Minding Your Business or Your Child? Entrepreneurs, Fertility, and Firm and Worker Outcomes

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Using Canadian administrative data, I document that childbirth has substantial and persistent effects on female entrepreneurs' firm performance and employees' outcomes. Over the five years after a founder's first birth, sales, assets, and profits fall by 15–25%. Performance in firms owned by fathers remains unchanged, while firms owned by spouses experience a moderate decline. The drop in firm outcomes spill over to employees of mother-owned firms, who experience a 4% reduction in earnings. Fertility among employees rises after the entrepreneur's childbirth, suggesting within-firm network effects in family formation. The penalties for mother-owned firms cannot be fully explained by household specialization based on labor market advantage. Childcare availability and progressive gender norms mitigate the adverse effect of childbirth on the entrepreneurship gap.

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I Introduction

Entrepreneurship is crucial for economic growth. Young firms play a disproportionate role in creating new jobs and driving aggregate productivity dynamics (Haltiwanger, Jarmin, and Miranda, 2013; Andrews et al., 2022). However, women are still underrepresented in entrepreneurship. Despite some convergence over the past decades, a substantial gender gap remains in both the likelihood of women starting new firms and the performance of female-founded firms. The causes of these disparities are not entirely understood, but their implications are potentially far-reaching. If women's underrepresentation in entrepreneurship reflects a misallocation of talent, it could have significant consequences for aggregate growth and innovation (Hsieh et al., 2019). This paper provides a novel explanation for the persistence of the entrepreneurship gender gap: children have a substantial effect on mothers' entrepreneurial activities, but not on fathers'.

Understanding the impact of childbirth on women's entrepreneurship is important for two reasons. First, it can help explain gender disparities in both firm entry and performance. If children are a significant factor behind these gender gaps in entrepreneurship, then policies designed to support mothers could yield higher-than-anticipated returns as they can foster new business creation or prevent the closure of women-owned firms. Second, examining firm performance before and after childbirth helps determine whether its impact extends beyond women's careers. If childbirth negatively affects firm performance—a result that would be consistent with evidence on the importance of founders for firm success (Smith et al., 2019; Becker and Hvide, 2022)—this suggests that childbirth effectively imposes a negative externality on the firm and its workers. This further raises the importance of policies aimed at closing gender gaps in entrepreneurship.

This paper studies the effect of children on women's entrepreneurial activity using rich administrative data from Canada. Using an event study design around the birth of the first child, I find that childbirth accounts for half of the gender gap in firm outcomes for entrepreneurial firms. Childbirth among women entrepreneurs generates large spillovers on firms and workers: firm sales fall by over 20% following childbirth, while workers' earnings drop by around 4%. Conversely, firms owned by men show no significant performance decline after childbirth, except when they own the firm jointly with a spouse. In addition, I show evidence of within-firm fertility spillovers in mother-owned firms. Finally, I find that childcare availability (supplied by either retired grandparents or daycare centers) as well as more progressive gender norms significantly reduce the negative effect of childbirth on firm performance. These results suggest that frictions, such as limited childcare support, are an important explanation for the existence of gender gaps in entrepreneurship. Addressing these frictions can thus lead to significant efficiency gains by fostering the creation of more women-led firms and improving the performance of existing ones.

Studying the impact of childbirth on entrepreneurial firms and workers requires longitudinal

data that tracks individuals through childbirth events, along with firm-level information, including ownership, balance sheets, and personnel data. I use the Canadian Employer-Employee Dynamics Database (CEEDD), covering the years 2001-2017. The CEEDD is a set of administrative files compiled by Statistics Canada, containing both demographic information on workers and detailed financial data on firms. An advantage of the CEEDD is that it contains ownership records for the entire universe of Canadian private firms. This linkage allows for precise identification of entrepreneurs and accurate measurement of the earnings extracted by each founder. Another key strength of the CEEDD is that it allows childbirth events to be identified using the Canada Child Benefit and birth records. Finally, by using historical tax filing data, I link entrepreneurs to their families of origin, allowing me to study the effect of informal childcare provided by grandparents.

The first part of the analysis examines how a childbirth event experienced by the founder affects firm performance. Using a matched event-study design that compares firms owned by women who become mothers to similar firms owned by women with zero observed fertility,[1] I find that childbirth leads to a substantial deterioration in firm outcomes. In the 5 years following childbirth, sales decline on average by 22%, assets by 17%, and profit by 21% relative to the control group. These effects extend beyond mere downsizing. Firms become less efficient, with profit margins decreasing by 6%. Survival rates also decline, though the effect is modest: after 5 years, the likelihood of mother-owned firms remaining operational falls by approximately 4% relative to the control group. To assess the economic significance of the main findings, I test whether the effects are concentrated among small firms or firms in low-value-added sectors. I show that this is not the case: the negative effects persist even for firms in the top quintile of the size distribution. In addition, the largest effects are concentrated in sectors such as scientific research, manufacturing, and computer system designs, and they are not solely driven by low-value-added service industries.

Crucially, firm performance is virtually unaffected when a male founder (solo or with a non-family co-founder) has a child. An Oaxaca decomposition shows that children are a substantial contributor to gender inequality in entrepreneurial outcomes, accounting for 47% of the gender gap in sales and 54% of the gap in profits. However, fathers experience performance penalties in one case: when they own the firm together with mothers. Couple-owned firms experience 8% and 10% drop in sales profits, respectively, in the first childbirth year. Since firms owned by couples account for a large share of businesses, this channel exposes a substantial number of fathers to the

[1] I use the matching approach as my main identification strategy for two reasons that are specific to the entrepreneurship context. First, it can be straightforwardly extended to the case of co-founder spouses, in which spouses with children are matched to spouses without children. Second, employees in mother-owned firms are suitably compared to those in firms led by women who remain childless. As a complementary check, I also estimate a parent-only design that directly contrasts mothers' firms with fathers' firms to gauge the effect on the gender gap. As a robustness test, I supplement the evidence with an instrumental variable approach, using the sex of the first two children as an instrument for the birth of a third child (Angrist and Evans, 1998). Details on the empirical strategies are discussed in Section III.

childbirth shock.

The second set of main results concerns workers. The employee sample comprises individuals who were already on the payroll of either a treated firm or its matched control firm in the year before the founder's first childbirth. Because the timing of the founder's childbirth is outside workers' control, the estimates can be interpreted as causal under standard identification conditions. I show that after the entrepreneur has a child, the firm's employees experience career disruptions. Workers in mother-owned firms see their earnings drop by 2% in the first year after childbirth, relatively to workers employed in firms owned by women without children. The decline in earnings persists for at least 5 years, with earnings remaining 4% lower that the control group. Workers affected by entrepreneur's childbirth event are also 1% more likely to experience unemployment. These effects are concentrated among younger and short-tenure employees.

The effects of the founder's childbirth extend beyond careers to workers' family decisions. Employee birth rates start to rise in the year after the entrepreneur becomes a mother and peak in the second year. For workers exposed before age 30, this translates into roughly 45 additional births per 1,000 employees over the subsequent five years. Taken together, these estimates provide causal evidence that a founder's childbirth both imposes earning losses on employees and alters their fertility choices, carrying the child penalty from the household into the workplace.

The third part of the analysis examines how childbirth affects entrepreneurial careers. Prior to childbirth, women entrepreneurs out-earn their male counterparts. However, income trajectories sharply diverge in the year of first childbirth. Mothers' total income declines by around 11% relative to women without children, while fathers' remains stable. This drop is modest relative to the child penalties typically found for wage employees, a gap that could reflect two facts: entrepreneurship offers greater discretion over hours and effort than salaried work, and the pool of female founders is positively selected on ability and earnings potential. If entrepreneurship truly is a congenial option for new mothers because it offers greater discretion over time allocation, we should perhaps expect to observe an inflow of women into entrepreneurship after childbirth. Tracing dynamic effects around the first birth for women who were not yet founders, I find a 35-40% drop in firm-creation rates in the childbirth year. Although entry gradually rebounds, it never returns to the pre-birth level. The result is consistent with the "greedy-job" view of entrepreneurship (Goldin, 2014): despite its nominal flexibility, running a young firm typically demands long and unpredictable hours (Levine and Rubinstein, 2017), making it difficult to combine with the commitments of early motherhood.

I test several potential mechanisms to explain why childbirth systematically impacts entrepreneurial outcomes for mothers, but not for fathers. The first is that mothers become more risk averse and switch to safer, lower-return investment strategies, without a deterioration in firm quality. The second potential explanation is that, after childbirth, couples need to specialize and

choose to allocate tasks based on their comparative advantage. Since women entrepreneurs are more likely to be the secondary earner compared to male entrepreneurs, they take on a larger share of childcare responsibilities, while their partners continue working outside the home. Third, couples might adhere to traditional gender norms, regardless of their comparative advantage in the labor market. Fourth, I examine the role of childcare availability, both informal (through family) and formal (through daycare centers).

Female breadwinners, for whom comparative advantage favors market work, do somewhat better than other mothers, yet still incur sizeable losses, suggesting that specialization based on labor market advantage alone cannot fully explain the division of labor after childbirth. The evidence points to gender norms and caregiving constraints. Using a sample of second-generation immigrants to Canada, I find that women from cultures with more traditional gender norms suffer markedly larger post-birth declines in firm performance, consistent with cultural expectations related to childcare responsibilities. Childcare expansions, captured by increases in local childcare-worker density, attenuate the performance decline for mothers whose children are under 3 relative to mothers with older children. Family support plays a similar role: linking mothers to their own parents via tax identifiers, I find that mothers who live near grandparents experience smaller losses. An event study around grandmother retirement shows a significant improvement in business performance for mothers living near newly retired grandmothers, with no similar effect from grandfather retirement, suggesting that the mechanism is tied specifically to caregiving. Finally, the effects of grandmother's retirement are stronger in municipalities with limited childcare availability, suggesting that family-provided childcare can substitute for formal services.

This paper contributes to several strands of the literature. A first strand is the child-penalty literature, which shows that children create large and persistent earnings losses for mothers and drive most of the remaining gender wage gap (Kleven, Landais, and Søgaard, 2019).[2] Recent work documents similar penalties for highly skilled women, such as women in science (Kim and Moser, Forthcoming). While much of this literature focuses on how children affect individual career outcomes, this paper shifts the focus to the broader spillover effects of childbirth on firms and employees. Evidence on such spillovers is scant. An exception is Brenøe et al. (2024), who show that when employees take parental leave, co-workers experience only modest effects. By contrast, for entrepreneurial firms, which rely heavily on the founder, these spillover effects can be far more pronounced. Moreover, entrepreneurs are a highly positively selected group and, because

[2]Cultural norms strongly correlate with child penalties (Boelmann, Raute, and Schönberg, 2024; Kleven, 2022), while biological explanations have little support (Kleven, Landais, and Søgaard, 2021; Andresen and Nix, 2022b). The effectiveness of parental leave and childcare subsidies in improving mothers' labor market outcomes remains debated: some studies find positive effects on female labor supply (Baker, Gruber, and Milligan, 2008; Andresen and Nix, 2022a), while others find minimal or no impact, often limited to single mothers (Nollenberger and Rodríguez-Planas, 2015; Kleven et al., 2024).

they craft their own work rules, they face no firm-imposed family policies, providing a unique setting to study child penalties in the absence of organizational constraints.

Second, this paper contributes to the rapidly growing literature on gender gaps in entrepreneurship. Previous studies have shown that women entrepreneurs face greater challenges in raising capital, partly due to investor biases (Alesina, Lotti, and Mistrulli, 2013; Hebert, 2025; Ewens and Townsend, 2020). Entry is higher when women grow up in communities rich in business owners, have better access to peers, or get exposed to entrepreneurship early in life (Markussen and Røed, 2017; Field et al., 2016; Mertz, Ronchi, and Salvestrini, 2024), suggesting that information and networks matter alongside finance. The entrepreneurship gender gap has consequences for aggregate productivity, and removing financial frictions and gender-specific barriers to business formation increases welfare (Bento, 2025; Morazzoni and Sy, 2022).

Closely related to this paper, recent work links fertility events to entrepreneurial decisions. Yang, Kacperczyk, and Naldi (2024) find that Swedish mothers are more likely to enter entrepreneurship when child penalties in the labor market are high, suggesting that entrepreneurship can serve as a means of avoiding career disruptions. Bonney, Pistaferri, and Voena (2025) find that Norwegian female-owned businesses experience a decline in profits after childbirth; Ferrando et al. (2025) finds similar effects for self-employed Dutch women. Access to reproductive healthcare and to family policies, such as parental leave and maternity benefits, increases female participation rates and improves women's entrepreneurial outcomes. (Core, 2024; Zandberg, 2021; Core and Karpati, 2024; Fontenay, 2024; Gottlieb, Townsend, and Xu, 2022). My contribution is three-fold. First, using high-quality administrative data covering the entire Canadian population, I estimate the effect of a founder's childbirth on firm outcomes for women, men, and spousal co-founders, and I show that motherhood accounts for roughly half of the gender gap in entrepreneurial performance. Second, I study spillovers to employees' careers and family formation. Third, I test how key mechanisms, including gender norms and childcare provision, drive variation in the childbirth penalty across firms.

Finally, this paper is related to the small empirical literature on peer effects in fertility in the workplace. Existing studies report contrasting findings. For instance, Hensvik and Nilsson (2010) show positive spillovers, while Ciliberto et al. (2016) find that the average effect is negative. These studies focus on horizontal spillovers among peers. By contrast, I document a vertical spillover effect: when a firm's founder becomes a parent, her employees, particularly younger ones, adjust their own family plans in response.

II Data

A. Data Sources and Sample Selection

I use the Canadian Employer-Employee Dynamics Database (CEEDD), a comprehensive administrative dataset compiled by Statistics Canada. The CEEDD integrates data from multiple government agencies, including the Canada Revenue Agency (CRA), Employment and Social Development Canada, and Immigration, Refugees, and Citizenship Canada (IRCC).

Each agency contributes specific data. The Canada Revenue Agency provides personal and corporate tax records. The T1 personal tax file contains individual demographic and financial characteristics, such as birth year, gender, marital status, and municipality of residence. The T2 corporate tax file includes firm financial statements, location, and industry classification for all corporations in Canada. The T4 Statement of Remuneration file contains job-level information, including annual employment income received by each worker from each employer.

Employment and Social Development Canada provides data on federal government programs and services, including Employment Insurance. Finally, Immigration, Refugees, and Citizenship Canada provides detailed immigration records. By linking these administrative sources through unique identifiers (anonymized Social Insurance Numbers for individuals and Business Numbers for firms), the CEEDD creates a rich longitudinal dataset, allowing detailed analysis of individuals, families, and firms over time.

Identifying entrepreneurs.— Defining who is considered an entrepreneur is a debated issue among entrepreneurship scholars. There is no consensus on whether the definition should include all or a subset of the self-employed. I focus on individuals who start incorporated firms, as incorporation may serve as a better proxy for entrepreneurship than overall self-employment (Rubinstein and Levine, 2018). Most unincorporated self-employed individuals have little ambition to grow their businesses, whereas incorporation is more common for ventures with high-growth potential due to limited liability and separate legal identity. Levine and Rubinstein (2017) show that individuals choose the legal form of their firm based on the nature of their planned business activities rather than switching legal forms ex post based on business success.

The CEEDD's T2 corporate tax file can be linked through firm-level identifiers to Schedule 50 (T2S50), a tax form that contains information on the firm's ownership structure. Private Canadian-controlled corporations are required to file a Schedule 50 to disclose the identity of all owners who hold at least 10% of common or preferred shares. Combining the T2 Schedule 50 and T4 files allows me to accurately identify entrepreneurs and measure returns to entrepreneurship. This represents a significant improvement over existing studies that typically rely on top earners within

a firm to identify entrepreneurs. Since business owners can decide to pay themselves via salary, dividends, or a mix of both, ignoring dividend income could introduce substantial measurement error. The availability of detailed ownership data allows for precise identification of entrepreneurs and an accurate measurement of the payoff extracted from the firm by each founder.

The sample covers the period 2001–2017. I restrict the sample to firms created during this period that had positive sales within the first five years of founding. Entrepreneurs are defined as firm owners who hold at least 20% of shares in the first year ownership is reported,[3] provided that ownership information is available within three years of the firm's founding.[4] I include in the sample firms founded at least two years before childbirth to ensure they were established prior to pregnancy. In addition, in my main analysis I exclude firms created by spouses (married or cohabiting couples) to separately identify the effects of childbirth on firms owned by fathers versus mothers. Firms created by couples are analyzed separately.

Family-level data.— Family-level data is drawn from the T1 Family File (T1FF), which aggregates information on family units by linking tax filers to their spouses and dependent children. Statistics Canada constructs family relationships by cross-referencing tax return filings and benefit claims.

To identify birth events, I use a family-level identifier to link individual tax files to a supplemental file containing children's year of birth and sex. Data on children is collected by Statistics Canada from the Canada Child Tax Benefit, a federal program supporting families, as well as from a supplemental birth record file, ensuring comprehensive coverage of children born in Canada. I restrict the parent sample to individuals who had their first child between 2001 and 2017.

Additionally, I use family identifiers to construct intergenerational links over time. By observing individuals who previously filed taxes together as part of a family unit, I can track familial relationships over time, even if co-filing ceases. This allows me to link entrepreneurs to their parents and study the effect of informal childcare provided by grandparents.

Immigration records.— To identify immigrants, I link individuals to immigration records from the Longitudinal Immigration Database compiled by Immigration, Refugees and Citizenship Canada (IRCC). This file contains information on all individuals granted permanent residency in Canada since 1980, including their country of origin and year of arrival. Through individual-level identifiers, immigration records can be linked to tax records. To construct my sample of second-generation immigrant entrepreneurs, I first build family linkages by linking entrepreneurs to their own parents, as described above. If an entrepreneur was born in Canada but has at least one parent recorded in the immigration database, I classify her as a second-generation immigrant.

[3] Results are robust to using alternative ownership thresholds.

[4] I allow for a three-year window because co-founders may delay equity allocation to evaluate contributions and avoid costly renegotiation ex post (Wasserman, 2008).

A. *Summary Statistics*

Table 1 presents descriptive statistics for the entrepreneurs and their firms in Panel A and workers in Panel B. In panel A, I report summary statistics as observed two years before the entrepreneur's first childbirth, separately for (i) mothers and their matched control group composed of women without children and (ii) fathers and their matched control group of men without children. Mean firm age is 2.8 years for mothers' firms and 3.1 years for fathers' firms, with virtually identical values in the corresponding control groups. These figures place the analysis in the domain of start-ups still in their initial stages, rather than mature small businesses that typically contribute less to employment growth. Mothers' ventures generate, on average, $285,800 in annual sales, hold $183,300 in total assets (in 2012 dollars), and employ 5.9 people. Fathers' firms are larger in terms of sales, at $349,300 dollars, but comparable in terms of assets and employment. The most notable gender difference lies in the sectoral composition: 95% of women-led firms operate in services versus 72% of men-led firms. In addition, 18% of mothers participate in mixed-gender teams compared with only 7.5% of fathers.

Turning to entrepreneurs, two years prior to childbirth, women are on average 31.7 years old and report $69,300 in individual income and $127,900 in household income (in 2012 dollars). This implies an average age at first birth above 33. By contrast, the average Canadian woman giving birth for the first time during this period was 28 years old, and the average annual earnings among employed women aged 25–54 was approximately $39,000.[5] Fathers are virtually identical in age to mothers, with a mean age of 31.9 years. More strikingly, the earnings profile is reversed relative to typical population patterns. Mothers report slightly higher pre-birth individual income than fathers ($69,300 versus $65,900). Female entrepreneurs are a highly selected group: they delay childbirth relative to other women, and their pre-birth earnings place them well above the average of the female earnings distribution, at levels comparable to those of male entrepreneurs. The estimates in this paper capture the effects of childbirth on a select group with comparatively high levels of human and financial capital.

