

## **Children and Gender Inequality: Evidence from Denmark**

Henrik Kleven, Camille Landais, Jakob Egholt Søgård (2018)

Most economic literature analyzing the sources of gender inequality in earnings have relied on gender differences in education or other gender-discriminating variables. Such explanation, however, has been inadequate to account for the persistent gender inequality in earnings worldwide. This paper provides empirical evidence from the case of Denmark and argues, instead, that having children is a major contributor to the gender inequality in earnings.

This paper attempts to address the following questions:

- Is there a child penalty (defined as percentage by which earnings of women with children lag behind those of men after giving birth) and how it affects dynamic labor market outcomes of women with children in both short- and the long-run?
- What fraction of gender inequality in earning is explained by child penalty?
- Is intergenerational transmission responsible for the magnitude of child penalty?

### **Data & Methodology**

- This paper uses full population panel dataset in Denmark from 1980-2013, observes individuals who have children in that period, and follows their labor market outcomes and earning data before and after the first child births to spot the differences.
- This study uses event-study approach that controls for age and time-trends and estimates earnings of individuals as a function of the number of children, children-related earnings determinants (hours, occupation etc) and non-children related earning determinants. Child penalty is measured by the magnitude of difference in both men and women subsamples' coefficients from the previous regression.
- Short-run impact of children is captured by difference of expected earnings right before and after first child birth, conditional on some control variables. Long-run (20 years) estimation manages to capture global effect of all the children born of an individual during our observation period. Control groups of men and women without children (placebo birth method) as well as sibling sex mix and twin births as instruments are utilized to test the reliability of the result.
- Decomposition framework here observes within-person time variation of earnings, in the presence of children. Sources of mean gender gap are defined to be child penalties and different observables, such as level of education. The fraction of child penalty estimates constitutes the contribution of having children to gender inequality in earnings.

### **Interpretation on Selected Key Findings:**

- There is a child penalty of 18-20% from 1980-2013. Decomposition shows that share of child penalties in gender inequality in earnings sharply increase from 40% in 1980 to 80% in 2013, mostly due to general increase in women's wages during that period.
- After giving birth, women generally choose to switch to family-friendly firms, are less likely to be promoted as manager, and tend to supply less labor (hours, participation). This result is still consistent after using various control groups or different subsamples.
- Child penalties for females are transmitted across generations. The magnitude of a woman's child penalty is negatively affected by the amount of labor supply of their maternal grandparents in particular.

## Gender Gaps in Performance: Evidence from Young Lawyers

Ghazala Azmat and Rosa Ferrer (2016)

Many literatures have shown unexplained gender gap in earnings and promotions even after controlling for individual or firm characteristics. One possible explanation for such earning gap is another gender gap in performance. The first part of this paper basically looks for evidence of actual gender differences in performance and examines *some factors that may contribute to this performance gap*. The second part essentially estimates the degree to which this gender gap in performance explains the gender gap in earnings and promotion. In particular, the scope of this study involves lawyers, which is a good representation for high-skilled workers in general.

### Data & Methodology

- This study uses *After the JD* dataset, longitudinal survey for lawyers in US from 2002-2007, and focuses on performance and earnings of mostly lawyers working for private law firms.
- The measures of performance used in this study are Billable Hours and New Client Revenue. They are good proxies for performance as they are standardized across all specializations.
- In the *first* part, authors conduct a series of panel data regression (with differing specifications) of performance on gender and a number of factors that are hypothesized to be affecting performance (in addition to more general controls for firm/ individual characteristics, education and regions). These factors are related with either discrimination, childrearing, career aspirations and some career behaviors/traits.
- The effect of a particular factor to the gender gap in performance is determined by how much controlling for this factor changes the gender coefficients of performance from the initial specifications. Such sizeable change indicates that the effect of this factor to performance is different across genders, and hence, significantly explains gender gap in performance.
- In the *second* part, authors perform a number of differently specified panel data regressions of both Log Earnings (Table 14-16) and Likelihood of Becoming Partner (Table 17) on gender, individual-characteristics and performance indicators. What is of interest here is how including performance in the regression would change the initial gender coefficient of earning/promotion.

