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Children and the gender gap in management☆

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ABSTRACT

Women are typically less likely to hold management positions than men. Despite the converging roles of men and women in several labour market outcomes, the gender management gap is persistent. In this paper, we analyse the impact of children on the gender gap in management, focussing on the within-couple gap, allowing us to control for both observed and unobserved attributes of the spouse. The main findings suggest that the gender gap in management increases considerably after the arrival of the first child. Nine years after the birth of the firstborn child, the male–female gap in management has increased by approximately 5 percentage points. Heterogeneity analyses suggest that the gender gap is wider, and gets steeper over time, for couples where the father has a management education or higher education, compared to the gap for the overall sample. In households where the spouses share the parental leave and the mother returns to full-time employment after the leave, the increase in the gender management gap is much smaller, and it is no longer significant towards the end of the period.

1. Introduction

Women have made major progress in the labour market throughout recent decades, resulting in a convergence in human capital investment, employment opportunities and wages relative to men (Olivetti and Petrongolo, 2016). But since the late 1990s, gender wage differences have reached a plateau. Management positions follow much the same pattern, where men dominate and the gender gap has been persistent. The lack of women in top positions in the labour market has often been explained by a glass ceiling effect (see e.g. Albrecht et al., 2003), and the presence of children has been mentioned as one explanation of the invisible barrier to women's career progression.

Norway has a long tradition striving for gender equality and is considered one of the most gender-equal countries in the world (World Economic Forum, 2016), and the female labour supply in Norway is among the highest in the OECD area (OECD, 2016). Still, women are grossly underrepresented in management positions; the female share in management has been steadily low for the last 10–15 years. The question we ask in this paper is how important children are to the sustained gender gap in management positions. Women still engage in the major part of the caring and rearing obligations in the household. In an international context, Norway stands out as a country with an ambitious and generous public family policy. A long and fully wage-compensated parental leave is one important instrument of this policy. Yet long periods out of the labour market in relation to child births and subsequent periods may have negative effects on the likelihood of reaching management positions, through lower efforts in the labour market during periods when important career decisions are made as well as through a lack of presence in the competition for management positions (Datta Gupta and Smith, 2002).

Bertrand et al. (2010) study the careers of MBAs from a top US business school. They suggest that the sharp reversal in labour supply patterns for MBA women by spousal income which occurs with motherhood seems most consistent with the notion that previously hard-working women slow down after their first birth if they have a high-earnings spouse. Bertrand et al. also suggest that MBA mothers seem to actively choose jobs which are family-friendly and avoid jobs with long hours and greater career advancement possibilities. Evidence of the career effects of children, using Norwegian data, is found in Cools et al. (2015a). They use an instrumental variable approach (sex-mix) for the parents' number of children. They find sizable yet temporary reductions in the labour supply for women, which fade away as the children grow up. For women with a college degree, there is clear evidence of a career penalty of family size, making them less likely than men to be employed by higher paying firms throughout their career.

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Blau and Kahn (2013) suggest that generous public family policies like those in the Scandinavian countries, with entitlements to long parental leaves and potentially full wage compensation as well as access to part-time work, may give women options which they would not otherwise have had. However, these policies may also encourage women who would otherwise have had a stronger labour force attachment to take part-time jobs or lower-level positions. On the demand side, such policies may lead employers to engage in statistical discrimination against women for jobs leading to higher-level positions. The authors illustrate their arguments by showing that US women are much better represented among full-time workers and in high-level management positions.

In spite of some progress in women's access to managerial positions in recent decades, most women are in lower- and middle-management jobs, and few are in top management jobs (Reskin and Ross, 1992; Cohen et al., 1998; Carter and Silva, 2010). The numbers of management positions are limited, and competition is hard for both men and women. The arrival of the firstborn will naturally increase family responsibilities. Time survey evidence suggests that mothers take on a large share of the extra responsibilities. The difference in time use with respect to domestic obligations within couples peaks at ages 25–29, a period in life where many become parents for the first time (Egge-Hoveid and Sandnes, 2013). Our argument is that the arrival of the first child will partly determine the relative share of domestic obligations between the parents and will thereby potentially have short and long-lasting effects on the couple's division of time, both domestically and in the labour market.

There is considerable empirical literature analysing the impact of children and domestic obligations on women's career development. The majority of these studies have looked at wage developments (Waldfogel, 1997; Datta Gupta and Smith, 2002; Budig and England, 2001; Sasser, 2005; Angelov et al., 2016). Fewer have looked at gender differences in management positions (Bertrand et al., 2010). Furthermore, most studies of the importance of children on career development have compared women and men with and without children. We choose another empirical approach.

Concretely, we compare the outcomes for women in relation to their male partners, before and after the firstborn, following the set-up proposed in Angelov et al. (2016). An important advantage of focusing on the within-couple gap is that we can control for both observed and unobserved attributes of the spouse/partner. However, our approach is somewhat different from that of Angelov et al. (2016) in that they compare the labour income and wage development of women in relation to their male partners before and after the arrival of the first child, while we focus on career development. Their results show that 15 years after the first child's birth the male–female gender gaps in income and wages within the couple have increased by 35 and 10 percentage points, respectively.

The crucial identification assumption in our approach is that the decision of *the timing* of the firstborn is not affected by an expected change in the perceived promotion or career trajectory in the absence of a child. For example, if one of the partners has reason to believe that the opportunity for a promotion in the coming years is good, this may affect the timing of the firstborn. Alternatively, if one of the partners, say, the woman, works in a company which is in decline, this may have a negative impact on her promotion opportunities. If reduced opportunities for promotion in turn affect the timing of parenthood, the identification assumption is violated. Such mechanisms are clearly unobserved by the researcher. We approach this threat by including a wide set of pre-birth variables, both in levels and within-couple differences, which are potentially correlated with both the decision of parenthood and future career development. We return to this question in Section 4.

The main mechanism we wish to capture is the impact of human capital depreciation and the lack of skill accumulation arising from career interruption due to parenthood, both in the short run and in the longer run. The impact in the short run is directly related to childbirth and maternity leave, while in the longer run, it is due to child rearing. Analysing the impact of career interruptions should be of particular interest at the top of the labour market, where the demand for work-related requirements such as long working hours and continuous availability and the drawbacks of career interruptions should be large (Goldin, 2014).

We exploit high-quality register data covering the whole population in Norway, enabling us to link couples with a common offspring. The unit of observation is the couple. We follow the spouses from two years before to nine years after the first child is born. The main result is that the within-couple gender gap in management increases as a consequence of the arrival of the firstborn. In the period preceding the firstborn, the difference is small. The gap then widens in the period after childbirth. Nine years after birth, the gap is widened by approximately 5 percentage points.

The paper proceeds as follows. The next section presents the Norwegian context, followed by a presentation of the data and descriptive statistics. Thereafter, the identification strategy is presented, followed by the result section and conclusion.

2. Norwegian context

Women's labour force participation has increased greatly in Norway since the 1970s, closely approaching that of men. Norway provides an interesting case with the overall encouragement of a dual earner–dual career model, an institutional context of generous parental leave and extensive job protection for parents, the fathers' quota, and universal, high quality and affordable childcare from the time the child is one year old. Female representation on corporate boards has also increased as a direct consequence of the corporate board quota reform (Dale-Olsen et al., 2013). However, despite the overall improvement of gender equality and women's labour force participation, the representation of women in management and top positions has not increased as successfully.

Parental leave is a cornerstone of family–work policies. In Norway, parents are entitled to up to 49 weeks of fully compensated parental leave (or 59 weeks with 80 per cent compensation) until the child is three years old. Eligibility is tied to previous employment, requiring having worked a minimum of six months of the last ten months prior to expected delivery. Normally, parents are on leave during the child's first year. Today, parental leave is split into three separate parts. Mothers are entitled to three weeks of leave prior to birth and 10 weeks of maternity leave, while the fathers' quota is 10 weeks.These weeks are not transferable between parents. The remaining 26 or 36 weeks of parental leave are shared between the parents as they see fit, but in general, women take most of the shared weeks (Brandt and Kvande, 2015). Parents also have extensive job protection during parental leave.

