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The impact of reducing the childcare allowance in the
Netherlands – the 2013 reform of the Dutch Childcare
Provisions Act

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Abstract

In 2013, the childcare allowance percentages were reduced and the extra childcare allowance for low-income families was abolished in the Netherlands. This study aimed to examine the child penalty and the impact of the 2013 policy reform on the child penalty in the Netherlands. The child penalty is defined as the impact of parenthood on women relative to men in the labour market, in terms of wage rate and labour participation. This study used three event studies and regression analysis to assess the child penalty in terms of gross income, hours worked, and wage rate for men and women. The reform was also analyzed through three event studies, with the sample divided into a control group (women who gave birth before 2013) and a treatment group (women who gave birth in 2013). The results of the event studies show the impact of parenthood on earnings, hours, and wage rate for both men and women, with women experiencing a greater negative impact than men, highlighting the child penalty. The event studies for the 2013 reform do not show any causal effects of the reform on the child penalty. This is mainly due to the small size of the treatment group. For further research, it is necessary to increase the sample size of the treatment group to detect any causal effects of this reform.

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1. Introduction

Over the past few decades, women's labour participation has increased significantly. This rise can be attributed to higher levels of education among women, the postponement of motherhood, and changes in cultural and social norms (Kleven et al., 2018). However, gender inequality in the workforce remains a persistent challenge globally. For instance, in the Netherlands in 2021, mothers' earnings were estimated to be 46% lower than predicted in the absence of childbirth, while fathers' earnings remained unaffected (Rabaté et al., 2021). The Dutch Central Bureau of Statistics (CBS) reveals that men are overrepresented in the higher-wage segment of the labour market. In the full-time higher segment, where earnings exceed €32 per hour, there are over 700 thousand men compared to 170 thousand women, which translates to approximately four times as many men as women in this segment (CBS). These findings reflect that gender disparities persist in the labour market, with parenthood being a major contributing factor.

This paper uses panel data from the LISS Panel to estimate the causal effect of a welfare policy change in the Netherlands on the so-called *child penalty* – the impact of parenthood on women relative to men in the labour market, in terms of wage rate and labour participation (Kleven et al., 2018). To achieve this, the specific welfare policy change of 2013, the Dutch Childcare (Provisions) Act, which altered the childcare allowance system in the Netherlands, will be examined.

In 2005 the Dutch Childcare Act (de Wet Kinderopvang) was introduced in the Netherlands to make childcare more affordable and to encourage young women to return to work after having children. To receive an allowance, parents had to meet various criteria, including both parents being employed. The allowances in 2005 were income-related: lower incomes received up to 63.2% coverage, while higher incomes received none. Additionally, there was an extra allowance covering almost all childcare costs for low-income families (*Staatsblad 2005, 627 | Overheid.nl > Officiële Bekendmakingen, 2005*).

In 2013, significant changes were made to this law. The extra childcare allowance was abolished, altering the overall allowance percentages. Stricter quality requirements for childcare providers were introduced, and maximum hourly rates for childcare were set,

capping the amount the government would reimburse per hour (*wetten.nl - Regeling - Besluit Kinderopvangtoeslag - BWBR0017321*, 2013).

The 2013 reform of the childcare allowance system in the Netherlands may negatively affect the child penalty. Primarily, it can affect the accessibility and affordability of childcare by reducing allowances and implementing stricter quality requirements, leading to higher childcare costs. This can influence labour market participation, particularly among women, potentially increasing the child penalty. The participation rate of women may either increase or decrease. One possibility is that women may work less to care for their children at home. Conversely, women may work more to cover the higher childcare costs. Overall, the increased costs may lead to greater economic pressure on parents, who may struggle to balance their work and family responsibilities.

The existing literature already discusses the child penalty extensively, including investigations into various policies affecting the child penalty, such as childcare subsidies (Rabaté et al. (2021); Kleven et al. (2020); Andresen et al. (2022a), Bettendorf et al. (2015)), and parental leave changes (Dahl et al. (2016); Lalive and Zweimüller (2009)). However, a gap remains in understanding the impact of welfare policy changes on the child penalty, especially regarding the 2013 reform in the Netherlands. Therefore, this paper aims to expand the existing literature.

In addition to its academic significance, this topic holds considerable societal relevance. Investigating the impact of this welfare policy change on the child penalty provides valuable insights into its effect on gender equality within the labour market and the balance between work and family responsibilities. As a result, parents can gain a deeper understanding, potentially influencing their participation in the labour force. Beyond its societal importance, I am personally drawn to this topic. As a woman currently investing substantial time and money in education, I am aware that starting a family might become a possibility in the next 15 years. It is disconcerting to witness the disparities between men and women in the labour market. If there is a possibility to find a solution to this problem, I am eager to contribute.

In this paper, the underlying causes of the child penalty will first be examined. Then, the different policy changes in the Netherlands and other countries and their effect on the child penalty will be discussed. Furthermore, the child penalty will be examined through three different event studies, showing the effect of parenthood on gross income, hours, and wage

rate. Lastly, the impact of the 2013 reform on the child penalty in the Netherlands will be examined through three different event studies and two regression models with the same dependent variables.

2. Theoretical Background

Previous studies have extensively discussed the child penalty, particularly those by Kleven, including “The Child Penalty Atlas”. In the Netherlands, the child penalty is approximately 46% after the birth of the first child. This penalty consists of three components – labour force participation, hours of work, and the wage rate (Kleven et al., 2018). According to the literature, the child penalty has several drivers, including gender norms, culture, welfare and family policies.

2.1. Gender norms and culture

Firstly, the focus shifts to gender norms and culture. Gender norms, defined as deeply ingrained societal beliefs within individuals (Cislaghi et al., 2019), significantly influence the existence of the child penalty. Extensive research has been conducted on this issue. For example, in 2019, the CBS compared the child penalty effects on same-sex and mixed-sex couples in the Netherlands. Since same-sex couples, by definition, do not encounter gender-related comparative advantages in household or workplace dynamics, any identified disparities must be due to factors beyond intra-household gender differences (Rosenbaum, 2019). Their findings suggest that the child penalty for same-sex mothers is significantly lower than for mixed-sex mothers. Thus, they showed that the differences between these two groups is most likely explained by gender norms. These conclusions for the Netherlands align with findings from other countries, such as Rosenbaum (2019) for Denmark, and Andresen et al. (2022b) for Norway. For example, Andresen et al. (2022b) found that after five years of childbirth, same-sex couples no longer face a child penalty, unlike heterosexual couples, where the penalty persists over time. In mixed-sex couples, women tend to experience the child penalty, while men do not. In same-sex couples, both parents experience a slight difference in the short run, but this disappears in the long run. Kleven et al. (2019) investigated the cultural aspects of gender norms. They concluded that women who grew up in traditional families with clear role divisions faced greater penalties when they became mothers. This underscores how upbringing influences women’s decisions in balancing family

and career responsibilities. The findings from the aforementioned studies indicate that a considerable portion of the child penalty can be attributed to gender norms. Given the extensive Dutch literature on this issue, which consistently reaches similar conclusions, further investigation into gender norms in the Netherlands is unlikely to yield new insights.

2.2. Welfare policy changes

Other factors influencing the child penalty are welfare and family policies, which can affect the child penalty when altered. Extensive literature discusses the impact of changes of welfare policies changes on the child penalty, particularly child benefits. Child benefits are defined as regular financial assistance provided by the government to families to help cover the costs of raising children. For example, the impact of an increase in Canadian Universal Child Care Benefits (UCCB) has been examined in Canada. Studies revealed a notable and considerable negative impact on the labour participation of women, particularly those with lower levels of education. Specifically, following the implementation of the UCCB, mothers with lower education levels saw a reduction in median hours worked by 1.85 hours per week (Schirle, 2015). Similarly, Poland's "Family 500+" initiative aimed to increase the fertility rate and reduce child poverty, by increasing the child benefits. Following this reform, the labour force participation rate of mothers actually declined by 2 to 3 percentage points (Magda et al., 2018). In both scenarios, the country increased the child benefit.

In contrast, Denmark revised its child benefit policy in 2011. Here, the child benefits for larger families with young children were significant reduced, while those for smaller families remained unchanged. Jensen et al. (2022) concluded that this reform led to an increase in women's labour participation rates, while men's remained unchanged. These finding suggests that such welfare changes may influence the child penalty. Therefore, it is necessary for this research to examine a more precise change.

2.3. Family policy changes

To delve deeper into welfare changes, the effect of family and childcare policy changes will be examined. First, changes in paternity, maternity, and parental leave will be explored – specifically the number of days/weeks of paid leave for fathers, mothers, and parents respectively, both before and after giving birth. This is an intriguing area of investigation because such policy changes could potentially encourage mothers to re-enter the labour market sooner after giving birth. However, existing literature shows the opposite. For

instance, Dahl et al. (2016) examined the Norwegian parental leave policy reform, which increased entitlement from 32 to 35 weeks. Their findings suggest that there is no evidence of an increase in the rate of mothers returning to work two years after giving birth. They also show that there is no long-term effect of this reform on women's labour participation rates. These findings align with Andresen et al. (2019; 2022a) who also examined paternity leave in Norway. They examined the changes in paternity leave over time and concluded that it has no impact on the child penalty, mainly due to gender norms. Additionally, Kleven et al. (2020) examined three different parental leave reforms in Austria. Their overall conclusion is that the parental leave policy changes have had small negative effects on female labour outcomes in the short run but showed no long-term effects. Lalive et al. (2009) investigated a major Austrian reform that extended the duration of parental leave. The reform increased leave from one to two years. They found that the fertility rate of women increased and that there was a significant reduction in female employment and earnings. Thus, worsening the child penalty. Overall, the conclusion of policy changes in paternity, maternity, and parental leave is that they have a small effect on the child penalty and therefore irrelevant to investigate further in the Netherlands.

2.4. Childcare costs

Other family policy changes that may influence the child penalty include changes in the childcare costs, subsidies, and early access to childcare. Firstly, examining the effects of childcare costs. Childcare costs are governmental expenditures to provide and maintain childcare services, including direct fundings for public childcare facilities. Studies suggest that reducing childcare costs alone does not significantly address the child penalty. For example, research by Givord et al. (2015) found that even a 50% reduction in childcare expenses in France resulted in only a marginal 1% increase in employment rates. Notably, France already had relatively low childcare costs compared to other countries. Similarly, Lundin et al. (2008) found that imposing a maximum limit on childcare expenses for parents in Sweden did not influence women's participation in the labour force. Additionally, general research suggests that employed mothers are more sensitive to the quality and price of childcare than unemployed mothers, indicating that childcare costs only matter when mothers are employed (Blau et al., 1998). Later research by Blau et al. (2006) also concludes that the price of paid childcare has a small effect on women's labour force participation and their hours of work, thus having a minor impact on the child penalty. These findings suggest that

reducing childcare costs has a negligible effect on the child penalty, and therefore, it is not worth investigating this issue further in the Netherlands.

