## The impact of human capital depreciation on mothers' and fathers' wages

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### Abstract

Using German Socio-Economic Panel (GSOEP) microdata this paper contributes new empirical evidence by examining the implications of motherhood and fatherhood for wages of a sample of women and men between 2005-2015. Making use, for the first time for this research question, of a difference-in-difference approach, the study uncovers inequalities among women and men in terms of parenthood wage effects. Moreover, the study takes this analysis a step further and investigates additional possible correlations between educational background (vocational versus general background) and motherhood wage gaps by exploiting, for the first time, the difference between skills acquired through a vocational educational path versus those developed following a general one, as one of the keys factors to help to shed light on the motherhood wage penalty if compared to those women having a general background, due to the higher rate of vocational skills depreciation.

Keywords: motherhood, fatherhood, wage penalty, gender, inequality, education.

JEL Classification: I26, J16, J24, J31

# 1. Introduction

The fact that women earn less than men is a well-established phenomenon, known as the gender wage gap. Earlier studies have tried to provide an explanation for this ongoing trend, mainly relying on two pillars, namely the human capital theory and labour market discrimination theory. However, even after controlling for individual observable and unobservable characteristics, taking into account possible differences in educational attainment (DiPrete and Buchmann 2006), school content (Brown and Corcoran 1997), occupational segregation (Bayard, Hellerstein et al. 2003, Kunze 2005), career and life expectation (Chevalier 2002, Chevalier 2007) and personality traits (Strain and Webber 2017), a large gender wage gap remains unexplained.

What is common among the abovementioned studies is that differences in the educational path, school content, career and life expectation, and personality could in part be partly explained by different expectations in terms of women and men's social roles; where women are still perceived as caregivers and as rearers of their children, and men, as those who should provide reliable financial assistance for their families.

It is, indeed, undeniable that the different social expectations, in terms of men's and women's behaviours and traditional social roles of the sexes, have been shaped by the biological event of motherhood, which continues to be the only immutable gender difference (Schwartz 1989). Given that, motherhood certainly is a critical event behind much of the gender wage gap.

Consequently, many studies have focused on the impact of motherhood and fatherhood on wages, that is, respectively, the difference in pay between mothers/fathers and childless individuals with similar characteristics, as one of the potential factors which could lead to a better explanation of the gender wage gap.

While earlier studies (Budig and England 2001, Gangl and Ziefle 2009, Meurs, Pailhé et al. 2010) agree on the negative consequences of motherhood in terms of career opportunities and wage rates, the literature has found no impact or, in some other cases, a positive impact of fatherhood on wages, confirming the existence of a fatherhood wage premium (Trappe and Rosenfeld 2000, Meurs, Pailhé et al. 2010).

The aim of this study is to make a novel contribution to the literature by investigating the impact of parenthood on wages. Previous studies have analysed the impact of parenthood on wages by using different econometric techniques: Ordinary Least Squares Estimator (OLS) (Kumlin 2007, Budig, Misra et al. 2012); Fixed effects model (Lundberg and Rose 2000, Budig and England 2001, Gangl and Ziefle 2009, Wilde, Batchelder et al. 2010), Heckman regression model (Kellokumpu 2007, Zhang, Hannum et al. 2008); Quantile regression (Nestić 2007); Instrumental variables (Simonsen and Skipper 2012); Inverse probability of treatment weight (Pal and Waldfogel 2014). However, this study, for the first time, studies the motherhood wage penalty by relying on a difference-in-differences approach. The latter will involve comparing treated individuals, that is mothers/fathers who had a child at a given point in time, with childless women/men, with similar background characteristics, in order to estimate the effect of interest, hence the existence of a motherhood wage penalty/ fatherhood wage premium. The peculiarity of this difference-in-differences model is that both the treatment and the control group are not defined by a pure exogenous event. Hence, to justify the results achieved, additional robustness checks for concerns regarding the time window and the threshold chosen will be performed. Moreover, to support the findings the study will also provide the results of a fixed effect estimation.

Results are in line with what the literature has suggested, and uncover inequalities among women and men in terms of parenthood wage effects

In addition, the present study aims to throw further light on the motherhood wage gap, by investigating the human capital theory as one of the possible explanations for the difference in wages between mothers/fathers and childless individuals. In brief, the human capital theory identifies career interruptions, which leads to human capital depreciation and lost job experience, as one of the main factors impacting on wage growth rate. Following this line of thought and given the existence of a strong trade-off between early advantages and late disadvantage in labour market outcomes for individuals with vocational education compared with those having a general background (Ryan 2001, Zimmerman 2013, Hanushek, Schwerdt et al. 2017), and that, on average, the skills developed following a vocational educational path become more easily atrophied or obsolete if compared with those acquired following an academic path (Weber 2014), this study is unique in that it is the first to use the difference in the rates of human capital depreciation between vocational and general skills, to evaluate the impact of skill depreciation on the motherhood wage gap.

The results are consistent with the main hypothesis of this study which supports the idea according to which women with a vocational education background suffer from a larger motherhood wage penalty if compared to those women having a general education background. Given that skills acquired through vocational studies depreciate quicker and may require to be updated more often, a birth-related absence from the labour market will have a higher cost in terms of human capital loss.

The remainder of this paper is organised as follows. The next section provides a review of the motherhood wage gap and the fatherhood wage premium and a comparison of vocational versus general education. Section 3 provides information on the German educational system. Section 4 describes the data and section 5 explains our identification strategy. Section 6 presents the main findings. Finally, Section 7 concludes.

# 2. The impact of parenthood on wage

The motherhood wage gap consists of the difference in pay between mothers and childless women with similar characteristics with non-mothers defined as those employed women who do not fulfil the dual requirements of having children and being female.

Several different mechanisms are identified by social science research investigations, to provide a plausible explanation for the existence of the motherhood wage gap (Grimshaw and Rubery 2015, Cukrowska-Torzewska and Matysiak 2020). According to the rational economics approach, mothers experience more career interruptions; consequently, the time spent out of the labour force might have an impact on the level and the growth rate of earnings. It is indeed well documented that there is a wage gap between an intermittent worker relative to a continuously employed worker (Cox 1984, Jacobsen and Levin 1995) due to the forgone human capital investment, lost job experience, and skill depreciation (Mincer and Polachek 1974); thus, a difference in wage between mothers and non-mothers is anticipated.

Jacobsen and Levin (1995) summarized the main reasons to explain the decrease in wages experienced by women after career interruption as follows. First, women who leave the labour force and later re-enter do not build up seniority, which, by itself, leads to a higher wage. Second, women who return to the labour force are less likely to get on-the-job training to increase their productivity and, consequently, their wages. Third, job skills and knowledge deteriorate during periods of non-employment.

Several studies (Budig and England 2001, Gangl and Ziefle 2009, Cukrowska-Torzewska and Matysiak 2020) have shown that part of the above-mentioned wage gap could be explained by the fact that those birth-related career breaks lead to a loss and non-accumulation of human capital. Using the French Families and Employers

survey, Meurs et al. (2010) provide information related to the impact of career interruptions and time out of the labour market. Their results support the human capital theory, according to which the motherhood wage gap can be explained by differences in human capital acquisition and human capital depreciation.

Furthermore, the expectations of future career interruption, by themselves, may impact current earnings growth. De facto, women could predict to be in the labour force for a shorter period of time; therefore, they will be less incentivized to enhance their skill, given that they will benefit from the human capital investment for a shorter time period (Polachek 1981, Blakemore and Low 1984, Anderson, Binder et al. 2003, Kalist 2008, Simonsen and Skipper 2012). This attitude could suggest that women can exhibit a weaker attachment to their job (Munasinghe, Reif et al. 2008).

Finally, the existence of work interruptions could also lead women to change their labour market behaviour. Indeed, women might be more likely to select family-friendly jobs, part-time jobs, or jobs with less responsibility, usually characterized by lower salaries (Waldfogel 1997, Budig and England 2001, Amuedo-Dorantes and Kimmel 2008). Nielsen, Simonsen et al. (2004) point out a severe penalty after care-related leave in sectors with non-family-friendly policies. This justifies the self-selection of mothers into female-dominated occupations, which allows them to meet family responsibility by sacrificing the wage received. Lundberg and Rose (2000) find that while mothers return to their jobs working fewer hours and suffer from a decrease in wages, men, after becoming fathers, work more and earn more. Using the German Socio-Economic Panel data and by implementing a first difference analysis, Felfe (2012) investigates women's work conditions after they became mothers. Given that for women who work full-time and have children the pressure on their time may be extreme, the study reports a decrease in terms of working hours, and a stronger preference for jobs with a lower level of stress.

While the negative consequences in terms of career opportunities and the negative motherhood wage gap have been exhaustively addressed in the literature, there are relatively few studies that focus on the effect of parenthood on men.

The general findings agree that fathers experience a wage premium if compared to childless men (Trappe and Rosenfeld 2000, Meurs, Pailhé et al. 2010). By estimating a fixed effect model on two cohorts of men using

the Panel Study of Income Dynamics, Lundberg and Rose (2002) find a significant increase in the hourly wage rate, with bonuses of 4 to 7 per cent, and a positive impact on labour supply.

Those results are confirmed by Koslowski (2010), who analyses, using the European Community Household Panel data, whether fathers work longer hours compared to childless men and if the time spent with the children has an impact on the wage. The study concludes that parental status does not seem to impact the weekly working hours and that fathers who report spending more time with the children earn 1 per cent more than childless men.

The literature tries to explain the existence of the fathers' wage premium by exploiting different factors. The most accepted theory is that the fatherhood wage premium depends strictly on women's uptake of employment after giving birth to a child and whether the child's mother works part or full time. An early study from Presser (1994), shows how employment schedules might impact family life. The author analyses the factors that can impact men's choice to share household labour, pointing out that men share household work only when the employment schedules of the couple do not overlap. Other studies support those early findings, showing the wage premium results to be bigger, indeed, when the child's mother works part-time or does not work at all (Hodges and Budig 2010). Those findings strictly connect with the traditional division of labour concerning the socially prescribed gender roles, which sees the mother fulfil family responsibilities and the men as the "breadwinner".

However, "a move towards a universal caregiver or dual-earner/dual carer society is a necessary one if true gender equality is to be achieved" (Fraser,1994 pp 116). If men do not participate in household labour the only way to lift the barrier and achieve gender equality is the outsourcing of childcare. Thus, another factor that might impact the father wage premium is the implementation of childcare related policy interventions such as parental leave which might impact mothers' and fathers' working decisions. Using Norwegian registry data, Rege and Solli (2013) investigate the effect of paternity leave on fathers' wages. Through the use of a difference-in-differences model, the authors disentangle the effect of the introduction of a paternity leave quota by the Norwegian Government in 1993 on wages, finding that fathers taking paternity leave are subject to earnings decreases five years later.

Other studies, instead, focus the attention on factors such as race and level of education to provide an explanation of the size of the fathers' premium. Glauber (2008) shows that the wage premium depends, indeed, on the race of the father with black fathers having a significantly lower premium than white fathers. Hodges and Budig (2010), instead, indicate that graduate fathers have a larger premium if compared with non-graduate fathers.

#### 2.1 Vocational versus general education

As previously stated, this study aims to contribute to the literature by analysing the impact of motherhood and fatherhood on wages, according to the type of educational background.

Earlier studies (Ryan 2001, Zimmerman 2013, Hanushek, Schwerdt et al. 2017) have provided extensive evidence that while holding a vocational qualification enhances the probability of being employed at the early career stage, providing ready to use skills and an initial relative earnings premium, these advantages turn into later disadvantages in terms of lower employment opportunities in later life and lower wages when compared to individuals with an academic background (Cörvers, Heijke et al. 2011, Brunello and Rocco 2017, Golsteyn and Stenberg 2017).

Moreover, previous studies have confirmed that the skills acquired through studying vocational qualifications become more easily obsolete and may require updating more often compared to skills and knowledge acquired through an academic path (Hanushek, Schwerdt et al. 2015, Hampf and Woessmann 2017). Weber (2014) uses data from the Swiss Labour Force Survey over the period 1998-2008, to examine the human capital depreciation rate across different education types and by different occupations, skills levels, and technology intensity. The study identifies that "concept-based" qualifications (e.g., academic qualifications), provide greater worker protection against skills obsolescence when compared to "skills-specific" qualifications (e.g., vocational qualifications). While technical obsolescence, the depreciation of skills due to under-utilization of skills, may impact both educational types, the economic obsolescence, the depreciation due to the workers' environment and to technological changes, may impact more heavily on those workers with a vocational background. The latter will be less able to adapt effectively to new situations in the labour market.

Following this line of thought, where human capital depreciation varies according to the educational qualifications and associated skills held by the individual, with vocational skills being more easily obsolete;

and given the existence of a strong trade-off between early advantages and late disadvantages in labour market outcomes for individuals with vocational education when compared with those having a general qualification, this paper aims to contribute to the literature by investigating whether, in the long term, women with a vocational background are likely to face a wider motherhood wage gap.

# 3. Institutional Background

The German school system is characterized by four different levels (Table 3.1):

- Early childhood education
- Primary education
- Secondary education
- Tertiary education

The curriculum is the same for all pupils until Primary education (age 9) but then gives way to a stratified system where pupils have to select between primarily an academic or a vocational route.

German secondary education can be split into two different levels:

- Sekundarstufe I, that is lower secondary education which involves students aged ten to fifteen/sixteen.
- Sekundarstufe II, that is upper secondary education for pupils of age fifteen/sixteen to eighteen.

At this level, the German system allows students to choose between two different paths of secondary education, either a vocational or a general orientated path.

The German vocational education system is mostly based on the so-called "dual system" which can mainly be defined as a work-based education system that aims to make students adapt to the work environment and to decrease the high rates of unemployment. Full-time school vocational education, instead, occupies a less important position in Germany.

The institutions related to the vocational educational path are the following:

- *Hauptschule*: general elementary education which covers grade 5 to grade 9, leads to either a vocational or a university entrance qualification. Sometimes it can include grade 10, and it ends with a "*Hauptschulabschluss*" (certificate of completion of the *Hauptschule*). Afterwards, students will be

enrolled in a vocational school, namely the *Berufsschule*. The latter delivers practically orientated classes that seek to prepare students for higher vocational education, or for the labour market. Students usually attend the *Berufsschule* part-time in conjunction with on-the-job training or apprenticeship.

- *Realschule*: general intermediate education which covers grade 5 to grade 10, ending with a *"Realschulabschluss"*. It provides students with more extensive knowledge and puts more emphasis on language and mathematic skills rather than manual activities if compared with *Hauptschule*. Both *Hauptschule* and *Realschule* are designed for those pupils who would like access to an apprenticeship. However, while the *Hauptschule* leads more to manual trade, the *Realschule* is more suitable for those who want to start an apprenticeship in a medical profession such as nursing or in commercial trade. The *Realschule* entitles students to enter into a *Fachoberschule* which provides two years of education and will lead students to the achievement of the *"Fachhochschulreife"*. The latter is a prerequisite for jobs in civil service, administration, business and to enter the university of applied sciences *"Fachhochschulen"*. If a 13th grade is accomplished, the student will achieve a *"Fachgebundene Hochschulreife"* or an *"Abitur"*.
- Gesamtschule or comprehensive school: this is an alternative to both *Hauptschule* and *Realschule*. The comprehensive school aims to avoid forcing children to choose their educational paths too early in life. It includes students of all ability levels from grade 5 through to grade 10. Students who conclude the *Gesamtschule* at the 9th grade achieve the *Hauptschule* certificate, while those who complete the *Gesamtschule* at the 10th grade will accomplish the *Realschule* certificate.

If students wish to follow instead an academic path they will need to enrol in a *Gymnasium*, a general advanced education, which covers grade 5 to grade 13, leading to the *Hochschulreife*, also called "*Abitur*", the maturity certificate. It prepares students for university study or a dual academic vocational credential. The Gymnasium is based on a mandatory study of core subjects including languages, literature and arts, social sciences, mathematics, and natural sciences.

The German tertiary education system is relatively less stratified compared with the secondary educational system.

The different institutions supplying German students with tertiary education are of the following types:

- *Universitäten,* universities: these institutions are academic-based, and the main program is characterized by theoretical and research-oriented components.
- *Fachhochschulen*, universities of applied sciences: mainly based on technical disciplines, design, agricultural economy, business, and social work; these institutions provide practically orientated programs in order to meet the needs of the labour market. The main feature of this qualification is the inclusion of the "*Praxissemester*", that is paid training, in the core program of study.

