departments	0.10	0.37	0	1	0.076*	0.011
	Accounting	0.05	0.22	0	1	0.024	0.005
Discipline/Field	Business History and Economic History	0.03	0.17	0	1	-0.016	-0.047
	Economics, Econometrics and Statistics	0.24	0.43	0	1	0.002	0.034
	Entrepreneurship and Small Business	0.04	0.19	0	1	-0.033	0.010
	Management						
	Finance	0.06	0.23	0	1	-0.003	-0.042
	General Management, Ethics and Social Responsibility	0.03	0.16	0	1	-0.032	-0.007
	Human Resource Management and Employment Studies	0.08	0.28	0	1	-0.021	0.010
	Information Management	0.02	0.12	0	1	-0.015	0.006
	Innovation	0.03	0.17	0	1	-0.010	-0.015
	International Business and Area Studies	0.02	0.15	0	1	0.038	0.000
	Management Development and Education	0.01	0.07	0	1	0.041	0.031
	Marketing	0.09	0.28	0	1	0.043	0.012
	Operations and Technology	0.03	0.16	0	1	0.044	0.030
	Operations Research and Management	0.03	0.17	0	1	0.003	0.010
	Science						
	Organization studies	0.05	0.22	0	1	-0.003	-0.009
	Psychology (General)	0.01	0.08	0	1	0.031	-0.004
	Psychology (Organisational)	0.03	0.17	0	1	-0.006	-0.027
	Public Sector and Health Care	0.01	0.12	0	1	0.000	0.002
	Regional Studies, Planning, Environment	0.01	0.09	0	1	-0.061*	-0.040
	0.02	0.13	0	1	0.018	0.046	

(continued on next page)

Table 1 (continued)

	Mean	Standard Deviation	Min	Max	Pairwise Correlations	
					(Dependent Variable: Grants)	(Dependent Variable: Debates)
Sector Studies (includes Leisure and Tourism)						
Social Sciences (e.g. sociology, political science, etc.)	0.05	0.22	0	1	0.042	0.014
Strategy	0.04	0.18	0	1	-0.038	-0.009
Other	0.05	0.22	0	1	-0.038	-0.032
None	0.00	0.04	0	1	-0.030	-0.039

Notes: * indicated a pairwise correlation with dependent variable where $p < 0.05$.

Table 2

Views on how Covid-19 has impacted research.

	Disagree/ Strongly Disagree	Neither Agree nor Disagree	Agree/ Strongly Agree
* Has undermined my confidence in applying for grants that are not focused on Covid-19	25.2	35.0	39.8
* Has shifted research efforts away from other debates that researchers would like to contribute to	23.3	36.6	40.1

Note: We used a five-point Likert scale on the survey, but it has been simplified into three points for expositional purposes.

The other notable finding relates to where participants were working, aligning to the third pair of hypotheses. Here the results suggest that individuals working at post-1992 universities (typically focused on more applied research) were on average 1.58 times more likely to be dissuaded from applying for non-pandemic related research grants, providing strong support for H3a. We also found that individuals working in those universities were 1.56 times more likely to consider that the pandemic was skewing their research efforts, supporting H3b. One potential explanation for this may be that such universities typically provide less time for research activity. However, we directly controlled for time available for research, and the effect of administrative work (with both elements being significant determinants of the extent that researchers were being diverted from other debates).

