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Maternity leaves in Academia: Why are some UK universities more generous than others?

Mariaelisa Epifanio* and Vera E. Troeger⁺¹

* University of Liverpool, Department of Politics

⁺ University of Warwick, Department of Economics

Abstract

Statutory parental leave provisions in the UK are amongst the least generous as compared to other EU and OECD countries². That is why most companies and other institutions, such as universities, top these legal provisions up with more generous occupational parental leave packages (OMPs). Yet, they don't do so uniformly. Indeed, the generosity of OMPs offered by HEIs across the UK differ greatly. This paper examines both theoretically and empirically why this is the case. We find that income of HEIs doesn't make a difference but size in terms of number of employees as well as the student-to-staff ratio do. Our results also show that more research intense universities with a higher previous share of female professors and female academics at child-bearing age provide more generous maternity pay. We offer a range of explanations for these findings.

¹ List of authors is alphabetical implying equal authorship

² With respect to generosity of maternity pay the UK is the second lowest in the EU, only Ireland provides less generous maternity pay. And in terms of public expenditure on maternity leave per child born only Greece and the Netherlands spend less (figures from 2013, OECD Health Expenditure and Family Databases).

1. Introduction

If you are an academic, you are a woman and you want to have children, your maternity leave provisions depend dramatically on the higher education institution that employs you in the UK. Maternity leave arrangements vary widely across UK universities and this variation does not rest on intuitive differences, such as universities' budget and size. The number of weeks for which full salary replacement is granted to women on maternity leave varies from 0 – or just statutory maternity pay (e.g. Leeds Metropolitan University) to 26 weeks (e.g. Manchester University). Places as diverse as Bristol, Kent or Goldsmith College only grant 8 weeks of fully paid maternity leave compared to the 18 weeks of full salary replacements provided by Keele University or Cambridge University, *inter alia*. In addition, not all women in the academic ranks are entitled to similar maternity leave policies. Staff on fixed-term contracts, such as researchers and teaching fellows are frequently excluded from most of the maternity schemes outside the statutory provisions because they often require a prolonged period of service to become eligible for occupational maternity packages³.

This article analyses the determinants of maternity leaves' generosity in 160 UK universities.⁴ We find that universities granting favorable maternity provisions are characterized by a higher number of women in higher academic ranks (such as full

³ Most occupational maternity packages (namely, 127 packages in our sample) require continuous employment for at least 52 weeks at 15 weeks prior to expected childbirth. This is longer than the typical fixed term contract that lasts or 12 months or just an academic year.

⁴ We focus on the *generosity* of occupational maternity pay because the *length* does not vary and is determined by the statutory provision that a job has to be held for 52 weeks after childbirth.

professors), a lower student-to-staff ratio and a high level of research intensity. We link these findings to the institutional structures across HEIs that increase women's bargaining power, lower the costs of granting more generous maternity policies, and affect the employer's incentives to keep female academics attached to the university.

Our work contributes to the literature on the determinants of maternity provisions across institutions and organizations. Alike this literature, we show that the presence of women in top-positions is a likely predictor of the generosity of maternity benefits across UK universities. Unlike this literature, we show that universities' budgets and financial resources do not matter for the variation in the generosity of maternity provisions; rather, the number of students per academic members of staff and the research intensity of universities, are important conditions for granting favorable maternity policies to academic women. Our research also adds to the larger debate on women's under-representation in qualified and competitive sectors by highlighting the institutional-based constraints and incentives offered to women in the UK academic sector.

This paper is structured as follows: the next section summarizes the main findings advanced by the literature on maternity policies across firms and organizations. We build on these works to advance our own hypotheses on the determinants of maternity arrangements in UK higher education institutions (HEIs) in section three. The data, variables and research design are described in section four. Section five discusses the results of our empirical analysis, while the last section concludes and points to future research avenues.

2. Variation in Maternity benefits

Most countries impose legal minimum standards on maternity leave provisions. Organizations then decide whether to grant additional – so called contractual or occupational - benefits to their workforce. In many countries, especially those with relatively large social welfare states such as Germany, France and the Scandinavian countries, statutory maternity provisions are generous enough for companies not to offer additional provisions. This is different for the UK where statutory benefits are very meagre: the UK offers the second least generous maternity pay in the EU, only Ireland provides less generous maternity pay. And in terms of public expenditure on maternity leave per child born only Greece and the Netherlands spend less⁵. Most companies, universities, and civil service institutions, therefore, offer additional maternity leave and pay to mothers.

This decision to top up legal requirements is usually regarded as the result of a cost-benefit analysis. Generous maternity provisions attract and retain female talents, minimize the costs of recruitment and training, reduce the costs of absenteeism and sick leaves, enhance job satisfaction, increase employees' loyalty and productivity and improve the corporate image of the providing institution (Yasbek 2004). But there are also costs: monetary costs, such as payments for maternal and parental leaves, costs associated with temporarily filling the posts of absentees, costs generated by productivity breaks due to the personnel on leave, and costs of adjustment in implementing work-life balance policies. Given than the costs are more directly measurable and observable than the benefits, companies and institutions have traditionally regarded maternity leaves and, more generally, work-life balance

⁵ figures from 2013, OECD Health Expenditure and Family Databases.

provisions as impediments to their profits and growth (Bevan 2001). A countervailing factor against a pure analysis of costs and benefits is the share of women in executive positions, which has consistently been associated with generous maternity policies in both for-profit and non-profit organizations (Pitt-Catsouphes et al. 2004; Galinsky and Bond, 1998; Konrad and Mangel, 2000).

Recently, high-tech consumer companies (such as Google, Netflix and Microsoft), consulting firms, law and financial services are increasingly using generous maternity leaves, as well as child bonuses and family friendly arrangements, to attract and retain productive workers, on the understanding that the conditions granted to employees are important predictors of firms' performances (Huselid, Jackson and Schuler, 1995). The "business case" for generous provisions does not hold equally across sectors and between organizations. Typically, work-life balance policies are more generous across sectors competing for a qualified workforce (Konrad and Mangel, 2000; Evans 2001, Sprang, Rompf, and Anderson 2000). Finance, insurance and real estate sectors, for example, grant more generous policies than retail, construction and wholesale industries.

Favorable arrangements are also prevalent in public sector jobs (Evans 2001) and that is usually attributed to the relative bargaining power of public sector employees, who are very likely to belong to trade unions or professional organizations.

Along with industry's type, the size and economic capacity of organizations and institutions account for a large part of the variation in maternity provisions. Large firms (with more than 1000 employees) grant more generous policies than small and medium enterprises, which is usually regarded as an effect of economies of scale, where the fixed cost of family-friendly provisions can be spread over a larger level of output (Comfort,

Johnson and Wallace, 2003). Much less is known about small and medium enterprises because of data limitation and inconsistencies in the definition of this category across countries.⁶

Our paper provides a different theoretical framework to understand maternity leave provisions. Rather than a cost-benefit analysis, we assume that, like most policy decisions, maternity leaves in U.K. universities are the result of bargaining between human resources and interested parties. We offer better theoretical underpinning and clearer comparative statics for the main determinants of maternity policies using the insights from the literature on organizations' work-life balance provisions.

3. Variation in maternity provisions across UK universities: theoretical intuitions

Based on the above discussion, we posit that maternity leave provisions result from an implicit or explicit negotiation between the organization board and the bargaining units representing the employees. In the context of UK universities, the two sides involved in this bargaining process are university management and female employees. Within this framework, we obtain clear predictions. First, factors which raise the bargaining power of women employees, especially academic women, increase maternity benefits. Second, determinants which augment the cost of providing maternity benefits decrease the

⁶ SMEs are less likely to have formal or stated work-life balance policies and the extent of these provisions is less likely to be captured by surveys. In addition, the definition of SMEs varies across countries (from 250-500 employees in the UK to 5-25 employees in New Zealand) and this prevents a systematic comparison of SMEs' policies across countries.

generosity of maternity provisions.⁷ And third, factors that increase the institution's benefits from retaining mothers in the workforce will also favor greater generosity of maternity pay.