Panel B characterizes the employee sample used in the worker-level analysis. I include every individual aged 18–65 who is continuously on the payroll of a treated (mother-led) firm and of its matched control firm in both $t^* - 1$ and t^* (where t^* is the entrepreneur's childbirth year). Baseline earnings average $24,000 for workers in mothers' firms and $23,600 for workers in the matched firms. The two groups are virtually identical on every other observable: mean age is 32.4 versus 32.5 years, average tenure is 2.3 years in both samples, and roughly 71% of employees are women in either group.

[5] Author's calculations using Statistics Canada's Table 11-10-0239-01.

III Identifying the Effect of Childbirth on Entrepreneurial Outcomes

Childbirth events are not random occurrences, complicating causal inference. The ideal experiment would randomly assign fertility shocks to individuals, enabling a clean comparison between parents and non-parents.[6] In the absence of such an experiment, I use a quasi-experimental design combining event studies and an instrumental variable approach. A key strength of this setting is that it allows me to track outcomes not only for entrepreneurs and their firms, but also for the workers they employ. Because employees are not involved in fertility decisions, worker-level outcomes are particularly well-identified and offer compelling evidence of the spillover effects of childbirth.

To study the effect of childbirth on entrepreneurial firms, the first approach I use is to match firms owned by mothers to firms owned by women with zero observed lifetime fertility. I rely on matching as my baseline identification strategy for two reasons. First, it can easily be applied to co-founder spouses by matching those who have children with similar spouses who do not. Second, employees in firms owned by women without children are the most suitable control group for employees in mother-owned firms. Section III.A describes the matching algorithm. The identifying assumption behind this approach is that the decision to have a child is not correlated with firm performance. One concern is that fertility can be timed strategically. For example, entrepreneurs might decide to have children after their firms have reached certain milestones, implying that their firms would exhibit accelerated growth before pregnancy; alternatively, they might have a child when the business has been performing poorly. I show that firms owned by mothers do not grow faster (or more slowly) than control firms in the years before pregnancy. Instead, they follow virtually identical trends to control firms up until childbirth and sharply diverge afterward.

While I find no evidence of differential trends before childbirth, one might argue that entrepreneurs possess private information about *future* performance. Mothers could time childbirth based on anticipated (but unobservable) shifts in firm outcomes. However, any such foresight would have to concern purely idiosyncratic shocks, as industry-by-year fixed effects absorb common shocks. Moreover, while childbirth can be planned to some extent, both its exact timing and future entrepreneurial outcomes are inherently uncertain. This is particularly relevant in the entrepreneurial context, where business performance is highly volatile and difficult to predict at the time of fertility decisions. To further mitigate this concern, I restrict the sample to women nearing the end of their childbearing years, for whom pregnancy is costlier to postpone and pregnancy

[6] Perhaps the closest approximation to this ideal is Gallen et al. (2023), who exploit failures of long-term contraception as exogenous shocks to pregnancy. They find large earnings penalties from unplanned pregnancies, consistent with estimates from event studies on all births. In contrast, using IVF success as an instrument for planned pregnancies yields smaller effects—though interpretation is complicated by negative earnings effects even in the control group (unsuccessful IVF), suggesting that infertility may itself reduce earnings.

timing is harder to predict. Results remain similar, supporting the interpretation that the sudden drop in women's entrepreneurial activity observed upon childbirth is caused by the childbirth event itself, rather than by mothers planning the timing of childbirth with perfect foresight of future entrepreneurial outcomes.

The second approach I use is to compare outcomes for mothers and fathers, as detailed in Section III.B. This strategy estimates the effect of childbirth for women relative to men, and provides insight into how parenthood contributes to gender inequality in entrepreneurship. Because both groups are parents, the comparison also mitigates concerns about selection into parenthood. The identifying assumption is that the timing of childbirth is not correlated with firm outcomes in systematically different ways for mothers and fathers.

Finally, to further reduce concerns related to selection bias, I use the sex of the first two children as an instrumental variable for the birth of a third child, as described in Section III.C.

A. Mothers vs. women without children

In this section, I restrict the analysis to women and I start by analyzing the effect of childbirth on firm outcomes. The sample comprises a panel of founders who had their first child during the sample period in year t^*, with the condition that the childbirth occurred during an entrepreneurship spell lasting at least 2 years between $t^* - 2$ and t^*. In the main analysis, I exclude firms jointly owned by spouses. Mothers are matched to women with no observed lifetime fertility using exact matching on industry at the 4-digit level, year, founder status, and marital status, and caliper-matching on firm age, entrepreneur's age, individual income percentile, and household income percentile, using calipers of 1 year, 5 years, 25%, and 25%, respectively. The matching is performed two years before childbirth (the last year in which individuals do not know that they will have a child in year t^*).

I estimate the following event-study specification:

$$y_{jt} = \alpha_j + \lambda_{s(j),p(j),t} + \sum_{k=a}^{b} \beta_k R_{jt}^k + \sum_{k=a}^{b} \theta_k (R_{jt}^k \times Mother_j) + X_{jt}'\gamma + \epsilon_{jt}, \tag{1}$$

where y_{jt} is an outcome (e.g., sales) for firm j in year t. $Mother_j$ is an indicator for whether firm j is owned by a mother; $R_{jt}^k = \mathbf{1}\{t = t_i^* + k\}$ are event-study indicators with t_i^* denoting the calendar year of the first childbirth. The coefficients of interest, θ_k, measure the effect of children relative to θ_{-2}. The set of control variables X_{jt} includes firm age indicators, number of owners (a proxy for how dependent the firm is on the founder who has a child), a polynomial for the entrepreneur's age, and marital status. The firm fixed effects, α_j, control for time-invariant firm characteristics, and $\lambda_{s(j),p(j),t}$ denote industry-province-year fixed effects.

Beyond the effects of childbirth on firm performance, I study the spillover effects on workers employed by mothers, relatively to workers employed in the matched control firms. Since employees are not involved in the entrepreneur's fertility choices, their career outcomes are less subject to endogeneity concerns related to the entrepreneur's timing of childbirth. I focus on employees who had worked at the firm for at least one year before the entrepreneur's childbirth and follow their employment and earnings trajectories over time. Workers may stay with the firm or move to another employer in the post-childbirth period. The following equation estimates the impact of childbirth on workers:

$$y_{ht} = \alpha_h + \lambda_t + \sum_{k=a}^{b} \beta_k R^k_{j(h)t} + \sum_{k=a}^{b} \theta_k (R^k_{j(h)t} \times Mother_{j(h)}) + X'_{ht}\gamma + \epsilon_{ht}, \tag{2}$$

where y_{ht} represents an outcome (e.g., earnings) for worker h in year t. α_h and λ_t denote worker and year fixed effects, respectively. $Mother_{j(h)}$ is an indicator for whether the entrepreneur who employs worker h is a mother and $R^k_{j(h)t} = \mathbf{1}\{t = t^*_{j(h)} + k\}$ are event-study indicators with $t^*_{j(h)}$ denoting the year of the entrepreneur's first childbirth. The set of control variables X_{ht} includes indicators for worker's age.

To complement the analysis of incumbent entrepreneurs, I also study how childbirth affects the decision to start a business. I expand the sample to all women who had their first child within the sample period, rather than just those who were already entrepreneurs. Each mother is matched to a non-mother based on year, marital status, and location (Census Metropolitan Area), together with caliper matching on age, individual income percentile, and family income percentile (with calipers of 1 year, 3%, and 3%, respectively). I estimate:

$$y_{it} = \alpha_i + \lambda_t + \sum_{k=a}^{b} \beta_k R^k_{it} + \sum_{k=a}^{b} \theta_k (R^k_{it} \times Mother_i) + X'_{it}\gamma + \epsilon_{it}, \tag{3}$$

where y_{it} is equal to 1 if individual i starts a firm in year t. α_i and λ_t represent individual and year fixed effects, respectively. The set of covariates X_{it} includes age dummies to control for life-cycle trends and marital status.

B. Mothers vs. fathers

The comparison between mothers and women without children allows us to understand the impact of childbirth on women. However, it does not speak directly to how parenthood affects the gender gap: fathers might experience similar effects (resulting in no gap) or, on the contrary, face little to no impact. In this section, I extend the analysis to fathers, following Kleven, Landais, and Søgaard (2019).

I restrict the sample to individuals who become parents during the sample period and estimate variations of Equations 1 and 3, applied to parent-only samples, separately for mothers and fathers. This allows me to compute the penalty P_k that women experience relative to men as the difference in outcomes between mothers and fathers at time k, following the birth of their first child.[7]

In this design, identification comes from comparing the trajectories of men and women after childbirth. Because both groups are affected by childbirth, P_k identifies the relative impact of children on mothers relative to fathers. This design does not separately identify the absolute effect of childbirth on fathers, since there is no untreated control group for them. To estimate the effect of childbirth on fathers, I use the matching algorithm described in Section III.A to construct a control group of men without children. As an alternative identification strategy, we can express P_k as the difference in outcomes between mothers and women without children, net of the difference between fathers and men without children.

Gap due to childbirth.— To quantify the extent to which childbirth contributes to the gender gap in entrepreneurial outcomes, I use a modified Oaxaca-Blinder decomposition. The standard Oaxaca-Blinder decomposition divides the gap in outcomes between two groups into an explained component, which reflects differences in observable characteristics, and an unexplained component, which captures differences in returns to these characteristics and other unobserved factors (Oaxaca, 1973; Blinder, 1973; Altonji and Blank, 1999; Fortin, Lemieux, and Firpo, 2011).

The mean gender gap Δ is given by $\Delta = (E[y^m_{jt}] - E[y^w_{jt}])/E[y^m_{jt}]$, where y^g_{jt} is a firm outcome (e.g., profits) for firm j owned by an individual of gender g in year t. Δ can be decomposed into inequality due to children and residual inequality:

$$\hat{\Delta} = \frac{E[P_k \cdot \tilde{y}^w_{jt}]}{E[\hat{y}^m_{jt}]} + \sum_q (\beta^m_q - \beta^w_q) \frac{E[X^m_{qjt}]}{E[\hat{y}^m_{jt}]} + \sum_q \beta^w_q \frac{E[X^m_{qjt}] - E[X^w_{qjt}]}{E[\hat{y}^m_{jt}]}. \tag{4}$$

P_k is the child penalty at event time k, $\tilde{y}^w_{jt}$ is the predicted counterfactual outcome for women (what women's outcomes would be absent childbirth), and $\hat{y}^m_{jt}$ is the predicted actual outcome for men. The first term measures the direct effect of childbirth on gender inequality in firm outcomes. It captures the share of the gender gap attributable to the differential impact of children on women relative to men, scaled by counterfactual firm outcomes for women. The second term represents differences in the returns to observable characteristics between men and women (the unexplained component of the gender gap). Finally, the third term measures differences in the distribution of observable characteristics, such as industry sorting, prior experience, or firm characteristics,

[7] For each gender $g \in m, w$, I express the estimated effect at event time k relative to the counterfactual outcome in the absence of children: $P^g_k = \hat{\theta}k^g / \mathbb{E}[\tilde{y}jt^g | t = t^*_j + k]$. The difference $P_k = P^m_k - P^w_k$ represents the relative penalty that mothers experience due to childbirth.

representing the explained component of the gap.

C. *Instrument: sibling sex mix*

To mitigate potential selection issues stemming from the endogeneity of childbirth, I use the sex of the first two children as an instrument for the birth of a third child (Angrist and Evans, 1998). This approach exploits parents' preference for variety in the sex mix of their children: a couple with two boys or two girls is more likely to have a third child than a couple with one child of each sex. This provides quasi-random variation in family size among parents with two children.

To assess the robustness of my main empirical strategy, I estimate event-study specifications around the birth of the third child, using both OLS and IV approaches. Comparing these estimates offers a check on the credibility of the event study design as a strategy for causal inference. Appendix B provides details on the instrument and estimation.

IV The Effect of Childbirth on Firms, Workers, and Entrepreneurs

A. *Firms*

Figure 1 shows the effect of childbirth on four main firm-level outcomes, using the estimation strategy in Section III.A. Panel (a) shows the trajectory of firm sales for mothers relative to the matched sample of women without children. The two groups follow nearly identical paths until the year before childbirth, after which a sharp divergence emerges. In the year of childbirth, sales for firms owned by mothers drop by over 20%. This effect persists, with sales still 16% lower after five years. Panel (b) documents a similar pattern for firm assets, which, on average, decline by about 17% in the five years following childbirth. Profits, shown in panel (c), experience the sharpest initial drop –falling by 27% in the year of childbirth– and show only a partial recovery, remaining 17% lower five years later. To assess whether these findings simply reflect downsizing, rather than a decline in performance, in panel (d) I examine the effect on profit margins. I find a 6% decline, pointing to an efficiency loss rather than just scale reduction.

These estimates are conditional on firms remaining active.[8] I turn to the effect of childbirth on firm survival in Figure A.1. Unlike the substantial declines observed in other firm outcomes, the effect on survival is modest, reducing the probability of remaining in business by only 3-4%. One possible explanation is that child penalties in the wage sector lower the opportunity cost of keeping a low-performing firm afloat. Alternatively, the non-pecuniary value of entrepreneurship,

[8] In Figure A.2, I show results without conditioning on survival by imputing zeros for firms that exit and applying the inverse hyperbolic sine (IHS) transformation to outcome variables, defined as $\text{IHS}(x) = \ln\left(x + \sqrt{x^2+1}\right)$. This transformation approximates the log transformation for small positive values but is also defined for $x \leq 0$. Using this approach, I continue to find significant negative effects across all outcome variables.

such as flexibility or autonomy, may make self-employment more attractive to mothers despite the large impact on the firm.

An important question is whether the effects of childbirth, though large on average, are primarily driven by small, low-productivity firms. If the most productive firms are unaffected, the broader economic implications may be less severe. Table 2 shows that the effects persist even among firms in the top quintile of the size and productivity distribution, as measured by assets or value-added two years prior to childbirth. Among firms in the top quintile by assets, sales fall by 12% after childbirth; among those in the top quintile by value-added, the decline reaches 18%. While smaller than the average effect, these declines remain substantial. Similarly, Figure A.3 shows that the largest impacts occur in sectors such as scientific research, manufacturing, and computer systems design, rather than in low-productivity sectors such as personal services or hospitality. Taken together, these findings indicate that the consequences of childbirth are not limited to the lower end of the firm distribution but extend to firms that play a disproportionate role in generating value-added.

How severe the childbirth shock is for firms depends on how critical the mother's own involvement is to the venture. In Figure A.4, I analyze firms' life cycle, comparing young firms that experience the motherhood shock when they are at most 5 years old with older firms. While the overall pattern of performance decline holds for firms of all ages, the effect is larger in magnitude among young firms. For instance, for sales, we observe an immediate drop of 25 log points in the year of childbirth for the young group, more than double the decline experienced by older firms. This pattern suggests that early-stage ventures, which lack deep management benches and rely more heavily on the founder's direct involvement, are especially exposed to shocks that limit the founder's time and attention. Consistent with founders seeking ways to offset the loss of their own input, Figure A.5 shows that the probability that a firm adopts professional management rises by 13% in the childbirth year. These new managers are almost always promoted internally rather than hired from outside the firm, and the promotion carries an average wage increase of 61% for the employee who assumes managerial duties. One might ask whether having a co-founder attenuates the shock. Table 3 shows that among firms entering childbirth with at least one co-founder, the post-childbirth fall in sales is about one-third smaller than in solo-founder businesses. Nevertheless, the penalty remains economically large, confirming that human capital is imperfectly replaceable even in a multi-founder setting.

A distinctive set of co-founders consists of ventures jointly founded by spouses. Because ownership is shared, it is impossible to disentangle mother- and father-specific responses; I therefore analyze these "family firms" separately, matching each to a couple-owned control firm in which no children are ever born. Figure 2 shows that in the year of the couple's first childbirth, sales suddenly

fall by 8% and profits by 10% relative to their matched controls, a decline about 40% the size observed in mother-owned firms. Recovery is comparatively swift: by year 3, both sales and profits have re-aligned with the counterfactual path. Only profit margins remain 6% lower five years after birth. The attenuated character of the drop suggests partial intra-household substitution: family firms fare better than ventures dependent on a single mother-founder but still bear an economically meaningful penalty from the arrival of a child.

Spousal co-founding is a very common organizational form among female-owned firms; in fact, a woman entrepreneur's most frequent co-founder is her spouse. Since firms owned by couples are ubiquitous, evidence that these firms also absorb a sizable (though transitory) productivity shock implies that men entrepreneurs are not immune to the childbirth shock. A natural question, then, is what happens when the firm is run by a male owner whose spouse is not involved in the business. To study fathers, I compare the effects of childbirth on mothers and fathers relative to women and men without children. Figure A.6 shows that fathers experience little to no impact across firm outcomes. Sales in firms owned by fathers dip slightly in the year of childbirth but see a modest increase relative to men without children in later years. Profit margins also see a small positive effect, while other outcomes remain unchanged.

To gauge the role of childbirth in explaining the gender gap in firm outcomes, I next turn from matched design to a parent-only comparison modeled on Kleven, Landais, and Søgaard (2019). Specifically, I re-estimate the event study on a sample restricted to parents and use fathers as the control group for mothers. Figure 3 shows that estimates remain nearly identical: the difference between mothers and fathers is quantitatively very close to the difference between mothers and childless women. To quantify how much childbirth contributes to the gender gap in firm outcomes, I apply a modified Oaxaca-Blinder decomposition, where the direct effect of children enters as a separate component alongside differences in observable characteristics and returns to these characteristics. The results show that childbirth accounts for 47% of the sales gap and 54% of the profit gap between male- and female-owned firms, pointing to its key role in driving performance differences.

I conduct several robustness tests to mitigate the concerns that results might be driven by endogenous birth timing and selection into parenthood. First, I re-estimate the event study on a sample of women who became mothers after age 35 and were single when they founded the firm. In these cases, conception is difficult to postpone and costlier to delay.[9] Figure A.7 shows that treated and control firms, again, follow similar pre-birth trends, but outcomes diverge sharply in the year of childbirth, with even larger immediate declines than for younger women. Second,

[9]Women aged 35–39 have a 50% lower likelihood of spontaneous conception compared to women aged 19–26. Miscarriage rates also rise sharply, reaching 27% at age 40 (Taylor, 2003; Delbaere, Verbiest, and Tydén, 2020).

to assess whether women strategically time childbirth to minimize firm disruptions, I examine the interaction between the business cycle at birth and firm performance in Figure A.8. I find that giving birth during a boom is especially costly, consistent with foregone opportunities when growth potential is highest.[10]. At the same time, I find that births are roughly evenly distributed across the business cycle, with a slightly higher likelihood of women giving birth during a boom. This pattern is inconsistent with women systematically timing childbirth to align with periods of lower opportunity costs.

Finally, to help address concerns about selection into parenthood, I turn to examining the effect of having a third child, using the same-sex instrument and comparing results to a standard event study. Figure A.9 shows that the estimated effects of a third child are smaller in magnitude than those of a first child, consistent with the interpretation that the marginal disruption from additional children is less pronounced once women are already mothers. For instance, in the year of birth, sales decline by 15% and profits by 11%, with both outcomes returning to pre-birth levels within three years. The similarity between OLS and IV estimates lends further credibility to the event study design as a strategy for estimating the causal effects of childbirth on firm outcomes.

In summary, the evidence establishes childbirth as a sizable productivity shock: it depresses output and margins in mother-led firms, leaves solo father-led firms largely untouched, and generates intermediate but still meaningful losses in spousal co-founded ventures. Whether these losses remain limited to the firm's balance sheet or cascade to its workforce is the question taken up in the following section.

B. Workers

The existing literature on the effect of children focuses on how childbirth affects individual mothers' careers, but it generally overlooks potential spillovers to other employees within firms. This section examines the effect of the entrepreneur's childbirth on the earnings, employment prospects, and subsequent fertility of workers employed in these firms. The sample for this analysis includes workers who were employed in treated or in the matched sample of control firms for at least one year before the childbirth event.