A fathers' quota in parental leave was first introduced in 1993, when they gained the right to four weeks of paid leave. Since then, the fathers' quota has been extended several times. In our period of analysis, it increased to five weeks in 2005, six weeks in 2006, 10 weeks in 2009 and 11 weeks in 2011. In July 2013, it increased to 14 weeks, but it was later reduced to 10 weeks in July 2014. The take-up of the fathers' quota is high, with a nearly 70 per cent take-up rate of the entire fathers' quota or more in 2013 (Statistics Norway, 2015a). Recent empirical studies have found ambiguous effects of the fathers' quota on mothers' and fathers' labour market outcomes (see Cools et al., 2015b; Rege and Solli, 2013). Noticeably, Kotsadam and Finseraas (2011) find positive effects on fathers' involvement at home, which in turn may affect mothers' and fathers' future career patterns.

Many countries have publicly subsidized childcare services, most often for children aged three or older (Blau and Kahn, 2013). The process of improving the supply of childcare facilities in Norway started in the mid-1970s. Childcare coverage rates increased from 10 to 40 per cent in 1985. In 2003, the implementation of a childcare reform led to

an overall reduction of childcare costs and increased childcare coverage. Today, the cap on the price charged to parents is set to 2730 NOK per month. This represents less than 5 per cent of the median monthly net income of families where the youngest child is under six years old (Statistics Norway, 2015b). The coverage rate is 90 per cent for children aged 1–5 years, 80 per cent among children aged 1–2 and 97 per cent among children aged 3–5 (Statistics Norway, 2015c). Recent empirical evidence shows that the decrease in the cost of childcare had a sizeable effect on the employment rate of women with children in Norway (Hardoy and Schøne, 2013; Eckhoff Andresen and Havnes, 2016).

An example of political action in the struggle for gender equality is Norway's corporate board quota. It was initiated in 2003 with the aim of increasing the gender balance on corporate boards, and it resulted in boards of listed companies in Norway reaching the required 40 per cent of female members (Dale-Olsen et al., 2013). A by-product of such an initiative may be to reduce the barriers to career progression, both from the demand and the supply side, leading to a higher share of women in management positions. But recent studies have shown that the quota reform has had little impact on women's outcomes in the short run (Østbakken et al., 2015; Bertrand et al., 2014).

3. Data and descriptives

We employ rich individual register data with a panel dimension, enabling us to follow individuals over time. The data is collected and organised by Statistics Norway and covers all individuals residing in Norway. From this register, we have information on gender, occupation and detailed information on all childbirths, marital status, education, work experience and age. The same information applies for the spouse.

The sample consists of eight cohorts of couples who gave birth to their firstborn in one of the years 2005–2012. Couples are matched in the year they become parents (t = 0). We follow these cohorts from two years before birth (t = −2) up to nine years after birth (t = 9), i.e. the data covers the period 2003–2014.[1]

The dependent variable is the difference between two binary variables. The binary variable measures whether or not the individual holds a management position. A management position is defined by the following occupational codes (ISCO 88): 12: “Corporate managers of large and medium sized enterprises”; 13: “General managers of small enterprises”; 112: “Senior government officials” and 114: “Senior officials of interest organisations.” We use a rather broad definition of management positions, including both high- and middle-level management jobs. In order to explore the development of the gender gap in high-level management, we run an additional analysis where we re-specify the dependent variable and define it to measure top management. This is defined as referring only to code 12, above.

We identify couples with children through a unique couple identifier (married or cohabiting) and through detailed information on births. Since our dependent variable measures the within-couple difference in holding a management position, it takes three values: 1 if the man holds a management position and the woman does not; 0 if both or neither of them has a management position; or −1 if the woman has a management position and the man does not.

As control variables, we include the within-couple pre-birth differences in age, work experience and number of years of education. Work experience is measured by the number of years in the labour market, as expressed by the number of years with an income higher than the basis threshold in the social security system.[2] Since fathers are on average two years older than their spouses when entering parenthood (see Table 1 below), fathers are more likely to have a head start on the labour market when entering parenthood. This motivates the inclusion of pre-birth work experience as a control variable. Educational attainment is measured by number of years after compulsory school. In the robustness check analyses, we also include pre-birth variables measured as level variables, we include more pre-birth within-couple difference variables (log hourly wages, working days, and working hours), and we use information on the household's use of parental leave. We construct two types of variables, one measuring the division of parental leave between the partners and the other measuring the father's use of the previously mentioned fathers’ quota. We construct three dummy variables where i) the father takes none of the quota, ii) the father takes up the amount of the quota or less and iii) the father takes more than the quota.

In the heterogeneity analyses, we investigate the impact of parenthood on the gender management gap using information on both level and type of education, and we also run different regressions for couples who have additional children after the firstborn, using detailed information on additional births. Finally, we conduct separate analyses for subsamples, depending on the degree of labour market attachment of the mother, and the division of parental leave within the couple. These variables are presented in the empirical section.

Table 1 presents descriptive statistics, separately for each of the eight cohorts, for the period 2005 to 2012. Statistics for management are time-varying variables, while age, education and experience are pre-birth variables measured two years prior to the birth of the firstborn (t = −2).

Table 1 shows that fathers are overrepresented among managers. For the 2005 cohort, nearly 10 per cent of the fathers are managers during the observation period. Among mothers, on the other hand, only 5.5 per cent hold a management position during the same period. The share in management positions is lower among more recent cohorts, reflecting that we observe them for fewer years after the child is born. Mothers are initially slightly more educated on average, and the difference increases somewhat over time, which is in line with the general trend in which women increasingly surpass men in educational attainment. Lastly, fathers are on average about two years older than their spouses/partners, and approximately the same difference applies for work experience.

Fig. 1 presents the average share in management for mothers and fathers, by years since birth, for the sample we use in the empirical analyses.

A concern for the interpretation of the results as effects of parenthood would arise if women's (or men's) careers are affected by the expectation of having children, before the arrival of the first child. Suppose a woman who expects to have several children is less likely to invest in a career track with lots of promotion opportunities, or is less likely to consider a management job early on in her career. In this case, the development in the career gap would be visible already prior to parenthood, and potentially a large part of the gender gap in management would have been “taken out” already before birth, and the estimated impacts would be underestimate lower bound of the impact of having children on a couple's management gap. An important exercise is therefore to investigate the pre-trends in management for men and women. If pre-trends are parallel this is evidence supporting that this is not problem for the analyses.

Fathers are on average more likely than their spouses/partners to be managers, even in the period preceding parenthood. Notwithstanding this, it is noteworthy that the trends are quite parallel in the pre-birth period, supporting our identification strategy. From period 0, the year of the first born, fathers experience a steeper profile compared to their female partners. This is preliminary evidence suggesting a parenthood effect, which we investigate more thoroughly in the following sections.

[1] Information on occupation is vital for identifying management positions. This information is available from 2003 onwards; therefore, 2003 is the first possible year of observation.

[2] In 2005, the basic amount in the social security system was 75,641 NOK, or approximately 8500 Euro.

Table 1
Descriptives. Mean values and standard deviation in parenthesis.

	Cohort							
	2005	2006	2007	2008	2009	2010	2011	2012
Difference in management	0.041 (0.358)	0.044 (0.359)	0.038 (0.344)	0.037 (0.335)	0.031 (0.316)	0.028 (0.315)	0.025 (0.308)	0.027 (0.300)
Father is a manager	0.097 (0.295)	0.095 (0.293)	0.089 (0.284)	0.083 (0.275)	0.074 (0.262)	0.070 (0.254)	0.065 (0.247)	0.064 (0.245)
Mother is a manager	0.055 (0.228)	0.051 (0.219)	0.050 (0.218)	0.046 (0.210)	0.043 (0.203)	0.042 (0.201)	0.041 (0.197)	0.037 (0.189)
*Difference in education**	−0.274 (1.520)	−0.260 (1.535)	−0.301 (1.532)	−0.311 (1.557)	−0.361 (1.566)	−0.375 (1.573)	−0.367 (1.566)	−0.383 (1.555)
Father's education	4.666 (1.522)	4.760 (1.536)	4.712 (1.558)	4.741 (1.574)	4.756 (1.582)	4.737 (1.609)	4.782 (1.608)	4.959 (1.569)
Mother's education	4.948 (1.483)	5.028 (1.472)	5.018 (1.512)	5.061 (1.516)	5.122 (1.518)	5.117 (1.541)	5.155 (1.564)	5.352 (1.468)
Difference in age (years)	2.222 (3.428)	2.172 (3.457)	2.248 (3.485)	2.319 (3.523)	2.284 (3.529)	2.271 (3.539)	2.352 (3.629)	2.240 (3.395)
Father's age	31,001 (4.776)	31,001 (4.776)	31,101 (4.776)	31,101 (4.776)	31,080 (4.776)	31,010 (4.776)	31,010 (4.776)	31,010 (4.776)
Mother's age	28,782 (4.768)	28,782 (4.768)	28,740 (4.768)	28,760 (4.768)	28,780 (4.768)	28,741 (4.768)	28,741 (4.768)	28,741 (4.768)
Difference in experience (years)	2.289 (4.181)	2.173 (4.255)	2.312 (4.285)	2.368 (4.353)	2.321 (4.325)	2.281 (4.358)	2.359 (4.460)	2.244 (4.432)
Father's exp	8.861 (4.445)	8.853 (4.455)	8.961 (4.523)	9.071 (4.579)	7.961 (4.445)	8.849 (4.700)	8.889 (4.729)	8.825 (4.702)
Mother's exp	6.571 (3.820)	6.679 (3.798)	6.648 (3.883)	6.648 (3.859)	5.640 (3.852)	6.558 (3.991)	6.553 (3.9348)	6.581 (4.009)
N	82,715	83,251	70,683	75,861	72,976	67,269	57,468	36,843

Note: * Difference in years of education after compulsory schooling.