Since the theoretically described bargaining process is rather implicit we talked to several Human Resources Directors across UK HEIs to understand how university management implements changes in occupational parental leave policies. Whenever there is a need to revise the OMP, e.g. when there are changes in statutory provisions or government promotes gender oriented activities such as the Athena Swan or Gender Equality mark programs, the respective Human Resources team will review the current provisions and propose potential changes to the relevant university bodies (council, senate, management team). This proposal is usually based on the following (and other) considerations⁸:

1. What are the benefits for recruitment and retention of staff
2. Benchmarking to competitor institutions, e.g. other universities (Russell Group), or respected employers in public and civil service for professional staff
3. Feedback from employees through e.g. a survey
4. Consultation with relevant groups of staff (e.g. female professors)
5. Issues raised through initiatives such as Athena Swan (this is more recent)
6. Finally, a business case has to be provided that considers costs vs. benefits

Two conditions are likely to affect the bargaining power and influence of women in the academic sector, namely the number of women with full professorship and the share of

⁷ Both sets of predictions are consistent with an asymmetric Nash-bargaining protocol among others.

⁸ We interviewed amongst others the Director of Human Resources at Warwick University, Gillian McGrattan.

female academics at child bearing age. Arguably, women in higher academic positions are more likely to influence the policy choices set at university level given that full professors participate in university committees that decide on policies and strategies. Since women have a vested interest in better work-life-balance provisions, we argue that a larger share of female professors involved in university policy making, affects generosity of occupational maternity packages positively. Similarly, the generosity of maternity leaves is expected to increase with a higher share of academic women at child bearing age. These women in particular have an interest in generous maternity benefits because they are face with the decision to start or enlarge their family. These views enter the “bargaining process” through the mentioned feedback and consultancy mechanisms that inform the proposal generated by human resources departments. Universities with a higher share of female professors and female academics at child bearing age are therefore expected to adopt more generous maternity policies.

Turning to costs, we identify three restraints on the generosity of maternity provisions: financial resources, workforce composition, and student-to-staff ratio. One intuitive difference between higher education institutions rests on their financial resources. Some universities are richer than others and can grant more generous leaves to their employees. Similarly, large universities (in terms of total number of staff) are expected to offer more favorable leaves. As for big enterprises, the fixed cost of maternity leave provisions for academic staff and IT systems in large universities can be spread over a larger level of output compared to smaller universities. Large and rich universities are therefore expected to grant more generous work-life balance provisions.

A further aspect that HR administrations are likely to consider in designing maternity schemes is the admin-to-academics ratio. The levels of education, training, qualification and skills required for administrative works are arguably lower than those necessary to become an academic. While differences in skills and qualifications usually translate in different salary schemes, institutions cannot discriminate female academics and female support staff in granting maternity provisions (and rightly so). We posit that universities employing a higher number of (female) administrative staff (to total member of academic staff) are likely to grant relatively less generous maternity policies. As for retail, construction and wholesale industries, the presence of less qualified workforce in universities with a higher proportion of support staff is likely to push down the maternity benefits granted to female employees. We therefore expect that the generosity of maternity arrangements is likely to decrease as the ratio between academics and administrative staff increases.

In addition, universities invest a lot of resources into the recruitment of academics and their productivity. For example, early career academics are supplied with resources to build up their research profiles through attending academic conferences, reductions in teaching and administrative loads, and funds to start new research agendas. These investments would be lost if young female academics did not return from maternity leaves to being research active and productive. Hence, universities – especially research oriented ones – have greater incentives to grant generous maternity pay when the share of female academics at child bearing age is larger.

The skill specificity of academic jobs is much more pronounced than for administrative jobs. An administrator in a biology department can relatively easily move across to a

similar job in the Humanities of Social Sciences while a sociologist can hardly do the job of a biologist. Also the investment in skills and productivity of female academics is much higher than for female administrators. Finally, comparing sheer numbers of female academics and administrators – the supply of female academics (especially at more senior levels) is much lower. As a consequence, it is much harder to replace an academic mother not returning to her job after maternity than a mother in an administrative capacity. We therefore posit that the bargaining process is geared toward female academics much more so than administrators and we expect that generosity of maternity pay is not influenced by the share of senior female administrators or female administrative staff at child bearing age.

In addition, we speculate that maternity allowances are likely to depend on differences between the students-to-staff ratio across universities. If we assume that teaching, admin, pastoral care and supervision duties are equally shared among members, as the students-to-staff ratio increases, that is the number of students per academic member of staff becomes higher, the absence on leave of any academic generates high levels of workload for all the remaining ones. By way of example, suppose there are 20 students allocated across 10 members of staff. If one member leaves, the costs for each member of staff, in terms of workload, are negligible compared to a case where 20 students have to be allocated among 4 members only. In this latter case, each academic member becomes highly indispensable and generous leave policies become costlier in terms of re-allocation of pastoral, teaching and supervision tasks among other academics. We expect that universities with a higher students-to-staff ratio are therefore less generous in granting maternity leaves compared to universities with lower students-to-staff ratios.

Our discussion of the determinants of maternity provisions across higher education institutions in the UK has identified a number of factors that are either likely to increase the bargaining power of women in academia (i.e. number of female professors and the levels of unionization) or to increase the costs of generous provisions across institutions (i.e. university income, size, admin-to-academics ratio and student-to-staff ratio). There is, however, an additional factor, ingrained in the UK academic system, which affects both women's bargaining power and the incentives for universities to retain productive mothers, the research intensity of the institution, usually measured through its performance in the periodically returning research excellence framework (REF).

The REF – Research Excellence Framework⁹ – is an assessment of the quality of British higher education institutions in terms of both their research outputs (e.g. publications, performances, and dissemination) and the impact beyond academia of the research produced. REF scores serve both as benchmarks for the allocation of public investments in research activities and as indicators of the quality of research carried out across British universities. Higher scores in the REF entails larger amount of funding and higher reputational returns for the academic institutions.

We argue that REF scores are important predictors of the generosity of maternity policies offered to women in academia for two reasons. First, research intensive universities (high REF scores) engage in a higher level of screening during hiring procedures, which select high-quality and high-productivity academic profiles (researchers who publish four-stars

⁹ Formerly, RAE – Research Assessment Exercise. The RAE was replaced by the REF in 2014.

or three-stars articles or high-impact scholars, to use the language of the REF). Given the high costs of recruitment, highly ranked universities have greater incentives to retain productive scholars by “rewarding” them with additional benefits, inter alia more generous maternity provisions for highly productive female academics. Second, highly productive academics are also more likely to be poached by competing universities and obtain outside offers, which increase their bargaining power. Both effects lead to the same predictions, namely that research intense universities have more generous maternity policies in place than less research oriented academic institutions. This also supports our previous argument that generosity of maternity pay does depend on female academics more than on female administrators.

Finally, following our discussions with HR directors, universities undertake benchmarking exercises with regard to competitor institutions. This is particularly important for recruitment and retention of academic staff because of the skill specificity of academic jobs and the amount of resources universities invest in the productivity of research active staff. The majority of administrative jobs requires much less skill specificity and the share of very high level administrative jobs is relatively small. We thus focus on peer groups within the higher education sector. Universities across the UK have self-selected into formal and informal associations according to their research activities, teaching aims, research grants, contract income and entry requirements, inter alia. The Russell Group, founded in 1994 and based in London, is arguably the most known HEIs association comprising of 24

universities, but many other formal and informal university groupings exist in the UK.¹⁰ The purpose of these affiliations is to represent the interests of member institutions and promote their shared values. For example, the “Golden Triangle” is an unofficial grouping of elite universities located in the English cities of Cambridge, London and Oxford. Golden Triangle universities¹¹ are similar in terms of their huge financial endowments, obtaining the highest research incomes of all British HEIs and have implemented a high number of joint research programs. Russell Group members are public high intense research universities which receive approximately two thirds of all university research grant and contract income, award 60% of all doctorates gained in the UK, host over 30% of all overseas (outside the EU) students studying in the UK, and generated 68% 4-star outputs¹² in the 2008 and 2014 research assessment exercise (RAE/REF). Albeit with some differences, group membership signals similarities between affiliated institutions. For example, the Million+ Group¹³ specializes in courses on modern subjects and professional qualification while the Russell Group or the 1994 group¹⁴ are more centered on traditional subjects. The “new universities”, also called post-1992 universities or modern universities, is a group of former polytechnics and central institutions that were given university status through the Further and Higher Education Act 1992, as well as institutions that have been

¹⁰ See Appendix for a detailed list of the universities belonging to different groups, we list the 14 most important groups that are also used in the empirical analysis.

