What Were They Thinking? A Statistical Analysis of the Arguments Surrounding the ULSB Controversy

Sarah Hawkins and John Routledge*

Abstract

We investigate the empirical validity of the main arguments made by the ULSB leadership on the reasons behind the involuntary redundancies of sixteen academic staff of the school. Based on publicly available data, we gathered information on the research interests, publications and publicly held union roles of the School's staff. We then run two separate statistical models, a probit and a logistic discrete-choice model, to estimate the likelihood that a member of staff would be selected for redundancy. Both models fit the data very well, giving correct predictions for over 90% of all observations. The variables for academic position, number of publications, REF score, and the union officer dummy come out as statistically significant, while the dummy variables for PE and CMS come out as insignificant in both models. The results suggest that staff with union activity, higher REF score and more senior positions are more likely to be targeted.

Keywords: Critical Management Studies, Involuntary Redundancy, Political Economy, ULSB.

*University of Leicester.

1 Motivation

Managerial decisions may sometimes seem to observers outside an organisation and employees alike as inscrutable, even irrational. Why did Apple sack Steve Jobs in the 1990s only to lose dynamism and fall into decline? Why did Nokia fail to invest in smart phones and lost its mobile phone business? Questions such as the above are hard to answer ex-post. The watchful observer is often cautioned against attempting to find reasonable explanations lest she falls into the pit of the ex-post-rationalisation fallacy. The domain of business cases is full of cross-roads that could have ended up either way, we are advised. It is the domain of randomness, where carefully crafted narratives are doomed to eventually fail.

In this study we attempt to bypass these complications by using well-established statistical methods in an novel way. Rather than waiting for the dice to be cast before we craft our narrative, we attempt to identify the factors that might have affected a given managerial decision given a set of publicly available information at the time and to test several different hypotheses as to what might have been the determining factor in their decision. We are also exploiting the specifics of an event that allows the drafting of such hypotheses from observable data. In particular, we examine the factors that might have underpinned the decision by the University of Leicester School of Business' (henceforth ULSB) leadership team to select sixteen individuals for involuntary redundancy during the second lockdown of the Covid-19 pandemic in the UK.

2 The ULSB Controversy

This section provides a short description of the events and the background of the controversy that motivated the study. Readers familiar with the setting can skip forward to the next section, where we describe our data collection and methodology.

In the middle of the autumn semester of 2020, as the Covid-19 pandemic was forcing a second lockdown on the UK economy, the University of Leicester announced its intent for a significant restructuring to its internal staff. According to the announcement, this would involve several departments, both academic and administrative, and it could potentially entail involuntary redundancies. However, no further details were disclosed at the time. The School of Business (which we refer to as ULSB) was included in the list of affected departments, and a further announcement from the College of Arts, Humanities and Social Sciences (CAHSS) confirmed the information and indicated of the challenging times that would await ahead.

The academic staff of ULSB did not receive further operational details until late January 2021. Then, on a Monday morning, the leadership of the school made an announcement via email that it was initiating the involuntary redundancy process for sixteen members of academic staff and that individual consultation sessions would follow in the coming weeks. This immediately caused a lot of stir within the School. Although a significant restructuring of the School was anticipated, few expected a redundancy rate of approximately 10% for academic staff (the School numbered roughly 160 academics at the time of the announcement). Incidentally, there was no mention of redundancies for administrative staff, which made the announcement all the more impactful. In addition, the leadership's letter provided few details on the reasoning behind this decision and the new direction of the School, except that they have decided to disinvest from the areas of Political Economy (PE) and Critical Management Studies (CMS).

Understandably, members of staff became alerted and through private communications they attempted to find out who the affected academics were. Eventually, the sixteen made their names public to the rest and, through a joint statement, they disputed the intentions of the University's leadership team. Many of them specialised in the areas of PE and CMS, so they questioned the criteria of their selection and the motives of the leadership team. This then became the starting point of the controversy, with both sides exchanging differing opinions and counter-claims through emails, staff meetings (both formal and informal), and letters of support.

