The Evolution of Child Penalties in the UK Labour Market

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Introduction

The key aims of this research are to:

- Examine how the impact of children on labour market outcomes has evolved over time in the United Kingdom
- Investigate whether flexible working arrangements can help sustain labour market participation following childbirth

While gender inequality in the labour market has narrowed in recent decades, significant disparities remain - 6.2% employment gap (ONS, 2024).

In highly developed countries, gender inequality in the labour market is largely driven by the differential impact of children on mothers and fathers — the "child penalty" (Kleven et al., 2019; 2024).

Policy Context

Recent family friendly policies in the UK:

- 2015: Introduction of Shared Parental Leave
- 2017: Free childcare doubled to 30 hours per week for children aged 3 to 4.
- 2025: Extension to childcare for children aged 9-months to 2 years old.

Promoting gender equality in the labour market has become a central policy objective in the UK. However, the effectiveness of these policies remains contested.

Evidence suggests that shared parental leave (Atkinson, 2017) and childcare expansion (Havnes and Mogstad, 2011) have limited impacts in reducing gender disparities.

Policymakers may not adequately account for individuals' preferences, gender norms and constraints in balancing work and family life.

Previous Studies

The key hurdle to reliably estimating the impact of children on employment is the endogeneity of fertility decisions.

While there have been attempts to exploit random variation in fertility:

- Sibling sex instruments (Angrist and Evans, 1998)
- Successful IVF Treatment (Lundborg, Plug and Rasmussen, 2017)
- Twin births (Rosenzweig and Wolpin, 1980; Bronars and Grogger, 1994)

the event study approach popularized by Kleven et al. (2019) is widely accepted as the superior method.

A first child is an orthogonal shock which causes sudden changes in employment outcomes unlikely to be explained by more gradually evolving unobserved factors.

Method

We use a combination of the British Household Panel Survey (BHPS) and its successor the United Kingdom Household Longitudinal Study (UKHLS).

We identify the month and year of birth of a parents first-child and then calculate event time measure:

$$\text{Years} = \text{round}\left(\frac{\text{Months}}{12}\right), \quad \text{where} \quad \text{Months} = \begin{cases} \text{Months Since Birth}, & \text{if post-birth} \\ \text{Months To Birth}, & \text{if pre-birth} \end{cases} \tag{1}$$

Unbalanced panel of parents from $t-5$ to $t=+10$:

- BHPS: 108,887 observations consisting of 13,015 unique parents.
- UKHLS: 393,387 observations consisting of 59,630 unique parents.

Empirical Strategy

We estimate the deviation in labour market outcome Y, for individual i, of gender g, in year s, at event time t, with reference to event time $t-1$:

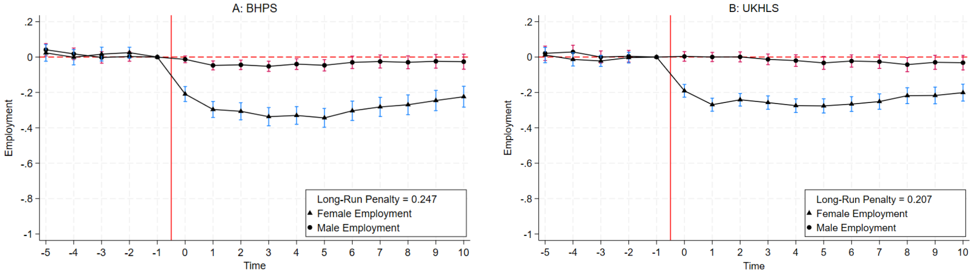
$$Y^g_{ist} = \sum_{j \neq -1} \alpha^g_j \cdot \mathbf{1}[j = t] + \sum_k \beta^g_k \cdot \mathbf{1}[k = \text{age}] + \sum_y \gamma^g_y \cdot \mathbf{1}[y = s] + v^g_{ist} \tag{2}$$

We control for lifecycle and business-cycle trends using age and interview date fixed effects, and cluster standard errors by individual.

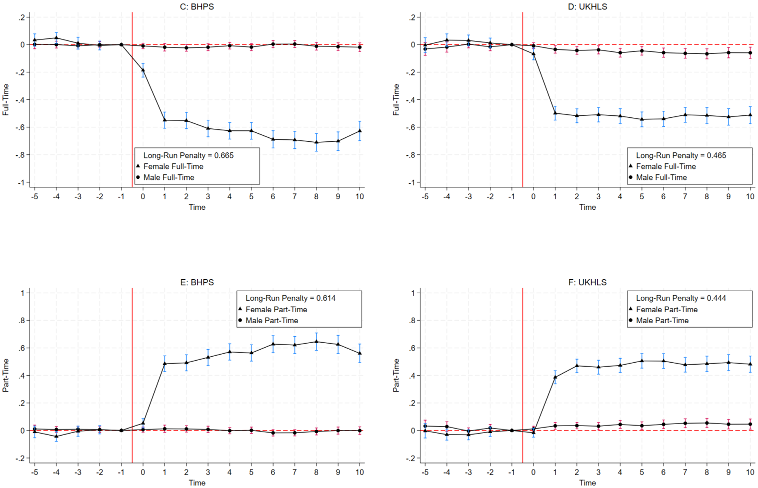
Gender-specific child penalty on mothers relative to fathers at event time t:

$$P_t = \frac{\hat{\alpha}^m_t - \hat{\alpha}^f_t}{\mathbf{E}\left[\tilde{Y}^f_{ist} \mid t\right]} \tag{3}$$