The main finding is that workers' careers are disrupted by the childbirth event. In panel (a) of Figure 4 I use earnings in levels to include in the sample workers who leave the labor force. The reported effects are expressed as percentages of the counterfactual outcome in the absence of childbirth. On average, workers in treated firms experience an earnings decline of approximately 2% in the first year following childbirth, compared to the control group. This decline persists for

[10]For instance, in the two years following childbirth, sales fall by 30 log points for mothers in expanding industries, compared to 20 log points in contracting industries

at least five years, with earnings remaining 4% lower than the pre-childbirth trajectory. These numbers reflect both employed and non-employed workers.

Panel (b) examines the impact of childbirth on log earnings, which restricts the sample to workers with positive earnings. Workers in treated firms experience an average earnings decline of approximately 3.5% in the first 5 years following the entrepreneur's childbirth. Panel (c) examines the probability of experiencing a period of involuntary exit from the labor force, defined as receiving positive income from unemployment insurance. I find that the average increase in unemployment risk across the first five years after childbirth is approximately 1%. In panel (d), I consider an alternative measure of reduced career opportunities by defining underemployment as earning less than the equivalent of 12 weeks of full-time minimum wage employment. I find an average increase in underemployment risk of approximately 1.5%.

The average effect masks significant heterogeneity across workers. Panel (a) of Figure 5 shows that the effects are concentrated among young workers (those below the median age at the time of childbirth), consistent with younger workers being especially exposed to economic shocks (Kahn, 2010; Oreopoulos, Wachter, and Heisz, 2012). A similar pattern emerges for tenure in panel (b): employees with shorter spells at the firm absorb the shock, whereas those above the median tenure are largely insulated, at least in the short run. A plausible interpretation is that long-tenured employees command firm-specific knowledge and can step into supervisory roles, making them quasi-substitutes for the absent entrepreneur, while recently hired workers become the margin of adjustment. Panel (c) shows that the both workers whose pre-birth earnings fell above and below the firm-specific median experience similar earnings effects. Finally, panel (d) shows that both male and female workers experience a decline in earnings, with larger point estimates for men.

I next examine whether the entrepreneur's childbirth affects employees' own fertility behavior. The sample is restricted to workers of fertile age (18–45) at the time of the founder's first childbirth. In Panel (a) of Figure 6, the dependent variable is an indicator equal to one if the employee has a childbirth in year t. Birth rates among treated employees begin to rise in the year following the founder's childbirth and reach their peak two years after the event. Over the five-year post-event window, the probability of having a child increases by 0.5 percentage points relative to workers in the control group, equivalent to a 9.5% increase over the counterfactual mean. Panel (b) shows that the fertility response is entirely driven by younger employees: among those aged 18–29 at the time of exposure, the increase reaches 0.9 percentage points, or 15.5% of the counterfactual outcome. There is no detectable effect for workers aged 30–40.

Panel (c) replaces the binary outcome with the cumulative number of children an employee has recorded by year t, estimated using Poisson pseudo-maximum likelihood. The results mirror the patterns in Panel (a): the child count significantly rises two years after the entrepreneur becomes

a mother. At 5 years after the entrepreneur's childbirth event, the expected number of children is 3.6% higher among employees in treated firms relative to those in the control group. Results are driven by young workers, for whom the relative increase reaches 7.1%, consistent with a mechanism in which younger workers, who are still forming their own family plans, take behavioral cues from the highly visible example set by the entrepreneur.

C. Entrepreneurs' outcomes

In this section, I examine to which extent childbirth contributes to gender differences in entrepreneurial career trajectories. A substantial body of literature has documented the long-term effects of motherhood on women's earnings, but the existing research focuses on salaried employees. The effect of career disruptions due to childbirth may differ for entrepreneurs compared to the broader labor force.

In Figure 7, I compare mothers' outcomes to those of women without children. In panels (a) and (b), the sample is composed of individuals who had been entrepreneurs for at least two years before becoming parents. Panel (a) compares the income trajectories of mothers relative to their matches, irrespective of whether they are still entrepreneurs at any point. Mothers experience an average 11% decline in total income over the five years following childbirth, compared to women without children. Among continuing entrepreneurs, compensation (measured as the sum of wages and dividends paid to the entrepreneur) that mothers take from their firms after childbirth declines by nearly 20% (panel (b)).

Up until this point, I have examined outcomes for individuals who were already entrepreneurs before having their first child. Next, I expand the analysis to study how motherhood impacts the likelihood of all women, regardless of prior entrepreneurial experience, to start a new firm. Panel (c) presents an event study that tracks firm entry surrounding childbirth. While the adverse effects on firm outcomes primarily appear after childbirth, the decline in mothers' firm creation rates begins in the pregnancy year. This effect peaks in the birth year, reaching a 40% decline, and subsequently tapers off, albeit without reverting to pre-birth levels. These results suggest that motherhood deters women from entrepreneurship.

In Figure A.10, I extend the analysis to fathers. The top panel compares fathers to their matched sample of men without children. In the bottom panel, I restrict the sample to parents only. Two main findings emerge. First, men experience no income decline: their total income trends slightly upward, increasing by 2.5%. It is worth remembering that, two years before childbirth, women entrepreneurs slightly out-earn men. Even among this highly positively selected sample of women, childbirth produces a substantial and persistent earnings gap that men do not experience. Second, childbirth dampens new firm creation for both sexes. While the effect is considerably

larger for women, men's entry rates decline by about 10% 5 years after childbirth.

V Mechanisms

In the previous section, I presented evidence that childbirth affects entrepreneurial outcomes. I now examine the underlying mechanisms to determine whether these effects stem from maternal preferences, such as increased risk aversion, or from constraints, such as limited access to childcare. Gender norms fall somewhere in between, shaping behavior through social expectations and blurring the line between choice and constraint. I first examine whether childbirth leads to a shift in risk preferences. Second, I turn to the role of household specialization and cultural norms to understand how couples choose to allocate tasks. Finally, I study childcare availability to understand if relaxing constraints has an effect on how mothers allocate time. If improving access to childcare mitigates the negative effects of childbirth, this would suggest that external constraints, rather than solely women's preferences, play a role in determining women's time allocation.

A. The risk-return trade-off

Parenthood has been linked to increased risk aversion (Görlitz and Tamm, 2020). The first potential explanation for the decline in firm outcomes post-childbirth could be related to changes in the risk-return profile of mother-owned firms. If female entrepreneurs become more risk-averse after having children, they may adopt safer, lower-risk investment strategies that yield lower but more stable returns.[11]

To assess whether reduced risk-taking explains the decline in firm performance post-childbirth, I use three proxies for firm risk-taking behavior. The first is the volatility of returns on assets, σ(ROA), measured as the standard deviation of ROA before and after childbirth. A decrease in σ(ROA) would indicate lower fluctuations in returns, suggesting a shift toward more conservative investment decisions. Similarly, I measure profit volatility as the standard deviation of profits over the same period. Finally, I use leverage as a proxy for the riskiness of corporate financing choices, defined as the ratio of total long-term liabilities to total assets. A higher leverage ratio indicates greater reliance on debt financing, increasing the firm's exposure to financial shocks.

Table 4 shows no significant change in the volatility of ROA or profits after childbirth. The

[11] A large literature has studied gender differences in risk preferences, mostly finding that women are more risk averse than men (see Bertrand (2011) for a review). Faccio, Marchica, and Mura (2016) find that firms led by female CEOs have lower leverage and less volatile earnings, suggesting lower levels of risk-taking compared to firms led by men. The relationship between gender and risk-taking may depend on context; for example, in their experimental setting, Kirchler, Lindner, and Weitzel (2018) find no gender differences in risk-taking among finance professionals. The effect of parenthood on risk preferences may be particularly pronounced for mothers due to evolutionary pressures: women's substantial investment in childbearing and caregiving may heighten their tendency to adopt safer strategies to protect both themselves and their children.

leverage ratio, however, increases. While the risk-return trade-off suggests that a shift toward lower-risk investment should reduce both risk and returns, the data show no evidence of reduced risk. These findings suggest that the observed decline in firm performance post-childbirth cannot be explained by a move toward safer investment strategies.

B. Individual or household decisions?

Up to this point, I have treated outcomes after childbirth as a result of women's individual choices. However, most entrepreneurs with children are married, so it is reasonable to assume that career and childcare decisions are made at the household level rather than by individuals alone. One possibility is that couples allocate work and childcare responsibilities based on their respective comparative advantage to maximize household income: the partner with higher earnings prioritizes their career, while the other assumes a greater share of childcare duties (Andresen and Nix, 2022b). Since women entrepreneurs are more likely than men entrepreneurs to be the secondary earner, this could explain why they take on a greater share of childcare responsibilities compared to male entrepreneurs.

If couples specialize based on labor market advantage, firms owned by female breadwinners should be less affected by childbirth than those owned by female secondary earner. This is because households with a female breadwinner would prioritize the mother's entrepreneurial career, while the father would take on a greater share of childcare. In addition, household income should be affected similarly regardless of whether the husband or wife was the primary earner, as they would adjust labor supply efficiently irrespective of gender. Moreover, female breadwinners should experience a less negative (or even positive) impact on their own income, as they might increase their labor supply to meet the additional financial demands of parenthood.

To test these predictions, I classify women based on whether they were the primary earner in the household during the three years before their first childbirth. Panel A of Table 5 provides some evidence in support of the household specialization hypothesis. However, since primary earners tend to own larger firms, which generally experience smaller post-childbirth declines, I use inverse probability weighting to reweight the sample so that firms owned by primary and secondary earners have similar characteristics. The results are mixed: primary earners experience a smaller decline in sales (40% smaller than for secondary earners) but the effects on profits and profit margins are similar between the two groups. Even among breadwinners, the performance penalty remains substantial, suggesting that while household specialization may mitigate the effects of childbirth, it does not fully offset them.

Panel B of Table 5 shows that couples with a female breadwinner experience a decline in total family income, relative to couples where the husband was the breadwinner. This is driven by the

fact female breadwinners suffer greater income losses than secondary earners (13% lower income than secondary earners) and their spouses do not fully compensate for this decline.

These findings could be explained by mothers having an inherent comparative advantage in childcare tasks, independent of their labor market advantage. The existing literature has largely ruled out childbirth itself as the primary driver of large career penalties for mothers (Kleven, Landais, and Søgaard, 2021; Andresen and Nix, 2022b), but other forms of comparative advantage, such as nurturing abilities beyond childbirth and nursing, could still matter. In addition, gender norms and preferences may shape household decision-making, leading women to prioritize childcare even when they have a stronger position in the labor market. I explore this hypothesis in the next section.

C. Culture

Immigrants provide a useful setting for studying cultural influences because norms and beliefs are embedded within individuals, whereas institutions and policies are location-specific. As people migrate, they bring their cultural heritage with them, while leaving behind the institutional environment of their home country (Alesina, Giuliano, and Nunn, 2013).[12]

In this section, I examine whether the effect of childbirth on women's entrepreneurial outcomes can be attributed to cultural preferences related to gender norms. I focus on second-generation immigrants, i.e., individuals born in Canada to foreign-born parents[13] (who, as Canadian citizens since birth, are more precisely referred to as second-generation Canadians). This approach offers several advantages over studying first-generation immigrants. Second-generation individuals typically have a stronger command of the host country's language, greater exposure to its education system and labor market, and no direct choice in the immigration decision, which was made by their parents (Fernández, 2007).

To measure gender norms by country of ancestry, I rely on data from the World Values Survey, a large-scale international research project that examines people's values and beliefs across countries. The survey was conducted in multiple waves since the early 1980s and covers a wide range of topics, including attitudes toward democracy, social capital, religion, family, and gender roles. I use responses to specific survey questions to construct a gender progressivity index, capturing

[12] A large literature in economics and finance has studied culture, defined as a set of shared values, beliefs, and preferences that influence individual behavior within a particular society or group and persist across generations (Guiso, Sapienza, and Zingales, 2006; Alesina and Giuliano, 2015; Boelmann, Raute, and Schönberg, 2024; Grinblatt and Keloharju, 2001). Gender norms are a subset of cultural norms that specifically pertain to expectations associated with individuals based on their gender. These norms shape the division of labor within households, influence career choices by prescribing which professions are deemed suitable for men and women, and affect investment in human capital. In cultures where men are perceived as primary earners, families may prioritize investing in sons' education over daughters' (Johnston, Schurer, and Shields, 2014; Humlum, Nandrup, and Smith, 2019).

[13] Canada, with its large immigrant population and long-standing support for cultural diversity, represents an ideal setting. During my sample years, about 20% of the Canadian population was made up of immigrants.

country-level attitudes toward gender norms (see Appendix B for details on its construction). Figure A.11 shows the distribution of gender norms across countries.

Table 6 compares firm outcomes after childbirth for entrepreneurs whose parents immigrated from countries with more egalitarian versus more conservative gender norms, separately by gender. Columns (1)-(3) show that women whose parents originated from traditional cultures experience larger declines in sales, profits, and profit margins than their egalitarian counterparts. These results are not explained by systematic differences in pre-birth firm characteristics. Because the sample of second-generation female founders is relatively small, in columns (4)-(6) I extend the analysis to all business owners and find similar results.

In columns (7)-(9), I repeat the exercise for fathers. If anything, the pattern is reversed: male entrepreneurs from traditional cultural backgrounds exhibit equal or better business outcomes following the birth of a child. This divergence is consistent with women from traditional backgrounds prioritizing family responsibilities over their entrepreneurial pursuits post-childbirth, while traditional gender norms reinforce men's role as primary providers. These findings suggest that while couples do specialize after having children, the process appears to be driven more by gender norms than by labor market advantage.

D. Informal childcare

The role of grandparents in providing childcare to their grandchildren is an important aspect of family support networks.[14] In this section, I study the role of proximity to grandparents in mitigating the impact of childbirth on women's entrepreneurial outcomes.

To examine the role of grandparents, I first establish a connection between entrepreneurs and their own parents. This linkage is possible because individuals residing at the same address file taxes together (non-filers, such as dependent children, are input by Statistics Canada). Thus, individuals who lived with their own parents at any point from 2001 onward are included in the sample. I then define a mother as living near her parents if they reside in the same Census Metropolitan Area or Census Agglomeration[15]. This measure of proximity serves as an indicator of potential childcare availability within family networks.

Table 7 shows that mothers who live in the same city as their parents experience less severe declines in business performance after childbirth. Geographical proximity to grandparents mitigates

[14] In the United States, 20% of working mothers with children under five rely on grandparents as their primary childcare providers (Posadas and Vidal-Fernandez, 2013); in Mexico, grandmothers take care of 40% of children aged under six (Marcos, 2023). Several studies have found that access to grandparental childcare increases mothers' labor supply but a negative effect on grandmothers' employment (Kaufmann, Özdemir, and Ye, 2022; Zamarro, 2020).

[15] A Census Metropolitan Area is akin to a commuting zone. Statistics Canada defines CMAs as regions with at least 100,000 people, including a core urban area of at least 50,000 and surrounding municipalities with high economic and social integration. In rural areas, a Census Agglomeration must have a core population of at least 10,000.

the negative effects of motherhood on sales, profits, and profitability. Panel B provides a corresponding test for fathers, showing that proximity to grandparents has no significant effect on their entrepreneurial outcomes post-childbirth. Figure A.12 shows that the mitigating effect for mothers is strongest when the child is very young. This pattern is likely driven by the intensive caregiving demands of infants and toddlers, which may lead mothers to rely more heavily on grandparental support during the early years. As children grow older, formal childcare options such as preschool and daycare may become more available, reducing the reliance on grandparents.

To provide further evidence on the role of grandmothers, I study the impact of grandmother retirement on their daughters' firms in Figure A.13. I restrict the analysis to mothers who did not experience childbirth during their entrepreneurial spell, ensuring that the decision to become a mother is not influenced by the grandmother's retirement. In addition, I restrict the sample to grandmothers who were employed at some point to capture a shift in their time availability for childcare. The empirical strategy compares mothers whose own mothers retire while living in the same municipality (allowing for potential childcare support) to mothers whose mothers also retire but live farther away. I find that mothers living in close proximity to grandmothers see significant improvements in firm performance following the retirement event. Examining pre-trends, there is no evidence that the retirement event is driven by an increase or a decline in business performance prior to retirement, supporting the interpretation that the improvements in firm outcomes result from the grandmother's retirement.[16]

Table A.2 shows that the effect of grandmother retirement on business performance is concentrated among women living in municipalities where center-based childcare provision is lacking. This suggests some degree of substitution between informal (e.g. family-provided) and formal childcare support, consistent with evidence that expanding formal childcare services partially reduces reliance on family-provided care (Baker, Gruber, and Milligan, 2008). Details on how I measure childcare provision at the municipality level are discussed below.

E. Formal childcare

The availability of childcare affects labor market outcomes even for highly skilled professional women.[17] In this section, I analyze the impact of formal childcare on mothers' entrepreneurial outcomes, using childcare expansion events at the municipality level as an exogenous shock to

[16] A potential concern is that these results may reflect general family assistance (for example, involvement with the business) rather than caregiving support. To address this, I conduct a falsification test by examining the effect of grandfather retirement and find no such improvement in entrepreneurial outcomes (Panel B of Figure A.13). This suggests that the results are not driven by broader family involvement but are specific to the caregiving support traditionally provided by grandmothers.

[17] In the finance industry, the availability of childcare benefits is linked to lower gender pay gaps (Lagaras et al., 2022). (Barber et al., 2021) find that, during the COVID-19 pandemic, time spent on childcare reduced productivity for female finance academics.

childcare availability. To measure the availability of formal childcare, I construct a municipality-level index based on the ratio of workers employed in childcare centers to the number of children under the age of two. Since the data does not report hours worked, childcare workers are classified as full-time if their annual earnings exceed the equivalent of full-time minimum wage. If a childcare worker's annual earnings are below this threshold, I consider them as a fraction of a full-time worker, proportional to their earnings relative to the full-time minimum wage.

I define a childcare shock as a one-standard-deviation increase in the density of childcare workers within a municipality over a given year. If a municipality undergoes multiple instances of childcare expansion based on the above definition, I consider the municipality treated starting from the first expansion event. Since childcare expansions may be correlated with broader labor market trends, such as rising female employment, I include municipality-by-year fixed effects in all specifications. This ensures that identification relies on within-municipality-year variation, comparing mothers in the same location and year who were differentially exposed to increased childcare availability based on their child's age at the time of expansion.

Specifically, I compare mothers with children under 6 who experienced a childcare expansion when their child was at most 2 years old with mothers whose children were older (3 to 6 years old) at the time of the expansion. This triple-differences design allows me to assess how the timing of childcare expansions affects mothers who are more likely to benefit due to their child's younger age. This approach is similar to Simintzi, Xu, and Xu (2024), who study the impact of the 1997 universal childcare reform in Quebec on women's labor market outcomes and firms by exploiting variation in treatment intensity based on the child's age at the time of expansion. While I cannot exploit the 1997 reform because it pre-dates the start of my sample, I validate my measure by confirming that childcare density in Quebec municipalities is consistently higher than in the rest of Canada, reflecting the province's long-standing investment in childcare services.

The results in Table 8 show that the expansion of formal childcare significantly improves firm performance for mothers with young children. Specifically, the triple interaction term shows an 11% increase in sales and a 7% rise in profit margin relative to mothers whose children were older at the time of the expansion. For robustness, I include fathers in the analysis, as shown in Panel B, to ensure that the observed effects are specific to mothers.

VI Conclusion

Entrepreneurship is a key driver of economic growth and innovation, yet women remain significantly underrepresented among entrepreneurs, particularly in high-growth ventures. Female entrepreneurs are less likely to succeed in scaling their businesses or achieving high-value outcomes, such as acquisitions or IPOs. Despite a growing literature on female entrepreneurs, our understanding of

the underlying factors driving the entrepreneurship gender gap remains incomplete.

