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Children and Gender Inequality: Evidence from Denmark (Kleven, Landais, & Søgaard, 2018)

Over the last century, gender inequality around the world has declined dramatically. However, gender earning gap still persists. Denmark is one of the most outstanding example. Denmark's gender gap in labor participation rate and hours worked are almost disappeared thanks to tax-transfer and various maternity subsidy policies, but it still experiences a substantial gender gap in earnings. This study proposes "child-penalty" as an explanation to such phenomenon. It uses rich administrative Denmark population data between 1980-2013 to investigate the magnitude of having a child on mother's labor market outcome, and concludes that child-penalty can result in lower hours worked, participation, and wage rate which sum up to a total of 20% reduction in mother's long run earning. The mechanism is that mothers tend to switch job or keep staying in a position that favors family rather than her career path. In addition, the study also found that the child penalty effect can be transmitted to female child which could partly explain why the gender gap in earning is so persistent.

The specification used is an event study approach controlling non-parametrically for age and time period. It studies the changes to outcome variables in each year around the time of the first child birth (-5 to 15 years after birth) and then compare these changes between father and mother to get gender gap; it studies the post-child effect. Age dummy was added to control for life-cycle trend, and time period dummy was added to control for time trends. In addition, this approach allows the study of the effect of global treatment. Event study method can estimate the effect of first child birth, while other popular methods such as twin births and sibling sex mix can only investigate the effect of subsequent child. Hence, this event study model can estimate outcomes dynamic of since the first child is born.

Though the event study is powerful, its identification relies on strong assumption. First, It assumes individuals to have a "smooth" outcome, so the change in that outcome during event period can be interpret as the event treatment effect. This assumption might be easier to hold in short-run or immediate impact, but it is unlikely in longer term because there could be many unobserved factors influencing the outcome during the period. The paper then employs identification checks using difference in difference and sibling sex mix IV approaches. For difference in difference, the control group is determined as those with zero estimated probability of having children and applies standard parallel trends assumption. For the IV, the identification is based on the idea that parents that have the first 2 kids with the same sex might want to have another child because they prefer variety, while children's sex will not have any impact on labor market outcome. It turns out that both of these identification checks support the event study result.

Overall I think that the event study approach adopt by the paper is quiet revealing. I allows researchers to observe the dynamic of the effect while controlling for various factors. However, as the paper itself mentioned, one key assumption for every event study is that it assumes outcome variable does not have influence on the event. In other words, it assumes the event is exogenous. Even though the paper provides some descriptive statistic to back this up, I found it is unlikely to

hold in general case (it might holds for countries with extraordinary child care subsidy like Denmark). Labor market outcome such as wage and hours worked are going to affect the likelihood of having the first child. For example, a family that does not have enough income to support a child nor enough time to take care of the child will likely postpone its decision to have a child until they are ready.