¹¹ Golden triangle HEIs are Cambridge University, Oxford University, London School of Economics, Imperial College London, King’s College London and University College London (sometimes London Business School and London School of Hygiene and Tropical Medicine are also mentioned as members).

¹² Publications that were deemed world leading by the REF panel.

¹³ The group was founded in 1997 as the Coalition of Modern Universities. It changed its name to the Campaign for Mainstream Universities in 2004 and then again in November 2007, to the Million+ Group.

¹⁴ The 1994 group was formed in 1994 to represent smaller research-intensive universities following the Russell Group foundation. The 1994 dissolved in 2013 and its members merged into the Russell Group.

granted university status since 1992 without receiving a royal charter. Especially new universities that were not former polytechnics – such as Anglia Ruskin, Birmingham City, Coventry, Oxford Brookes, or Sheffield Hallam University without a royal charter were only granted to power to award taught degrees but not research degrees. These universities are therefore much more teaching oriented and much less research intense.

The classification of universities in groups allows advancing some further predictions on the determinants of maternity schemes. We argue that “peer” universities (i.e. HEIs affiliated to the same group) are likely to offer similar maternity provisions, which is likely to lead to convergence *within* groups and divergence of maternity arrangements *between* groups. The logic underlying this prediction rests on the assumption that universities belonging to the same group also compete with each other in terms of staff recruitment, which is essential for achieving the goals set by their respective affiliations. For example, to maintain their leadership in research grants, golden triangle HEIs must keep attracting leading scholars by offering favorable working conditions. Along with contract income, research budgets and teaching workload, generous maternity leaves are one of the instrument HEIs can use to attract highly skilled scholars. All these policies are costly and are very likely to be correlated with universities characteristics (i.e. budget, size, academics/admin and students/academic ratios, and unionization levels). However, peer universities would have an incentive to push up the working conditions offered to existing or potential staff members but not unconditionally (given that these policies are costly). Rather they would adjust the benefits offered by their schemes up to the level guaranteed by similar HEIs, thus reducing the gap between similarly attractive universities for candidate scholars. Given that academic institutions are not identical and the cost of

maternity schemes is different across universities, we expect to see similar maternity arrangements within similar academic institutions and dissimilar provisions between different universities while university characteristics would account for the remaining variation. We thus expect maternity provisions in goal oriented groups and high research intense associations such as the Russell Group and the Golden Triangle to be on average more generous and more similar, i.e. the variance of these maternity benefits is smaller. For less research intense and more diverse groups such as the Million+ and especially the post-1992 non-polytechnics universities we expect more diverse and less generous maternity pay provisions.

3.a. Summary of Hypotheses

We have argued that the generosity of maternity leaves across UK universities increases as the bargaining power of women increases and the costs of maternity leaves decrease. The number of female professors and the levels of unionization enhance women's bargaining positions, whereas university income, size, admin-to-academics ratio and student-to-staff ratio increase the costs of granting favorable maternity policies. Finally, the generosity of maternity leaves is likely to increase in research oriented universities, where women have more bargaining power and the costs of generous policies are offset by the higher returns of hiring highly productive researchers. We derive nine testable hypotheses:

H1: The larger the previous share of female full professors in a university, the more generous is the provision of maternity policies.

H2: The higher the share of female academics at child bearing age, the more generous the maternity pay.

H3: *The higher the universities' budget, the more generous is the provision of maternity leave policies.*

H4: *The larger the size - in terms of employees - of universities, the more generous is the provision of maternity leave policies.*

H5: *The higher the academic-to-admin ratio, the more generous is the provision of maternity leave policies.*

H6: *The higher the student-to-staff ratio in a university, the less generous is the provision of maternity leave policies.*

H7: *The higher the research intensity of the university, the more generous is the provision of maternity leave policies.*

H8: *Maternity provisions are likely to be more similar within homogeneous peer institution groups.*

4. Data and Empirical Analysis

4.a. Variation of maternity leaves across UK universities

In the UK, women employees are entitled to Statutory Maternity Pay (SMP) if they have worked for the same employer continuously for at least 26 weeks up to the 15th week before the expected week of childbirth and they earn on average at least £109 a week. Women that qualify for the SMP are paid the 90% of the average weekly earnings (before tax) for the first 6 weeks and the lower of £140.98 or 90% of the average weekly earnings for the next 33 weeks.

Given the meagre benefits granted through statutory maternity pay to women in the UK (vis-à-vis other European countries),¹⁵ most UK universities provide an extra Occupational Maternity Pay (OMP) that tops up the Statutory Maternity Pay (SMP) in the first 39 weeks of maternity leave. The eligibility criterion to access the OMP usually depends on the length of service and both the payment and the eligibility criteria vary across institutions. For example, the University of Liverpool's OMP, regardless of the length of service, allows for full salary replacement for the first 8 weeks, half salary plus the SMP rate for the next 16 weeks and only the SMP for the last 15 weeks of ordinary maternity leave. The London School of Economics and Political Science instead pays full salary replacement for the first 18 weeks and the SMP (at the lowest rate) for the last 21 weeks, if the woman has been employed for at least 26 continuous weeks before the expected date of childbirth.

Other universities may offer different OMP payments schemes that either depend on the length of service of the employee (in such cases the employee cannot choose the OMP she prefers), or may not depend on eligibility criteria and the employee is free to choose between different salary replacement schemes. For instance, at the University of Durham women can choose, if they satisfy the unique eligibility criterion, the salary replacement scheme they prefer during the ordinary maternity leave period.

There are two types of schemes in cases where universities offer more than one occupational maternity package. Type one consists of HEIs offering different maternity packages where one is more generous in terms of salary replacement than the other. This

¹⁵ See OECD Family Database www.oecd.org/social/family/database.htm for a summary of maternity and parental leave provision by country.

is usually dependent on different eligibility criteria, e.g. longer service is required for the more generous package. Type two involves HEIs offering different packages that are roughly similar in terms of monetary value but entail a trade-off between salary and time, namely between a higher level of salary replacement for a shorter period of time and a longer but less paid leave.¹⁶ The choice between the two packages is usually not determined by different eligibility criteria.

Only 30 out of the 160 HEIs, for which data on occupational maternity benefits was available, offer more than 1 package - usually 2. Only 8 of the universities with different packages have different eligibility criteria for the different schemes, typically they require a longer period of service to become eligible for more generous maternity pay¹⁷. In the other 22 cases the two (or more) schemes require the same length of prior employment and have the same monetary value but the maternity pay is split up into different periods with full or partial salary replacement, e.g. 8 weeks of full pay plus 16 weeks of half pay vs. 16 weeks of full pay (e.g. University of Warwick).

4.b. Data

¹⁶ Research shows that, high replacement incomes are beneficial to mothers' employment rates and their attachment to the labour market in the short run (Waldfogel et al. 1999; Winegarden and Bracy 1995; Ruhm 1998) but long leaves depreciate the human-capital of female workers and jeopardize their employment prospects, in the long run (Ruhm 1998; Pylkkaenen and Smith 2003; Stoiber 1990; Beblo and Wolf 2002; Wetzels and Tjidsens 2002). Also, women career breaks affect their productivity levels and earning capacity, thus increasing the gender wage gap and the unequal treatment of women in the labour market (Klerman and Leibowitz 1997; Ondrich et al. 1996, Périvier 2004; Fagnani 1996).

¹⁷ Unfortunately, we do not have enough variation across eligibility criteria to statistically explore eligibility as a potential screening mechanism but it is usually the case the more generous maternity pay requires a longer employment to become eligible, e.g. 52 weeks vs. 104 weeks of continuous employment before the 15th week of expected childbirth.

Arguably the best indicator for the generosity of maternity benefits is the number of weeks full salary replacement is paid. On the one hand, if women can take more time out of work – without income cuts – they are certainly advantaged in terms of adapting to their motherhood status without being pressured by income concerns or the need to multitask administration, teaching and research tasks. This increases the probability that women return to their research position without having to take a career break and with possibly minor effects on research and publication activity. On the other hand, salary replacement represents the most costly part of maternity packages for universities.