2.5. Early childcare access

Moreover, earlier access to childcare may influence the child penalty in countries. Andresen et al. (2022a) demonstrate that the Norwegian childcare reform for early access reduces the child penalty by 23%. This reform applied to childcare for children aged 1 and 2. During the period of early childcare utilization, fathers' earnings decreased while mothers' earnings increased. Similarly, Andresen et al. (2019) investigated the 2022 childcare reform for toddlers in Norway. Using an instrumental variable approach, they found substantial labour supply responses to the reform. Their research indicated that, due to the expansion, for every 10 cohabiting mothers, 3 more women were employed compared to before the reform. Furthermore, in cases of low maternal employment due to a lack of affordable childcare, early access can encourage more mothers in OECD countries to work (Cattan, 2016). This positive effect also holds in the long run. However, it does not apply to countries with more traditional views or strong gender norms. Cattan (2016) concludes that the success of universal early access to childcare largely depends on policy parameters and specific country contexts. Additionally, the quality and intensity of childcare are very important. High-quality, center-based childcare has positive impacts on the development of children. This can indirectly lead to increased labour participation of parents by reducing stress and improving the work-family balance (Berger et al., 2021). In conclusion, early access to childcare can positively influence the child penalty.

2.6. Childcare Subsidies

Furthermore, the effects of childcare subsidies will be discussed. In 2005, the Dutch Childcare Act was implemented in the Netherlands, as mentioned earlier. Prior to 2005, daycare subsidies varied, with most being provided directly by employers and local government. Access to and the cost of childcare were influenced by arbitrary factors.

2.6.1. The Dutch Childcare Act

Following the reform, the Dutch government standardized subsidies for commercial childcare. Specifically, in 2005, the Dutch Childcare Act ("de Wet Kinderopvang") was introduced to make childcare more affordable and encourage young women to return to work

after having children. To receive an allowance, parents had to meet various criteria, such as both parents being employed. Childcare providers also had to meet national quality standards. The allowances in 2005 were income-related: the higher the income, the lower the allowance. For instance, parents with an annual income below €16,118 could receive an allowance covering up to 63.2% of childcare costs, while those with incomes between €20,000 and €50,000 received allowances ranging from 61.1% to 36.8%. Those with earnings above €96,543 received no allowance. Employers were also required to contribute to childcare costs. Additionally, there was an extra allowance for low-income families, reimbursing 96% of childcare costs for incomes below €16,118, between 95% and 75% for incomes between €21,411 and €35,158, and no extra allowance for incomes above €79,654 (*Staatsblad 2005*, 627 | *Overheid.nl > Officiële Bekendmakingen*, 2005).

2.6.2. The Dutch Childcare Act of 2005

Bettendorf et al. (2015) examined the impact of the impact of the Dutch Childcare Act's implementation in 2005. This law was introduced to help parents pay for childcare costs. As a result of the new law, public spending on childcare increased enormously, from 1 billion euros in 2004 to 3 billion euros in 2009. During the same period, the Dutch government also increased targeted Earned Income Tax Credits (EITCs). The purpose of this tax is to increase labour participation among the lower- and middle-income classes and to enhance the welfare status of those working individuals. Both policy changes targeted the same treatment group, prompting Bettendorf et al. (2015) to examine their combined effect.

Their findings suggest that the reform increased women's participation rate by 2.3 percentage points. Furthermore, it reduced men's weekly working hours by 0.8%. This indicates that the reform positively impacted the child penalty. However, they noted that this policy change incurred significant government costs that outweighed the additional benefits. The costs were substantial because the subsidy caused parents who already used informal childcare to shift to formal childcare. As a result, the reform had a marginal effect on maternal employment, increasing it by only 0.19 percentage point (Bettendorf et al., 2015).

Rabaté et al. (2021) also investigated the effect of the 2005 reform. They took advantage of the geographical variation in the timing of childcare expansion following the 2005 reform, similar to the approach used by Kleven et al. (2020) for Austria and Andresen et al. (2022a) for Norway. Rabaté et al. (2021) found strong negative correlations between the use of

childcare and the child penalty for mothers, suggesting that access to childcare is essential to decrease the child penalty. However, their study found only a small direct effect of large childcare expansion on the child penalty in the short run.

Besides the Dutch reform, the German government implemented significant public childcare reforms between 2007 and 2014. Similar to the Netherlands, Germany expanded its subsidies for public childcare for 0-2-year-old children. These reforms notably reduced the child penalty for mothers with children aged 1 to 3 compared to those with children aged 4 to 6, who did not benefit as much from these changes (Lim et al., 2023). According to Lim et al. (2023), an increase in public childcare coverage by ten percentage points reduces the child penalty for mothers by approximately three percentage points in the five years following childbirth. This reduction is primarily due to the opportunity for mothers to return to work sooner after childbirth. The expansion of public childcare also increases the likelihood of mothers working more hours and years, and earning higher wages, thus decreasing the child penalty.

Studies examining the 2005 implementation of the Dutch Childcare Act were significantly influenced by the concurrent increase in Earned Income Tax Credits (EITCs) in the Netherlands. Therefore, isolating the effects of the childcare policy changes from those of the EITCs is challenging due to their combined influence.

In 2013, the Dutch Childcare Act underwent significant changes. During this reform period, there are no other policy changes affecting the same demographic group. Additionally, there is a lack of existing literature examining this topic. Investigation this reform could yield valuable insights into how changes in childcare subsidies influence parental labour participation, and consequently the child penalty.

3. Institutional Background and Data

3.1. Institutional Background

In 2013, the additional childcare allowance was abolished, altering the overall allowance percentages. For instance, incomes below €17,229 were reimbursed 90%, while incomes between €23,000 and €55,000 were reimbursed between 85% and 59%. For incomes above €118,000, no allowance was available. Other changes included stricter quality requirements for childcare providers. The government introduced maximum hourly rates for childcare, capping the amount it would reimburse per hour. For example, standard daycare had a maximum hourly rate of €6.46, after-school care €6.02, and childminding €5.17 (gasthouderopvang). Thus, although the percentage changes may appear minor, the introduction of maximum hourly rates significantly impacted the overall allowance.

3.2. Data

The quantitative, longitudinal data used in this paper is sourced from the LISS Panel, a high-quality online research infrastructure in the Netherlands. It comprises of panel data for the Dutch population from 2005 to 2024, focusing on individuals aged 20 to 45 who are having their first child. The data from the LISS panel is collected through extensive questionnaires. For this study, two different sets of panel data were combined into one dataset containing the necessary variables, such as income, hours worked, gender, and age.

3.3. Descriptive Statistics

The combined dataset allowed the study to examine the effects of parenthood on multiple dependent variables, as discussed in the first part of the results. In the second part, a different dataset is used. This dataset comprises only women who gave birth to their first child during the period in which they completed the questionnaire.

The first dataset comprises men and women who had their first childbirth in one of the years they completed the questionnaire. The descriptive statistics of this dataset are shown in Table 1. To ensure accurate results, several adjustments were made to the dataset. Firstly, duplicate ID numbers were removed. Additionally, the variables were cleaned by addressing outliers and undefined values. The LISS panel questionnaire includes questions about respondents' gross and net income. Respondents who had no income or chose not to answer were instructed to enter 0. To prevent skewed outcomes, the dataset provides the variables

'brutoink_f' and 'nettoink_f' for such cases, where an estimation for the missing values is made.

As shown in Table 1, the dataset comprises 773 men and 996 women. The table shows the mean values of variables, variation, and the distribution between men and women. Notably, men in this dataset are generally older. The age of men is also higher at the first childbirth. Moreover, the gross income of men is higher, and perhaps the most notable difference is that men work 6 hours more on average per week compared than women. In Figure 7, you can see the distribution of education level by gender. Something to keep in mind, when analyzing the results is that there are more higher-educated women than men.

In the second part of this paper, a different dataset is used. This dataset comprises only women who gave birth to their first child during the period in which they completed the questionnaire. This group is divided into a control group and a treatment group. The control group consists of women who gave birth before 2013, while the treatment group consists of women who gave birth in 2013. More information about these groups is provided in section 4.2. *The 2013 Reform Methodology*. The descriptive statistics of this dataset are shown in Table 4. The sample size consists of 212 women for the control group and 72 women for the treatment group. The average age of the treatment group is slightly higher. Additionally, the average age at first childbirth is somewhat higher in the treatment group. Another notable point is that the average gross income of the treatment group is higher, while the average working hours do not differ significantly. In Figure 11, the numbers of respondents per group per event time are shown. The control group has more respondents than the treatment group in all the event time variables. From event time $t = 5$, the treatment group counts only one respondent per year. A small sample size decrease the statistical power of an analysis. Because of this it is harder to detect the real effects of the reform. This is a major shortcoming in this paper. Therefore, only the short-term effects of the reform will be examined. This is unfortunate, but the long run effect can be examined in further research.

4. Methodology

4.1. Event Study Methodology

In this paper, the same methodology as Kleven et al. (2018) is used – an event study to graphically show the child penalty. An event study is an empirical analysis used to examine the impact of a specific event on a variable. In this case, the event is the birth of the first child. An event study requires panel data, which makes our dataset highly suitable.

Kleven et al. (2018) used a time-horizon from five years before to ten years after childbirth and did not impose any relationship restrictions. In the first part of this paper, there is data available from 5 years before to ten years after childbirth. In the second part, the data is more limited, and it is available from four years before to eight years after childbirth. The baseline used in Kleven et al.'s (2018) study is one year before the childbirth. This is necessary because one year before childbirth, there already are notable differences. For instance, the woman becomes pregnant and due to maternity leave, they work less. In this paper, a baseline of one year before childbirth will also be used. To provide a comprehensive view of the effect of having children, the event study is performed on multiple dependent variables: earnings, hours worked and wage rates (earnings divided by hours worked). For earnings, the variable gross income is used. This choice was made because net income can fluctuate over time due to tax policies, various deductions, and other factors. For the variable hours worked, the variable contractual hours is used, which represents the agreed-upon hours in the respondent's contract. Although the dataset also included actual hours worked, it was determined that contractual hours are more suitable for assessing the child penalty. This is because contractual hours are more stable and less influenced by seasonal changes, illness, or other temporary factors.

Kleven et al. (2018) used the following event-study equation:

$$(1) \quad Y_{ist}^g = \sum_{j \neq -1} \alpha_j^g \cdot I[j = t] + \sum_k \beta_k^g \cdot I[k = age] + \sum_y \gamma_y^g \cdot I[y = s] + \varepsilon$$

Here, Y denotes the outcome of interest for individual i of gender g in year s and at event time t . The first sum of the equation is a full set of event time dummies, allowing the examination to measure the impact of different event times on the outcome. The second term includes age dummies, and the third term includes year dummies. These variables control the outcome for age-specific and year-specific influences on the outcome.

