

## **Productivity takes Leave?**

# **Maternity benefits and career opportunities of women in academia**

By Vera E. Troeger  
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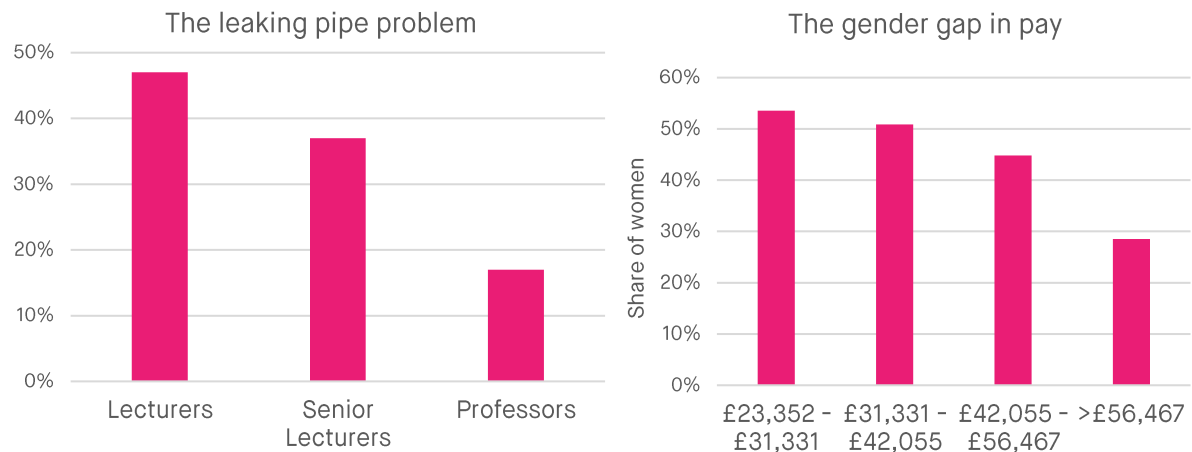
### Introduction: Why is maternity leave important?

“May” children, holiday babies and post-tenure pregnancies: these are some of the labels attached to women’s choices of having children in an academic environment. Academic women seem to share a common burden in scheduling their maternity plans: to survive in academia and advance through the faculty ranks, women tend either to give birth during vacation time, or to postpone their motherhood status to the end of their probation period and the achievement of tenure. The end result is, generally, an underrepresentation of women in higher academic positions (also known as the “leaking pipe problem”), lower salaries, lower research outcomes and rates of promotion, lower fertility, and higher rates of family dissolution – while family and children seem to have either no impact or even a positive effect on the patterns of men’s performance in the academic ranks. Thus, motherhood and professional achievements appear as conflicting goals even for women in academia, an environment that is usually praised for its flexibility in terms of working hours and thus family friendliness. Of course, this pattern of women falling behind in their career path after birth is similar or even more pronounced in other sectors, such as the civil service, and in particular industries.

The recent public discussion in the UK of the gender pay gap across different industries, and the requirement for companies to disclose differences in salaries paid to men and women, has sparked interest in the reasons underlying the continued discrimination of women in the workplace. The unconditional gender pay gap in the UK amounts to roughly 18 percent (ONS), and with this the UK ranks in the bottom third of all EU member states. The higher education and other high-skilled sectors usually fare even worse than the national average. The UK

Higher Education Statistics Agency (HESA) provides useful data underlining both the “leaking pipe” and the gender pay gap in British academia.

**Figure 1: The “leaking pipe problem” and gender gap in pay at UK HEIs<sup>1</sup>**



Across all academic disciplines, fewer than 1 in 5 professors is a woman, and less than a third of academics in the highest salary bracket are female. Of course, the argument that both promotion and increases in salary should follow performance can and should be made. But even if we believe that these decisions are purely based on academic merits, we would have to ask ourselves: Why is it that women in academia and other sectors are underperforming? And what can and should be done about it?

The vast majority of studies on gender and academic achievements point to the lower mobility of women (mostly due to family responsibilities), child rearing burdens and women’s preferences for academic disciplines that have low publication records as possible explanations of gender differences in higher education systems. Other studies link the gender gap in academia to women’s ‘gender-related’ attitudes, such as women’s propensity to choose teaching rather than research institutions.