The evidence with respect to the diversity of disciplinary topics or output types was mixed. For grant applications, there was no evidence that the extent of engagement in extramural publications, or the nature of their outputs (i.e. monograph), influenced views, although researchers who published across more disciplines within business, economics and management were 3.6% more confident (per additional subject) in applying for non-pandemic grants. To give a better understanding of the magnitude of the effect, the average multidisciplinary business, management and economics scholar in the top quintile has an average 6.6 subjects, equating to being about 25% more confident in applying for non-pandemic grants. There was no evidence of differences between the 22 disciplines that constitute the sample, with none of the discipline dummies being significantly determined. Nor were scholars with more academic influence, as captured by their citation rates being higher, likely to have different views. However, we did find that publications in journals rated 3 or higher reduced the odds that those researchers would be put off applying for non-pandemic grants. Similar results were found for researchers being diverted from other debates they would want to contribute to: greater multidisciplinary, within business, economics, and management, leads researchers to be 1.8% less likely (per additional discipline) to worry about diversion. Again, individuals who had a greater diversity of publications outside business, economics, and management, or those who published monographs,

were neither more nor less likely to consider that the pandemic had shifted researchers' focus from other debates.

Nor did we find evidence that primary discipline matters. These results are perhaps surprising given that, *a priori*, it would seem plausible to consider that disciplines where researchers need to access resources such as ethnographic and archival research, that was physically restricted, would have been more affected. We suspect that researchers who have struggled to obtain access to resources have been adversely affected by the pandemic and that this would be an interesting area for future research to examine, but it does not appear that these consequences have fed into their views relating to non-pandemic grants or other research.

We did not find that the REF rank of the department, or other institutional factors, such as university income, significantly influenced perceptions. With respect to the other control variables, we did not find that gender or childcare commitments (captured by participants having children under the age of 5 in their household) influenced perceptions. However, we did find that engaging in pandemic related research has a modest effect on participants' grant perceptions. The findings suggest that those involved in pandemic related research or media activity were more likely to consider that it has shifted research efforts away from such debates than those who did not: while those researchers felt pandemic work to be important, they were interested in returning to their previous research.

5. Discussion, policy implications and recommendations

We now discuss the implications of these findings for grant providers and national research agencies as well as for individual academic researchers and the institutions they work for. Grant applications and impact upon the academic and non-academic communities are core foundations of the UK research environment; and have been linked through the 'impact' agenda (Martin, 2011; RCUK, 2015). In relation to the two questions that the study seeks to address – ascertaining the extent to which researchers consider that the pandemic has 'crowded out' other projects they would like to contribute to and whether the pandemic has undermined their confidence in applying for non-pandemic grants – the results point to a sizeable minority of about 40% of participants considering that both mechanisms were in play. Funders (e.g., European Commission, 2020) offered many new pandemic-related grants and asked existing grant holders to move their work toward 'pandemic projects' and away from the projects they were engaged with.

In line with status theory, (Merton, 1968; Podolny, 1993; Sauder et al., 2012; Brankovic, 2018), researchers who have been directly affected by the impact agenda, either through publicly funded grants or impact case studies, are more likely than other participants to believe that the pandemic was crowding out their 'own' areas of interest. The most 'experienced' grant and impact providers are at odds with the funding agencies who are viewed as being myopic in their focus on the pandemic and overlooking the potential negative consequences that this narrower focus may have on other areas and researchers. While

Table 3
Logit Estimates (odds ratios reported).