Year-fixed effects control for economic fluctuations and other time-specific factors that can influence the dependent variable. Furthermore, these variables control for seasonal effects. This is important for sectors that are heavily dependent on the season, such as tourism or catering industries. By including age-fixed effects, you control for variables related to the age of individuals. For instance, earnings may increase with age, because of greater work experience. Overall, by including these fixed effects, the accuracy of the model is enhanced.

To see the impact of the first childbirth over time, the estimated levels will be converted into percentages. To obtain the child penalty for P_t^g for gender g at event time t , the following equation is used:

$$(2) \quad P_t^g = \frac{\hat{\alpha}_t^g}{E[\tilde{Y}_{ist}^g | t]}$$

In this equation $\hat{\alpha}_t^g$ is the expected coefficients for each event time t and gender g . \tilde{Y}_{ist}^g denotes the predicted outcome when omitting the contributing of the event time dummies. Following this equation, P_t^g can be interpreted as the percentage loss of average dependent variable.

In the first part of this paper, this methodology is used to provide a general picture of the child penalty in the Netherlands through three different event studies. In these graphs, you can easily see the differences between men and women on the labour market across various dependent variables. In the second part of this paper, the event studies provide a more detailed picture of the 2013 reform.

4.2. The 2013 Reform Methodology

The 2013 reform is examined in two different ways. First, the reform's impact on men and women is investigated to closely examine its effect on the child penalty – the difference in labour market outcomes between men and women. To achieve this, two regression models were conducted with gross income and hours as the dependent variables. A dummy variable for post-birth was included, indicating whether the respondent had already had a child. Additionally, dummy variable post-2013 was included, indicating whether the respondent completed the questionnaire before or after 2013. To measure the possible changes in the child penalty, an interaction term between these two dummy variables was included. This

approach shows the differences between men and women after the reform. Both year- and age-fixed effects are included in these regressions to control for variables that influence the dependent variable.

However, a more detailed way to examine the reform follows the methodology of Kleven et al.'s (2020) paper, where they examined the impact of parental leave policy changes in Austria. In their study, they divided the respondents into a control group and a treatment group. The treatment group consists of women who gave birth in the year of the policy change, while the control group consists of women who gave birth in the years before the policy change. By dividing the dataset into a treatment group and a control group, you can effectively compare the outcomes between these two groups. This approach isolates the impact of the policy change from other variables because the only difference between the groups is the policy change. Dividing these groups creates a quasi-experimental setup, mimicking a randomized controlled trial. Following this methodology in this paper, the sample size was divided into a treatment group for all women who gave birth in 2013, and a control group for all women who gave birth before 2013. To measure the impact of the 2013 reform, three event studies were conducted with the same dependent variables as before: gross income, hours and wage rate. These event studies were conducted using the same methodology as previously mentioned.

5. Results

5.1.1. The Event Study

Firstly, to give a general overview of the child penalty in the Netherlands, three event studies have been conducted. These event studies are shown in Figure 8, 9, and 10. The y-axes of these graphs display the relative changes of the dependent variable, while the x-axes show the relative years before and after birth. Here, $t = 0$ denotes the year of childbirth, $t = -5$ represents five years before childbirth and $t = 10$ indicates ten years after childbirth. The vertical striped line represents the baseline at one year before childbirth. The horizontal bold black line at $y = 0$, represents the y-value of the baseline. The red and blue line represents the coefficients for women and men respectively. These coefficients are estimated through equation (1) and made relative through equation (2). Comparing the outcomes of men and women with the horizontal baseline allows for an easy observation of the relative changes compared to this baseline. The red and blue shaded areas refer to the 95% confidence intervals for women and men, respectively. These intervals indicate that it is 95% likely that the true outcomes lie within this range. A larger area indicates more uncertainty about the outcomes, while smaller areas indicate greater certainty. When two confidence intervals intersect, it means that the differences in outcomes are not statistically significant at those points.

Based on prior literature, the expectations are that gross income, work hours, and wage rates would exhibit different patterns for men and women. These patterns differ as follows: income would remain relatively stable before childbirth, with a steady increase for men and a relatively large decline for women post-childbirth (Kleven et al., 2019; Rabaté et al., 2021).

Examining the first event study, Figure 8, which focuses on gross income, it can be concluded that these results align with expectations. Before the baseline, incomes for both men and women increase over time. After the baseline, and after childbirth, women experience a significant decline in their incomes. Around two years after childbirth, their incomes decline by approximately 20% compared to the baseline. The decline becomes larger over time. The graph shows a significant decline in income for women around 10 years after childbirth, ranging from 50% and 120%. The wide area of the confidence interval for women during that time prevents a definitive conclusion. However, it is clear that their income declines significantly after ten years. This is shown in the figure because the confidence interval for

women does not intersect with the horizontal bold baseline. Regarding the outcomes of men in this graph, their income remains relatively stable over time after childbirth. Eventually, five years after childbirth, their income increases significantly by around 20% compared to their pre-birth income. Throughout the entire event time period, with the exception of ten years after childbirth, the confidence intervals for men and women intersect. Because of this, no conclusions can be made about the changes of men's income compared to those of women. However, the graph suggests that women individually experience a small child penalty around the time of the first childbirth and a larger child penalty after ten years. Conversely, men do not experience a child penalty; instead, their incomes increase after childbirth. This highlights the child penalty in terms of gross income.

Figure 9 illustrates the relative changes in hours worked over time compared to the baseline. Before the baseline, both men and women maintain a similar number of hours worked. After the baseline, and after childbirth, women experience a significant decline in their working hours. Throughout the entire event time, women work less after their childbirth compared to their pre-birth working hours. They experience a relatively small decline of 20% in the first five years after childbirth. Eventually, women experience a 70% percent decline in their working hours after ten years. In comparison, men do not experience a significant change in their working hours after childbirth. However, after ten years, men do experience a significant decline in their working hours of 20% compared to the baseline. Furthermore, there are some points in the graph where men and women significantly differ from each other. The first moment is around 2 to 3 years after childbirth, where women significantly work less than men compared to their pre-birth working hours. This is also the case five years after childbirth. In conclusion, the graph indicates an overall decrease in hours worked for women and no significant changes for men, highlighting the child penalty in terms of hours. This graph aligns with the mentioned literature.

Lastly, Figure 10 illustrates the relative changes in wage rate over time compared to the baseline. The graph indicates that before childbirth, the wage rate of men and women does not differ significantly from the baseline. After five years of childbirth, women experience a significant increase of approximately 30%. Given the results of the previous two event studies, this outcome is logical. Women experienced a significant decline in their working hours five years after childbirth. However, their income did not significantly differ after five years. Wage rate is income divided by working hours, which explains why women

experience an increase in their wage rate five years after childbirth. Further event times do not provide significant outcomes for women. Considering the outcomes for men after childbirth, they experience a significant increase around six years after childbirth and eventually around ten years after childbirth. Around six years after childbirth, men experienced an increase in income. However, their working hours did not differ significantly. Therefore, it can be explained that their wage rate increased six years after childbirth. Ten years after childbirth, their income did not differ significantly, but their working hours declined. Thus, their wage rate also increased ten years after childbirth. Furthermore, no conclusions can be made about the relative changes between men and women due to the intersecting confidence intervals. However, the graph shows no significant differences in wage rate for either men or women at the first five years after childbirth. Around five years after childbirth, both genders experience an increase in their wage rate. Beyond that, only a small increase for women is observed after six years. However, men still experience a higher wage rate compared to the baseline.

5.2.1. The 2013 Reform Regression for men and women

Based on prior literature, Rabaté et al. (2021), Kleven et al. (2019) and Andresen et al. (2022b) concluded that there is a strong correlation between the use of childcare and the child penalty for mothers, indicating that access to childcare is essential in reducing the child penalty. The reform increased the costs of childcare and reduced the financial support for it. Therefore, the expectations of the reform on gross income and work hours would primarily show negative outcomes for both women and men.

The first method to investigate the 2013 reform involves regressions for men and women. There are two regressions conducted with gross income and hours as the dependent variables. The first regression is shown in Table 2, with gross income as the dependent variable. The first column shows the outcomes for men. For significant reasons, it can be concluded that men experience an increase in income of 275 euros monthly when they became father after 2013. Regarding the outcomes for women, it can be concluded that they experience a decline in income of 512 euros after giving birth, highlighting the negative effect of having children for women. Furthermore, the income of women declined by 259 euros after 2013. However, the interaction term provides an opposite outcome. It suggests that women who became mother after 2013 experienced an increase in income of 259 euros monthly, thereby

indicating that the 2013 reform increased the earnings for women. When comparing the outcomes from men and women, it is evident that men still experience a greater change. Another important point to note is that the average earnings of women are still lower than those of men, as shown in Table 1. Therefore, while the 2013 reform may have had a positive influence on both men and women, the earnings gap between both genders did not disappear. In fact, it worsened the differences between men and women in terms of their incomes. These outcomes are in contrast with the expectations and literature. However, the increase in earnings when parents experience a smaller childcare allowance could be due to the substitution effect, assuming that leisure time is considered a normal good. The 2013 reform led to a decrease in available income, which may have resulted in more working hours to compensate for the loss. It is important to note that these are assumptions.

To assess the validity of the conclusions from Table 2, a regression with hours as the dependent variable was also conducted. This regression is shown in Table 3. For significant reasons, no conclusions can be drawn for men regarding the effect of childbirth, the 2013 reform and their interaction term on hours worked. On the other hand, the outcomes for women show a significant result for the coefficient of post birth, indicating that women tend to work 7.2 hours less weekly after giving birth. However, the rest of the regression coefficients for women does not provide any significant outcomes. Therefore, no conclusions can be drawn about the impact of the 2013 reform on hours worked for both men and women.

5.2.2. The 2013 Reform Event Studies

The second method to investigate the 2013 reform involves event studies for the control group and the treatment group. The control group consists of women who gave birth before 2013, and the treatment group consists of women who gave birth in the year of the reform; 2013. The y-axis and the x-axis are the same as the previous event studies. The baseline still represents one year before childbirth.

Figure 19 presents the results with gross income as the dependent variable. Firstly, looking at the control group, they do not experience significant changes in their income before childbirth. However, after the baseline and childbirth, the control group experiences a decline in their income. From a relative decline of 40% after two years, to eventually a decline of approximately 160% after eight years. Comparing this with the treatment group, a significant increase in income is observed before the baseline, around four years before childbirth.