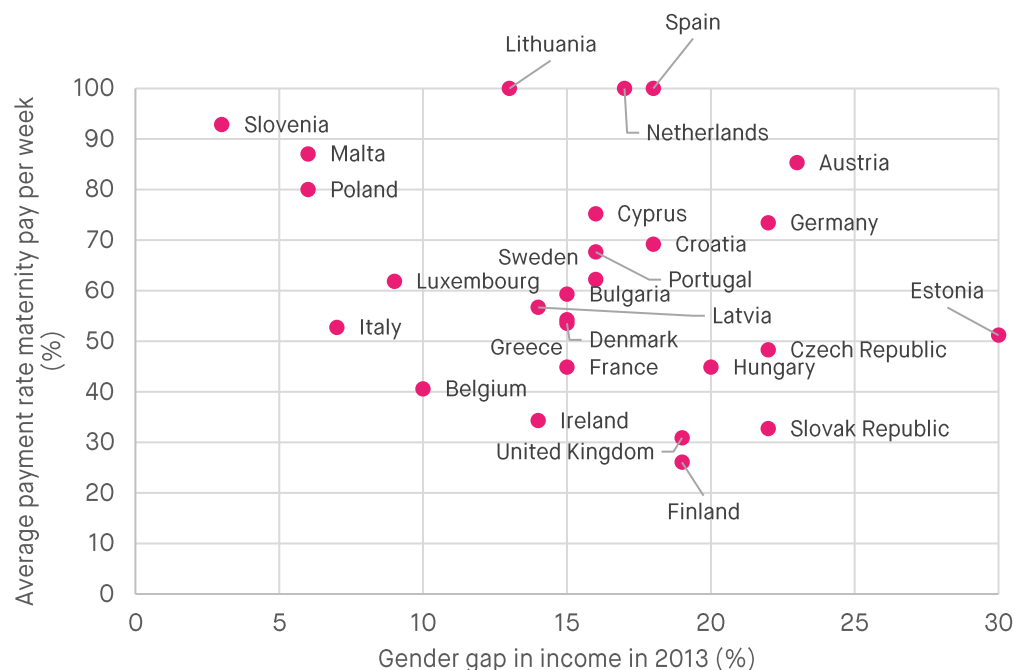
Previous research also argued that having children, taking maternity breaks and the lack of family friendly policies negatively affect the career path of women in academia. Compared to their male colleagues, who are more likely to benefit from family formation and fatherhood, women pay a huge prize for having children in academia, which takes forms including lower promotion rates, higher exit patterns and personal vicissitudes such as family dissolution and divorce. More generally, the probability of exit from academia is higher for women at the early stage of their career, which usually coincides with their fertility age, while the lack of family-

<sup>1</sup> Data from HESA.

oriented policies disproportionately disadvantages women's professional and personal conditions. Yet, to date, we do not know whether the status of female academics has improved over recent years, nor do we have up to date information on maternity and parental provisions for faculty members in the UK system.

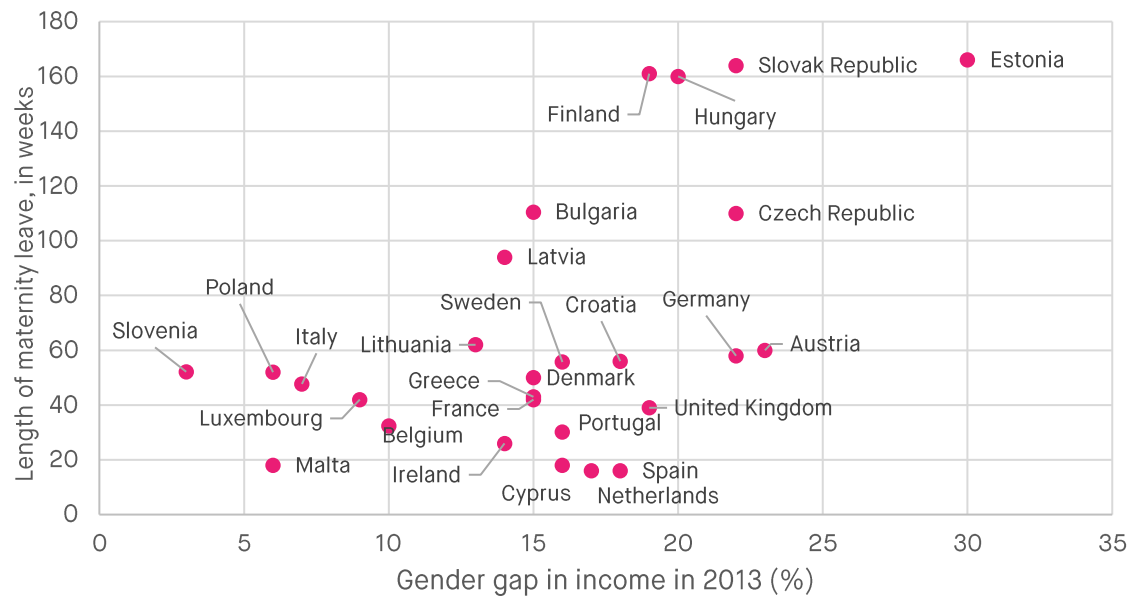
There is much research – mostly across countries – that shows how maternity benefits affect female labour market participation and career outcomes. In general, there seems to be a trade-off between the benefits of generous salary replacement rates in the short run, and the costs of extended maternity leaves in the long run. High replacement incomes are beneficial to mothers' employment rates and their attachment to the labour market in the short run. However, long leaves depreciate the human-capital of female workers and jeopardize their employment prospects in the long run. Figures 2.1 and 2.2<sup>2</sup> underline this pattern.