### Interpretation on Selected Key Findings:

- Even after controlling for firm and individual characteristics, Table 2 provides evidence that female lawyers are significantly lagged behind male ones in both performance indicators.
- Two significant factors that account for this gender gap in performance: (1) career aspirations, that explain gender gap in new client revenues generated, and (2) having young children, which explains gender gap in billed hours.
- There are many other factors (e.g. discrimination, networking behavior etc) that significantly influence performance without explaining gender gap in performance. It indicates the fact that the effects of such factors to performance are similarly realized across both genders.
- Half of the source of gender gap in earnings among lawyers is attributed to different firm- and individual-characteristics. Meanwhile, performance (gap) accounts for approximately half of the remaining, unexplained determinants for this gender gap in earning.
- No evidence on gender discrimination on rewards per billable hour that brings firms client revenue (Table 16).

## Gender Identity and Relative Income Within Households

Authors: Marianne Bertrand, Emir Kamenica, Jessica Pan (2015)

The prevalence of women earning more than men has been increasing due to narrower gender gap in earnings and labor participation over the last century. On the other hand, gender identity norm suggesting that a wife should not earn more than her husband remains rampant in the society. This study provides evidence on the extent to which this gender identity norm affects social and economic outcomes, through marriages and labor market participation respectively, especially among wives who earn more income than their husbands.

### Data & Methodology

- This study utilizes both cross-sectional and panel approaches. Observations include 73,654 couples from US census or administrative data in slightly different time frames for each model.
- For the *cross-section* approach, this study mostly uses linear probability model to estimate the probability that, for example, a woman is out of labor market or a couple reporting/showing marital stability. The coefficient of interest here is that of a proxy variable capturing the incidence where wives/women earn more than husbands/men (usually in probabilistic terms). Each model has varied specifications that control for different things to isolate the proxy's true effect.
- This study also uses *panel* approach to detect within-couple marital or working behavior dynamics over time. Meanwhile, another regression is estimating marital formation for each specific marriage market (constructed by demographic groups) and verifying if women's relative income to men affects this process.
- One strength of specifications in this study is their control for both relative and absolute income of each individuals in the couple, something that almost no paper in the literature has done.
- Dependent variables to observe: marital formation, probability women out of labor market, women's income gap (realized from potential), probability of reporting/showing marital stability
- Key coefficient of interest: That of variable capturing the probability or incidence that wives earn more than husbands.

### Interpretation on Selected Key Findings:

- The discontinuity and 12% gap displayed in Figure 1-3 (at 0.5) reflect the fact that overearning wives tend to significantly alter their behaviors to maintain the gender identity norm.
- Gender identity norm is more heavily ingrained among less-educated couples, which shows more pronounced effects on almost all (except probability of divorce) the dependent variables in the study, compared to their more-educated counterparts.
- Being exposed to the greater probability that women earn more than men reduces the incidence of marriages given a particular marriage market. Also, couples in which the wife earns more than the husbands are less likely to report marital stability and more likely to get divorced, regardless of income rank. This is not a significant, however, based on within-couple model.
- Wives who earn more than their husbands are more likely to perform more non-market work at home and to at least report less labor participation (if not leave labor market entirely) to preserve the gender identity norm. This is also true dynamically, where the probability of wives being in the labor force at time  $t$  significantly falls if wives earn more than their husbands at time  $t-1$ .

## **Bargaining, Sorting, and the Gender Wage Gap: Quantifying the Impact of Firms on the Relative Pay of Women**

Authors: David Card, Ana Rute Cardoso, Patrick Kline

Economic literatures have tried to explain the source of gender gaps in earnings. On frictional labor markets model where some firms offer higher wages than market price to employment, bargaining and sorting effects play important roles in explaining such gap. There has been evidence suggesting that these firm-specific wage premiums are unevenly distributed among both women and men. This paper basically tries to estimate the magnitude of firm-specific wage premium and how much they explain the gender gap in earnings in Portugal by decomposing the contribution of both bargaining and sorting effects to the firm-specific gender effects.

