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WORKPLACE PRESENTEEISM, JOB SUBSTITUTABILITY AND GENDER INEQUALITY

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Workplace Presenteeism, Job Substitutability and Gender Inequality[a]

by

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Abstract

Following the arrival of the first child, women's absence rates soar and become less predictable. This fall in workplace presenteeism harms women's wages, especially in jobs with low substitutability. Although both presenteeism and job uniqueness are rewarded, we document that women's likelihood of holding jobs with low substitutability decreases relative to men's after childbearing. This gap persists, with important long-run wage implications. We highlight that the parenthood wage penalty for women could be reduced by organizing work so that more employees have tasks that can be performed satisfactorily by other employees in the workplace.

Keywords: work absence, job substitutability, gender wage inequality
JEL-codes: J16, J22

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1 Introduction

The way in which jobs and firms are structured is an important challenge for achieving gender equality in the labor market (Goldin, 2014). Despite a great deal of convergence in the gender wage and employment gaps over the last century, important long-run economic gaps persist between similarly trained and educated men and women. Recent research highlights the importance of parenthood on the emergence and persistence of gender inequality in the labor market (Ejrnæs and Kunze, 2013; Angelov et al., 2016; Adda et al., 2017; Kleven et al., 2019).

The diverging gender wage profiles after the arrival of the first child are often attributed to foregone investments in human capital because of the time out of the labor market (Altonji and Blank, 1999). Moreover, a strong switch into working part-time by women following the arrival of the first child can often imply a wage penalty (Manning and Petrongolo, 2008). Similarly, mothers avoiding jobs that are often well paid but require overtime or commuting time can also explain part of the gender wage gap that emerges after children join the household (Cortés and Pan, 2019; Le Barbanchon et al., 2019).

What has received less attention, however, is the importance of *unpredictable* (temporary) work absence – or conversely, the importance of "presenteeism" – in the workplace. While work absence due to parental leave and part-time employment, which are often prearranged, allow employers to anticipate the absence of a worker, absence due to own sick leave or leave to take care of sick children can be more complicated. Unpredictable absence due to own sick leave or leave to take care of sick children is often difficult for firms (and researchers) to measure but can, nonetheless, pose important problems for firms.

A firm's production loss caused by temporary work absence is likely to depend on the internal substitutability of workers, such that presenteeism and its related incentives is likely to be more important in some occupations or firms than in others (Hensvik and Rosenqvist, 2019). Production disruption and discontinuous drops in productivity are

likely to occur in "unique" jobs – i.e., if there are no, or few, close substitutes to the absent employee at the workplace. The lack of a substitute might be a feature of the firm, but it might also reflect the characteristics of a job. Whether a trait of an occupation or firm specific, the importance of presenteeism for a given position suggests that flexibility, such as the possibility of staying at home with a sick child, is more difficult to accommodate.

In this paper, we first document, using Swedish register data, that both presenteeism and job uniqueness, are highly rewarded in the labor market. Unique jobs are higher paying, more stable, have better wage trajectories, and, at the same time, they provide higher rewards for presenteeism. This continues to be so even after conditioning on occupation and workplace fixed effects. Next, we adopt an event study approach based on changes in within-couple gaps around the birth of the first child. We document the emergence of gender gaps in the probability of holding a unique job after the arrival of the first child, and its consequences for the gender wage gap. By examining changes in temporary absence (or, inversely, presenteeism) before and after the arrival of the first child, and connecting it to the premiums for holding a unique job, we highlight the importance of organizational structure on the dynamics of the gender wage gap.

The strong interaction between presenteeism and job uniqueness favors more men than women since, after childbearing, women's presence involves more uncertainty – due to a higher incidence of temporary work absence – and they are more likely to switch into (lower paying) non-unique jobs.[1] Compared with the period before the arrival of the first child, in the relatively short period after, parenthood reduces mothers' likelihood of holding unique jobs relative to fathers by approximately 3.5 percentage points. This effect grows over time. By approximately 15 years after the child's arrival, the parenthood effect is approximately 6 percentage points. We show that these parenthood effects on holding a unique job are not driven by differences in seniority (i.e., holding a managerial position) but instead reflect differences across occupations and firms. We connect the premiums

[1] We can measure changes in temporary absence before and after the arrival of the first child, separately identifying whether the absence is due to caring for a child or for oneself. Consistent with previous studies (Angelov et al. 2020; Boye 2015; Ichino et al. 2019), we show that women are more likely to experience an increase in both types of absence relative to men at the onset of childbearing.

for holding a unique job and being present at the workplace with the dynamics of the gender gap in holding a unique job, showing how highly consequential these premiums are for explaining the diverging wage paths of fathers and mothers. We show that unique jobs not only are higher paying but also offer a better wage trajectory and more stable employment.

We further find that the effect of parenthood on the gender gap in holding a unique job is much more (less) pronounced in occupations where the penalty for absence is higher (lower), suggesting gender differences in sorting into and out of jobs that compensate differentially on the basis of the required amount of presenteeism. Women who are initially in occupations where uniqueness is attractive (i.e., the uniqueness premium outweighs the penalty of high absence) are less likely to avoid unique positions after childbirth than women who are initially in occupations where uniqueness is unattractive in the event of high absence. Consequently, this implies a smaller gap in the presence in unique positions of fathers relative to mothers. Overall, the results highlight that sorting away from these jobs is likely to contribute to the persistent gender wage gap following the arrival of the first child.

Our study highlights that the internal organization of the firm can play an immensely important role on the gender gap instigated by parenthood. This is consistent with the theoretical framework outlined by Goldin (2014) in which jobs are characterized by their degree of temporal flexibility, where the term temporal flexibility captures how sensitive the productivity in the job is to – for instance – the number of hours worked, and, in particular, the potential to work part-time.[2] Our findings emphasize the importance of other dimensions, particularly the sensitivity of the productivity in a job to temporary unpredictable absence (or, alternatively, the importance of presenteeism). We focus on substitutability – namely, when one works in a position with few or no close substitutes

[2] Goldin (2014), Goldin and Katz (2016) and Bütikofer et al. (2018) present empirical evidence on the child wage penalty for college-educated women across majors, showing that mothers in professions with more nonlinear wage structures, such as law, have a larger penalty than those in professions with a more linear wage structure, such as pharmacy or medicine.

at the workplace and therefore with low temporal flexibility – allowing us to explore variation within as well as across occupations.

The findings of the paper underline an important policy implication. It is traditionally believed that increased time out of the labor market after childbearing generates a gender differential in human capital accumulation, which can be an important explanation for the gender wage gap that develops after childbearing (Angelov et al., 2016). In this case, policies aimed at more gender-equal divisions of childcare that reduce gaps in human capital accumulation (e.g., paternal quotas) can close the gender wage gap. Here, we highlight that the weight firms attach to presenteeism can be another important channel.

An interesting aspect of the recent crisis caused by the COVID-19 global pandemic is that it has – at least temporarily – decreased the presenteeism requirements of many jobs. There is a great deal of discussion on how this situation has affected the work-life-balance within the household, especially when combined with school closures (see Del Boca et al., 2020). Women seem to be more adversely affected than men because of an increase in household chores and caring for children but also because of larger employment losses for women than for men (see Alon et al, 2020). In the longer run, however, this crisis might actually help to reduce gender inequality.

As a response to the changes in the norms (and needs) of individuals working from home, many firms have invested a great deal in their internal reorganization to accommodate for working from home (Barrero et al, 2020). While this reorganization is likely to have come at a cost, by targeting the organizations' structure in such a way that tasks are performed in a satisfactory way from home, it can make it less costly for those holding a unique job to not be present in the workplace. By changing the infrastructure in such a way that it reduces the penalty for an unpredictable absence (because of say, caring for sick children), firms could, therefore, inadvertently, help to reduce the associated gender disparities it generates.

2 Context and data description

2.1 The Swedish context

From an international perspective, gender equality in the labor market is high in Sweden. The employment and labor force participation rates for women in Sweden are among the highest in the world, and there are relativity small employment differences between men and women. In 2017, the labor force participation rates for women and men aged 20–64 were 85% and 89%, respectively. The corresponding employment rates were 80% and 84%, respectively.[3] The individualized income taxation and generous public provision of childcare that started in the 1970s have arguably contributed to this situation (Selin, 2014). Following a sample of children born in 2004–2009, Hall and Lindahl (2018) report that 55% of the children attended formal childcare by 18 months of age. At three years of age, the corresponding number was 93%. Aspects of the parental leave system also give incentives for labor force participation before parenthood and between births. Since the parental leave benefits are proportional to foregone wages, women have strong incentives to have a high labor supply in the years immediately preceding parenthood.

Despite the high gender equality in the labor market in Sweden, however, there are still substantial and important differences. The raw gender wage gap (monthly full-time equivalent wages) in 2017 was 11.3%. Approximately half of the gap is closed when occupation, sector, education, age and contracted hours are taken into account (Swedish National Mediation Office, 2018), reflecting labor market segregation by gender, which is also common in other countries. Moreover, in 2017, the percentage of women aged 20–64 with full-time employment was only 57%, while the corresponding number for men was 74%. Thus, the prevalence of part-time work is much higher among women than among men.

With respect to absence, women are also much more likely to use parental insurance than men. In 2017, women took approximately 72% of the paid parental leave days and 62% of the paid *temporary* parental leave days –, i.e., days when the parents abstain from

[3] See Statistics Sweden, 2018.

work to care for sick children who would otherwise be in school or in daycare (more details are given in section 2.2). Women also account for approximately 65% of the paid sick leave days. Among women in the age group 30–49, many of whom have small children, the corresponding number is almost 70% (Statistics Sweden, 2018).

Overall, even though the extensive margin labor supply is relatively similar for men and women in Sweden, there are still substantial differences on the intensive margin, in particular during childbearing ages, and with respect to long-run labor market outcomes.

2.2 Parental leave rules in Sweden

In what follows, we will estimate the effect of parenthood on the probability of holding jobs that are more or less substitutable (Section 2.3.1 explains in further detail how substitutability is measured). It is therefore important to understand the parental insurance system in Sweden. Since 2002, parents who have a child are entitled to 480 paid parental leave days, paid by the Swedish Social Insurance Agency (SSIA). For 390 of these days, the parental benefits are related to the pre-birth labor income. The replacement rate is nearly 80% up to a cap.[4] The 390 days are divided into three parts: 60 days that only the mother can use, 60 days that only the father can use and 270 days that either of the parents can use.[5] For the remaining 90 days, the parental benefits are set at a fixed low level (180 SEK≈ 21 USD). None of these days are earmarked for the father or the mother. Over the period of our study, 480 days could be used before the child turned 8. Approximately 75% of these 480 paid parental leave days are used during the child's first two years (Hall and Lindahl, 2018). [6]

During the child's first 18 months, both the mother and father are allowed to be on full-time parental leave with job protection. The parents are free to choose how many paid parental leave days they want to take during this period. After 18 months, however,

[4] Currently, the maximum level of parental benefits per day is 989 SEK (≈ 117 USD). Parents who have very low prebirth labor income do not qualify for income-related parental benefits. Instead, they receive 390 days with a fixed level, which is currently 250 SEK (≈ 30 USD). Employees covered by certain collective agreements might also be entitled to supplementary parental benefits paid by the employer.