This paper contributes to filling this gap by examining the effects of childbirth on women's entrepreneurial activity. Drawing on comprehensive administrative data from Canada, I first show that childbirth leads to a persistent decline in the performance of women-owned firms, explaining a large fraction of the entrepreneurship gender gap. While these effects attenuate over time, they do not fully recover to pre-birth levels. Second, I show that the negative spillovers extend beyond the entrepreneur herself, reducing earnings and increasing job displacement risk for employees of affected firms. These labor-market setbacks spill over into workers' private lives as well: birth rates increase among employees under 30, suggesting that founders' fertility decisions also affect employees' own choices related to family formation.

These findings contribute to the broader discussion on demographic change and economic dynamism. Children impose significant career costs on women; this paper provides new evidence that these costs extend beyond individuals, creating spillovers for entrepreneurial firms and their employees. At the same time, many advanced economies face declining fertility rates, raising concerns about the long-term implications for labor supply and innovation. A growing literature documents a decline in business dynamism, with falling rates of firm entry and young firm activity across industries and regions (Decker et al., 2016). Demographic shifts may be one contributing factor, as new firm creation is closely linked to the supply of young workers, who are disproportionately employed in high-growth, innovative firms (Ouimet and Zarutskie, 2014; Karahan, Pugsley, and Şahin, 2024). Understanding the trade-offs between the immediate economic costs of children and the long-term effects of demographic change on entrepreneurship and productivity remains an important avenue for future research.

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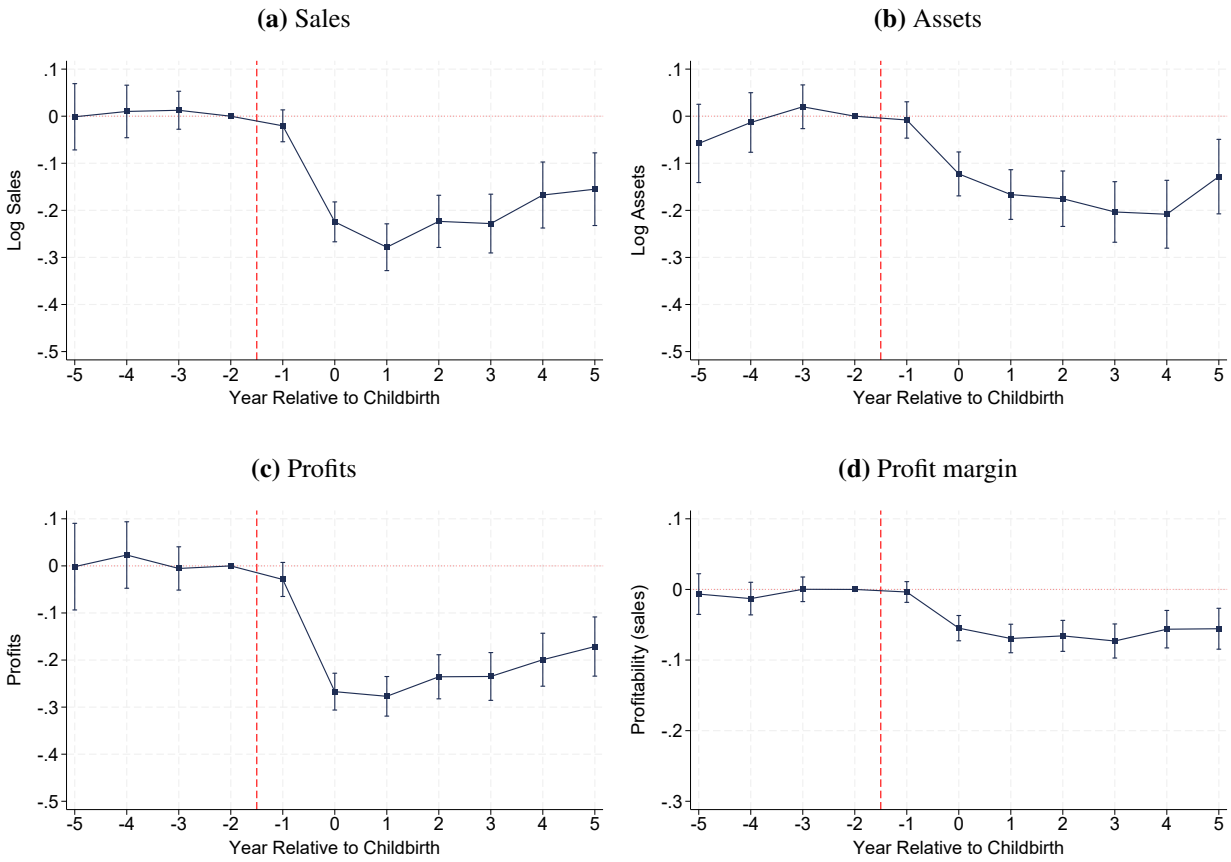
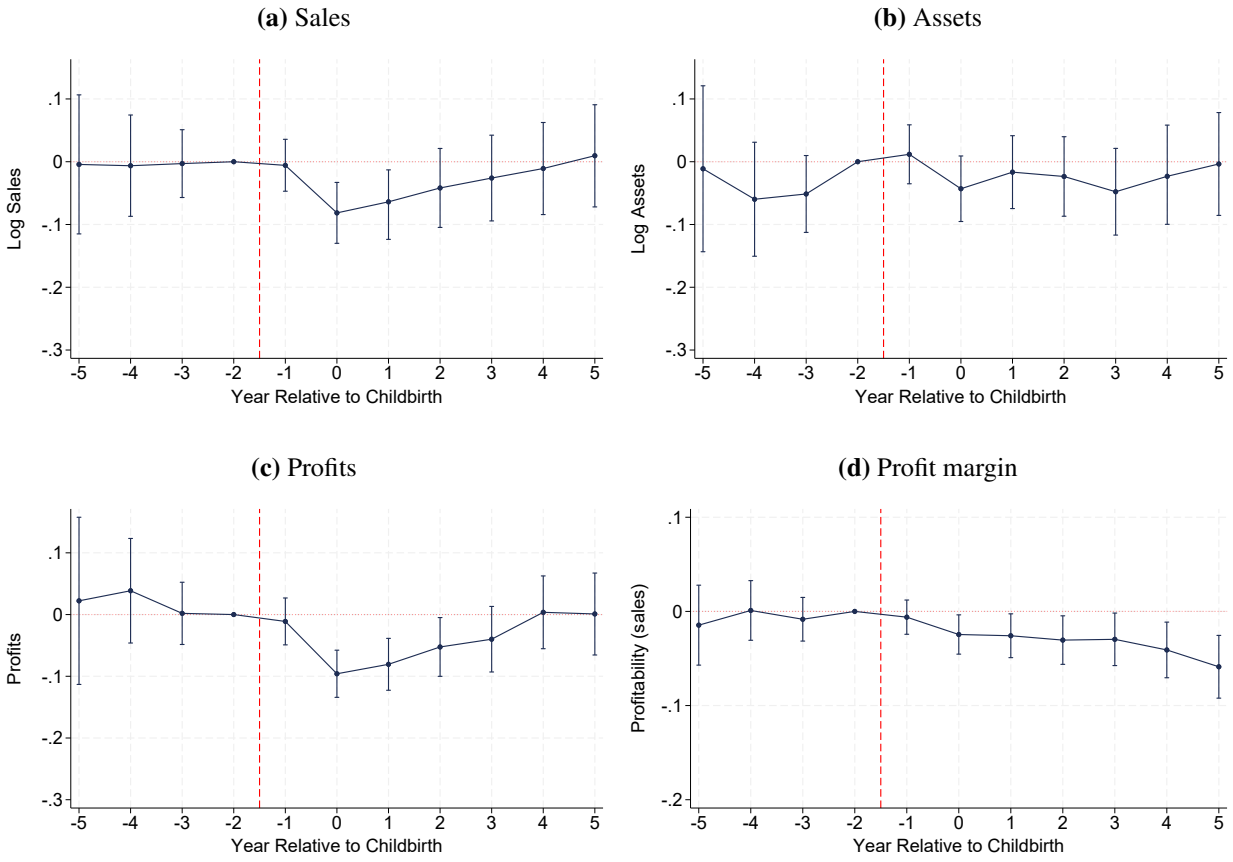
Figures

Figure 1: Effect of childbirth on firm outcomes



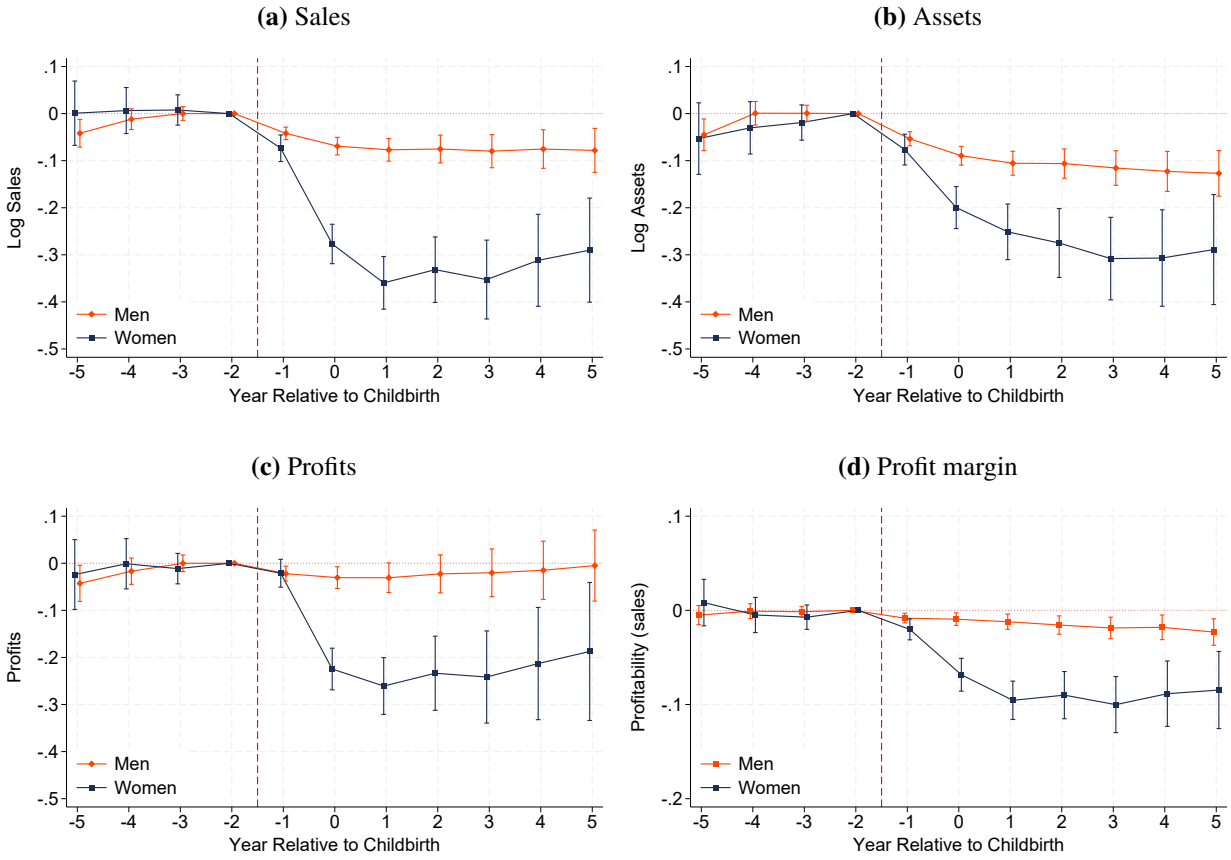
Notes: The graphs show event-study estimates obtained by fitting equation 1 on log sales (panel (a)), log assets (panel (b)), profits (panel (c)), and profit margin (panel (d)). Year 0 is when the first childbirth event takes place. The treated group is a sample of firms owned by a female entrepreneur for at least two years before she had her first child. The control group is a matched sample of firms owned by female entrepreneurs with zero observed fertility. Coefficients for profits are reported as a percentage of the counterfactual outcome absent children. Profit margin is the ratio of profits to sales. Control variables include indicators for firm age, the number of firm owners, a polynomial for individual age, and marital status. Firm effects and industry × province × year fixed effects are included. I report 95% confidence intervals based on standard errors clustered at the firm level.

Figure 2: Effect of childbirth on firms owned by spouses



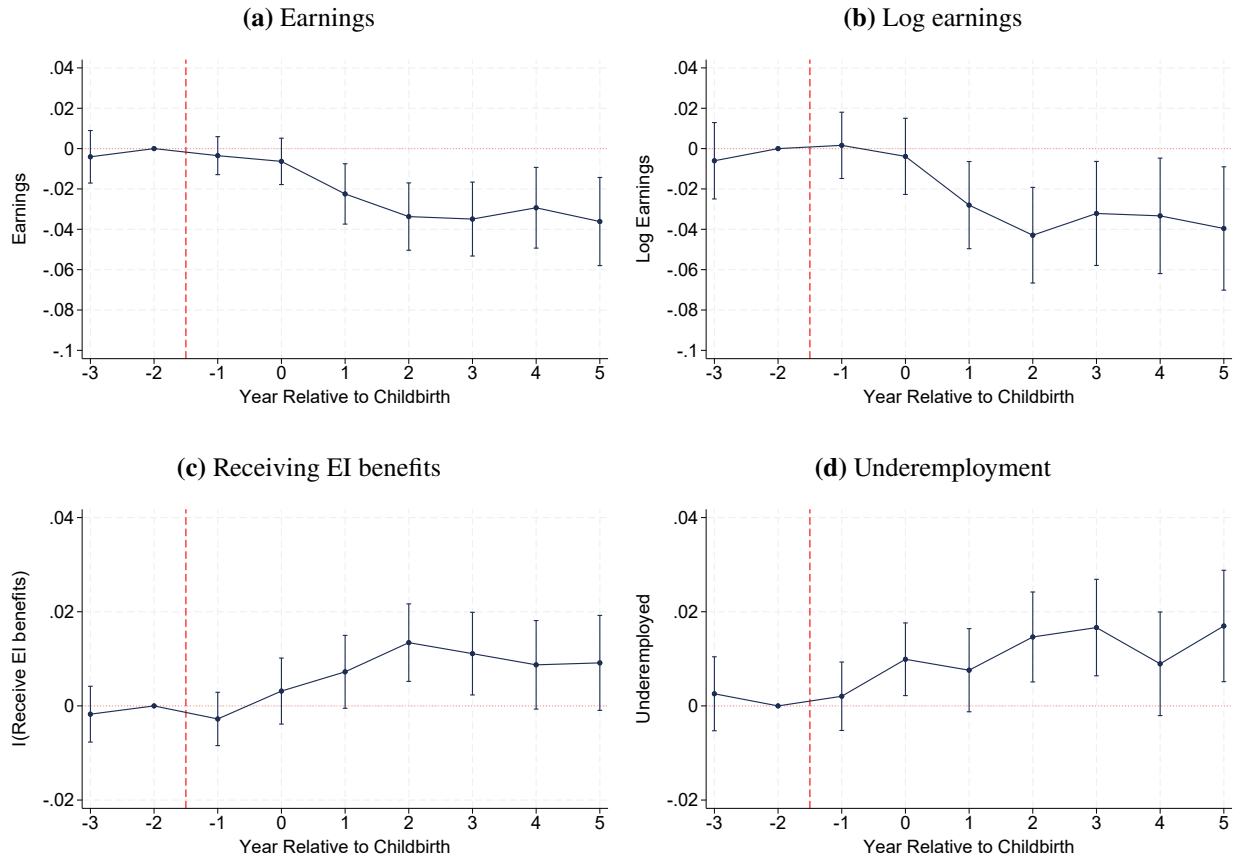
Notes: The graphs show event-study estimates obtained by fitting equation 1 on log sales (panel (a)), log assets (panel (b)), profits (panel (c)), and profit margin (panel (d)). Year 0 is when the first childbirth event takes place. The treated group is a sample of firms owned by a couple for at least two years before they had their first child. The control group is a matched sample of firms owned by couples with zero observed fertility. Coefficients for profits are reported as a percentage of the counterfactual outcome absent children. Profit margin is the ratio of profits to sales. Control variables include indicators for firm age, the number of firm owners, a polynomial for individual age, and marital status. Firm effects and industry × province × year fixed effects are included. I report 95% confidence intervals based on standard errors clustered at the firm level.

Figure 3: Effect of childbirth on firm outcomes: mothers vs. fathers



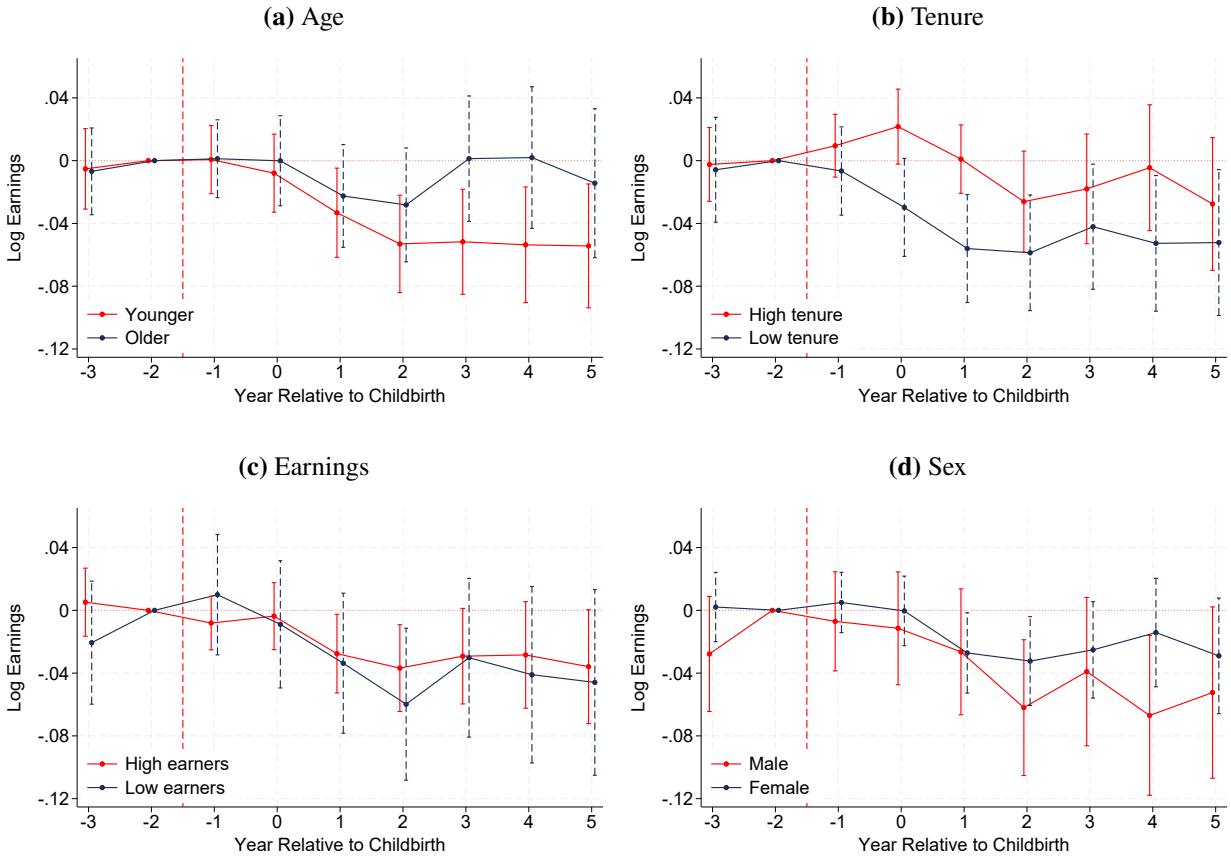
Notes: The graphs show event-study estimates obtained by estimating equation 1 on the sample restricted to parents, separately for mothers and fathers, following Kleven, Landais, and Søgaard (2019). Outcomes include log sales (panel (a)), log assets (panel (b)), profits (panel (c)), and profit margin (panel (d)). Year 0 is when the first childbirth event takes place. Coefficients for profits are reported as a percentage of the counterfactual outcome absent children. Profit margin is the ratio of profits to sales. Control variables include indicators for firm age, the number of firm owners, a polynomial for individual age, and marital status. Firm effects and industry × province × year fixed effects are included. I report 95% confidence intervals based on standard errors clustered at the firm level.