### **Data & Methodology:**

- This study uses 8-year (2002-09) sample period of Portuguese employment dataset on 4 million workers spread across 500,000 firms. It contains data on employees and employers.
- Using rent-sharing model (Equation 4), this study runs a panel regression of log wages as a function of person effect and gender-specific firm effects (our variable of interest). This equation yields both male and female firm effects, from which we compare different effect of wage premium across both genders and how much they contribute to the total gender gap in earnings.
- Furthermore, having obtained and normalized gender-specific firm effects, this study performs decomposition exercise to calculate the contribution of bargaining and sorting effects to the wage-premium difference (Equation 8,9).
- Next, this study tries to more precisely estimate firm-specific effects by identifying the source of the difference of firm-specific wage premium across genders and taking into account measures for firm's profitability and worker's productivity into the model. (Equation 13-15).
- Having used mostly between-firms wages variation, the model finally also incorporates within-firm changes in productivity and wages, and how they might drive changes in wage dynamics of workers (who stay at one particular firm) of both genders. (Equation 17).

### **Interpretation on Selected Key Findings:**

- Women only receive about 90% of firm-specific pay premiums of that of men. This tends to suggest that due to their slightly worse bargaining power, female workers tend to enjoy less reward for their value added to firms compared to similarly productive male workers. Similar result is observed after exploring within-firm changes in productivity and wages.
- Combined together, both bargaining and sorting effects explain about 20% of the observed gender gap in earnings in Portugal. Sorting effect, which comes mostly from the under-representation of women in higher-paying firms, accounts for about 75% of this number. Meanwhile, bargaining effect, which leads to women getting paid less by higher-wage firms, contributes the remaining quarter.
- A major factor that transforms different firm-specific wage premium into gender gap in earnings is male's and female's productivity-related components of firm-specific effects, which is responsible for 80% of the impact of firms' wage premiums to total gender gap in wages.
- Therefore, it is likely that the more effective policy to reduce the gender gap in earnings is by targeting the sorting effect. Specifically, policies that ensure equal representation across genders in firm's hiring pool may benefit (in term of the gender-distribution of the wage premium) female workers regardless of skill level.

## Selection, Investment, and Women's Relative Wages over Time

Authors: Casey B. Mulligan and Yona Rubinstein (2008)

There are three coexisting trends in US labor market since 1970s: higher within-gender inequality, apparent closing in relative wages of women and greater women participation in labor market. This paper argues that, instead of being paradoxical, an indepth analysis on women's selection rule and how it changes over time connect these three trends together. Essentially, the purpose of this paper is to precisely estimate year effects on the relative wages of women over time (measure for gender gap in earning) after correcting for selection bias that informs women's decision to enter workforce.

### Data & Methodology:

To control for selection bias, this study uses two alternative methods:

- a. *Heckman two-step procedure (GHR)* applied separately on repeated cross-sectional CPS data. First, GHR runs Probit equations of probability of being in workforce, which supplies the ensuing OLS regression of log wages. GHR method captures factors that may influence changes in women's selection rule over time, which itself informs women's labor supply decision.
- b. *Identification at infinity (Method II)* corrects for selection bias by running the previous OLS regression of log wages only on subsamples with high attachment to labor market (demographic groups with high initial employment rates). This method mitigates the possibility of ever-changing selection bias over time and is likely to be better at accounting for investment decision as it involves only women demographic groups that are most likely to exhibit similar investment pattern to that of men's.

### Interpretation on Selected Key Findings:

- GHR model captures the changing women's selection rule on entering workforce, and hence, selection bias over time. It finds that selection bias of female workforce shifted from being negative in the 1970s to positive in 1990s.
- Magnitude of selection bias generally declines as employment threshold of a particular demographic group rises. It means that demographic groups with higher initial labor supply tend to exhibit less change in gender gap over the year, due to their hardly changing wage growth, relative to those with initially lower labor supply or low-skilled workers.
- This paper provides evidence that after correcting for selection bias (regardless of methods), relative wages of women do not have an upward trend over time, while failing to do so yields the aforementioned apparent narrowing gender gap. In particular, this is confirmed by Method II which shows no evidence of closing on gender gap earnings despite using only particular subsample (high-employment groups) with inherently low selection bias. This seems to suggest that selection bias has been a major factor in the apparent narrowing of gender gap over time.
- Another possible source of the apparent narrowing of gender wage gap is dynamic changes in female workforce composition. This study seems to suggest that the most able women contribute the most to the rising relative wages of women through their higher participation in the labor market. That is, that higher within-gender inequality causes greater importance of market wages in employment decision, which in turn induces them to invest more to acquire skills valued by employers, which ultimately enables them to supply more human capital to the labor market.