[5] For children born from January 1, 2016, the corresponding division is: 90, 90 and 210.

[6] In 2014, the limit was extended to the age of 12. However, with the new age limit, parents are only allowed to save a maximum of 20% of the 480 days after the child's fourth birthday.

the right to parental leave is conditional on taking out parental benefits for the days abstained from work to take care of the child.

Typically, both the mother and the father are employed full-time in the year preceding the birth of their first child (Angelov et al.,2020). The mother often goes on leave approximately one month before expected delivery and has some income during (at least parts of) this pre-birth leave period (via paid vacation days, paid sick leave days or paid parental leave days).[7] Immediately after the birth of the child, the father is entitled to 10 paid *temporary* parental leave days. These 10 days are not part of the 480 days discussed above. Approximately 75% of fathers use these 10 days and then return to full-time employment, while the mother stays at home with the child (SSIA 2019). Most mothers take full-time parental leave during the child's first 12 months. The mother takes out paid parental leave days corresponding to approximately 60% of this period (SSIA 2013). After 12 months, the mother returns to work, and the father goes on full-time parental leave. The typical father takes full-time parental leave for approximately 3–6 months (also using paid days for approximately 60% of the time). After this, the child starts attending subsidized daycare.[8] At this point, the mother typically makes at least some reduction in her working hours.[9] The typical total time on parental leave (both paid and unpaid) during the child's first two years is estimated to be 15.3 months for mothers and 3.8 months for fathers (SSIA 2013).

Once the child is in daycare and the parents are back in employment, the system of *temporary* parental leave days becomes relevant. When the child is too sick to be in daycare, the parents have the right to be on temporary parental leave from their job to care for their sick child (only one parent can be at home with the sick child). The parents can then claim temporary parental leave benefits from the SSIA to compensate for their foregone earnings. As in the "standard" parental leave system, the replacement rate is

[7] The mother can start taking out paid parental leave days 60 days before expected delivery. However, it is quite rare that mothers actually use these paid days before the birth of the child.
[8] The monthly cost of having one child in daycare is 3% of the household's pretax monthly income up to a cap. The maximum cost per month is currently (2019) 1 425 SEK (≈ 168 USD).
[9] The part-time incidence among working mothers (fathers) with young children is 34.6 (8.9) percent, according to Statistics Sweden.

approximately 80% up to a cap. Parents are entitled to 120 paid temporary parental leave days annually per child, and the days can be used until the child turns 12 years old. It has previously been shown that the average mother (father) is absent from work to care for a sick child for 5 (2.5) days per year during the first 10 years of the child's life (Boye 2015; Ichino et al. 2019).[10] In Figure A3, we show that the finding that women take more temporary parental leave than men also holds in our estimation sample.

2.3 Data and variable descriptions

Our analysis is conducted using Swedish register data covering (almost) the entire Swedish population between 1997–2013.[11] We primarily use three different data sources that we link on the individual level via personal identifiers. We briefly discuss the three data sources below.

2.3.1 Wages, hours, occupations and job substitutability

The basis of our analysis is the Wage and Salary Structure Data (WSSD), which contain information on monthly full-time equivalent wages, extent of the contract (in percent of full-time) and occupations (ISCO-88, 3-digit level), as well as worker and establishment identifiers. The data are collected by Statistics Sweden and cover a representative sample of establishments in the private sector (the data cover almost 50 percent of private sector workers) and all public establishments. The sample of private establishments is stratified by firm size and industry, where establishments within large firms are overrepresented.

Following Hensvik and Rosenqvist (2019), we define employee substitutability as the number of other workers within the same combination of establishment and occupation (ISCO-88, 3-digit level) in a given year.[12] For example, an office secretary at an establishment that employs five office secretaries will have four substitutes. We construct an indicator variable that takes the value 1 if the number of substitutes is 5 or less and 0

[10] The use of temporary leave to care for sick children peaks when the children are between 2 and 7 years old, which corresponds to the time when Swedish children attend childcare (Boye, 2015).
[11] In general, Swedish register data go back to 1985, but information on occupations (and, hence, uniqueness) is available from 1997, which is therefore our starting point.
[12] There are 107 different occupations in our data at the 3-digit level.

otherwise.[13]In what follows, we will use the terms unique (value 1) and non-unique (value 0) jobs to describe this distinction. This binary uniqueness variable, and particularly the within-couple difference in this variable, is the main outcome in our analysis. In Table A1, we show characteristics of the employees holding unique and non-unique jobs. Approximately 20% of all jobs can be described as unique jobs according to our definition. Employees in unique jobs are, on average, slightly older and more likely to be women than employees in nonunique jobs. Employees in unique jobs also work in more skilled professions and earn higher wages. They also receive less parental and sickness benefits, indicating lower absence.

2.3.2 Benefits from the social insurance system

Using data from the longitudinal database about education, income and employment (LOUISE), we can observe the amount of sickness absence benefits, parental benefits and temporary parental benefits received from the SSIA on a yearly basis. LOUISE data cover all individuals in Sweden aged 16–74 in a given year (16–65 before 2001).

Sweden has an obligatory, general and uniform sickness insurance system. Sickness absence benefits are income related, and the replacement rate is almost 80% of the labor income up to a cap. Employers pay benefits for the first 14 days of sick leave. Thereafter, the SSIA pays benefits. Individuals in the LOUISE data with a positive value on sickness absence benefits have had at least one spell of sickness absence longer than 14 days during the given year. Among the individuals who have not received sickness absence benefits from the SSIA, there is presumably still substantial variation in actual sickness absence. Some of these individuals have not been absent at all, while others might have had multiple short sickness absence spells (no longer than 14 days). The data do not allow us to observe this variation.

As explained in Section 2.2, Swedish parents with children aged 8 months–12 years can also receive temporary parental benefits when they abstain from work to care for sick

[13] We follow Hensvik and Rosenqvist (2019) in defining uniqueness as 5 or less substitutes. We complement the analysis, however, by looking also at the full distribution of the number of substitutes. This allows us to check the monotonicity of effect of uniqueness on the outcome of interest and to measure the change in coefficient as the number of substitutes increase.

children who would otherwise be in school or in daycare. The benefits are paid by the SSIA from day one. Thus, unlike the sickness absence benefits, the temporary parental benefits data also pick up short absence spells.

Note that since the benefits are income related, the amount received from the SSIA is a function of both the wage level and the extent of absence. Thus, for example, if men and women are absent to exactly the same extent, men will still receive more absence benefits, on average, since they tend to have higher wages than women.

2.3.3 Couples

We draw data on couples from a multigenerational register that covers all individuals in Sweden born in the period 1932–2017. This dataset contains the year and month of birth, gender and a personal identifier that can be linked to other registers. It also contains personal identifiers and birth year for the father and the mother (if they are known). We keep children born in the period 1999–2007, and we require that both the father and the mother are known. The period 1999–2007 is chosen because information on the occupation and thereby the job uniqueness of the parents is available between 1997 and 2013, and we must be able to observe the job uniqueness of the parents both before and after the birth of the child. We further require that the child is the first child for both the father and the mother. A mother and a father who have their first child together is defined as a couple in our data (as in Angelov et al. 2016). We make no further restrictions on the relationship status of the parents.

In our empirical model, we want to be able to control for the within-couple difference in job uniqueness two years before the arrival of the first child, and consequently, we further restrict our sample to couples where this difference can be defined, i.e., couples in which both the mother and the father are sampled in the WSSD two years before the arrival of the first child. The within-couple difference in job uniqueness is calculated as the father's value on the job uniqueness variable (1 if unique and 0 otherwise) minus the mother's corresponding value.[14] This leaves us with 51,729 unique couples. From these

[14] All within-couple differences defined in the paper are calculated the same way, i.e., the father's value on the relevant variable minus the mother's value.

couples, we construct a panel of within-couple differences in job uniqueness (and sickness absence) covering the calendar years 1997–2013. However, not all couples are observed each year since both the father and the mother must be sampled in the WSSD for a given year, i.e., it is an unbalanced panel. By taking the difference between the observation year and the birth year of the child, we can construct an event year variable. For example, if a couple is observed in 2003 and they had their first child in 1999, the event year variable will take the value 4 (2003-1999). In our main analysis, we keep observations where the event year variable takes values in the interval -4 to 14. We then create dummy variables for all event years and all calendar years. For all couples, we also have information on the age difference and the difference in years of schooling two years before the arrival of the first child.

Our final analysis data contain 360,510 observations and 51,729 unique couples. For each observation, we have the following information: the within-couple difference in job uniqueness (and sickness absence), the calendar year of the observation, the event year of the observation, a set of dummy variables for the calendar year of the observation, a set of dummy variables for the event year of the observation, the within-couple difference in job uniqueness (and sickness absence) two years before the birth of the first child, the within-couple difference in age and the within-couple difference in years of schooling two years before the arrival of the first child.

3 Job Uniqueness and Presenteeism

In this section, we show that unique jobs are the "good" jobs. They are better rewarded, have a steeper age profile of wages and entail a lower likelihood of unemployment. We then turn to the importance of presenteeism at the workplace, and its interaction with job uniqueness.

3.1 Unique Jobs: Wages and Trajectory

To estimate the returns to working in a unique job, we follow the procedure outlined by Goldin (2014) and Cortés and Pan (2019), who estimate the return to long hours in

different occupations. Specifically, we restrict the sample to male workers and estimate the following regression:

$$\ln(wage)_{itfo} = \alpha + \beta U_{itfo} + \gamma X_{itfo} + \delta_t + \delta_f + \delta_o + \delta_{o*f} + \varepsilon_{itfo} \qquad (1)$$

where the outcome is the monthly wage of individual *i* in year *t* in occupation *o* at firm *f*. *U* is a dummy variable indicating whether the individual holds a unique job (i.e., takes the value 1 if the number of substitutes is less than or equal to 5, and 0 otherwise. See section 2.3.1 for more details). *X* is a vector of controls that includes a quadratic in age, years of education and the number of children living at home. We also include year, occupation and firm fixed effects, as well the interactions between workplace and occupation fixed effects The standard errors are clustered at the firm level. β reflects the return to holding a unique job.

In column (1) of Table 1, we present the baseline difference in the log wage between employees in unique and non-unique jobs. There is a strong and positive association between wages and holding a unique job. In column (2), we include both workplace fixed effects and occupation fixed effects, resulting in a much lower, but still significantly positive, association between job uniqueness and wages. In columns (3) and (6), we include individual characteristics and the interaction between workplace and occupation fixed effects, respectively, which only marginally reduces the estimate. Overall, we see that holding a unique job is associated with around a two-percentage point higher wage. In Appendix Figure A1, when we look at different definitions of uniqueness (i.e., from 0 substitutes to 50), we see that the effect is monotonically decreasing. When there are no other substitutes the associated wage premium is around five percentage points. After around 10 substitutes the effect is smaller and flatter, until becoming very small and insignificant when the number of substitutes is larger than 25.

The results highlight that the low substitutability of a job is strongly linked to the occupation. However, unique jobs are not only characterized by certain occupations, suggesting that for a given occupation, across firms, there exist different degrees of uniqueness.