Up until the writing of this study, the leadership's official position remains that the School stands at a critical junction, and if it is to become successful in the near future it needs to focus its research priorities. The areas of PE and CMS been deemed not suitable for the research and teaching portfolio of the School, and because resources are scarce, it had been decided to disinvest from them. This, however, would be an one-off cost, securing the employment prospects for the rest. The response by the directly affected academics challenges the leadership's claims. They insist that they are targeted for their academic interests and that this decision is an assault on academic freedom. They are also sceptic of whether this is the last wave of involuntary redundancies and its necessity for the School's prosperity.

The numerous discussions and exchanges from both sides have left many of the School's staff in confusion. Moreover, the timing and the reasoning behind the leadership's decisions have created more questions than those they have answered. Was this decision taken on financial grounds? Are the areas of PE and CMS the main criterion of selection for redundancy? Were the targeted individuals selected for other reasons, such as academic (under)performance or union activism?

Why did the leadership team decide to initiate the process in the middle of a global pandemic with the academic job market all but closed? We will not be in a position to answer all of the above questions in this study. However, with the use of appropriate statistical models we will be able to shed some light on the likely factors behind the managerial decisions within ULSB and to provide alternative hypotheses as to what might be going on.[1]

The main idea is simple. We have collected as much information as we could find from publicly available sources regarding the individual academic members of staff within ULSB, such as academic position (lecturer, associate professor, etc), department, number and quality of publications, affiliated research area (PE, CMS).[2] We then estimated the probability that a single member of staff is targeted for being made redundant based on this collection of observable variables. The probability is estimated by using two qualitative response (QR) models, a probit and a logistic model. Both of them give consistent results, which are presented in section 4.

The main findings of our investigation are as follows. First, there is little statistical evidence to suggest that the selected members were being targeted on the basis of their research interests alone. This may at first seem a very striking result, because all of them are active in either the PE or the CMS area or in both. Moreover, ULSB's leadership was very explicit in its communications that staff were selected for redundancy because they engaged in these research areas and they made the decision to strategically disinvest from the two areas. However, many other academics in the school have research interests in these areas. We present simple descriptive statistics that show that up to 50% of the staff can be classified as having publications in the past five years in at least one of the two targeted areas. Once this is taken into account, it is perhaps unsurprising that the statistical significance of the variables associated with research interests is rendered insignificant in our analysis.

Second, the single most significant predictor of the management's selection criteria seems to be public involvement in trade union activities. As we elaborate in the next section, we proxy union activism by a dummy variable which indicates if a member of staff currently holds a publicly observable role within Leicester UCU. It turns out that nine of the sixteen targeted members do. This is an important finding, because it lets us view the controversy from an entirely different perspective.

[1] At the time of the drafting of this study, three out of the sixteen individuals who were originally selected for involuntary redundancy, were moved out of the pool. For robustness, we re-estimated our statistical models after incorporating this piece of information. The estimation results are given in Table 6 in Appendix B, and they affirm the results of our original estimations.

[2] A detailed explanation of all variables and of the collection methodology is provide in the next section.

Third, the results from research activity are mixed. While the variable for research quantity comes up negative and significant, the variable for REF score comes up positive and significant. This means that although the targeted individuals have (on average) less publications than the non-targeted ones, they have generated higher research quality. This result is perplexing, because it makes hard to decipher the management's research strategy. It seems that they plan to disinvest from the research areas where the school has a comparative advantage, which is typically the opposite of what one would expect from a rational organisation. It also contradicts the statements made by the university's leadership team that the university intends to increase its research focus around its strong areas.

We present our data collection and estimation methodology in section 3 below. The estimation outputs and their interpretation are discussed in detail in the subsequent section.

3 Data and Methodology

For replicability purposes, we confine ourselves to the use of exclusively publicly-available information. Our data come from two sources: (a) The ULSB's official website, where there is full list of staff along with the accompanying individual pages. (b) The website of the Leicester branch of the University and College Union (UCU), where the information on who hold UCU Officer positions and Departmental Representative roles is available[3]. Table 1 presents the set of all independent variables we have collected and a short explanation of each.