**Figure 2.1: Generosity of maternity leave and the gender pay gap in the EU**



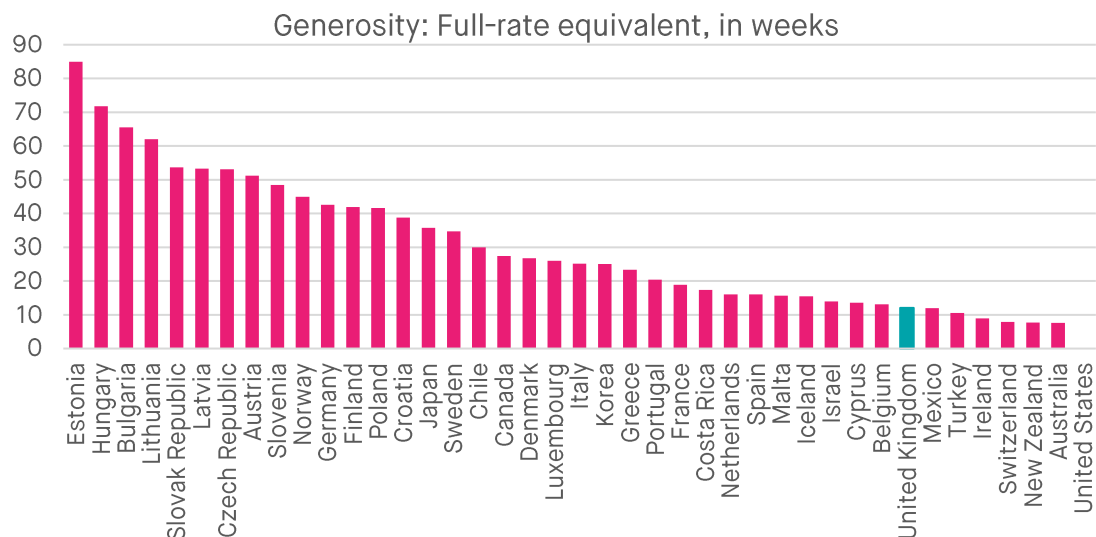
<sup>2</sup> Data from OECD 2013.

**Figure 2.2: Length of maternity leave and the gender pay gap in the EU**



In terms of overall length (52 weeks), maternity leave in the UK is close to the OECD average, and research shows that much longer maternity leave depreciates the career and earning capacities of mothers. However, the generosity of maternity pay and public expenditure on parental leave in the UK are rather low when compared with other developed economies.