	Grade		Educatio	on system		Age	
Tertiary Education		Fachhochs	schule	Unive			
	13					18/19	
Tertiary Education Secondary Education Primary education Early childhood aducation	12	Berufsschule (d	ual system),		17		
	11	Beruisiachschulen,	Fachoberschule		16		
Secondary Education	10	some schools have grade 10		Gesamtschule	Gymnasium	15	
Education	9	6	•	Gesamtsenute	Gynnasian	14	
	8	Hauptschule	Realschule			13	
	7	Hauptschule				12	
	6					11	
•	5					10	
	4						
Primary	3	Grundschule					
education	2						
	1						
Early abildhood							
education		ixinder	mippe, miderge	arten, Kindertages	Statio	3	
						2	
						1	

#### Table 3.1: German educational system

## 4 Data

The primary data source used in this study is the German Socio-Economic Panel (GSOEP). In particular, the study is going to use the SOEP-Core which is the centrepiece of the GSOEP. The GSOEP is an interdisciplinary longitudinal survey of private households for the representative analysis and interpretation of social and economic behaviour in the Federal Republic of Germany. The data collection of the GSOEP started in 1984, by the German Institute for Economic Research, DIW (Deutsches Institut für Wirtschaftsforschung) Berlin,

and shortly after German reunification, it was enlarged by including a representative sample from East Germany. The GSOEP surveys about 30,000 individuals annually in about 15,000 households. German citizens living in Germany, overseas citizens residing in Germany, and from 2016 a representative proportion of refugees, are included in the GSOEP sample. Each participating household member, aged 18 years and older, is invited to fill out a personal questionnaire every year that includes a wide range of questions providing information about demographic, epidemiological, geographic, health science, political science, socio-psychological and even sport-science issues.

GSOEP is the most suited database for this analysis due to the rich set of information provided. It does not only provide useful data related to the demographic characteristics, the background of respondents, educational attainment, labour force, and health status but it also offers valuable information on women's fertility history and the mother-child relationship. Most importantly, using the Comparative Analysis of Social Mobility in Industrial Nations (CASMIN) classification, the highest qualification achieved by each respondent can be easily classified as either vocational or general orientated.

## 4.1 The Sample

The data used for this study comes from wave "v", in 2005, to wave "bf", in 2015, of the GSOEP. Thus, the study relies on an unbalanced panel of eleven years of data.

The final analytical sample used in this paper comprises 25,088 women and 30,890 men. This study considers only women of fertile age, defined as age 18 to 47. To make the sample of men similar to the sample of women considered, the same restrictions, in terms of age, are applied to men. Given that this study aims to investigate the impact of having a child on wages, men and women not currently employed are also excluded from the sample. Moreover, to allow a comparison of the impact of parenthood on women and men with different educational backgrounds, individuals with no qualifications or training are excluded from the sample. Finally, to make the sample of mothers and fathers as homogenous as possible, this study will focus on those parents whose first child is born during or after 2005. People working for the army and students are also excluded. Table 4.1 summarises the number of observations in the sample following the above-mentioned exclusions. The estimating sample did not differ significantly from the full sample in terms of background characteristics.

#### Table 4.1 Sample size summary

	Women	Men
Total number of observations (2005-2015)	235,947	222,719
If the individual is younger than 18 and older than 47	(-139,484)	(-137,211)
	96,463	85,508
If the individual is not employed	(-44,770)	(-33,083)
	51,693	52,425
If the individual is currently studying or has no	(-312)	(-271)
qualifications/training	51,381	52,154
Mothers/Fathers who gave birth to their first child	(-26,266)	(-20,915)
before 2005	25,115	31,239
Other exclusion (army)	(-27)	(-349)
	25,088	30,890
Total number of usable observations	25,088	30,890

## 4.2 Dependent variable

The dependent variable is the natural logarithm of the individual's current labour monthly wage. While overtime payments are included in the monthly wage, no irregular one-time payments such as holidays or bonuses are considered. Income details are consistently provided in euros for all waves. To limit the influence of outliners, this analysis trims the bottom and the top one per cent of the wage distribution. The variable is then adjusted for inflation using the consumer price index provided by the GSOEP (base year 2015- survey year 2016).

### 4.3 Key variables

## Mothers / Fathers

This study defines "Non-mothers" as those women who never have a child and those women who became mothers, in the years before they gave birth. Mothers are identified as those women who gave birth to a child, in the years after they give birth. The same classification is adopted for "Fathers" and "Childless men". Consequently, our key independent variables, that identify the wage penalty/premium of mothers/fathers, are two dummy variables: "mother" and "father", both taking value one when the individual has a child.

Figure 4.1 shows the lowess smoothed values of the logarithm of the monthly wage across ages, separating mothers/fathers from childless individuals for employed individuals aged between 18 to 47. The graph confirms that the degree of curvature in the relationship between age and the logarithm of monthly wage differs

based on whether an individual has a child. The wage gap is wider among women, with mothers having a lower wage, on average, compared with non-mothers. In particular, the figure highlights that there is a fatherhood wage premium and a motherhood wage penalty at all ages, not just on average.



Figure 4.1 Age-log monthly wage relationship for mothers/fathers and childless individual

Figure 4.2 shows the distribution of the log monthly wages. On the horizontal axis there is the logarithm of the monthly wage and on the vertical axis the corresponding percentages. Both distributions are skewed to the left or negatively skewed. While for the distributions of fathers and childless men, fathers show a greater frequency for the highest values of the logarithm of the monthly wage; the distributions of mothers and non-mothers lead to a different conclusion, with non-mothers showing a higher frequency for the highest wage values.



Figure 4.2 Monthly wage distribution by gender (Parents vs childless individuals)

Figure 4.3 shows the distribution of the log monthly wage this time taking age into account. It shows that even after taking age into account by plotting the distribution according to the age range considered, the conclusions that one could derive are still the same. During the child-bearing age, non-mothers show a higher frequency for the highest wage if compared with mothers. The two distributions become closer only when the age range 38-47 is examined. Non-fathers show higher frequency for the highest wage values only if the age range 18-27 is taken into account.



Figure 4.3 Monthly wage distribution by gender (Parents vs childless individuals) and by age range

## Highest qualification achieved.

The highest qualification achieved by the individual is identified according to the CASMIN classification which is an internationally comparable measurement instrument for educational attainment (Brauns et al, 2003). The CASMIN classification was developed in the 1970s to take into consideration the effects of different educational systems on inter and intra-generational mobility.

Walter Müller (2000) describes the German qualifications included in each CASMIN level (Table 4.2).

According to Table 4.2, one can distinguish 9 different CASMIN levels:

- *Level 1a, inadequately completed general education*: which includes individuals without a completion certificate or internship.
- *Level 1b, general elementary education*: that considers the certifications that an individual can achieve with the completion of the *Hauptschule*.
- *Level 1c, basic vocational qualification/general elementary education and vocational:* that includes the certifications achieved with the completion of the *Hauptschule* with a completed apprenticeship.
- Level 2a, intermediate vocational qualification/ intermediate general qualification and vocational qualification: that comprises the *Realschule* leaving certificate with a completed apprenticeship or vocational training.
- *Level 2b, intermediate general qualification*: that includes the *Realschule* leaving certificate without a completed apprenticeship or vocational training.
- Level 2c\_gen, general maturity certificate: that considers the Fachhochschulreife, school leaving certificate after Realschule and/or the Hochschulreife, also called Abitur, a maturity certificate usually achieved after 13 years of Gymnasium and that allows access to universities.
- Level 2c\_voc, vocational maturity certificate/ general maturity certificate and vocational qualification: school leaving certificate after *Realschule* and/or the *Hochschulreife*, also called *Abitur*, a maturity certificate usually achieved after 13 years of *Gymnasium* and that allows access to universities, plus a completed apprenticeship or vocational training.
- *Level 3a, lower tertiary education*: that considers degrees from *Fachhochschule, Ingenieurschule*, polytechnic or engineering college.
- Level 3b, higher tertiary education: that includes degrees from the Hochschule, that is University.

Accordingly, this study considers as academic level 1 and 2 those qualifications that fall in CASMIN level 1b and 2b, as academic level 3 those included in CASMIN level 2c\_gen, and finally as academic level 4 those contained in CASMIN level 3b. For how it concerns, instead, vocational qualifications, those qualifications included in level 1c and 2a CASMIN are considered as level 1 and level 2 vocational, while those in level 2c\_voc and 3a define, respectively, level 3 vocational and level 4 vocational.

## Table 4.2 Casmin Classification- German qualifications

	Qualifications	VET/NO
		VET
<u>1a</u>	Inadequately completed general education	-
	ohne Abschluß, berufliches Praktikum	
1b	General elementary education	ACAD
	Haupt-/Volksschulabschluß	
1c	Basic vocational qualification/general elementary education and vocational qualification	VET
	Haupt-/Volksschulabschluß mit Abschluß einer Lehr-/Anlernausbildung oder Meister-/Technikerausbildung	
2a	Intermediate vocational qualification/ Intermediate general qualification	VET
	Realschulabschluß (Mittlere Reife) mit Abschluß einer Lehr-/Anlernausbildung oder	
	Meister-/Technikerausbildung	
2b	Intermediate general qualification	GEN
	Realschulabschluß (Mittlere Reife)	
2c_gen	General Maturity certificate	GEN
	Fachhochschulreife, Hochschulreife (Abitur)	
2c_voc	Vocational maturity/ General maturity and vocational qualification	VET
	Fachhochschulreife, Hochschulreife (Abitur) mit Abschluß einer Lehr- /Anlernausbildung oder Meister-/Technikerausbildung	
3a	Lower tertiary education	VET
	Fachhochschule, Ingenieurschule	
<b>3</b> b	Higher tertiary education	GEN
	Hochschule	

Consequently, eight dummy variables have been generated "level 1 academic", "level 2 academic", "level 3 academic", "level 4 academic", binary variables taking value one when the highest qualification achieved by the respondent is level 1 academic, 2 academic, 3 academic or 4 academic respectively, and "level 1 vocational", "level 2 vocational" "level 3 vocational" and "level 4 vocational" (with level 4 vocational being the base category), that assume value one when the individual has as highest qualification achieved a level 1 vocational, 2 vocational, 3 vocational or 4 vocational respectively.

Figure 4.4 shows the average monthly wage for both men and women by education type separating mothers and fathers from childless individuals, for employed individuals aged 18-47. While mothers are shown to have a lower monthly wage, on average, if compared with childless women for all the qualification types (the only exception being level 3 Academic), fathers show, instead, a slightly higher monthly wage if compared with childless men.



Figure 4.4 Mean of the log of the monthly wage of mothers/fathers and childless individuals by education type.

## 4.4 Control variables

The GSOEP dataset provides very rich information concerning the background characteristics of the individuals. To control for other conflating factors that may impact an individual's monthly wage and the motherhood wage gap/ father wage premium, the model will consider background characteristics, relationship status, educational background, and job characteristics.

A summary of both key variables and other control variables is provided in Table A.1.

The choice of explanatory variables is based on the existing literature. For instance, a set of four variables is used to control for the relationship status of the respondent given the impact that the latter could have on wages for both men and women (Becker 1981, Barg and Beblo 2009, Pollmann-Schult 2011). "Single" (the reference category) denotes individuals who are not in a relationship; "Married" refers to individuals who have a partner,

"Separated/Divorced" identifies those respondents who are legally divorced or separated; finally, "widowed" denotes those who have lost their partner.

A large part of the literature has focused on the positive returns to experience and seniority (Altonji and Williams 1997, Dustmann and Meghir 2005). It is also well known that women who decide to become mothers need to consider that birth-related leave will lead to foregone human capital investment, lost job experience, and skill depreciation (Mincer and Polachek 1974) which consequently will impact their wage rate; the same effect is not observed for men. Relying on the importance given to experience from the previous literature, the model implemented in this study will consider both part-time and full-time years of experience. Those variables reflect the total length of full-time and part-time employment in the respondent's career. Also, binary variables for current "Full-time", "Public -sector" and "Self-employed" status are included in the model. The variables will assume value one if the respondent works full time, in the public sector, and is self-employed, respectively.

The model will also include four dummy variables to classify the occupation of the respondent. The categorization of the different occupations is made according to the third version of the International Standard Classification of Occupation (ISCO-88) for European Union purposes. "Elementary occupation" (the base category) indicates whether the individual has an elementary occupation; "Agricultural/Craft/Machine operators" if the respondent is a skilled agricultural worker, a craft worker or a machine operator; "Clerks/Service workers" if the respondent is a clerk or a service worker; "Manager /Professional" if the individual is a manager or a professional.

Finally, in agreement with the literature which sees unstable employment and low income significantly related to precarious workers' perceived health (Lim, Kimm et al. 2015) the model will include a dummy variable "Good health" which takes the value of one when the respondents define their health status as rather good, zero otherwise.

## 4.5 Descriptive statistics

The descriptive statistics of the analytical sample are provided in Appendix A. The data show the existence of a raw motherhood wage penalty (Table A.2) and a fatherhood wage premium (Table A.3) both if the comparison is made among people with a vocational qualification or with a general qualification as highest qualification achieved (Table A.4, A.5). The difference in means of the monthly wage remains negative and statistically significant across the selected age ranges for women with general or vocational qualifications; in contrast, the difference in means of the hourly wage for men remains positive across age and education type.

Lining up with the literature, while the gap between the monthly wage of women and men having a vocational qualification and those having a general background is positive if we consider individuals aged 18-27 (for both mothers and non-mothers), this gap turns instead negative if we consider individuals aged 28-37 or 38-47. This can be explained by the fact that a vocational educational path helps to develop specific job-related skills that prepare students to work in specific occupations while general education provides students with broad knowledge and basic skills as a foundation for further learning and on-the-job training. This leads to a strong early advantage and a late disadvantage in terms of labour market outcomes (wage, employment, school-to-work transition) for individuals with a vocational qualification as their highest qualification.

The latter could also help to understand why the motherhood wage gap is, on average, bigger for women with a vocational background compared to women with a general background (the only exception being women aged 18-27). Indeed, previous studies have confirmed that while holding a vocational qualification enhances the probability of being employed and having a higher wage at the early career stage providing ready-to-use skills, this advantage comes at the cost that the skills acquired through studying vocational qualifications become more easily obsolete. Thus, the early advantage of studying vocational qualifications turns into a later disadvantage. In this respect, women with a vocational background, who give birth and who then take some time off from their job, would be exposed to a depreciation of their skills which will cost more in terms of future income as compared to women with a general background. The path is not clear, instead, if the comparison is made between men with a vocational versus those with a general background. The educational background does not seem to affect the fatherhood wage premium.

The monthly wage appears to be higher, on average, for childless women if compared to mothers, even though mothers are, on average, older than no-mothers. Employments rates are also very different for women with 53% of mothers being employed compared to the 75% of non-mothers; the employment rate is instead higher for fathers if compared with childless men (90% compared with 75%). Not surprisingly, childless women have a higher probability to work full-time (77%) while only 31% of mothers work full-time. On the contrary, fathers are more likely to work full time than non-fathers (93% vs 88%). Further striking differences, which

can be partly explained by the age differences, can be observed with respect to work experience: mothers show more years of both part-time (2.0) and full-time (5.7) job experience when compared with non-mothers (with respectively 1.4 and 4.9 years of experience). The difference in years of full-time job experience is even greater if the comparison is made between fathers (11.2) and childless men (5.8). It is interesting to highlight that, in agreement with the literature, while men show, on average, more years of full-time job experience, women show, on average, more years of part-time experience when compared with men. On average, the majority of women work as managers or professionals (58-56 %) or as clerks and service workers (32-35%), men typically work either as managers or professionals (51-42%) or as skilled agricultural workers, craft workers and machine operators (33-36%).

As expected, 70% of the mothers and 78% of the fathers in the sample have a partner while less than 15% of childless men and women have one.

Childless women and mothers show the same average of years of schooling (12 years), the same can be said for fathers and non-fathers. More than 57% of the women and men considered in this study, have as highest qualification a vocational qualification.

## 5 Methodology

The model seeks to compare the difference in monthly earnings between two groups of women/men: the ones who had a child at a given time t and the ones who are childless throughout the sample period. Simply regressing the parental status (giving birth to a child versus not giving birth to a child) over the wage should suffer from an endogeneity bias. By using a difference-in-differences technique, instead, one can disentangle the effect of motherhood/fatherhood on wage. Thus, this study identifies a treatment (women/men giving birth/becoming a father to a child in year t) and a control (childless women/childless men not giving birth to a child in year t) group.