Table 1 The association between job substitutability and wage - private sector male employees

Column:	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Outcome:	**Log of wage**	**Log of wage**	**Log of wage**	**Log of wage**	**Log of wage**	**Log of wage**
Unique Job	0.080***	0.031***	0.023***	0.020***	0.025***	0.023***
	(0.007)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Year FE	No	Yes	Yes	Yes	N/A	N/A
Workplace FE	No	Yes	Yes	N/A	N/A	Yes
Occupation FE	No	Yes	Yes	N/A	Yes	N/A
Covariates	No	No	Yes	Yes	Yes	Yes
Wplace×Occupation FE	No	No	No	Yes	No	No
Wplace×Year FE	No	No	No	No	Yes	No
Occupation×Year FE	No	No	No	No	No	Yes
Observations	9,962,029	9,962,029	9,940,002	9,940,002	9,940,002	9,940,002

Notes: Standard errors clustered on workplace in parentheses. Covariates include years of education, age, age squared and number of children living at home. The period is 1997–2013. The outcome is the log of the full-time equivalent monthly wage. The independent variable is an indicator of having less than or equal to 5 coworkers in the same occupation. There are 17 year fixed effects, 84,537 workplace fixed effects and 113 occupation fixed effects. Estimations are performed on private sector male employees. Asterisks indicate that the estimates are significantly different from zero at the ***1% level, **5% level, and *10% level.

In Table 2, we show the importance of uniqueness in other aspects of the labor market. Columns (1) and (2) show that the probability of unemployment is lower in unique jobs. In particular, employees who hold unique positions are more likely to remain employed in the future, suggesting that these are stable, high-quality jobs. The effects are fairly large, reducing the non-employment rate by approximately 0.3 percentage points from a baseline non-employment rate of 3.4%. In columns (3) and (4), we shows that unique jobs have a steeper age profile of wages than non-unique jobs, as indicated by the positive interaction between age and job uniqueness.

Table 2 Uniqueness and Other Aspects of the Labor Market – private sector male employees

Column:	**(1)**	**(2)**	**(3)**	**(4)**
Outcome:	**1**[empl. t+1]	**1**[empl. t+1]	**Log of wage**	**Log of wage**
Unique Job	0.002***	0.003***	-0.299***	-0.114***
	(0.001)	(0.000)	(0.027)	(0.011)
Age			0.046***	0.019***
			(0.002)	(0.000)
Age^2			-0.000***	-0.000***
			(0.000)	(0.000)
Age × Unique Job			0.014***	0.005***
			(0.002)	(0.001)
Age^2 × Unique Job			-0.000***	-0.000***
			(0.000)	(0.000)
Year FE	No	Yes	No	Yes
Workplace FE	No	Yes	No	Yes
Occupation FE	No	Yes	No	Yes
Covariates	No	Yes	No	Yes
Observations	9,962,029	9,940,002	9,962,029	9,940,002

Notes: Standard errors clustered on workplace in parentheses. Covariates include years of education and number of children living at home. The period is 1997–2013. The outcome is the log of the full-time equivalent monthly wage. **1**[substitutes<6] is an indicator for having less than or equal to 5 coworkers in the same occupation. There are 17 year fixed effects, 84,537 workplace fixed effects and 113 occupation fixed effects. Estimations are performed on private sector male employees. Asterisks indicate that the estimates are significantly different from zero at the ***1% level, **5% level, and *1

3.2 Unique Jobs and Presenteeism

We have shown that job uniqueness does not simply capture occupation, firm or other characteristics. We now look more closely at job uniqueness and, in particular, how it interacts with presenteeism at the workplace (or, conversely, the importance of unpredictable (temporary) work absence).

A firm's production loss caused by temporary work absence is likely to depend on the internal substitutability of workers. Presenteeism, therefore, can be important since "flexibility", such as caring for sick children, becomes difficult to accommodate when there is no suitable substitute in the workplace. In Table 4, we estimate the relationship

between absences due to own sickness and wages in the male sample, following a similar estimation strategy to Equation (1).

In columns (1) and (2) of Table 3, we present the baseline specification and then include the year, workplace, occupation fixed effects, and covariates, respectively. Throughout, those who have taken sick leave for themselves in the last year have significantly lower wages.

Table 3 The association between absence due to sick leave (own or child) and wage – private sector male employees

Column:	**(1)**	**(2)**	**(3)**	**(4)**
Outcome:	**Log of wage**	**Log of wage**	**Log of wage**	**Log of wage**
Own Sickness Benefit (‘0000SEK)	-0.014***	-0.004***		
	(0.000)	(0.000)		
Temp. Parental Benefit (‘0000SEK)			-0.065***	-0.031***
			(0.003)	(0.001)
Year FE	No	Yes	No	Yes
Workplace FE	No	Yes	No	Yes
Occupation FE	No	Yes	No	Yes
Covariates	No	Yes	No	Yes
Observations	9,962,029	9,940,002	2,623,040	2,617,129

Notes: Standard errors clustered on workplace in parentheses. Covariates include years of education, age, age squared and number of children living at home. The period is 1997–2013. The outcome is the log of the full-time equivalent monthly wage. In columns (1) and (2), the independent variable is the amount of sickness benefits received by the SSIA. The sickness benefits replace foregone earnings due to absence caused by own sickness. The amount has been divided by 10,000. There are 17 year fixed effects, 84,537 workplace fixed effects and 113 occupation fixed effects. Estimations are performed on private sector male employees. In columns (3) and (4), the temporary parental benefits replace foregone earnings due to absence caused by child sickness (caring for children who are too sick to be in daycare or in school). The SSIA pays out benefits from day. The amount has been divided by 10,000. There are 17 year fixed effects, 62,394 workplace fixed effects and 113 occupation fixed effects. Estimations are performed on private sector male employees with children aged 0–10. Asterisks indicate that the estimates are significantly different from zero at the ***1% level, **5% level, and *10% level.

It is, of course, possible that individuals who have taken sick leave for themselves have lower productivity than other employees as a direct consequence of their health problems. In this case, the estimates in Table 3 capture this relation rather than a wage penalty of absence. In columns (3) and (4), we instead look *directly* at the association between absence due to sick children and wages. Since parents are entitled to sickness benefits for

foregone earnings due to absence caused by a child's sickness, we can separately measure absence due to caring for a sick child.[15] We show that there is a strong negative relationship between absence and wages, suggesting that there is a penalty in the association.

In Table 4, we investigate whether the negative relation between absence due to sick children and wages is more pronounced in jobs with low substitutability. This is indeed the case, as indicated by the negative interaction between the absence measure and the uniqueness dummy (in columns (3) and (4)). Moreover, as previously shown in Hensvik and Rosenqvist (2019), employees with few close substitutes at the workplace have significantly lower absence rates than other employees (here shown in Table A2), further strengthening the notion that absence is more heavily penalized in jobs with low substitutability.

Table 4 Interaction model: absence due to child sickness and uniqueness – private sector male employees

Column:	**(1)**	**(1)**	**(3)**	**(4)**
Outcome:	**Log of wage**	**Log of wage**	**Log of wage**	**Log of wage**
TPB ('0000SEK)	-0.065***	-0.031***	-0.057***	-0.030***
	(0.003)	(0.001)	(0.004)	(0.001)
Unique Job			0.065***	0.031***
			(0.010)	(0.002)
TPB×			-0.044***	-0.015***
Unique Job			(0.005)	(0.002)
Year FE	No	No	No	Yes
Workplace FE	No	No	No	Yes
Occupation FE	No	No	No	Yes
Covariates	No	No	No	Yes
Observations	2,623,040	2,617,129	2,623,040	2,617,129

[15] This analysis is restricted to employees with children aged 0–10 since it is for this age band that parents are entitled to take leave to care for sick children.

Notes: Standard errors clustered on workplace in parentheses. Covariates include years of education, age, age squared and number of children living at home. The period is 1997–2013. The outcome is the log of the full-time equivalent monthly wage. There are two independent variables and an interaction term. Unique Job is an indicator for having less than or equal to 5 coworkers in the same occupation. TPB/10000 is the amount of temporary parental benefits received from the SSIA divided by 10,000. The temporary parental benefits replace foregone earnings due to absence caused by child sickness (caring for children who are too sick to be in daycare or in school). The SSIA pays out benefits from day 1. There are 17 year fixed effects, 62,394 workplace fixed effects and 113 occupation fixed effects. Estimations are performed on private sector male employees with children aged 0–10. Asterisks indicate that the estimates are significantly different from zero at the ***1% level, **5% level, and *10% level.

4 Effect of Parenthood on Job Uniqueness

To explore changes in the probability of holding a unique job, we adopt an event study approach based on changes around the birth of the first child for a mother relative to a father. This event study methodology closely follows Angelov et al. (2016), who compare the income and wage trajectories of women to those of their male partners before and after parenthood.

We follow couples (indexed by *i*) before and after the arrival of the first child (indexed by *t*). We study couples who have their first child over the period 1999 to 2007, following them until 2013 (calendar years are indexed by *c*). In the regression analysis, we restrict the sample to couples in which both the mother and the father are observed in the WSSD two years before birth so that we can compute the within-couple gap in job uniqueness at t=-2 (51,729 couples). Both the father and the mother must be observed in the WSSD at a certain event time for the within-couple gap in job uniqueness to be defined at that event time. [16]

The empirical model is specified below:

$$\tilde{y}_{tci} = \alpha + \sum_{j=-4, j\neq -1}^{14} \alpha_j \mathbf{1}[t=j] + \sum_{k=1998}^{2013} \psi_k \mathbf{1}[c=k] + \theta_0 \tilde{y}_{(-2)ci} + \boldsymbol{x}'_{(-2)i}\boldsymbol{\beta} + u_{tci} \qquad (2)$$

The outcome is the within-couple gap in job uniqueness (father-mother) at a particular event time (*t*), which ranges from four years before birth to fourteen years after birth. The

[16] As discussed in section 2.3.1, the WSSD cover all employees in the public sector but only 50% of the employees in the private sector (a representative sample). For a couple to be observed at a certain event time, both the mother and the father must be working at that time, and conditional on working, they must both be sampled. This implies an unbalanced panel of couples (as in Angelov et al. 2016).

