

Fertility and mothers' employment: evidences from a longitudinal survey¹

Short abstract

While the impact of childbirth on women's labor force participation is often negative, its intensity and duration depend on social and economic factors. We evaluate the impacts of childbirth on women's employment using a unique longitudinal data with information on reproductive outcomes and intentions in Pernambuco, Brazil. Our empirical strategy uses random-effects non-linear models combined with a quasi-experimental approach to account for the non-randomness in childbirth. Results indicate a significant and persistent reduction in the probability of formal employment among recent mothers, while the effects on informal employment tend to be positive in the mid-term. We also found that the negative impacts of childbirth are mainly driven by parous women and unintended childbirths. We further discuss the mechanisms explaining how fertility outcomes and intentions can moderate the impacts of fertility on women's labor supply.

Keywords: fertility, women's employment, panel data analysis, socioeconomic inequality, economic demography

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Extended abstract

Recent studies show that the effects of the first birth account for most of the observed gender inequality in the labor market worldwide (Kleven et al., 2023). While some mothers return to full-time work after a few months or years, others will balance caring for children with part-time employment or will never rejoin the labor market (Kleven et al., 2019). Important questions that arise in this debate are whether and how the effects of childbirth on women's labor participation depend on underlying socioeconomic conditions.

We evaluate the child penalty of children on women's employment using a rich longitudinal data on fertility intentions and outcomes in Pernambuco, Brazil. We contribute to the growing literature in this subject into two aspects. First, by investigating causal identification combining panel data models with quasi-experimental designs. Second, by providing evidence on mechanisms (differences by social and demographic groups) linking childbirth to women's employment. We show that, while childbirth implies in a persistent reduction in the probability of formal employment among recent mothers, the effects on informal employment tend to be positive in the mid-term. We also found that the negative impacts of childbirth are mainly driven by parous women and unintended childbirths.

Material and methods

We used longitudinal data from the first three waves of the Decode Zika and Covid Project (DZC) in Pernambuco, a coastal state in northeastern Brazil, known for its diverse socioeconomic and racial makeup. Wave 1 (W1) was conducted from May to October 2020, Wave 2 (W2) from May to August 2021, and Wave 3 (W3) from June 2022 to March 2023. W1 interviewed 3,989 women aged between 18 and 40 years in 2020.

We have three binary dependent variables (Y_{it}). The first is equal to 1 if the woman i was employed or did freelance work for at least one hour during the week before the interview in wave t , and 0 otherwise. We have 62.9% of women employed in W2 and 64.4% in W3. The second is equal to 1 if the women had a formal employment (43.7% in W2 and 45.1% in W3), while the third is equal to 1 if the women had an informal employment (17.2% in W2 and 17.6% in W3).

We used the life history calendar from DZC to define the binary exposure variable B_{it-1} , which is equal to 1 if the woman had a child born between five and 16 months before the month of the interview (hereafter, at period $t - 1$). This definition considers that the official maternity leave in Brazil lasts four months. In other words, recent mothers may not have worked in the four months prior to the interview due to legal restrictions following childbirth rather than due to deliberate choice. We have 165 women who had a child born at period $t - 1$, 92 in W2 (5.3% of the sample) and 73 in W3 (5.9%). We also conducted sensitivity analysis for births occurring more than one year before the month of the interview: between 17 and 28 months (P_{it-2}), 29 and 40 months (P_{it-3}), 41 and 52 months (P_{it-4}), and 53 and 64 months before the month of the interview (P_{it-5}) before the month of interview.

Our control variables (vector $\mathbf{x}_{it-1}$) include a set of demographic and social characteristics for women i at wave $t - 1$. We defined the binary variable for cohabitation status, which equals 1 if the woman lives in the same household with her partner (living with partner); a binary which is 1 if the woman had never given birth to a live baby (nulliparous); a binary which is 1 if the woman reported wanting more children (want more); a binary which is 1 if the monthly family income was below R\$ 1,100 (poor); age and age squared; a binary which is 1 if the woman had some college (college or more); a binary which is 1 if the woman reported being Black (black).

We fit random-effects probit models for the probability of being employed ($Y = 1$) using sampling weights (w_i). We also control the lack of randomness among the women having a child in the previous period using a quasi-experimental strategy, the *Inverse Probability Weighting Regression Adjustment* (IPWRA). The IPWRA is a two-stage method based on the propensity score, which is the probability of receiving the treatment conditional on the control variables (Imbens & Wooldridge, 2009). In the first stage, we fit a probit model for the probability of having a child (selection model) using sampling weights (w_i). In the second stage, we fit a probit model for the probability of being employed (outcome model, equation 1) using a combination of sampling weights and the inverse probability weights (IPW) of treatment or non-treatment estimated in the first stage (Ridgeway et al., 2015). The IPWRA is a doubly robust strategy that obtains consistent estimates even when only one of the two equations (selection or outcome model) is correctly specified, this means, (Imbens & Wooldridge, 2009).

Results

Having a child at period $t - 1$ reduces the probability of employment by 9.4 percentage points. When we add lags for having a child between periods $t - 1$ and $t - 5$, our estimates indicate an invert-U relationship between the time of childbirth and employment. The impact of childbirth is negative shortly after childbirth (at $t - 1$), becomes positive in the mid-term (between $t - 2$ and $t - 3$), and approaches zero in the long term (between $t - 4$ and $t - 5$).

Results also emphasize that the negative effect of childbirth on employment is driven by the formal employment. Having a child at period $t - 1$ reduces the probability of formal employment by 10.5 percentage points (model 1). The effects of childbirth on informal employment are nearly null in the short term and become positive in the middle-term. For example, having a child at period $t - 5$ increases the probability of informal employment by 6.8 percentage points.

The impacts of having a child on employment also vary remarkably among socioeconomic groups. The most notable difference is among groups of fertility outcomes and intentions. Having a child decreased by 32 percentage points the probability of employment for women who reported not intending to have more children at period $t - 1$, while it increased by 14 percentage points the probability of employment for women who reported intending to have more children. The impacts of having a child on employment were also more pronounced for women with more than one child: 21 negative percentage points for parous women versus one positive percentage point for nulliparous women. We also found a higher impact of having a child on older and less educated women.

Conclusion

At a time when the fertility regime has stabilized at low, it becomes even more crucial to understand the implications of a birth for women's labor force participation. Our initial findings highlight that giving birth reduces the likelihood of employment for new mothers in the subsequent year by nearly ten percentage points. The mid-term impacts of childbirth on employment are positive because many mothers will join the informal sector in the coming years.

We also found that the negative impacts of childbirth on women's employment are more pronounced for those women who have given birth before and for women who did not plan to have

more children. The increased family responsibilities for women with multiple children, such as childcare and household chores, help explain the first finding. In turn, unintended pregnancies may have emotional and psychological effects on women's health that go beyond the usual economic and social factors linking childbirth to labor supply.

In the next steps of our ongoing research, we will refine and elaborate on the theoretical mechanisms linking childbirth to employment and implement different empirical strategies to check the and reliability of our results.

Key references

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