The key identification assumption is that the difference in earnings between the treatment and the control group would have remained constant over time if women/men in the treatment group had not had a child. In other words, the model relies on the existence of a previous common trend in the difference in earnings between the treatment and control groups. Hence, for the method to provide a valid estimate of the counterfactual, one must

assume that in the absence of the treatment, the difference in the average earnings between mothers/fathers and non-mothers/non-fathers would need to constant, thus the average outcome should have increased or decreased at the same rate in both groups.

The baseline model implemented in this study can be represented as follows:

$$lny_{it} = \alpha_0 + \alpha_1 \text{Time}_t + \alpha_2 \text{Treat}_i + \beta \text{Treat}_i * \text{Time}_t + \gamma X_{it} + \varepsilon_{it}$$
 1)

where  $y_i$  denotes the outcome of interest, thus the monthly earnings of individual i at time t.

 $\alpha_1$  represents the coefficient on the time dummy equalling zero before time t (the time of treatment). The time dummy simply captures the temporal trend common to both groups.

 $\alpha_2$  is the coefficient on the treatment dummy and it indicates the estimated mean difference in average monthly earnings between the treatment and the control group in the absence of the treatment. Thus, it defines the "baseline" differences existing between the treatment and the control groups.

 $\beta$  is the coefficient on the interaction term between the two dummies mentioned above and measures the treatment effect of interest.

The parameter  $\gamma$  is a vector of coefficients on the characteristics of individual i at time t that might affect the dependent variable including, importantly, background characteristics, highest qualification achieved, relationship status and job characteristics.

Finally,  $\varepsilon_{it}$  is an error term.

The log-linear relationship between wage and human capital is justified by the investment paradigm developed by (Mincer 1974).

The peculiarity of the difference-in-differences model implemented in this study is that both the treatment and the control group are not defined by the implementation of a policy or a program, thus a truly exogenous event. For this reason, the year t used as a threshold in this analysis and essential to identify the treatment and the control group is chosen among all the years available to the study. Hence, to justify the results achieved, additional robustness checks for concerns regarding the time window and the threshold chosen will be performed. Moreover, through the adoption of a set of robustness checks, the study will deal with the validity of the common trends assumption. Indeed, one usual concern when using a difference-in-differences model specification is that the results can be driven by pre-treatment trends and by the presence of confounding factors. The study will test this key assumption in different ways. First, a graphical inspection of the common trend assumption will be provided. Then, the graphical analysis will be complemented with placebo regressions by testing the effect of a "fake" treatment period prior to the actual treatment of becoming a parent.

## 6 Results

The main results for the difference-in-differences model implemented for the sample of women and men are reported in Table 6.1 and Table 6.2, respectively. The full results from the model, showing the controls for the background characteristics, education, relationship status and job characteristics, are provided in the appendix (Table A.6, Table A.7).

Column 1 considers all women/men of any educational background; column 2 includes women/men whose highest qualification achieved is a vocational qualification; column 3 comprises women/men with a general background. The sample includes employed women and men aged 18-47 between 2005 and 2015. Individuals with no qualifications and who are currently studying are excluded from the sample.

The results reported in this section are related to those mothers/fathers who had a child in year t=2010. Women/men who are childless throughout the all-sample period, constitute the control group. Women and men who had a child either between 2005 and 2009 or between 2011 and 2015 are excluded from the sample.

The main coefficient of interest,  $\beta$ , is the interaction term between the variable Treatment, which switches on when a child is born in 2010, and Time, which takes value one from 2010 on. In particular,  $\beta$  denotes whether the expected mean change in outcomes between the periods from before to after the birth of the baby in 2010, was any different between mothers/fathers and childless individuals.

Looking at the results for women (Table 6.1), one can notice that the variable Treatment has a positive and significant value both when the overall sample and the sample of women with a vocational highest qualification background are considered. The coefficient on Treatment is the estimated mean difference in the logarithm of

the monthly wage between the treatment and control groups prior to the "event". In other words, it represents the 'baseline' differences existing between the treatment and the control groups before the mothers and fathers had a child in 2010; thus, the model indicates that mothers have, on average, higher monthly earnings compared to non-mothers before the event of giving birth in 2010. The coefficient is not statistically significant, though still positive, for the sample of women with highest qualification as general qualifications.

The variable Time shows the expected mean change in the logarithm of the monthly wage from before to after the event (child born in 2010) among the control group. It reflects the pure effect of the passage of time among the control group. As one can observe the coefficient is negative and statistically significant only for the first and second columns, indicating a decrease in monthly earnings after 2010 for the overall sample of women and the sample of women with a vocational background, in the control group. This result is quite expected given that earnings are measured in real terms and that the year considered, 2010, was a period of falling real wages, after the 2007-2009 financial crises. Once again, the coefficient is positive but not statistically significant for women with a general qualification as their highest qualification.

Finally, Table 6.1 shows a negative and statistically significant difference-in-differences coefficient both if one considers all women or if the sample is restricted to only those having a vocational background as their highest qualification. Hence, giving birth in 2010 results in a further decrease in monthly earnings by 17% for all women and by 30% for women with a vocational qualification as the highest qualification. The coefficient is instead positive and not significant for women with a general background. These results are consistent with the main hypothesis of this study which supports the idea according to which women with a vocational background suffer from a larger motherhood wage penalty compared to those women having a general background. This is mainly due to the fact that skills acquired through vocational studies depreciate quicker and may require to be updated more often; consequently, a birth-related leave will have a higher cost in terms of human capital loss.

Table	6.1	Baseline	model	: DID	Log	Wage	Resu	lts-women
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	All women	<b>Vocational Education</b>	<b>General Education</b>
Treatment	$0.087^{***}$	$0.081^{**}$	0.051
	[0.030]	[0.032]	[0.064]
Time	-0.016*	$-0.020^{*}$	0.024
	[0.010]	[0.011]	[0.019]
Treatment* time	-0.171***	-0.298****	0.088
	[0.034]	[0.038]	[0.071]
<b>Background characteristics</b>	Yes	Yes	Yes
Education	Yes	Yes	Yes
Relationship status	Yes	Yes	Yes
Job Characteristics	Yes	Yes	Yes
Observations	14839	10041	4716
Adjusted $R^2$	0.565	0.523	0.640

Source: GSOEP; Standard errors in brackets; \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Table 6.2 shows the results for the difference-in-differences model implemented considering men by education type. The coefficients are small and positive but not statistically significant for all the categories considered, confirming what the previous literature suggests, that is the zero impact of a child's birth on the monthly earnings of fathers or, in some cases, the existence of a fatherhood wage premium. The Treatment coefficient is always negative, even though significant only for men with a vocational background, meaning that vocational fathers have on average lower monthly earnings compared to childless men before the "event" (becoming a father in 2010).

	All men	Vocational Education	<b>General Education</b>
Treatment	-0.034	-0.063*	0.033
	[0.032]	[0.035]	[0.075]
Time	-0.029***	-0.023**	-0.022
	[0.009]	[0.010]	[0.019]
Treatment*Time	0.041	0.045	0.024
	[0.035]	[0.038]	[0.080]
<b>Background characteristics</b>	Yes	Yes	Yes
Education	Yes	Yes	Yes
Relationship status	Yes	Yes	Yes
Job Characteristics	Yes	Yes	Yes
Observations	18296	12959	5143
Adjusted $R^2$	0.570	0.547	0.631

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Source: GSOEP; Standard errors in brackets; \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

One of the possible factors which could help to explain the different impact of motherhood and fatherhood on the monthly wage is the change in the average number of weekly working hours. Figure 6.1 shows the average weekly worked hours by gender distinguishing between mothers/fathers and childless individuals. The difference between fathers' and non-fathers' average weekly hours worked after the event is similar to the gap before the event, with the two lines moving in parallel after 2010 and with fathers working, on average, more hours on a weekly basis than non-fathers. Fathers seem to diverge from childless men in the year before the event where the average of the weekly worked hours slightly increases when compared to childless men.

On the contrary, women show a large decrease in the actual work time per week immediately after they give birth. Indeed, while before the event, mothers work, on average, more hours than non-mothers, the event of giving birth in 2010 drastically reduces the average hours worked, leading to the existence of a "motherhood hours penalty" which does not seem to close in the following years. The decrease starts from the pregnancy period and persists for several more years after the event.



Figure 6.1 Change in working hours by gender across time, before and after the event.

## 6.1 Robustness checks

In this section, the study will introduce several robustness checks to support the results of the baseline model presented in the previous section.

## **Different time windows**

First, the same difference-in-differences model is implemented, this time taking into consideration different time windows from the one analysed in the baseline model (2005-2015) while using the same threshold year (t=2010). In particular, the time before and after the "event" is reduced first from 5 to 4 years, and then to 3

years. The results for the sample of women considered by education type are shown in Table 6.3<sup>1</sup>. Columns 1, 2 and 3 of Table 6.3 refer to a period of time which goes from 2006 to 2014 (4 years before and 4 years after the "event"), while columns 4, 5 and 6 refer to years 2007-2013 (3 years before and 3 years after the "event").

Despite reducing the number of observations, the results (Table 6.3) are consistent and qualitatively similar to the main results. Specifically, giving birth in 2010 leads to a decrease in monthly earnings of 15% (2006-2014) and 12% (2007-2013) more for mothers than for non-mothers amongst all women and by 27% (2006-2014) and 24% (2007-2013) more for mothers than for non-mothers amongst those women with a vocational qualification as their highest qualification.

Table 6.3 Baseline model, different time windows - Women

	All women 2006-2014	Vocational Education 2006-2014	General Education 2006-2014	All women 2007-2013	Vocational Education 2007-2013	General Education 2007-2013
Treatment	$0.071^{**}$	$0.062^{*}$	0.046	0.045	0.021	0.065
	[0.033]	[0.035]	[0.069]	[0.036]	[0.040]	[0.076]
Time	-0.013	-0.016	0.018	-0.012	-0.011	0.006
	[0.011]	[0.012]	[0.021]	[0.012]	[0.014]	[0.025]
Treatment*Time	-0.146***	-0.272***	0.100	-0.119***	-0.240***	0.101
	[0.038]	[0.042]	[0.078]	[0.042]	[0.047]	[0.086]
Background	Yes	Yes	Yes	Yes	Yes	Yes
characteristics						
Education	Yes	Yes	Yes	Yes	Yes	Yes
<b>Relationship Status</b>	Yes	Yes	Yes	Yes	Yes	Yes
Job Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11873	8140	3673	9161	6330	2786
Adjusted R <sup>2</sup>	0.571	0.528	0.648	0.570	0.529	0.644

Source: GSOEP; Standard errors in brackets; \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Again, having a child does not have a statistically significant impact on men's monthly earnings (Table 6.4<sup>2</sup>). These tests show that the results achieved through the implementation of the baseline difference-indifferences are still persistent even after the time window considered for the analysis is reduced.

<sup>&</sup>lt;sup>1</sup> The results from the full model, including controls on the background characteristics, education, relationship status and job characteristics, are provided in the appendix Table A.8

<sup>&</sup>lt;sup>2</sup> The results from the full model, including controls on the background characteristics, education, relationship status and job characteristics, are provided in the appendix Table A.9

	All Men 2006-2014	Vocational Education 2006-2014	General Education 2006-2014	All Men 2007-2013	Vocational Education 2007-2013	General Education 2007-2013
Treatment	-0.043	-0.075**	0.044	-0.054	-0.073*	-0.001
	[0.035]	[0.037]	[0.079]	[0.038]	[0.041]	[0.086]
Time	-0.025**	-0.017	-0.021	-0.026**	-0.010	$-0.050^{**}$
	[0.010]	[0.011]	[0.021]	[0.011]	[0.012]	[0.024]
Treatment*Time	0.051	0.056	0.030	0.070*	0.053	0.113
	[0.037]	[0.041]	[0.085]	[0.041]	[0.045]	[0.091]
Background	Yes	Yes	Yes	Yes	Yes	Yes
characteristics						
Education	Yes	Yes	Yes	Yes	Yes	Yes
<b>Relationship Status</b>	Yes	Yes	Yes	Yes	Yes	Yes
Job characteristic	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14781	10589	4037	11557	8342	3092
Adjusted $R^2$	0.573	0.548	0.638	0.572	0.548	0.639

Source: GSOEP; Standard errors in brackets; \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

#### **Common trend assumption**

Second, a test of whether the common trend assumption is credibly maintained in this setting is provided. The aim is to compare changes in outcomes for the treatment and control groups before the "event". One usual concern when using the difference-in-differences model is that results can be driven by differences in preevent trends between treatment and control groups or by confounding factors. For this reason, a graphical inspection is provided. The graphical analysis of the common trend assumption, in the basic difference-indifferences framework, requires both groups to follow a parallel path prior to the event. The figure below shows the trend of the logarithm of monthly earnings by gender and for both treatment and control groups across years. The lines move in parallel before the event, for both genders when the visual inspection is made on the logarithm of the real monthly earnings (Figure 6.2)<sup>3</sup>. The only exception is in 2009 when a small divergence in trends is noticed, particularly for men. This is quite expected given that the event (giving birth to a child) manifests its effects already 9 months before, during the pregnancy period.

For this reason, one can conclude that the visual inspections performed may give more confidence about the credibility of the common trend assumption.

<sup>&</sup>lt;sup>3</sup> A visual inspection of the common trend of the raw data on real monthly earnings can be found in Appendix B (Figure B.1). Figure B.2 provides instead a visual inspection on the common trend for the sub-sample of women classified accordingly to their educational background.



Figure 6.2 Common trend: Logarithm of the monthly wage by gender

#### Placebo test

Third, the visual inspection of the common trend is complemented with placebo regressions. The purpose is to test if there is an effect even where not expected, in the absence of treatment. This study implements placebo tests using previous periods, by shortening the sample period up to the year before the event, and by generating a fake dummy variable Time. In particular, in Table 6.5 (women) and Table 6.6 (men) <sup>4</sup> a fake dummy Time2006, which switches to one from 2006 on, is included. Columns 1, 2 and 3 consider a sample period from 2005 to 2008, while Columns 4, 5 and 6 consider a sample period from 2005 to 2009. The results related to the difference-in-differences coefficient show that there are no statistically significant coefficients in any specifications, suggesting that there are no significant variations in monthly earnings trends between treatment and control groups before treatment occurs.

	All women 2005-2008	Vocational Education 2005-2008	General Education 2005-2008	All women 2005-2009	Vocational Education 2005-2009	General Education 2005-2009
Treatment	0.158**	0.174**	0.036	0.157***	0.174**	0.033
	[0.067]	[0.070]	[0.160]	[0.061]	[0.070]	[0.162]
Time2006	-0.042**	-0.039*	-0.041	-0.039**	-0.041**	-0.032
	[0.019]	[0.020]	[0.042]	[0.018]	[0.020]	[0.041]
Treatment*Time2006	-0.059	-0.056	-0.029	-0.092	-0.104	-0.009
	[0.076]	[0.080]	[0.179]	[0.067]	[0.078]	[0.176]
Background	Yes	Yes	Yes	Yes	Yes	Yes
characteristics						
Education	Yes	Yes	Yes	Yes	Yes	Yes
<b>Relationship status</b>	Yes	Yes	Yes	Yes	Yes	Yes
Job Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4365	3186	1167	5543	4015	1514
Adjusted $R^2$	0.589	0.549	0.672	0.585	0.550	0.654

Table 6.5 Placebo test with a fake dummy time 2006- Women

Source: GSOEP; Standard errors in brackets; \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

<sup>&</sup>lt;sup>4</sup> The full results, including controls on the background characteristics, education, relationship status and job characteristics, are provided in the appendix Table A.10 and A.11

#### Table 6.6 Placebo test with a fake dummy time 2006- Men

	All Men 2005- 2008	Vocational Education 2005-2008	General Education 2005-2008	All Men 2005-2009	Vocational Education 2005-2009	General Education 2005-2009
Treatment	0.019	0.001	-0.003	0.014	-0.004	0.007
	[0.090]	[0.092]	[0.244]	[0.085]	[0.091]	[0.245]
Time2006	-0.022	-0.021	-0.027	-0.033*	-0.029	-0.044
	[0.018]	[0.019]	[0.041]	[0.017]	[0.018]	[0.040]
Treatment*Time2006	-0.090	-0.099	0.015	-0.073	-0.089	0.037
	[0.100]	[0.103]	[0.266]	[0.091]	[0.098]	[0.259]
Background	Yes	Yes	Yes	Yes	Yes	Yes
characteristic						
Education	Yes	Yes	Yes	Yes	Yes	Yes
<b>Relationship status</b>	Yes	Yes	Yes	Yes	Yes	Yes
Job characteristic	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5497	4123	1341	6917	5190	1685
Adjusted $R^2$	0.542	0.549	0.568	0.547	0.559	0.567

Source: GSOEP; Standard errors in brackets; \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

### **Different time-period**

As mentioned in the previous section, the peculiarity of this difference-in-differences model is that both the treatment and the control group are not defined by the implementation of a policy or a program. The year t (2010) used as a threshold in this analysis is chosen arbitrarily. The fact that the year used as a threshold is chosen arbitrarily may raise some concerns. For this reason, to reduce any residual doubts about the arbitrary time t used in this analysis, we perform the same baseline model using different combinations of time-windows associated with different thresholds. In Table 6.7 the model considers a time-window 2005-2013 and the event analysed is "giving birth in 2009". In Table 6.8 the time window studied is 2007-2015 and the event is "giving birth in 2011". In Table 6.9 the time window is 2005-2011 while the event is "giving birth in 2008" and finally Table 6.10 <sup>5</sup> looks at years 2009-2015 considering "giving birth in 2012" as the event. Results are reported for both women and men.

