

The motherhood wage gap: Does timing matter?

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Motivation I

- Education and labour market participation of women increased, and discrimination laws forbid wage discrimination against (minority) groups
- Though, women still earn on average less than men: Gender wage gap of about *20 percent* in Germany; in the U.S. women earn *77 cent* for every dollar a man earns
- What causes the remaining and persistent gender differences in pay?
- Vertical segregation: Due to family responsibilities women's and men's wage trajectories diverge
- Assumption: childbirth is costly for women

Motivation II

”Apple and Facebook offer to freeze eggs for female employees”



- Increase in age at first birth and decrease in total fertility rates in last decades in most developed societies
- Trend in fertility delay that is also supported by employers

This paper...

- Explores the role of motherhood for explaining persistent wage differences between men and women
- Identifies whether fertility timing has an effect on labour market outcomes and whether women can mitigate motherhood wage gaps by delaying childbearing to later ages
- Specifically focuses on female migrants

Content

2 Theoretical Considerations

3 Method and Data

4 Results

5 Conclusion

Theory on a wage penalty for mothers

1. *Career interruptions* are associated with lower wages. Due to childbirth, most women take a period of maternity leave.
 - Interruptions reduce working experience
 - Interruptions lead to a depreciation of human capital
(e.g. Mincer and Ofek 1982, Mincer and Polachek 1974)

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2. Wage penalties due to *slower wage growth* of mothers
 - Statistical discrimination (demand side effect)
(e.g. Phelps/Arrow)
 - Children change women's preferences and decrease their effort at work (supply side effect)
(e.g. Becker 1985, Wilde et al. 2010)

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Hypothesis: Due to human capital depreciation and slower wage tracks, mothers have lower (lifetime) wages.

Why should fertility timing matter?

- Length of maternity leave and magnitude of wage drop lower for "older" mothers
- "Older" mothers have a more established career, are more attached to the labour market and face fewer discrimination
- Signalling: Being a young and working mother is associated with motivation and resilience

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Hypothesis: Women benefit from a delay. Opposite effect may be true, too

Female migrants

Statistics:

- Mean age at first birth is lower for migrants (compared to natives and within the same education categories)
- It differs by country of origin and age at immigration
- Do female migrants have a higher taste for early motherhood?
- Are the costs of childbearing higher or lower for migrant mothers?

Empirical Model

$$\ln w_{it} = \beta_0 + \beta_1 AGE_{it} + \beta_2 AGE_{it}^2 + \beta_3 X_{it} + \beta_4 M_{it} + \alpha_i + \varepsilon_{it} \quad (1)$$

- Dependent variable: log of real gross hourly wages
- M_{it} is a dummy variable for being a mother or not
- Covariates: Years of schooling, marital status, working part time, working in a female occupation, tenure, firm size
- α_i includes fixed effect, ε_{it} is the idiosyncratic error term
- Estimated by a fixed-effect transformation

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... and the effect of fertility timing:

- Mother \times Age \times Age at first birth
- Mother \times Duration of maternity leave \times Age at first birth

Econometric challenges

- Reverse causality: Women anticipate future labour market outcomes
- Identification strategy: Control for changes in the wage path prior to the first birth

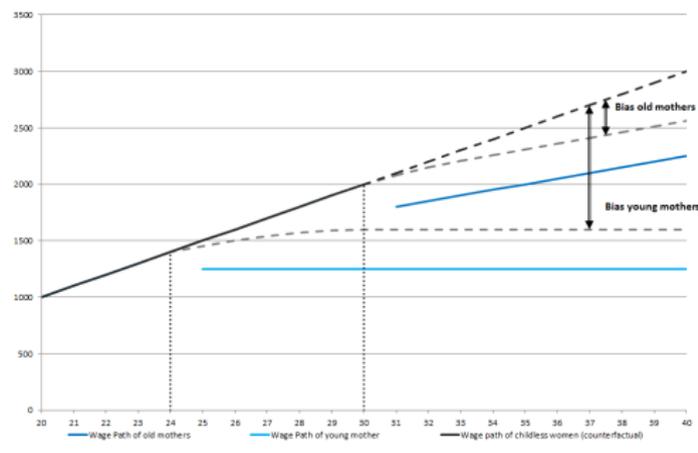


Figure: Illustration of a bias due to reverse causality

Data

- German Socio-Economic Panel Study (GSOEP)
- Sample of women who have their first child between 1984 and 2013, living in West Germany
- Women who have their first child between 21 and 35
- Age categories: "Early motherhood" age at first birth 21-27, "late motherhood" age at first birth 28-34
- Panel data: labour market outcomes before and after the first birth
- First and second generation female migrants

Descriptive Statistics I

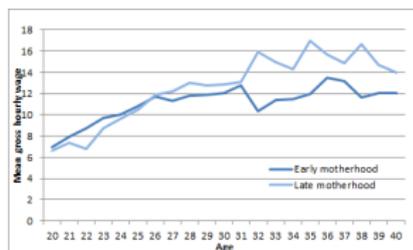


Figure: Wage path of mothers by timing of first birth: Later motherhood seems to pay off.