A few explanatory notes on Table 1 are in order. We do not know exactly what criteria the ULSB leadership used to categorise staff as affiliated with PE or CMS. Therefore we can not emulate them perfectly. However, we can approximate them with a suitable proxy. To do this we constructed two dummy variables of our own, PE and CMS respectively, as they appear in Table 1. We then used the keywords of Table 5 in the Appendix and went through the webpages of staff in the official ULSB website. If a member of staff self-reports affiliation with the relevant research area, or if any of the keywords of Table 5 appeared in the description of her/his research interests, or in any of the titles of her/his respective research publications, we assigned the value of one to the respective variable and zero otherwise.

The variable *Keywords* was constructed in a related way. For each faculty member we selected a random academic article publication over the past five years via a random number generator.

[3] https://www.uculeicester.org.uk/about-the-branch/branch-officers-committee/
https://www.uculeicester.org.uk/about-the-branch/department-reps/

Name	Description
Department	The department that each individual member of staff belongs to. ULSB is separated into four departments at the writing of this study: Economics, Finance and Accounting (EFA, given 4), Management and Organisation (MO, 3), Marketing (Mktg, 2), and Work & Employment (WE, 1).
Position	Academic position. There are four classifications: Research/Teaching Fellow, Lecturer, Associate Professor, and Professor. Higher values indicate higher position.
Political Economy (PE)	Dummy variable that takes the value one if a member of staff engages in research activity in the respective area.
Critical Management Studies (CMS)	Dummy variable that takes the value one if a member of staff engages in research activity in the respective area.
Keywords (Words)	The number of keywords appearing in the title and the abstract of a randomly chosen publication over the past five years. The keywords indicate relevance to PE or CMS, such as power, capitalism, inclusive, coersion. The full list of used keywords appears in Table 5 in the Appendix.
Official UCU Role (UCUOff)	A dummy variable that takes the value one if a member of staff holds an elected union position.
Publications (Pub)	Number of research publications in the past five years.
REF	An estimation of the REF score of the research publications in the past five years based on the ABS 2018 ranking of academic journals.

Table 1: *Independent variables and short description.*

Then, for the selected article we counted the number of appearances in its title and the abstract of the keywords in Table 5. Higher score indicates higher research affiliation with at least one of the two groups.

We are also unsure whether research performance played any role in the management's decision. Although there is no such indication from their communications to the ULSB faculty, one could hypothesise that the management may have been trying to identify under-performing members of staff. To test this hypothesis we constructed two additional variables. The variable *Pub* captures the number of listed non-book publications over the past five years as the appeared in the staff's ULSB webpage. Similarly, *REF* gives an estimation of the REF score of the listed publications

according to the journal ranking published by ABS (2018 edition). Note that we did not visit personal webpages of academic staff and so there may be some discrepancies due to some staff not updating their school pages as frequently as other. However, there is no indication that this should bias our findings in one way or the other. In addition, some members of staff have publications outside the range of journals included in ABS. Since we could not find a comparable ranking system for these areas, we chose not to include these publications in the calculation of either the *Pub* or the *REF* variable. Again, we do not expect our results to be particularly affected by this. In fact, because staff affiliated to the CMS research area tend to favour pluralism in research topics, they are more likely to have non-rankable publications, which tends to decrease their *Pub* and *REF* scores. Thus, we expect our results to be robust to the inclusion of more detailed research quality metrics.

Finally, the variables *Department*, *Position* and *UCUOff* are self-explanatory. We include them here in order to be able to test alternative decision hypotheses, such as did the ULSB leadership target specific departments, or positions, or unionist activity.