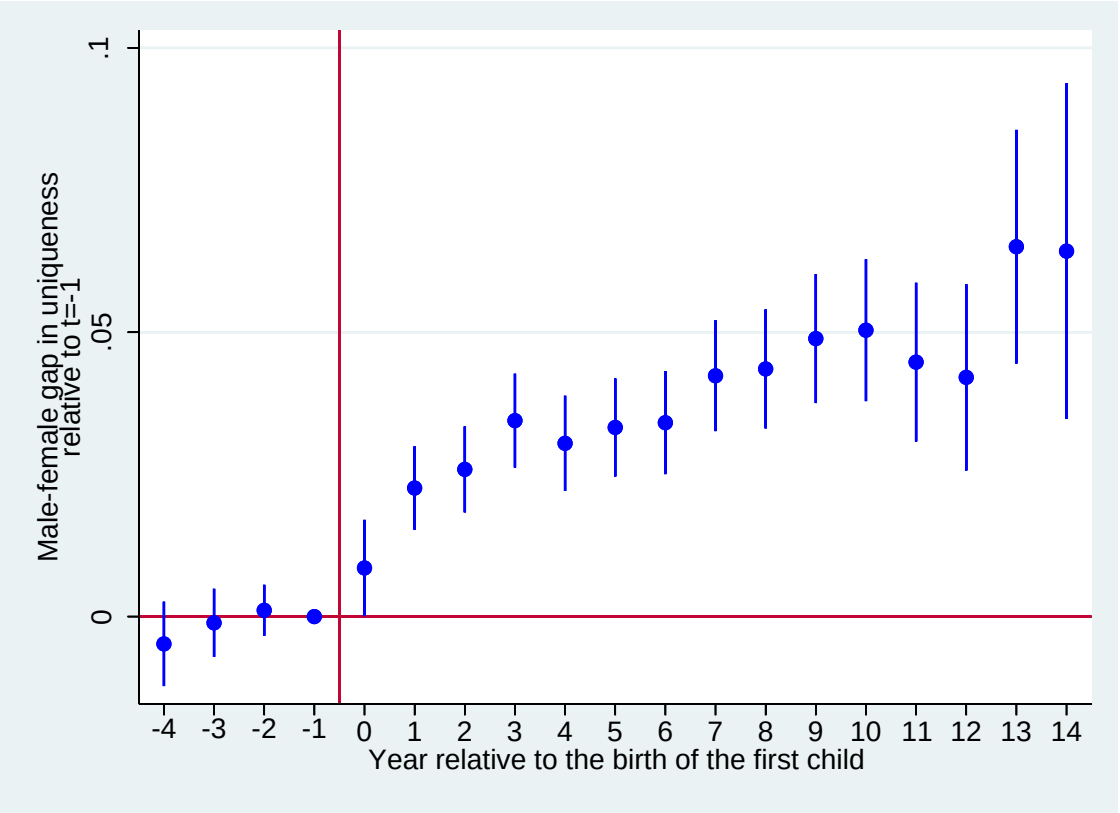
outcome is explained by event time dummies (where t=-1 is the omitted category), calendar year dummies (where c=1997 is the omitted category), the within-couple gap in job uniqueness at t=-2 (the lagged y-variable), the within-couple differences in age and pre-birth years of education (x variables) and an error term. We are interested in the coefficients on the event time dummies (α_j), which, conditional on the model, identify the effect of parenthood on the change in the within-couple gap in job uniqueness relative to the prebirth difference.

4.1 Effect of Parenthood on Job Uniqueness

Figure 1 plots estimates of α_j in Equation (2) when the model is estimated on our baseline sample of couples, showing that the pre-birth event time dummies are generally small and non-significant. The coefficients on the post-birth event time dummies, on the other hand, are significantly positive and large, as well as persistent. The results for the baseline sample clearly show that men have an increased likelihood of holding jobs with few substitutes relative to women after the arrival of the first child. Three years after childbirth, the within-couple gap in job uniqueness has increased by 3.4 percentage points relative to the pre-birth difference. In the long run, this parenthood effect increases and persists, with long-run parenthood effects of approximately 5 to 6 percentage points. The estimates are reported in Table A3.[17]

[17] We complement this analysis by looking at a more continuous measure of uniqueness. In Figure A2, we plot the within-couple gap in the adjusted number of substitutes (father-mother) at a particular event time, which ranges from four years before birth to fourteen years after birth. We see very similar patterns as using the job uniqueness dummy. Following the arrival of the first child, there is a sharp and significant drop in the relative number of substitutes for fathers than mothers. This gap continues to grow for some years after the arrival of the first child.

Figure 1 Effect of parenthood on the within-couple gap in uniqueness: baseline sample



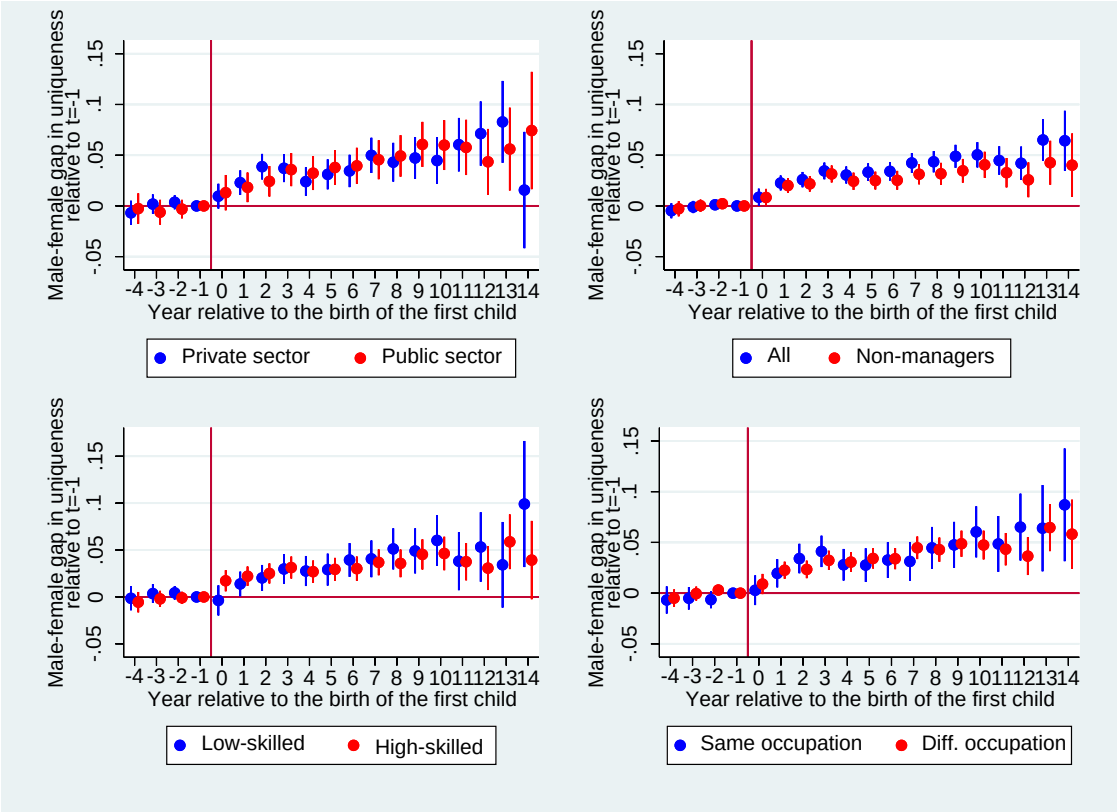
Notes: The figure shows estimates of α_j in Equation (2), together with 95% confidence intervals, for the baseline estimation sample. In Equation (2), the outcome is the within-couple gap in uniqueness (father-mother) at a particular event time, which ranges from four years before birth to fourteen years after birth. Uniqueness is defined as having less than or equal to 5 coworkers in the same occupation. Uniqueness can be observed between 1997–2013. The outcome is explained by event time dummies (where t=-1 is the omitted category), calendar year dummies (where c=1997 is the omitted category), the within-couple gap in uniqueness at t=-2, the within-couple differences in age and prebirth years of education and an error term. The coefficients on the event time dummies (α_j) identify the effect of parenthood on the change in the within-couple gap in uniqueness relative to the prebirth difference. In the baseline estimation sample, we include all couples with nonmissing values on the within-couple gap in uniqueness two years before the birth who had their first child over the period 1999 to 2007 (51,729 unique couples). The number of observations in the baseline estimation is 360,510.

4.2 Job Uniqueness and Seniority

Could holding a unique job simply reflect holding a more senior (or managerial) position? This could be the case, especially in later years, and could, therefore, reflect the gender gap in holding a manager position. In Figure 2, we show that when excluding managers, while the effects are smaller than those in the baseline model, sizeable effects are still present.

Importantly, we also show that the baseline results are robust to restricting the sample to couples in which the mother and the father worked in the *same* occupation two years before birth, suggesting that the baseline results are not driven by men and women working in different pre-birth occupations with potentially different time profiles with respect to job uniqueness. Figure 2 further shows that the estimates remain similar when we restrict the analysis to couples working in the private sector or in the public sector, as well as in low versus high-skilled jobs, suggesting no difference in the gender gap when in one sector or the other.[18] The estimates are reported in Table A3.

Figure 2 Effect of parenthood on the within-couple gap in uniqueness: other samples



[18] In our baseline sample, because of the nature of the WSSD data, couples where both the mother and the father are working long-term in the public sector are overrepresented, which could pose a challenge for the representativeness of our main results. The similarity of the results for the private and public sector in Figure 2, however, reduces this concern. We have also estimated Equation (2) replacing the within-couple difference in job uniqueness with the within-couple difference in income. Since income, unlike job uniqueness, is available for the entire population each year, we can compare the results on income in our baseline sample with the results on income in a wider and more general sample. It turns out that the results on income are generally similar in the two samples, further supporting the representativeness of our main results. There are, however, some differences in the very long run (t=12, 13 and 14), which suggests some caution when interpreting the results that are identified from a relatively small set of couples.

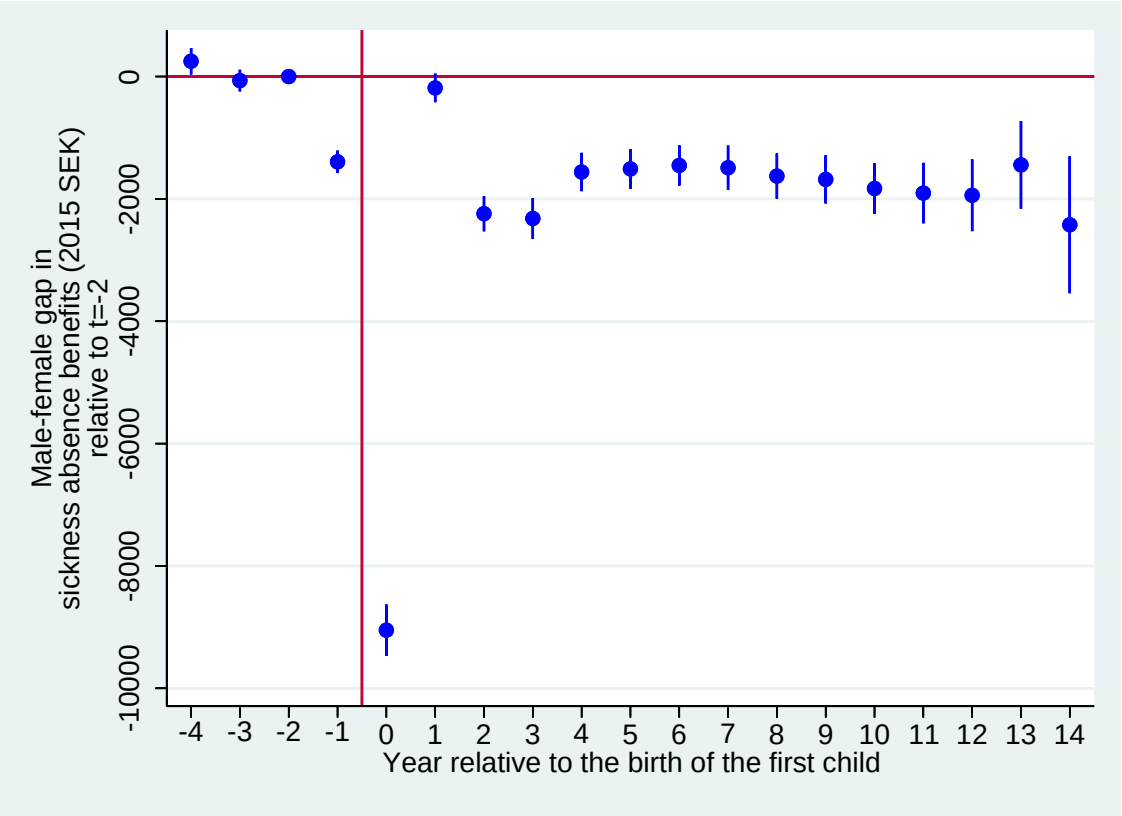
Notes: See note in Figure 1. In the "private sector" estimation sample, we restrict the analysis to jobs in the private sector. The "private sector" estimation sample includes 105,033 observations (17,997 unique couples). In the "public sector" estimation sample, we restrict the analysis to jobs in the public sector. The "public sector" estimation sample includes 91,386 observations (12,372 unique couples). In the "no managers" estimation sample, we drop observations where either the father or the mother holds a managerial position. The "no managers" estimation sample includes 319,830 observations (48,899 unique couples). In the "low-skilled" estimation sample, we restrict the analysis to jobs in low-skilled occupations. The "low-skilled" estimation sample includes 67,398 observations (13,992 unique couples). In the "high-skilled" estimation sample, we restrict the analysis to jobs in high-skilled occupations. The "high-skilled" estimation sample includes 171,944 observations (23,563 unique couples). In the "same occupation" estimation sample, we keep couples in which the mother and the father worked in the same occupation two years before birth. The "same occupation" estimation sample includes 65,764 observations (8,549 unique couples). In the "different occupation" estimation sample, we keep couples in which the mother and the father worked in different occupations two years before birth. The "different occupation" estimation sample includes 294,746 observations (43,180 unique couples).