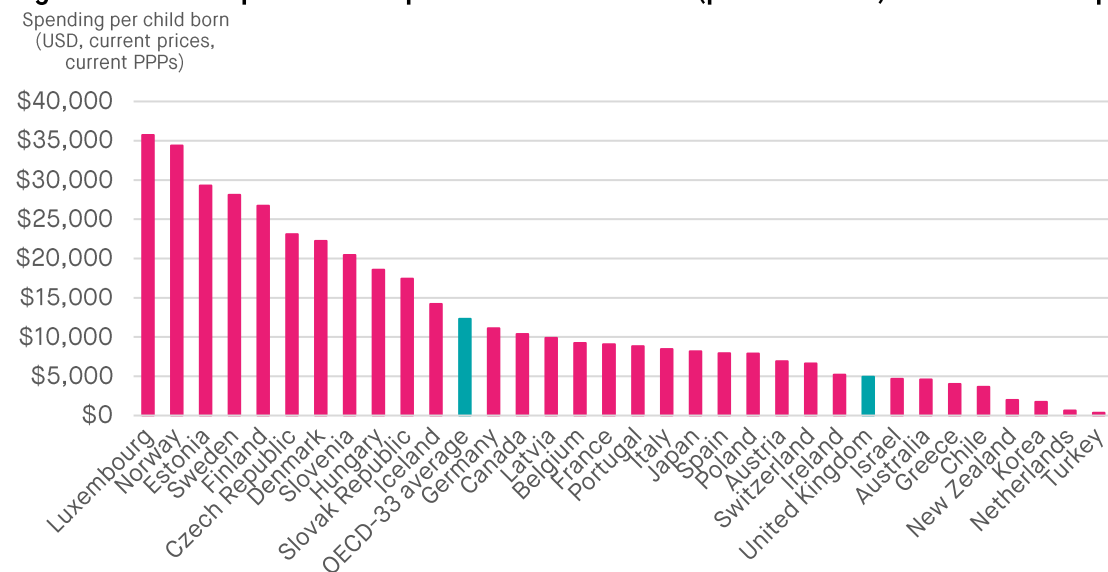
**Figure 3: Generosity of UK maternity pay in comparison<sup>3</sup>**



<sup>3</sup> Data from OECD 2013.

From figure 3 we can see that statutory maternity pay in the UK is one of the lowest across OECD countries and only undercut by Ireland in the EU.

**Figure 4: Public expenditure on parental leave benefits (per child born) in the UK in comparison<sup>4</sup>**



Public expenditure per child born remains extremely limited in the UK; only Greece and the Netherlands spend less.

## Maternity provisions across UK universities – determinants and outcomes

Given that maternity provisions strongly affect labour market participation on outcomes of mothers as well as the gender pay gap we need to understand the underlying mechanisms better. In our research, we seek to fill this gap by analysing higher education institutions in the UK and their provisions on a number of maternity leave arrangements. We examine the effect of such maternity provisions on the career achievements of women, e.g. promotion to full professor, and salaries. In general, we find that the generosity of maternity pay, as well as the availability of childcare, positively affects career opportunities as well as the income of female academics.

The UK higher education sector provides fertile ground to examine the effects of generosity of maternity provisions on individual and aggregate outcomes. Firstly, because statutory maternity benefits in the UK lack behind in generosity, many universities (and companies) top up the benefits but not uniformly. Secondly, higher education is arguably the only sector

<sup>4</sup> Public expenditure on maternity and parental leaves, OECD 2013: Public expenditure on maternity and parental leaves per child born, at current prices and current PPPs, in US dollars.

where individual productivity can be directly measured (through the quantity and quality of individual publications), and thus linked to other outcomes such as salary and career progression.

Most of the universities provide extra Occupational Maternity Pay (OMP) that tops up the SMP (Statutory Maternity Pay) 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 payments and the eligibility criteria may vary among the institutions. Arguably the best indicator for the generosity of maternity benefits is the number of weeks full salary replacement is paid<sup>5</sup>. In our research, we collect data on maternity benefits and childcare provisions for 165 institutions, and match these to data on the composition of academic staff and university characteristics from the Higher Education Statistics Agency (HESA). Indeed, examining the generosity of maternity pay across 165 HEIs reveals a large variance which cannot only be explained by different financial constraints faced by the university<sup>6</sup>. Tables 1 and 2 show this large variation across UK universities:

**Table 1: Number of weeks of full salary replacement across British 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
20	3	1.4
26	7	3.3
Total	214	100.0

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<sup>5</sup> We also analyse other generosity measures, such as the number of weeks for which the OMP tops up the SMP, and the so called ‘full weeks equivalent’, which measures for how many weeks on average full salary replacement is paid.

<sup>6</sup> In a companion paper we explain this variance, and find that larger, more research intense universities, with a (previous) larger share of female full professors and a low student-to-staff ratio implement more generous maternity packages.