While the effect of fatherhood on men is, again, not statistically significant (with some exceptions, e.g. Table 6.7 men with vocational education), once again, the results, derived from our baseline model related to women, are confirmed: women with a vocational background show always a greater motherhood wage gap if compared to women with a general background, who instead show a non-statistically significant difference-in-differences coefficient.

<sup>&</sup>lt;sup>5</sup> Full results reported in Table A.12, A.13, A.14, A.15 in the Appendix

## Table 6.7 DID Treatment= giving birth in 2009 (2005-2013)

	All Women	Women Vocational Education	Women General Education	All Men	Men Vocational Education	Men General Education
Treatment	0.004	-0.023	0.047	-0.011	-0.079**	$0.208^{**}$
	[0.034]	[0.037]	[0.070]	[0.033]	[0.035]	[0.084]
Time	-0.021*	-0.026**	0.011	-0.047***	-0.034***	-0.062***
	[0.011]	[0.012]	[0.022]	[0.010]	[0.011]	[0.021]
Treatment*Time	-0.152***	-0.253***	0.042	0.037	0.076*	-0.118
	[0.039]	[0.043]	[0.079]	[0.036]	[0.039]	[0.090]
Background	Yes	Yes	Yes	Yes	Yes	Yes
characteristics						
Education	Yes	Yes	Yes	Yes	Yes	Yes
<b>Relationship Status</b>	Yes	Yes	Yes	Yes	Yes	Yes
Job Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11901	8303	3541	14755	10749	3872
Adjusted $R^2$	0.566	0.528	0.638	0.569	0.554	0.621

Source: GSOEP; Standard errors in brackets; \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

## Table 6.8 DID Treatment: giving birth in 2011 (2007-2015)

	All	Women	Women	All Men	Men	Men General
	Women	Vocational	General		Vocational	Education
		Education	Education		Education	
Treatment	$0.097^{***}$	0.056	0.143**	$0.066^{**}$	0.095***	-0.031
	[0.034]	[0.037]	[0.071]	[0.032]	[0.036]	[0.065]
Time	-0.005	-0.010	0.032	$-0.017^{*}$	-0.006	-0.022
	[0.011]	[0.012]	[0.021]	[0.010]	[0.011]	[0.020]
Treatment*Time	-0.110***	-0.184***	-0.025	-0.012	-0.015	0.047
	[0.041]	[0.046]	[0.082]	[0.037]	[0.042]	[0.073]
Background	Yes	Yes	Yes	Yes	Yes	Yes
characteristics						
Education	Yes	Yes	Yes	Yes	Yes	Yes
<b>Relationship status</b>	Yes	Yes	Yes	Yes	Yes	Yes
Job characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11904	7943	3895	14556	10199	4219
Adjusted $R^2$	0.569	0.520	0.643	0.572	0.545	0.642

Source: GSOEP; Standard errors in brackets; \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

## Table 6.9 DID Treatment= giving birth in 2008 (2005-2011)

	All Women	Women Vocational Education	Women General Education	All Men	Men Vocational Education	Men General Education
Treatment	0.015	-0.018	0.111	-0.034	-0.025	-0.115
	[0.039]	[0.042]	[0.085]	[0.039]	[0.041]	[0.093]
Time	-0.029**	-0.031**	-0.017	-0.031***	-0.029**	-0.024
	[0.012]	[0.013]	[0.025]	[0.011]	[0.012]	[0.025]
Treatment*Time	-0.136***	-0.200***	0.018	0.019	-0.028	0.197**
	[0.047]	[0.051]	[0.101]	[0.043]	[0.046]	[0.100]
Background	Yes	Yes	Yes	Yes	Yes	Yes
characteristics						
Education	Yes	Yes	Yes	Yes	Yes	Yes
<b>Relationship Status</b>	Yes	Yes	Yes	Yes	Yes	Yes
Job characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8934	6362	2545	10938	8038	2811
Adjusted $R^2$	0.569	0.531	0.643	0.557	0.553	0.601

Source: GSOEP; Standard errors in brackets; \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Table 6.10 DID Treatment=	e giving birth in 2012 -	(2009-2015)
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	All Womon	Women Vocational	Women	All Men	Men Vocational	Men General
	women	Education	Education		Education	Education
Treatment	0.018	-0.045	$0.118^{*}$	0.119***	$0.098^{**}$	0.184***
	[0.037]	[0.044]	[0.066]	[0.035]	[0.040]	[0.068]
Time	0.001	0.005	0.016	-0.007	-0.007	0.009
	[0.012]	[0.014]	[0.022]	[0.011]	[0.013]	[0.022]
Treatment*Time	-0.125***	-0.175***	-0.096	-0.046	-0.018	-0.088
	[0.047]	[0.057]	[0.081]	[0.041]	[0.048]	[0.077]
Background	Yes	Yes	Yes	Yes	Yes	Yes
characteristic						
Education	Yes	Yes	Yes	Yes	Yes	Yes
Relationship status	Yes	Yes	Yes	Yes	Yes	Yes
Job characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9511	6185	3266	11438	7868	3451
Adjusted R2	0.572	0.515	0.651	0.582	0.546	0.656

Source: GSOEP; Standard errors in brackets; \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

### Fixed effects model

The difference-in-differences model discussed so far has the drawback of relying on a non-exogenous event. Hence, it could be subject to criticism of unobserved selection effects into the treatment group.. To support the robustness of the previous findings, the wage penalty for motherhood was also estimated using a fixed-effects panel data regression model.

More specifically:

$$lny_{it} = \alpha_0 + \alpha_1 Age_{it} + \alpha_2 Age_{it}^2 + \beta Mother_{it} + \gamma X_{it} + v_i + \varepsilon_{it}$$
<sup>(2)</sup>

Equation 2 relates the logarithm of the monthly wage observed for respondent i at time t to a set of covariates. The key interest is the estimation of parameter  $\beta$  that provides the wage penalty for motherhood keeping constant a set of covariates through the vector X<sub>it</sub>. Mother is a dummy variable that will switch to one when the woman will give birth to a child at any point in time. Hence, the model will focus on the motherhood wage gap by taking into consideration women who give birth at any point in time.

Table 6.11 and 6.12<sup>6</sup> report the main results for both women and men by education type. The coefficient of interest is mother/father, a binary variable which takes value one if the individual has a child, zero otherwise.

<sup>&</sup>lt;sup>6</sup> Full results reported in Table A.16, A.17 in the Appendix

Hence, while the baseline difference-in-differences models implemented previously looked at the effect of giving birth to a child in a particular year t, the fixed effects model performed now analyses the effect on the monthly wage for births in all years. As shown, motherhood is consistently associated with a significant wage penalty for the overall sample and women with a vocational background. Consistent with the main hypothesis of this study, the motherhood wage penalty is found again to be highest among women with a vocational background, with a 20% decrease in monthly earnings. The overall sample reports, instead, a decrease in earnings of 14%. Again, no significant effects are found for fathers.

All women	Vocational Education	<b>General Education</b>
-0.141***	-0.197***	-0.030
[0.017]	[0.019]	[0.033]
Yes	Yes	Yes
22439	15254	7067
0.002	-0.078	-0.017
	All women -0.141*** [0.017] Yes Yes Yes Yes 22439 0.002	All womenVocational Education-0.141***-0.197***[0.017][0.019]YesYesYesYesYesYesYesYesYesYesYesYesYournerYesYesYesYesYesYournerYesYesYesYournerYes <tr< td=""></tr<>

Source: GSOEP; Standard errors in brackets; \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Table 6.12 Fixed Effects Log Earnings Results- Men (2005-2015)	

	All men	<b>Vocational Education</b>	<b>General Education</b>
Father	0.002	-0.009	0.039
	[0.013]	[0.015]	[0.026]
<b>Background characteristics</b>	Yes	Yes	Yes
Education	Yes	Yes	Yes
Relationship Status	Yes	Yes	Yes
Job Characteristics	Yes	Yes	Yes
Observations	27409	19193	7868
Adjusted $R^2$	0.104	0.030	0.027

Source: GSOEP; Standard errors in brackets; \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

# 7 Conclusion

Using German GSOEP data for 2005-2015, this study examines the impact of the birth of a child on mothers' and fathers' monthly earnings, documenting a significant wage penalty for mothers, while registering no impact on men's earnings. This study, for the first time, applies an innovative difference-and-differences model

using the birth of a child in year t as an event generating two groups, that is the control group, made of childless women/men, and a treatment group, consisting of those mothers/ fathers who had a child in year t.

In particular, the baseline analysis setting uses t=2010 as the threshold-year. Results show that giving birth in 2010 leads to a 17% decrease in mothers' monthly earnings compared to childless women; the coefficient of interest is, instead, positive but not statistically significant for men. Results are still coherent and robust if different time frames and different thresholds are adopted to perform the same analysis.

One possible explanation which may help to understand the reason for such a distinct impact of motherhood and fatherhood on earnings might be the different responses of women and men in terms of changes in the total amount of weekly working hours after the event. While fathers' average weekly hours worked after the event does not reveal a substantial change compared to childless men, the average of mothers' weekly working hours drastically decreases compared to the average of childless women.

The study takes this analysis a step further by investigating a possible correlation between human capital skills depreciation and the motherhood wage gap. The main assumption relies on the human capital theory according to which women suffer from a motherhood wage gap because birth-related leave and, in general, career interruptions, lead to human capital depreciation and lost work experience. In this context, in order to analyse the impact of human capital depreciation on earnings, the study exploits, for the first time, the difference between skills acquired though a vocational educational path versus those developed following a general one, as one of the keys factors to help to shed light on the motherhood wage gap. Given that skills acquired through vocational studies depreciate quicker and may require to be updated more often, this study supports the hypothesis that a birth-related leave will have a higher cost in terms of human capital loss for those women with a vocational qualification when compared with those having a general one. The hypothesis is confirmed by the results which uncover a 30% larger decrease in monthly earnings for women with a vocational qualification. The coefficient is instead positive and not significant for women with a general background. Once again, the same conclusions can be reached if different time windows and thresholds are used to perform the same analysis.

In conclusion, the results achieved in this analysis confirm previous results in the literature in regards to the negative effect of the motherhood wage gap, arguing for the first time that part of this gap could be affected by the different rates of skills depreciation.

Given the proven existence of a wage penalty for women who decide to have a child, the country's institutional environment must change by improving family and market labour systems. In particular, as already proven by recent studies, a change in the welfare system, which financially supports mothers, could be beneficial for mothers who intend to keep working after childbirth. Ensuring job security (Hegewisch and Gornick 2013), paid maternity leave (De Henau, Meulders et al. 2007), providing child care (Pettit and Hook 2009) and ensuring job flexibility (Neuburger, Joshi et al. 2010) may be much-needed steps to reduce the motherhood wage gap and ensure gender equality.

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# APPENDIX A

Variable	Category	Description
Age	Background characteristics	Continuous-variable in years
West	Background characteristics	Binary variable (0, 1). 1 if the individual is resident in West Germany; 0 otherwise.
Female	Background characteristics	Binary variable (0, 1). 1 if the individual is female; 0 otherwise
No-migration background	Background characteristics	Binary variable (0, 1). 1 if the individual has no migration background; 0 otherwise.
Second-generation background	Background characteristics	Binary variable (0, 1). 1 if the individual has a second- generation migration background; 0 otherwise.
Migration background	Background characteristics	Binary variable (0, 1). 1 if the individual is an immigrant; 0 otherwise.
Good_health	Background characteristics	Binary variable (0, 1). 1 if the individual has a rather good health status; 0 otherwise.
Mother	Background characteristics	Binary variable (0, 1). 1 if the individual has a child; 0 otherwise.
Father	Background characteristics	Binary variable (0, 1). 1 if the individual has a child; 0 otherwise.
Single	Relationship status	Binary variable (0, 1). 1 if the reference person has no partner; 0 otherwise
Married	Relationship status	Binary variable (0, 1). 1 if the reference person has a partner; 0 otherwise
Divorced/Separated	Relationship status	Binary variable (0, 1). 1 if the reference is legally divorced or separated; 0 otherwise
Widowed	Relationship status	Binary variable (0, 1). 1 if the reference is widowed; 0 otherwise
Years of Education	Educational background	Continuous and centered variable <sup>7</sup> (in years)
Vocational	Educational background	Binary variable $(0, 1)$ . 1 if the respondent has any vocational qualification as highest qualification achieved; 0 otherwise
Level 1 Vocational	Educational background	Binary variable (0, 1). 1 if the respondent has a level 1 vocational qualification as highest qualification achieved; 0 otherwise
Level 1 Academic	Educational background	Binary variable (0, 1). 1 if the respondent has a level 1 academic qualification as highest qualification achieved; 0 otherwise

Table A.1 Definition of the variables used in the analysis.

<sup>&</sup>lt;sup>7</sup> For ease of interpretation, the age variable is centered, and it is derived by subtracting the mean age from all the observations related to age in the dataset such that the new mean age is zero.

Level 2 Vocational	Educational background	Binary variable (0, 1). 1 if the respondent has a level 2 vocational qualification as highest qualification achieved; 0 otherwise
Level 2 Academic	Educational background	Binary variable (0, 1). 1 if the respondent has a level 2 academic qualification as highest qualification achieved; 0 otherwise
Level 3 Vocational	Educational background	Binary variable (0, 1). 1 if the respondent has a level 3 vocational qualification as highest qualification achieved; 0 otherwise
Level 3 Academic	Educational background	Binary variable (0, 1). 1 if the respondent has a level 3 academic qualification as highest qualification achieved; 0 otherwise
Level 4 Vocational	Educational background	Binary variable (0, 1). 1 if the respondent has a level 4 vocational qualification as highest qualification achieved; 0 otherwise
Level 4 Academic	Educational background	Binary variable (0, 1). 1 if the respondent has a level 4 academic qualification as highest qualification achieved; 0 otherwise
Employed	Job characteristics	Binary variable (0, 1). 1 if the individual is employed; 0 otherwise
Monthly wage	Job characteristics	Continuous variable, in Euros
Manager /Professional	Job characteristics	Binary variable (0, 1). 1 if the respondent works as a manager or professional; 0 otherwise
Clerks/Service workers	Job characteristics	Binary variable (0, 1). 1 if the respondent works as clerk or service worker; 0 otherwise
Agricultural/Craft/Machine operators	Job characteristics	Binary variable (0, 1). 1 if the respondent works as a skilled agricultural worker, craft or machine operators; 0 otherwise
Elementary occupations	Job characteristics	Binary variable (0, 1). 1 if the respondent has an elementary occupation; 0 otherwise
Full-time	Job characteristics	Binary variable (0, 1). 1 if the respondent works full-time; 0 otherwise
Self-employed	Job characteristics	Binary variable (0, 1). 1 if the respondent is self-employed; 0 otherwise
Full-time experience	Job characteristics	Continuous-variable in years.
Part-time experience	Job characteristics	Continuous-variable in years.
Public-Sector	Job characteristics	Binary variable (0, 1). 1 if the respondent works in a public sector; 0 otherwise

Table A.2 Descriptive statistics (women sample)

· · · · · ·		Mothers		Γ	Non-mothers	
Variable	Ν	Mean	SD	Ν	Mean	SD
Employed	15005	0.527	0.499	22736	0.745	0.436
Monthly wage	7799	1742.710	1304.390	16805	2009.438	1389.788
Age	17827	32.708	5.792	29853	27.593	7.787
Years of education	14574	12.804	2.825	20398	12.812	2.632
Vocational education Married	17167 15312	0.641 0.698	0.480 0.459	26798 23281	0.576 0.154	0.494 0.361
Divorced	15312	0.054	0.226	23281	0.037	0.190
Widowed	15312	0.002	0.039	23281	0.001	0.038
Single	15312	0.246	0.431	23281	0.807	0.395
Good health	14998	0.908	0.289	22820	0.908	0.289
Manager/Professional	7526	0.578	0.494	16063	0.562	0.496
Clerks/Service	7526	0.324	0.468	16063	0.354	0.478
Agri/Craft/Machine	7526	0.046	0.209	16063	0.051	0.221
Elementary occupation	7526	0.052	0.223	16063	0.033	0.178
Full time	7920	0.309	0.462	17055	0.772	0.419
West	17799	0.804	0.397	29718	0.831	0.375
Public sector	7392	0.249	0.432	16110	0.268	0.443
Work experience FT	14602	5.733	5.177	22579	4.904	6.858
Work experience PT	14602	2.005	2.756	22579	1.363	2.633
No migration background	17800	0.666	0.472	29784	0.751	0.433
Second generation	17800	0.105	0.306	29784	0.141	0.348
Migrant	17800	0.229	0.420	29784	0.109	0.311

Note: The tables show averages of person-year observations, using GSOEP data for women aged 18 to 47, and considering a time frame 2005-2015. Individuals with no qualifications are excluded from the sample.

