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Children and Gender Inequality: Evidence from Denmark
By Henrik Kleven, Camille Landais, & Jakob Egholt Søgaard
Reading Note

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Authors Henrik Kleven, Camille Landais, and Jakob Egholt Søgaard study the impacts of children on gender inequality in the labor market through Danish administrative data. Despite improvements, gender inequality in earnings and wage rates remains a substantial component in all countries, and the process for convergence has slowed down. From the Danish administrative data (1980-2013), the authors explain the persistence of gender inequality: the effects of children on the careers of women relative to men are large and have not fallen over time. Thus, the remaining gender inequality is a property of children. The arrival of children presents a long-run gender gap in earnings of around 20 percent, driven by hours worked, participation, and wage rates. The authors identify mechanisms driving these "child penalties" in terms of occupation, sector, and firm choices. They find that the portion of gender inequality stemming from child penalties increased over the last three to four decades. Finally, the authors show that child penalties are transmitted through generations, from parents to daughters, thereby suggesting an influence of childhood environment on gender identity.

The authors use different empirical strategies to assess their topic. The authors adopt a quasi-experimental approach based on event studies around the birth of the first child to estimate the impact of children on the labor market trajectories of women relative to men. In terms of labor market outcomes, before the birth of their first child, men and women evolve in parallel, then diverge after the birth. They do not converge again. Second, they decomposed gender inequality into what attributes to children and what is due to other factors. The authors further show the evolution of this composition across time. Finally, the authors provide evidence in favor of environmental influences in the formation of preferences over family versus careers. In particular, they show that the female child penalty is strongly related to the work history of the maternal grandparents: women who grow up in traditional families with a male breadwinner and a female homemaker incur larger child penalties when they become mothers.

Explaining gender inequality serves as the motivation for the paper. The administrative data from 1980-2013 contains information on children, earnings, labor supply, occupation, firms, education, and much more. Their paper contributes to two literatures. The first is on the literature on gender inequality in the labor market as reviewed by, for example, Altonji and Blank (1999), Bertrand (2011), Blau and Kahn (2017), and Olivetti and Petrongolo (2016). A great portion of this literature focuses on the role of human capital, occupation, and discrimination in explaining gender gaps, as well as the role of parenthood. There are copious other papers which help contribute to the author's literature. Their paper most closely relates to the case study of MBA graduates from Chicago Booth School of Business by Bertrand, Goldin, and Katz (2010), and to the paper by Angelov, Johansson, and Lindahl (2016) who estimate child penalties in annual earnings and monthly wage rates using Swedish administrative data and an event study approach.

The first strategy the author's use is to address the impact of the first childbirth to men and women's labor market results. For each parent in the data, the year when the individual has their first child is denoted as $t = 0$, and index all years relative to that year. Their baseline specification considers a balanced structure of parents whom they observe every year from 5 years before having their first child and 10 years after. Thus, t runs from -5 to $+10$. To assess the long run, they observe parents up to 20 years after their first birth. They examine the evolution of labor market outcomes as a function of event time. Particularly, denoting by Y_{ist}^{g} the outcome of interest for individual i of gender g in year s and at event time t, they run the regression separately for men and women:

$$Y_{ist}^{g} = \sum_{j \neq -1} \alpha_j^g \cdot \mathbf{I}[j = t] + \sum_k \beta_k^g \cdot \mathbf{I}[k = age_{is}] + \sum_y \gamma_y^g \cdot \mathbf{I}[y = s] + \nu_{ist}^g,$$

where the authors include event time dummies, age dummies, and year dummies. They omit the event time dummy at $t = -1$, suggesting that the event coefficients measure the impact of children relative to the year before the first childbirth. The authors find that women's gross earnings decline by nearly 30 percent after first childbirth, and men are unaffected. After 10 years, the earnings for women remain 20 percent below the level before childbirth. Similarly, the trends for hours worked, participation rates, wage rates follow the same path and are statistically significant at the 95 percent confidence level. Probabilities also decrease for women to earn promotion or manager (by 26 percent relative to men) status after first childbirth. However, women's probability for job in the public sector rises. Men face marginal to negligible effect.

The second empirical strategy was to decompose gender inequality into what can be attributed to children and what can be attributed to other factors, showing how this evolved over time. The authors use a standard Oaxaca-Blinder decomposition approach but innovate on existing gender gap decompositions by leveraging the event study variation around childbirth. They include education dummy variables and regress labor market outcomes on these dummies with the interaction of event time dummy variables and year dummy variables. Thus, the authors get a year-specific coefficient α for men and women. Then, the authors divide the difference in α by women's labor market outcomes to find the child penalty. The authors find that the fraction of gender inequality can be attributed to children increased from around 40 percent in 1980 to around 80 percent in 2013. The increase reflects a couple of changes. First, child-related gender inequality in earnings has increased from 18 percent to almost 20 percent. Second, total gender inequality in earnings has fallen from 46 percent to 24 percent. Even though the first effect has a slight decrease, it is critical to understand that the penalty operates on a larger base due to the general increase in the earnings of women relative to men coming from the second effect. Their findings imply that gender inequality today is centered around children. A limitation of their findings is the unexplained gap in traditional decomposition, denoted as "discrimination." The author's analysis implies the gap is from children. However, it does not rule out discrimination but implies that potential discrimination lives through the impacts of children.

The third empirical strategy was to assess intergenerational transmission of child penalties. The authors examine the importance of gender identity norms in the labor market and the impact the norms amongst maternal and paternal grandparents have on mother's child penalties. The authors focus on labor supply changes around childbirth for women relative to men, rather than the intergenerational transmission of labor supply levels. By working with child penalties, the authors are able to mitigate omitted variable concerns when dealing with labor supply levels. They rely on three generations: children, their parents, and their maternal and paternal grandparents. They rank parents by quantiles of the distribution of $h_i^{mm} - h_i^{mf}$ (cumulative labor supply of maternal grandparents from 1964-1979). For the paternal grandparents, they rank them by quantiles of the distribution of $h_i^{pm} - h_i^{pf}$. A higher rank implies the grandparents were more "modern" in terms of their gender division of labor. Next, they regress labor market outcomes on rank dummies, age dummies, year dummies, control variables, and with modified event time dummies where 0 indicates negative event time. The authors show that the female child penalty is strongly related to the work history of the maternal grandparents such that women who grow up in traditional families with a male breadwinner and a female homemaker incur larger child penalties when they themselves become mothers. Moreover, the female child penalty is unrelated to the work history of the paternal grandparents.

The author's goal with their paper was to examine whether gender inequality can be attributed to children, whether this impact was significant, and the dynamics of the inequality over time. Their paper highlights that unequal pay is due to children, and this can be either good or bad depending on perspective. Another limitation is that their findings on intergenerational transmission are consistent with but do not conclusively prove the existence of such environmental factors, such as potential welfare and policy implications. Moreover, one should consider exploring the effects of adopting children as the authors only consider women that go through or do not go through childbirth.