THE IMPACT OF PARENTHOOD ON THE GENDER WAGE GAP - A COMPARATIVE ANALYSIS OF EUROPEAN COUNTRIES AND FAMILY POLICIES

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This research was supported by a grant from the National Science Center in Poland, grant numer UMO-2015/16/T/HS4/00309.

Mannheim, 3 March 2017
RESEARCH QUESTIONS

- To what extent institutions and family policies, explain the evolution of the gender wage gap from the point of view of parenthood?

- Which family policies mitigate/increase the wage inequality among mothers and childless women, and consequently contribute towards lower/greater total gender wage inequality?
MOTIVATION BEHIND THE RESEARCH

GENDER WAGE GAP

Men’s wages
- Fathers’ wages
- Non-fathers’ wages
- FAMILY GAP (+)

Women’s wages
- Mothers’ wages
- Non-mothers’ wages
- FAMILY GAP (-)
Comparative studies find that countries differ substantially in the size of the family wage gaps (e.g. Davies and Pierre, 2005, Budig et al., 2012, Boeckmann et al., 2015).

This country variation is usually assigned to family policies and cultural context.
RESEARCH METHODS

RESEARCH METHODS

1) Estimate wage equations for men and women and parent/non-parent by country

Dubin’s and McFadden’s selection model (1984), which allows correcting for
the selection processes that are likely to take place:
(1) selection into employment; (2) selection into parenthood.
RESEARCH METHODS

1) Estimate wage equations for men and women and parent/non-parent by country

Dubin’s and McFadden’s selection model (1984), which allows correcting for the selection processes that are likely to take place: (1) selection into employment; (2) selection into parenthood.

2) Decompose the GWG to show the relative contribution of family gaps into the overall gender wage differential.

We estimate four different wage equations: 1) for childless women, 2) for mothers, 3) for childless men and 4) for fathers.

Denote separate wage equations for parents and childless individuals as:

$$\ln w_f^c = X_j^c \beta_j^c + u_j^c$$

$c = \{CH, NCH\}$ refers to working parent (CH) and working childless (NCH), $j = \{f, m\}$ stands to females (f) and males (m).

The mean wage level for men and women is:

**MEN:**
$$\bar{\ln w_m} = p_m \bar{\ln w_m^{CH}} + (1 - p_m) \bar{\ln w_m^{NCH}}$$

**WOMEN:**
$$\bar{\ln w_f} = p_f \bar{\ln w_f^{CH}} + (1 - p_f) \bar{\ln w_f^{NCH}}$$

$p_m$ and $p_f$ are the shares of men and women who have children.
RESEARCH METHODS - A modification of OB gender wage gap decomposition

Transform mean wages of men and women as:

MEN: $\ln w_m = p_m \ln w_{mCH} + (1 - p_m) \ln w_{mNCH}$  \rightarrow  MEN: $\ln w_m = p_m (\ln w_{mCH} - \ln w_{mNCH}) + \ln w_{mNCH}$

WOMEN: $\ln w_f = p_f \ln w_{fCH} + (1 - p_f) \ln w_{fNCH}$  \rightarrow  WOMEN: $\ln w_f = p_f (\ln w_{fCH} - \ln w_{fNCH}) + \ln w_{fNCH}$

Incorporate transformed equations to the standard mean gender wage gap decomposition:

$$\ln(w_m) - \ln(w_f) = p_m (\ln w_{mCH} - \ln w_{mNCH}) - p_f (\ln w_{fCH} - \ln w_{fNCH}) + (\ln w_{mNCH} - \ln w_{fNCH})$$

- GENDER WAGE GAP
- FAMILY GAP AMONG MEN
- FAMILY GAP AMONG WOMEN
- GENDER WAGE GAP AMONG CHILDLESS
RESEARCH METHODS - A modification of OB gender wage gap decomposition

Transform mean wages of men and women as:

\[
\overline{\ln w}_m = p_m \overline{\ln w}^{CH}_m + (1 - p_m) \overline{\ln w}^{NCH}_m \\
\overline{\ln w}_f = p_f \overline{\ln w}^{CH}_f + (1 - p_f) \overline{\ln w}^{NCH}_f
\]

Incorporate transformed equations to the standard mean gender wage gap decomposition:

\[
\overline{\ln (w}_m - \overline{\ln (w}_f) = p_m (\overline{\ln w}^{CH}_m - \overline{\ln w}^{NCH}_m) - p_f (\overline{\ln w}^{CH}_f - \overline{\ln w}^{NCH}_f) + (\overline{\ln w}^{NCH}_m - \overline{\ln w}^{NCH}_f)
\]