Table A.3 Descriptive	statistics (	(men sample)
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		Fathers			Non-fathers	
Variable	Ν	Mean	SD	Ν	Mean	SD
Employed	11910	0.896	0.305	26367	0.748	0.434
Monthly wage	10451	3278.484	1725.906	19545	2330.321	1611.852
Age	14995	35.437	5.764	35220	28.546	8.149
Years of education	11655	12.638	2.942	23691	12.293	2.579
Vocational education	13841	0.670	0.470	31619	0.618	0.486
Married	12139	0.779	0.415	26906	0.125	0.331
Divorced	12139	0.034	0.181	26906	0.036	0.186
Widowed	12139	0.001	0.033	26906	0.001	0.036
Single	12139	0.186	0.389	26906	0.838	0.368
Good health	11902	0.918	0.275	26433	0.928	0.259
Manager/Professional	10400	0.514	0.500	18587	0.423	0.494
Clerks/Service	10400	0.110	0.313	18587	0.164	0.370
Agri/Craft/Machine	10400	0.327	0.469	18587	0.356	0.479
Elementary occupation	10400	0.050	0.217	18587	0.057	0.231
Full time	10680	0.926	0.262	19842	0.879	0.327
West	14967	0.815	0.388	35069	0.794	0.404
Public sector	10178	0.162	0.369	18470	0.156	0.363
Work experience FT	11551	11.150	6.413	26126	5.789	7.269
Work experience PT	11551	0.861	2.201	26126	0.810	1.877
No migration background	14938	0.671	0.470	35157	0.760	0.427
Second generation	14938	0.107	0.309	35157	0.135	0.341
Migrant	14938	0.222	0.416	35157	0.106	0.307

The tables show averages of person-year observations, using GSOEP data for men and men aged 18 to 47, and considering a time frame 2005-2015. Individuals with no qualifications are excluded from the sample.

	AGE: 18-47		
Log Monthly Wage	Mothers	Non-mothers	Difference
Total	7.153	7.311	-0.158***
Vet qualification	7.080	7.409	-0.329***
General qualification	7.329	7.191	0.138***
Difference	-0.249***	0.218***	
	AGE: 18-27		
Log Monthly Wage	Mothers	Non-mothers	Difference
Total	6.635	6.875	-0.240***
Vet qualification	6.776	7.054	-0.278***
General qualification	6.364	6.594	-0.230***
Difference	0.412***	0.460***	
	AGE: 28-37		
Log Monthly Wage	Mothers	Non-mothers	Difference
Total	7.134	7.672	-0.538***
Vet qualification	7.066	7.689	-0.623***
General qualification	7.328	7.665	-0.337***
Difference	-0.262 ***	0.024	
	AGE: 38-47		
Log Monthly Wage	Mothers	Non-mothers	Difference
Total	7.415	7.819	-0.404***
Vet qualification	7.267	7.808	-0.541***
General qualification	7.638	7.911	-0.273**
Difference	-0 371***	-0 103***	

Table A.4 Descriptive analysis of the monthly wage by education type (women)

Note: The table provides descriptive statistics on the monthly wage of employed women across different age ranges and by educational background. The second and the third columns report the mean of the logarithm of the monthly wage for mothers and non-mothers The last column provides a t-test for the difference in means of the dependent variable between mothers and childless individuals.

Source: GSOEP; \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

## Table A.5 Descriptive analysis of the monthly wage by education type (men)

	AGE: 18-47		
Log Monthly Wage	Fathers	Non-Fathers	Difference
Total	7.929	7.454	0.475 ***
Vet qualification	7.915	7.501	0.414 ***
General qualification	8.008	7.408	0.600 ***
Difference	-0.093 ***	-0.093 ***	
	AGE: 18-27		
Log Monthly Wage	Fathers	Non-Fathers	Difference
Total	7.338	6.930	0.408 ***
Vet qualification	7.442	7.039	0.403***
General qualification	7.124	6.718	0.406* **
Difference	0.318 ***	0.321 ***	
	AGE: 28-37		
Log Monthly Wage	Fathers	Non-Fathers	Difference
Total	7.879	7.776	0.103 ***
Vet qualification	7.873	7.793	0.080***
General qualification	7.939	7.785	0.154***
Difference	-0.066**	0.008	
	AGE: 38-47		
Log Monthly Wage	Fathers	Non-Fathers	Difference
Total	8.115	7.982	0.133***
Vet qualification	8.068	7.939	0.129***
General qualification	8.247	8.141	0.106***
Difference	-0 179***	-0 202**	

Note: The table provides descriptive statistics on the monthly wage of employed men across different age ranges and by educational background. The second and the third columns report the mean of the logarithm of the monthly wage for fathers and non-fathers The last column provides a t-test for the difference in means of the dependent variable between fathers and childless individuals. Source: GSOEP;, \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Table A. 6 Baseline	e model: DID Log	g Wage Results-women
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	All women	Vocational Education	General Education
Treatment	0.087***	0.081**	0.051
	[0.030]	[0.032]	[0.064]
Time	-0.016*	-0.020*	0.024
	[0.010]	[0.011]	[0.019]
Treatment* time	-0.171***	-0.298***	0.088
	[0.034]	[0.038]	[0.071]
Age	0.011***	0.005**	0.019***
5	[0.002]	[0.002]	[0.003]
Age squared	-0.003***	-0.003***	-0.002***
	[0.000]	[0.000]	[0.000]
Good health	0.026	0.019	0.034
	[0.016]	[0.018]	[0.033]
Education			
Level 1 Vet	-0.223***	-0.321***	
	[0.023]	[0.023]	
Level 2 Vet	-0.242***	-0.315***	
	[0.018]	[0.018]	
Level 3 Vet	-0.118***	-0.192***	
	[0.020]	[0.019]	
Level 1 Acad	-0.398***		-0.450***
	[0.034]		[0.040]
Level 2 Acad	-0.255***		-0.298***
	[0.034]		[0.039]
Level 3 Acad	-0.501***		-0.562***
	[0.023]		[0.028]
Level 4 Acad	0.110***		
	[0.019]		
Relationship status			
Married/Relationship	0.012	0.045***	-0.074***
	[0.013]	[0.015]	[0.025]
Separated/Divorced	0.009	0.065***	-0.177***
	[0.023]	[0.025]	[0.049]
Widowed	-0.114	0.004	-0.939***
	[0.108]	[0.108]	[0.339]
Job characteristics			
Manager/Professional	0.623***	0.547***	0.673***
	[0.026]	[0.032]	[0.046]
Clerk/Service	$0.407^{***}$	0.365***	$0.418^{***}$
	[0.026]	[0.032]	[0.046]
Agri/Craft/Machine	$0.227^{***}$	0.237***	0.163***
	[0.031]	[0.037]	[0.063]
Full time	$0.690^{***}$	$0.620^{***}$	$0.764^{***}$
	[0.013]	[0.016]	[0.021]
Work Experience PT	$0.008^{***}$	0.011****	$0.007^{**}$
	[0.002]	[0.003]	[0.003]
Work Experience FT	0.031***	0.035***	0.031***
	[0.002]	[0.002]	[0.003]
Self employed	-0.174***	-0.117***	-0.256***
	[0.022]	[0.029]	[0.035]
Constant	6.480***	6.660***	6.420***
	[0.037]	[0.044]	[0.063]
Observations	14839	10041	4716
Adjusted $R^2$	0.565	0.523	0.640

Standard errors in brackets; Source: GSOEP; \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

	All men	Vocational Education	General Education
Tractor ant	0.024	0.062*	0.022
Ireatment	-0.034	-0.003	0.035
Time	$\begin{bmatrix} 0.052 \end{bmatrix}$	[0.033]	[0.073]
	-0.029	-0.023	-0.022
Treatment*Time	[0.009] 0.041	0 045	0 024
Treatment Time	[0.035]	[0 038]	[0.024
Age	0.015***	0.006***	0.028***
1.50	[0 001]	[0 002]	[0 003]
Age squared	-0.003***	-0.003***	-0.002***
ngo squarou	[0.000]	[000.0]	[0.000]
Good health	0.095***	0.076***	0.068*
	[0.017]	[0.018]	[0.037]
Education	[0:01/]	[0:010]	[00027]
Level 1 Vet	-0.176***	-0.294***	
	[0.019]	[0.020]	
Level 2 Vet	-0.270***	-0.378***	
	[0.017]	[0.018]	
Level 3 Vet	-0.092***	-0.186***	
	[0.019]	[0.019]	
Level 1 Acad	-0.403***		-0.558***
	[0.026]		[0.032]
Level 2 Acad	-0.083**		-0.244***
	[0.032]		[0.038]
Level 3 Acad	-0.403***		-0.586***
	[0.021]		[0.025]
Level 4 Acad	0.158***		
	[0.019]		
Relationship status			
Married/Relationship	$0.068^{***}$	0.063***	$0.069^{***}$
	[0.012]	[0.014]	[0.025]
Separated/Divorced	-0.035	-0.046*	0.072
	[0.022]	[0.023]	[0.053]
Widowed	0.008	0.049	-0.236
	[0.112]	[0.108]	[0.591]
Job characteristic			
Managan/Drafassianal	0.206***	0.265***	0.252***
Manager/Frotessional	0.390	0.303	[0.037]
Clerk/Service	0.161***	0.152***	$\begin{bmatrix} 0.037 \end{bmatrix}$ 0.127***
CICIK/SCIVICC	[0 020]	[0 024]	[0 038]
Agric/Craft/Machine	0.185***	0.168***	0 191***
	[0 019]	[0 022]	[0 038]
Full time	0.915***	0.950***	0.883***
i un_time	[0 016]	[0 022]	[0 024]
Working Experience PT	-0.003	0.005	-0.009**
working Experience I I	[0 002]	[0 003]	[0 004]
Working Experience FT	0.028***	0.037***	0.014***
5	[0.002]	[0.002]	[0.003]
Self Employed	-0.129***	-0.119***	-0.154***
1 5	[0.016]	[0.020]	[0.028]
Constant	6.561***	6.604***	6.823***
	[0.033]	[0.039]	[0.060]
Observations	18296	12959	5143
Adjusted R2	0.570	0.547	0.631

Table A. 7 Baseline model: DID Log Wage Results-Men

Standard errors in brackets, Source: GSOEP, \*p < 0.10, \*\*p < 0.05, \*\*\*p < 0.01

	All women	Vocational	General	All women	Vocational	General
	2006-2014	Education	Education	2007-2013	Education	Education
		2006-2014	2006-2014		2007-2013	2007-2013
Treatment	$0.071^{**}$	$0.062^{*}$	0.046	0.045	0.021	0.065
	[0.033]	[0.035]	[0.069]	[0.036]	[0.040]	[0.076]
Time	-0.013	-0.016	0.018	-0.012	-0.011	0.006
	[0.011]	[0.012]	[0.021]	[0.012]	[0.014]	[0.025]
Treatment*Time	-0.146***	-0.272***	0.100	-0.119***	-0.240***	0.101
	[0.038]	[0.042]	[0.078]	[0.042]	[0.047]	[0.086]
Age	$0.011^{***}$	$0.005^{**}$	$0.018^{***}$	0.013***	$0.007^{**}$	$0.019^{***}$
	[0.002]	[0.002]	[0.003]	[0.002]	[0.003]	[0.004]
Age squared	-0.003***	-0.003***	-0.002***	-0.003***	-0.003***	-0.002***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Good health	0.020	0.022	0.009	0.022	0.021	0.020
	[0.018]	[0.020]	[0.037]	[0.020]	[0.022]	[0.043]
Education						
Level 1 Vet	-0.223***	-0.318***		-0.214***	-0.309***	
	[0.026]	[0.025]		[0.029]	[0.029]	
Level 2 Vet	-0.244***	-0.315***		-0.250***	-0.321***	
	[0.020]	[0.020]		[0.023]	[0.023]	
Level 3 Vet	-0.119***	-0.190***		-0.126***	-0.198***	
	[0.022]	[0.021]		[0.025]	[0.024]	
Level 1 Acad	-0.403***		-0.460***	-0.403***		-0.452***
	[0.038]		[0.046]	[0.044]		[0.053]
Level 2 Acad	-0.268***		-0.320***	-0.288***		-0.330***
	[0.038]		[0.044]	[0.043]		[0.051]
Level 3 Acad	-0.522***		-0.594***	-0.543***		-0.609***
	[0.025]		[0.031]	[0.029]		[0.036]
Level 4 Acad	0.122***			0.115***		2 3
	[0.021]			[0.024]		
<b>Relationship status</b>						
Married/Relationship	0.012	$0.042^{**}$	-0.064**	0.013	0.043**	$-0.058^{*}$
-	[0.015]	[0.016]	[0.029]	[0.017]	[0.019]	[0.034]
Separated/Divorced	0.012	$0.068^{**}$	-0.191***	-0.003	$0.066^{**}$	-0.235***
1	[0.025]	[0.027]	[0.055]	[0.029]	[0.031]	[0.064]
Widowed	-0.192	-0.061	-0.939***	-0.249*	-0.116	-0.954**
	[0.119]	[0.121]	[0.338]	[0.136]	[0.137]	[0.415]
Job characteristic						2 3
Manager/Professional	$0.602^{***}$	0.493***	$0.688^{***}$	$0.614^{***}$	$0.490^{***}$	$0.709^{***}$
	[0.030]	[0.037]	[0.056]	[0.035]	[0.042]	[0.066]
Clerk/Service	0.394***	0.314***	0.443***	$0.411^{***}$	$0.317^{***}$	$0.462^{***}$
	[0.030]	[0.037]	[0.055]	[0.035]	[0.042]	[0.065]
Agric/Craft/Machine	0.194***	$0.167^{***}$	0.166**	$0.200^{***}$	$0.146^{***}$	0.201**
-	[0.036]	[0.042]	[0.072]	[0.041]	[0.048]	[0.084]
Full time	0.699***	0.634***	0.764***	$0.698^{***}$	0.636***	$0.757^{***}$
	[0.014]	[0.018]	[0.024]	[0.016]	[0.020]	[0.028]
Working Experience PT	$0.010^{***}$	0.011***	$0.010^{***}$	$0.010^{***}$	$0.010^{***}$	0.011**
	[0.002]	[0.003]	[0.004]	[0.003]	[0.004]	[0.004]
Working Experience FT	0.032***	0.035***	0.032***	0.030***	0.033***	0.030***
	[0.002]	[0.002]	[0.004]	[0.002]	[0.003]	[0.004]
Self Employed	-0.164***	-0.131***	-0.215***	-0.167***	-0.164***	-0.186***
	[0.025]	[0.032]	[0.038]	[0.028]	[0.036]	[0.044]
Constant	6.488***	6.694***	6.418***	6.496***	6.718***	6.403***
	[0.042]	[0.049]	[0.074]	[0.048]	[0.056]	[0.087]
Observations	11873	8140	3673	9161	6330	2786
Adjusted $R^2$	0.571	0.528	0.648	0.570	0.529	0.644

Table A. 8 Baseline model, different time windows - Women

Standard errors in brackets Source: GSOEP, \*p < 0.10, \*\*p < 0.05, \*\*\*p < 0.01

