Impacts of Childhood Disability on Family: Labor, Marriage, Fertility, and Depression

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Abstract

Childhood disability has enormous impacts on family members. Limited by data, previous literature faces challenges in measurement and identification and focuses primarily on maternal labor outcomes. Using administrative records from the National Health Insurance Research Database from Taiwan, we study one of the most prevalent causes of childhood disability—cerebral palsy (CP). We exploit its unexpected nature and our rich data to investigate a wide variety of impacts on family members. With 12,491 children diagnosed with CP and their families from 2001 to 2019, we take an event study approach to study various outcomes, including parents' labor supply, mental health, marital status, and fertility. We find that having a CP child decreases the mother's probability of work by 9.2 pp, and it increases divorce and depression by 2.2 pp and 32.7 pp, respectively. We find significant effect of children's genders on long-run net fertility. These effects are larger for parents with worse socioeconomic conditions.

Contribution

Unlike past literature that develops indirect identification strategies[1,2], we **estimate how families deal with adverse health shocks in a clean setting without selection on birth**. We further **expand the scope other than labor outcomes[3,4] and the span of the event window to 20 years** to give a more comprehensive picture. Last, we further **examine working/caring collaboration between parents and its effects on health and relationship**.

Cerebral Palsy

Cerebral Palsy (CP) is the most common motor disability in childhood that affect a person's ability to move, balance, and learn. CP is caused by abnormality of or damage to the developing brain of infants.

- Prevalence:

1/360 newborns (TW, 2000-2020) and 1/345 (US, 2010)

- Diagnosis:

Age 1 median age | 90% congenital

- Relevance:

23% childhood disability | 10% died by age 20

Data

We link multiple administrative data including National Health Insurance records from 2000 to 2019 and construct a panel data of rich variables: **(1) Demographic variables**: gender, age, years of education, marital status, mortality, household structure; **(2) Health variables**: diagnosis date, ICD code, health expenditure for each doctor visit; **(3) Economic variables**: salary income and work status; **(4) Welfare variables**: domestic violence, disability records, middle-low income program status.

We collect all CP children (12,491) born in 2001-2018 as the treatment group and randomly draw non-CP children (188,804) as the control group.

Methods

To identify and estimate the causal effects of having a CP child, we take **an event study approach and compare family members' outcomes between those with CP and non-CP children**. Due to the nature of CP, **the event is set to be the birth of a CP child**.

Formally, we estimate the following regression:

$$Y_{il} = \delta_l + \sum_{k \neq -1} \beta_l D_i \mathbf{1}\{k = l\} + \lambda X_{il} + \epsilon_{il}$$

where i is individual (parent), l is **event time (relative to birth time of child)**, Y is outcome, δ's are event time fixed effects, D is treatment status (whether the child has CP), and X's are covariate variables including individual fixed effects. The parameter of interest is β_l. Clustering is at the child level. Standard inverse propensity score weighting (IPW) is utilized to balance both the implicit and explicit characteristics of CP and non-CP families.

Results

Having a CP child **reduces parents' labor supply and income, increases the probability of divorces, and deteriorates health and welfare status**; the effects **significantly affect mothers**. Chart 1 summarizes the average effect. Furthermore, **the adverse shocks persist for 15 years and more**. Figure 1 illustrates the typical SR/LR dynamics of the effects.

Our heterogeneity results show that households with younger ages, lower incomes, or lower education levels are hit harder. **Having a CP daughter exacerbates family function: it increases the probability of divorce by 180% and decreases the probability of having an additional child by 90%.** Gender inequality in children exists as parents allocate more resources to a male CP child.