For example, the number of weeks for which full salary replacement is granted varies from 0 (e.g. Leeds Metropolitan University) to 26 weeks in HEIs such as Oxford, Manchester, Birkbeck College and the Royal College of Arts.

**Table 2: HEIs and Generosity of Maternity Leave**

Weeks	Institutions
0	Leeds Metropolitan University, Anglia Ruskin
4	Bath Spa, Liverpool Hope, Plymouth, Portsmouth, Huddersfield, Chester
8	Essex, Exeter, Bath, Birmingham City, Bangor, Heriot-Watt, Goldsmith College, Nottingham, Leicester, Aberystwyth
16	Bristol, Edinburgh, Glasgow, Kent, Leeds, Strathclyde, Warwick, Durham
18	Keele University, Heythrop College, Cambridge University, UCL, LBS, LSE, Queen Mary, Royal Holloway, Reading
26	Oxford, Manchester, Birkbeck College and the Royal College of Arts

Given this large variation in generosity of maternity pay across UK HEIs, we ask two relevant questions:

1. Why do HEIs implement vastly different maternity packages?
2. Does the generosity of maternity packages make a difference for productivity, career progression and job satisfaction of female academics with children?

We argue that maternity leave provisions result from implicit or explicit negotiations between the organization board and the bargaining units representing the workforce. In the context of UK universities, the two sides involved in this bargaining process are the university management and female employees. Within this framework, we obtain clear predictions. Firstly, factors which raise the bargaining power of women employees, especially academic women, increase maternity benefits. Secondly, determinants which enhance the cost of providing maternity benefits reduce the generosity of maternity provisions.<sup>7</sup> Finally, factors that increase the institutions incentives to retaining mothers in the workforce will also increase the generosity of maternity pays.

In terms of outcomes, we expect that if women can take more time out of work – without income cuts – they are 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 will return to their research

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

position without having to take a career break and with possibly minor effects on research and publication activity.

In addition, research-intense universities screen the quality of academics at hiring stage. There's a larger variance in terms of productivity of staff hired at more teaching-oriented institutions. If these universities have more generous maternity benefits, they also have a greater incentive to screen potential recipients by initially employing more women on fixed-term contracts.

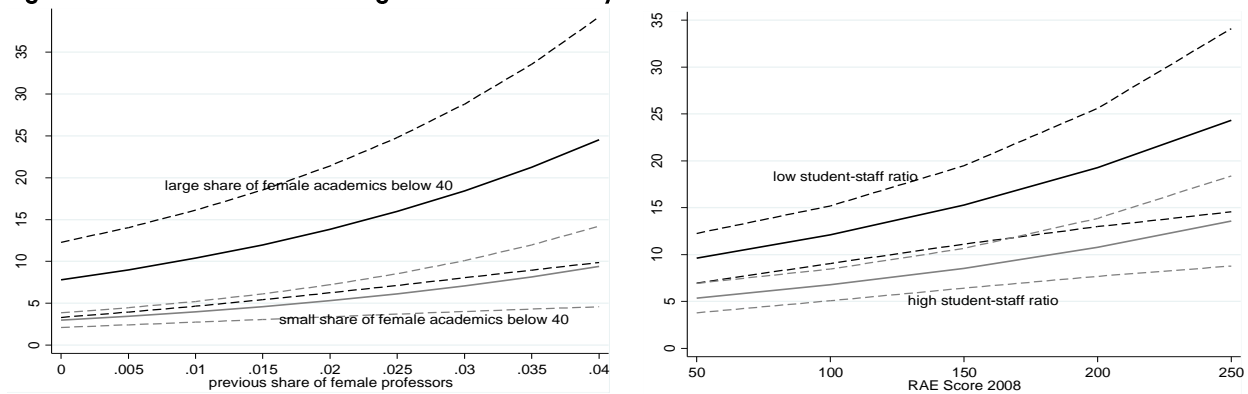
Whether more generous maternity provisions impact the career paths of female academics seems to be an incredibly important question that has serious policy implications. We address the “leaking pipe” and gender gap in salary questions by analysing whether better maternity provisions affect the share of female full professors, and the share of women in the highest salary bracket.