However, the further outcomes of the treatment group do not show significant differences compared to the baseline. As mentioned in section 3.3. *Descriptive Statistics*, the data only allow conclusions to be drawn for the first five years after childbirth due to the low number of respondents in the subsequent years. Unfortunately, no conclusions can be made about the relative changes between the control and treatment group because their confidence intervals are intersecting. However, the graph does provide a clear picture of the child penalty for the control group.

In Figure 20, the same method is applied with hours as the dependent variable. The control group shows no significant changes before the baseline. However, from the baseline to five years after childbirth, the control group experiences a decline in working hours of approximately 20% compared to their pre-birth working hours. After five years, the control group does not show any further significant changes. The treatment group shows an increase in working hours four years before childbirth. However, in this graph, the treatment group also does not show any significant changes compared to the baseline for the first five years after childbirth. In conclusion, this graph provides a clear picture of the negative effects of parenthood on the labour market for the control group in terms of hours. The treatment group, on the other hand, does not provide any new information.

Lastly, in Figure 21, the same method is applied with wage rate as the dependent variable. Examining the control group, no significant changes in wage rate are observed before the baseline. However, four years after childbirth, their wage rate decreases by approximately 80% compared to their pre-birth wage rate. This aligns with the outcomes of the previous event studies, where the decrease in income was larger than the decrease in the number of working hours four years after childbirth, resulting in a decline in the wage rate. Seven years after childbirth, the wage rate declines even further statistically. They experience a loss of 150% in wage rate after eight years. For the treatment group, the same problem arises as with the previous two event studies. Their outcomes do not show any significant changes from before childbirth until five years after childbirth.

Discussion

In this paper, the effect of the 2013 policy reform is examined, where the Dutch government reduced the overall childcare allowance percentages and abolished the additional childcare allowance for lower-income families. In the first part of this paper, the methodology of Kleven et al. (2018) is replicated, who constructed event studies for multiple countries. In this paper there are three different event studies constructed for the Netherlands with gross income, hours, and wage rate as dependent variables. These event studies show the impact of having children on men and women in terms of these dependent variables.

The event study with gross income as the dependent variable (Figure 8) showed no significant changes for men compared to the baseline. Conversely, for women, it showed a small decrease in earnings after childbirth for women. This decrease worsened, as after ten years the decrease was approximately 80% compared to their pre-birth earnings. Due to intersecting confidence intervals, no conclusions can be made about the relative changes between men and women. However, the graph did show a significant decline in earnings after childbirth for women, highlighting the negative effects of having children for women on the labour market.

Similarly, the graph with hours as the dependent variable (Figure 9) showed these negative effects for women. The years after childbirth showed significant decreases for women, with a small decrease in hours of approximately 20% after five years, eventually leading to a large decrease of 60% after ten years. For men, no significant changes are observed compared to the baseline. However, after ten years, men also experienced a decline, but only a decrease of 30%. Considering the relative changes between men and women, it can be concluded that five years after childbirth, men and women experience a significant difference in hours worked. This highlights the child penalty in the Netherlands in terms of hours working.

Lastly, the graph with wage rate as the dependent variable (Figure 10) showed a significant increase in wage rate for women around five years after childbirth. For men, it also showed a significant increase in wage rate at six years after childbirth. This aligns with the previous two event studies. Regarding the relative changes between men and women, no conclusions can be made due to the intersecting confidence intervals. In conclusion, these three event studies measured the impact of having children on the dependent variable. They all showed a

more negative effect for women, highlighting the child penalty. These findings align with prior literature. Kleven et al. (2019) demonstrated the negative effects of parenthood for women across countries. This corroborates our findings, where the event study graphs for income, hours and wage rate show a large negative effect for women, compared to no significant changes for men. These findings are also supported by Rabaté et al. (2021) and Andresen et al. (2019).

In the second part of this paper, the 2013 reform is examined through two different methods. The first method, two regression models are constructed to examine the impact of the reform on men and women. For the second method, three different event studies are constructed, using the same methodology as Kleven et al. (2019).

Firstly, the first regression model, with gross income as the dependent variable (Table 2), shows that the variable post birth had a significantly negative outcome for women, highlighting the negative effects on the labour market for women in terms of earnings. The interaction term between the two variables of interest, post birth and post 2013, showed a positive significant outcome for both men and women. However, the men's coefficients showed an increase of 275 euros monthly, while those for women showed a 259 euros increase. Therefore, the regression may have a positive outcome for both genders. However, the average income of women is below that of men. Thus, following the regression, the 2013 reform may have widened the differences between men and women on the labour market in terms of their income.

The second regression model, with hours as the dependent variable (Table 3), do not provide any relevant significant outcomes for men. For women, it only showed a significantly negative outcome for the variable post birth, highlighting the negative effects on the labour market for women in terms of hours. From this regression, there cannot be any conclusion about the 2013 reform.

The second method to examine the 2013 reform was through three different event studies, with the same dependent variable as the earlier event studies – gross income, hours and wage rate. The sample size is divided in a control group, women who gave birth before 2013, and a treatment group, women who gave birth in 2013. In the three graphs, the treatment group does not show significant changes over time. The event times after five years for the

treatment group are excluded for because there were only one or two respondents in those years. Including these years would not be representative for larger samples.

The first event study (Figure 19) showed a significant decrease in earnings after childbirth for the control group. They experienced a decline in earnings of 80% five years after childbirth compared to the baseline. Eventually, after eight years, they experience a greater decline of approximately 160%. Due to a lack of sufficient data for the treatment group, no conclusions can be made about the treatment group and the 2013 reform in terms of earnings.

The second event study (Figure 20) shows similar patterns. The control group experienced a significant decrease of 20% four years after childbirth. Long-term effects do not show any significant changes for the control group. Also, in this graph, the treatment group does not provide any significant outcomes. Therefore, no conclusions can be made about the treatment group and the 2013 reform in terms of hours.

The last event study (Figure 21) shows significant decreases in the wage rate of the control group. They experienced a decline in wage rate of 80% four years after childbirth. This decline becomes greater after six years, when they experienced a decrease of 160% compared to the baseline. Also in this graph, no conclusions can be made about the treatment group.

In conclusion, the control group shows significantly negative changes over time in terms of earnings, hours, and wage rate. Despite the fact that this was not fully the aim of these event studies, the control group does show negative effects for women in the labour market.

The small sample size of the treatment group is a significant shortcoming of this research. Due to the small sample size, the statistical power of the tests decreases, making it harder to detect true significant changes. Furthermore, random selection criteria are not fully met with a small sample size, which means that the observed changes may be random and not representative of larger populations.

To address these issues, further research should focus on increasing the sample size of the treatment group. By increasing the sample size of the treatment group, the accuracy of the estimated improves, and it becomes possible to examine the long-term effects of the 2013 reform. Larger sample sized also lead to smaller 95% confidence intervals, indicating more precise estimates.

One reason for the small sample size in this study can be the stringent requirements for the treatment group. The LISS Panel provided a good dataset for men and women. However, it included few women who gave birth exactly in 2013 and continued to respond to the questionnaire in subsequent years. This longitudinal follow-up is crucial for examining long-term effects.

Further research could benefit from using governmental data, which includes information on earnings, working hours, and the year of first childbirth. Access to such comprehensive data would improve the sample size and enhance the ability to investigate the long-term effects of the 2013 reform. By utilizing larger and more representative datasets, research can better understand the reform's impact and inform policy changes aimed at reducing the child penalty.

Conclusion

In this paper the child penalty in the Netherlands is examined and the impact of the 2013 reform on this penalty. The event studies provide a comprehensive overview of the child penalty in the Netherlands (Figure 8, 9, 10). They show the negative effect of parenthood for women in terms of gross income, hours and wage rate. The graphs also show no significant differences in the men's outcomes. These results align with prior literature, concluding that income, hours, and wage rate show a negative impact for women after parenthood. However, the event studies examining the impact of the 2013 reform do not significantly provide outcomes for the treatment group (Figure 19, 20, 21). This is because the sample size of the treatment group is too small. Therefore, no conclusions about the 2013 reform can be made for the treatment group based on the event studies. The control group shows significant changes over time in terms of earnings, hours, and wage rate. The control group highlights the negative effects for women in the labour market.

The two regression models in this paper, on the other hand, offer insights into the correlation between the 2013 reform and the difference in impact between men and women. The first regression (Table 2) shows a positive influence of the 2013 reform on income for both genders, with men experiencing a greater positive impact than women. It is important to note that the average income of women is lower than that of men. Therefore, according to the regression results, the reform may have widened the income differences between men and women. However, correlation does not imply causation. Thus, no conclusions can be made about definitive differences resulting from the 2013 reform based on these regressions. Lastly, the regression with hours as the dependent variable (Table 3) does not provide any significant outcomes, and therefore no conclusions can be made in terms of hours.

It is important to examine the impact of reforms that influence parenthood on the child penalty. By analyzing these reforms, we can understand their impact and use this knowledge to inform further policy changes. I believe that achieving equality between men and women in the labour market is possible. By studying these changes, we move a little closer to that goal every day.

References

- Andresen, M., & Nix, E. (2022a). Can the child penalty be reduced? Evaluating multiple policy interventions. *Econstor Discussion Paper No. 984, Research Department*, <https://www.econstor.eu/bitstream/10419/268059/1/1814679154.pdf>
- Andresen, M. E., & Havnes, T. (2019). Child care, parental labor supply and tax revenue. *Labour Economics*, *61*, 101762. <https://doi.org/10.1016/j.labeco.2019.101762>
- Andresen, M., & Nix, E. (2022b). What Causes the Child Penalty? Evidence from Adopting and Same-Sex Couples. *Journal of Labor Economics*, *40*(4), 971–1004. <https://doi.org/10.1086/718565>
- Bettendorf, L., Jongen, E., & Müller, P. J. (2015). Childcare subsidies and labour supply — Evidence from a large Dutch reform. *Labour Economics*, *36*, 112–123. <https://doi.org/10.1016/j.labeco.2015.03.007>
- Blau, D., & Currie, J. (2006). Chapter 20 Pre-School, Day Care, and After-School Care: Who’s minding the kids? In *Handbook of the economics of education* (pp. 1163–1278). [https://doi.org/10.1016/s1574-0692\(06\)02020-4](https://doi.org/10.1016/s1574-0692(06)02020-4)
- Blau, D. M., & Hagy, A. P. (1998). The demand for quality in child care. *Journal of Political Economy*, *106*(1), 104–146. <https://doi.org/10.1086/250004>
- Cattan, S. (2016). Can universal preschool increase the labor supply of mothers? *IZA World of Labor*. <https://doi.org/10.15185/izawol.312>
- Cislaghi, B., & Heise, L. (2019). Gender norms and social norms: differences, similarities and why they matter in prevention science. *Sociology of Health & Illness*, *42*(2), 407–422. <https://doi.org/10.1111/1467-9566.13008>
- Dahl, G. B., Løken, K. V., Mogstad, M., & Salvanes, K. V. (2016). What is the case for paid maternity leave? *The Review of Economics and Statistics*, *98*(4), 655–670. https://doi.org/10.1162/rest_a_00602