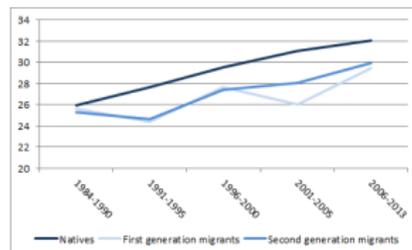


Figure: Age at first birth increased but there is still a difference between migrants and natives.

Descriptive Statistics II

	Early Mother		Late Mother	
	All	Migrants	All	Migrants
Wage before motherhood	11.68	11.44	13.7	13.02
Duration of maternity leave	19.4	21.49	24.55	22.47
Years of schooling	11.02	10.55	12.76	12.4
Married in the year of first child	66.48	60.78	81.94	80.35
Working full time before motherhood	53.55	50.38	50.48	71.29
Working full time after motherhood	11.90	17.91	7.58	8.79

Estimation results of the fixed-effects regression

	All women		Migrant women	
Age	0.1473*** (0.0083)	0.1614*** (0.0088)	0.1825*** (0.0180)	0.1943*** 0.0203
Age squared	-0.0017*** (0.0001)	-0.0019*** (0.0001)	-0.0022*** (0.0003)	-0.0023*** (0.0003)
Dur. of mat. leave	-0.0012 (0.0009)	0.0013 (0.0077)	-0.0011 (0.0018)	0.0363** (0.0179)
Dur.of mat.*A1b		-0.0001 (0.0003)		-0.0014** (0.0006)
Mother*Age	-0.0093*** (0.0010)	-0.0273*** (0.0060)	-0.0096*** (0.0020)	-0.0398*** (0.0123)
Mother*Age*A1b		0.0006*** (0.0002)		0.0011** (0.0004)
R-squared	0.2115	0.2144	0.2918	0.2952
Observations	13324	13324	2982	2982
Individuals	1569	1569	388	388

Source: GSOEP 1984-2013. Covariates are included. A1b: age at first birth

Main results

- Mothers have a lower wage growth than they would have had without children
- Fertility delay mitigates the negative effect of motherhood on wages
- Migrants have a greater benefit of fertility delay
- The duration of an interruption is positively related to wages for migrant mothers

Further Findings

- The transition into a female occupation negatively affects wages
- Working in part time employment is positively correlated with wages
- Wage growth is slower if women work part time

Wage effect of childbirth by age at first birth

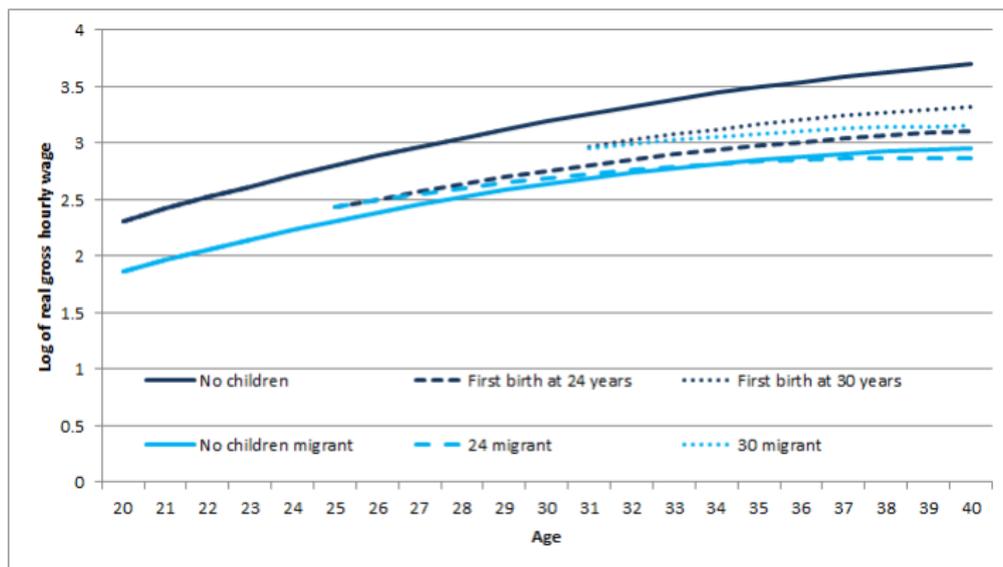


Figure: Predicted wage profile for women giving birth at an age of 24 and 30, and have 12 years of education, work in full time employment, in a medium-sized firm.

Comparison of results with previous findings

- Previous research finds a positive effect of a fertility delay using different methods
(e.g. Miller 2011, Wilde et al. 2010, Herr 2016)
- Longer maternity leave episodes result in lower wages (control for the endogeneity in length of maternity leave)
(e.g. Ejrnaes and Kunze 2013)

Conclusion

- Fertility delay improves women's career outcomes. The effect is stronger for migrant women
- Although women can plan and control fertility timing to a great amount nowadays with regard to economic forces, on average, mothers still face wage penalties
- Supply or demand side effects?

Further research

- Check for a non-linear effect of the age at first birth
- Analyse changes in preferences using SOEP Data

Robustness Checks

- Actual experience instead of age ✓
- Restrict sample to women who worked full time before the first birth ✓
- Restrict sample to women with completed education