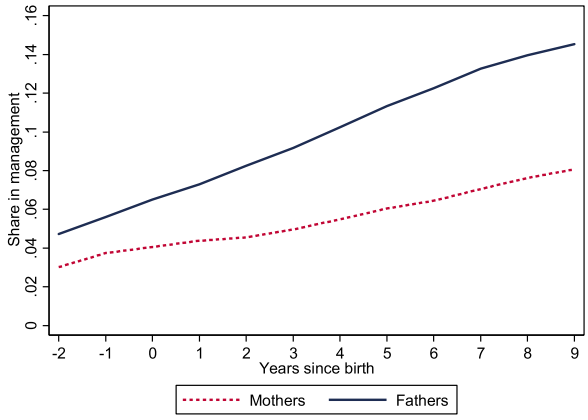

Fig. 1. Mean share in management from time since birth. Mothers and fathers.

4. Identification strategy

Our aim is to analyse the causal relationship between having a child and the gender gap in career development. The decision to enter parenthood is often planned, regarding with whom and the timing of the event. The timing of the birth may be influenced by the degree of labour market attachment. As mentioned above, paid parental leave in Norway is conditional on the mother having worked at least 6 of the last 10 months, such that many prospective mothers enter the labour market before entering motherhood in order to gain eligibility. This implies that we need to control both for factors which are correlated with future career development as well as factors correlated with the decision to have a child.

The empirical approach presented in Eq. (1) below identifies the effect of having children on the gender gap in career development (measured by managerial position), given that i) the decision to have a child is based on the couples' expectations of future career development and ii) the couples solve their career dilemmas by equalizing the marginal utility of time and effort between domestic and market work (Becker, 1985). A couple will have a child if the utility of having the child is greater than the expected loss of future income of the couple as a whole. In this paper, all couples will have a child; thus, the utility exceeds the expected loss. The important question is then how the income loss is divided within the couple. Under the assumption that *the timing* of parenthood is not based on the within-couple expected gender difference in career development in the absence of a child, we can estimate the impact of having a child, limiting the estimation to couples with a child *while* controlling for pre-birth difference in career development. The latter point is important. Therefore, we include a wide set of pre-birth variables which may be correlated with both occupational trajectories and the timing of the firstborn, measured both as a within-couple difference and in levels.[3] These are presented below.[4]

The identification strategy can be regarded as a kind of a differences-in-differences (DD) approach. This is not an entirely clean DD approach, since men and women are affected by the treatment, but we allow the strength of the treatment to differ between the parents. The identifying assumption is the same as in a traditional DD approach; that is, the change in outcome over time would have been the same, in the absence of treatment (having a child). Because we sample parents only, exogeneity in our case is a statement about the timing of parenthood rather than about parenthood per se.

We estimate variants of Eq. (1):

$$(y_{imct} - y_{ifct}) = \alpha_1 + \alpha_2 (y_{imc(-2)} - y_{ifc(-2)}) + \sum_{k=2004}^{2014} \alpha_{3k} 1[c = k] + \sum_{j=0}^{j=9} \alpha_{4j} 1[t = j] + \alpha_5 (x_{im(-2)} - x_{if(-2)}) + \varepsilon_{ict} \quad (1)$$

where y is a dummy variable measuring whether couple member i (*m*ale or *f*emale) is in a management position at time t, such that the dependent variable $(y_{imct} - y_{ifct})$ is the within-couple gender gap in management t years after or before birth, observed in calendar year c; c is the calendar year, c=2004,..., 2014 (reference year is 2003); and 1[.] = 1 if the expression within the brackets is true, and 0 otherwise.

We include the pre-birth differences in management as one of our control variables: $(y_{imc(-2)} - y_{ifc(-2)})$. Furthermore, $(x_{im(-2)} - x_{if(-2)})$ is a vector of differences in within-couple characteristics measured at t = −2. The key variables we include in $(x_{im(-2)} - x_{if(-2)})$ are the within-couple differences in age, work experience and educational attainment. The key parameter α_{4j} measures the impact of parenthood on the within-couple gender gap in management from one year before birth up to nine years after. The reference category is one year before birth; that is, the term $\sum_{j=0}^{j=9}$ reflects that this period is dropped. Therefore, α_{4j} portrays the development of the gender management gap over time, relative to the t= −1 period. The couple gap in management in the t = −

[3] A more technical presentation of the identification assumption is found in Angelov et al. (2016), Appendix A.

[4] An instrumental variable approach would be an alternative approach to the one we use in this paper. Often used are instruments measuring the exogenous increase in family size by exploiting preferences for mixed sibling sex composition (Angrist and Evans, 1998) or twin births (Bronars and Grogger, 1994). None of these approaches is suitable for our research question. One approach for us would be to include non-parents and instrument parenthood. Unfortunately, no suitable instrument for measuring exogenous increase in family size from zero to one child can be found.

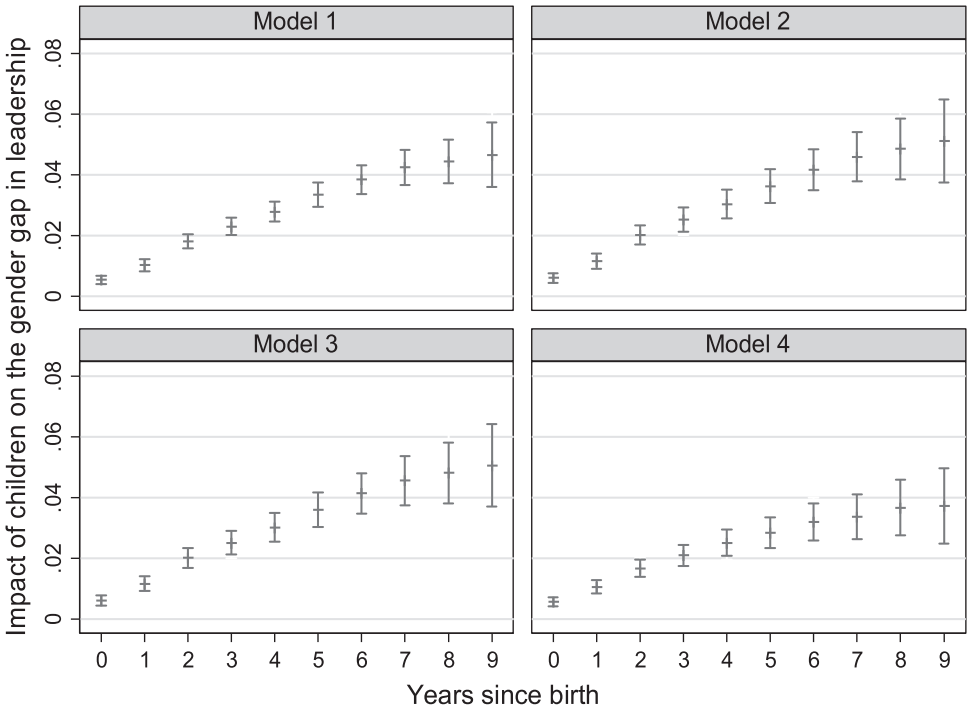

Fig. 2. Impact of children on the gender gap in management. The dependent variable: $(y_{imct} - y_{ifct})$. Estimated coefficients and confidence intervals. Note: Model 1: No controls; Model 2: Calendar controls; Model 3: Full set of controls (including pre-birth differences in age, education, and experience); Model 4: Top managers, with full set of controls. Estimated coefficients are reported in Appendix Table A1.