In terms of methodology, we use a family of well-established statistical models, namely the QR models. Roughly speaking, these models take a set of independent variables to predict the probability of a binary outcome. In our case, the independent variables are the measures of the characteristics that appear in Table 1 for each member of staff and the dependent variable is dichotomous; 1 for being selected for involuntary redundancy, 0 otherwise. Thus, what we are effectively estimating is the probability that a single member of staff will be selected for involuntary redundancy given her individual characteristics (department, position, etc). Moreover, we estimate the marginal contribution (on average) of each one of these characteristics in the probability of being targeted for redundancy. We can thus make statements of whether departmental affiliation or research quality increases or decreases in a statistically meaningful way the probability of being added to the list of staff members to be made redundant.

Within the family of QR models, we employ two of the simplest and most well-established ones, the probit and logit. Let $\boldsymbol{x}_i$ be a 9×1 vector containing the independent variables listed in Table 1 plus one for the intercept. Let $\boldsymbol{\beta}$ denote a 9×1 parameter vector capturing the impact of $\boldsymbol{x}_i$ on y_i, the dependent variable. We cannot constrain $\boldsymbol{x}_i^T \boldsymbol{\beta}$ to be within the interval zero to one. Probit

and logit are nonlinear models which predict $\Pr(y_i = 1|\boldsymbol{x}_i)$ by fitting a curve consistent with:

$$\lim_{\boldsymbol{x}_i^T\boldsymbol{\beta}\to+\infty} \Pr(y_i = 1|\boldsymbol{x}_i) = 1, \tag{1}$$

$$\lim_{\boldsymbol{x}_i^T\boldsymbol{\beta}\to-\infty} \Pr(y_i = 1|\boldsymbol{x}_i) = 0. \tag{2}$$

Therefore, any proper cumulative probability distribution defined over a real line will suffice. The probit model uses a normal distribution:

$$\Pr(y_i = 1|\boldsymbol{x}_i) = \Phi(\boldsymbol{x}_i^T\boldsymbol{\beta}), \tag{3}$$

where Φ denotes the cumulative standard normal evaluated at $\boldsymbol{x}_i^T\boldsymbol{\beta}$. The logit model uses the logistic distribution:

$$\Pr(y_i = 1|\boldsymbol{x}_i) = \frac{\exp(\boldsymbol{x}_i^T\boldsymbol{\beta})}{1 + \exp(\boldsymbol{x}_i^T\boldsymbol{\beta})} = \Lambda(\boldsymbol{x}_i^T\boldsymbol{\beta}), \tag{4}$$

and predicts the log odds-ratio of the binary outcome. The results from the above models are presented in the next section.

4 Results and Discussion

Table 2 below shows the results from our analysis. The columns headed $\tilde{\boldsymbol{\beta}}_p$ and $\tilde{\boldsymbol{\beta}}_l$ list the maximum likelihood estimates of $\boldsymbol{\beta}$ from the probit and logit models, respectively. Their standard errors are given in parentheses. Since these models are nonlinear, the estimated coefficients do not directly capture the marginal impact of each regressor. However, their signs indicate if a variable has a positive or negative effect on the probability of a member of staff being made redundant. The magnitude of estimated coefficients do not necessarily capture the impact on $\Pr(y_i = 1|\boldsymbol{x}_i)$. However, the magnitude of the test statistics, in the column headed 't-stat', and that of their probability values ('p-value) does—the greater the magnitude of the test statistics, the greater the impact the corresponding regressor has on $\Pr(y_i = 1|\boldsymbol{x}_i)$. Slopes are estimated at the mean values of the independent variables.

Let us explain what the above estimation outputs tell us using an example. Suppose an individual i has observations for the eight regressors as given in Table 3.