	All Men	Vocational	General	All Men 2007-	Vocational	General
	2006-	Education	Education	2013	Education	Education
	2014	2006-2014	2006-2014		2007-2013	2007-2013
Treatment	-0.043	-0.075**	0.044	-0.054	-0.073*	-0.001
	[0.035]	[0.037]	[0.079]	[0.038]	[0.041]	[0.086]
Time	-0.025**	-0.017	-0.021	-0.026**	-0.010	-0.050**
	[0.010]	[0.011]	[0.021]	[0.011]	[0.012]	[0.024]
Treatment*Time	0.051	0.056	0.030	0.070*	0.053	0.113
	[0.037]	[0.041]	[0.085]	[0.041]	[0.045]	[0.091]
Age	0.015***	$0.005^{**}$	$0.029^{***}$	$0.015^{***}$	$0.004^{**}$	$0.028^{***}$
	[0.002]	[0.002]	[0.003]	[0.002]	[0.002]	[0.003]
Age squared	-0.003***	-0.003***	-0.001***	-0.003***	-0.003***	-0.001***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Good Health	0.099***	0.086***	0.054	0.106***	0.085***	0.110**
	[0.018]	[0.020]	[0.042]	[0.021]	[0.022]	[0.047]
Education	· · — -***	***		***	***	
Level 1 Vet	-0.175***	-0.290***		-0.175***	-0.288***	
	[0.021]	[0.023]		[0.024]	[0.026]	
Level 2 Vet	-0.274***	-0.379***		-0.277***	-0.381	
	[0.019]	[0.020]		[0.022]	[0.023]	
Level 3 Vet	-0.087	-0.178		-0.077	-0.166	
	[0.021]	[0.021]	0 =00***	[0.024]	[0.024]	0 = 0 = ***
Level I Acad	-0.426		-0.588	-0.425		-0.587
T 10 1 1	[0.029]		[0.037]	[0.032]		[0.042]
Level 2 Acad	-0.052		-0.222	-0.036		-0.198
T 12 A 1	[0.036]		[0.043]	[0.042]		[0.050]
Level 3 Acad	-0.416		-0.606	-0.420		-0.607
	[0 023]		[0 028]	[0 026]		[0.032]
Level 4 Acad	0.161***		[0.028]	[0.020]		[0.032]
Level 4 Acad	0.101 [0.021]			0.138		
<b>Balationshin</b> status	[0.021]			[0.025]		
Married/Relationship	0.073***	0.068***	0.065**	0.071***	0.066***	0.055*
Warned/Relationship	[0.073 [0.014]	[0 015]	[0 029]	[0 015]	[0 017]	[0 033]
Separated/Divorced	-0.032	-0.040	0.066	-0.032	_0.048	0.070
Separated/Divorced	[0 024]	[0 026]	[0.060]	[0 027]	[0 029]	[0.067]
Widowed	0.072	0 1 2 1	-0.238	0.035	0.051	0.000
Wildo Wed	[0 122]	[0 118]	[0 587]	[0 146]	[0 138]	[]
Job Characteristics	[0.122]	[0.110]	[0.507]	[0.110]	[0.150]	[.]
Manager/Professional	0.399***	0.360***	0.383***	0.411***	0.375***	$0.400^{***}$
8	[0.021]	[0.025]	[0.042]	[0.024]	[0.028]	[0.049]
Clerk/Service	0.170***	0.146***	0.174***	0.183***	0.169***	0.172***
	[0.022]	[0.026]	[0.043]	[0.025]	[0.029]	[0.050]
Agric/Craft/Machine	0.188***	0.156***	0.253***	0.189***	0.158***	0.284***
8	[0.021]	[0.024]	[0.043]	[0.024]	[0.027]	[0.050]
Full time	0.922***	0.939***	0.902***	0.935***	0.940***	0.916***
	[0.017]	[0.024]	[0.027]	[0.020]	[0.027]	[0.031]
Working Experience PT	-0.002	0.006	-0.009**	-0.002	0.004	-0.007
	[0.003]	[0.004]	[0.004]	[0.003]	[0.004]	[0.005]
Working Experience FT	0.028***	0.037***	0.012***	$0.028^{***}$	0.038***	0.012***
	[0.002]	[0.002]	[0.003]	[0.002]	[0.002]	[0.004]
Self Employed	-0.138***	-0.119***	$-0.172^{***}$	$-0.152^{***}$	-0.136***	-0.184***
	[0.018]	[0.022]	[0.032]	[0.021]	[0.025]	[0.036]
Constant	6.543***	$6.598^{***}$	$6.792^{***}$	6.505***	6.573***	$6.712^{***}$
	[0.037]	[0.043]	[0.068]	[0.041]	[0.048]	[0.078]
Observations	14781	10589	4037	11557	8342	3092
Adjusted R <sup>2</sup>	0.573	0.548	0.638	0.572	0.548	0.639

Standard errors in brackets Source: GSOEP, \*p < 0.10, \*\*p < 0.05, \*\*\*p < 0.01

$\begin{array}{c c c c c c c c c c c c c c c c c c c $		2005-2008	Education		2005 2000		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			Equivation	Education	2005-2009	Education	Education
Treatment $0.158^{**}$ $0.174^{**}$ $0.036$ $0.157^{***}$ $0.174^{**}$ $0.033$ $[0.067]$ $[0.070]$ $[0.160]$ $[0.061]$ $[0.070]$ $[0.162]$ Time $-0.042^{**}$ $-0.039^{*}$ $-0.041$ $-0.039^{**}$ $-0.041^{**}$ $-0.032$ $[0.019]$ $[0.020]$ $[0.042]$ $[0.018]$ $[0.020]$ $[0.041]$ Treatment*Time $-0.059$ $-0.056$ $-0.029$ $-0.092$ $-0.104$ $-0.009$ $[0.076]$ $[0.080]$ $[0.170]$ $[0.072]$ $[0.072]$ $[0.072]$ $[0.072]$			2005-2008	2005-2008		2005-2009	2005-2009
Image: Time $[0.067]$ $[0.070]$ $[0.160]$ $[0.061]$ $[0.070]$ $[0.162]$ Time $-0.042^{**}$ $-0.039^{*}$ $-0.041$ $-0.039^{**}$ $-0.041^{**}$ $-0.032$ $[0.019]$ $[0.020]$ $[0.042]$ $[0.018]$ $[0.020]$ $[0.041]$ Treatment*Time $-0.059$ $-0.056$ $-0.029$ $-0.092$ $-0.104$ $-0.009$ $[0.071]$ $[0.070]$ $[0.070]$ $[0.070]$ $[0.070]$ $[0.070]$ $[0.070]$	Treatment	0.158**	0.174**	0.036	0.157***	0.174**	0.033
Time $-0.042^{**}$ $-0.039^{*}$ $-0.041$ $-0.039^{**}$ $-0.041^{**}$ $-0.032$ $[0.019]$ $[0.020]$ $[0.042]$ $[0.018]$ $[0.020]$ $[0.041]$ Treatment*Time $-0.059$ $-0.056$ $-0.029$ $-0.092$ $-0.104$ $-0.009$ $[0.071]$ $[0.070]$ $[0.070]$ $[0.070]$ $[0.070]$ $[0.070]$ $[0.070]$		[0.067]	[0.070]	[0.160]	[0.061]	[0.070]	[0.162]
Treatment*Time $[0.019]$ $[0.020]$ $[0.042]$ $[0.018]$ $[0.020]$ $[0.041]$ Treatment*Time-0.059-0.056-0.029-0.092-0.104-0.009 $[0.075]$ $[0.075]$ $[0.075]$ $[0.075]$ $[0.175]$	Time	-0.042**	-0.039*	-0.041	-0.039**	-0.041**	-0.032
Treatment*Time -0.059 -0.056 -0.029 -0.092 -0.104 -0.009		[0.019]	[0.020]	[0.042]	[0.018]	[0.020]	[0.041]
	Treatment*Time	-0.059	-0.056	-0.029	-0.092	-0.104	-0.009
		[0.076]	[0.080]	[0.179]	[0.067]	[0.078]	[0.176]
Age 0.009*** 0.004 0.019*** 0.010*** 0.005 0.019***	Age	$0.009^{***}$	0.004	0.019***	$0.010^{***}$	0.005	$0.019^{***}$
$[0.003] \qquad [0.004] \qquad [0.006] \qquad [0.003] \qquad [0.003] \qquad [0.005]$		[0.003]	[0.004]	[0.006]	[0.003]	[0.003]	[0.005]
Age squared $-0.003^{***}$ $-0.003^{***}$ $-0.003^{***}$ $-0.003^{***}$ $-0.003^{***}$	Age squared	-0.003***	-0.003***	-0.002***	-0.003***	-0.003***	-0.002***
$[0.000] \qquad [0.000] \qquad [0.000] \qquad [0.000] \qquad [0.000] \qquad [0.000]$		[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Good Health         0.044         0.012         0.105         0.034         0.009         0.084	Good Health	0.044	0.012	0.105	0.034	0.009	0.084
$[0.029] \qquad [0.031] \qquad [0.066] \qquad [0.027] \qquad [0.028] \qquad [0.058]$		[0.029]	[0.031]	[0.066]	[0.027]	[0.028]	[0.058]
Education	Education						
Level 1 Vet $-0.232^{***}$ $-0.298^{***}$ $-0.228^{***}$ $-0.292^{***}$	Level 1 Vet	-0.232***	-0.298***		-0.228***	-0.292***	
[0.040] $[0.038]$ $[0.032]$ $[0.034]$		[0.040]	[0.038]		[0.032]	[0.034]	
Level 2 Vet $-0.266^{***}$ $-0.308^{***}$ $-0.260^{***}$ $-0.302^{***}$	Level 2 Vet	-0.266***	-0.308***		-0.260***	-0.302***	
[0.033] $[0.032]$ $[0.025]$ $[0.028]$		[0.033]	[0.032]		[0.025]	[0.028]	
Level 3 Vet $-0.094^{***}$ $-0.137^{***}$ $-0.093^{***}$ $-0.134^{***}$	Level 3 Vet	-0.094***	-0.137***		-0.093***	-0.134***	
[0.035] $[0.033]$ $[0.025]$ $[0.029]$		[0.035]	[0.033]		[0.025]	[0.029]	
Level 1 Acad -0.613*** -0.570*** -0.610*** -0.577***	Level 1 Acad	-0.613***		-0.570***	-0.610***		-0.577***
[0.058] [0.075] [0.071] [0.067]		[0.058]		[0.075]	[0.071]		[0.067]
Level 2 Acad -0.282*** -0.286*** -0.268*** -0.289***	Level 2 Acad	-0.282***		-0.286***	-0.268***		-0.289***
[0.058] $[0.073]$ $[0.058]$ $[0.065]$		[0.058]		[0.073]	[0.058]		[0.065]
Level 3 Acad -0.616*** -0.657*** -0.570*** -0.624***	Level 3 Acad	-0.616***		-0.657***	-0.570***		-0.624***
[0.042] [0.057] [0.038] [0.050]		[0.042]		[0.057]	[0.038]		[0.050]
Level 4 Acad 0.128*** 0.123***	Level 4 Acad	0.128***			0.123***		
		[0.036]			[0.030]		
Relationship status	Relationship status	0 0 <b>5 0</b> **	0.000***	0.00.0*	○ ○ <b>= 4</b> ***	0 001***	• • • <b>- -</b> *
$Married/Relationship 0.052^{-1} 0.083^{-1} -0.096^{-1} 0.054^{-1} 0.081^{-1} -0.087^{-1}$	Married/Relationship	0.052	0.083	-0.096	0.054	0.081	-0.087
$\begin{bmatrix} 0.023 \end{bmatrix} \begin{bmatrix} 0.025 \end{bmatrix} \begin{bmatrix} 0.052 \end{bmatrix} \begin{bmatrix} 0.020 \end{bmatrix} \begin{bmatrix} 0.022 \end{bmatrix} \begin{bmatrix} 0.027 \end{bmatrix}$		[0.023]	[0.025]	[0.052]	[0.020]	[0.022]	[0.047]
Separated/Divorced $0.082^{-1}$ $0.110^{-1}$ $-0.155^{-1}$ $0.074^{-1}$ $0.100^{-1}$ $-0.153^{-1}$	Separated/Divorced	0.082	0.110	-0.155	0.074	0.100	-0.153
$\begin{bmatrix} 0.036 \end{bmatrix} \begin{bmatrix} 0.039 \end{bmatrix} \begin{bmatrix} 0.084 \end{bmatrix} \begin{bmatrix} 0.029 \end{bmatrix} \begin{bmatrix} 0.035 \end{bmatrix} \begin{bmatrix} 0.077 \end{bmatrix}$	<b>TT</b> 7'1 1	[0.036]	[0.039]	[0.084]	[0.029]	[0.035]	[0.077]
Widowed $0.080$ $0.114$ - $0.069$ $0.105$ $0.000$	Widowed	0.080	0.114	-	0.069	0.105	0.000
[0.152] $[0.141]$ - $[0.106]$ $[0.131]$ $[.]$		[0.152]	[0.141]	-	[0.106]	[0.131]	[.]
Job Characteristics	Job Characteristics						
		0. ( 0.0***	0 455***	0.00 =***	0 ( 10***	0 470***	0.00 =***
Manager/Professional $0.628$ $0.457$ $0.985$ $0.648$ $0.473$ $0.985$	Manager/Professional	0.628	0.457	0.985	0.648	0.4/3	0.985
$\begin{bmatrix} 0.047 \end{bmatrix} \begin{bmatrix} 0.052 \end{bmatrix} \begin{bmatrix} 0.095 \end{bmatrix} \begin{bmatrix} 0.062 \end{bmatrix} \begin{bmatrix} 0.048 \end{bmatrix} \begin{bmatrix} 0.087 \end{bmatrix}$		[0.04/]	[0.052]	[0.095]	[0.062]	[0.048]	[0.087]
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Clerk/Service	0.304	0.330	0.920	0.310	0.344	0.8/9
$\begin{bmatrix} 0.04/\end{bmatrix} \begin{bmatrix} 0.052\end{bmatrix} \begin{bmatrix} 0.095\end{bmatrix} \begin{bmatrix} 0.062\end{bmatrix} \begin{bmatrix} 0.064\end{bmatrix} \begin{bmatrix} 0.086\end{bmatrix} \begin{bmatrix} 0.086\end{bmatrix}$	A ania/Craft/Mashina	[0.04/]	[0.052]	[0.095]	[0.062]	[0.048]	[0.087]
Agric/Crait/Machine $0.240$ $0.172$ $0.160$ $0.250$ $0.161$ $0.194$	Agric/Crait/Machine	0.240	0.1/2	0.180	0.230	0.181	0.194
$\begin{bmatrix} 0.050 \end{bmatrix} \begin{bmatrix} 0.000 \end{bmatrix} \begin{bmatrix} 0.127 \end{bmatrix} \begin{bmatrix} 0.071 \end{bmatrix} \begin{bmatrix} 0.053 \end{bmatrix} \begin{bmatrix} 0.110 \end{bmatrix}$	Exili time a	[0.030]	[0.000]	[0.12/]	$\begin{bmatrix} 0.0/1 \end{bmatrix}$	[0.033]	$\begin{bmatrix} 0.110 \end{bmatrix}$ 0.721***
Full time $0.018$ $0.333$ $0.764$ $0.022$ $0.365$ $0.751$ $[0.024]$ $[0.029]$	run ume	0.018	0.333	0.784	0.022	0.385	0.731
[0.024] [0.026] [0.045] [0.026] [0.026] [0.025] [0.040] Working Experience <b>PT</b> 0.005 0.010* 0.005 0.004 0.012** 0.001	Warling Evennion of DT	[0.024]	[0.028]	[0.045]	[0.028]	[0.023]	[0.040]
working Experience P1 $0.005$ $0.010$ $0.005$ $0.012$ $-0.001$ $[0, 0.04]$ $[0, 0.05]$	working Experience P1	0.003	0.010	0.003	0.004	0.012	-0.001
	Working Experience ET	[0.004]	$\begin{bmatrix} 0.003 \end{bmatrix}$	[0.007]	$\begin{bmatrix} 0.003 \end{bmatrix}$	$\begin{bmatrix} 0.003 \end{bmatrix}$	$\begin{bmatrix} 0.000 \end{bmatrix}$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	working Experience F1	0.030	0.037	0.039	0.034	0.030	0.037
$ \begin{bmatrix} 0.005 \end{bmatrix} \begin{bmatrix} 0.004 \end{bmatrix} \begin{bmatrix} 0.000 \end{bmatrix} \begin{bmatrix} 0.005 \end{bmatrix} \\ 0.005 \end{bmatrix} \begin{bmatrix} 0.005 \end{bmatrix} \begin{bmatrix} 0.005 \end{bmatrix} \\ 0.005 \end{bmatrix} \begin{bmatrix} 0.005 \end{bmatrix} \\ 0.005 \\ 0.005 \end{bmatrix} \\ 0.005 \\ 0.005 \\ 0.005 \\ 0.005 \end{bmatrix} \\ 0.005 \\ 0.005 \\ 0.005 \\ 0.005 \\ 0.005 \\ 0.005 \\ 0.005 \\ 0.005 \\ 0.005 \\ 0.005 \\ 0.005 \\ 0.005 \\ 0.005 \\ 0.005$	SalfEmployed	[0.003]	0.026	[0.000]	$\begin{bmatrix} 0.003 \end{bmatrix}$ 0.172***	[0.003]	[0.000]
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Sen Employed	-0.101	-0.030	-0.292	-0.1/2 [0.0/0]	-0.107	-0.233 [0.062]
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Constant	[0.040] 6.405***	[0.049] 6 758***	[0.009] 6.068***	[U.U47] 6 /08***	[0.043] 6 735***	[0.002] 6 1/3***
Constant 0.755 0.756 0.000 0.476 0.755 0.145 [0.068] [0.076] [0.120] [0.021 [0.068] [0.119]	Constant	0. <del>1</del> 25 [0.068]	[0.750 [0.076]	[0 1201	[0.490 [0.082]	[0.735	[0.145 [0.119]
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Observations	1265	2186	1167	55/2	/015	1514
Adjusted $R^2$ 0.589         0.549         0.672         0.585         0.550         0.654	Adjusted $R^2$	0.589	0.549	0.672	0.585	0.550	0.654