Indeed looking at generosity of maternity pay across British HEIs reveals a large variance across universities which cannot only be explained by different financial constraints faced by the HEI. We collected data on occupational maternity provisions for 214 different packages across 160 different UK HEIs. Table 1 gives a summary of our main measure of generosity – weeks with full salary replacement¹⁸.

Table 1: *Generosity of OMPs across UK HEIs*

Weeks full salary replacement	Number of packages	%
0	15	7.0
4	51	23.8
6	27	12.6
8	38	17.8
9	5	2.3
10	1	0.5
12	3	1.4
13	9	4.2
14	2	0.9
16	14	6.5
17	1	0.5
18	37	17.3
19	1	0.5

¹⁸ See Appendix XX for a break down all packages by HEIs.

20	3	1.4
26	7	3.3
Total	214	100.0

Table 1 shows that there is large variance of generosity across UK universities, with 15 packages that do not top up statutory care, a large number (51) of provisions that grant up to 4 weeks of full pay, and only 7 HEIs that provide mothers with up to 6 months of full salary replacement. It seems surprising that UK HEIs have implemented very different maternity provisions given that more or less generous packages imply a huge variation in costs for universities.

We also collected and calculated slightly different measures of generosity for robustness purposes. First we looked at the number of weeks salary replacement is granted, either fully or partially. Second we calculated an often used measure that allows more easy comparison across benefits, the so called full weeks' equivalent which estimates the full monetary value of the payed maternity benefits.¹⁹ Table 2 shows these different measures.

Table 2: *Descriptive Statistics of Generosity Measures*

	N	Mean	SD	Minimum	Maximum
Weeks with full salary replacement	214	9.7	6.5	0.0	26
Full weeks' equivalent	210	18.4	3.9	7.1	39
Weeks of salary replacement	214	18.7	6.9	0.0	52

We use all three measures as dependent variables in the subsequent analyses. Weeks of full salary replacement and full weeks' equivalent clearly measure the overall generosity of a

¹⁹ This measure sums the weeks with full pay, plus all partial pay, plus weeks of statutory maternity pay. In the UK SMP grants 90% of the average weekly earnings (before tax) for the first 6 weeks and the lower of £140.98 or 90% of the average weekly earnings for the next 33 weeks. We measure average earnings as average female salary per institution.

maternity package and are highly correlated (0.84). The number of weeks for which some salary replacement is granted seems to be a less precise measure of generosity since a package could offer many weeks with very low pay or only a few weeks with full salary replacement. In this case the former case would receive a higher value than the latter. This variable thus covaries to a lesser extent with weeks of full salary replacement (0.3) and full weeks' equivalent (0.5).

In order to explain generosity of maternity benefits we include the above discussed university characteristics, research intensity, and membership in an association. Most HEIs majorly adjusted their occupational maternity packages between 2008 and 2013 after the last round of modifications in the UK statutory provisions was implemented on 1st April 2007 when the flat rate payment period was extended from 20 to 33 weeks²⁰. We therefore measure university characteristics that should affect maternity provisions but not vice versa co-temporarily in 2013. These variables include staff costs, and income from research grants, total income. In order to avoid potential endogeneity, particularly reversed causality issues we measure variables that affect decisions on generosity but potentially are also determined by generosity in the year before each university implemented changes. For example, if the maternity policies were changed in 2008 we look at these variables in 2007. These factors comprise total number of staff, ratio of female academic to admin staff, share of female professors, share of female academics at child bearing age (under 40 years), the

²⁰ This was the last major change in statutory maternity pay, in 2009 additional provisions for fathers were implemented and in 2015 shared parental leave was introduced with no changes to the actual monetary value of the parental leave benefits.

student-to-staff ratio, and the research intensity measured as overall RAE score in 2008²¹.

We use the share of male professors, share of female senior managers, and the share of female administrative staff at child bearing age (under 40) as placebo test. Given our bargaining argument, these groups should not be able to affect maternity provisions. Or alternatively the university management has no incentives to provide these groups with their preferred maternity option. For robustness we also look at these variables uniformly in 2006, 2005, and 2004 - before the last major change in statutory provisions in 2007 (table 7). Table 3 depicts some descriptive measures for these variables.

Table 3: *Descriptive Statistics of Other RHS Variables*

Measured in year before last changes in OMP	N	Mean	SD	Minimum	Maximum
Total number of staff	212	2749.67	2537.78	105	12600
Share of female staff	212	0.55	0.05	0.38	0.71
Ratio of female academic/admin staff	212	0.72	0.42	0.05	4.36
Share of female full professors	212	0.01	0.01	0.00	0.04
Share of female academics under 40	212	0.09	0.04	0.00	0.26
Staff costs per income (2013)	209	52.64	6.66	2.22	69.10
Income from research grants in mill. GBP (2013)	213	37.79	75.93	0.00	428.80
Total income in mill GBP (2013)	209	208.27	222.14	6.68	1438.24
Student to staff ratio	212	16.27	4.64	1.40	31.20
RAE Score 2008	213	110.60	36.62	0.00	318.03
Share of male full professors	212	0.03	0.02	0.00	0.08
Share of female senior managers	212	0.00	0.01	0.00	0.04
Share of female admin staff under 40	212	0.15	0.04	0.04	0.47

4.c. Empirical Specification

²¹ We also use the share of 4* submission but the results do not change and this variable is very highly correlated with the overall RAE score.

We test the 9 Hypotheses derived above empirically with data on generosity of maternity provisions collected for 160 UK HEIs. Our main measure of generosity is the number weeks with full salary replacement granted by the occupational maternity package. Since this is a count variable, a Poisson or Negative binomial model potentially represent adequate estimation choices²². However, weeks of full salary replacement is not typically Poisson distributed, which would imply many observations for smaller values decreasing with higher values, e.g. fewer universities grant 16 or 18 weeks of full salary replacement. We therefore estimate also a Negative binomial model and test whether there is significant over-dispersion (this seems to be the case). In addition, hypothesis 9 implies that dispersion of generosity is not equal across university groups but smaller within more homogeneous associations with clear research goals (e.g. Russell Group and Golden Triangle). We thus also employ a generalized negative binomial model which allows dispersion to be different across groups and directly estimated. We first present a set of baseline results for the main hypotheses. We subsequently look at whether these findings remain robust when using alternative measures for generosity, when introducing placebo tests and looking at RHS variables for different years prior to changes in OMPs.

4.d. Baseline Results

We start to present different specifications for a direct test of the main hypotheses derived from our theoretical discussion. Table 4 presents these baseline estimation results. Models 1 and 5 present our preferred Negative binomial specification that seems to be appropriate

²² We use a (potentially misspecified) OLS model as benchmark, esp. given that the DV is not typically Poisson distributed.

given that the variance is significantly overdispersed (model 1 – alpha, Chi²). Models 2 and 3 show that the results remain strongly robust when using other (less appropriate) estimators such as simple OLS (model 3) and Poisson (model 2) that – in our case wrongly – assumes equidispersion (mean=variance). Model 4 tests hypothesis 8 directly by allowing dispersion to be heterogeneous across different peer university groups.