### Determinants of generous maternity benefits

Our empirical findings largely support the theoretical discussion. We find that generosity depends on the size of an institution in terms of staff but not income. This points the potential economies of scale provided by larger institutions. Moreover, we find support for our bargaining argument: universities with a larger previous share of female professors and female academics at child-bearing age provide more generous maternity benefits – this holds especially true at research intensive universities which have a higher incentive to keep highly productive female talent in whom they have invested a lot of resources during recruitment and training. However, we do not find that the share of senior female administrators or female administrators at child-bearing age affects generosity, because the skill specificity of academic jobs is higher and support staff can be replaced and redeployed much easier. Finally, a larger student-to-staff ratio affects generosity of maternity pay negatively, pointing to higher replacement costs of longer and more generous maternity leaves. Figure 5 depicts the major results.



**Figure 5: The determinants of generous maternity benefits**

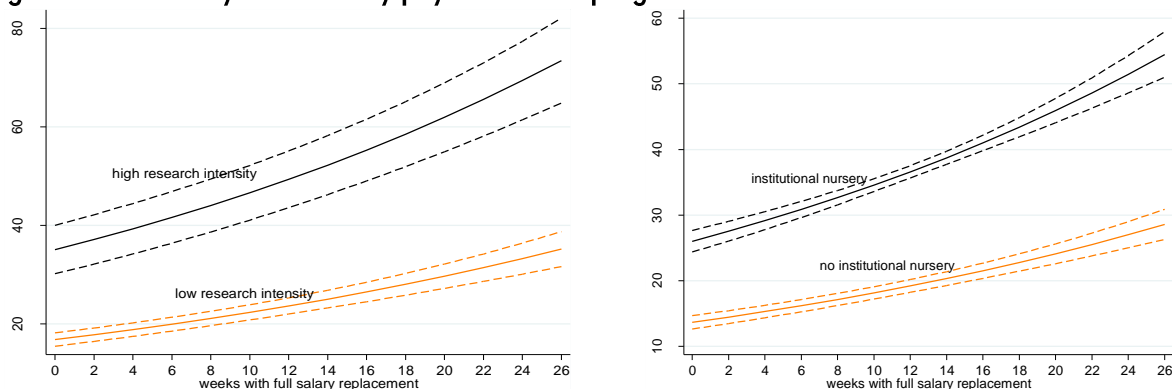


The left panel shows the impact of student costs on generosity that varies greatly by research intensity (measured as Research Assessment Exercise score in 2008). On the right, we see that bargaining power of female academics strongly affects maternity pay.

### Does generosity have an effect on career paths?

Strikingly we find an unambiguously strong relationship between the generosity of maternity pay and an increase in the share of female professors across all disciplines<sup>8</sup>. Universities with a very generous occupational maternity pay on average double the number of female professors compared to HEIs with minimal maternity benefits. This effect, however, is much stronger for research-intense institutions than for primarily teaching institutions as shown in figure 6<sup>9</sup>.

**Figure 6: Generosity of maternity pay and career progression**



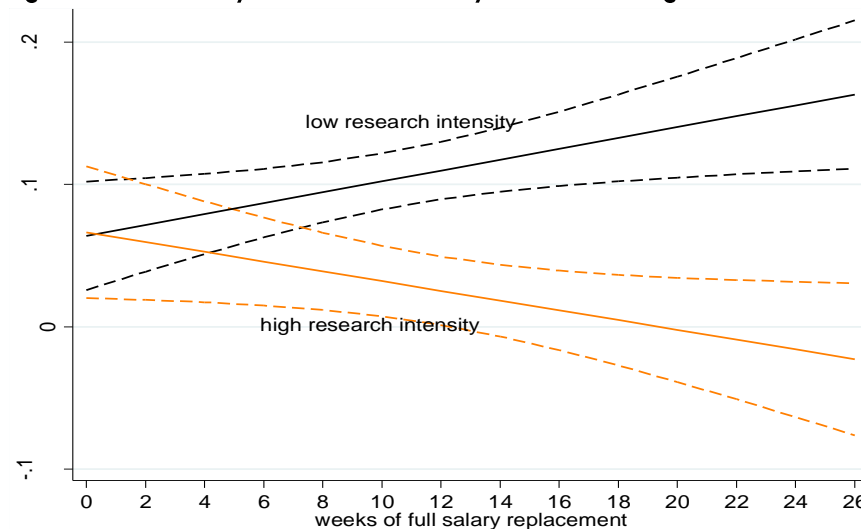
<sup>8</sup> When we break down the analysis across different disciplines, we find stronger relationships between the generosity of maternity pay and career advancement for the natural and social sciences than for the humanities.