		Has undermined my confidence in applying for grants that are not focused on Covid-19		Has shifted research efforts away from other debates that researchers would like to contribute to	
		Coeff	z-stat	Coeff	z-stat
Grants (current)	Current grant funded research	1.730***	(3.57)	1.224**	(2.28)
Grant Supported Outputs	Proportion of output supported by grant funding	1.086	(1.24)	1.001	(0.17)
	Proportion of output supported by UKRI grant funding*	1.078**	(2.30)	1.019**	(2.14)
Impact	Impact case study in REF 2014*	1.112**	(2.06)	1.150**	(2.42)
Involved in Covid-19-related research	Coordinating Covid-19-related research	1.364	(1.04)	0.990	(0.05)
	Involved in Covid-19-related research	1.039	(0.09)	1.400***	(2.77)
	Opinion piece or media participation related to Covid-19	1.216*	(1.93)	1.510***	(3.22)
Academic Rank (Ref. Associate Professor)	Lecturer	1.070**	(1.99)	0.921	(0.50)
	Professor	0.762**	(2.48)	1.019	(0.13)
Multidisciplinarity	Research Fellow/ Senior Research Fellow	1.111	(0.49)	1.322	(1.20)
	Other	2.352	(2.88)	1.389	(0.96)
Publication topics (Reference Social Science)	Number of fields published in within business, economics and management	0.964**	(1.75)	0.982**	(2.19)
	Science	1.001	(0.05)	1.003	(0.26)
Type of output	Mathematics	0.827	(0.90)	0.756	(0.78)
	Decision Science	1.005	(0.22)	0.996	(0.22)
	Arts and Humanities	1.004	(0.01)	0.949	(0.23)
Academic influence	No. of books published	1.400	(0.68)	0.990	(0.66)
	Citations (age adjusted)	0.985	(0.24)	1.000	(0.21)
Demographic	No. of publications in '3-rated' journals or above	0.985***	(3.31)	0.991*	(1.85)
	Gender (Male)	0.930	(0.76)	1.051	(0.44)
Work activities	Child under the age of 5	1.042	(0.42)	0.910	(0.81)
	Administrative workload over pandemic	0.874**	(2.57)	0.831***	(3.45)
		0.992**	(1.99)	0.995***	(2.69)

Table 3 (continued)

		Has undermined my confidence in applying for grants that are not focused on Covid-19		Has shifted research efforts away from other debates that researchers would like to contribute to	
		Coeff	z-stat	Coeff	z-stat
Institutional environment	Proportion of time devoted to research (%)	1.555***	(2.29)	1.691***	(3.72)
	"New" universities	0.993	(1.23)	1.001	(0.38)
Wave (Ref. wave 1)	Research rank of the department (REF 2014)	1.007	(1.05)	1.005	(0.81)
	Surplus of deficit of institution (% of total income)	1.000	(0.53)	1.000	(0.02)
Business School Economics department	Total Income (£000 s)	1.065	(1.63)	1.000	(0.66)
	Grant capture of university (000 s)	YES		YES	
Field fixed effects	N	YES		YES	
	Log likelihood	1604		1604	
		-2387.9		-2255.3	

Notes: z-statistics in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

researchers are aware of their responsibility to society to examine current phenomena, such as the pandemic (George et al., 2016; Gümüşay et al., 2020), they also have their eye on longer-run issues facing society; policymakers will need to consider carefully how to refocus funding priorities towards such issues in the future.

Two significant groups – both the group that has historically had the greatest impact, as captured by authorship of impact case studies and publications that embedded the ‘societal impact’ agenda, and early career researchers – felt particularly concerned, worrying that work contributing to addressing economic and societal issues, including the grand challenges humanity faces (Buckley et al., 2017; George et al., 2016; Gümüşay et al., 2020; Lowe and Phillipson, 2006), may be undermined. Funders may need to ensure that there is a balance struck between pandemic and non-pandemic work and that this is communicated clearly to researchers. The finding suggests that, despite the potential benefits of grant capture to their careers, early career researchers are less likely to apply for other funding raises serious questions about further undermining their careers (Blake and La Valle, 2000; Bloch et al., 2014; van Arensbergen et al., 2012) and about the research career pipeline and academic impact (Jacob and Lefgren, 2011; Gaughan and Bozeman, 2002). This suggests that their shorter academic age and, thus, academic status, may put them at an additional disadvantage, with potentially significant consequences for their careers. In general, the growing socio-political turbulences linked to macroeconomic shocks mean that funding bodies and HE institutions need to consider ways to address the implications of those changes because they pose significant challenges for academics, their careers and research outputs (Watermeyer et al., 2020).