2 period being a predetermined variable. The intercept α_1 measures the impact of the pre-birth within-couple difference in management not captured by the other variables in the model.

Estimating Eq. (1) presents a consistent estimate for α_{4j} if ε_{ict} is exogenous. This implies that conditioned on calendar effects, pre-birth career gap, and pre-birth covariates, the decision regarding the timing of birth is unaffected by the within-couple expected gender difference in career development in the absence of a child. In contrast, if the choice of what year to enter parenthood is determined by the expectations of the future career developments of one of the partners, the estimate for α_{4j} will not measure the impact of having a child but will measure the impact on the gender management gap even in the absence of children.

To further check the identification assumption, that is, to ensure that the gender gap can be attributed to having the child, we add more control variables; in particular, we add pre-birth level variables for education, experience and age. We also add a wider set of pre-birth within-couple difference variables. These are differences in log hourly wage, working days and working hours as well as the father's uptake of parental leave.

Finally, we estimate Eq. (1) by OLS. Estimating linear probability models using OLS raises the question on how to interpret the coefficients. The dependent variable can take three values, therefore regression coefficients cannot be stringently interpreted as changes in percentage points. In the empirical section we present some robustness checks on this issue, by estimating multinomial logit models as an alternative approach.

5. Results

5.1. Main results

Fig. 2 presents results based on different specifications of Eq. (1). We estimate four models; the first includes only the pre-birth difference in management and time dummies for years since birth, the second model adds calendar controls, the third model includes the full set of controls and the fourth model is a specification using the top management definition (see description in the data section). The reference year is t = −1, i.e. one year prior to birth. Estimated coefficients are reported in Appendix Table A1.

The first model clearly shows that the male advantage increases over time. Initially, the difference is negligible, but it increases year by year. If we are to give results in Fig. 2 an approximate interpretation we could say that nine years after the birth of the first child, the gender gap has increased to approximately 5 percentage points.[5] Controlling for calendar effects in Model 2, and thereby controlling for secular trends or shocks in management, increases the gender gap slightly, and it peaks in the last year of our observation window. The gender gap is steadily increasing over time, suggesting that there is no clear distinction between short- and medium-term effects of childbirth.[6]

Model 3 adds pre-birth differences in education, age and work experience. All three variables are significant and have the expected signs (see Appendix Table A1 for details). Adding these variables does not alter the results for the main coefficients much. This is reassuring; a significant change in the coefficient of interest would be indicative of a violation of our identification strategy. Finally, in Model 4, the full specification is applied to the top management variable. Naturally, a lower share of both males and females are top managers compared to the broader management definition used in Model 3. Over the whole period, 6.5 per cent and 3.5 per cent of males and females, respectively, are registered as top managers (compared to 8.1 per cent and 4.7 per cent for the broader definition). The lower mean shares in top management positions are reflected in the lower gender gap coefficients in the last column. Still, the pattern is the same as in the previous specifications.

In summary, the gender management gap increases after the

[5] Note the previous mentioned caveat in Section 4 regarding interpretation of the coefficients as percentage points. We return to this issue by estimating multinomial logit models.

[6] In the current setting and with the data at hand long run effects cannot be investigated since many couples are only observed for a few years after first birth – so that we do not observe these couples in the years where the gap could potentially recover.

firstborn such that after nine years, and as a consequence of parenthood, it is about 5 percentage point higher compared to the pre-child gap. Within this period (up to nine years after birth), there are no indications that mothers catch up after the first post-birth years. Mothers still take most of the parental leave (approximately 80 per cent in our sample), which especially affects the gender difference in labour market involvement in the years after the firstborn. The estimated coefficients measuring the impact of childbirth capture both the immediate effect from parental leave and the subsequent impact from gender differences in caring and rearing responsibilities. Results from Fig. 2 suggest that medium-term impacts are present as well.

5.2. Robustness checks

In this section, we further investigate the robustness of the results. We emphasized earlier that it is pivotal for the identification assumption to control both for the decision of parenthood and career development. These concerns were incorporated into the estimations in Fig. 2. Previous controls include variables in differences only. We take this a step further by presenting results from estimations adding controls for variables in levels, for the father (age, education and experience). These three variables are fixed at pre-birth age. Since we condition on the couple's age-, experience-, and education-difference, the coefficients would not change if we included the variables for the mother instead. For example, a positive coefficient of age would suggests that the within couple difference in management is larger if both the man and woman are older at birth. The same argument and motivation applies for the education and experience level variables.

We also include a regression with controls for additional pre-birth differences in variables which potentially affect parenthood and career development. These are pre-birth differences in log hourly wages, working days as expressed by the number of registered working days per year, and working hours, a variable based on three categories of working time: full-time, long part-time (more than 20 h) and short part-time. These variables are intended to better control for potential bias arising from diverging career trajectories in the pre-parenthood period. Recall that ideally, the timing of the first birth should be independent of expected gender differences in career development. Differences in log hourly wages and labour market attachment (working days and working hours) among spouses are meant to control more precisely for the strength of this assumption.

In addition, we exploit detailed information on fathers' parental leave uptake. We construct three dummy variables to characterize the household: the father takes nothing from the quota, the father takes parental leave up to the quota and the father takes more than the quota. The mean shares in the three categories are 9 per cent, 66 per cent, and 25 per cent, respectively.[7] In total, we estimate four models, all presented in Fig. 3. Firstly, the preferred specification from Model 3 in Fig. 2/Table A1 is our starting point. In Model 1, we add age measured in levels as a control variable. Model 2 adds education in levels, Model 3 includes work experience in levels and Model 4 adds the additional variable capturing labour market attachment, and fathers' quota uptake. Fig. 3 only presents the coefficients for the time since birth variables. We also comment on the impact on the included variables. These regression coefficients are presented in Table A2, in Appendix.

All level variables are measured for the father, since we cannot include variables for both partners (models with mother variables do not change the results, as mentioned above).

Regarding the extra explanatory variables; results in Table A2 show that older age as well as more work experience and higher education increase the gender gap in management, see Model 1 - Model 3 (age becomes insignificant when all three variables are added).

Note the interpretation of these level variables, a positive coefficient of for example experience suggests that the within couple difference in management is larger if both the man and woman are more experienced.

Still, the inclusion of these variables leaves the effect of parenthood over time unaffected.[8] The last model includes the additional pre-birth differences which potentially may pick up gender differences in career trajectories in pre-birth periods. The pre-birth differences in log hourly wages and working days are significant and show the expected signs while differences in working hours turn out to be insignificant.

The coefficients for the fathers' quota uptake reveal a negative and significant relationship between fathers taking more than the quota and the gender gap (relative to taking up to the quota). This is indicative evidence of a trade-off between the father's domestic time use and the gender gap in management. Still, nothing changes in the main coefficients when we control or the father's uptake, i.e., the widening of the gender gap is also present when we hold paternity leave constant. In general, the pattern in all four models in Fig. 3 is very similar to the main results in Fig. 2. Adding extra control variables does not change pattern of the gender gap in management.

The dependent variable in our set up can take three values: 1 if only the father is manager, −1 if only the mother is manager, and 0 if none or both are managers. So far we have used linear probability models in all the estimations. This can be criticised on the grounds that since the dependent variable can take three values, the regression coefficients cannot be interpreted as changes in percentage points. In the following we shed light on this issue by redefining the dependent variable into three categories of couples: i) only the male partner is manager, ii) only the female partner is manager and iii) none or both are managers. By redefining the dependent variable we can also get a measure of the importance for the results that the male partner is manager and that the female is manager, respectively.

We estimate the models by multinomial logit. The reference category is that none of the spouses or both are managers, which means that "Only the male partner is manager", and the category "only the female partner is manager" are measured relative to none or both are managers. Results are presented as marginal effect using mean values of all relevant characteristics in our sample.[9] Fig. 4 presents the results. At each year since birth, the interpretation of the coefficient is the increase in the likelihood of only the male (female) being manager, relative to t = −1.