Figure 4: Effect of childbirth on workers' careers



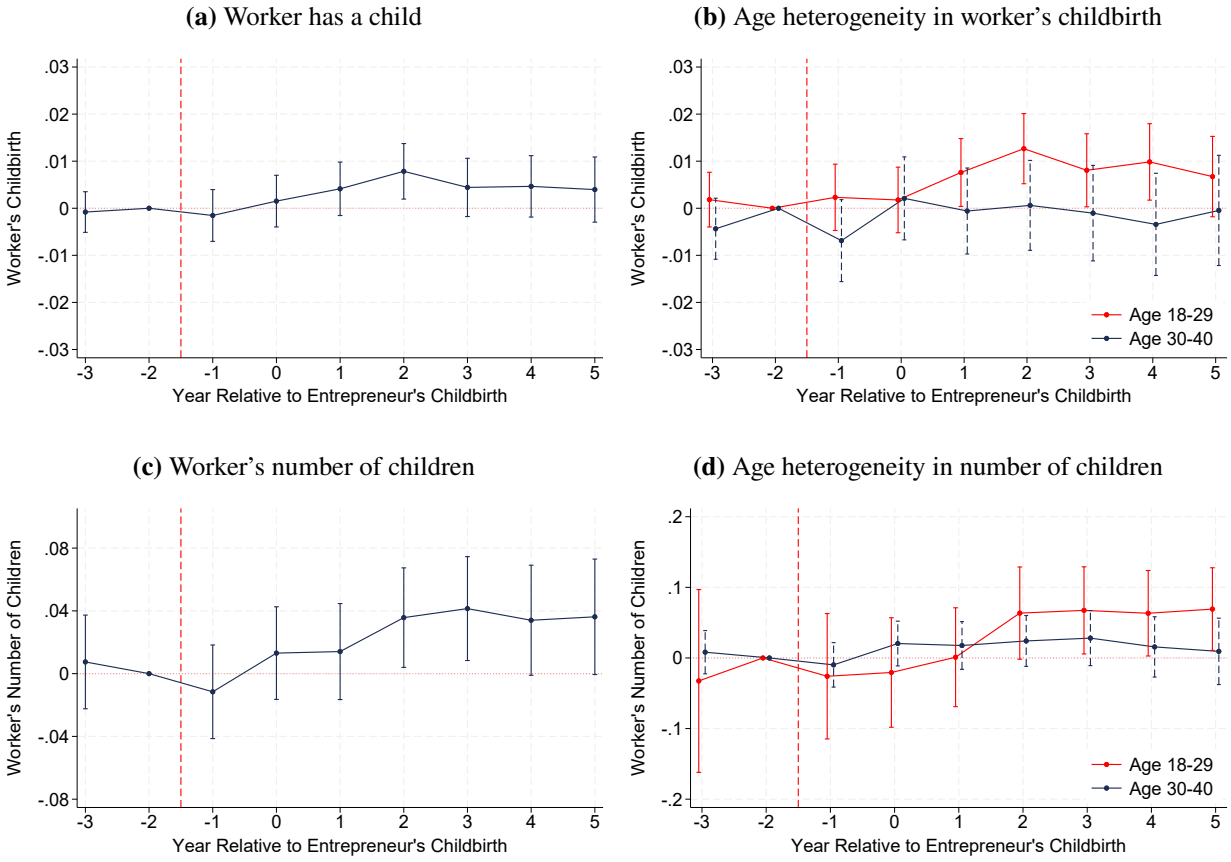
Notes: The graphs show event-study estimates obtained by fitting equation 2 on total earnings (panel (a)), log earnings (panel (b)), the probability of receiving EI benefits (panel (c)), and underemployment (panel (d)). Year 0 is when the entrepreneur's first childbirth event takes place. The treated group include workers employed in firms in which the entrepreneur had a child, compared to a control group of workers employed in a matched sample of firms owned by women with zero observed fertility. In panel (a), earnings refer to total employment income in year t and coefficients are expressed as a percentage deviation from the counterfactual earnings trajectory in the absence of childbirth. In panel (c), receiving EI benefits is an indicator equal to 1 if the individual reports positive income from unemployment insurance. In panel (d), underemployment is an indicator equal to 1 if the individual earns in one year less than an amount equivalent to 12 weeks of full-time employment at minimum wage. Control variables include indicators for worker age. Worker and year fixed effects are included. I report 95% confidence intervals based on standard errors clustered at the worker level.

Figure 5: Heterogeneous effects of childbirth on workers' earnings



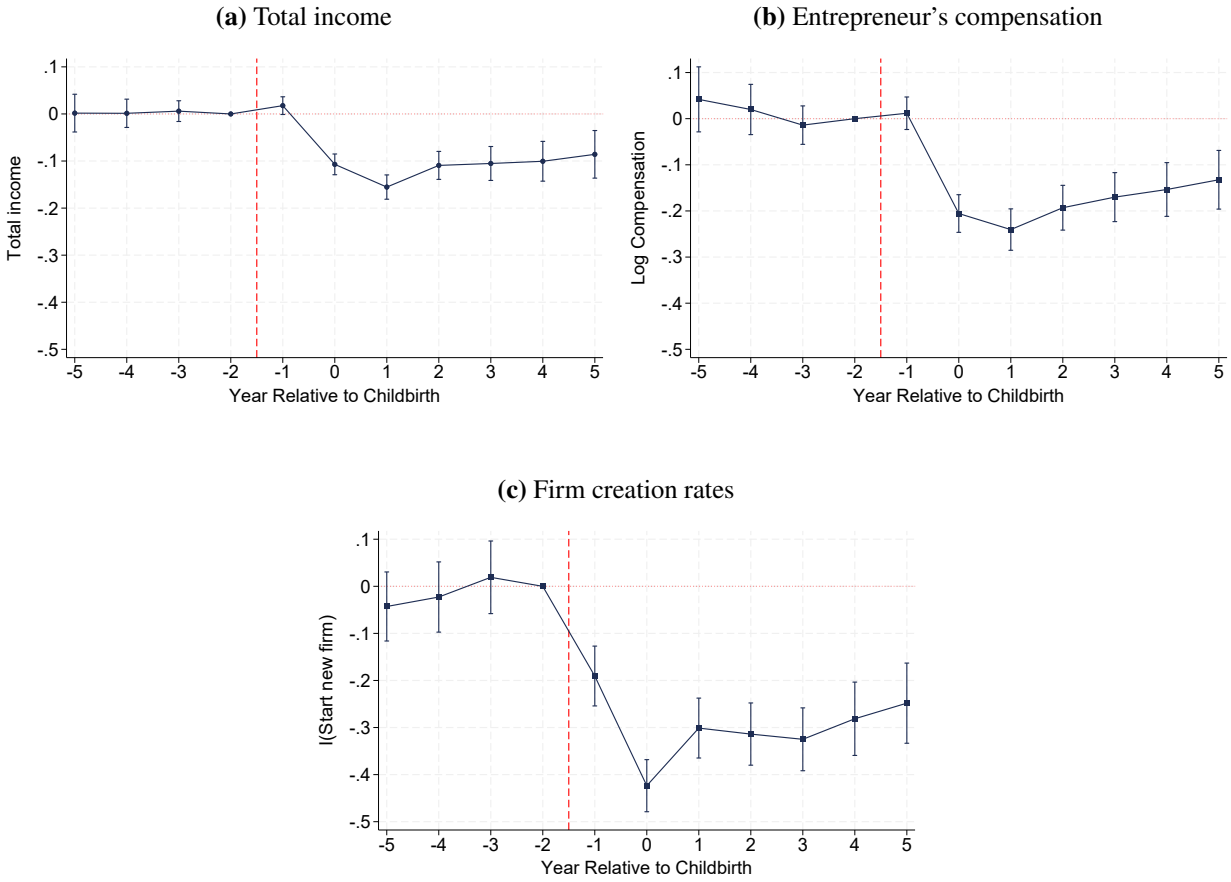
Notes: The graphs show event-study estimates obtained by fitting equation 2 on log earnings. Year 0 is when the entrepreneur's first childbirth event takes place. The treated group include workers employed in firms in which the entrepreneur had a child, compared to a control group of workers employed in a matched sample of firms owned by women with zero observed fertility. Panel (a), (b), and (c) show results for workers who were above or below the median age, tenure, and firm earnings, respectively, the year before the entrepreneur had a child. Panel (d) shows the earnings effects for male and female workers. Control variables include indicators for worker age. Worker and year fixed effects are included. I report 95% confidence intervals based on standard errors clustered at the worker level.

Figure 6: Effect of entrepreneur's childbirth on workers' fertility



Notes: Panel (a) shows event-study estimates obtained by fitting equation 2 on an indicator for whether a worker experiences childbirth in year t. Year 0 is when the entrepreneur's first childbirth event takes place. The treated group include workers employed in firms in which the entrepreneur had a child, compared to a control group of workers employed in a matched sample of firms owned by women with zero observed fertility. The sample includes workers of fertile age (18-45). Panel (b) repeats the analysis separately for workers who were aged 18–29 and 30–40 at the time of the entrepreneur's childbirth. In panel (c), the number of children a worker has by time t is modeled using Poisson pseudo-maximum likelihood estimation suitable for count outcomes. Panel (d) again splits the sample by age at exposure. I report 95% confidence intervals based on standard errors clustered at the worker level.

Figure 7: Effect of childbirth on entrepreneurial career outcomes



Notes: The graphs show the effect of childbirth on entrepreneurial career outcomes. Year 0 is when the first childbirth event takes place. Panel (a) and (b) report coefficients obtained by fitting variations of equation 1, for the sample of individuals who were entrepreneurs for at least two years before the first childbirth event. In panel (a), total income is income from all sources, irrespective of whether the individual is still an entrepreneur at any point. Coefficients are reported as a percentage of the counterfactual outcome absent children. Control variables include a polynomial for individual age and marital status. Individual and year fixed effects are included. In panel (b), entrepreneurs' compensation is the sum of wages and dividends entrepreneurs take from their firms (conditional on the firm being active). Control variables include indicators for firm age, the number of firm owners, a polynomial for individual age, and marital status. Firm effects and industry × province × year fixed effects are included. Panel (c) reports event-study estimates obtained fitting equation 3, irrespective of any entrepreneurial experience prior to childbirth. Coefficients are reported as a percentage of the counterfactual outcome absent children. Control variables include indicators for individual age and marital status. Individual and year fixed effects are included. I report 95% confidence intervals based on standard errors clustered at the individual level (panel (a) and (c)) and at the firm level (panel (b)).

Tables

Table 1: Descriptive statistics

Panel A: Entrepreneurs

	(1) **Mothers**	(2) **Matched controls**	(3) **Standardized difference**	(4) **Fathers**	(5) **Matched controls**	(6) **Standardized difference**
Firm age	2.8	2.8	-0.01	3.1	3.2	-0.04
	(2.0)	(2.0)		(2.3)	(2.3)	
Sales (000)	285.8	263.1	0.03	349.3	306.7	0.06
	(645.5)	(571.7)		(793.5)	(712.9)	
Sales per owner (000)	217.8	212.7	0.01	244.9	242.1	0.00
	(529.6)	(511.9)		(570.9)	(576.5)	
Assets (000)	183.3	172.6	0.03	182.9	180.6	0.01
	(382.1)	(353.6)		(329.7)	(422.4)	
Assets per owner (000)	138.8	137.1	0.01	134.2	142.5	-0.03
	(297.9)	(293.3)		(243.0)	(340.9)	
Number of employees	5.9	5.1	0.06	5.9	5.0	0.04
	(15.8)	(12.7)		(19.8)	(22.7)	
Equity share	79.7	83.0	-0.11	79.4	84.9	-0.17
	(28.4)	(26.8)		(28.3)	(25.7)	
Mixed team (%)	18.2	17.8	–	7.5	7.7	–
Service sectors (%)	94.8	94.8	–	72.4	72.4	–
Entrepreneur age	31.7	32.3	-0.13	31.9	32.6	-0.15
	(4.3)	(5.0)		(4.4)	(5.0)	
Entrepreneur income (000)	69.3	69.5	-0.00	65.9	64.7	0.02
	(70.9)	(71.1)		(71.5)	(68.4)	
Family income (000)	127.9	126.0	0.02	103.1	101.4	0.02
	(121.1)	(121.8)		(91.5)	(91.0)	
Number of observations	10,535	10,535		45,800	45,800	

Table 1: Descriptive statistics – continued

Panel B: Workers

	(1) **Workers in mothers' firms**	(2) **Workers in matched firms**	(3) **Standardized difference**
Earnings (000)	24.0	23.6	0.02
	(20.9)	(20.3)	
Age	32.4	32.5	-0.01
	(12.1)	(11.9)	
Tenure	2.3	2.3	0.01
	(1.8)	(1.8)	
Female (%)	71.7	70.6	–
Number of observations	26,315	23,750	

Notes: This table presents summary statistics for entrepreneurs (Panel A) and workers (Panel B). In panel A, summary statistics are reported at $t^* - 2$, i.e., two years before the entrepreneur's first childbirth. Column (1) reports summary statistics for mothers (T), column (2) for their matched controls (C), and column (3) reports the standardized mean difference between the two groups, calculated as $(\bar{x}_T - \bar{x}_C)/\sqrt{s^2}$, where s^2 is the pooled variance. Columns (4)-(6) show summary statistics for fathers, their matched controls, and the standardized mean difference between the two groups. Panel B reports summary statistics for the sample of workers, which includes individuals aged 18-65 employed at mothers' firms or the matched control firms in both $t^* - 1$ and t^* continuously. Summary statistics are reported at $t^* - 1$. Standard deviations are reported in parenthesis. The numbers of observations are rounded to the nearest five to comply with the confidentiality requirements of Statistics Canada.

Table 2: Top-performing firms

	Top 20% by assets			Top 20% by value added		
	(1)	(2)	(3)	(4)	(5)	(6)
	Log Sales	**Profits**	**Profit margin**	**Log Sales**	**Profits**	**Profit margin**
Post × Mother	-0.121***	-29,147***	-0.059***	-0.180***	-42,764***	-0.055***
	(0.041)	(4,337)	(0.015)	(0.028)	(3,666)	(0.009)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry × province × year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	24,435	24,435	24,435	32,425	32,425	32,425

Notes: This table examines outcomes for the top quintile of the firm distribution. The top quintile is calculated two years before childbirth, using the full sample of male- and female-owned firms within each cohort. The difference in sample size between columns (1)-(3) and columns (4)-(6) is due to the fact that more women-owned firms rank in the top quintile by value added than in the top quintile by assets. The treated group is a sample of firms owned by a female entrepreneur for at least two years before she had her first child. The control group is a matched sample of firms owned by female entrepreneurs with zero observed fertility. "Post" is an indicator equal to 1 in the year of birth of the first child or after. Profits are expressed in constant 2012 dollars. Controls include indicators for firm age, the number of firm owners, a polynomial for individual age, and marital status. Standard errors are reported in parenthesis and are clustered at the firm level. * indicates statistical significance at the 10% level, ** at the 5% level, and *** at the 1% level. The numbers of observations are rounded to the nearest five to comply with the confidentiality requirements of Statistics Canada.

Table 3: Co-founders and firm outcomes

	(1)	(2)	(3)	
		Log Sales	**Profits**	**Profit Margin**
Post × Mother		-0.266***	-20,793***	-0.069***
		(0.021)	(1324)	(0.008)
Post × Mother × Co-founder		0.212***	13,404***	0.044***
		(0.042)	(2,596)	(0.015)
Controls		Yes	Yes	Yes
Industry × province × year effects		Yes	Yes	Yes
Firm effects		Yes	Yes	Yes
R^2		0.777	0.785	0.619
Number of observations		154,460	154,460	154,460

Notes: This table presents regression estimates examining variation in mothers' outcomes depending on the presence of a co-founder. "Post" is an indicator equal to 1 in the year of birth of the first child or after. "Co-founder" is an indicator equal to 1 if the firm has a co-founder the year prior to childbirth. Profits are expressed in constant 2012 dollars. Controls include indicators for firm age, the number of firm owners, a polynomial for individual age, and marital status. Standard errors are reported in parenthesis and clustered at the firm level. * indicates statistical significance at the 10% level, ** at the 5% level, and *** at the 1% level. The numbers of observations are rounded to the nearest five to comply with the confidentiality requirements of Statistics Canada.

Table 4: Firm risk taking

	(1)	(2)	(3)
	σ**(ROA)**	σ**(Profits)**	**Leverage**
Post × Mother	0.019	661	0.025**
	(1.017)	(837)	(0.011)
Controls	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Industry × province × year FE	Yes	Yes	Yes
Number of observations	157,470	157,470	157,470

Notes: This table examines the impact of childbirth on firm risk-taking. The treated group is a sample of firms owned by a female entrepreneur for at least two years before she had her first child. The control group is a matched sample of firms owned by female entrepreneurs with zero observed fertility. "Post" is an indicator equal to 1 in the year of birth of the first child or after. The dependent variable in column (1), σ(ROA), is the standard deviation of the return on assets, computed separately before and after childbirth. The dependent variable in column (2), σ(Profit), is the standard deviation of net income, calculated separately before and after childbirth, in constant 2012 dollars. The dependent varaible in column (3), Leverage, is the ratio of total long term liabilities to total assets, reflecting the firm's reliance on debt financing. Control variables iinclude firm age, the number of owners, and marital status. Standard errors are clustered at the firm level. * indicates statistical significance at the 10% level, ** at the 5% level, and *** at the 1% level. The numbers of observations are rounded to the nearest five to comply with the confidentiality requirements of Statistics Canada.

Table 5: Specialization within the household

Panel A: firm outcomes

	Raw			Inverse Probability Weighting		
	(1) **Log Sales**	(2) **Profits**	(3) **Profit Margin**	(4) **Log Sales**	(5) **Profits**	(6) **Profit Margin**
Post × Mother	-0.345***	-16,486***	-0.078***	-0.348***	-22,310***	-0.077***
	(0.034)	(1,523)	(0.012)	(0.035)	(2,016)	(0.011)
Post × Mother	0.153***	-5,987**	0.021	0.143***	1,111	0.014
× Main earner	(0.045)	(2,516)	(0.016)	(0.048)	(2,704)	(0.017)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry × province × year effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.800	0.770	0.658	0.800	0.768	0.657
Number of observations	86,110	93,745	86,110	80,125	83,945	80,125

Panel B: income

	(1) **Household Income**	(2) **Individual Income**	(3) **Spousal Income**
Post × Mother	0.073***	-0.069*	0.122***
	(0.016)	(0.039)	(0.017)
Post × Mother × Main earner	-0.067***	-0.130***	0.022
	(0.024)	(0.047)	(0.028)
Controls	Yes	Yes	Yes
Individual effects	Yes	Yes	Yes
Province × year effects	Yes	Yes	Yes
R^2	0.522	0.454	0.626
Number of observations	227,195	225,440	133,570

Notes: This table examines variation in firm and individual-level outcomes depending on main earner status. The sample is restricted to entrepreneurs who were married or cohabiting the year before giving birth to their first child. "Main earner" is an indicator equal to 1 if the mother earned more than 50% of the household income in the 3 years before childbirth. Panel A examines firm outcomes for main vs. secondary earners. In columns (4)-(6), observations are reweighted to achieve a balanced distribution of firm characteristics between main and secondary earners. Panel B examines the effect on log income, irrespective of whether the individual is still an entrepreneur at any point. The control group includes the entrepreneurs who own the matched firms and their spouses (spouses stay in the sample if they are still married to the entrepreneur). Controls in Panel B include a polynomial for individual age, marital status, and interaction between main earner status and marital status. Standard errors are reported in parenthesis and are clustered at the firm level (Panel A) and at the individual level (Panel B). * indicates statistical significance at the 10% level, ** at the 5% level, and *** at the 1% level.