- Givord, P., & Marbot, C. (2015). Does the cost of child care affect female labor market participation? An evaluation of a French reform of childcare subsidies. *Labour Economics*, 36, 99–111. <https://doi.org/10.1016/j.labeco.2015.07.003>
- Jensen, M. F., & Blundell, J. (2022). Income Effects and Labour Supply: Evidence from a Child Benefits Reform. *Social Science Research Network*. <https://doi.org/10.2139/ssrn.4053318>
- Kleven, H., Landais, C., & Søgaaard, J. E. (2018). Children and Gender Inequality: Evidence from Denmark. *American Economic Journal. Applied Economics*, 11(4), 181–209. <https://doi.org/10.1257/app.20180010>
- Kleven, H., Landais, C., Posch, J., Steinhauer, A., & Zweimüller, J. (2019). Child Penalties across Countries: Evidence and Explanations. *AEA Papers and Proceedings*, 109, 122–126. <https://doi.org/10.1257/pandp.20191078>
- Kleven, H., Landais, C., Posch, J., Steinhauer, A., & Zweimüller, J. (2020). *Do Family Policies Reduce Gender Inequality? Evidence from 60 Years of Policy Experimentation*. <https://doi.org/10.3386/w28082>
- Kleven, H., Landais, C., & Leite-Mariante, G. (2023). *The Child Penalty Atlas*. <https://doi.org/10.3386/w31649>
- Lalive, R., & Zweimüller, J. (2009). How does Parental Leave Affect Fertility and Return to Work? Evidence from Two Natural Experiments*. *the Quarterly Journal of Economics*, 124(3), 1363–1402. <https://doi.org/10.1162/qjec.2009.124.3.1363>
- Lim, N., Duletzki, L.-M., Paserman, D., Cortes, P., Lang, K., Collischon, M., & Kühnle, D. (2023). *The Effects of Public Childcare Expansion on Child Penalties -Evidence From West Germany **. https://www.bu.edu/econ/files/2023/07/PCC_CP_IED_WP_NayeonLim.pdf
- Lundin, D., Mörk, E., & Öckert, B. (2008). How far can reduced childcare prices push female labour supply? *Labour Economics*, 15(4), 647–659. <https://doi.org/10.1016/j.labeco.2008.04.005>

- Magda, I., Kielczewska, A., & Brandt, N. (2018). The effects of large universal child benefits on female labour supply. *Social Science Research Network*. <https://doi.org/10.2139/ssrn.3217467>
- Rabaté, S., & Rellstab, S. (2021). *The Child Penalty in the Netherlands and its Determinants CPB Discussion Paper*. <https://doi.org/10.34932/trkz-qh66>
- Rosenbaum, P. (2019). The family earnings gap revisited: a household or a labor market problem? *Social Science Research Network*. <https://doi.org/10.2139/ssrn.3314102>
- Schirle, T. (2015). The effect of universal child benefits on labour supply. *Canadian Journal of Economics*, 48(2), 437–463. <https://doi.org/10.1111/caje.12132>
- Staatsblad 2005, 627 | Overheid.nl > Officiële bekendmakingen*. (2005, December 13). <https://zoek.officielebekendmakingen.nl/stb-2005-627.html>

Appendix

Table 1.

Descriptive Statistics

Sex	Observations	Average age	Year of first child average	Age at first child average	Gross income range	Gross income average	Hours average
Male	773	35.0	2015	34.2	600 - 5700	3061.0	36.9
Female	996	32.4	2016	32.4	110 – 550	2361.4	30.7

Note. Table 1 presents the descriptive statistics for males and females. The sample includes all first births between 2008 and 2023. The estimated statistics are the mean and range for different variables of interest.

Figure 1.

Age Distribution – Male

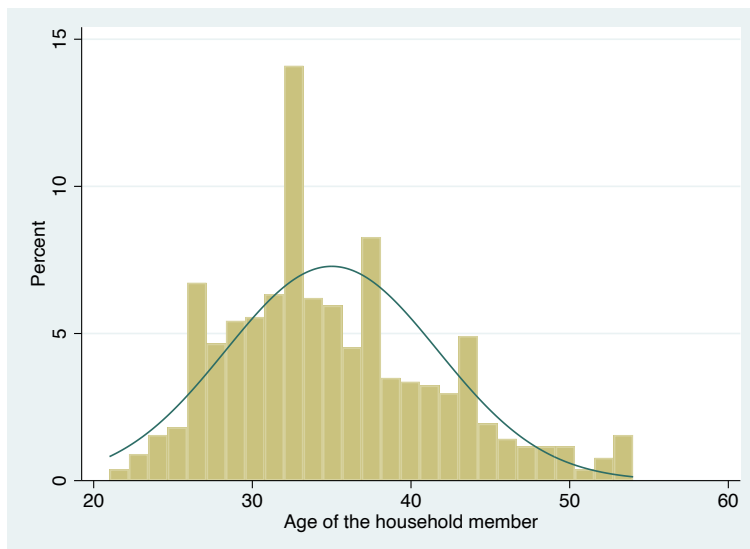


Figure 2.

Age Distribution – Female

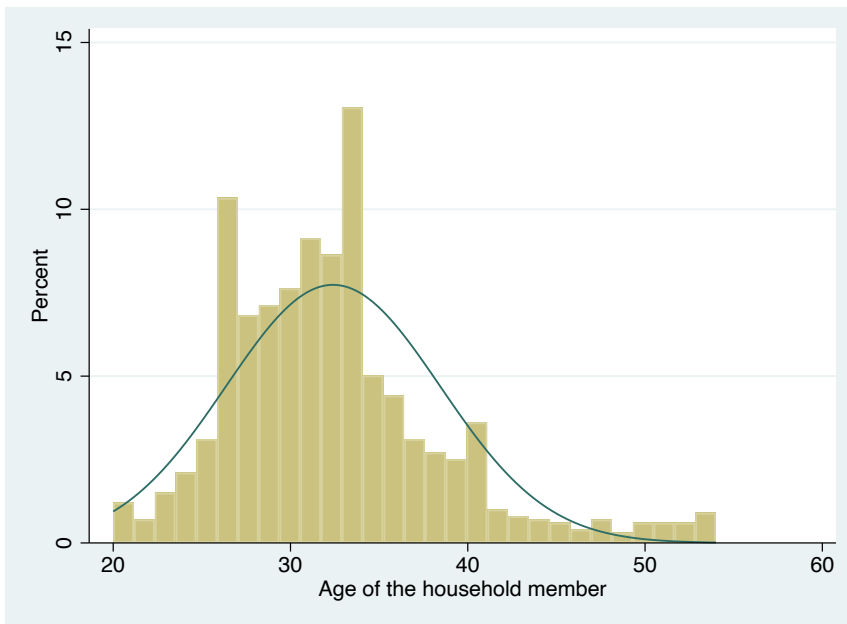


Figure 3.

Gross Income Distribution – Male

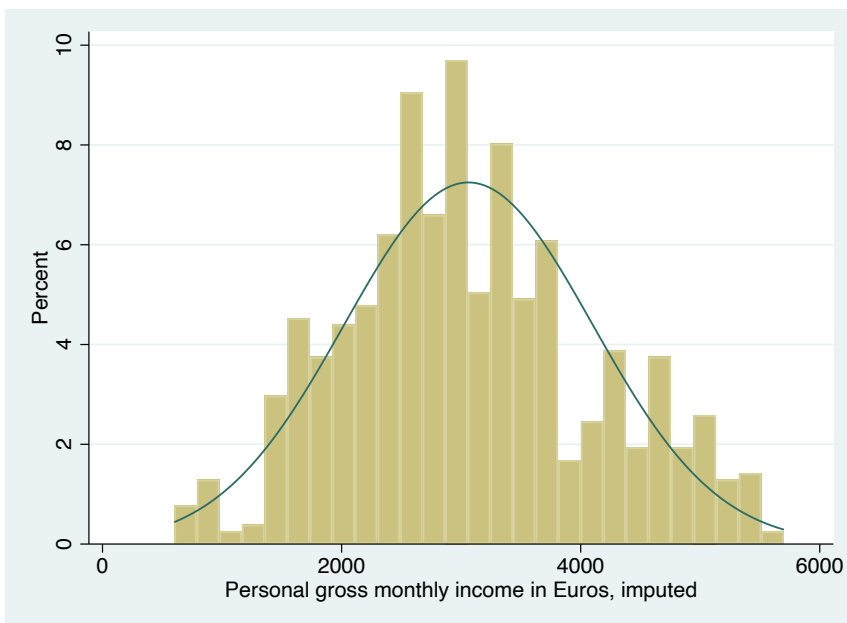


Figure 4.

Gross Income Distribution – Female

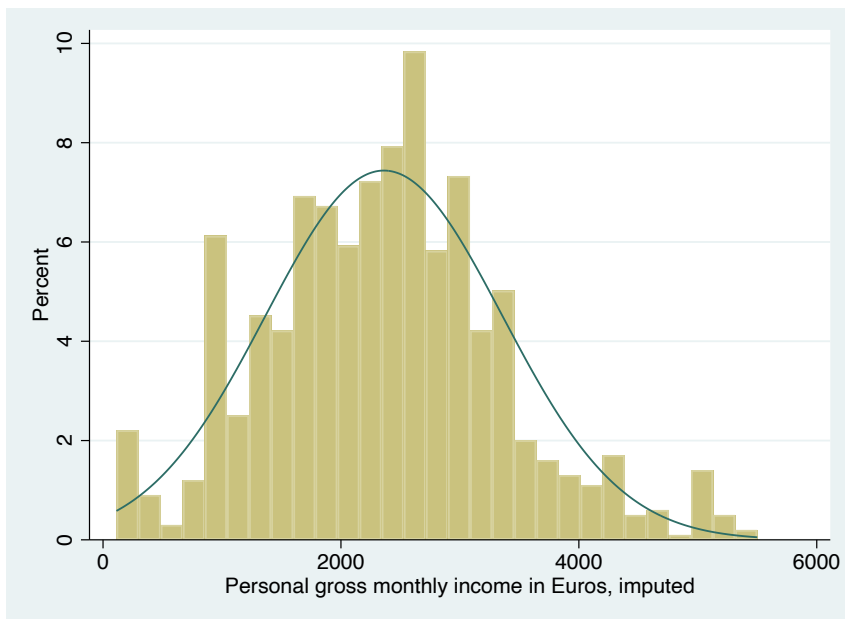


Figure 5.