The estimated model includes the full set of controls, but we only present the estimated coefficients for the time dummies for years since birth. The mean value over the whole period for only the male being a manager is 0.074. The corresponding value for only the female being a manager is 0.039. As expected, the results show that the likelihood of being a manager is much higher for the male partner than for the female partner, measured by the difference between the estimates in Model 1 and Model 2, for t = 0 to 9. At t = 0 the likelihood of only the male partner is manager has increased by approximately 1 percentage point. Nine years after birth 0 the likelihood of only the male partner is manager has increased by approximately 8 percentage point. The comparable percentage for the female partner after 9 years is 3 percentage points. The difference between the couples is approximately equal to the estimates in the full model in Fig. 2. This is reassuring with respect to the models we estimate in the main specification.

We mentioned earlier that the pre-treatment parallel trend assumption must be fulfilled in order to proceed with a DD-like approach. Based on developments in Fig. 1, we concluded that pre-parallel trends

[7] Of course, the fathers' quota uptake is not a pre-birth variable. Being a post-treatment variable, it is potentially endogenous and should be interpreted with some caution.

[8] We also estimated a model including the age of the youngest partner at time of birth. This did not change the results.

[9] Results obtained using mlogit and margins command in Stata.

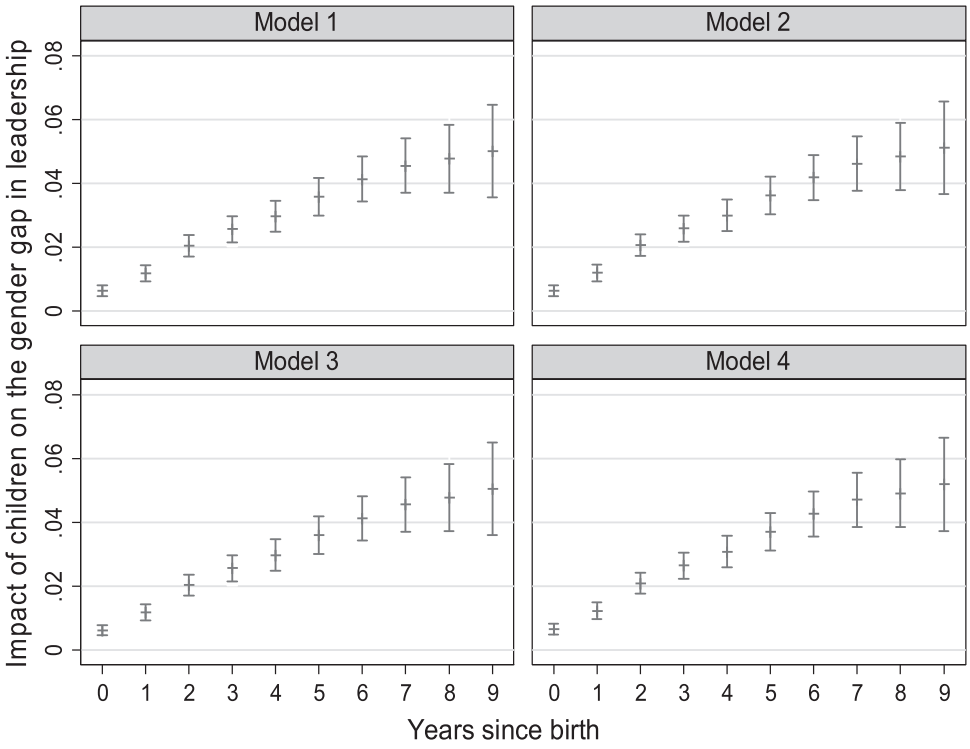

Fig. 3. Robustness checks. Iimpact of children on the gender gap in management. The dependent variable: $(y_{imct} - y_{ifct})$. Estimated coefficients and standard errors in parentheses. Note: Model 1: Equivalent of Model 3 in Fig. 2 + Age in levels. Model 2: + education in levels, Model 3: + work experience in levels, Model 4; + labour market attachment and the use of fathers' quota. Estimated coefficients are reported in Appendix Table A2.

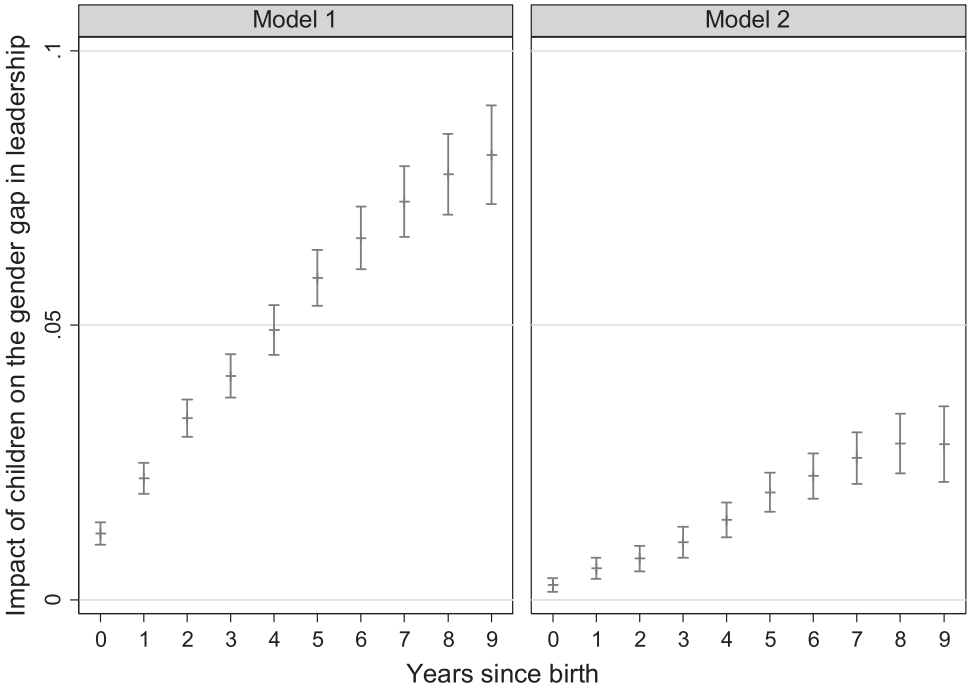

Fig. 4. Probability of only the male partner is manager (Model 1), and only the female partner is manager (Model 2). Multinomial logit. Marginal effects. Note: Results from estimating a multinomial logit model, presented as marginal effects. Estimation includes the full set of controls, i.e., variables included as controls in Model 3 in Table A1 in Appendix.

were satisfied. However, careers might be affected by the expectation of having a child, even early on in the career. To further check the robustness of this assumption in our data, we extend the pre-period by two more years, including four pre-birth years in total. This comes at the expense of having fewer cohorts, as we leave out cohorts 2005 and 2006, since we observe them only two and three years prior to birth. Fig. 5 presents developments in mean management shares for mothers and fathers, similar to Fig. 1 but with two extra pre-years. The main conclusion is still that the pre-trend assumption is fulfilled.

Table A3 in the Appendix presents regression results for this sample, similar to the models in Table A1. Mothers-to-be have a somewhat more favourable development in the pre-birth period, but

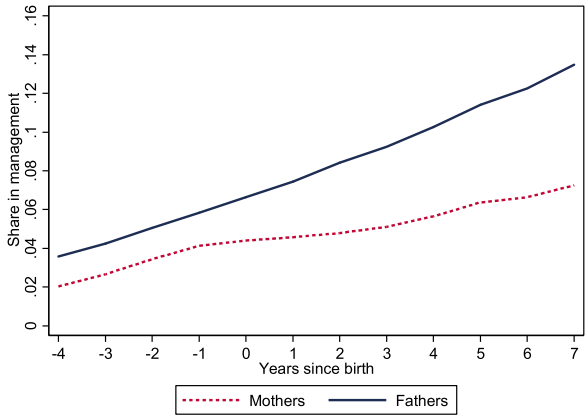

Fig. 5. Mean share in management from time since birth. Cohorts 2007–2012. Mothers and fathers.