# Table A.10 Placebo test with a fake dummy time 2006- Women

Standard errors in brackets Source: GSOEP , \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

	All Men	Vocational	General	All Men	Vocational	General
	2005-2008	Education	Education	2005-2009	Education	Education
		2005-2008	2005-2008		2005-2009	2005-2009
Treatment	0.019	0.001	-0.003	0.014	-0.004	0.007
	[0.090]	[0.092]	[0.244]	[0.085]	[0.091]	[0.245]
Time	-0.022	-0.021	-0.027	-0.033*	-0.029	-0.044
	[0.018]	[0.019]	[0.041]	[0.017]	[0.018]	[0.040]
Treatment*Time	-0.090	-0.099	0.015	-0.073	-0.089	0.037
	[0.100]	[0.103]	[0.266]	[0.091]	[0.098]	[0.259]
Age	0.017***	$0.010^{***}$	0.028***	0.017***	$0.007^{**}$	0.032***
	[0.003]	[0.003]	[0.005]	[0.003]	[0.003]	[0.005]
Age squared	-0.003***	-0.004***	$-0.002^{***}$	-0.003***	$-0.004^{***}$	$-0.002^{***}$
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Good Health	0.116***	0.073**	0.088	0.105***	$0.072^{**}$	0.030
	[0.031]	[0.033]	[0.082]	[0.030]	[0.029]	[0.073]
Education						
Level 1 Vet	-0.158***	-0.227***		-0.177***	-0.249***	
	[0.037]	[0.038]		[0.037]	[0.033]	
Level 2 Vet	-0.257***	-0.321***		-0.278***	-0.344***	
	[0.034]	[0.035]		[0.034]	[0.030]	
Level 3 Vet	-0.055	-0.105***		-0.068**	-0.120***	
	[0.038]	[0.037]		[0.034]	[0.032]	
Level 1 Acad	-0.462***		-0.612***	-0.450***		-0.554***
	[0.051]		[0.068]	[0.065]		[0.062]
Level 2 Acad	-0.064		-0.209**	-0.051		-0.139*
	[0.064]		[0.081]	[0.061]		[0.074]
Level 3 Acad	-0.369***		-0.539***	-0.398***		-0.521***
	[0.042]		[0.052]	[0.043]		[0.047]
Level 4 Acad	0.152***			0.121***		
	[0.038]			[0.035]		
<b>Relationship status</b>						
Married/Relationship	$0.082^{***}$	$0.062^{**}$	$0.095^{*}$	0.091***	$0.069^{***}$	$0.117^{**}$
	[0.023]	[0.024]	[0.054]	[0.018]	[0.021]	[0.048]
Separated/Divorced	0.005	-0.017	0.126	-0.014	-0.030	0.084
	[0.036]	[0.036]	[0.115]	[0.028]	[0.032]	[0.103]
Widowed	-0.257	-0.209	0.000	-0.238*	-0.201	0.000
	[0.188]	[0.175]	[.]	[0.125]	[0.163]	[.]
Job Characteristics						
	***	***	***	***	***	***
Manager/Professional	0.399	0.370	0.352	0.425	0.394	0.393
~	[0.036]	[0.041]	[0.077]	[0.041]	[0.036]	[0.071]
Clerk/Service	0.179***	0.156	0.147*	0.199***	0.173***	0.175**
	[0.037]	[0.042]	[0.079]	[0.041]	[0.037]	[0.072]
Agric/Craft/Machine	0.226	0.206	0.186	0.242***	0.215	0.238
	[0.035]	[0.039]		[0.039]	[0.034]	[0.073]
Full time	0.803	0.965	0.658	0.816	0.963	0.671
	[0.031]	[0.040]	[0.053]	[0.038]	[0.035]	[0.048]
Working Experience PT	-0.002	0.012	-0.008	-0.003	0.013	-0.012*
	[0.005]	[0.008]	[0.008]	[0.006]	[0.007]	[0.007]
Working Experience FT	0.026	0.033	0.019	0.027	0.036	0.016
	[0.003]	[0.004]	[0.006]	[0.003]	[0.003]	[0.006]
Self Employed	-0.044	-0.033	-0.065	-0.064	-0.043	-0.104
0	[0.030]	[0.034]	[0.057]	[0.031]	[0.031]	[0.051]
Constant	6.658	6.593	6.9/8	6.652	6.5/2	6.994
01	[0.065]	[0.073]	[0.134]	[0.073]	[0.064]	[0.120]
Observations $A divised P^2$	5497	4123	1341	6917	5190	1685
Aujusted K-	0.342	0.349	0.308	0.347	0.339	0.30/

Table A. 11 Placebo test with a fake dummy time 2006- Men

Standard errors in brackets Source: GSOEP ; \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

	A 11	W/	W/	A 11 M	Man	Man
	All	women	women	All Men	Men	Men
	Women	Vocational	General		Vocational	General
		Education	Education		Education	Education
Treatment	0.004	-0.023	0.047	-0.011	-0.079**	$0.208^{**}$
	[0.034]	[0.037]	[0.070]	[0.033]	[0.035]	[0.084]
Time	$-0.021^*$	-0.026**	0 011	-0.047***	-0.034***	-0.062***
1 mile	[0.011]	[0 012]	[0 022]	[0 010]	[0 0111	[0 021]
T	0.152***	0.252***			0.07(*	0.110
I reatment* I ime	-0.152	-0.255	0.042	0.037	0.070	-0.118
	[0.039]	[0.043]	[0.079]	[0.036]	[0.039]	[0.090]
Age	0.013***	0.006**	0.023***	$0.014^{***}$	0.005***	0.023***
	[0.002]	[0.002]	[0.003]	[0.002]	[0.002]	[0.003]
Age squared	-0.003***	$-0.003^{***}$	$-0.002^{***}$	-0.003***	$-0.003^{***}$	$-0.002^{***}$
6 1	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Good health	0.025	0.020	0.026	0 113***	0.082***	$0.114^{**}$
Good health	0.025	0.020 [0.020]	0.020	0.115	0.082 [0.020]	0.11 <del>4</del>
	[0.018]	[0.020]	[0.038]	[0.019]	[0.020]	[0.045]
Education	ماد ماد ماد	all all all		a a a de de de	ate ate ate	
Level 1 Vet	-0.229***	-0.321***		-0.208***	-0.312***	
	[0.025]	[0.025]		[0.021]	[0.022]	
Level 2 Vet	-0.259***	-0.330***		-0.299***	-0.394***	
	[0.020]	[0.020]		[0.019]	[0.020]	
Level 3 Vet	$-0.134^{***}$	_0 100***		_0 113***	_0 180***	
Level 5 vet	-0.134	-0.199		-0.113	-0.109	
T 11 A 1	[0.022]	[0.021]	0.450***	[0.021]	[0.021]	o ===***
Level I Acad	-0.440		-0.458	-0.439		-0.5//
	[0.039]		[0.047]	[0.029]		[0.039]
Level 2 Acad	-0.255***		-0.278***	-0.087**		-0.227***
	[0.038]		[0.045]	[0.038]		[0.046]
Level 3 Acad	-0.543***		-0.594***	-0.451***		-0.603***
200000000000	[0.025]		[0 032]	[0 024]		[0 029]
Level 1 Acad	0 102***		[0:052]	0.135***		[0.029]
Level 4 Acau	0.102			0.133		
<b>BI I I I</b>	[0.021]			[0.020]		
Relationship-status						
Married/Relationship	-0.000	0.037**	-0.104***	$0.068^{***}$	0.053***	$0.086^{***}$
	[0.015]	[0.016]	[0.030]	[0.014]	[0.015]	[0.030]
Separated/Divorced	-0.029	0.012	-0.209***	-0.017	-0.038	0.091
1	[0.025]	[0 027]	[0 058]	[0 024]	[0.025]	[0.062]
Widowed	_0 1/9	_0.040	_1.006**	0.047	_0.030	0.457
Widowed	-0.147 [0.115]	-0.0 <del>4</del> 0	-1.000 [0.4 <b>2</b> 0]	[0.110]	-0.037 [0.1 <b>2</b> 1]	[0.350]
	[0.115]	[0.115]	[0.420]	[0.119]	[0.121]	[0.330]
Job Characteristics						
Manager/Professional	$0.662^{***}$	$0.533^{***}$	$0.765^{***}$	$0.429^{***}$	$0.372^{***}$	$0.458^{***}$
	[0.031]	[0.038]	[0.057]	[0.022]	[0.025]	[0.045]
Clerk/Service	$0.461^{***}$	0.353***	0.533***	$0.194^{***}$	$0.156^{***}$	$0.229^{***}$
	[0.031]	[0.038]	[0.056]	[0.023]	[0.026]	[0.047]
Agri/Craft/Machine	0.253***	$0.214^{***}$	0 181**	$0.220^{***}$	0 175***	0.315***
Agn/Clait/Machine	0.233	0.21 <del>4</del> [0.042]	0.101	0.220 [0.021]	0.17J	0.313 [0.046]
<b>D</b> 11 <i>c</i>	[0.057]	[0.043]	[0.073]	[0.021]	[0.024]	[0.040]
Full-time	0.679	0.625	0.745	0.885	0.921	0.841
	[0.014]	[0.018]	[0.025]	[0.018]	[0.024]	[0.029]
Working Experience PT	$0.009^{***}$	$0.013^{***}$	$0.007^{*}$	-0.000	-0.002	0.002
	[0.002]	[0.003]	[0.004]	[0.003]	[0.004]	[0.004]
Working Experience FT	0.031***	0.036***	0.028***	0.030***	0.037***	0.021***
	[0 002]	[0 002]	[0 004]	[0 002]	[0 002]	[0 004]
Salfamplayed	0.002	0.172***	0.00-1	0.120***	0.002]	0.194***
sen employed	-0.203	-0.1/3	-0.243	-0.120	-0.084	-0.100
	[0.025]	[0.031]	[0.043]	[0.018]	[0.021]	[0.033]
Constant	6.479***	6.679***	6.389	6.567***	6.648***	6.680***
	[0.043]	[0.051]	[0.076]	[0.037]	[0.042]	[0.072]
Observations	11901	8303	3541	14755	10749	3872
Adjusted $R^2$	0.566	0.528	0.638	0.569	0.554	0.621

Table A. 12 DID Treatment= giving birth in 2009 (2005-2013)