Hours Distribution – Male

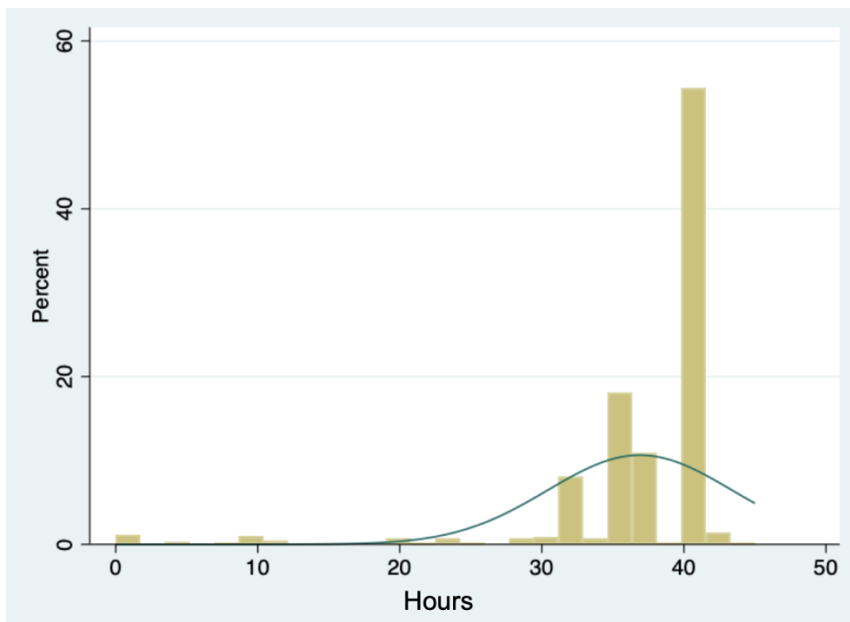


Figure 6.

Hours Distribution – Female

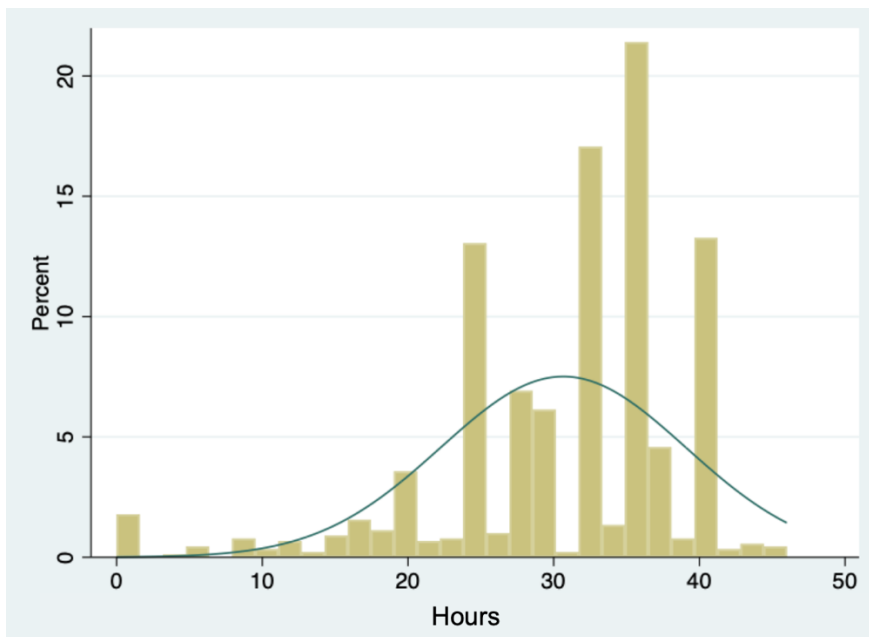


Figure 7.

Distribution of Education Level by Gender

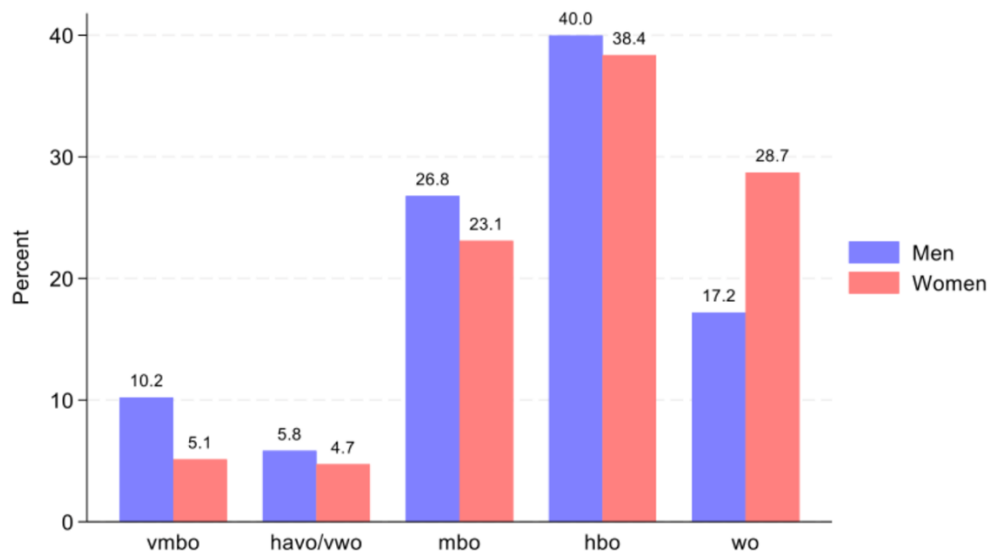


Figure 8.

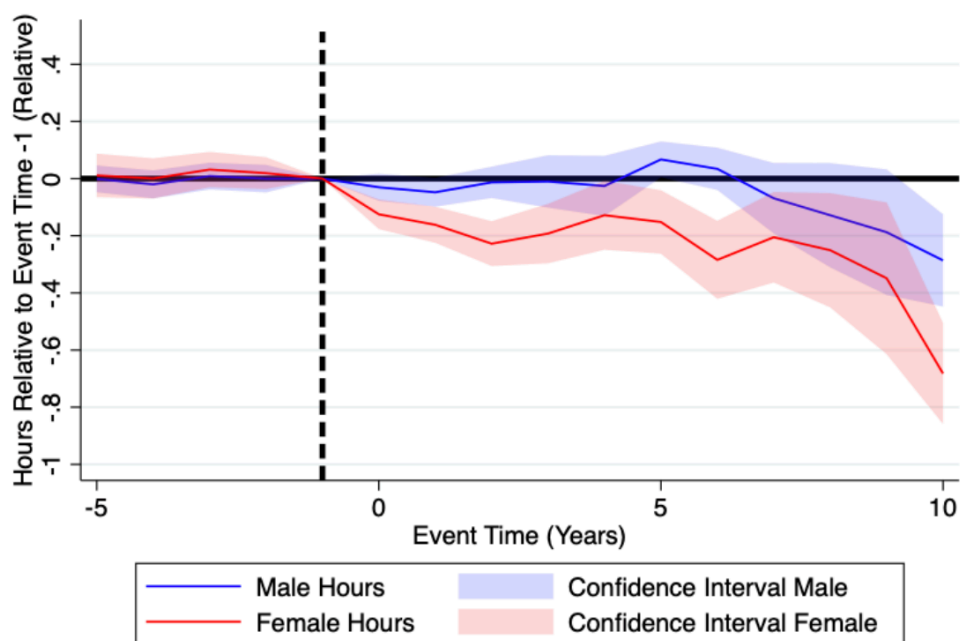
Earnings Around First Childbirth



Note. Figure 8 presents the estimated coefficients from equation (2) for males and females with monthly gross income as the dependent variable. The sample includes all first births between 2008 and 2023. The red and blue areas correspond to the 95 percent confidence intervals.

Figure 9.

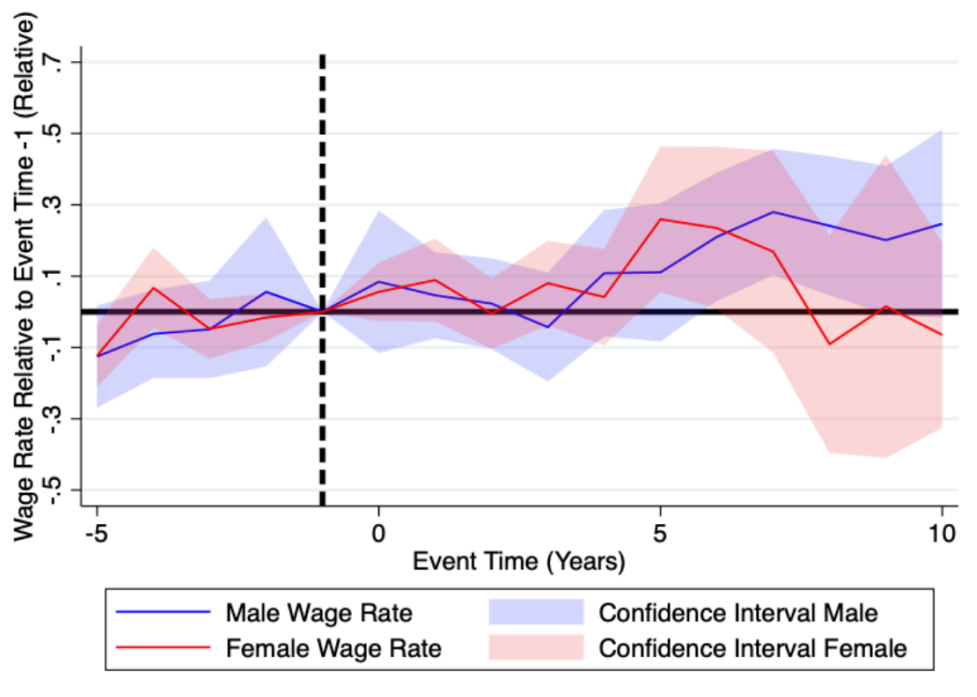
Hours around First Childbirth



Note. Figure 9 presents the estimated coefficients from equation (2) for males and females with working hours as the dependent variable. The sample includes all first births between 2008 and 2023. The red and blue areas correspond to the 95 percent confidence intervals.

Figure 10.

Wage Rate around First Childbirth



Note. Figure 10 presents the estimated coefficients from equation (2) for males and females with wage rate as the dependent variable. The sample includes all first births between 2008 and 2023. The red and blue areas correspond to the 95 percent confidence intervals.

Table 2.