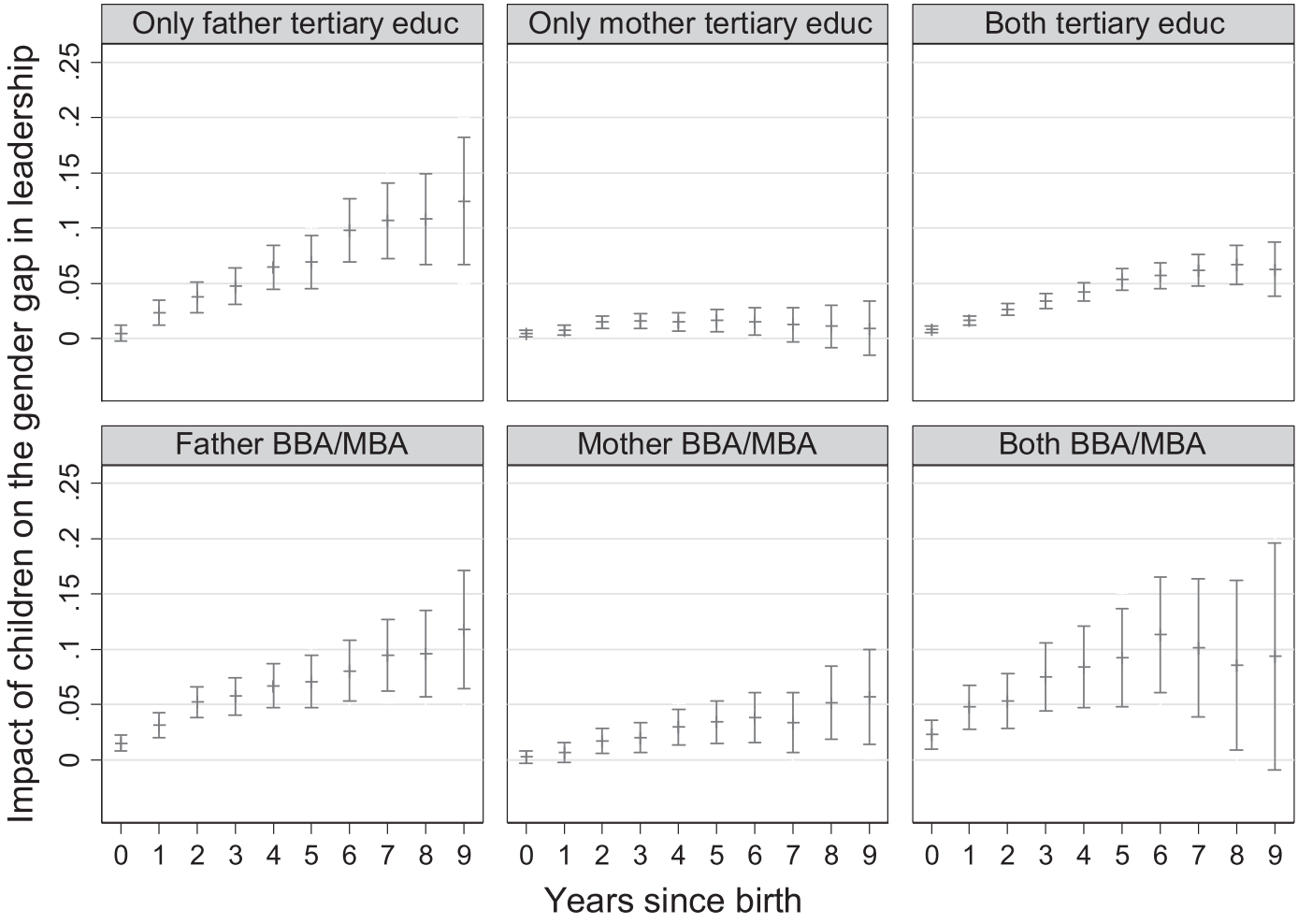

Fig. 6. Impact of children on the gender gap in management. By level and type of education. The dependent variable: ($y_{imct} - y_{ifct}$). Estimated coefficients and confidence intervals. Note: Results from six separate regressions. All models include the full set of controls, i.e., variables included as controls in Model 3 in Table A1 in Appendix.

thereafter, the fathers experience a steeper management trajectory, which lasts throughout the period of the analyses. It is noteworthy that the estimated management gaps are smaller in this setting, at each t. This suggests that the management gap is smaller among more recent cohorts, since we leave out cohort 2005 and 2006 in the estimations in Table A3. We investigate this and reestimate the original sample, leaving out cohort 2005 and 2006. These results are presented in the last column in Table A3. The estimates are lower for all t's compared to the estimates using all cohorts, in Table A1. This suggests that the gender gap in management is slowly narrowing, i.e., that more recent cohorts are experiencing lower gender gaps in management due to parenthood.

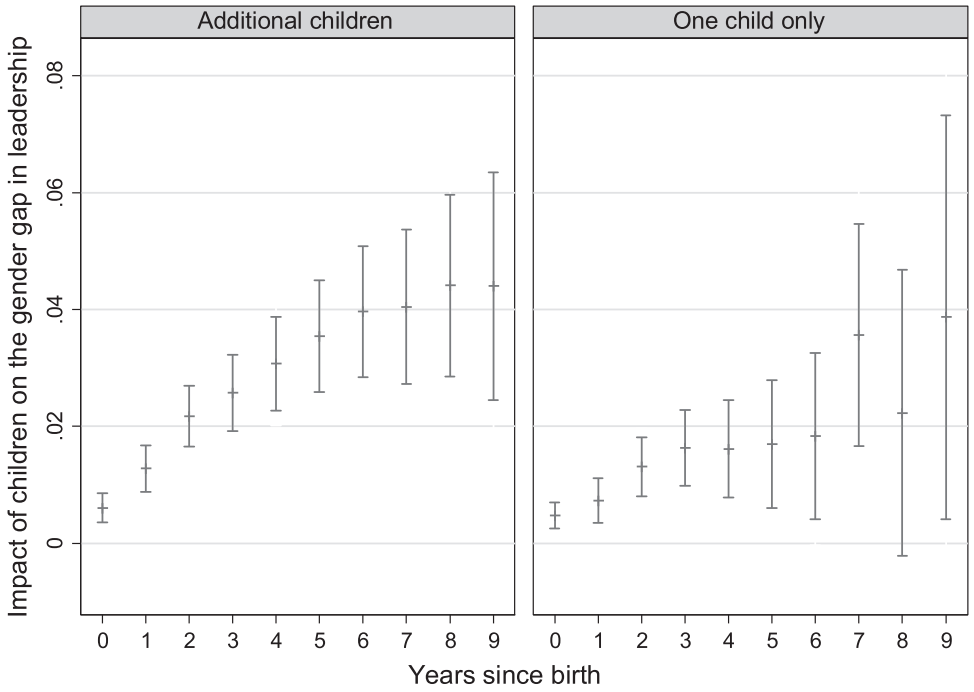

Fig. 7. Impact of children on the gender gap in management. Additional children or not. The dependent variable: ($y_{imct} - y_{ifct}$). Estimated coefficients and confidence intervals. Note: Results from two separate regressions. All models include the full set of controls, i.e. variables included as controls in Model 3 in Table A1 in Appendix.

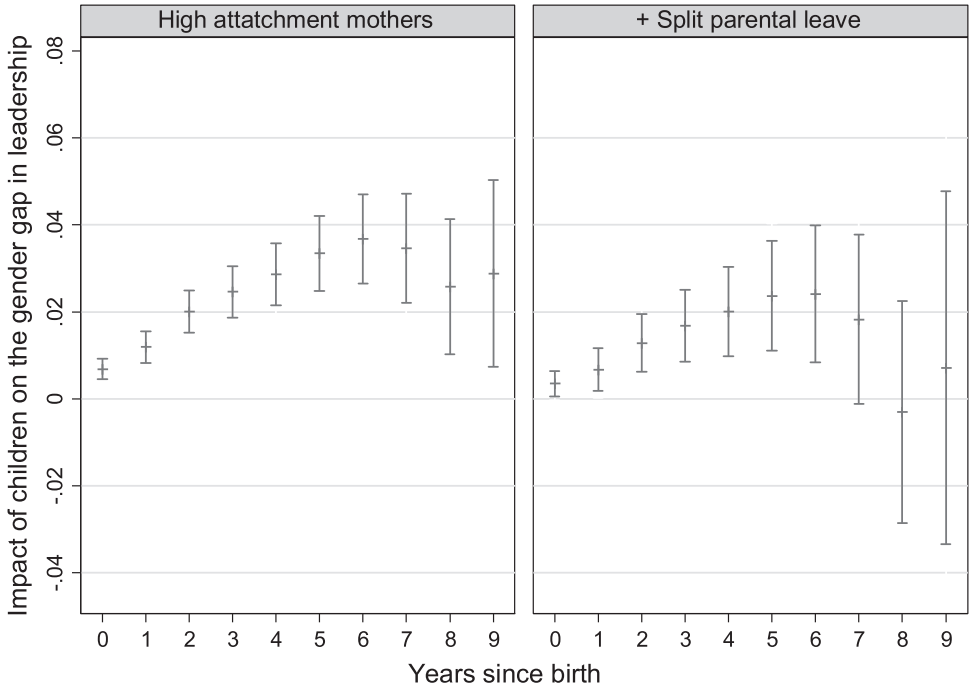

Fig. 8. Impact of children on the gender gap in management. Labour market attachment, and mothers in household where parental leave is split. The dependent variable: ($y_{imct} - y_{ifct}$). Estimated coefficients and confidence intervals. Note: Results from two separate regressions. All models include the full set of controls, i.e. variables included as controls in Model 3 in Table A1 in Appendix.