Table 4: *Explaining the Generosity of Maternity Provisions across UK HEIs*

DV: WEEKS OF FULL SALARY REPLACEMENT	1 NEGBIN	2 POISSON	3 OLS	4 G_NEGBIN	5 NEGBIN
TOTAL STAFF IN 1000S	0.081*	0.076*	0.872*	0.045	0.087*
(BC OMP)	(0.048)	(0.041)	(0.485)	(0.032)	(0.049)
RATIO AC/ADMIN FEMALES	-0.456***	-0.458***	-2.832***	-0.511***	-0.536***
(BC OMP)	(0.162)	(0.166)	(0.801)	(0.157)	(0.160)
SHARE OF FEMALE PROFS	28.687***	24.373***	282.903***	23.337***	32.190***
(BC OMP)	(7.410)	(6.575)	(65.638)	(6.029)	(6.550)
FEMALE ACADEMICS U 40	3.841***	3.864***	24.652**	4.164***	4.380***
(BC OMP)	(1.405)	(1.345)	(10.535)	(1.342)	(1.461)
RATIO STAFFCOSTS/INCOME	-0.004	-0.003	-0.068	-0.004	-0.004
(2013)	(0.009)	(0.009)	(0.067)	(0.011)	(0.009)
INCOME FROM RESEARCH-GRANTS (IN MILL. £ 2013)	-0.002*	-0.001	-0.001	0.000	-0.002*
	(0.001)	(0.001)	(0.011)	(0.001)	(0.001)
TOTAL INCOME IN MILL. £	0.000	0.000	-0.003	-0.000	-0.000
(2013)	(0.001)	(0.000)	(0.006)	(0.000)	(0.001)
STUDENT TO STAFF RATIO	-0.022*	-0.018	-0.153	-0.009	-0.015
(BC_OMP)	(0.012)	(0.013)	(0.093)	(0.013)	(0.013)
RAE SCORE (2008)	0.005***	0.003**	0.035***	0.004***	0.004**
	(0.002)	(0.001)	(0.013)	(0.001)	(0.002)
DIFFERENT PACKAGES	-0.449***	-0.456***	-4.851***	-0.425***	-0.458***
	(0.074)	(0.071)	(0.641)	(0.067)	(0.075)
SCOTTLAND	0.363***	0.295***	3.120***		0.355***
	(0.109)	(0.103)	(1.135)		(0.113)
NORTHERN IRELAND	0.381**	0.361**	4.584**		0.333**
	(0.173)	(0.157)	(2.015)		(0.169)
WALES	-0.025	-0.092	-0.577		-0.058
	(0.219)	(0.156)	(1.614)		(0.223)
POST 1992, NOT POLYTECHNIQUES				-0.528***	
				(0.145)	
SHARE OF FEMALE STAFF					-2.082**
(BC_OMP)					(0.953)
INTERCEPT	2.260***	2.426***	12.835***	2.399***	3.410***
	(0.479)	(0.506)	(3.978)	(0.605)	(0.731)
DISPERSION (LN_ALPHA)					
RUSSELL GROUP				-2.182**	

				(0.979)	
GOLDEN TRIANGLE				-10.823***	
				(0.201)	
INTERCEPT	-1.690***			-1.407***	-1.753***
	(0.205)			(0.201)	(0.205)
N	208	208	208	208	208
R2 (PSEUDO)	0.082	0.218	0.442	0.102	0.086
ALPHA	0.185				0.173
CHI²	132.620				
ROBUST STANDARD ERRORS IN PARENTHESES, * P≤0.1, ** P≤0.05, *** P≤0.01, BC OMP = YEAR BEFORE THE LAST CHANGE IN OCCUPATIONAL MATERNITY PACKAGE					

The empirical results lend ample support to several of our derived hypotheses. In terms of size effects (H4), HEIs with a larger number of employees do tend to provide more generous maternity provisions, yet the financial resources available do not affect occupational maternity pay (H3)²³. This is in line with our argument above, that resources in terms of staff size should play a bigger role than income. This also defeats the general belief that richer universities provide better parental leave policies, if anything, they are less generous in their provisions. The question whether the student-to-staff ratio affects the decision on granting more or less generous maternity pay (H6) can be answered tentatively positive. All coefficients point in the right direction and are marginally significant. This supports the argument that when individual staff have to teach and advise more students, replacement is harder and thus fewer weeks of full salary are offered. Our estimation results show that the pure existence of female staff does not affect maternity provisions positively but rather negatively because it increases overall costs (model 5). However, as predicted, a previously large share of female professors affects the generosity of maternity benefits

²³ We look at total income, as well as net income but results remain insignificant.

positively (H1). This points to the observation that if women are in decision making positions, family policies become more important and support for female academics increases. Interestingly, also the previous share of female academics at child bearing age (under 40 years) increases the generosity of maternity pay (H2). Two interpretations seem likely: first, there might be a lobbying effect, so as discussed the bargaining power of female academics increases, and second, university managers might be aware that they could lose a large share of their academic staff if there are many women at child bearing age. We also find strong support that more research intensive (measured as RAE score) universities have stronger incentives to keep productive academics and thus reward them with more generous maternity benefits (H7). More generous benefits should allow female academics to stay in touch with research without the continuous burden of teaching and administrative duties due to the prolonged and more generous maternity pay.

In addition, we do not find confirmation that the ratio of female academic staff to female administrative staff pushed generosity of maternity pay up, but it significantly decreases this generosity (H5). This result is somewhat surprising, though the substantive effects remain very small. Potential costs that increase exponentially with the rate of female academic staff could explain this finding. The discussed skill specificity does not only mean that female academics are hard to replace but also hard to get rid of. We also argued that bargaining power increases with the share of female full professors and the share of female academics at child bearing age and not in the size of this group in general.

The generalized negative binomial specification (model 4) allows us to some extent to evaluate the peer group effects (H8). We find two results that are consistent with our argument. First, the dispersion of the generosity of benefits is significantly smaller for

Russell Group members as well as for universities that belong to the Golden Triangle. These universities are leading in terms of research intensity and therefore offer more generous maternity pay. They are also relatively more homogeneous in their goals and thus provide very similar packages with high generosity levels²⁴. Second, we find that new universities that were founded after 1992 and had not been previously polytechnics in general grant less generous maternity pay but their packages still vary across group members. This is due to the heterogeneous nature of this association that includes all post-1992 non-polytechnics. In addition, these newly founded universities are mostly teaching institutions since they don't have the permission to award research degrees such as PhDs and are thus much less research oriented.²⁵

We have established that most of our hypotheses are supported by the evidence, yet in order to understand whether these effects are substantial we need to investigate the size of these effects. We use the estimates of the Negative Binomial model (table 4, model 1) to assess the economic relevance of these effects. Figure one displays the combined effect of the research intensity of a university (x-axis) and the student to staff ratio (small – black, large – grey)²⁶. We can see that research intense universities with a small student to staff ratio are 5 times as generous in their maternity provisions as compared to teaching oriented HEIs with a large student to staff ratio. Also the positive effect of research strength is much stronger at institutions with a more favorable student to staff ratio. While teaching

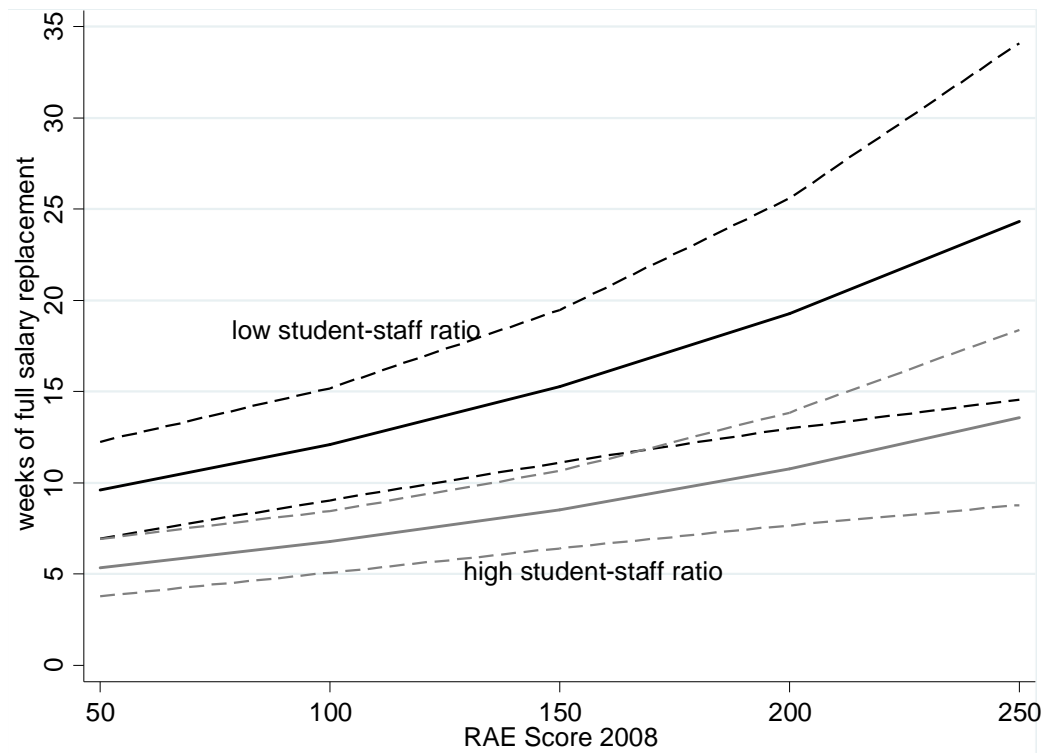
²⁴ These results come from the specification of the dispersion equation in the generalized negbin model.