	Probit				Logistic			
	$\tilde{\boldsymbol{\beta}}_p$	t-stat.	p-value	Slope	$\tilde{\boldsymbol{\beta}}_l$	t-stat.	p-value	Slope
Intercept	−3.696	−4.926	8.37e-07		−6.891	−4.558	5.17e-06	
	(0.750)				(1.512)			
Department	0.214	1.709	0.087	0.022	0.418	1.880	0.060	0.019
	(0.124)				(0.222)			
Position	0.352	2.136	0.033	0.036	0.654	1.957	0.050	0.030
	(0.165)				(0.334)			
PE	0.329	1.031	0.303	0.036	0.755	1.209	0.227	0.037
	(0.319)				(0.624)			
CMS	0.735	1.500	0.134	0.092	1.446	1.368	0.171	0.084
	(0.490)				(1.056)			
Keywords	−0.249	−2.612	0.009	−0.025	−0.472	−2.144	0.032	−0.021
	(0.095)				(0.220)			
UCUOff.	2.499	5.162	2.44e-07	0.689	4.486	4.896	9.76e-07	0.699
	(0.484)				(0.916)			
Pub.	−0.129	−2.116	0.034	−0.013	−0.243	−2.271	0.023	−0.011
	(0.061)				(0.107)			
REF	0.321	2.461	0.014	0.033	0.593	2.205	0.027	0.027
	(0.131)				(0.269)			
McFadden R^2:			0.330				0.330	
% Correct prediction:			0.924				0.924	
Log-Likelihood:			−33.637				−33.631	
Akaike Info. Criterion:			85.274				85.262	
Bayesian Info. Criterion:			112.002				111.990	
Hannan-Quinn Criterion:			96.135				96.123	
No. of observations			144				144	

Table 2: *Estimation outputs of the probit and logit models.*

Then the estimation results in 2 give:

$$\text{from probit:} \quad \boldsymbol{x}_i^T \tilde{\boldsymbol{\beta}}_p = -1.595, \tag{5}$$

$$\text{from logit:} \quad \boldsymbol{x}_i^T \tilde{\boldsymbol{\beta}}_l = -2.807, \tag{6}$$

both to three decimal places. The prediction of $\Pr(y_i = 1|\boldsymbol{x}_i)$ from the probit model is the cumulative standard normal evaluated at -1.595:

$$\Pr(y_i = 1|\boldsymbol{x}_i) = \Phi(-1.595) = 0.055 \tag{7}$$

Name	Observation
Department	4
Position	4
PE	1
CMS	0
Words	3
UCUOff.	0
Pub	3
REF	2

Table 3: *Example of values for the independent variables of a hypothetical member of staff (i).*

This means that, according to the probit model and given the information of Table 3, i has a 5.5% chance to be selected for redundancy.

Similarly, one can estimate the likelihood of i being targeted for redundancy according to the logit model. The prediction given by the logit model in (6) is the log odds-ratio, denoted by $\text{logit}(p)$. Let p denote $\Pr(y_i = 1)$. Then the log odds-ratio is defined as:

$$\text{logit}(p) = \ln\left[\frac{p}{1-p}\right] = \boldsymbol{x}_i^T \tilde{\boldsymbol{\beta}}_l. \tag{8}$$

Then $p = \Pr(y_i = 1)$ can be solved for by using the inverse of the natural logit function, i.e. the logistic function below:

$$\Pr(y_i = 1|\boldsymbol{x}_i) = \frac{1}{1 + \exp(-\boldsymbol{x}_i^T \tilde{\boldsymbol{\beta}}_l)} = 0.057 \tag{9}$$

Again, (9) gives us the probability of the ith individual in Table 3 being made redundant.

Keeping in mind the above interpretation, the statistical significance of the variables indicated in Table 2 enable us reach certain conclusions with regards to our initial questions. First, did the ULSB management select the sixteen individuals on the basis of research activity alone? There is little evidence to support this claim. The dummy variables for PE and CMS, although their sign is positive, do not come out statistically significant in either the logit or the probit model, even at the 10% level of statistical significance. Moreover, the keyword count is not only negative, but statistically significant at the 0.9% level for the probit model and at the 3.2% level for the logistic model. This means that *people who have higher word count in the impacted research areas are less likely to be targeted for involuntary redundancy.* This is the opposite of what one would have expected given that the ULSB's leadership have unequivocally claimed that the School wishes to

disinvest from these areas. A more likely explanation is that, although the leadership would like to disinvest from the selected areas, this is planned as an incremental process rather than as an one-off event.