Table 6: Cultural norms and firm outcomes

	Mothers (founders)			Mothers (all firm owners)			Fathers (founders)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Log Sales	**Profits**	**Profit Margin**	**Log Sales**	**Profits**	**Profit Margin**	**Log Sales**	**Profits**	**Profit Margin**
Post × Traditional	-0.256**	-34,205***	-0.141**	-0.253***	-18,000***	-0.081***	0.176**	-1,953	0.027
	(0.123)	(4,705)	(0.061)	(0.088)	(3,582)	(0.028)	(0.070)	(5,718)	(0.033)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry × year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province × year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.800	0.762	0.680	0.822	0.812	0.652	0.793	0.703	0.600
Number of observations	8,525	9,475	8,525	15,670	18,020	15,670	31,430	34,845	31,430

Notes: This table presents regression estimates examining variation in mothers' and fathers' firm outcomes depending on cultural norms. The sample includes parents who are second-generation immigrant entrepreneurs, i.e., individuals born in Canada from foreign-born parents. "Post" is an indicator equal to 1 in the year of birth of the first child or after. "Traditional" is an indicator equal to 1 if the entrepreneur's parents immigrated from a country with traditional gender norms. The construction of the gender norms index is detailed in Appendix C. Columns (1)-(3) show results for mothers who are founders; columns (4)-(6) for all mothers who are business owners. Columns (7)-(9) shows results for fathers who are founders. Profits are expressed in constant 2012 dollars. Controls include indicators for firm age, the number of firm owners, a polynomial for individual age, and marital status. Standard errors are reported in parentheses and are clustered at the firm and landing year *times* country of origin level. * indicates statistical significance at the 10% level, ** at the 5% level, and *** at the 1% level. The numbers of observations are rounded to the nearest five to comply with the confidentiality requirements of Statistics Canada.

Table 7: Proximity to grandparents and firm outcomes

Panel A: mothers

	(1) **Log Sales**	(2) **Profits**	(3) **Profit Margin**
Post × Close to grandparents	0.133***	5,728**	0.071***
	(0.035)	(2,287)	(0.024)
Controls	Yes	Yes	Yes
Industry × province × year effects	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes
R^2	0.803	0.756	0.598
Number of observations	49,770	54,820	49,770

Panel B: fathers

	(1) **Log Sales**	(2) **Profits**	(3) **Profit Margin**
Post × Close to grandparents	0.019	-3,748***	0.007
	(0.019)	(1,338)	(0.012)
Controls	Yes	Yes	Yes
Industry × province × year effects	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes
R^2	0.766	0.670	0.496
Number of observations	236,635	259,890	236,635

Notes: This table presents regression estimates examining variation in mothers' and fathers' firm outcomes depending on proximity to grandparents. "Post" is an indicator equal to 1 in the year of birth of the first child or after. "Close to grandparents" is an indicator equal to 1 if the grandparents live in the same municipality as the parent, as a proxy for the availability of informal childcare through family networks. Panel A shows results for firms owned by mothers; Panel B for firms owned by fathers. The sample includes mother and father entrepreneurs who can be matched to their own family of origin through tax files. Profits are expressed in constant 2012 dollars. Controls include indicators for firm age, the number of firm owners, a polynomial for individual age, and marital status. Standard errors are reported in parenthesis and clustered at the firm level. * indicates statistical significance at the 10% level, ** at the 5% level, and *** at the 1% level. The numbers of observations are rounded to the nearest five to comply with the confidentiality requirements of Statistics Canada.

Table 8: Formal childcare expansion and firm outcomes

Panel A: mothers

	(1) **Log Sales**	(2) **Profits**	(3) **Profit Margin**
Post expansion × Mother	-0.048	711	-0.054*
	(0.041)	(2,992)	(0.029)
Post expansion × Mother × Child under two	0.113**	4,625	0.072***
	(0.050)	(3,913)	(0.027)
Controls	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Industry × year FE	Yes	Yes	Yes
Municipality × year FE	Yes	Yes	Yes
Number of observations	58,335	58,335	58,335

Panel B: mothers and fathers

	(1) **Log Sales**	(2) **Profits**	(3) **Profit Margin**
Post expansion × Father × Child under two	-0.028	-1,813	0.004
	(0.031)	(2,239)	(0.008)
Post expansion × Mother × Child under two	0.172***	11,494**	0.095***
	(0.050)	(4,819)	(0.031)
Controls	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Industry × year FE	Yes	Yes	Yes
Municipality × year FE	Yes	Yes	Yes
Number of observations	344,540	344,540	344,540

Notes: This table examines the effect of formal childcare expansion on firm outcomes. The sample include parents of children who are at most six years old. "Post expansion" is equal to 1 in or after the year the municipality experiences an increase in childcare provision of at least one standard deviation. "Child under two" is equal to 1 if the parent has a child who is two years old or younger at the time of expansion. In Panel A, mothers and their matches are part of the sample. In Panel B, men and their matches are also included. Profits are expressed in constant 2012 dollars. Controls include indicators for firm age, the number of firm owners, a polynomial for individual age, marital status, and indicators for the number of children under 3 years old in the household. Standard errors are double clustered at the firm and municipality level. * indicates statistical significance at the 10% level, ** at the 5% level, and *** at the 1% level. The numbers of observations are rounded to the nearest five to comply with the confidentiality requirements of Statistics Canada.

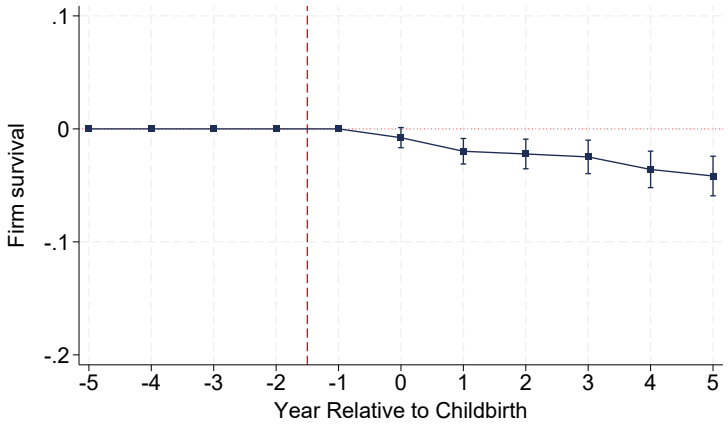
Internet Appendix to

"Minding Your Business or Your Child? Entrepreneurs, Fertility, and Firm and Worker Outcomes"

Valentina Rutigliano
University of British Columbia

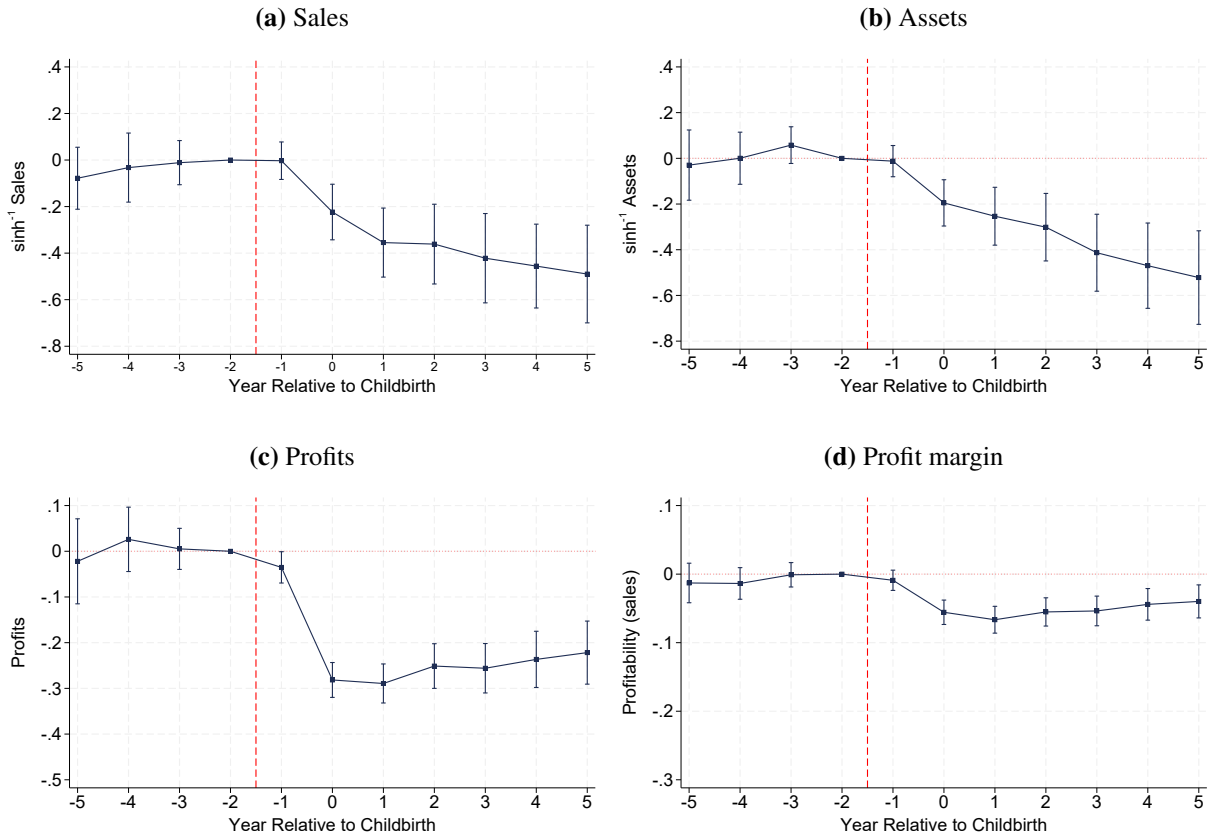
A Additional Figures and Tables

Figure A.1: Firm survival



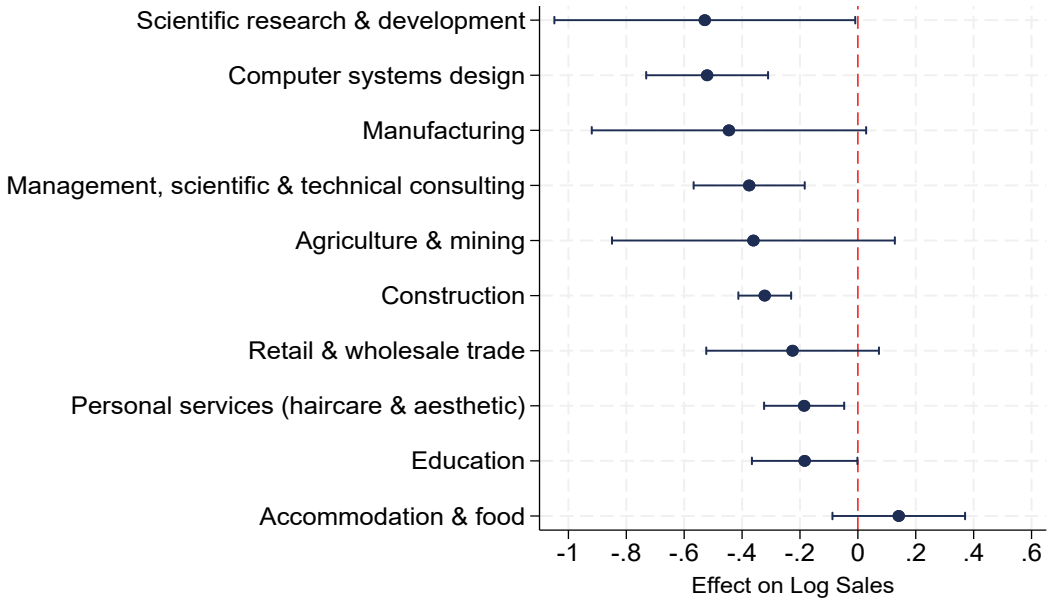
Notes: The graphs show event-study estimates obtained by fitting equation 1 on an indicator variable for firm survival. Year 0 is when the first childbirth event takes place. The treated group is a sample of firms owned by a female entrepreneur for at least two years before she had her first child. The control group is a matched sample of firms owned by female entrepreneurs with zero observed fertility. Control variables include indicators for firm age, the number of firm owners, a polynomial for individual age, and marital status. Firm effects and industry × province × year fixed effects are included. I report 95% confidence intervals based on standard errors clustered at the firm level.

Figure A.2: Effect of childbirth on firm outcomes without conditioning on survival



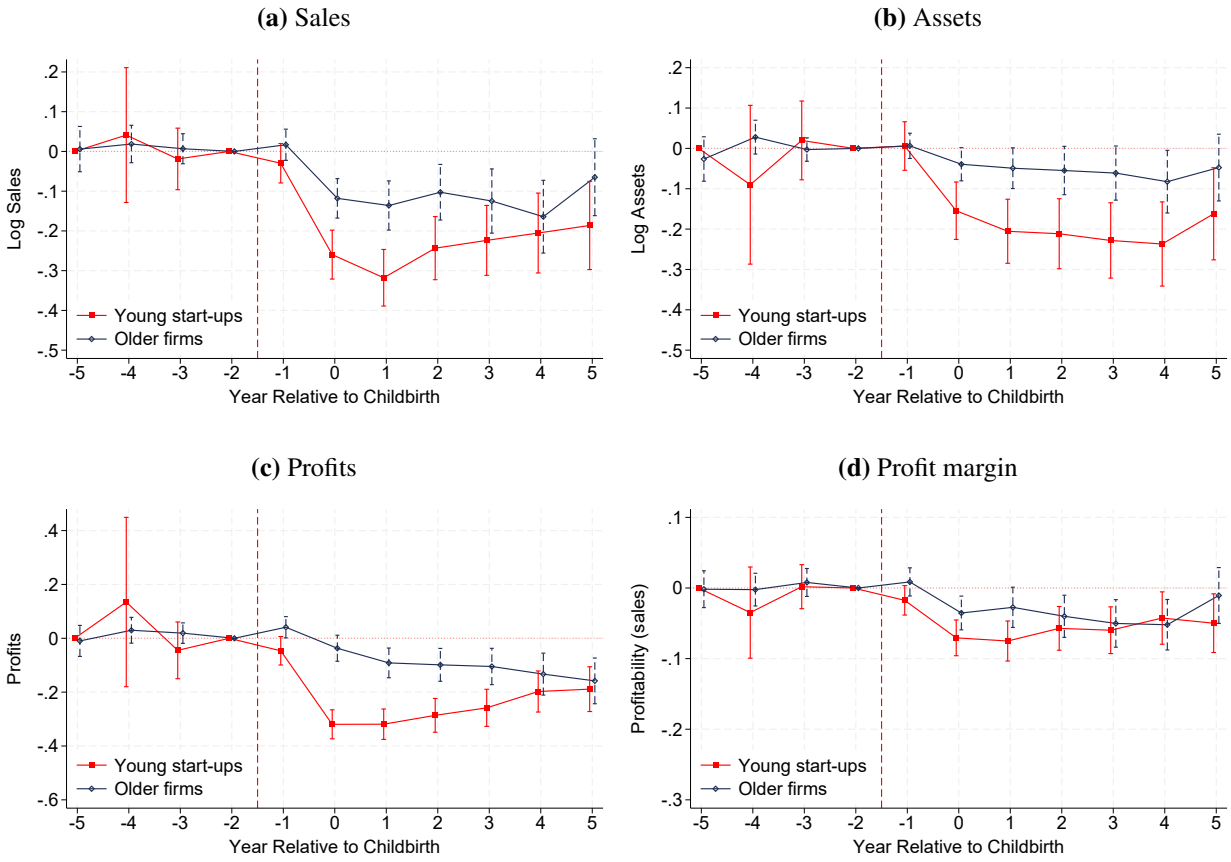
Notes: The graphs show event-study estimates obtained by fitting equation 1, without conditioning on firm survival. Firms that go out of business remain in the sample and their outcomes are set to 0. Logs are replaced by inverse hyperbolic sine. The control group is a matched sample of firms owned by women with zero observed fertility. Coefficients for profits are reported as a percentage of the counterfactual outcome absent children. Control variables include indicators for firm age, the number of firm owners, a polynomial for individual age, and marital status. Firm effects and industry × province × year fixed effects are included. I report 95% confidence intervals based on standard errors which are clustered at the firm level.

Figure A.3: Effect of childbirth on log sales by industry



Notes: The graphs show event-study estimates obtained by fitting a two-period version of equation 1 on log sales, separately by industry. I report coefficients on the interaction $Post \times Mother_j$. Post is an indicator equal to 1 in the year of birth of the first child or after. The treated group is a sample of firms owned by a female entrepreneur for at least two years before she had her first child. The control group is a matched sample of firms owned by female entrepreneurs with zero observed fertility. Control variables include indicators for firm age, the number of firm owners, a polynomial for individual age, and marital status. Firm effects and industry × province × year fixed effects are included, where industry codes are at the 4-digit level. I report 95% confidence intervals based on standard errors clustered at the firm level.

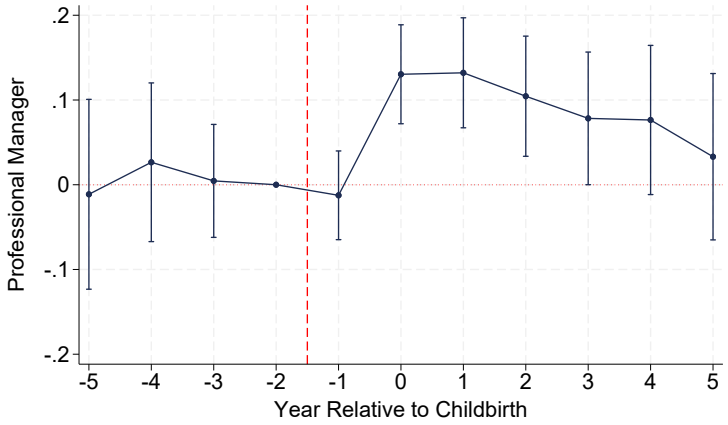
Figure A.4: Effect of childbirth on firm outcomes by firm age



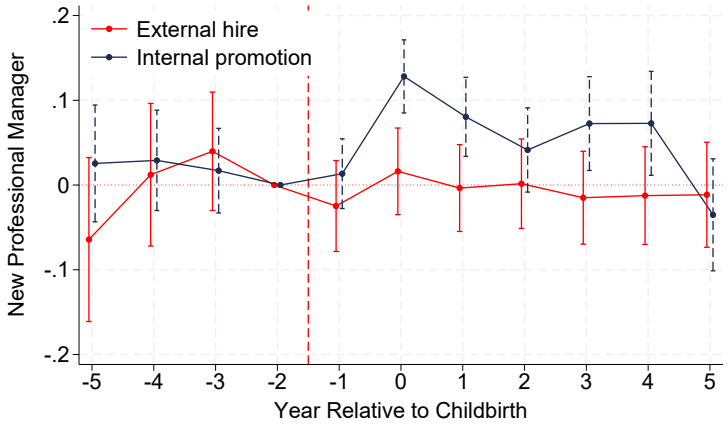
Notes: The graphs show event-study estimates obtained by fitting equation 1 on log sales (panel (a)), log assets (panel (b)), profits (panel (c)), and profit margin (panel (d)), separately by firm age. Young start-ups are firms that experienced the entrepreneur's first childbirth when they were at most 5 years old. Older firms are defined as firms that were older than 5 when the entrepreneur had her first child. Year 0 is when the first childbirth event takes place. The treated group is a sample of firms owned by a female entrepreneur for at least two years before she had her first child. The control group is a matched sample of firms owned by female entrepreneurs with zero observed fertility. Coefficients for profits are reported as a percentage of the counterfactual outcome absent children. Profit margin is the ratio of profits to sales. Control variables include indicators for firm age, the number of firm owners, a polynomial for individual age, and marital status. Firm effects and industry × province × year fixed effects are included. I report 95% confidence intervals based on standard errors clustered at the firm level.