²⁵ We ran comparative models with different combinations of all other group memberships – see appendix but did not find any additional significant results and thus are not reporting the findings here. However the significant relationships we found are fully consistent with our argument.

²⁶ Small = 2, large=29

institutions with a high student to staff ratio offer close to the observed minimal generosity (5 weeks of full salary replacement), the most research intense universities with a small student to staff ratio are predicted to offer close to the observed maximum – 25 weeks of full salary²⁷.

Figure 1: *Predicted Weeks of Full Salary Replacement dependent on Student-Staff Ratio and Research Intensity*

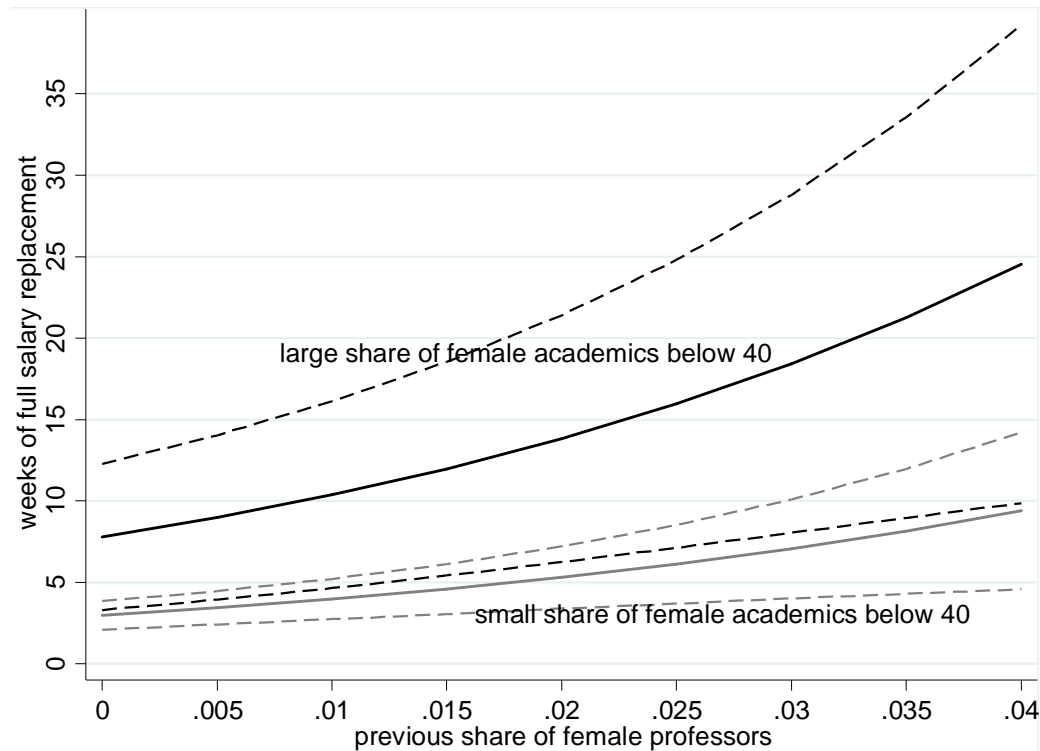


We can observe similar combined effects for the previous share of female professors and the share of academic women at child bearing age (figure 2). Again the predicted number of weeks with full salary replacement is more than 5 times larger at institutions with a large

²⁷ All other explanatory variable are fixed at their sample means for prediction.

share of both groups of female academics pointing to their increased bargaining power. Especially when the share of female professors is minimal the predicted generosity only varies between 3 and 8 weeks of full salary replacement.

Figure 2: *Predicted Weeks of Full Salary Replacement dependent on Research Intensity and Previous Share of Female Professors*



Based on the factors we are taking into account to explain institutional generosity of maternity pay, we compare the predictions to the actually observed number of weeks with full salary replacement and discuss some interesting discrepancies. For example, given their research intensity, student to staff ration, share of female professors and female academics at child bearing age, income etc. the university of Nottingham should offer 18 weeks of full pay but only offers 8 weeks – a stark discrepancy. Similarly our model over-estimates the expected generosity of the LSE (21 weeks predicted, vs. 18 weeks offered),

Warwick university (20 vs. 16), Liverpool (12 vs. 8), Glasgow (25 vs. 16) and UCL (23 vs. 18). Contrarily some universities are more generous than expected. For example, Southampton should offer 18 weeks of full pay given its characteristics but grants 26 weeks of full salary replacement. We find similar results for the LBS (14 predicted, 18 offered), and Oxford (22 predicted and 26 offered). These findings do not suggest any normative conclusions but empirically show that these institutions either over- or underprovide given their measurable characteristics. For a large number of universities our simple baseline model makes exact predictions: Cambridge (18), Aberdeen (18), Lancaster (18), Leeds (16), Strathclyde (16), Northampton (6), Winchester (6), Cumbria (6), and the London University of Arts (4) amongst others.

4.e. Alternative Generosity measures

We use the other two measures of generosity (full weeks' equivalent and weeks of full and partial salary replacement) as robustness checks. Table 5 presents the estimation results

Table 5: *Alternative Measures of Maternity Benefit Generosity*

	WEEKS OF SALARY REPLACEMENT: FULL TIME EQUIVALENT		WEEKS OF SALARY REPLACEMENT (FULL AND PARTIAL)	
	NEGBIN	OLS	NEGBIN	OLS
TOTAL STAFF IN 1000S (BC OMP)	0.016	0.323	0.007	0.210
	(0.015)	(0.294)	(0.027)	(0.456)
RATIO AC/ADMIN FEMALES (BC OMP)	-0.130***	-2.165***	-0.204**	-3.259**
	(0.041)	(0.637)	(0.097)	(1.346)
SHARE OF FEMALE PROFESSORS (BC OMP)	6.595***	129.670***	5.754	109.000
	(2.149)	(41.613)	(3.937)	(73.773)
FEMALE ACADEMICS UNDER 40 (BC OMP)	1.018**	17.329**	1.156	19.285
	(0.419)	(7.521)	(1.132)	(18.801)
RATIO STAFFCOSTS/INCOME (2013)	0.001	0.012	0.010	0.139
	(0.002)	(0.040)	(0.008)	(0.096)
INCOME FROM RESEARCHGRANTS (IN MILL. £ 2013)	-0.001	-0.009	-0.001	-0.007
	(0.000)	(0.009)	(0.001)	(0.017)
TOTAL INCOME IN MILL. £ (2013)	0.000	0.001	-0.000	-0.003
	(0.000)	(0.004)	(0.000)	(0.008)
STUDENT TO STAF RATIO	-0.010***	-0.166***	-0.020**	-0.331**

(BC_OMP)	(0.004)	(0.060)	(0.008)	(0.131)
RAE SCORE (2008)	0.001	0.016*	0.001	0.013
	(0.001)	(0.009)	(0.001)	(0.017)
DIFFERENT PACKAGES	-0.103***	-1.966***	0.043	1.070
	(0.028)	(0.530)	(0.061)	(1.153)
SCOTTLAND	0.095***	1.801***	0.062	1.125
	(0.031)	(0.586)	(0.082)	(1.579)
NORTHERN IRELAND	0.055	1.144	-0.151	-2.529
	(0.042)	(0.855)	(0.195)	(3.063)
WALES	0.069	1.363	-0.004	0.366
	(0.074)	(1.520)	(0.146)	(2.825)
INTERCEPT	2.921***	18.900***	2.543***	13.911***
	(0.131)	(2.298)	(0.384)	(4.734)
N	208	208	208	208
R2 (PSEUDO)	0.051	0.348	0.020	0.141
ALPHA	0.000		0.094	
ROBUST STANDARD ERRORS IN PARENTHESES, * P≤0.1, ** P≤0.05, *** P≤0.01, BC OMP = YEAR BEFORE THE LAST CHANGE IN OCCUPATIONAL MATERNITY PACKAGE				

First, if we look at full weeks' equivalent – which is very closely related to weeks with full salary replacement – we find exactly the same results as discussed before, both in size and significance which lends more robust support to our claims²⁸. Second, the results differ in interesting but predictable ways for the other measure – full and partial salary replacement. This measure is often used in cross-country analysis because it is usually easy to collect but does not really capture generosity since it gives higher values to schemes that grant very limited amounts of money for a large number of weeks, like the statutory pay in the UK which only offers £140.98 but for 33 weeks. In this case only the student to staff ratio significantly affects the outcome – this is a pure cost indicator. This goes along with our argument that generosity is important for research oriented universities that want to allow female academics to climb the career ladder to full professorship. In addition, the overall

²⁸ Only the number of total staff turns out to be not significant anymore.

explanatory power (R^2) halved for these models lending further support to the conclusion that other factors predict maternity provisions that are not related to generosity.