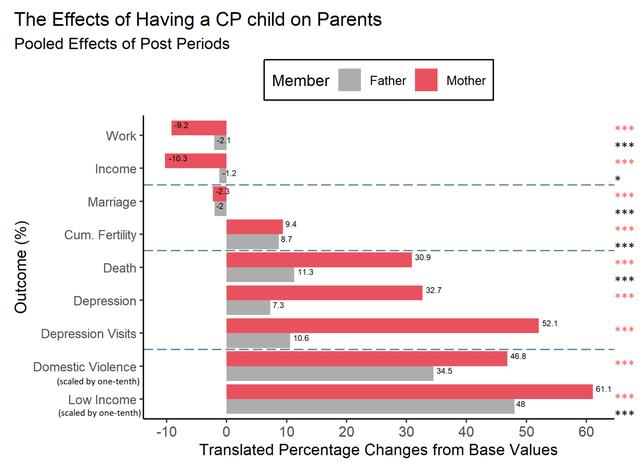

Chart 1. The Average Effects of having a CP Child.

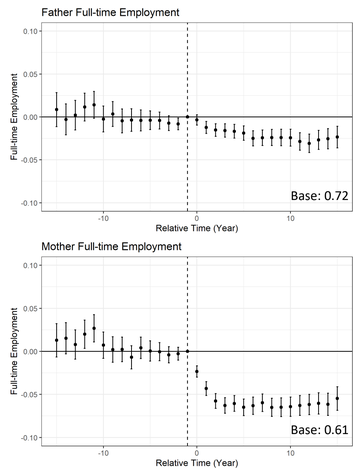

Figure 1. The dynamic effects of parents' labor supply.

Discussion

Given that having a CP child significantly impacts parents' labor outcomes and health status, we decompose the division of work and childcare to analyze the mechanism. First, we construct dummies of parents' full-time employment status (e.g. $\mathbf{1}\{\text{mother work}\} * \mathbf{1}\{\text{father work}\}$) and find that **15% more mothers quit FT jobs from double-career families than non-CP mothers do** (Figure 2). Similarly, if dividing mothers by their joint outcomes of work and being depressed/being abused, it is shown that **mothers who switch to PT jobs/childcaring have a higher risk of developing depression or becoming victims of domestic violence**.

Additionally, we analyze the effect of the death of children on families' fertility planning. We look at 955 deceased children with CP, take them as the treatment group, and compare them with three control groups: survived CP child, deceased non-CP child, and survived non-CP child. Figure 3 exhibits the results. We find **a large compensation effect compared to families with a surviving child**.

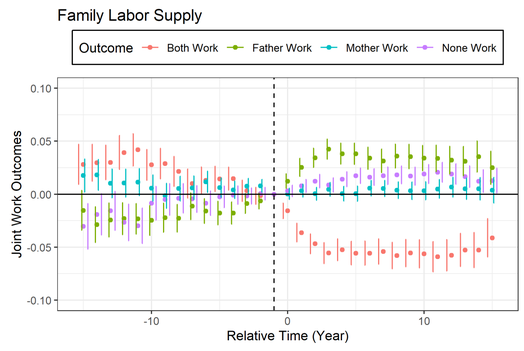

Figure 2. The Changes of Domestic Division.

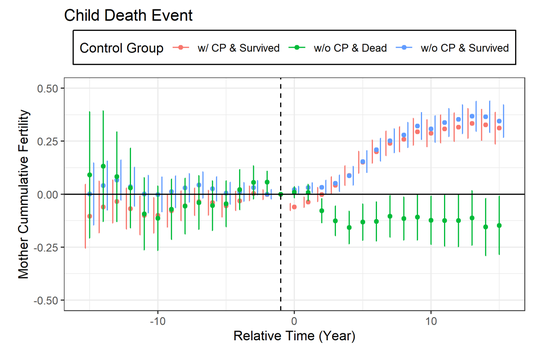

Figure 3. The Fertility Outcomes After Death of Child.

Conclusions

In this paper, **we illustrate how families deal with persistent shocks and what the consequences would be**. By taking advantage of the unique nature of CP and expanding the scope in the span and outcomes, we estimate its negative and long-lasting impacts. After decomposing the domestic division, we show that the burden of providing childcare is on mothers, and it deteriorates mothers' mental health and families' relationships. In addition, gender inequality in children exists and significantly affects family functions.

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