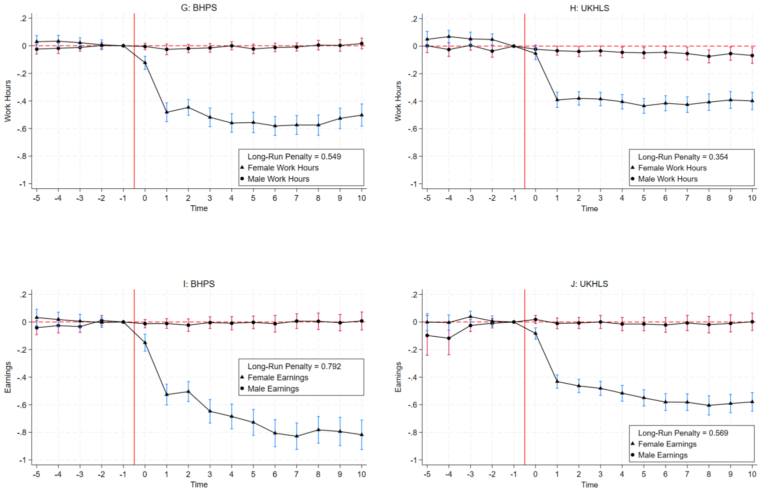
Baseline Results: Extensive Margin



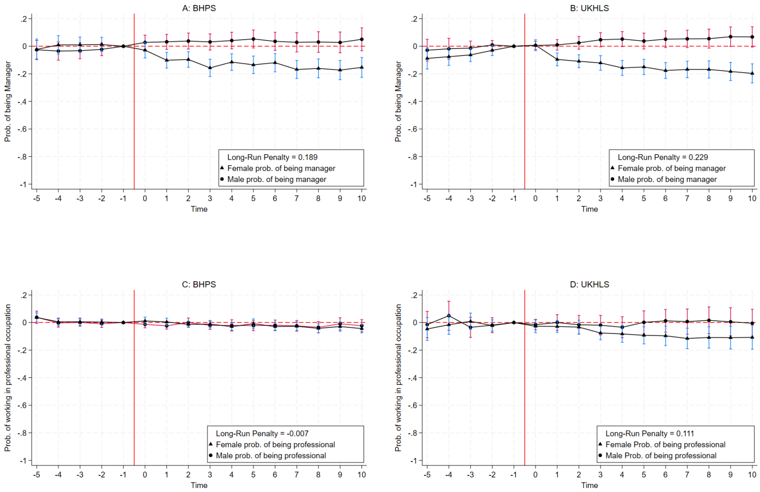
Baseline Results: Intensive Margin I



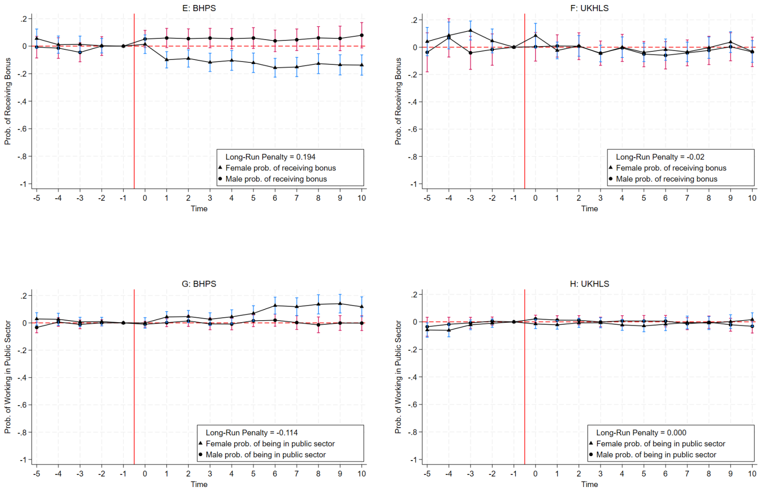
Baseline Results: Intensive Margin II



Baseline Results: Qualitative Margin I



Baseline Results: Qualitative Margin II



Flexible Working

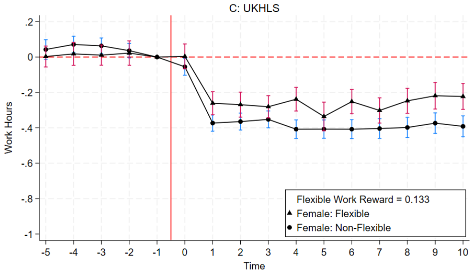
Flexible working has become a defining feature of the UK labour market, particularly in the aftermath of the COVID-19 pandemic.

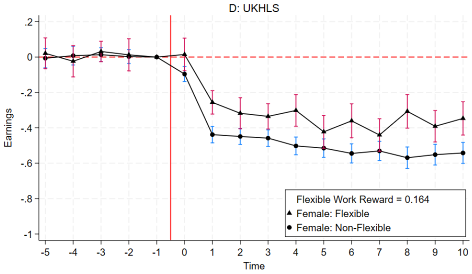
- Proportion of individuals regularly working from home rose from around 6% in 2010 to over 20% as of 2023.

Can flexible working reduce the child penalty by allowing mothers to better reconcile work and family responsibilities?

To explore this, we re-estimate our event study models, comparing mothers with and without access to or use of flexible working arrangements, namely flexi-time, compressed hours, annualised hours, and remote working.

Flexible Working Results





Concluding Remarks

While the reduction in the extensive margin participation penalty has been small (4%), significant progress has been made at the intensive margin.

We find that mothers are less likely to transition from full-time to part-time work, are able to maintain better working hours, and as such face a reduced earnings penalty.

At the qualitative margin, while the penalty on bonus receiving appears to have been eliminated, mothers are less likely to be working in a managerial position, professional occupation or public sector job than they were in the past.

Finally, we find evidence that child penalties on intensive margin outcomes are smaller for mothers with access to and use of flexible working arrangements than those without.

Thank you!

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