From the policy perspective, one implication of these findings is that funding agencies and policymakers may need to take remedial steps in order to ‘reboot’ non-pandemic related research by ECRs. Failing to do so may not only build-in future challenges for early career researchers,

but also undermine future research development. This may be ameliorated by the redirection of resources, for example, providing greater numbers of ECR grants. Other major funders, such as the Wellcome Trust and Leverhulme Trust, could also help in providing such targeted resources. The findings may also have wider ramifications for research funders as they suggest radical shifts in research agendas, which may lead to capable scholars potentially being disenfranchised. If that is indeed the case, a more incremental and well-publicised change that engages with the research community may be beneficial to all parties.

It may also be useful for agencies to provide transparent information on the success rates of pandemic vs. non-pandemic applications as a means of ensuring greater balance in schemes. Indeed, as of 20th July 2020, 4.9% of applications for rapid response grants were successful - a rate far below that of traditional grant applications (which is historically around 20%), suggesting that while participants may have been put off from applying for non-pandemic grants, they would actually have had higher success rates if they had not responded that way (Research Professional, 2020). More locally, there are important roles for those involved in managing research and other work activities, in looking to redress the negative consequences of the pandemic on research activity. Reassuringly, we did not find that other demographic characteristics that have been shown to influence research output, such as childcare and gender (Minello, 2020; Myers et al., 2020), impacted upon respondents' confidence in applying for non-pandemic grants. This does not rule out that these groups are being detrimentally affected through other channels, however, perhaps most poignantly given constraints on time and concentration, on the ability to draft research during the pandemic, as recent work suggests (Del Boca et al., 2020).

Turning to the second dimension of 'crowding out' - that the pandemic shifted research efforts away from other debates they would like to contribute to - we did not find evidence that gender, childcare responsibilities or being an ECR influenced scholars' views. However, we did find that those who had been involved in impact case studies were more likely to consider non-pandemic work was being undermined, underscoring the need for funders, policymakers and academic institutions to provide support through targeted funding via grant providers or through internal funding by universities themselves.

Further, the nature of the institution where the researcher is based affects their perceptions. The results suggest that scholars working in 'new' (post-1992) universities, that have traditionally been less research intensive, less successful in grant application and more focused on teaching and local industry, were more substantially impacted upon than 'traditional' universities. A historical strength of the UK academy is its depth, with excellent research being conducted at most UK universities, and the danger is that grant applications and the research culture in the 'new' universities is undermined¹² and the gap between them and the traditional universities widens. Indeed, there are indications that such responses to the pandemic may exacerbate ongoing trends and widen organisational status gaps. The past decade has witnessed several highly rated UK-based university's business schools trying to 'break away from the pack' by behaving like US universities - hiring students with PhDs from 'top' US schools and paying far higher salaries than other UK universities could afford (Brooks et al., 2019; Glass et al., al., 1995). Our finding suggests that such trends have altered the make-up and behavior of individuals working in different organisational contexts and that where resourcing and work is linked to future success, differing perceptions of those working in lower status research environments may lead to increasing inequality across the sector and may be increased by the pandemic.

Like all studies, there are a number of limitations to our research

¹² The results from UK's Research Excellence Framework (2014) suggest that 68% of institutions submitting to the business and management sub-panel had a minimum 10% of their research rated at the highest rating 4* (world leading) level.

approach. First, our study is based on a survey of academics in a single country and those active in business, economics, and management within a defined sample frame, and this limits the generalisability of our findings. The group we focus on is a diverse population of individuals drawing upon faculty from a wide range of arts and humanities to more scientific domains. We also included economists who were working outside business schools in economics departments, or in other domains (such as health, education, energy), and did not find that the views of these individuals differed in their perception on average from those in business school environments. A further characteristic of our sample is that business, economics and management researchers are involved in a longstanding debate about how impactful research, or what is often referred to in this debate as 'relevance' and applied quantitative work, can be reconciled with more traditional academic activities, such as writing papers for academic journals providing 'scholarly impact'.¹³ There are also additional pressures to focus on 'societal impact' from business school accreditation agencies, such as AACSB (AACSB, 2020). In this sense, business and management schools/departments may be seen as an 'extreme case', where individuals may be particularly receptive to impact demands due to the applied orientation of their subject matter. It would certainly be helpful to look at other scholarly areas, particularly those in the natural science that are highly dependent on grant income.