Effect on Gross Income

Gross Income	(1) Male	(2) Female
Post birth	-101.081 (141.095)	-512.321*** (128.728)
Post 2013	-234.538 (145.368)	-259.721*** (126.936)
Post birth * Post 2013	275.949* (163.988)	259.790* (144.781)
Education	435.008 (31.082)	408.026*** (26.822)
Constant	64.736 (234.582)	-607.051** (252.916)
Observations	773	996
R-squared	.312	.311
Year FE	Yes	Yes
Age FE	Yes	Yes

Note. Table 2 presents the estimated coefficients from equation (2) for the males and females with monthly gross income as the dependent variable. The sample includes all first births between 2008 and 2023. Standard errors are in parentheses. Significance levels are indicated as follows: *** p<.01, **p<.05, *p<.1

Table 3.*Effect on Hours*

Hours	(1) Male	(2) Female
Post birth	-1.227 (1.099)	-7.221*** (1.221)
Post 2013	.805 (1.030)	-1.717 (1.123)
Post birth * Post 2013	.738 (1.222)	2.006 (1.332)
Education	.361* (.205)	2.432*** (.297)
Constant	9.772*** (2.177)	13.521** (6.729)
Observations	708	897
R-squared	.110	.243
Year FE	Yes	Yes
Age FE	Yes	Yes

Note. Table 3 presents the estimated coefficients from equation (2) for the males and females with hours as the dependent variable. The sample includes all first births between 2008 and 2023. Standard errors are in parentheses. Significance levels are indicated as follows: *** p<.01, **p<.05, *p<.1

Table 4.*Descriptive statistics Control- and Treatment Group*

Group	Observations	Average age	Year of first child average	Age at first child average	Gross income range	Gross income average	Hours average
Control	212	32.2	2011	31.4	150 - 4150	2209.6	29.9
Treatment	72	34.6	2013	34.7	878 – 5100	2457.1	29.4

Note. Table 4 presents the descriptive statistics for the control group and the treatment group. The sample includes all the first births of women before and in 2013. The estimated statistics are the mean and range for different variables of interest.

Figure 11.

Number of respondents in control group and treatment group

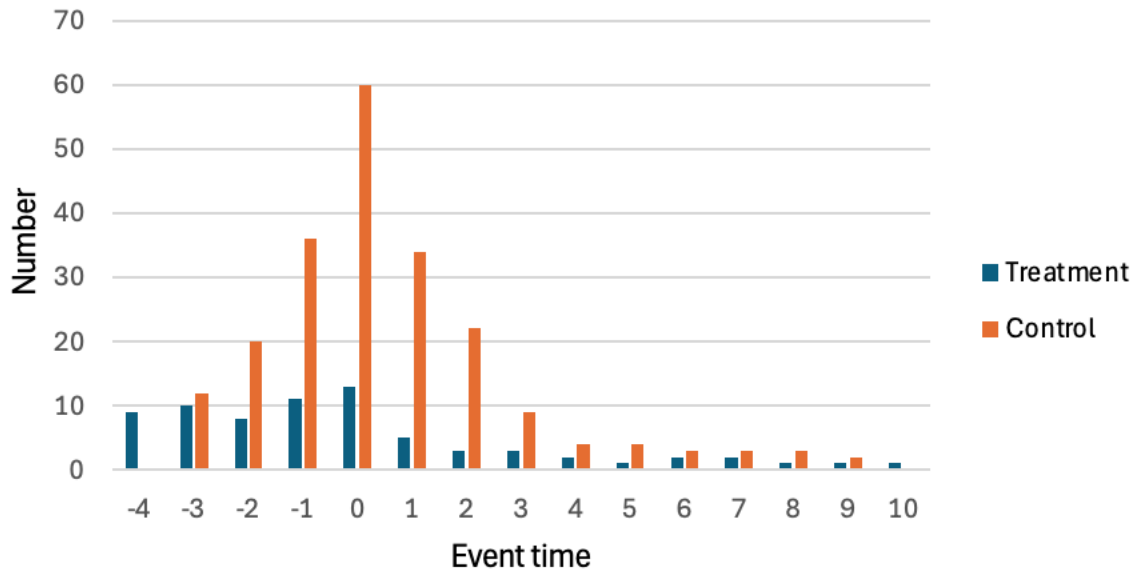


Figure 12.

Age Distribution – Control Group

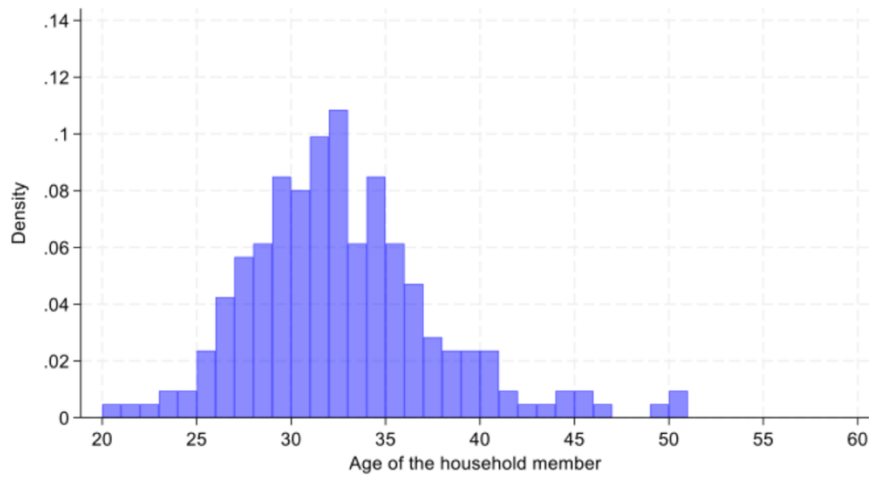


Figure 13.
Age Distribution – Treatment Group

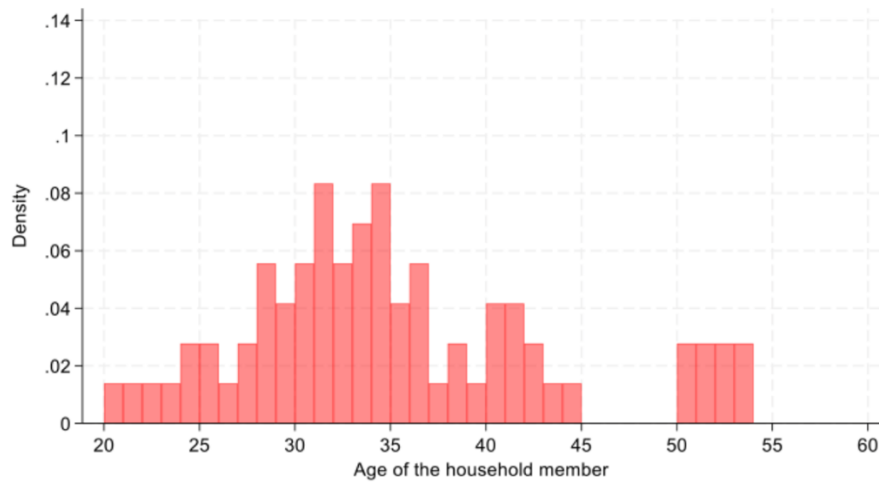


Figure 14.
Gross Income Distribution – Control Group

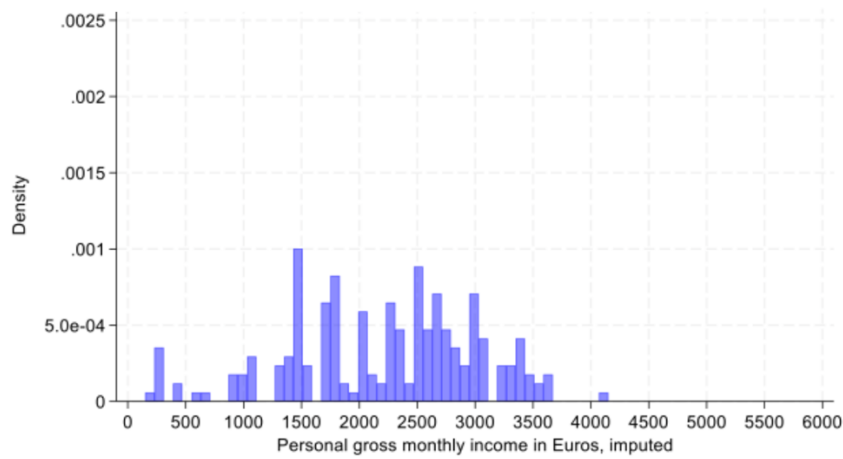


Figure 15.

Gross Income Distribution – Treatment Group

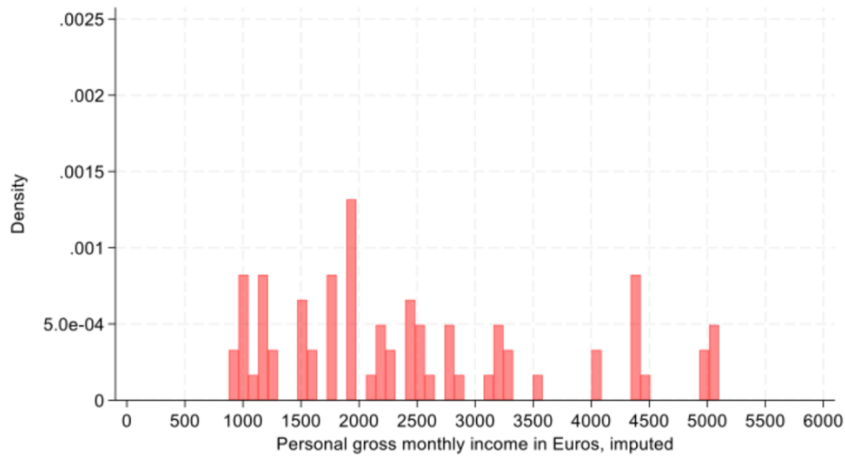


Figure 16.

Hours Distribution – Control Group

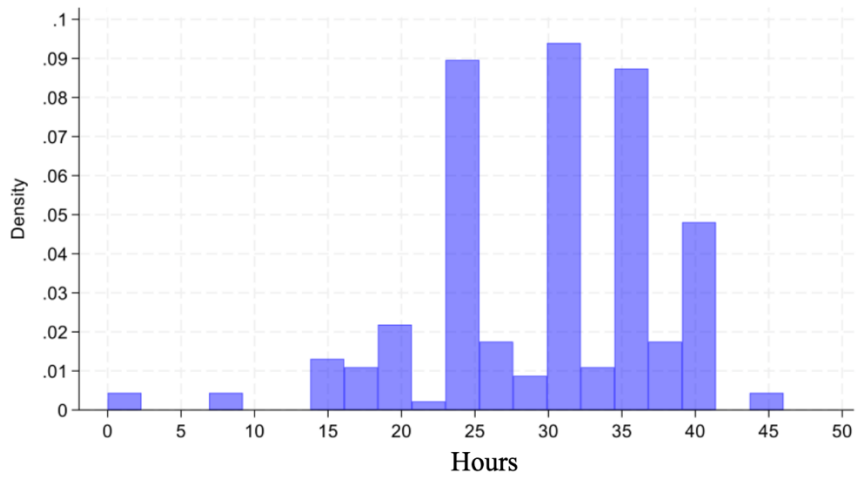


Figure 17.

