

Ria Ivandić

Anne Sophie Lassen

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## What makes the child penalty in academia different?

*Women are underrepresented in senior academic positions in economics. Ria Ivandić and Anne Sophie Lassen assess the impact of having children on men and women's career trajectories and suggest how the sector can adapt.*

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On average there is **one woman for every four or five men** at a senior level in university economics departments in Europe and the United States. Despite a considerable increase in the share of women studying economics as undergraduates and postgraduates, women remain underrepresented at the top of the profession across economics departments. What are the causes of this “leaky pipeline” – the decreasing share of women in economics as we move up the ranks?

Becoming a parent has been widely shown to affect outcomes in the wider labour market, an effect known as the “**child penalty**”. In a recent study, we examine the extent to which having a child affects labour market outcomes in academia. To do this, we use data from Denmark covering all individuals enrolling in PhD programmes in economics between 1996 and 2018. We track people from this first step into academia, by linking it with information on their family and labour market outcomes within and outside academia.

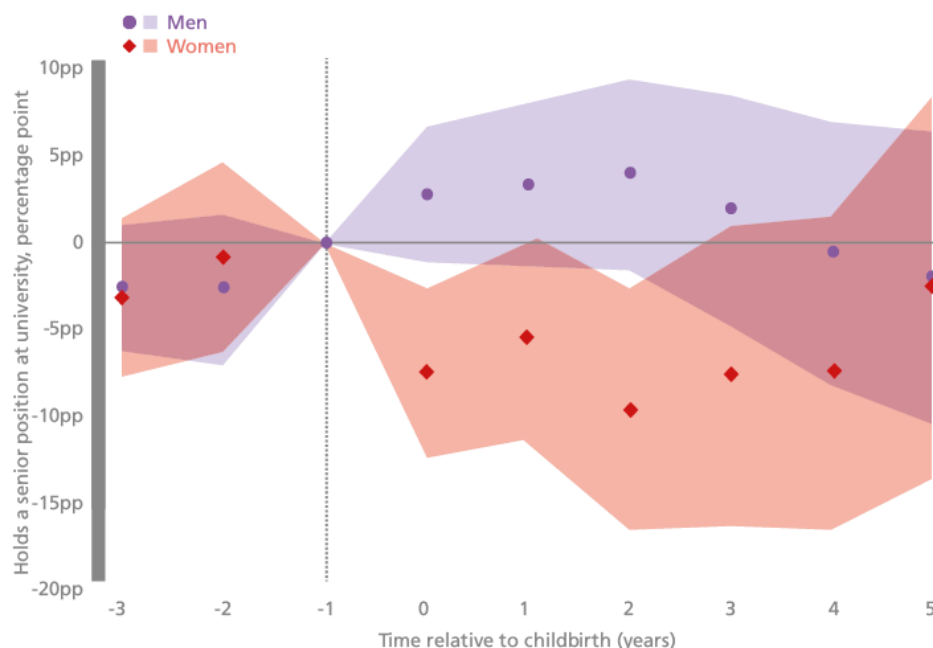
Our research uses an event study design that allows us to make a causal interpretation of our estimates, as it takes account of the fact that changes in labour market outcomes due to parenthood occur sharply, while other determinants influencing labour market outcomes evolve more smoothly conditional on the year and career stage.

## The tenure gap

We show that women are ten percentage points less likely to hold senior positions immediately after parenthood than men – and this remains the case until five years after birth – after which the gap disappears (Fig.1). As parenthood has no effect on men's likelihood of tenure (obtaining a

senior position in academia equivalent to associate professor or full professor) this leads to a gender gap of around ten percentage points in tenure rates for the five years after parenthood.

Figure 1:  
Parenthood and promotion to senior position



Source: Lassen and Ivandić, 2024

As the arrival of children often takes place early in a research career overlapping with the key time that determines whether an individual will be granted tenure, it is not surprising it has an effect on tenure rates. We show that this is due both to women leaving academia and to a lower likelihood of women being granted tenure after staying in academia after parenthood.