5.3. Heterogeneous effects

In the following, we proceed using the original dependent variable and the original sample, i.e. couples becoming parents in 2005–2012. The intra-household distribution of the level and type of education may affect the partners' bargaining power, and hence, career prospects and trajectory. Also, some types of education are much more likely to lead to management positions. Business and administration is typically the type of education with the largest share in managerial positions. This is also the case in our data.[10] The main motivation for the analyses which follow is to investigate the importance of the comparative advantage in the household between domestic work and labour market work. If we consider a household's labour supply to be a collective decision, the collective labour supply model assumes that the bargaining power of the members of the household is determined by comparative advan-

[10] In our data, 20 (13) per cent of the male (female) managers have education type "Business and administration".

tages in the labour market (cf. Becker, 1991). The model predicts that the person in the household with the smallest opportunity cost of expected foregone labour market opportunities bears the largest share of the costs of parenthood, in our case, measured by career opportunities in management. Here we focus on investment in education.

In Fig. 6 we present regression results for subgroups of couples by the level and type of education. Education is measured prior to the arrival of the firstborn. The three models on the upper half present results for the level of education; the first model depicts when the father has tertiary education (at least one year of college or university education) and the mother has not, the second model when the mother has tertiary education and the father has not, and in the third model, both parents have tertiary education. The three models on the lower half present estimates by type of education; the first model depicts fathers with a degree in business and administration, the second model depicts mothers with a degree in business and administration, and in the last model, both parents have a degree in business and administration. In all models, we include the full set of controls. All figures are based on regressions with the same controls as the last model in Table A1.

Consider a household where the father has tertiary education and the mother does not. From a household perspective, it will be economically rational for the father to specialize in labour market work and the mother in domestic work. This is what we find in Fig. 6, presented in the figures in the upper panel. The first figure in the upper panel shows that the gender gap is larger when conditioned on the father having tertiary education, compared to the full model for the whole sample in Fig. 2. Furthermore, the gender gap is much larger when it is the father who has tertiary education than when it is the mother. When the mother has tertiary education, the difference is numerically small, and the estimates are not significant towards the end of the period. When both have tertiary education, the gender gaps lie between the estimates in the first two figures in the upper row. When both parents have higher education, the bargaining power is more equally distributed, and this should reduce the gap compared to the first model.[11] Still, the results suggest that the father has the strongest bargaining position; based on the results when both have higher education, there is still a considerable gender management gap.[12] The results which depend on the level of education are broadly consistent with surveys measuring the amount of time used on domestic work, depending on the educational attainment of the spouses/partners. A nationwide Norwegian survey shows that the share of people agreeing with statements reflecting gender equality increases with the level of education, more so for women than for men (Hansen and Slagsvold, 2012).

In the lower panel of Fig. 6, we allow for heterogeneous effects, depending on the couples' type of education. When considering couples where the father has a business and administration degree and the mother does not, the gender gap in management is as pronounced as in the case when the father has higher education and the mother does not. Thus, there is a large gender gap in favour of the father, independent of the type of education. Even when the mother has a management type of education, the gap is very much in favour of the father. There is small tendency towards the end of the period of a somewhat smaller gender gap when both have a business type of education, which can be interpreted as a slight indication of a "catching up" pattern - when the firstborn child has reached school starting age.[13]

Next, to shed light on the importance of additional children for the gender gap in management, we estimate models separately for those who had only one child and for those who had additional children (measured within the period covered by the data, i.e. up to 2014). Having more children likely means a greater domestic workload and less effort allocated to the labour market, potentially affecting the within-household career gap. If the mother does the majority of caring and rearing for the next child, this may reinforce the gender gap in management. Still, we cannot rule out selection and preferences. Having just one child may be indicative of more career-oriented mothers, which may be positively correlated with management likelihood. Fig. 7 presents results separately for the two groups. The figure on the left is for couples with additional children, and the figure on the right is for couples with no additional children. As was the case earlier, the figures are based on regressions with controls similar to the last model in Table A1.

The figure on the left shows a somewhat larger gender gap among couples who have several children relative to those with no additional children. Such findings are in line with the view that women who have only one child will spend less time outside the labour market and hence will be more likely to be in management positions. Still, the differences between the two groups are not significant in all years (t = 1, 7, 8, 9 are not significant) and should be interpreted with some caution.[14] If we compare the results among those with additional children with results for the whole sample in Fig. 2, they do not differ much. This mainly reflects that a large share of the couples get additional children.

We end our empirical investigations by having a closer look at how far we can go to close the gender gap in management. We focus on two things: i) the importance of labour market attachment in the post-parenthood period and ii) the importance of sharing the parental leave period between the parents. We discussed the importance of human capital depreciation and the lack of acquisition of new skills resulting from the interruption in employment due to childbirth. To highlight this point, we analyse the gender gap in management in households where the mother is registered with continuous post-birth employment and where she is also registered with continuous full-time employment.[15] The results from this analysis are presented in the left part of Fig. 8. Furthermore, to highlight the importance of gender balance in the uptake of parental leave, we further limit the analyses to households where the father takes up at least 20 per cent of the parental leave. The mean share of the parental leave period that is taken up by the mother in our sample is approximately 80 per cent. On average, over the whole period, the mother is registered with 10.8 months and the father with 3 months of compensated parental leave. The result from this exercise is presented in the right part of Fig. 8.

Results on the left of the figure show that the gender gap in management is considerably lower than the estimates in Fig. 2 with full set of controls, which included the whole sample. Even though the sample is substantially smaller and is subject to selection issues, the results suggest that career interruption is one important explanation for the gender gap in management. Still, a sizeable gap remains. On the right side of the figure, also conditioned on spouses sharing parental leave more equally, the gap is further reduced and becomes insignificant towards the end of the period. This last result suggests that a more gender-equal distribution of parental leave between spouses levels the playing field and increases the management opportunities for mothers.[16]

[11] In our sample, only 0.8 per cent of the couples are couples where both the mother and the father are in management positions.

[12] An alternative explanation that we cannot rule out is that the gender gap reflects women's preferences for paid and unpaid work.

[13] As an additional exercise, we have also undertaken an analysis limiting the sample to couples of the same age. We mentioned earlier that men, being older on average, have a comparative advantage in the labour market. We control for pre-birth age difference, but to allow for different profiles over time, we have estimated the model for the subsample of couples (results not shown). However, this had just a small effect on the coefficients in the direction of larger gender gaps.

[14] We have also conducted analyses looking at the importance of twin/multiple births. One possibility is that the within-couple domestic workload is further skewed when twin/multiple births arise. However, we find no evidence of an extra gender gap as a consequence of such births.

[15] In our sample, 40 per cent of mothers are registered with continuous full-time employment and 65 per cent with continuous employment. Full-time is registered as those working more than 30h per week.

[16] One caveat is that it might be that couples who choose to share their parental leave period are more egalitarian and would not have increased the gender gap even in the absence of the shared leave.

6. Conclusion

Norway stands out as one of the most gender-equal countries in the world. Still, there is a large and persistent gender gap in management positions, to women's disfavour. Blau and Kahn (2013) suggest that generous public family policies such as those in the Scandinavian countries, including entitlements to long and fully wage-compensated parental leave and the entitlement to subsequent part-time work, may encourage women who would otherwise have had a stronger labour force commitment to take part-time jobs or lower-level positions in the workplace. This may be detrimental to their career development and may also have the effect that fewer women are likely to pursue high-level management positions. On the demand side, such policies may lead employers to engage in statistical discrimination against women aspiring to jobs leading to higher-level positions.

In this paper, we look at the importance of parenthood for the gender gap in management, in an environment typically characterised as having a generous public family policy. Parenthood involves more domestic obligations for the spouses/partners. If the major share of these obligations falls on the mother, her use of less time and effort in the labour market may imply an increased gender gap in the career ladder. Empirically, we exploit very rich individual register data and analyse the development in within-couple differences in the likelihood of being in a management position. The data enables us to follow individuals from two years before the birth of the firstborn until nine years after that. Investigating within-couple differences allows us to control for both observed and unobserved attributes of the spouse/partner.