4.f. Robustness and Placebo Tests

We run the same specification as in table 4 (model 1) but adding some additional variables to the right-hand-side in order to a) see whether our results are robust to the inclusion of additional factors, and b) understand whether those factors that we predicted not to have an effect in our theoretical discussion indeed turn out to be statistically insignificant. We also call this a placebo test. Specifically, we want to test whether senior male academics can or have an interest to influence the process and we find that this is not the case confirming our expectation. We also argued that the decisive groups in the bargaining process are female professors and female academics at child bearing age because of the skill specificity of their jobs and the universities investment in their recruitment and productivity. We thus posit that it should not make a difference for generosity if there is a large share of senior female managers or female administrators at child bearing age, and we find exactly this. All other results correspond closely in direction, significance, and size to our baseline findings. Estimation results can be found in table 6.

Table 6: *Placebo Tests – Effect of Male Professors and Female Administrators*

DV: WEEKS OF FULL SALARY REPLACEMENT	1 NEGBIN	2 NEGBIN	3 NEGBIN
TOTAL STAFF IN 1000S (BC OMP)	0.089* (0.047)	0.090* (0.047)	0.088* (0.045)
RATIO AC/ADMIN FEMALES (BC OMP)	-0.370** (0.187)	-0.380* (0.194)	-0.307 (0.236)
SHARE OF FEMALE PROFS (BC OMP)	21.183** (10.015)	21.208** (9.940)	19.253* (10.207)
FEMALE ACADEMICS U 40(BC OMP)	3.125* (1.624)	3.273* (1.778)	3.267* (1.785)
RATIO STAFFCOSTS/INCOME (2013)	-0.006 (0.009)	-0.006 (0.009)	-0.005 (0.009)

INCOME FROM RESEARCHGRANTS (IN MILL. £ 2013)	-0.002*	-0.002*	-0.002*
	(0.001)	(0.001)	(0.001)
TOTAL INCOME IN MILL. £ (2013)	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)
STUDENT TO STAFF RATIO (BC_OMP)	-0.019	-0.018	-0.016
	(0.012)	(0.013)	(0.013)
RAE SCORE (2008)	0.004**	0.004**	0.004**
	(0.002)	(0.002)	(0.002)
DIFFERENT PACKAGES	-0.447***	-0.446***	-0.445***
	(0.077)	(0.077)	(0.077)
SHARE OF MALE PROFESSORS (BC OMP)	5.536	5.644	6.462
	(4.375)	(4.318)	(4.555)
SHARE OF SENIOR FEMALE MANAGERS (BC OMP)		3.650	3.021
FEMALE ADMINISTRATORS UNDER 40 (BC OMP)		(9.455)	(9.400)
			0.885
			(0.979)
SCOTTLAND	0.341***	0.339***	0.353***
	(0.113)	(0.114)	(0.116)
NORTHERN IRELAND	0.382**	0.388**	0.401**
	(0.164)	(0.163)	(0.166)
WALES	-0.076	-0.069	-0.075
	(0.222)	(0.224)	(0.223)
INTERCEPT	2.293***	2.266***	1.999***
	(0.498)	(0.503)	(0.580)
N	208	208	208
R2 (PSEUDO)	0.084	0.084	0.084
ALPHA	0.179	0.179	0.177

ROBUST STANDARD ERRORS IN PARENTHESES, * P≤0.1, ** P≤0.05, *** P≤0.01, BC OMP = YEAR BEFORE THE LAST CHANGE IN OCCUPATIONAL MATERNITY PACKAGE

Finally we examine whether the year in which the potentially endogenous explanatory variables are measured changes the estimation results. Models 1, 2, and 3 in table 7 use the same specification as our baseline model but measure the relevant right-hand-side variables in the years 2006, 2005, and 2004 – all prior to the last major changes in statutory benefits. While models 4 and 5 show results with measurements for the RHS variables in 2006 but with the alternative specifications of the dependent variable (weeks with full time equivalent pay and weeks with partial and full salary replacement).

Table 7: *Different RHS Years and Alternative DVs*

DV: WEEKS OF FULL SALARY REPLACEMENT	2006 NEGBIN	2005 NEGBIN	2004 NEGBIN	2006 FT- EQUIVAL ENT	2006 WEEKS SR
TOTAL STAFF IN 1000S	0.093** (0.037)	0.084** (0.041)	0.078* (0.044)	0.025** (0.011)	0.001 (0.028)
RATIO AC/ADMIN FEMALES	-0.261 (0.207)	-0.162 (0.212)	-0.032 (0.180)	-0.099 (0.068)	-0.145 (0.107)
SHARE OF FEMALE PROFS	30.631*** (8.841)	32.706*** (8.533)	33.260*** (9.009)	7.131*** (2.390)	6.621 (4.327)
FEMALE ACADEMICS U 40	4.131** (1.719)	2.226 (1.745)	1.544 (1.647)	1.264** (0.550)	2.150 (1.376)
RATIO STAFFCOSTS/INCOME (2013)	-0.006 (0.009)	-0.030** (0.013)	-0.029** (0.013)	-0.000 (0.003)	0.008 (0.009)
INCOME FROM RESEARCH- GRANTS (IN MILL. £ 2013)	-0.002 (0.001)	-0.002 (0.002)	-0.002 (0.002)	-0.000 (0.001)	-0.000 (0.001)
TOTAL INCOME IN MILL. £ (2013)	0.000 (0.001)	0.001 (0.001)	0.001 (0.001)	0.000 (0.000)	0.000 (0.000)
STUDENT TO STAFF RATIO	-0.024* (0.013)			-0.006 (0.004)	-0.003 (0.010)
RAE SCORE (2008)	0.005*** (0.002)	0.005** (0.002)	0.005** (0.002)	0.001 (0.001)	0.001 (0.001)
DIFFERENT PACKAGES	-0.443*** (0.075)	-0.448*** (0.075)	-0.428*** (0.078)	-0.103*** (0.028)	0.038 (0.060)
SCOTTLAND	0.394*** (0.122)	0.397*** (0.119)	0.407*** (0.119)	0.097*** (0.032)	0.076 (0.079)
NORTHERN IRELAND	0.384** (0.181)	0.441*** (0.170)	0.473*** (0.163)	0.050 (0.040)	-0.149 (0.190)
WALES	-0.002 (0.162)	-0.010 (0.155)	0.017 (0.148)	0.067 (0.064)	0.014 (0.142)
INTERCEPT	2.163*** (0.511)	2.216*** (0.500)	2.200*** (0.486)	2.866*** (0.146)	2.290*** (0.435)
N	209	206	203	209	209
R2 (PSEUDO)	0.084	0.088	0.084	0.048	0.013
ALPHA	0.184	0.169	0.179	0.000	0.101

ROBUST STANDARD ERRORS IN PARENTHESES, * P≤0.1, ** P≤0.05, *** P≤0.01

The results in table 7 largely confirm the findings in the baseline model as well as the models with alternative specifications of the dependent variable. Since the bulk of changes in occupational maternity benefits occurred between 2008 and 2012 the measures from 2006 seem to best explain the implemented changes in OMP. This confirms our expectations that the process of consultation regarding changes in occupational maternity

happens shortly before new maternity provisions are issued by a university. If we move further into the past (2005, 2004) some of the effects lose statistical significance, e.g. the share of female academics at child bearing age. However, the overall effects remain remarkably stable, adding to the notion that our findings are robust towards different specifications and inclusion of variables.