4.3 Within-couple gap in sickness absence

When linking the analysis around presenteeism to the gender gap in holding a unique job following the birth of the first child, it is quite likely that the certainty around being present at the workplace might be altered by the presence of children. Unlike periods of maternity leave and lower (predicted) labor supply (e.g., working part-time), temporary absence, often due to sickness, is difficult to measure or account for – especially if the absence is related to caring for sick children.

In Figure 3, we plot α_j coefficients from Equation (2) when we have replaced the within-couple gap in job uniqueness as the outcome with the within-couple gap in sick leave benefits. As also discussed by Angelov et al. (2020), following the arrival of the first child, mothers substantially increase their sick leave compared with fathers. Since we define the within-couple gap in sick leave benefits as the father's benefits minus the mother's benefits, the increase for women here shows up as negative parenthood effects on the within-couple gap. The strongest effects are in the first three years after the birth of the child, but there is still a strong persistence in the parenthood effect, which continues even when the child is older. The small drop at t=-1 and the large drop at t=0 reflect pregnancy-related sickness absence. The effect close to zero at t=1 reflects that most women are on parental leave at this point, making them less likely to use the sickness insurance system. In Figure A3, we further show that men are much less likely than women to be temporarily absent due to caring for sick children. This result is consistent with the findings of Boye (2015) and Ichino et al. (2019).

Figure 3 Effect of parenthood on the within-couple gap in sickness absence



Notes: The figure shows estimates of α_j in Equation (2), together with 95% confidence intervals, for the baseline estimation sample. The outcome is the within-couple gap in sickness absence benefits from the SSIA (in 2015 SEK) at a particular event time, which ranges from four years before birth to fourteen years after birth. The sickness benefits replace foregone earnings due to absence caused by own sickness. The outcome is explained by event time dummies (where t=-2 is the omitted category), calendar year dummies (where c=1997 is the omitted category), the within-couple gap in sickness absence benefits at t=-2, the within-couple differences in age and prebirth years of education and an error term. t=-2 rather than t=-1 is the omitted category since a substantial fraction of the women are pregnant during at least part of the year immediately preceding the birth year and are thereby at risk for pregnancy-related sickness absence. Therefore, t=-1 is a bad choice of a baseline year. The coefficients on the event time dummies (α_j) identify the effect of parenthood on the change in the within-couple gap in sickness absence benefits relative to the difference at t=-2. The number of observations is 360,510 (51,729 unique couples).

4.4 Role of absence-sensitivity of prebirth job

If women avoid jobs with few substitutes after the arrival of the first child because they would otherwise incur severe absence-related wage cuts, we would expect more pronounced effects of parenthood in occupations where jobs with few substitutes are

particularly sensitive to absence. In this section, we investigate the relevance of this hypothesis.

Jobs with low substitutability appear to have a wage premium (Table 1), but at the same time, absence is more heavily penalized in such jobs (Table 6). Employees who anticipate a high absence rate must reflect on this trade-off and the net effect of the premium versus the extra absence penalty when making a decision about staying in (or leaving) jobs with few substitutes. This net effect on the wage might, of course, vary by occupation. In some occupations, it can be relatively attractive to have a job with few substitutes, even in the presence of a high absence penalty. However, in other occupations, it may be that the cost outweighs the benefit.

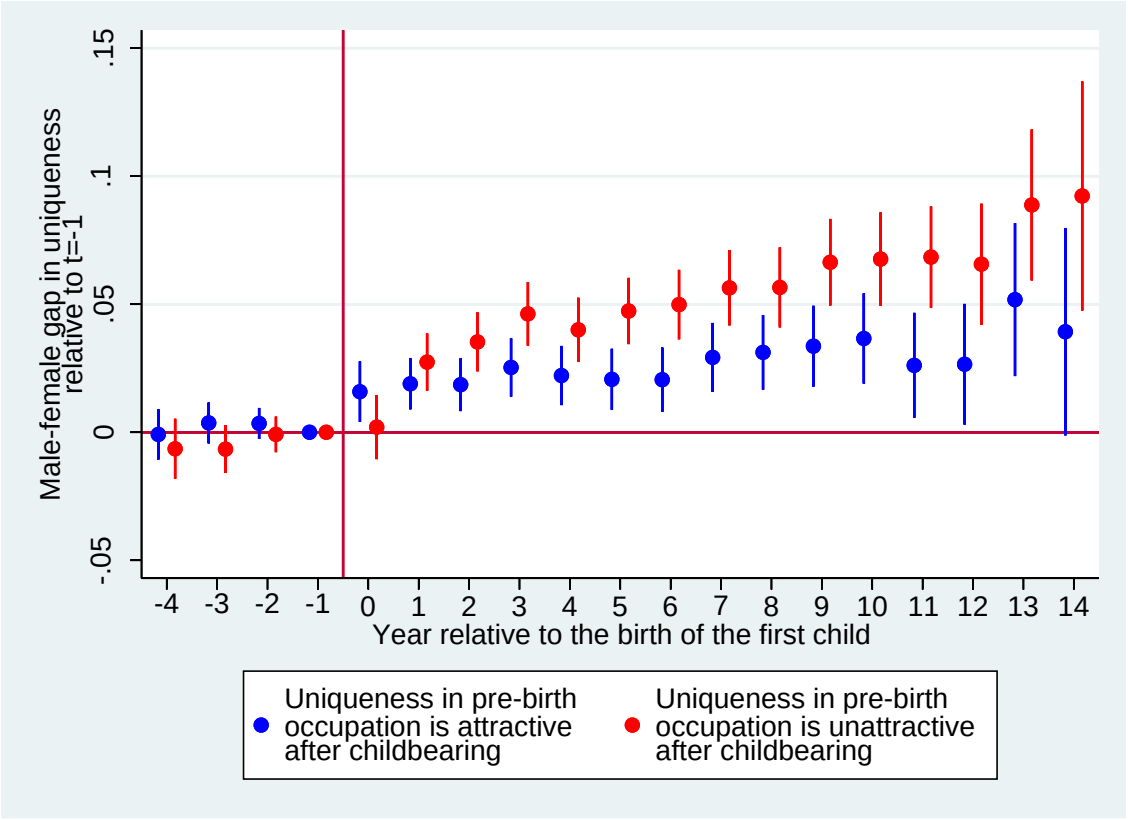
The occupation-specific net effects on the wage of having a unique job but exhibiting high absence can be estimated by running versions of the model used in Table 6 separately by occupation and summing the coefficients on **1**[substitutes<6] and the interaction. We estimate the occupation-specific net effects by year and then generate a dummy variable indicating whether the occupation is *above the median* in terms of the net effect in a given year. If the occupation is above the median, it can be interpreted as a relatively "attractive" job with few substitutes in that occupation, even if the individual expects to have high absence. If the occupation is below the median, it can be interpreted as a relatively "unattractive" job with few substitutes in that occupation if the individual expects to have high absence.

Since we know the pre-birth occupation (the occupation two years before birth) of all mothers in our couple sample and the calendar year in which the pre-birth occupation was observed, we can match the occupation and year to add information about the attractiveness of holding a unique job in the mother's pre-birth occupation. Therefore, two years before they have a child, we know whether the women work in an occupation where job uniqueness is attractive even in the case of high temporary absence (due to positive net wage effects). Women in pre-birth occupations where uniqueness is attractive should be *less likely* to avoid unique positions after childbirth than women who are in pre-birth occupations where uniqueness is unattractive in case of high absence. Consequently,

in couples where before the birth of the first child, the woman works in an occupation where job uniqueness is attractive even with high absence, the effect of parenthood on the within-couple gap in holding a unique position should be smaller than that in couples where the mothers work in an occupation where uniqueness is unattractive (for a given level of high absence).