Results from the main model show that the gender gap in the likelihood of having a managerial position increases sharply from the pre-birth to the post-birth period, from a small difference prior to conceiving the first child to a difference in the order of 5 percentage points nine years after birth. This result is in line with theories focusing on specialization and the allocation of resources within the household. Results from heterogeneity analyses support this, showing that the gender gap in management is larger when the father has more education and also if he has a more typical management education ("Business and administration"). Finally, we try to close the gap by focussing on post-birth continuous full-time working mothers in households which share the parental leave. For this high labour market-attachment group of mothers, the gender gap is strongly reduced, and towards the end of the period, the gap is no longer significant. This last result is suggestive evidence pointing to the importance of the depreciation and non-accumulation of human capital resulting from career interruption related to child bearing and rearing.

Appendix A

See Tables A1–A3.

Table A1
Impact of children on the gender gap in management. The dependent variable: $(y_{imct} - y_{ifct})$. Estimated coefficients and standard errors in parentheses.

	(1) No controls	(2) Calendar controls	(3) Full set of controls	(4) Top manager Full set of controls
Pre-birth difference in management	0.557***	0.557***	0.555***	0.536***
	(0.006)	(0.006)	(0.006)	(0.006)
Pre-birth difference in education			0.004***	0.005***
			(0.001)	(0.001)
Pre-birth difference in experience			0.001***	0.001*
			(0.000)	(0.000)
Pre-birth difference in age			0.002***	0.002***
			(0.000)	(0.000)
t=0	0.005***	0.006***	0.006***	0.006***
	(0.001)	(0.001)	(0.001)	(0.001)
t=1	0.010***	0.012***	0.012***	0.011***
	(0.001)	(0.001)	(0.001)	(0.001)
t=2	0.018***	0.020***	0.020***	0.017***
	(0.001)	(0.002)	(0.002)	(0.001)
t=3	0.023***	0.025***	0.025***	0.021***
	(0.001)	(0.002)	(0.002)	(0.002)
t=4	0.028***	0.030***	0.030***	0.025***
	(0.002)	(0.002)	(0.002)	(0.002)
t=5	0.033***	0.036***	0.036***	0.028***
	(0.002)	(0.003)	(0.003)	(0.003)
t=6	0.038***	0.042***	0.041***	0.032***
	(0.002)	(0.003)	(0.003)	(0.003)
t=7	0.042***	0.046***	0.046***	0.034***

(continued on next page)

Table A1 *(continued)*

	(1) No controls	(2) Calendar controls	(3) Full set of controls	(4) Top manager Full set of controls
	(0.003)	(0.004)	(0.004)	(0.004)
t=8	0.044***	0.049***	0.048***	0.037***
	(0.004)	(0.005)	(0.005)	(0.005)
t=9	0.047***	0.051***	0.051***	0.037***
	(0.005)	(0.007)	(0.007)	(0.006)
Constant	0.009***	0.012***	0.009***	0.011***
	(0.001)	(0.002)	(0.002)	(0.002)
Observations	478,033	478,033	478,033	478,033
Adjusted R-squared	0.193	0.193	0.194	0.176

Note: Robust standard errors in parentheses ** $p < 0.05$,
Standard errors are clustered at the level of the couple.
*** $p < 0.01$,
* $p < 0.1$.

Table A2
Robustness checks. Iimpact of children on the gender gap in management. The dependent variable: $(y_{imct} - y_{ifct})$. Estimated coefficients and standard errors in parentheses.

	(1) Age in levels	(2) +Education in levels	(3) +Experience in levels	(4) +Extended set of pre-variables
Pre-birth difference in management	0.560***	0.559***	0.559***	0.557***
	(0.006)	(0.006)	(0.006)	(0.006)
Age (level)	0.002***	0.001**	−0.001*	−0.001
	(0.000)	(0.000)	(0.000)	(0.000)
Education (level)		0.007***	0.008***	0.009***
		(0.001)	(0.001)	(0.001)
Experience (level)			0.002***	0.002***
			(0.000)	(0.000)
Pre-birth difference in log hourly wage				0.006***
				(0.001)
Pre-birth difference in working days/100				0.000***
				(0.000)
Pre-birth difference in working hours				−0.001
				(0.001)
Paternity leave: No part of the quota				0.007**
				(0.003)
Paternity leave: More than the quota				−0.012***
				(0.002)
t=0	0.006***	0.006***	0.006***	0.006***
	(0.001)	(0.001)	(0.001)	(0.001)
t=1	0.012***	0.012***	0.012***	0.012***
	(0.001)	(0.001)	(0.001)	(0.001)
t=2	0.020***	0.021***	0.020***	0.021***
	(0.002)	(0.002)	(0.002)	(0.002)
t=3	0.026***	0.026***	0.026***	0.026***
	(0.002)	(0.002)	(0.002)	(0.002)
t=4	0.030***	0.030***	0.030***	0.031***
	(0.003)	(0.003)	(0.003)	(0.003)
t=5	0.036***	0.036***	0.036***	0.037***
	(0.003)	(0.003)	(0.003)	(0.003)

(continued on next page)

Table A2 *(continued)*

	(1) Age in levels	(2) +Education in levels	(3) +Experience in levels	(4) +Extended set of pre-variables
t=6	0.041***	0.042***	0.041***	0.043***
	(0.004)	(0.004)	(0.004)	(0.004)
t=7	0.046***	0.046***	0.046***	0.047***
	(0.004)	(0.004)	(0.004)	(0.004)
t=8	0.048***	0.048***	0.048***	0.049***
	(0.005)	(0.005)	(0.005)	(0.005)
t=9	0.050***	0.051***	0.050***	0.052***
	(0.007)	(0.007)	(0.007)	(0.007)
Constant	−0.039***	−0.043***	−0.020**	−0.033***
	(0.007)	(0.007)	(0.009)	(0.009)
Observations	441,509	441,509	441,509	441,509
Adjusted R-squared	0.199	0.199	0.199	0.199

Note: Robust standard errors in parentheses.
In all models the full set of controls are included, see Model 3 in Table A1.
The reference variable for paternity leave is the father taking up to the quota.
Standard errors are clustered at the level of the couple.
*** p < 0.01.
** p < 0.05.
* p < 0.1.

Table A3
Impact of children on the gender gap in management. The dependent variable: ($y_{imct} - y_{ifct}$). Longer pre-period. Estimated coefficients and standard errors in parentheses.

	(1) No controls	(2) Calendar controls	(3) Full set of controls	(4) Full set of controls Original sample
t=−2	−0.005***	−0.005***	−0.005***	
	(0.001)	(0.001)	(0.001)	
t=−1	−0.004***	−0.003***	−0.003***	
	(0.001)	(0.001)	(0.001)	
t=0	0.001	0.003	0.003	0.005***
	(0.001)	(0.002)	(0.002)	(0.001)
t=1	0.008***	0.009***	0.009***	0.010***
	(0.001)	(0.002)	(0.002)	(0.001)
t=2	0.015***	0.017***	0.017***	0.018***
	(0.002)	(0.003)	(0.003)	(0.001)
t=3	0.019***	0.022***	0.022***	0.023***
	(0.002)	(0.004)	(0.004)	(0.001)
t=4	0.024***	0.026***	0.026***	0.028***
	(0.002)	(0.004)	(0.004)	(0.002)
t=5	0.029***	0.031***	0.031***	0.034***
	(0.003)	(0.005)	(0.005)	(0.004)
t=6	0.034***	0.037***	0.036***	0.040***
	(0.004)	(0.006)	(0.006)	(0.005)
t=7	0.039***	0.042***	0.042***	0.042***
	(0.005)	(0.008)	(0.008)	(0.007)
Constant	0.002***	0.003***	0.0001	0.006***
	(0.000)	(0.001)	(0.001)	(0.002)

(continued on next page)

Table A3 *(continued)*

	(1) No controls	(2) Calendar controls	(3) Full set of controls	(4) Full set of controls Original sample
Observations	372,658	372,658	372,658	330,304
Adjusted R-squared	0.240	0.240	0.280	0.227

Note: Robust standard errors in parentheses ** $p < 0.05$, * $p < 0.1$.
Standard errors are clustered at the level of the couple.
*** $p < 0.01$.

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