5. Discussion

UK higher education institutions vary greatly in the generosity of the occupational maternity pay they grant to their employees. We find that much of this variation can be explained with a bargaining model in mind that distinguishes between the factors that determine the bargaining power of female academics, the incentives for universities to invest in the retention of female talent, and the costs imposed by generous maternity provisions. Differences in the structural characteristics of these institutions comparable to other areas like corporations and companies in the manufacturing or service sectors contribute to these different dimensions. The sheer size in terms of employees but also structural factors such as the student-to-staff ratio help to account for differences in generosity because these features describe how potential costs of mothers taking time out can be redistributed across other staff members. Interestingly, size in terms of overall income does not help to explain maternity benefits. Thus it seems that decisions on maternity benefits are much more intentional and depend on the bargaining power of female academics specifically, but also on the strategic goals universities pursue. One of the driving factors behind the design of maternity pay is the research orientation of the HEI in question. Highly research intense institutions have a vested interest in keeping productive mothers in whom they have invested resources both at the hiring stage as well

as during their employment at the university. Better maternity provisions are seen as a reward and a means to keep mothers productive and satisfied with a work environment that allows them to dedicate time to their research. The rigorous hiring process serves as screening device at research intense HEIs.

The bargaining power of female academics who can affect the process of deciding over maternity benefits is mainly strengthened by the share of female professors in place when decision are made and the share of female academics at child bearing age. Female professors are similar to women in executive positions in other sectors and can influence policy outcomes at universities. The number female academics at child bearing age increases the probability that the university loses many talented and productive women in whom they have invested if maternity provisions are sparse.

We also argue – and empirically confirm – that the same logic is not at play for female administrators because they are a) easier to replace, b) they share is generally large, and c) the university's investment in administrative staff is comparatively lower. Neither the share of female senior managers nor female administrators at child bearing age, therefor are able to influence maternity provisions.

6. Conclusion

Maternity and parental policies are costly and their costs and benefits are widely debated beyond the normative aspect of allowing women to have children without sacrificing their professional careers. Understanding how and why institutions decide to implement certain levels of maternity pay generosity may help to unpack these potential costs and benefits of maternity pay. This work suggests that both structural characteristics but also strategic goals of universities, and the bargaining power of affected employees help explaining the

generosity of maternity pay across UK higher education institution and that research-intensive universities have much stronger incentives to implement generous maternity pay provisions. From this follows that the potential benefits of maternity provisions might be stronger for such institutions.

Research shows that maternity and parental policies are crucial to keep women talents in the labor market, reduce the pay gap and allow women to climb the career ladder (Ginther and Kahn 2003, 2004; Waldfogel 1998; Mason and Goulden 2004). Our work highlights the institutional-based constraints and incentives offered to women in the UK academic sector and represents a first step in unpacking the causes and consequences of generous maternity benefits. In companion research, we investigate how differences in maternity benefits affect productivity, career paths, pay, and job satisfaction of female academics. From our perspective, the UK higher education sector provides fertile ground for such investigations because maternity benefits vary widely across universities and the productivity and career paths can be measured straightforwardly at the individual level. We believe that the implications of our research extend beyond higher education institution and offer insights on the determinants of the under-representation of women in qualified and competitive sectors. Finally, given that the generosity of statutory maternity pay in the UK is one of the lowest across EU countries, our research can help inform policy reforms in this area.

7. Literature

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Appendix

Table A1: Generosity of Occupational Maternity Pay across UK HEIs

Weeks with full salary replacement	Number of packages	HEI
0	15	Anglia Ruskin University, Conservatoire for Dance and Drama, Edge Hill University, Falmouth University, Guildhall School of Music and Drama, Leeds College of Music, Leeds Metropolitan University, Norwich University of the Arts, Queen Margaret University (Edinburgh), Ravensbourne, Royal Agricultural University, The University of Bolton
4	51	Bath Spa University, Bishop Grosseteste University, Buckinghamshire New University, Canterbury Christ Church University, Cardiff Metropolitan University, Central School of Speech and Drama, Coventry University, Falmouth University, Harper Adams University, Leeds Trinity University, Liverpool Hope University, Liverpool John Moores University, London Metropolitan University, London South Bank University, Rose, Bruford College, Royal Academy of Music, Royal College of Music, Royal Northern College of Music, St Mary's University College, St Mary's University College (Twickenham), Stranmillis University College, Teesside University, The Liverpool Institute for Performing Arts, The University of Chichester, The University of Huddersfield, The University of Lincoln, The University of Northumbria at Newcastle, The University of Plymouth, The University of Portsmouth, The University of Wales (Newport), The University of West London, The University of Wolverhampton, The University of Worcester, Trinity Laban Conservatoire of Music and Dance, University for the Creative Arts, University of Bedfordshire, University of Chester, University of Glamorgan, University of Gloucestershire, University of Hertfordshire, University of St Mark and St John, University of the Arts (London)
6	27	Anglia Ruskin University, Bournemouth University, De Montfort University, Falmouth University, Newman University, Roehampton University, Royal Conservatoire of Scotland, Southampton Solent University, Staffordshire University, Swansea Metropolitan University, The Arts University Bournemouth, The Arts University Bournemouth, The City University, The Manchester Metropolitan University, The Nottingham Trent University, The University

		of Bradford, The University of Brighton, The University of Northampton, The University of Westminster, The University of Winchester, University of Cumbria, University of Derby, University of the West of England (Bristol), Writtle College, York St John University
8	38	Aberystwyth University, Bangor University, Birmingham City University, Brunel University, Cranfield University, Goldsmiths College, Heriot-Watt University, Imperial College of Science Technology and Medicine, St George's Hospital Medical School, Swansea University, The Royal Veterinary College, The University of Bath, The University of Bristol, The University of Dundee, The University of East Anglia, The University of Edinburgh, The University of Essex, The University of Exeter, The University of Glasgow, The University of Hull, The University of Kent, The University of Leeds, The University of Leicester, The University of Liverpool, The University of Nottingham, The University of Stirling, The University of Strathclyde, The University of Surrey, The University of Sussex, The University of Warwick, The University of the West of Scotland, University Campus Suffolk, University of Durham, University of London
9	5	Courtauld Institute of Art, London School of Hygiene and Tropical Medicine, The University of Aberdeen, University College London
10	1	The University of East London
12	3	Aston University, Sheffield Hallam University, The University of Sheffield
13	9	Edinburgh Napier University, Glyndŵr University, Oxford Brookes University, The Manchester Metropolitan University, The Robert Gordon University, The University of Central Lancashire, The University of Surrey, University of Abertay Dundee
14	2	The Institute of Cancer Research, The University of Sunderland
16	14	Glasgow School of Art, Imperial College of Science, Technology and Medicine, Institute of Education, The University of Bristol, The University of Edinburgh, The University of Glasgow, The University of Kent, The University of Leeds, The University of St Andrews, The University of Stirling, The University of Strathclyde, The University of Warwick, The University of the West of Scotland, University of Durham
17	1	Heriot-Watt University
18	37	Brunel University, Cardiff University, Courtauld Institute of Art, Edinburgh College of Art, Heythrop College, Imperial

		<p>College of Science, Technology and Medicine, King's College London, Liverpool Hope University, London Business School, London School of Economics and Political Science, London School of Hygiene and Tropical Medicine, Loughborough University, Middlesex University, Queen Mary University of London, Royal Holloway and Bedford New College, The Open University, The Queen's University of Belfast, The School of Oriental and African Studies, The University of Aberdeen, The University of Birmingham, The University of Cambridge, The University of East London, The University of Hull</p> <p>The University of Keele, The University of Lancaster, The University of Newcastle-upon-Tyne, The University of Reading, The University of Salford, The University of Sheffield, The University of Sussex, The University of York, University College London, University of Ulster, University of the Highlands and Islands</p>
19	1	Glasgow Caledonian University
20	3	Kingston University, The University of Greenwich
26	7	Aston University, Birkbeck College, Royal College of Art, Scottish Agricultural College, The University of Manchester, The University of Oxford, The University of Southampton