The Labor Market Returns to Delaying Pregnancy

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Women alter career and fertility plans to minimize impact of children
(Polachek 1981; Goldin & Katz 2002; Caucutt, Guner & Knowles 2002; Baily 2006; Bronson 2014; Adda, Dustmann & Stevens 2017)

Research Questions:
1. What are the labor market impacts of pregnancies?
2. Does the impact vary with circumstances?
   - Age
   - Investment in human capital
   - Pregnancy intentions

Data
- Swedish labor market + prescriptions + medical data

Methodology
- Study unplanned pregnancies when using long-acting reversible contraception (LARC)
- Compare women who received LARC at same time, same age
Identifying Unplanned Pregnancies

- Define pregnancies as “unplanned” if occur within 9 months of getting an IUD or implant prescription
  - Observe 350 unplanned LARC pregnancies

Concern #1: Measurement Error
- 0.1% LARC users change intention after six months (Grunloh et al., 2013)
- Results robust to using different windows

Concern #2: Pregnancies are more likely when more fertile, more intercourse
- Labor market outcomes are balanced
- Small differences in education
- Divorced and married women more likely to have unplanned pregnancies
  - Results robust to matching additionally on, e.g., civil status and education
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Estimation of Impact of Pregnancy (Reduced Form)

\[ Y_{is} = \sum_{t=-7}^{7} \alpha^{LARC}_t \cdot \mathbf{1}[t = s - year_i] \cdot UnplannedPregnancy_i \]

\[ + \sum_{t=-7}^{7} \sum_{y} \sum_{j} \delta^{LARC}_{tyj} \cdot \mathbf{1}[t = s - year_i] \cdot \mathbf{1}[y = year_i] \cdot \mathbf{1}[j = age_{i,year_i}] + \epsilon_{is} \] (1)

- \( Y_{is} \) is the outcome of interest (e.g., labor market earnings) in year \( s \) for woman \( i \)
- \( s \) calendar year; \( year_i \) year of LARC for woman \( i \); \( t \) year relative to \( year_i \) for \( i \)
- \( \alpha^{LARC}_t \) is the parameter of interest
- Implicitly test identifying assumption: \( \alpha^{LARC}_{-7} = ... = \alpha^{LARC}_{-1} = 0 \)
Impact of Pregnancy on Childbirth

![Graph showing the impact of years since LARC prescription on the likelihood of first birth. The y-axis represents the probability of a first birth, ranging from 0 to 0.8. The x-axis represents years since LARC prescription, ranging from -7 to 7. The graph indicates a sharp increase in the likelihood of first birth around the year 0, followed by a gradual decrease over the subsequent years.]
Impact of Pregnancy on Earnings

![Graph depicting earnings including paid leave over years since LARC prescription. The graph shows the earnings trend for individuals with and without unplanned pregnancies, with and without abortions.](image-url)
Heterogeneity

• Do older women have children sooner?
• More likely to get an abortion?
• Or are there heterogeneous effects?
Estimating: Pregnancy vs. Birth

- What is the impact of unplanned *birth*?
  - Use pregnancy as an instrument for birth

- Challenging to estimate dynamic TE with dynamic compliance
- Methodological contributions:
  - Identification strategy for dynamic LATE
  - Develop IV-GMM methodology for estimating dynamic LATE
- but need impact of planned births
  - Jointly estimate with IVF sample to estimate planned birth impacts
- Many alternatives in paper
Impact of Birth on Earnings

Earnings Including Paid Leave (%)

Years since first childbirth

Planned births
Unplanned births

re-weighted
Impact of Birth on Occupation

Years since first childbirth

Occupations Requiring Med-High Skills

Planned births

Unplanned births
Heterogeneity: Unplanned Birth Impact on Earnings

Average earnings loss, % (years 1-6)

IV-GMM estimate

-0.45 -0.4 -0.35 -0.3 -0.25 -0.2 -0.15 -0.1 -0.05 0 0.05

Total:
- all unplanned

Heterogeneity by age:
- 28 or older
- 27 or younger

Heterogeneity by education:
- enrolled
- not enrolled
Heterogeneity: Unplanned Birth Impact on Occupation

![Graph showing the impact of unplanned birth on occupation](image)

- **Total:**
  - **all unplanned**
  - **28 or older**
  - **27 or younger**
  - **enrolled**
  - **not enrolled**

**X-axis:** IV-GMM estimate

**Y-axis:** Years in medium or high skill occupation
Relation to literature on the impact of children (by empirical design)

- **Event Studies** (Angelov et al., 2016; Kleven et al., 2019a,b; Chung et al., 2017; Andresen et al., 2022; Eichmeyer et al., 2023)

- **Miscarriage** (Hotz et al., 2005; Miller, 2011; Bíró et al., 2019)

- **IVF Success** (Lundborg et al., 2017, 2024; Bensnes et al., 2023)

- **Abortion Access** (Miller et al., 2023; Brooks et al., 2020; Londoño-Vélez et al., 2024)

**Strengths of LARC Pregnancy Design**

- Comparable control group unaffected by major life event
- Anticipation unlikely to be important
- Compliers are women who decide to continue an unplanned pregnancy
Summary and Conclusions

• Unplanned pregnancy and birth associated with large and persistent earnings impacts
  • Short-term: ↓ non-employment, ↓ probability of promotion
  • Med/long term: occupational and earnings trajectories ↓

• Impacts are larger for women enrolled in education, younger women

• Impacts are smaller for planned and second births

• Timing important, delay mitigates impact of children on careers