As our population data allow us to track individuals from the start of their PhD, we are able to investigate the effects of parenthood early in an individual's career. This is important for two reasons. First, as the starting age for a PhD rises due to a more competitive entry process requiring long pre-docs and Master's degrees, it is increasingly feasible that young scholars will decide to have children during their PhDs.

Second, research based on a sample of active researchers might contain survivorship bias if there are gender differences in who obtains a job in academia after their PhD. Our research design overcomes this issue by studying population data through their education path to academia.



## *New mothers are more likely to leave research careers entirely, new fathers to move into non-university research jobs*

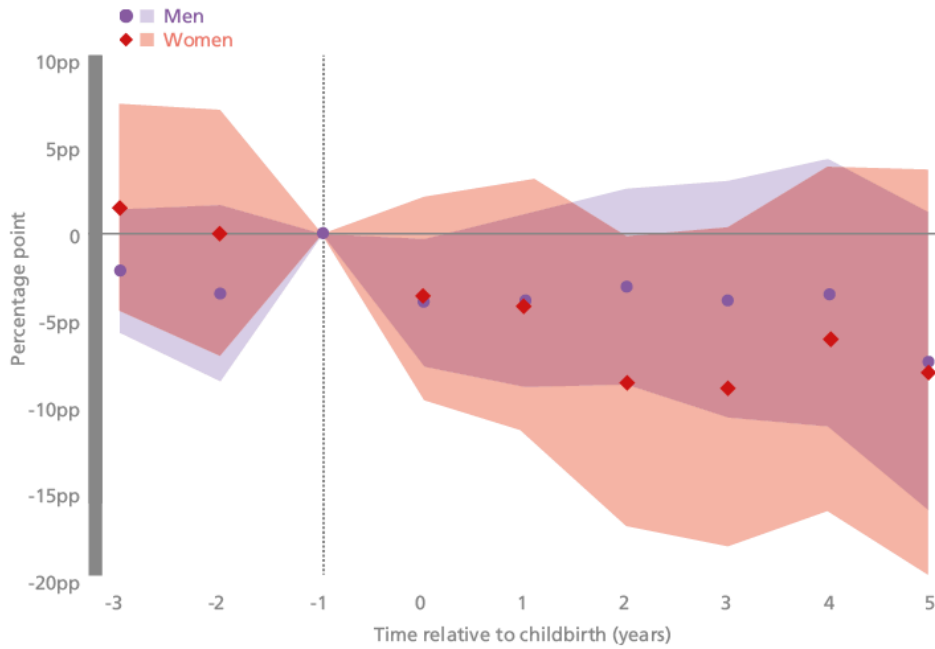


We estimate the effects of parenthood on academic career trajectories, regardless of the stage in their career that a researcher became a parent. Following the birth of the first child, both men and women experience substantial changes in their academic career trajectories. We show that women are on average eight percentage points less likely to stay in research following parenthood.