- GENDER WAGE GAP
- FAMILY GAP AMONG MEN
- FAMILY GAP AMONG WOMEN
- GENDER WAGE GAP AMONG CHILDLESS
DATA

INDIVIDUAL LEVEL DATA:
- EU-SILC cross-sectional harmonized data for 25 European countries.
- Sample: individuals aged 25-59 in full-time employment.
- Time: 2004-2013 (varies by country)
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INSTITUTIONAL AND FAMILY POLICIES DATA:
- Several data sources: World Bank, Eurostat, Eurobarometer, OECD Family database, Multilinks database.
DATA – DATA PROBLEMS
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THE HOURLY WAGE RATE

- Income measures:
  - (1) monthly earnings at the time of the interview
  - (2) employee cash or near cash income received during an income reference period

- Usual hours of work per week (at the time of an interview)
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APPROACH: FOCUS ON FULL-TIME WORKERS ONLY

HOURLY WAGE DEFINED AS:
\[ WAGE = \frac{\text{income received during IRP}}{12} \times \frac{1}{\text{usual hours of work per week} \times 4} \]
DATA – DATA PROBLEMS

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THE PRESENCE OF A CHILD

○ A child is a person who is living in the same household as parents and who is below 25 years old

○ A parent is a person for whom a child indicates „mother/father ID”
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DO NOT OBSERVE CHILDREN WHO ARE NOT LIVING IN THE SAME HOUSEHOLD AS THEIR PARENTS (E.G. STUDENTS)

SOME INDIVIDUALS WHO ARE PARENTS MIGHT BE TREATED AS CHILDLESS
### RESULTS

<table>
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<tr>
<th>Source</th>
<th>Group</th>
<th>Country</th>
<th>Employment to population ratio (%)</th>
<th>Part-time employment (%)</th>
<th>Culture 1</th>
<th>Culture 2</th>
<th>Length leaves (weeks)</th>
<th>Childcare coverage</th>
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**Culture 1:** Share of individuals that agree with the statement that overall men are less competent than women to perform household tasks

**Culture 2:** Share of individuals that agree with the statement that a father must put his career ahead of looking after his young child
RESULTS – GENDER WAGE GAP ESTIMATES

The bar charts show the gender wage gap (GWG) estimates for various countries, including Greece, Portugal, Spain, Italy, Sweden, Norway, Iceland, Finland, Netherlands, Denmark, Luxembourg, United Kingdom, Slovenia, France, Belgium, Estonia, Czech Republic, Slovak Republic, Bulgaria, Lithuania, Germany, Austria, Romania, Hungary, and Poland. The charts distinguish between the explained and unexplained components of the gender wage gap.
Group A: not all the women work, employed women are relatively highly skilled and highly paid → lower GWG

Group C: some evidence that countries with the lowest GWGs also display relatively lower employment rates.

→ Labor market selection as a mechanism behind low gender wage inequality
RESULTS – FAMILY GAP AMONG WOMEN

[Graph showing family gap among women across various countries with bars indicating explained, unexplained, and selection components.]
RESULTS – FAMILY GAP AMONG WOMEN

**Group C:** negative gaps, even when selection is accounted. Family policies: long paid leaves + low accessibility of childcare institutions + traditional gender roles → these may lead to mothers’ long absences from work and thus to their lower wages.
RESULTS – FAMILY GAP AMONG WOMEN

**Group B:** high variation in gaps; no apparent relation to family policies

**Group C:** negative gaps, even when selection is accounted. Family policies: long paid leaves + low accessibility of childcare institutions + traditional gender roles → these may lead to mothers’ long absences from work and thus to their lower wages.
GROUP A: mostly positive estimates; partially due to selection mothers who work are likely to be especially career-oriented, highly skilled, and thus well paid.

GROUP B: high variation in gaps; no apparent relation to family policies.

GROUP C: negative gaps, even when selection is accounted. Family policies: long paid leaves + low accessibility of childcare institutions + traditional gender roles these may lead to mothers’ long absences from work and thus to their lower wages.
RESULTS – FAMILY GAP AMONG MEN

Graph showing the family gap among men across different countries with bars indicating explained, unexplained, and selection components.
Overall men are less competent than women to perform household tasks
A father must put his career ahead of looking after his young child
FG men
Overall men are less competent than women to perform household tasks
A father must put his career ahead of looking after his young child
FG men

In almost all countries a positive fatherhood wage premium; only partially due to the selection.