Figure A.5: Effect of childbirth on manager appointment

(a) Appointment of a professional manager

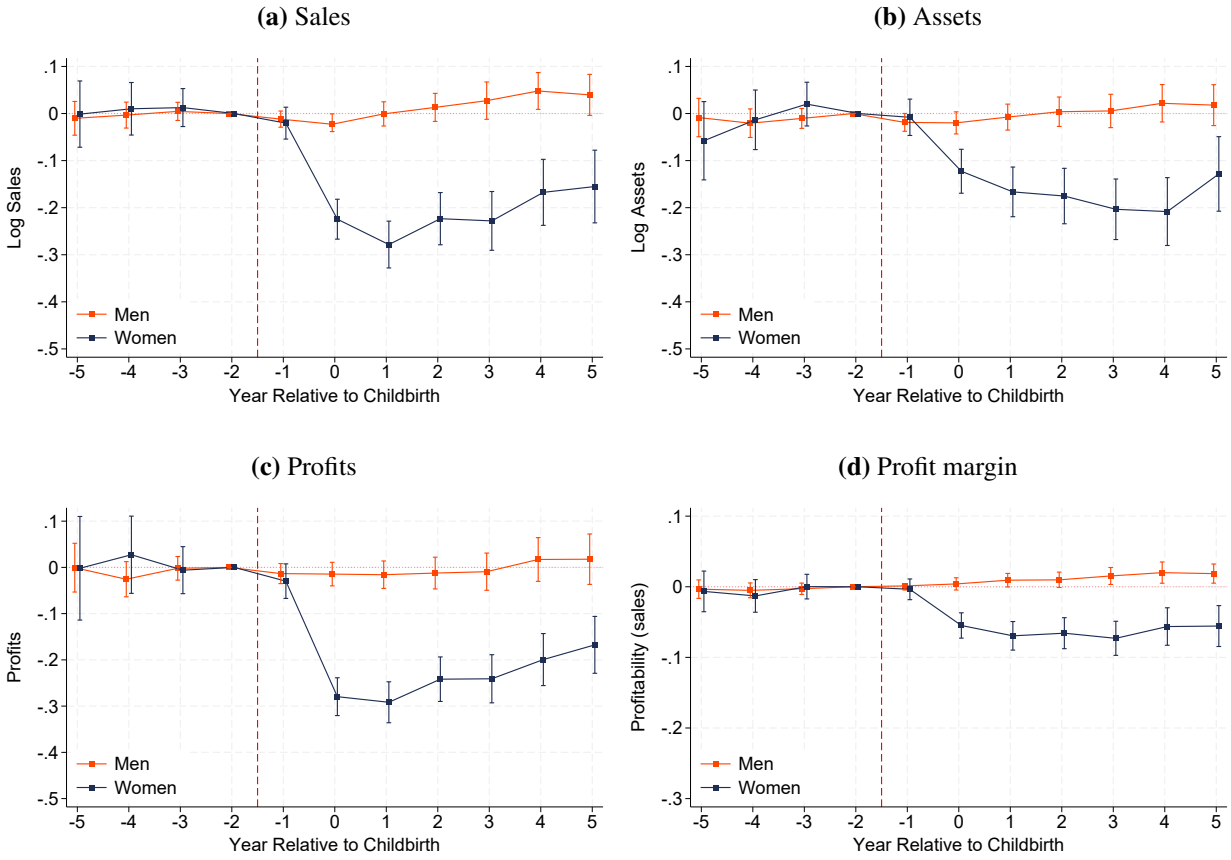


(b) Hiring a manager through external hire vs. internal promotion



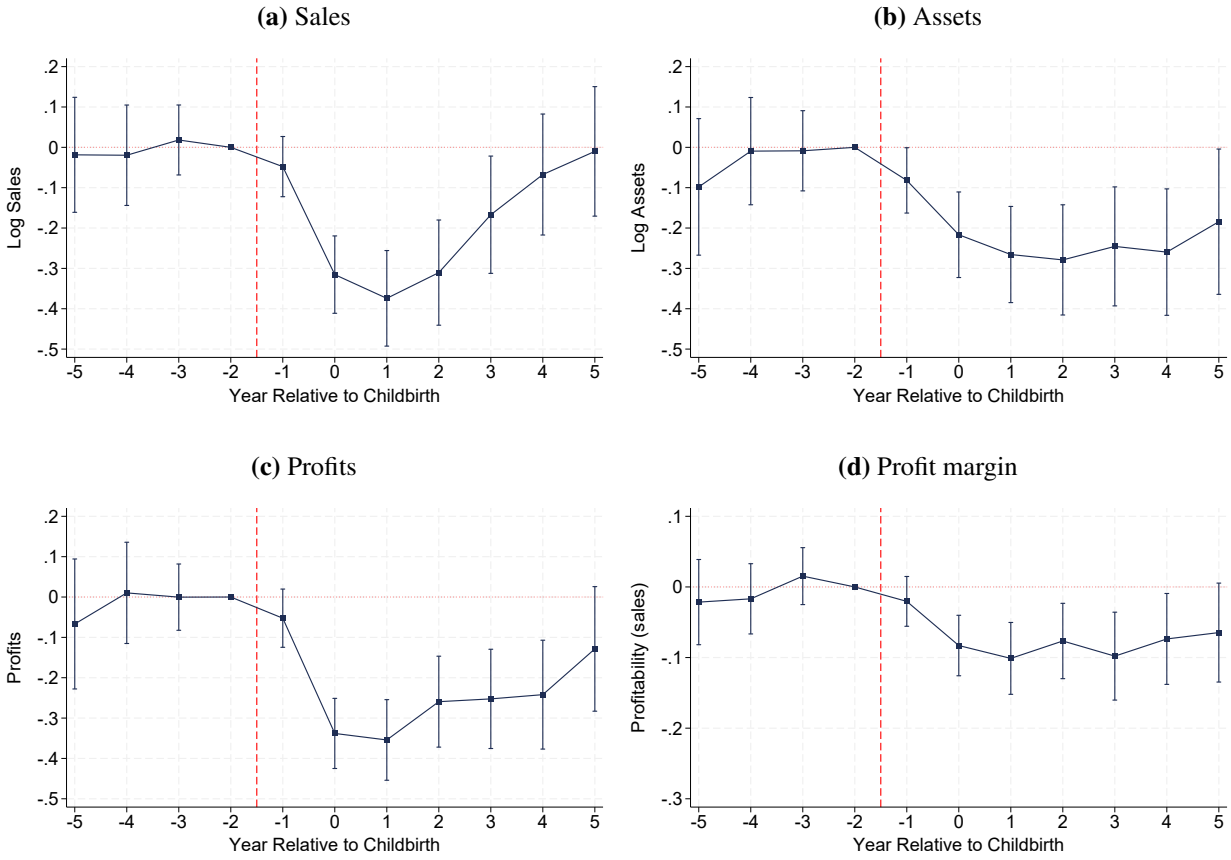
Notes: The graphs show event-study estimates obtained by fitting equation 1 on an indicator for whether the firm is professionally managed (panel (a)) and an indicator for whether the firm hires a manager through external hiring or internal promotion (panel (b)). A firm is defined as professionally managed if the highest paid employee in the firm is not an owner. Year 0 is when the first childbirth event takes place. The treated group is a sample of firms owned by a female entrepreneur for at least two years before she had her first child. The control group is a matched sample of firms owned by female entrepreneurs with zero observed fertility. Control variables include indicators for firm age, the number of firm owners, a polynomial for individual age, and marital status. Firm effects and industry × province × year fixed effects are included. I report 95% confidence intervals based on standard errors clustered at the firm level.

Figure A.6: Gender gap in the effect of childbirth on firm outcomes



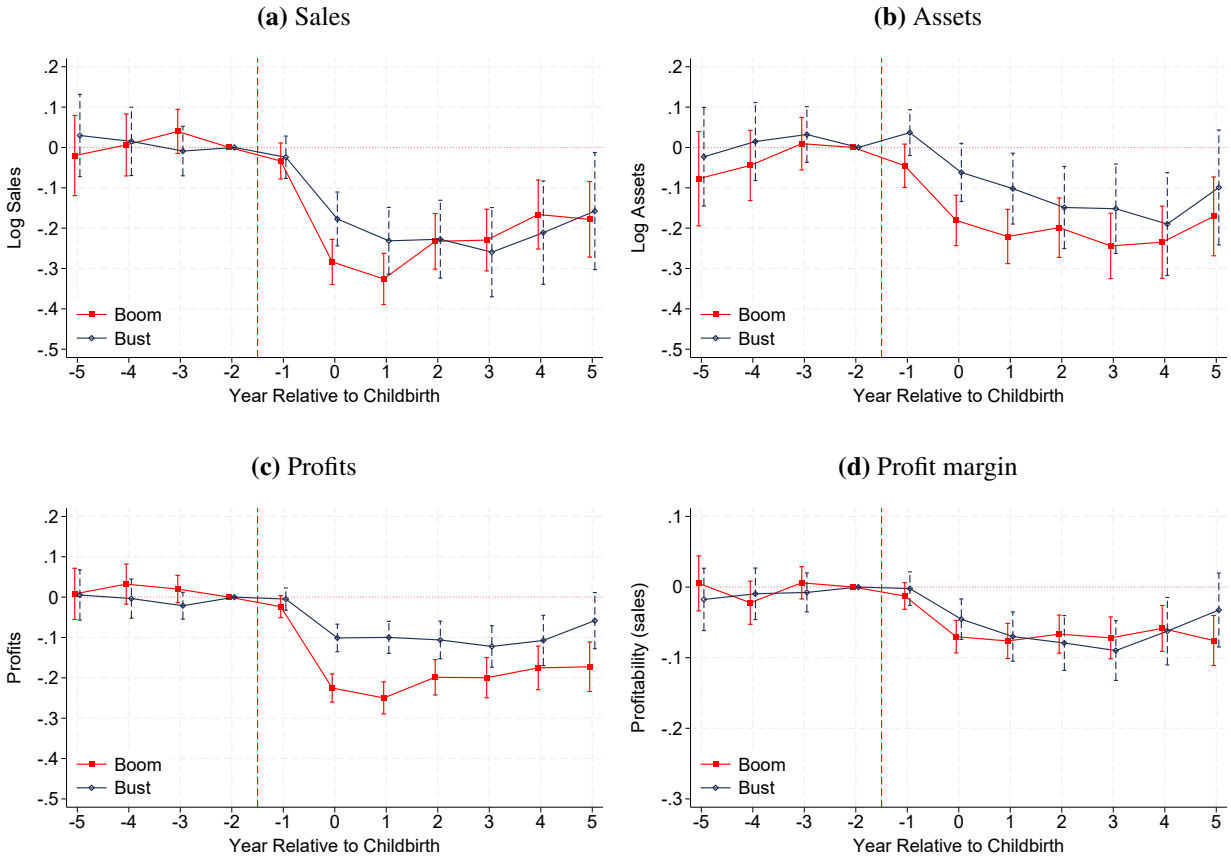
Notes: The graphs show event-study estimates obtained by fitting equation 1 on log sales (panel (a)), log assets (panel (b)), profits (panel (c)), and profit margin (panel (d)), separately for men and women. Year 0 is when the first childbirth event takes place. Coefficients for profits are reported as a percentage of the counterfactual outcome absent children. Profit margin is the ratio of profits to sales. Control variables include indicators for firm age, the number of firm owners, a polynomial for individual age, and marital status. Firm effects and industry × province × year fixed effects are included. I report 95% confidence intervals based on standard errors clustered at the firm level.

Figure A.7: Effect of childbirth on firm outcomes for women over 35



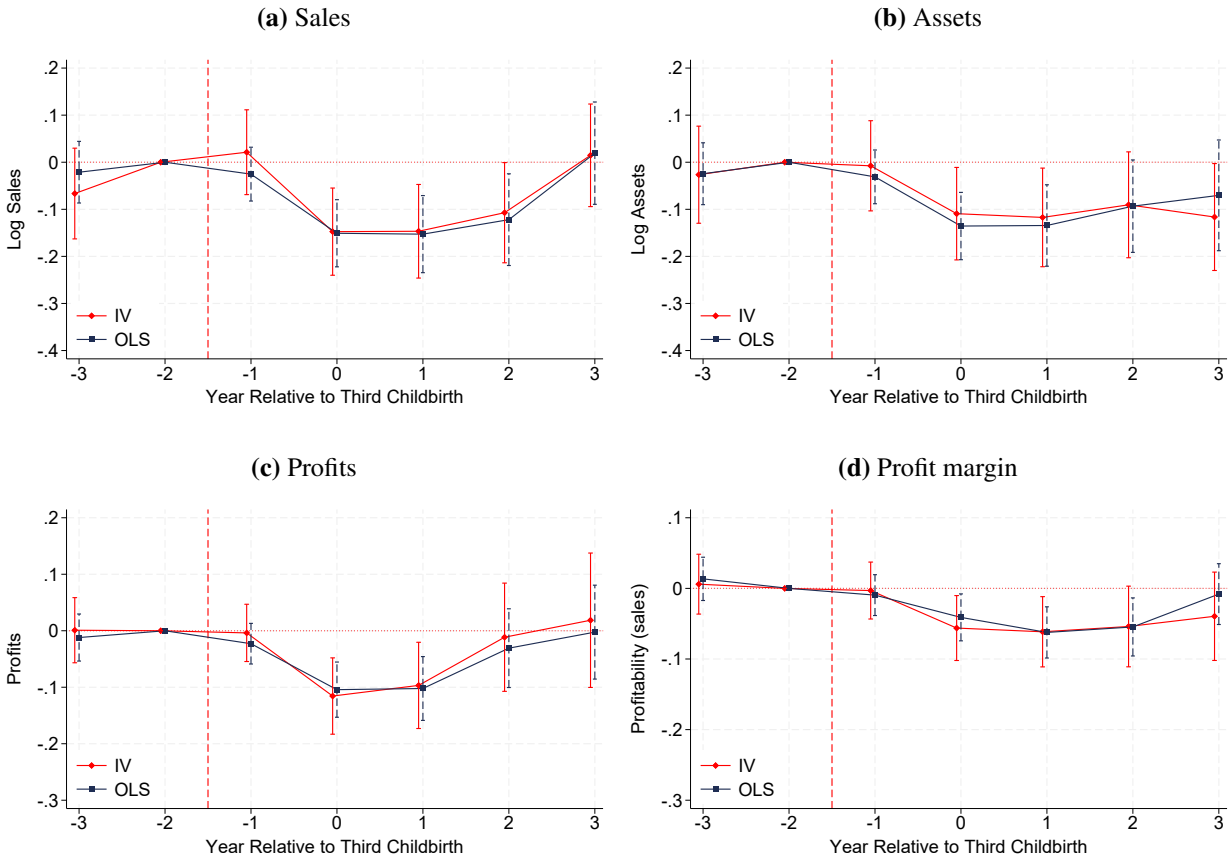
Notes: The graphs show event-study estimates obtained by fitting equation 1 on log sales (panel (a)), log assets (panel (b)), profits (panel (c)), and profit margin (panel (d)). The sample is restricted to women who were over 35 when they had their first child and were single (not married or cohabiting) when they started their firm. Year 0 is when the first childbirth event takes place. The treated group is a sample of firms owned by a female entrepreneur for at least two years before she had her first child. The control group is a matched sample of firms owned by female entrepreneurs with zero observed fertility. Coefficients for profits are reported as a percentage of the counterfactual outcome absent children. Profit margin is the ratio of profits to sales. Control variables include indicators for firm age, the number of firm owners, a polynomial for individual age, and marital status. Firm effects and industry × province × year fixed effects are included. I report 95% confidence intervals based on standard errors clustered at the firm level.

Figure A.8: Firm outcomes by business cycle



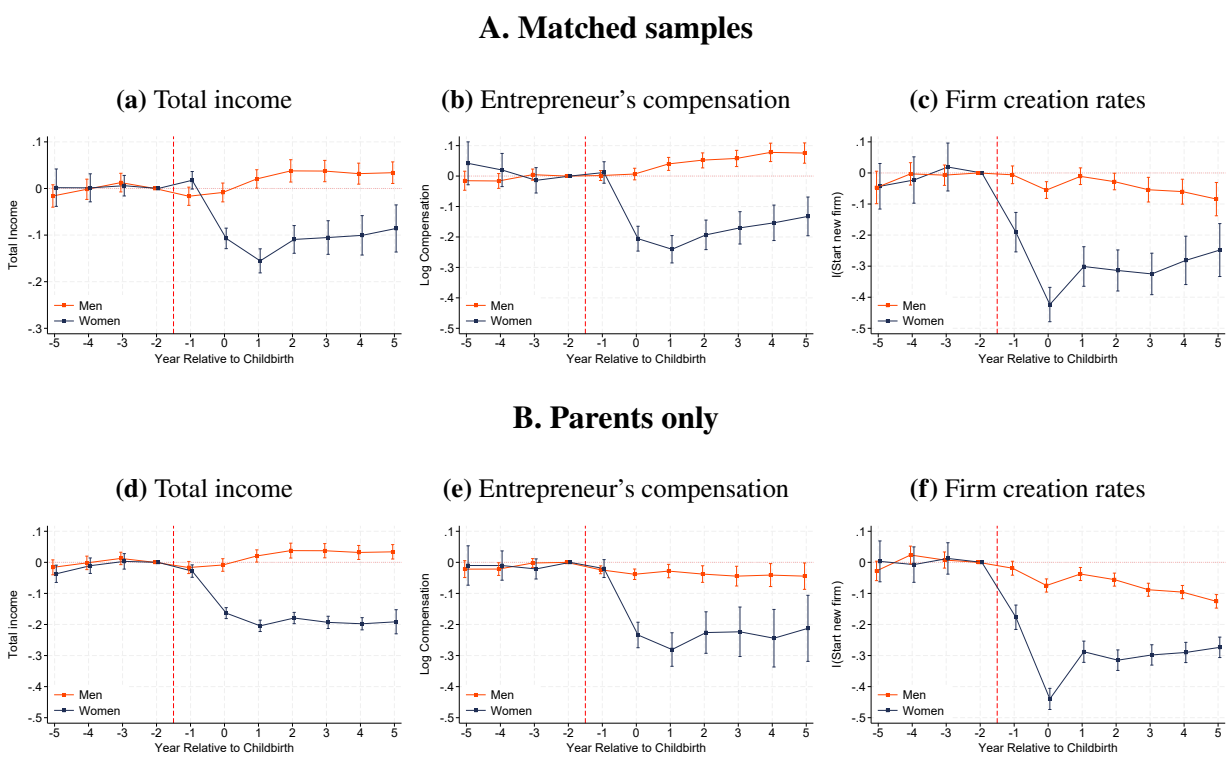
Notes: The graphs show event-study estimates obtained by fitting equation 1 on log sales (panel (a)), log assets (panel (b)), profits (panel (c)), and profit margin (panel (d)), separately by industry performance in the year of the first childbirth. Booms are periods in which industry sales growth ranks in the upper tercile of all industry-years, while busts are periods of growth in the lower tercile. Only firms owned by male entrepreneurs are used to construct the terciles. Year 0 is when the first childbirth event takes place. The treated group is a sample of firms owned by a female entrepreneur for at least two years before she had her first child. The control group is a matched sample of firms owned by female entrepreneurs with zero observed fertility. Coefficients for profits are reported as a percentage of the counterfactual outcome absent children. Profit margin is the ratio of profits to sales. Control variables include indicators for firm age, the number of firm owners, a polynomial for individual age, and marital status. Firm effects and industry × province × year fixed effects are included. I report 95% confidence intervals based on standard errors clustered at the firm level.