Hours Distribution – Treatment Group

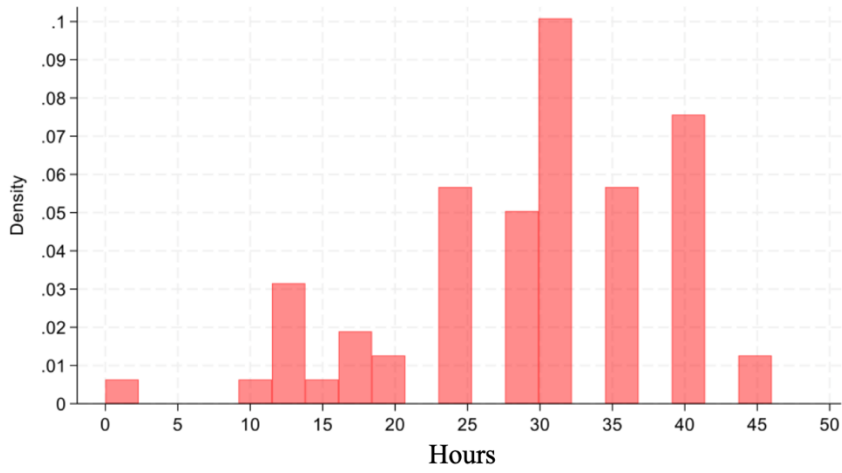


Figure 18.

Distribution of Education level by Group

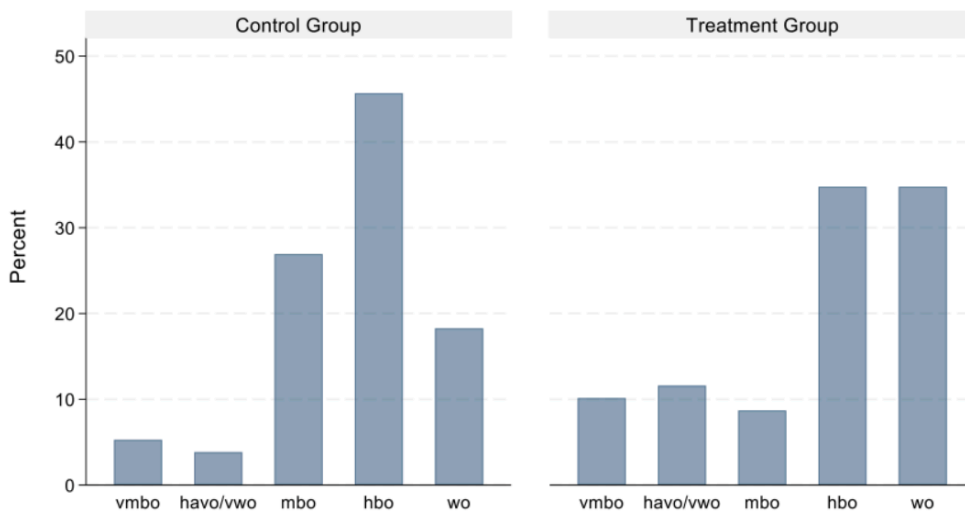
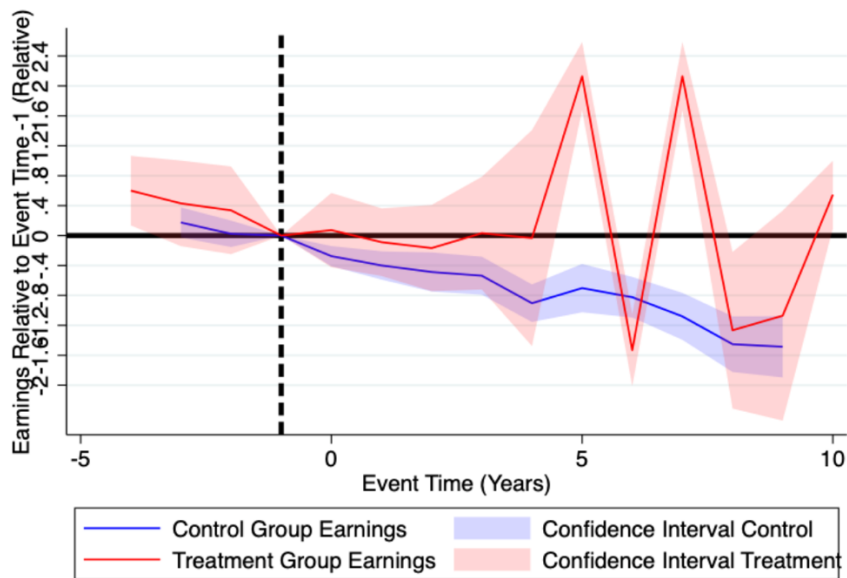


Figure 19.

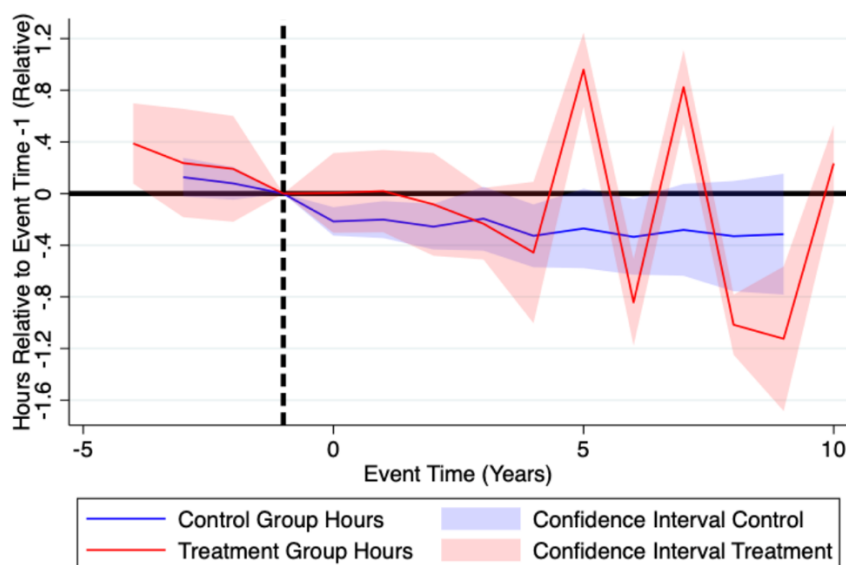
Gross Income around First Childbirth



Note. Figure 19 presents the estimated coefficients from equation (2) for the control group and the treatment group with the monthly gross income as the dependent variable. The sample includes all first births between 2008 and 2023. The red and blue areas correspond to the 95 percent confidence intervals.

Figure 20.

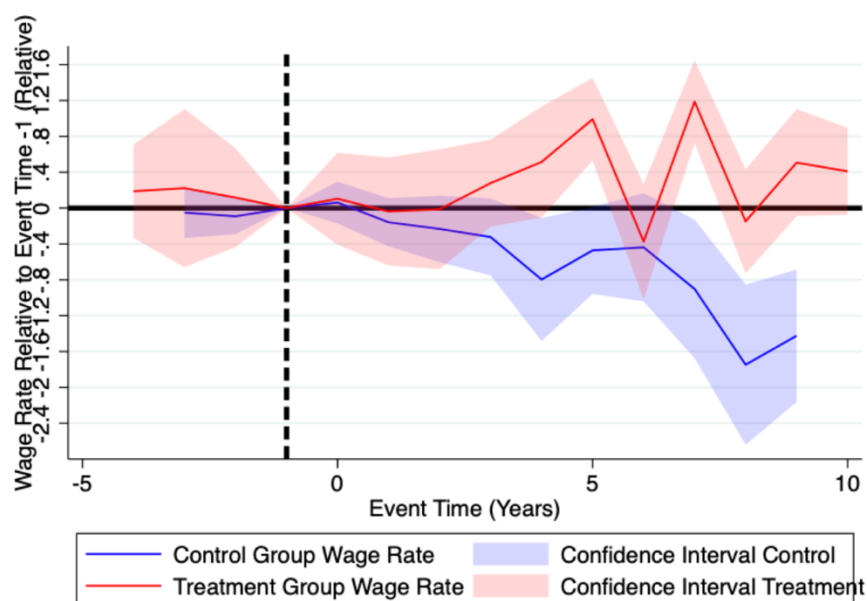
Hours around First Childbirth



Note. Figure 20 presents the estimated coefficients from equation (2) for the control group and the treatment group with the working hours as the dependent variable. The sample includes all first births between 2008 and 2023. The red and blue areas correspond to the 95 confidence intervals.

Figure 21.

Wage Rate around First Childbirth



Note. Figure 21 presents the estimated coefficients from equation (2) for the control group and the treatment group with wage rate as the dependent variable. The sample includes all first births between 2008 and 2023. The red and blue area correspond to the 95 percent confidence intervals.

A1. Variables used in dataset

nomem_encr	Number of household member encrypted
wave	Year and month of field work period
geslacht	Gender of respondent
aantalhh	Number of household members
aantalki	Number of living-at-home children
burgstat	Civil status
brutoink	Gross income in income
opmet	Highest level of education with diploma
brutoink_f	Personal gross monthly income in Euros, imputed
netinc	Net income in Euros
nettoink_f	Net income in Euros, imputed
herkomstgroep	Origin
age_respondent	Age respondent
children_total_alt	Total number of children
birth_year_1	Birthyear first child
birth_year_2	Birthyear second child
birth_year_3	Birthyear third child
birth_year_4	Birthyear fourth child
birth_year_5	Birthyear fifth child
birth_year_6	Birthyear sixth child
help_from_father	Help from grandfather taking care of children

help_from_mother	Help from grandmother taking care of children
childcare_toddler	Regular use of toddler playgroup
childcare_daycare	Regular use of daycare center
childcare_preschool	Regular use of preschool childcare
childcare_afterschool	Regular use of afterschool childcare
childcare_host_parent	Regular use of host parents
childcare_paid_sitter_out	Regular use of paid child sitter (outside)
childcare_paid_sitter_in	Regular use of paid child sitter (at home)
childcare_unpaid_sitter	Regular use of unpaid child sitter
childcare_other	Regular use of other childcare facilities
childcare_none	No use of childcare
childcare_hours	Number of hours childcare
childcare_cost	Total costs of childcare
childcare_supplement	Total subsidy received
childcare_supplement_ paid_work	Total subsidy received Paid work
work_status	Working status
contract_hours	Hours of work in contract
actual_hours	Actual hours of work
stop_reason	Reason why respondent stopped working
sector	Sector of work
year	Year of respondents' answer
leeftijd_child	Age first child
event_time	Relative years from birth first child