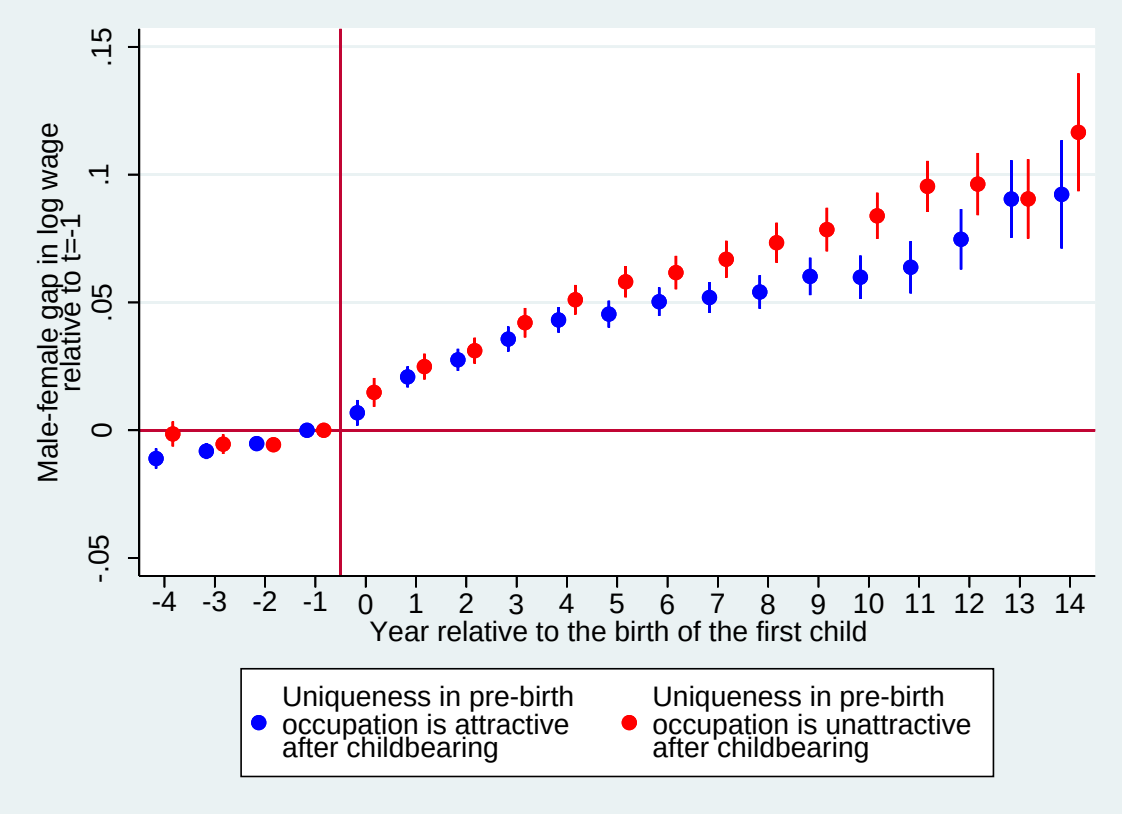
We estimate the model in Equation (2) separately for these two couple types and plot the point estimates of the α_j parameters in Figure 4. Consistent with the prediction, we find substantially larger effects of parenthood on the within-couple gap in uniqueness in couples where the mother was in a pre-birth occupation where uniqueness was unattractive in the case of high absence. In addition, when we replace uniqueness as the outcome with the log wage, we find a similar pattern; i.e., the effect of parenthood on the within-couple gap in wages is larger in couples where the mother was in a pre-birth occupation where uniqueness was unattractive in the case of high absence (see Figure 5). This result gives a direct link between mothers' need for post-birth job uniqueness adjustments and their wage growth, strongly suggesting that women sorting away from unique jobs after the onset of parenthood is likely to contribute to the persistent gender wage gap following the arrival of the first child. The estimates in Figures 4 and 5 are shown in Table A4.

Figure 4 Effect of parenthood on the within-couple gap in uniqueness



Notes: The figure shows estimates of α_j in Equation (2) for an unbalanced panel of couples divided into two groups depending on the net cost of absence related to low substitutability. In Equation (2), the outcome is the within-couple gap in uniqueness (father-mother) at a particular event time, which ranges from four years before birth to fourteen years after birth. Uniqueness is defined as having less than or equal to 5 coworkers in the same occupation. Uniqueness can be observed between 1997–2013. The outcome is explained by event time dummies (where t=-1 is the omitted category), calendar year dummies (where c=1997 is the omitted category), the within-couple gap in uniqueness at t=-2, the within-couple differences in age and prebirth years of education and an error term. The coefficients on the event time dummies (α_j) identify the effect of parenthood on the change in the within-couple gap in uniqueness relative to the prebirth difference. We divide our baseline estimation sample (i.e., all couples with nonmissing values on the within-couple gap in uniqueness two years before the birth who had their first child over the period 1999 to 2007) into two parts: couples in which the mother had a prebirth occupation where uniqueness is relatively attractive even with high absence and couples in which the mother had a prebirth occupation where uniqueness is relatively unattractive in the case of high absence. This division is further explained in the main text of section 4.4. The "attractive" estimation sample includes 199,871 observations (29,030 unique couples). The "unattractive" estimation sample includes 154,739 observations (22,049 unique couples).

Figure 5 Effect of parenthood on the within-couple gap in log wage



Notes: The figure shows estimates of α_j in Equation (2) for an unbalanced panel of couples divided into two groups depending on the net cost of absence related to low substitutability. The outcome is now the within-couple gap in log wage (father-mother) at a particular event time, which ranges from four years before birth to fourteen years after birth. The outcome is explained by event time dummies (where t=-1 is the omitted category), calendar year dummies (where c=1997 is the omitted category), the within-couple gap in log wage at t=-2, the within-couple differences in age and prebirth years of education and an error term. The coefficients on the event time dummies (α_j) identify the effect of parenthood on the change in the within-couple gap in log wage relative to the prebirth difference. We divide our baseline estimation sample (i.e., all couples with nonmissing values on the within-couple gap in log wage two years before the birth who had their first child over the period 1999 to 2007) into two parts: couples in which the mother had a prebirth occupation where uniqueness is relatively attractive even with high absence and couples in which the mother had a prebirth occupation where uniqueness is relatively unattractive in the case of high absence. This division is further explained in the main text of section 4.4. The "attractive" estimation sample includes 199,871 observations (29,030 unique couples). The "unattractive" estimation sample includes 154,739 observations (22,049 unique couples).

5 Discussion

In this paper, we have shown that temporary unpredictable absence is particularly harmful for both workers and firms in jobs where there is a scarcity of close substitutes at the workplace. Consistent with this, we have shown that the dramatic rise in women's temporary absence rates, both due to own sickness and due to care for sick children, following the arrival of the first child is accompanied by a sharp and persistent drop in

the likelihood of holding jobs with few substitutes. Recent studies have shown that women tend to sort into more family friendly *sectors* and *workplaces* after the arrival of the first child (Hotz et al. 2018; Kleven et al. 2019). In our paper, using information at the job level, we show that women tend to sort into more family friendly *jobs* using a direct measure of worker substitutability.

Theoretically, our findings are consistent with the framework outlined by Goldin (2014), specifically with a model in which jobs are characterized by their degree of temporal flexibility, where the term temporal flexibility captures how sensitive the productivity in the job is to – for instance – the number of hours worked and the precise hours worked. While Goldin's discussion of temporal flexibility in different jobs largely centers around the potential productivity drops associated with working part-time, temporal flexibility can encompass many more dimensions. Our study highlights the importance of other dimensions, particularly the sensitivity of the productivity in a job to temporary unpredictable absence (or, alternatively, the importance of presenteeism). Incorporating temporary unpredictable absence into the discussion of the temporal flexibility of a job offers a direct correspondence between the empirical analysis of our paper and the model described by Goldin (2014), which highlights the generalizability and usefulness of the model.

In Goldin's model, the productivity of a worker in a job with *low* temporal flexibility drops discontinuously when "the worker is absent more than some amount". In our interpretation of the model, this discontinuous drop in productivity can occur if the employee works too few hours overall and/or if the temporary unpredictable absence of the employee becomes too common. In jobs with *high* temporal flexibility, workers can be absent much more before productivity drops, and the drop might be less pronounced. Goldin (2014) postulates a link between the temporal flexibility of a job and the substitutability among workers on the workplace. Stated simply, the more coworkers in the workplace who can easily cover for an absent employee and satisfactorily perform tasks in the short run in the case of absence (i.e., the more close substitutes there are), the higher the temporal flexibility of a job. If there are no or few close internal substitutes to

the absent worker, the consequences of temporary unpredictable absence can be costly production disruptions and cancelled meetings with important clients.

In the model, jobs with low temporal flexibility – in our case, jobs with few substitutes – pay a high wage when the labor supply requirement is met (i.e., when absence is low and predictable) and a very low wage otherwise; i.e., in these jobs, the wage penalty of absence is high. Jobs with higher temporal flexibility pay a lower baseline wage, but on the other hand, the wage penalty of absence is lower. Thus, for some individuals, it will be optimal to transition into a job with higher temporal flexibility when the rates of temporary unpredictable absence increase. In the same way, the incentives to transition into a job with low temporal flexibility will be weaker when the rates of temporary unpredictable absence increase. Since women increase their rates of temporary unpredictable absence relative to men after the arrival of the first child, the model would predict that parenthood will reduce the relative likelihood of women holding jobs with low temporal flexibility – in our case, jobs with few substitutes. This is what we have empirically identified in the data.

Overall, our results highlight the importance of occupational structure. Goldin (2014) argues that the cost of absence is reduced when tasks and procedures are standardized, and in our study, we contribute to this finding by showing that the cost of absence can also be lower with more *balanced* occupational groups in the workplace. Our study focuses on one form of substitutability – namely, when one works in a position where there are few or no close substitutes within the workplace. Other forms of frictions related to temporal substitution might constrain employees in a similar way – for instance, working in a position with a great deal of individual autonomy or with incentives based on the employee's own client list.

Unlike parental leave and part-time employment, which allow the employer to anticipate the absence of the worker, temporal work absence, often due to own sickness or caring for sick children, is unpredictable. The study highlights that presenteeism plays an important role in explaining the parenthood wage penalty for women. From the firm's perspective, it is likely that such reorganization may come at a cost, depending on the

specific tasks to be shared. An interesting aspect of the recent crisis is that it has incentivized firms to reorganize work to accommodate social distancing guidelines and increased absence rates caused by the COVID-19 virus. This push towards greater work flexibility could make it less costly for workers in unique jobs not to be present in the workplace. Exploring further the implications of these organizational changes for gender inequality is an important area for future research.

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Appendix

Table A1 Descriptive statistics on the uniqueness variable

Column:	**(1)**	**(2)**	**(3)**
Sample:	**All**	**Unique**	**Nonunique**
Unique job	0.202	1	0
Male	0.615	0.529	0.637
Age	41.8	44.1	41.2
Years of schooling	11.9	12.1	11.9
Workplace size	554.9	81.9	674.4
Number of children 0–17	0.704	0.716	0.701
Born in Sweden	0.864	0.905	0.854
Monthly wage (SEK)	26,695	27,649	26,454
Parental benefits (SEK)	3,379	3,004	3,474
Temporary parental benefits (SEK)	960	748	1,014
Sickness benefits (SEK)	3,234	2,934	3,310
Percent of full time	94.5	93.6	94.8
Occupations (first digit)			
Managers	5.91	15.81	3.41
Professionals	14.78	14.44	14.87
Technicians	20.89	24.16	20.07
Clerks	12.11	17.39	10.77
Service workers and shop salespersons	10.95	9.94	11.20
Skilled agricultural and fishery workers	0.57	1.17	0.41
Craft and related trades workers	9.39	7.97	9.75
Plant and machine operators	18.13	4.11	21.68
Elementary occupations	7.27	5.01	7.84
Industry			
Unspecified	0.01	0.01	0.01
Agriculture, forestry and fishery	0.66	1.42	0.47
Mineral extraction	0.58	0.51	0.59
Manufacturing	36.21	21.79	39.85
Power, gas and water	1.94	2.54	1.78
Construction	3.39	3.82	3.28
Commerce, restaurant and hotels	14.84	21.42	13.18
Communication and transportation	12.85	8.71	13.89

Bank, insurance and commissions	18.45	18.70	18.39
Administration, care and education	11.08	21.07	8.56
Observations	16,185,988	3,265,306	12,920,682

Note: Private sector employees 1997–2013. 49% of our total sample (private + public) pertains to the private sector. The corresponding number for employees with few (many) substitutes is 44% (51%). Note that the data cover 100% of the public sector but only 50% of the private sector. The share of private sector employees in the full economy is approximately 66%.