Another possibility is that the discrepancy stems from the random selection of the publications for the construction of the keyword count. Table 4 below shows the number of staff who have been categorised as PE or CMS according to our measure. Whether EFA is included in the calculation or not of PE/CMS-active staff makes little difference.[4] Since the School has more than half of its staff categorised in these two areas, a small sample created entirely at random would still generate a predominately PE/CMS group. This is potentially why the PE and CMS dummies come out as statistically insignificant. It is also consistent with the hypothesis that, if the School's objective is to veer off from these research areas, then the current wave of redundancies is insufficient to materialise it.

	PE	**CMS**	**Total**
ULSB	56	51	85
ULSB (excluding EFA)	32	45	59

Table 4: *Number of staff with either PE or CMS research affiliation.*

Another testable hypothesis is whether the management team wishes to distinguish underperforming individuals from the rest of the School in order to improve the average quality. Again, our findings offer little evidence to this direction. Although the coefficient for number of publication is negative and significant at the 5% level, the REF score coefficient is positive and statistically significant in both models. Taken at face value, the results indicate that the targeted group have higher publication quality than the average member of staff, a rather odd finding. This is corroborated further by the positive and statistically significant coefficient of *Position*, 0.352 for the probit model and 0.654 for the logistic. This means that the selected individuals are more senior than the average member of the school and hence more likely to have an established research record and high quality publications. Anecdotal evidence also reaffirms this conclusion, as there is word-of-mouth that some of the targeted individuals have important contributions to the REF submission for the School and Impact Cases. However, without access to more detailed information, we are unable to

[4] At the time this study was conducted, the count of all ULSB academic staff stood at 144, with EFA counting 64 members. Therefore the relative proportion of PE/CMS in the total school is roughly 60%-70%, with or without EFA.

provide analysis on this.

However, perhaps the most troubling result of all is the one on union activism. This coefficient is the most statistically significant in both models. Suppose the person i in Table 3 has decided to hold a position within Leicester UCU. Our estimated models from Table 2 predict that now the probability of this person being selected for involuntary redundancy is given by:

$$\text{From probit:} \quad \Phi(\boldsymbol{x}_i^T \tilde{\boldsymbol{\beta}}_p = 0.904) \quad \longrightarrow \quad \Pr(y_i = 1|\boldsymbol{x}_i) = 0.817, \tag{10}$$

$$\text{From logit:} \quad \Lambda(\boldsymbol{x}_i^T \tilde{\boldsymbol{\beta}}_l = 1.679) \quad \longrightarrow \quad \Pr(y_i = 1|\boldsymbol{x}_i) = 0.843, \tag{11}$$

i.e. fifteen times higher than it would have been had he not opted to hold a public position within UCU. This finding is consistent with the claims by the local UCU branch that the real target of the involuntary redundancies in the School is union activism. Although our model does not provide conclusive proof of this being the case, it shows that is a far more likely explanation than any other that has been posited to us thus far. It is also consistent with the rather irrational outcome of selecting academics with higher research quality for redundancy.

Finally, the coefficient for *Department* comes up as positive and statistically significant in both model although at the 10% rather than the 5% level. This reflects the fact that the targeted individuals come almost exclusively from a single department. This is another indicative evidence against the hypothesis of research-based criteria for selection. With the PE/CMS affiliated researchers spread widely within the school, it is unlikely that this is the instrumental factor in the redundancies.

5 Caveats and Conclusions

We exploited a rather unusual event, the announcement of involuntary redundancies in the academic sector, and in ULSB in particular, in order to test several competing hypotheses of what might have been the underlying factors behind them. Our results are rather unsettling. Although the school's leadership team claims that the criterion for the redundancies is based solely in the plans for disinvestement from the research areas of CMS and PE, we found little evidence in support of this claim. At the very least, if this plan is to be borne to fruition, several other waves of redundancies must follow.