Figure A.9: Effect of childbirth on firm outcomes: sibling sex mix IV vs. OLS



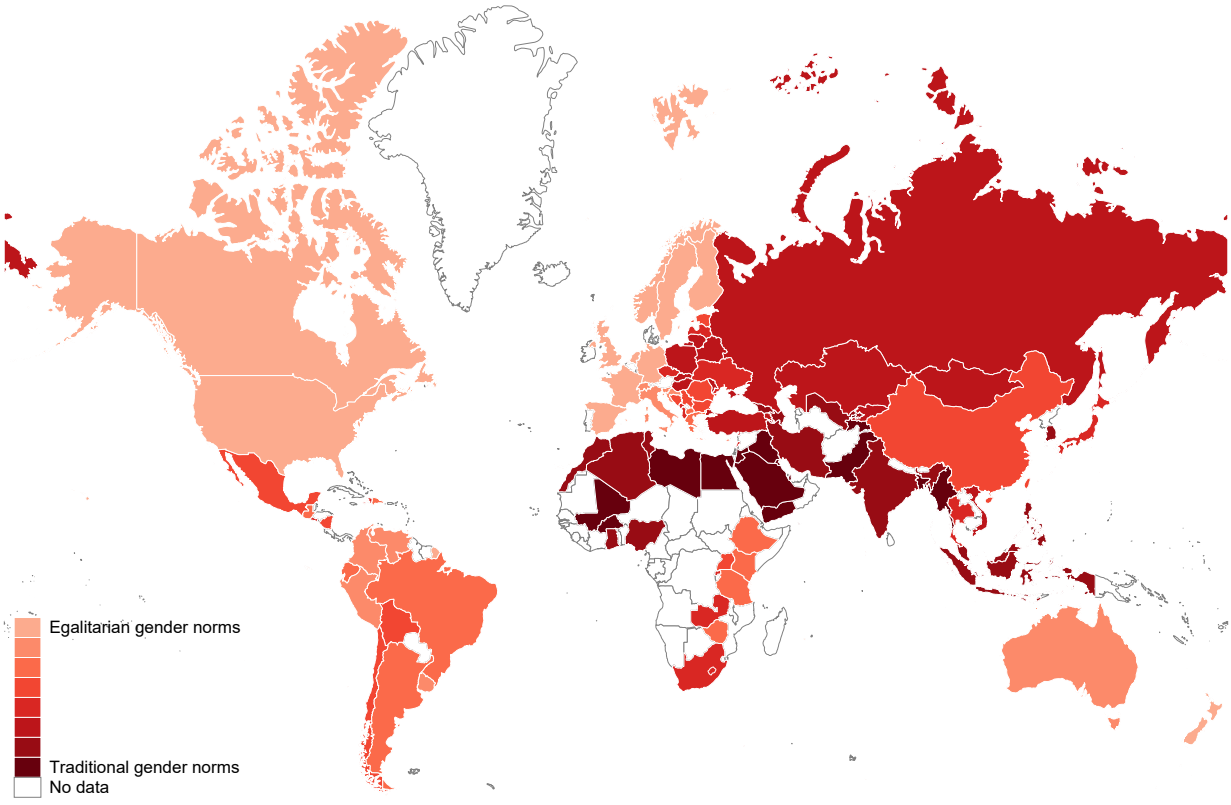
Notes: The graphs compare event-study estimates around third childbirth using an instrumental variable and OLS. The dependent variables are log sales (panel (a)), log assets (panel (b)), profits (panel (c)), and profit margin (panel (d)). Year 0 is when the first childbirth event takes place. For the IV design, I report event time coefficients β_κ estimated from equation 5. The instrumental variable specification is based on the sex mix of the first two children as instrument for the birth of a third child. Coefficients for profits are reported as a percentage of the counterfactual outcome absent children. Profit margin is the ratio of profits to sales. Control variables include indicators for firm age, the number of firm owners, a polynomial for individual age, marital status, a dummy to indicate whether the individual already had their first child, and binned event time dummies with respect to the second child. Firm effects and industry × province × year fixed effects are included. I report 95% confidence intervals based on standard errors clustered at the firm level.

Figure A.10: Gender gap in the effect of childbirth on entrepreneurial career outcomes



Notes: The graphs show the effect of childbirth on entrepreneurial career outcomes, separately by gender. Year 0 is when the first childbirth event takes place. In the top panel, Panel (a) and (b) report coefficients obtained by fitting variations of equation 1, for the sample of individuals who were entrepreneurs for at least two years before the first childbirth event. In panel (a), total income is income from all sources, irrespective of whether the individual is still an entrepreneur at any point. Coefficients are reported as a percentage of the counterfactual outcome absent children. Control variables include a polynomial for individual age and marital status. Individual and year fixed effects are included. In panel (b), entrepreneurs' compensation is the sum of wages and dividends entrepreneurs take from their firms (conditional on the firm being active). Control variables include indicators for firm age, the number of firm owners, a polynomial for individual age, and marital status. Firm effects and industry × province × year fixed effects are included. Panel (c) reports event-study estimates obtained fitting equation 3, separately by gender, irrespective of any entrepreneurial experience prior to childbirth. Coefficients are reported as a percentage of the counterfactual outcome absent children. Control variables include indicators for individual age and marital status. Individual and year fixed effects are included. I report 95% confidence intervals based on standard errors clustered at the individual level (panel (a) and (c)) and at the firm level (panel (b)). In the bottom panel, I repeat the same estimation on the sample of parents only, following Kleven, Landais, and Søgaard (2019).

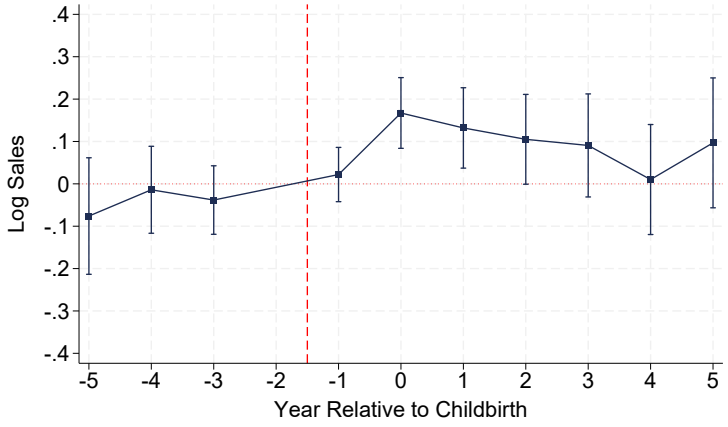
Figure A.11: Distribution of the gender progressivity index



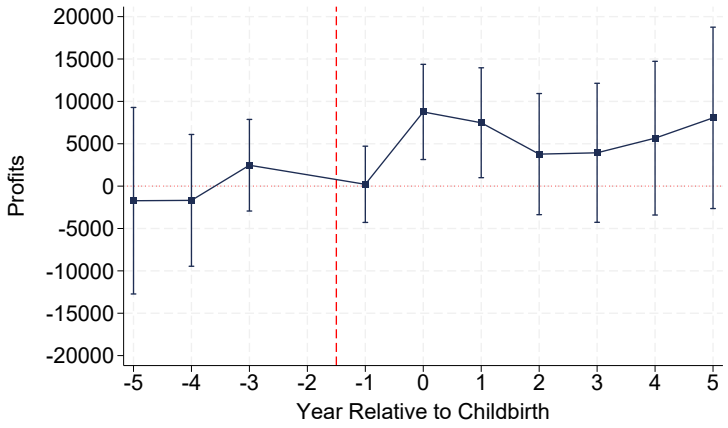
Notes: This figure depicts values of a gender progressivity index calculated using values from the World Values Survey. See Appendix C for details on index construction.

Figure A.12: Proximity to grandparents and mothers' firm outcomes: event study

(a) Sales

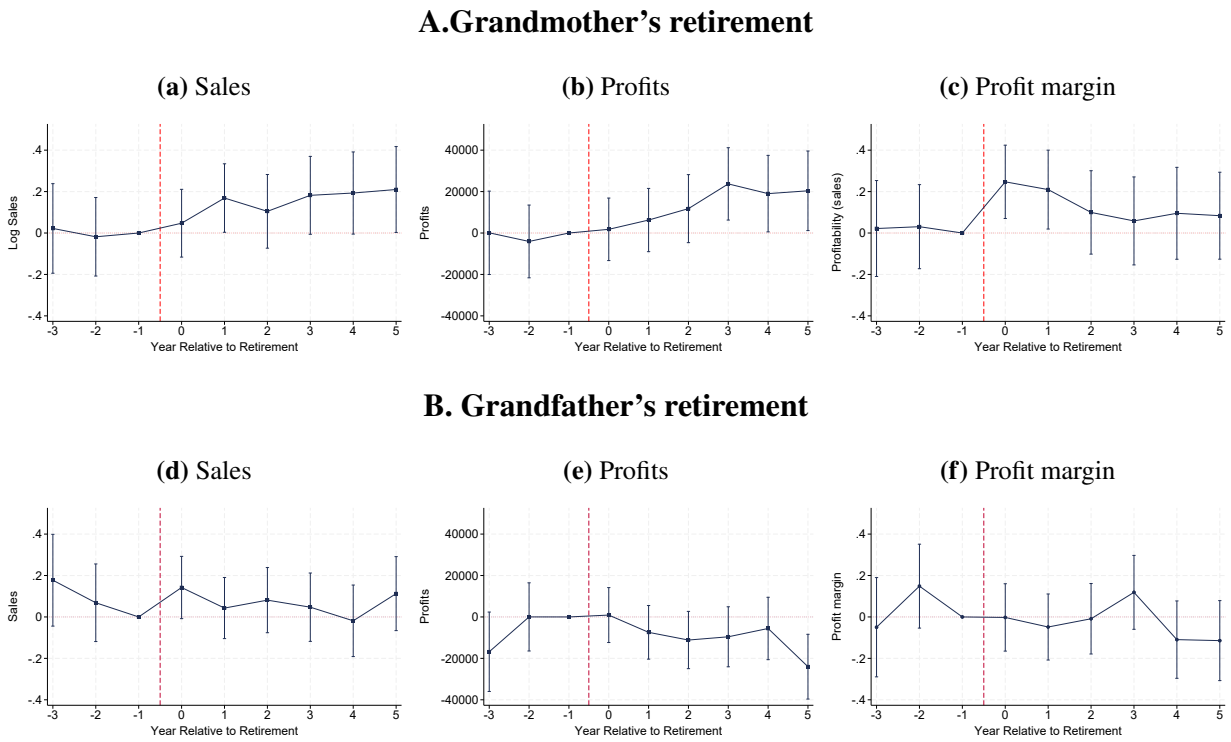


(b) Profits



Notes: This figure depicts coefficients for the interaction of event time indicators relative to first childbirth and an indicator for proximity to grandparents, showing dynamic effects for the specification in Table 7. Firm effects and industry × province × year fixed effects are included. I report 95% confidence intervals based on standard errors which are clustered at the firm level.

Figure A.13: Effect of grandparents' retirement on mothers' firm outcomes



Notes: The graphs show event-study estimates around grandmother's (top panel) and grandfather's (bottom panel) retirement for log sales (panel (a)), profits (panel (b)), and profit margin (panel (c)). Year 0 is when the grandfather retires. The sample includes mother entrepreneurs who can be matched to their own family of origin through tax files. The treated group includes women who live in the same municipality as their father, compared to a control group of women whose father lives in a different municipality. Coefficients for profits are reported in real terms (2012 CPI). Profit margin is the ratio of profits to sales. Control variables include indicators for firm age, a polynomial for entrepreneur's age, and indicators for whether or not a grandfather is also retired and lives in the same municipality. Firm and industry × year fixed effects are included. I report 95% confidence intervals based on standard errors clustered at the firm level.

Table A.1: Children's sex mix and family size

Panel A: family size

	(1) **Third child**	(2) **Third child**	(3) **Third child**	(4) **Second child**
Same sex	0.047***			
	(0.006)			
Two sons		0.045***		
		(0.008)		
Two daughters		0.049***		
		(0.008)		
First-born daughter			0.001	0.002
			(0.002)	(0.004)
Controls	Yes	Yes	Yes	Yes
Province × year effects	Yes	Yes	Yes	Yes
R^2	0.020	0.020	0.042	0.207
Number of observations	77,260	77,260	253,500	253,500

Panel B: descriptive statistics

		(1) **Same sex**	(2) **Different sex**
Married	%	84.0	83.9
Age	mean	33.8	33.7
	SD	5.0	5.0
Age at first childbirth	mean	30.0	30.0
	SD	3.1	3.1
Age at second childbirth	mean	32.8	32.8
	SD	3.3	3.2
Individual income	mean	68,911	69,624
	SD	99,975	126,787
Family income	mean	155,693	160,529
	SD	211,794	324,260
Number of observations		62,760	63,370

Notes: This table provides evidence on the same-sex instrumental variable. Panel A presents regression estimates examining the effect of children's sex mix on family size. Column (1) shows the effect of having two children of the same sex on the probability of having a third child, for a sample of female entrepreneurs with at least two children. Column (2) decomposes the the effect in column (1) into the effect of having two sons vs. two daughters. Columns (3) and (4) show the effect of having a first-born daughter on the probability of having a third and second child, respectively, for the whole sample of female entrepreneurs who are mothers. Controls include marital status and a polynomial for age. Standard errors are reported in parenthesis and are clustered at the individual level. * indicates statistical significance at the 10% level, ** at the 5% level, and *** at the 1% level. Panel B shows descriptive statistics for the sample of women with two children, separately by the sex mix of the first two children. Individual and family income are reported in real terms (2012 CPI). The numbers of observations are rounded to the nearest five to comply with the confidentiality requirements of Statistics Canada.

Table A.2: Grandmother retirement and center-based childcare

	Log Sales	**Profits**	**Profit Margin**
Post × Close to grandma	0.217***	16,016**	0.144**
	(0.065)	(6,354)	(0.071)
Post × Close to grandma × High childcare	-0.176**	-16,515**	-0.212***
	(0.073)	(7,149)	(0.080)
Controls	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Industry × year FE	Yes	Yes	Yes
Municipality × year FE	Yes	Yes	Yes
Number of observations	37,190	37,190	37,190

Notes: This table examines the effect of grandmother retirement on firm outcomes, using a triple difference design. "Post retirement" is an indicator equal to 1 in the year of retirement or after. "Close to grandparents" is equal to 1 if the grandparents live in the same municipality as the parent. High childcare refers to municipalities with above median center-based childcare provision. Profits are expressed in constant 2012 dollars. Controls include indicators for firm age, the number of firm owners, a polynomial for individual age, and marital status. * indicates statistical significance at the 10% level, ** at the 5% level, and *** at the 1% level. The numbers of observations are rounded to the nearest five to comply with the confidentiality requirements of Statistics Canada.

B Same Sex Instrument

A key challenge in estimating the effects of childbirth on firm outcomes is selection: women who become mothers may differ systematically from those who do not in ways that are unobservable and correlated with firm performance. To address this concern, I adopt the instrumental variable approach first proposed by Angrist and Evans (1998), using the sex composition of the first two children to generate plausibly exogenous variation in family size. This approach exploits parents' preference for a mixed-sex composition in children: parents whose first two children are of the same sex are significantly more likely to have a third child than those with one child of each sex.

Preference for variety, which has been documented in many contexts, also holds for parents in Canada. Table A.1 reports the relationship between children's sex composition and family size. Column (1) shows that having two children of the same sex increases the probability of having a third child by 4.7 percentage points. Given a base rate of 12.6% in this sample, this corresponds to an increase of nearly 37%.

For this instrument to be valid, it must satisfy two key assumptions. First, the sex of the first two children must be as good as randomly assigned. Second, the instrument has to satisfy the exclusion restriction, requiring that the sex of the first two children must not directly affect entrepreneurial outcomes, except through its impact on the likelihood of having a third child. This assumption could be violated, for example, if parents systematically invest more time or resources into raising children of one sex over the other, particularly boys (Dahl and Moretti, 2008).[18]

While these assumptions cannot be tested directly, I present evidence that supports their plausibility. First, I show that women who had two same-sex children are observationally similar to women who had two opposite-sex children. Panel B of Table A.1 reports descriptive statistics for women with two children, stratified by the sex composition of the first two. The two groups are virtually identical in age, age at childbirth, marital status, and both individual and family income, supporting the random assignment assumption. Moreover, I find no evidence of a systematic preference for sons among Canadian parents during the sample period. Columns (2) and (3) of Panel A show that the increase in third-birth probability is similar whether parents have two boys (4.5 percentage points) or two girls (4.9 percentage points), consistent with a preference for mixed-sex composition rather than for a particular gender. Columns (4) and (5) show that having a

[18] An additional assumption often required for interpreting instrumental variable estimates as local average treatment effects is the monotonicity condition, which rules out the presence of "defiers"—individuals who would take the treatment only when not encouraged by the instrument. In this setting, defiers are individuals who prefer exactly two children of a particular sex, so that having two boys or two girls decreases the probability of having a third child. Even though the presence of defiers cannot be tested, De Chaisemartin (2017) shows that it is possible to identify causal estimates under weaker assumptions than the absence of defiers and that the sufficient conditions are likely to hold in the context of the sibling sex mix instrument.

first-born daughter has no significant effect on the probability of having a second or third child.

To estimate the dynamic effect of having a third child, I implement an instrumental variables event study design following Kleven, Landais, and Søgaard (2019). I restrict the sample to women who had their first child during the sample years and had at least two children by the end of the sample period. This setup ensures that all individuals in the estimation sample were at risk of having a third child, even if they had none or only one child in a given year. Specifically, I estimate the following regression:

$$y_{jt'} = \alpha_j + \lambda_{s(j),p(j),t'} + \sum_{k=a}^{b} \beta_k R^k_{jt'} + X'_{jt'}\gamma + \epsilon_{jt'}, \tag{5}$$

where $y_{jt'}$ denotes an outcome for firm j in year t', α_j are firm fixed effects, and $\lambda_{s(j),p(j),t'}$ are province-by-industry-by-year fixed effects. The indicators $R^k_{jt'}$ denote event times relative to the third birth. Each indicator is instrumented by the interaction $R^k_{jt'} \times SameSex_j$, where $SameSex_j$ is equal to 1 if the first two children are of the same sex. The control vector $X'_{jt'}$ includes the same covariates used in Equation 1, along with binned event time indicators around the second child's birth (to account for any effects of the most recent prior birth) and an indicator for whether the entrepreneur already had their first child.

To assess the validity of the event study approach, I estimate dynamic effects around the birth of the third child using both OLS and IV specifications of Equation 5. The close similarity between the two sets of estimates across event time reinforces the credibility of the event study design as a tool for estimating the effects of childbirth on firm outcomes.

C Gender Progressivity Index

The World Values Survey (WVS) includes several questions designed to gauge individuals' attitudes toward gender roles. These questions may ask respondents to agree or disagree with statements related to gender equality, traditional gender roles, and women's roles in society. I consider the following questions or statements:

1. A working mother can establish just as warm and secure a relationship with her children as a mother who does not work.
2. Both the husband and wife should contribute to household income.
3. When jobs are scarce, men should have more right to a job than women.
4. On the whole, men make better political leaders than women do.
5. A university education is more important for a boy than for a girl.
6. On the whole, men make better business executives than women do.
7. If a woman earns more money than her husband, it's almost certain to cause problems.
8. When a mother works for pay, the children suffer.
9. Do you think that a woman has to have children in order to be fulfilled or is this not necessary?

Not all questions are asked in each survey wave, but all the questions I include were present in at least three waves. To create a single index, I aggregate the answers in several steps. First, I code the answers to all questions so that a higher score represents more egalitarian attitudes. Second, for each wave, I calculate a country's score as the standardized deviation from the average score of that wave. Using the deviation from the average helps account for changes in gender norms over time and ensure fair comparisons between countries surveyed in different years. Finally, for countries surveyed in multiple waves, I average the score across waves.

Cultural values are remarkably stable over time: the correlation of the index across different time periods within countries is 86%. I alternatively compute the index only using questions 3, 4, and 5, which were included in each wave except the first. The correlation between the two indexes is 96%.

Additional References

Dahl, G.B. and E. Moretti. 2008. The demand for sons. *The Review of Economic Studies 75(4)*, pp. 1085-1120.

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