Table A2 Absence due to sick children and low job substitutability

Column:	**(1)**	**(2)**	**(3)**
Outcome:	**TP benefits**	**TP benefits**	**TP benefits**
Unique Job	-750.3***	-132.6***	-147.8***
	(23.83)	(14.12)	(14.00)
Year FE	No	Yes	Yes
Workplace FE	No	Yes	Yes
Occupation FE	No	Yes	Yes
Covariates	No	No	Yes
Observations	2,623,040	2,623,040	2,617,129

Notes: Standard errors clustered on workplace in parentheses. Covariates include years of education, age, age squared and number of children living at home. The period is 1997–2013. The outcome is the amount of temporary parental benefits received from the SSIA. The temporary parental benefits replace foregone earnings due to absence caused by child sickness (caring for children who are too sick to be in daycare or in school). The SSIA pays out benefits from day 1. The independent variable is an indicator for having fewer than 6 coworkers in the same occupation. There are 17 year fixed effects, 62,394 workplace fixed effects and 113 occupation fixed effects. Estimations are performed on private sector male employees with children aged 0–10. Asterisks indicate that the estimates are significantly different from zero at the ***1% level, **5% level, and *10% level.

Table A3 Estimates from Figures 1 and 2

Column:	**(1)**	**(2)**	**(3)**	**(4)**
Outcome:	**Unique**	**Unique**	**Unique**	**Unique**
Panel A	*Baseline*	*Non-managers*	*Private*	*Public*
1[t=-4]	-0.0048	-0.0028	-0.0068	-0.0026
	(0.0038)	(0.0038)	(0.0061)	(0.0076)
1[t=-3]	-0.0011	0.0003	0.0018	-0.0062
	(0.0031)	(0.0031)	(0.0048)	(0.0062)
1[t=-2]	0.0011	0.0022	0.0036	-0.0031
	(0.0023)	(0.0023)	(0.0035)	(0.0047)
1[t=-1]	Omitted	Omitted	Omitted	Omitted
1[t=0]	0.0085**	0.0083*	0.0096	0.0131
	(0.0043)	(0.0043)	(0.0062)	(0.0089)
1[t=1]	0.0226***	0.0201***	0.0229***	0.0183**
	(0.0037)	(0.0038)	(0.0062)	(0.0074)
1[t=2]	0.0259***	0.0217***	0.0387***	0.0242***
	(0.0039)	(0.0039)	(0.0064)	(0.0077)
1[t=3]	0.0345***	0.0315***	0.0371***	0.0358***
	(0.0042)	(0.0043)	(0.0070)	(0.0083)
1[t=4]	0.0305***	0.0243***	0.0240***	0.0323***
	(0.0043)	(0.0043)	(0.0072)	(0.0085)
1[t=5]	0.0333***	0.0250***	0.0311***	0.0379***
	(0.0044)	(0.0045)	(0.0076)	(0.0087)
1[t=6]	0.0341***	0.0253***	0.0345***	0.0395***
	(0.0046)	(0.0047)	(0.0082)	(0.0091)
1[t=7]	0.0423***	0.0312***	0.0498***	0.0455***
	(0.0050)	(0.0051)	(0.0089)	(0.0098)
1[t=8]	0.0435***	0.0317***	0.0431***	0.0492***
	(0.0053)	(0.0055)	(0.0097)	(0.0104)
1[t=9]	0.0489***	0.0346***	0.0472***	0.0606***
	(0.0058)	(0.0059)	(0.0105)	(0.0113)
1[t=10]	0.0504***	0.0405***	0.0447***	0.0599***
	(0.0064)	(0.0066)	(0.0117)	(0.0125)

1[t=11]	0.0447***	0.0327***	0.0604***	0.0577***
	(0.0071)	(0.0074)	(0.0134)	(0.0139)
1[t=12]	0.0421***	0.0257***	0.0713***	0.0435***
	(0.0084)	(0.0088)	(0.0162)	(0.0165)
1[t=13]	0.0650***	0.0426***	0.0828***	0.0560***
	(0.0105)	(0.0110)	(0.0206)	(0.0208)
1[t=14]	0.0643***	0.0402**	0.0156	0.0743**
	(0.0151)	(0.0159)	(0.0293)	(0.0295)
N	360,510	319,830	105,033	91,386
Panel B	*Low-skilled*	*High-skilled*	*Same occup.*	*Different occup.*
1[t=-4]	-0.0014	-0.0056	-0.0068	-0.0050
	(0.0065)	(0.0056)	(0.0068)	(0.0044)
1[t=-3]	0.0036	-0.0021	-0.0050	-0.0004
	(0.0051)	(0.0044)	(0.0057)	(0.0035)
1[t=-2]	0.0044	-0.0009	-0.0064	0.0031
	(0.0037)	(0.0033)	(0.0043)	(0.0026)
1[t=-1]	Omitted	Omitted	Omitted	Omitted
1[t=0]	-0.0037	0.0172***	0.0028	0.0090*
	(0.0082)	(0.0057)	(0.0075)	(0.0051)
1[t=1]	0.0139**	0.0221***	0.0195***	0.0226***
	(0.0067)	(0.0053)	(0.0071)	(0.0043)
1[t=2]	0.0203***	0.0251***	0.0341***	0.0234***
	(0.0070)	(0.0055)	(0.0074)	(0.0044)
1[t=3]	0.0298***	0.0313***	0.0412***	0.0323***
	(0.0080)	(0.0060)	(0.0079)	(0.0048)
1[t=4]	0.0276***	0.0269***	0.0280***	0.0306***
	(0.0082)	(0.0060)	(0.0079)	(0.0049)
1[t=5]	0.0291***	0.0294***	0.0276***	0.0342***
	(0.0087)	(0.0062)	(0.0084)	(0.0050)
1[t=6]	0.0394***	0.0302***	0.0326***	0.0339***
	(0.0092)	(0.0066)	(0.0090)	(0.0053)
1[t=7]	0.0406***	0.0368***	0.0313***	0.0447***

	(0.0100)	(0.0070)	(0.0097)	(0.0057)
1[t=8]	0.0512***	0.0358***	0.0446***	0.0429***
	(0.0111)	(0.0075)	(0.0105)	(0.0061)
1[t=9]	0.0490***	0.0453***	0.0475***	0.0487***
	(0.0122)	(0.0082)	(0.0116)	(0.0066)
1[t=10]	0.0602***	0.0463***	0.0604***	0.0474***
	(0.0137)	(0.0091)	(0.0128)	(0.0072)
1[t=11]	0.0381**	0.0375***	0.0485***	0.0433***
	(0.0158)	(0.0101)	(0.0140)	(0.0081)
1[t=12]	0.0532***	0.0307***	0.0651***	0.0365***
	(0.0189)	(0.0119)	(0.0168)	(0.0095)
1[t=13]	0.0342	0.0587***	0.0640***	0.0646***
	(0.0233)	(0.0148)	(0.0217)	(0.0119)
1[t=14]	0.0990***	0.0393*	0.0870***	0.0582***
	(0.0343)	(0.0213)	(0.0284)	(0.0173)
N	67,398	171,944	65,764	294,746

Notes: Here, we present estimates plotted in Figures 1 and 2 (see more information in the notes of those figures). In parentheses, we present robust standard errors. Asterisks indicate that the estimates are significantly different from zero at the ***1% level, **5% level, and *10% level.