However, the single best predictor of selection is union activism. A member of staff that has been

actively involved in publicly visible UCU roles has a significantly higher chance of being targeted than otherwise. This is extremely troubling because it indicates that fundamental working rights are coming under attack and it probably violates, if not the letter, then the spirit of employment law. This hypothesis is further corroborated by the fact that the targeted members are on average more senior and with higher calibre of publications than the average school member. At face value, this seems to contradict the very core of the leadership's arguments for investing in the school's future and improving its research quality.

Although it is an obvious point, we feel compelled to repeat here that the analysis presented in this study does not provide irrefutable and conclusive proof of the management's intentions. It is meant to be a check of various hypotheses that have been going on in informal discussions within the ULSB faculty and have drawn our attention. However, instead of verbal arguments, which are often anchored in confirmation bias, we have opted to let the numbers speak for themselves.

Numbers can of course be misleading in several ways and so caution in their interpretation is needed. We mention just a few caveats to keep in mind here. First, our data are limited and there are several ways to expand them. The inclusion of information from personal webpages, the expansion of the research quality criteria beyond the ABS journal ranking, the expansion of the search for relevant keywords are possible actions in this direction. And second, additional robustness checks need to be carried out with respect to the discrete-choice models employed for the estimation of our hypotheses.

Notwithstanding the above shortcomings, we feel that our analysis tries to examine the ULSB Controversy from a novel perspective. It also contributes to the debate by putting to test different hypotheses on the reasons behind the management's decisions. We hope that this approach is informative and that it finds uses in other contexts.

6 Appendix A

Keyword
accountability
capitalism
coersion
coersive
collective
collectivism
conflict
critical
discourse
discursive
dispute
dissent
diversity
empowerment
feminism
identity
inclusion
inclusive
labour
neoliberal
responsibility
political
power
social
sociology
union
unionism
women's rights

Table 5: *List of keywords used in classifying a research paper as belonging in the areas of PE or CMS.*

7 Appendix B

On Monday 15th of March, three out of the sixteen individuals who were initially selected for involuntary redundancy were moved out of the pool. For robustness, we have re-estimated the two models after incorporating this new piece of information. The estimation results are given below.

	Probit				Logistic			
	$\tilde{\boldsymbol{\beta}}_p$	t-stat.	p-value	Slope	$\tilde{\boldsymbol{\beta}}_l$	t-stat.	p-value	Slope
Intercept	−4.668	−4.324	1.53e-05		−9.202	−4.218	2.47e-05	
	(1.080)				(2.182)			
Department	0.332	2.144	0.032	0.022	0.698	2.388	0.017	0.019
	(0.155)				(0.292)			
Position	0.515	2.818	0.005	0.034	1.007	2.718	0.007	0.027
	(0.183)				(0.371)			
PE	0.466	1.239	0.215	0.035	1.045	1.419	0.156	0.033
	(0.376)				(0.737)			
CMS	0.824	1.483	0.138	0.073	1.744	1.421	0.155	0.066
	(0.556)				(1.228)			
Keywords	−0.228	−2.261	0.024	−0.015	−0.447	−1.989	0.047	−0.012
	(0.101)				(0.225)			
UCUOff.	2.585	4.399	1.09e-05	0.642	4.903	4.434	9.25e-06	0.672
	(0.588)				(1.106)			
Pub.	−0.136	−2.062	0.039	−0.009	−0.267	−2.319	0.020	−0.007
	(0.066)				(0.115)			
REF	0.243	1.771	0.077	0.016	0.469	1.620	0.105	0.013
	(0.137)				(0.290)			
McFadden R^2:			0.356				0.361	
% Correct prediction:			0.951				0.951	
Log-Likelihood:			−28.131				−27.910	
Akaike Info. Criterion:			74.262				73.819	
Bayesian Info. Criterion:			100.991				100.548	
Hannan-Quinn Criterion:			85.123				84.680	
No. of observations			144				144	

Table 6: *Estimation outputs of the probit and logit models, 13 at risk.*

Qualitatively, the results are very similar to the ones reported in Table 2. Trade union activism remains the single most significant factor. The two dummies PE and CMS are statistically insignificant, and members of staff with a high REF score are more likely to be selected for redundancy.