Differences among the groups of countries with respect to cultural attitudes towards men’s role in the childcare do not seem to provide an explanation for the emerging patterns.
RESULTS – GWG AMONG CHILDLESS

GWG childless - explained
GWG childless - unexplained
GWG childless - selection
RESULTS – GWG AMONG CHILDLESS

GWG childless - explained
GWG childless - unexplained
GWG childless - selection

Graph showing GWG among childless individuals across different countries.
RESULTS - The contributions of the family gaps among women and men, and the gender gap among childless to the overall gender wage gap

Graph showing contributions to the gender wage gap from family gaps among women and men, and the gender gap among childless for various countries.
RESULTS - The contributions of the family gaps among women and men, and the gender gap among childless to the overall gender wage gap

Group A: GWG mostly driven by positive FG among MEN.

The FG among WOMEN is also positive, meaning that motherhood increases women's average wages, and thus it contributes towards decreasing overall GWG → partially due to selection.
RESULTS - The contributions of the family gaps among women and men, and the gender gap among childless to the overall gender wage gap

**Group B:** GWG mostly driven by positive FG among MEN and GWG among childless.

The role of FG among WOMEN is rather small ➔ the role of institutional incentives to combine work and family obligations (flexible LM, relatively easy access to childcare, moderate length leaves)
**RESULTS** - The contributions of the family gaps among women and men, and the gender gap among childless to the overall gender wage gap

**Group C:** GWG mostly driven by FG among MEN and FG among WOMEN. Parenthood is an important factor contributing towards the divergence of men’s and women’s wages.

The role of FG among women is the greatest here → the role of institutions, i.e. family policies that explicitly support mothers in their caring function for children (long leaves, very low access to childcare), traditional gender norms, inflexible LM.
CONCLUSIONS

- **Southern European countries**: low female employment coexisting with low GWG and positive FG among women
  
  - Importance of women’s and mothers’ selection to work

- **Western European countries (Slovenia)**: FG among women varies and is not a significant contributor to the overall GWG
  
  - Policies, cultural norms and LM characteristics supportive of maternal employment

- **Central and Eastern European countries (Austria and Germany)**: FG among women is significant and the most important contributor to the overall GWG
  
  - Policies, cultural norms and LM characteristics unsupportive of maternal employment

- **All countries**: The fatherhood premium is an important contributor to the GWG.
  
  - THE NEED OF POLICIES ENCOURAGING THE GREATER INVOLVEMENT OF FATHERS IN CHILDCARE DUTIES FOR ACHIEVING GENDER EQUALITY
THANK YOU FOR YOUR KIND ATTENTION!

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RESEARCH METHODS 1 - Estimation of the wage equations

- Formally the choice of employment-parenthood is given by the multinomial logit model of a form:
  \[ Y_{s,j}^* = X_{s,j} \beta_{s,j} + \omega_{s,j}, \]

  Where \( j = \{f, m\} \) refers to females (f) and males (m) and \( s = \{1,2,3,4\} \) denotes four possible alternatives.

- And the wage equation for each possible combination of employment-parenthood decision is:
  \[ Y_{s,j} = X_{s,j} \beta_{s,j} + U_{s,j}. \]

- The problem occurs because of the correlation of the error terms. When the relation between the error terms is assumed linear then:
  \[ E(u_{1,j} | \omega_{1,j}, ..., \omega_{s,j}) = \frac{\gamma^s}{\pi} \sum_{s=1}^{s} \gamma_{s,j} (\omega_{s,j} - E(\omega_{s,j})), \]
RESEARCH METHODS 1 - Estimation of the wage equations

It can be shown that if the relation between the error terms is linear and the error terms of selection equations are identically Gumbel distributed (modeled by multinomial logit) then expected value of these errors can be expressed as:

\[ E(\omega_{1,j} - E(\omega_{1,j}))|Y_{1,j} > max_{t \neq s}(Y_{t,j})) = -\ln(P_{1,j}); \]
\[ E(\omega_{s,j} - E(\omega_{s,j})|Y_{1} > max_{t \neq s}(Y_{t,j})) = \frac{P_{s,j} \ln(P_{s,j})}{1 - P_{s,j}}; \]

Where \( P_{s} = P(Y_{s} > max_{j \neq s}(Y_{j})) \)

Then the outcome equation conditional on choosing \( s=1 \) is:

\[ Y_{1,j} = x_{1,j} \beta_{1,j} + \sigma \sqrt{\frac{\pi}{3}} \sum_{s=2}^{S} r_{s,j} \left[ \frac{P_{s,j} \ln(P_{s,j})}{1 - P_{s,j}} + \ln(P_{s,j}) \right] + v_{1,j}. \]

In practice we have 3 correction terms representing the correlations of error terms from each outcome and selection equation.
To estimate DMF model we need to have some variables that would allow its identification (i.e. exclusion restrictions).

For the identification we use:

- Household’s non-labor income (financial and from various benefits)
- An indicator whether the spouse is employed
- Total number of people living in the HH
- Housing tenure
- Number of rooms available to the HH
- Age of the spouse