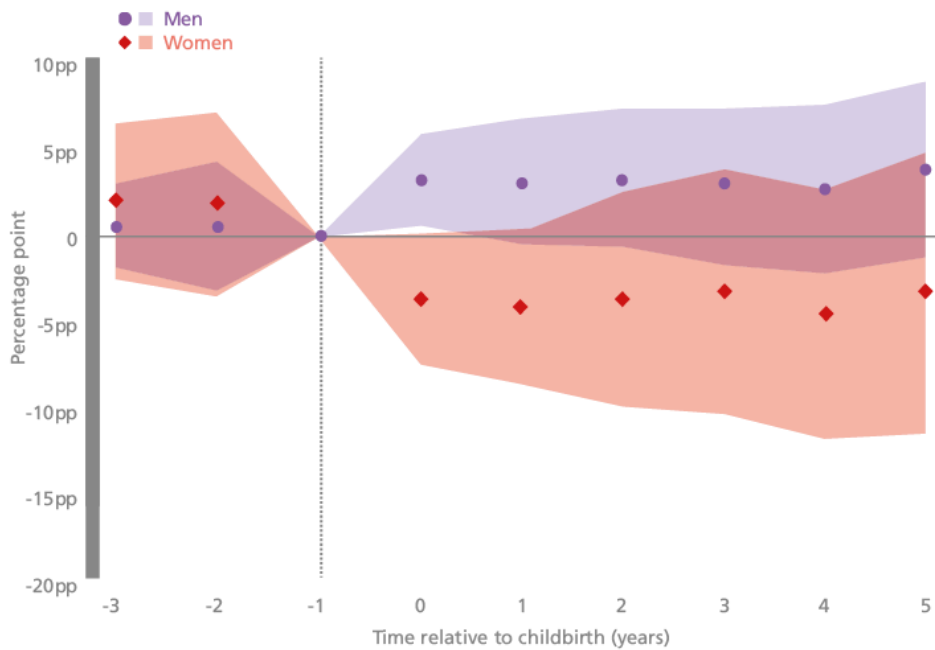
In Fig.2, we distinguish between universities and the broader research sector (including think tanks and public research institutes), which reveals a striking gender divergence in career trajectories. While both men and women are four percentage points more likely to leave universities after parenthood. In the broader research sector, women are more likely to leave research careers immediately in the year of childbirth than before, while fathers are moving into these positions – resulting in an eight percentage point gender gap. This finding covers both PhD students who became parents and were not able to secure an academic job, and junior faculty who became parents and then left academia.

Figure 2:  
Research career paths after childbirth

A. Working at universities



B. Working in broader research



Source: Lassen and Ivandić, 2024

What can we learn from these findings? First, we can think about how our findings would translate to other academic contexts outside Denmark. The academic career in Denmark is similar to other European and English-speaking countries. Yet Denmark is characterised by paying PhD students

salaries that are equivalent to those of junior civil servants, providing well-compensated parental leave for up to eleven months, and universal childcare.

We find that no evidence that academics in Denmark delay childbirth or reduce the number of children they have compared to individuals who leave academia. This is true for both men and women. We also find no evidence of women academics delaying starting a family or having a smaller family relative to their male colleagues. In contrast, Antecol et al [document a substantial gender gap](#) in early career fertility across top-50 economics departments in the United States.

## Sharing the caring

Findings from Kleven et al show that in Denmark, [child penalties in the whole labour market are smaller than in most other middle- and high-income countries](#), while Iaria et al show that [gender gaps in academia don't correlate with patterns of women's labour force participation](#). This opens up the question of whether policies that are effective for closing gaps in the broader labour market are relevant for closing gender gaps in academia.

To speak to this, we find the likelihood of leaving research is smaller when a woman's partner takes longer parental leave and that a larger share of men over time taking parental leave is correlated with a higher share of women staying in research following parenthood. Increased paternal involvement alleviates the time constraints facing new mothers in academia.

Taken together, our results provide suggestive evidence that in other academic contexts the career consequences of motherhood would be reduced by implementing some of the policies in place in Denmark: generous PhD stipends, parental leave for both academics and their partners, and universal childcare.

Today, 13% of professors in economics in Denmark are women. While our research shows that parenthood leads to a lower likelihood of tenure for women and that women are likely to leave academia in the years after having their first child, these effects are not sufficient to explain the large gender difference in tenure that exists.

In contrast to the general labour market where the majority of research has pointed to child penalties as the main remaining reason for the gender gap in earnings, in academia there are other reasons beyond parenthood that have led to women being a minority at the top of the profession.

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*This article first appeared as [Parenthood and academia](#) in [CentrePiece](#) magazine, the magazine of the LSE's Centre for Economic Performance and draws on the authors' paper, [Parenthood and Academic Career Trajectories](#) published in [AEA Papers and Proceedings](#).*

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*Image Credit: Raphael Whittle.*

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### About the author



Ria Ivandić

Ria Ivandić is an assistant professor at the University of Zagreb and an associate in CEP's community wellbeing programme.



Anne Sophie Lassen

Anne Sophie Lassen is a post-doctoral researcher at the Berlin Social Science Center (WZB).

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