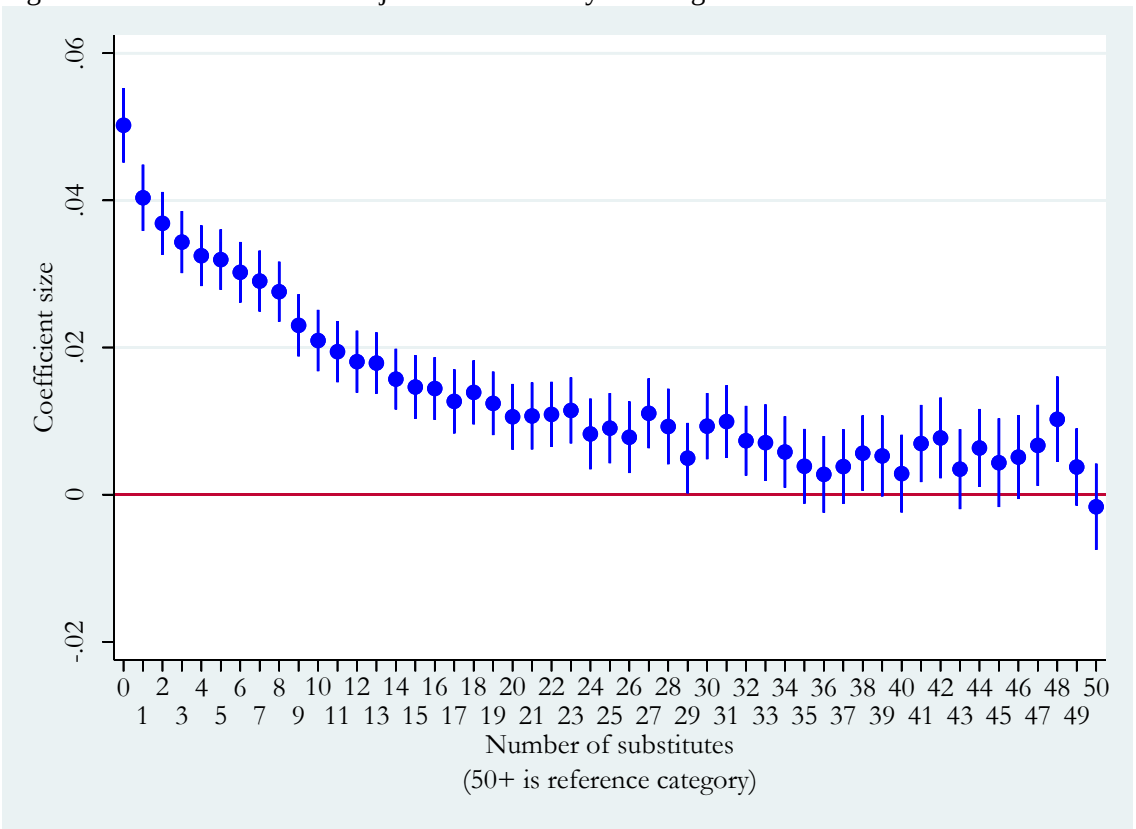
Table A4 Estimates from Figures 4 and 5

Column:	**(1)**	**(2)**	**(3)**	**(4)**
Outcome:	**Unique**	**Unique**	**Log of wage**	**Log of wage**
Sample:	**Attractive**	**Unattractive**	**Attractive**	**Unattractive**
1[t=-4]	-0.0008	-0.0064	-0.0110***	-0.0014
	(0.0050)	(0.0060)	(0.0020)	(0.0025)
1[t=-3]	0.0036	-0.0066	-0.0081***	-0.0054***
	(0.0041)	(0.0048)	(0.0016)	(0.0020)
1[t=-2]	0.0034	-0.0008	-0.0052***	-0.0056***
	(0.0031)	(0.0036)	(0.0011)	(0.0013)
1[t=-1]	Omitted	Omitted	Omitted	Omitted
1[t=0]	0.0158***	0.0020	0.0068***	0.0148***
	(0.0060)	(0.0064)	(0.0026)	(0.0029)
1[t=1]	0.0189***	0.0274***	0.0209***	0.0249***
	(0.0051)	(0.0057)	(0.0021)	(0.0026)
1[t=2]	0.0186***	0.0353***	0.0276***	0.0311***
	(0.0053)	(0.0059)	(0.0022)	(0.0026)
1[t=3]	0.0253***	0.0462***	0.0357***	0.0421***
	(0.0058)	(0.0063)	(0.0025)	(0.0029)
1[t=4]	0.0221***	0.0400***	0.0432***	0.0511***
	(0.0059)	(0.0064)	(0.0025)	(0.0029)
1[t=5]	0.0207***	0.0473***	0.0454***	0.0581***
	(0.0061)	(0.0066)	(0.0027)	(0.0031)
1[t=6]	0.0205***	0.0499***	0.0503***	0.0617***
	(0.0064)	(0.0069)	(0.0028)	(0.0033)
1[t=7]	0.0292***	0.0564***	0.0519***	0.0669***
	(0.0069)	(0.0075)	(0.0031)	(0.0037)
1[t=8]	0.0312***	0.0566***	0.0541***	0.0734***
	(0.0074)	(0.0080)	(0.0033)	(0.0040)
1[t=9]	0.0336***	0.0664***	0.0602***	0.0785***
	(0.0081)	(0.0086)	(0.0037)	(0.0043)
1[t=10]	0.0366***	0.0676***	0.0599***	0.0839***
	(0.0090)	(0.0093)	(0.0043)	(0.0046)

1[t=11]	0.0261**	0.0684***	0.0638***	0.0954***
	(0.0105)	(0.0101)	(0.0052)	(0.0051)
1[t=12]	0.0266**	0.0656***	0.0747***	0.0963***
	(0.0120)	(0.0121)	(0.0060)	(0.0062)
1[t=13]	0.0518***	0.0888***	0.0905***	0.0905***
	(0.0152)	(0.0150)	(0.0077)	(0.0079)
1[t=14]	0.0393*	0.0923***	0.0923***	0.1165***
	(0.0207)	(0.0229)	(0.0108)	(0.0117)
N	199,871	154,739	199,871	154,739

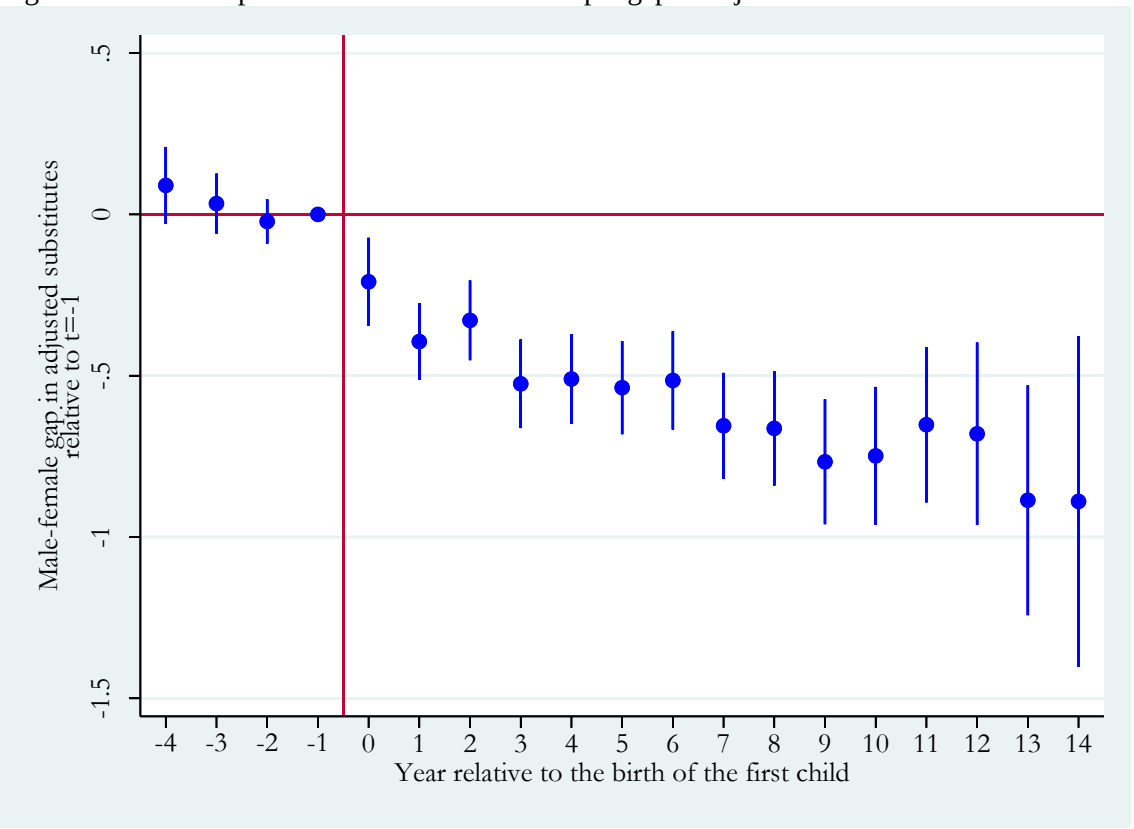
Notes: Here, we present estimates plotted in Figures 4 and 5 (see more information in the notes of those figures). In parentheses, we present robust standard errors. Asterisks indicate that the estimates are significantly different from zero at the ***1% level, **5% level, and *10% level.

Figure A1 Association between job substitutability and wage



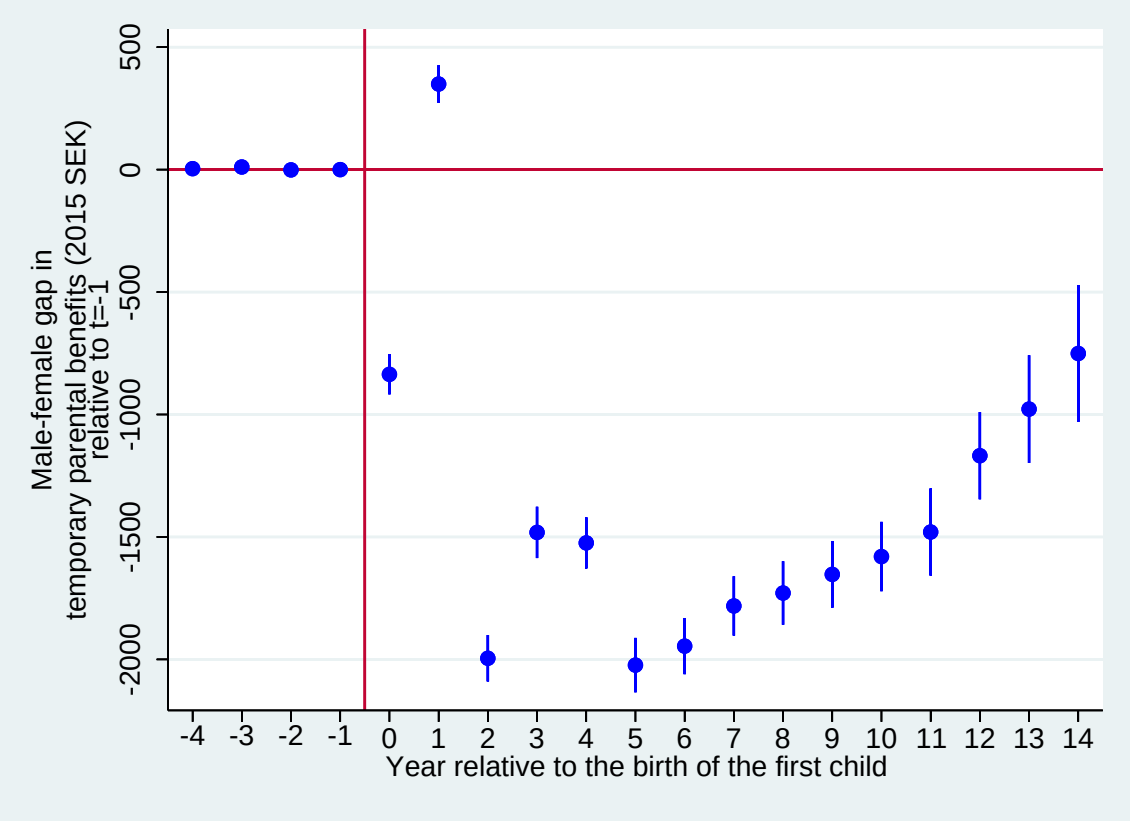
Notes: Estimates from an alternative version of column 3 in Table 1. In column 3 of Table 1, the independent variable is an indicator for having fewer than 6 coworkers in the same occupation as yourself. Here, we instead show estimates from a model where we include indicators for having 0 substitutes, 1 substitute, …, 50 substitutes. The reference category is having more than 50 substitutes. See more information in the note of Table 1.

Figure A2 Effect of parenthood on the within-couple gap in adjusted number of substitutes



Notes: The figure shows estimates of α_j in Equation (2), together with 95% confidence intervals, for the baseline estimation sample. The outcome is the within-couple gap in the adjusted number of substitutes (father-mother) at a particular event time, which ranges from four years before birth to fourteen years after birth. The adjusted number of substitutes is generated by transforming the substitutes variable in the following way: employees with 10–19 substitutes are assigned a value of 15 substitutes and employees with more than 19 substitutes are assigned a value of 20 substitutes. Number of substitutes can be observed between 1997–2013. The outcome is explained by event time dummies (where t=-1 is the omitted category), calendar year dummies (where c=1997 is the omitted category), the within-couple gap in the adjusted number of substitutes at t=-2, the within-couple differences in age and prebirth years of education and an error term. The coefficients on the event time dummies (α_j) identify the effect of parenthood on the change in the within-couple gap in the adjusted number of substitutes relative to the prebirth difference. In the baseline estimation sample, we include all couples with nonmissing values on the within-couple gap in the adjusted number of substitutes two years before the birth who had their first child over the period 1999 to 2007 (51,729 unique couples). The number of observations in the baseline estimation is 360,510.

Figure A3 Effect of parenthood on the within-couple gap in temporary parental benefits



Notes: The figure shows estimates of α_j in Equation (2), together with 95% confidence intervals, for the baseline estimation sample. The outcome is the within-couple gap in temporary parental benefits from the SSIA (in 2015 SEK) at a particular event time, which ranges from four years before birth to fourteen years after birth. The temporary parental benefits replace foregone earnings due to absence caused by child sickness (caring for children who are too sick to be in daycare or in school). The outcome is explained by event time dummies (where t=-1 is the omitted category), calendar year dummies (where c=1997 is the omitted category), the within-couple gap in temporary parental benefits at t=-2, the within-couple differences in age and prebirth years of education and an error term. The coefficients on the event time dummies (α_j) identify the effect of parenthood on the change in the within-couple gap in temporary parental benefits relative to the difference in t=-1 (which, of course, is 0 since this is the first child). The number of observations is 360,510 (51,729 unique couples).