Second, as has been noted by Cunningham et al. (2016), there is a lack of literature examining grants relating to social science and humanity domains, compared to work focused upon the natural sciences, engineering and technology domains and it would be helpful to have more comparative literature to examine.

Third, we used a single-item indicator to measure our dependent variables. While this may not be desirable from a psychometric perspective when measuring latent constructs, psychometric research suggests that some single-item measures can be reliable and valid (Fisher et al., 2016). Furthermore, the questions we asked about individuals' willingness to apply for grants that are focused on issues other than the pandemic and their views that research efforts are being shifted away from other debates that researchers would like to contribute to, have a relatively objective nature. That said, given that the variables defined for the study were developed for the project it would certainly be useful for future work to validate these in different contexts. In particular, we note that while we focus on crowding-out driven by the pandemic, it is also the case that other exogenous shifts, such as where funders revised their priorities and funding topics, occur, and this is a wider issue that the literature could seek to examine.

Finally, recent survey work has provided some descriptive evidence that academics across the world are struggling with competition for resources and that the domains we examine are not atypical of the wider sector (Rijs and Fenter, 2020). Rijs and Fenter suggest that further detailed analysis in different domains would be helpful. However, it is also possible that in other disciplines one would find a different set of factors that shape perceptions of how the pandemic has affected grant application and displaced focus on other debates. Indeed, future research could examine whether the preference for impact is weaker in basic-oriented research fields, such as physics or arts and humanities, or stronger in applied ones, such as chemical engineering or health.

A further element to consider is that our work examines perceptions in the early period of the pandemic, albeit from the stage of a complete lockdown and hence when it was clear that Covid-19 would have lasting effects upon individuals and society. However, we are not able to comment on whether views altered over the course of the pandemic or their consequences on an individual's careers and research activities. There is a limited amount of research into the effects of the pandemic on

¹³ See Salter et al., 2017 as an example from business and management, while Hamermesh (2018) illustrates the shift towards applied quantitative work in economics over recent decades.

research activity, which is still in its infancy. Further research could also investigate the intersection of the pandemic with other societally relevant topics and their effects on research activity. Despite its limitations, we offer a novel view of the perceptions of individual researchers on how the pandemic is affecting their views – a perspective that is potentially of interest to research managers, grant providers and policymakers and that we hope will inform wider debates.

6. Conclusions

We examined the extent to which academics' confidence in applying for non-pandemic related grants, their individual characteristics and institutional research interests, was influenced by the enormous attention to the topic of the pandemic. We identified two research questions related to the pandemic and its implications on research activities and grant applications. Using a large-scale survey of researchers coupled with their publication histories and other institutional data, we examined the factors influencing academics' grant application choices. We were able to show that the effects of the pandemic require a refreshed view of academics' approach toward research and grant application by scholars, HE management and funding bodies. While pandemic-related research is currently extremely relevant, as it addressed a current grand challenge, there should be an additional effort so that research focusing on other key economic and societal issues is not undermined.

CRedit authorship contribution statement

James Walker: Conceptualization, Formal analysis, Writing – original draft, Writing – review & editing. **Chris Brewster:** Writing – original draft, Writing – review & editing. **Rita Fontinha:** Conceptualization, Investigation, Writing – original draft, Writing – review & editing. **Washika Haak-Saheem:** Writing – original draft, Writing – review & editing. **Stefano Benigni:** Data curation, Writing – review & editing. **Fabio Lamperti:** Data curation, Writing – original draft, Writing – review & editing. **Dalila Ribaud:** Data curation.

Declaration of Competing Interest

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

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