<sup>9</sup> Research-intense universities have a much stronger screening process at hiring stage, and therefore have stronger incentives to retain highly productive female academics by providing more generous maternity pay.

In addition, in-house childcare provision increases the share of female professors by up to a third. Our results suggest similar, albeit weaker patterns, for female salaries in academia: more generous maternity leave provisions lead to a higher share of female academics with an income in the highest salary bracket. We find no relationship between maternity/paternity leave provisions and the career opportunities of male academics or female administrators.

We also confirm our suspicion that less research-intensive universities employ more women on fixed-term contracts if they offer more generous maternity benefits, as figure 7 shows.

**Figure 7: Generosity, research intensity, and screening**



## Conclusions

These aggregated results have to be taken with some caution and more work has to be done to identify the effects of maternity leave provisions at the individual level<sup>10</sup>. However, these findings point towards the possibility that the generosity of maternity pay can positively impact the career path of female academics and help close the salary gap. Of course, generous maternity schemes impose a cost on universities' budgetary allocation. However, if the academic community, and more broadly society, are interested in generating equal opportunities beyond just window dressing and keeping female human capital in the production process, we have to ask ourselves how we can generate an environment that

<sup>10</sup> We have collected individual data for 10,000 female academics in the UK on child rearing histories, individual career paths and productivity: the results show similar patterns.

allows women to maintain productivity and keep up with their male colleagues despite child-rearing and family responsibilities.

Our research does not necessarily support the idea of infinitely generous and long maternity leaves, yet it is in line with previous results on the trade-off between length and generosity. Our findings suggest that a combination of limited but generous maternity benefits, coupled with institutionally provided childcare, might help to deplete the leakage in the pipe.

We can possibly draw inferences from the UK higher education sector more broadly. Our research shows that more generous maternity pay can help keep female talent in the labour market and thereby increase productivity. The UK suffers from a productivity gap compared to other highly developed economies, and ranks very unfavourably both in terms of generosity of statutory maternity pay, and public spending on parental leave provisions, compared to other EU and OECD countries. It seems that UK family policies externalize the costs of parental leave to employers, which can be very strenuous especially for small companies and start-ups, and the costs for childcare to parents.

There seems to be room for improvement: more generous parental leave policies could help close the productivity gap and thus pay for themselves in the long run.

**Any views expressed in this article do not reflect those of the ESRC.**

### About the speaker

Vera Troeger is Professor of Quantitative Political Science at the Economics Department and the Department for Politics and International Studies at the University of Warwick. She joined CAGE (Centre for Competitive Advantage in the Global Economy) in August 2011. Vera is the editor-in-chief of the journal Political Science Research and Methods, the official journal of the European Political Science Association, published by Cambridge University Press. She is also an associate editor of Political Analysis. Vera also serves on the editorial boards of the European Journal of Political Research, and the Journal of European Public Policy. She is a council member of the newly founded European Political Science Association and the Midwest Political Science Association.

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Established in January 2010, CAGE is a research centre in the Department of Economics at the University of Warwick. Funded by the Economic and Social Research Council (ESRC), CAGE is carrying out a 10 year programme of innovative research. The centre's research programme is focused on how countries succeed in achieving key economic objectives such as improving living standards, raising productivity, and maintaining international competitiveness, which are central to the economic wellbeing of their citizens. Its research analyses the reasons for economic outcomes both in developed economies like the UK and emerging economies such as China and India. CAGE aims to develop a better understanding of how to promote institutions and policies which are conducive to successful economic performance and endeavour to draw lessons for policy makers from economic history as well as the contemporary world. Research at CAGE examines how and why different countries achieve economic success. CAGE defines 'success' in terms of well-being as well as productivity. The research uses economic analysis to address real-world policy issues. The centre is distinctive in providing a perspective that draws on economic history as well as economic theory and is applied to countries at various different stages of economic development.

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The Social Market Foundation (SMF) is a non-partisan think tank. We believe that fair markets, complemented by open public services, increase prosperity and help people to live well. We conduct research and run events looking at a wide range of economic and social policy areas, focusing on economic prosperity, public services and consumer markets. The SMF is resolutely independent, and the range of backgrounds and opinions among our staff, trustees and advisory board reflects this.