Standard errors in brackets; Source: GSOEP; \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Table A. 13 DID	Treatment:	giving birth	n in 2011	(2007-2015)
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Women         Vocational Education         General Education         Vocational Education         Education Education           Treatment $0.097^{**}$ $0.056$ $0.143^{**}$ $0.066^{**}$ $0.095^{***}$ $0.031$ Treatment*Time $0.0101$ $0.0321$ $0.00111$ $0.0221$ $0.00111$ $0.0021$ Treatment*Time $0.0110^{**}$ $0.022^{**}$ $0.0121$ $0.00111$ $0.0021$ Age $0.001^{**}$ $0.022^{**}$ $0.0121$ $0.0012$ $0.0021$ Age $0.001^{**}$ $0.002^{**}$ $0.0021^{**}$ $0.0221^{**}$ $0.0221^{**}$ $0.0221^{**}$ $0.0221^{**}$ $0.0221^{**}$		All	Women	Women	All Men	Men	Men General
Faluration         Faluration         Faluration         Faluration           Treatment         0.0057"         0.056         0.143"         0.066"         0.095""         -0.011           Time         -0.005         -0.010         0.032         -0.017         -0.006         -0.022           Treatment*Time         -0.101"         -0.012         -0.012         -0.017         -0.006         -0.022           Treatment*Time         -0.104"         -0.025         -0.012         -0.015         0.0477           Age         0.010"         -0.022"         0.0031         0.0021         [0.000]         [0.003]         [0.003]         [0.003]         [0.003]         [0.003]         [0.000]         [0.00		Women	Vocational	General		Vocational	Education
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			Education	Education		Education	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Treatment	0.097***	0.056	0.143**	0.066**	0.095***	-0.031
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		[0.034]	[0.037]	[0.071]	[0.032]	[0.036]	[0.065]
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Time	-0.005	-0.010	0.032	-0.017*	-0.006	-0.022
Treatment*Time $b.110^{++}$ $b.025$ $0.012$ $-0.015$ $0.017$ Age $0.016^{++}$ $0.022^{++}$ $0.014^{++}$ $0.0021$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.000]$ $[0.002]$ $[0.021]$ $[0.021]$ $[0.021]$ $[0.021]$ $[0.021]$ $[0.021]$ $[0.021]$ $[0.021]$ $[0.021]$ $[0.021]$ $[0.021]$ $[0.021]$ $[0.021]$ $[$		[0.011]	[0.012]	[0.021]	[0.010]	[0.011]	[0.020]
Age $[0.041]$ $[0.042]$ $[0.037]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.003]$ Age squared $-0.03^{3+}$ $-0.00^{3+}$ $-0.03^{3+}$ $-0.03^{3+}$ $-0.03^{3+}$ $-0.03^{3+}$ $-0.03^{3+}$ $-0.40^{3+}$ $-0.40^{3+}$ $-0.20^{3+}$ $-0.24^{3+}$ $-0.24^{3+}$ $-0.24^{3+}$ $-0.24^{3+}$ $-0.24^{3+}$ $-0.24^{3+}$ $-0.24^{3+}$ $-0.24^{3+}$ $-0.24^{3+}$ $-0.24^{3+}$ $-0.24^{3+}$ $-0.24^{3+}$ $-0.24^{3$	Treatment*Time	-0.110***	-0.184***	-0.025	-0.012	-0.015	0.047
Age $\dot{0}016^{+7}$ $\dot{0}022^{+7}$ $\dot{0}014^{+7}$ $0.004^{+7}$ $\dot{0}.002$ Age squared $-0.003^{++}$ $-0.003^{++}$ $-0.003^{++}$ $-0.003^{++}$ $-0.002^{++}$ Good health $0.038^{++}$ $0.000^{++}$ $0.000^{++}$ $0.000^{++}$ $0.000^{++}$ $0.000^{++}$ Good health $0.038^{++}$ $0.038^{++}$ $0.038^{++}$ $0.000^{++}$ $0.000^{++}$ Education         Image: Control of the theorem in		[0.041]	[0.046]	[0.082]	[0.037]	[0.042]	[0.073]
$a_{ge}$ squared $[0.002]$ $[0.003]$ $[0.002]$ $[0.003]$ $[0.002]$ $[0.003]$ $[0.003]$ $[0.003]$ $[0.003]$ $[0.003]$ $[0.003]$ $[0.003]$ $[0.003]$ $[0.003]$ $[0.003]$ $[0.003]$ $[0.003]$ $[0.003]$ $[0.003]$ $[0.003]$ $[0.003]$ $[0.003]$ $[0.003]$ $[0.003]$ Good health $[0.038]$ $[0.035]$ $[0.036]$ $[0.036]$ $[0.021]$ $[0.021]$ $[0.023]$ Level 1 Vet $[0.226]$ $[0.025]$ $[0.022]$ $[0.021]$ $[0.022]$ $[0.021]$ Level 3 Vet $[0.022]$ $[0.021]$ $[0.022]$ $[0.021]$ $[0.022]$ Level 1 Acad $[0.038]$ $[0.044]$ $[0.022]$ $[0.021]$ $[0.023]$ Level 1 Acad $[0.337]$ $[0.043]$ $[0.038]$ $[0.043]$ $[0.038]$ Level 3 Acad $[0.377^{***}$ $(0.241^{***})$ $(0.231^{***})$ $(0.231^{***})$ $(0.037^{***})$ Level 3 Acad $[0.371^{***})$ $(0.031^{***})$ $(0.037^{***})$	Age	0.016***	0.010***	0.022***	0.014***	0.004*	0.028***
Age squared $-0.003^{++}$ $-0.002^{++}$ $-0.003^{++}$ $-0.003^{++}$ $-0.003^{++}$ $-0.002^{++}$ Good health $0.038^{+}$ $0.030^{+}$ $0.003^{+}$ $0.002^{++}$ $0.072^{++}$ $0.008^{++}$ Good health $0.038^{+}$ $0.032^{++}$ $0.022^{++}$ $0.072^{++}$ $0.068^{++}$ Education         -         - $-0.218^{++}$ $-0.30^{++}$ $-0.30^{++}$ $-0.30^{++}$ Level 1 Vet $-0.228^{++}$ $-0.310^{++}$ $-0.309^{++}$ $-0.408^{++}$ $-0.204^{++}$ Level 2 Vet $-0.238^{+-}$ $-0.309^{++}$ $-0.409^{++}$ $-0.204^{++}$ $[0.022]$ $[0.021]$ $[0.023]$ $[0.023]$ $[0.024]$ Level 3 Vet $-0.369^{++}$ $-0.409^{++}$ $-0.248^{++}$ $-0.248^{++}$ $[0.038]$ $[0.044]$ $[0.028]$ $[0.034]$ $[0.034]$ Level 3 Acad $-0.477^{++}$ $-0.496^{++}$ $-0.430^{++}$ $-0.603^{++}$ $[0.026]$ $[0.057]$ $[0.023]$ $[0.027]$ $0.023$	6	[0.002]	[0.002]	[0.003]	[0.002]	[0.002]	[0.003]
$ \begin{array}{c ccccc} 0.000 & [0.000] & [0.000] & [0.000] & [0.000] & [0.000] & [0.000] \\ \hline $	Age squared	-0.003***	-0.003***	-0.002***	-0.003***	-0.003***	-0.002***
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Education         [0.018]         [0.020]         [0.036]         [0.019]         [0.021]         [0.040]           Education	Good health	0.038**	0.035*	0.039	0.092***	0.072***	0.068*
Education         Lower of the second s		[0.018]	[0.020]	[0.036]	[0.019]	[0.021]	[0.040]
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Education	[01010]	[0:0=0]	[0.05.0]	[01019]	[0:0=1]	[01010]
Level 2 Vet $0.026]         [0.025] [0.022] [0.023]           Level 3 Vet         -0.300^{**} -0.309^{**} -0.408^{**} [0.022] [0.020] [0.021] [0.022]           Level 3 Vet         -0.128^{**} -0.205^{**} -0.117^{**} -0.204^{**} [0.021] [0.021] [0.022] [0.023]           Level 1 Acad         -0.369^{**} -0.409^{**} -0.532^{**} [0.038] [0.044] [0.028] [0.034]           Level 3 Acad         -0.477^{**} -0.496^{**} -0.408^{**} [0.021] [0.029] [0.023] [0.027]           Level 3 Acad         -0.477^{**} -0.496^{**} -0.408^{**} [0.021] [0.029] [0.020] [0.027]           Level 4 Acad         0.056^{**} 0.077^{**} 0.064^{**} [0.021] [0.021] [0.027] [0.027]           Separated/Divorced         -0.018 0.057^{**} 0.067^{**} 0.044^{***}           Married/Relationship         0.0063^{*} $	Level 1 Vet	-0.226***	-0.320***		-0.218***	-0.330***	
Level 2 Vet $-0.310^{**}$ $-0.310^{**}$ $-0.309^{**}$ $-0.408^{**}$ Level 3 Vet $(0.020]$ $(0.020]$ $(0.019]$ $(0.021]$ Level 1 Acad $-0.360^{***}$ $-0.369^{***}$ $-0.244^{***}$ $(0.022]$ $[0.021]$ $[0.022]$ $[0.034]$ Level 1 Acad $-0.360^{***}$ $-0.409^{***}$ $-0.532^{***}$ $[0.038]$ $[0.044]$ $[0.028]$ $[0.034]$ Level 2 Acad $-0.37^{**}$ $-0.466^{***}$ $-0.248^{***}$ $[0.039]$ $[0.045]$ $[0.033]$ $[0.039]$ Level 4 Acad $0.056^{***}$ $-0.466^{***}$ $-0.603^{***}$ $[0.021]$ $[0.023]$ $[0.027]$ $[0.023]$ $[0.027]$ Level 4 Acad $[0.051]$ $[0.017]$ $[0.028]$ $[0.014]$ $[0.016]$ $[0.27]$ Separated/Divorced $-0.018$ $0.057^{**}$ $0.025^{**}$ $0.031$ $[0.025]$ $[0.025]$ $[0.057]$ Widowed $-0.205^{***}$ $0.0337^{**}$ $0.025^{***}$ $0.038$		[0.026]	[0.025]		[0.022]	[0.023]	
	Level 2 Vet	-0 238***	-0.310***		-0 309***	-0 408***	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		[0 020]	[0 020]		[0 019]	[0.021]	
	Level 3 Vet	-0 128***	-0.205***		-0.117***	-0 204***	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		[0 022]	[0.021]		[0 022]	[0.022]	
	Level 1 Acad	-0.360***	[0:021]	-0 369***	-0 409***	[0:022]	-0 532***
$\begin{array}{c cccccc} Level 2 \mbox{Acad} & 0.0371^{**}_{1} & -0.121^{**}_{1} & -0.125^{**}_{1} & -0.241^{**}_{1} & 0.0341_{1} & 0.0391_{1}\\ 0.0391_{1} & 0.0471^{**}_{1} & -0.496^{***}_{1} & -0.450^{***}_{1} & 0.603^{***}_{1} & 0.603^{***}_{1} \\ 0.0241_{1} & 0.0291_{1} & 0.0291_{1} & 0.0231_{1} & 0.027_{1} \\ 0.021_{1} & 0.021_{1} & 0.021_{1} & 0.023_{1} \\ \hline Relationship status & 0.056^{***}_{1} & 0.067^{***}_{1} & 0.044^{***}_{1} & 0.093^{***}_{1} \\ 0.015_{1} & 0.017_{1} & 0.028_{1} & 0.067^{***}_{1} & 0.044^{****}_{1} & 0.093^{***}_{1} \\ 0.026_{1} & 0.050^{*}_{1} & -0.075^{***}_{1} & 0.067^{***}_{1} & 0.044^{***}_{1} & 0.093^{***}_{1} \\ \hline Separated/Divorced & -0.018_{1} & 0.050^{*}_{1} & 0.025_{1} & 0.028_{1} & 0.056_{1} \\ 0.026_{1} & 0.050^{*}_{1} & 0.025_{1} & 0.028_{1} & 0.056_{1} \\ 0.026_{1} & 0.050^{*}_{1} & 0.057_{1} & 0.025_{1} & 0.028_{1} & 0.056_{1} \\ \hline Widowed & -0.205_{1} & -0.063_{1} & -0.225^{***}_{1} & 0.038_{1} & 0.097_{1} & -0.416_{1} \\ 0.125_{1} & 0.128_{1} & 0.337_{1} & 0.120_{1} & 0.121_{1} & 0.412_{1} \\ Job characteristic & & & & & & & & & & & & & & & & & & &$	Lever i neud	[0 038]		[0 044]	[0 028]		[0 034]
	Level 2 Acad	-0 237***		-0 241***	-0.125***		-0 248***
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Level 2 read	[0 039]		[0.045]	[0 034]		[0 039]
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Level 3 Acad	-0 477***		-0.496***	-0.450***		-0.603***
	Levers rieud	[0 024]		[0 029]	[0 023]		[0 027]
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Level 4 Acad	0.056***		[0:029]	0 109***		[0:027]
Relationship statusMarried/Relationship $-0.005$ $0.031^*$ $-0.075^{***}$ $0.067^{***}$ $0.044^{***}$ $0.093^{***}$ Separated/Divorced $-0.018$ $0.050^*$ $-0.227^{***}$ $-0.025$ $-0.031$ $0.056$ Separated/Divorced $-0.018$ $0.050^*$ $-0.227^{***}$ $-0.025$ $-0.031$ $0.056$ $[0.026]$ $[0.028]$ $[0.057]$ $[0.025]$ $[0.028]$ $[0.057]$ Widowed $-0.205$ $-0.063$ $-0.925^{***}$ $0.038$ $0.097$ $-0.416$ $[0.125]$ $[0.128]$ $[0.337]$ $[0.120]$ $[0.121]$ $[0.412]$ Job characteristicManager/Professional $0.551^{***}$ $0.491^{***}$ $0.566^{***}$ $0.406^{***}$ $0.384^{***}$ $0.360^{***}$ $[0.030]$ $[0.038]$ $[0.050]$ $[0.022]$ $[0.027]$ $[0.039]$ Clerk/Service $0.336^{***}$ $0.320^{***}$ $0.268^{***}$ $0.160^{***}$ $0.164^{***}$ $0.131^{***}$ $[0.030]$ $[0.038]$ $[0.050]$ $[0.023]$ $[0.028]$ $[0.040]$ Agric/Craft/Machine $0.151^{***}$ $0.770^{***}$ $0.925^{***}$ $0.916^{***}$ $0.937^{***}$ $[0.014]$ $[0.018]$ $[0.023]$ $[0.017]$ $[0.024]$ $[0.026]$ Working Experience PT $0.006^{**}$ $0.008^{***}$ $0.005$ $0.004$ $0.008^{**}$ $-0.001^{***}$ $[0.022]$ $[0.022]$ $[0.023]$ $[0.031]$ $[0.004]$ $[0.003]$ $[0.004]$ <	Level Theud	[0 021]			[0 021]		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Relationship status	[0:021]			[0:021]		
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	Married/Relationship	-0.005	0.031*	-0.075***	0.067***	0.044***	0.093***
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	r	[0.015]	[0.017]	[0.028]	[0.014]	[0.016]	[0.027]
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Separated/Divorced	-0.018	0.050*	-0.227***	-0.025	-0.031	0.056
Widowed $-0.205$ $-0.063$ $-0.925^{***}$ $0.038$ $0.097$ $-0.416$ $[0.125]$ $[0.128]$ $[0.337]$ $[0.120]$ $[0.121]$ $[0.412]$ Job characteristicManager/Professional $0.551^{***}$ $0.491^{***}$ $0.556^{***}$ $0.406^{***}$ $0.384^{***}$ $0.360^{***}$ $[0.030]$ $[0.038]$ $[0.050]$ $[0.022]$ $[0.027]$ $[0.039]$ Clerk/Service $0.336^{***}$ $0.320^{***}$ $0.268^{***}$ $0.160^{***}$ $0.164^{***}$ $0.131^{***}$ $[0.030]$ $[0.038]$ $[0.050]$ $[0.023]$ $[0.028]$ $[0.040]$ Agric/Craft/Machine $0.151^{***}$ $0.178^{***}$ $0.077$ $0.205^{***}$ $0.912^{***}$ $0.242^{***}$ $[0.036]$ $[0.043]$ $[0.068]$ $[0.021]$ $[0.026]$ $[0.040]$ Full time $0.716^{***}$ $0.646^{***}$ $0.770^{***}$ $0.925^{***}$ $0.916^{***}$ $0.937^{***}$ $[0.014]$ $[0.018]$ $[0.023]$ $[0.017]$ $[0.024]$ $[0.026]$ Working Experience PT $0.006^{***}$ $0.008^{***}$ $0.005$ $0.004$ $0.008^{***}$ $-0.001$ $[0.002]$ $[0.003]$ $[0.004]$ $[0.003]$ $[0.004]$ $[0.004]$ Working Experience FT $0.027^{***}$ $0.028^{***}$ $0.029^{***}$ $0.039^{***}$ $0.011^{***}$ $[0.002]$ $[0.002]$ $[0.003]$ $[0.004]$ $[0.002]$ $[0.003]$ $[0.003]$ Self Employed $-0.214^{***}$ $-0.165^{*$	20Pmm0m21101000	[0.026]	[0.028]	[0.057]	[0.025]	[0.028]	[0.057]
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Widowed	-0.205	-0.063	-0.925***	0.038	0.097	-0.416
Job characteristic $[0.120]$ $[0.120]$ $[0.120]$ $[0.121]$ $[0.121]$ $[0.121]$ Manager/Professional $0.551^{***}$ $0.491^{***}$ $0.556^{***}$ $0.406^{***}$ $0.384^{***}$ $0.360^{***}$ $[0.030]$ $[0.038]$ $[0.050]$ $[0.022]$ $[0.027]$ $[0.039]$ Clerk/Service $0.336^{***}$ $0.320^{***}$ $0.268^{***}$ $0.160^{***}$ $0.164^{***}$ $0.131^{***}$ $[0.030]$ $[0.038]$ $[0.050]$ $[0.023]$ $[0.028]$ $[0.040]$ Agric/Craft/Machine $0.151^{***}$ $0.178^{***}$ $0.077$ $0.205^{***}$ $0.192^{***}$ $0.242^{***}$ $[0.036]$ $[0.043]$ $[0.068]$ $[0.021]$ $[0.026]$ $[0.040]$ Full time $0.716^{***}$ $0.646^{***}$ $0.770^{***}$ $0.925^{***}$ $0.916^{***}$ $0.937^{***}$ $[0.014]$ $[0.018]$ $[0.023]$ $[0.017]$ $[0.024]$ $[0.026]$ Working Experience PT $0.006^{***}$ $0.008^{***}$ $0.005$ $0.004$ $0.008^{***}$ $-0.001$ $[0.002]$ $[0.003]$ $[0.004]$ $[0.003]$ $[0.004]$ $[0.004]$ Working Experience FT $0.027^{***}$ $0.028^{***}$ $0.029^{***}$ $0.039^{***}$ $0.011^{****}$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.003]$ $[0.003]$ $[0.003]$ $[0.003]$ Self Employed $-0.214^{***}$ $-0.165^{****}$ $-0.279^{***}$ $-0.154^{***}$ $-0.12^{***}$ $-0.20^{***}$ $[0.025]$ $[0.034]$ $[$		[0.125]	[0.128]	[0.337]	[0.120]	[0.121]	[0.412]
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Job characteristic	[0.120]	[0.120]	[0.557]	[0.120]	[0.121]	[0.112]
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Manager/Professional	0.551***	0.491***	0.556***	0.406***	0.384***	0.360***
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	8	[0.030]	[0.038]	[0.050]	[0.022]	[0.027]	[0.039]
Agric/Craft/Machine $[0.030]$ $[0.038]$ $[0.050]$ $[0.023]$ $[0.028]$ $[0.040]$ Agric/Craft/Machine $0.151^{***}$ $0.178^{***}$ $0.077$ $0.205^{***}$ $0.192^{***}$ $0.242^{***}$ $[0.036]$ $[0.043]$ $[0.068]$ $[0.021]$ $[0.026]$ $[0.040]$ Full time $0.716^{***}$ $0.646^{***}$ $0.770^{***}$ $0.925^{***}$ $0.916^{***}$ $0.937^{***}$ $[0.014]$ $[0.018]$ $[0.023]$ $[0.017]$ $[0.024]$ $[0.026]$ Working Experience PT $0.006^{***}$ $0.008^{***}$ $0.005$ $0.004$ $0.008^{**}$ $-0.001$ $[0.002]$ $[0.003]$ $[0.004]$ $[0.003]$ $[0.004]$ $[0.004]$ Working Experience FT $0.027^{***}$ $0.030^{***}$ $0.028^{***}$ $0.029^{***}$ $0.39^{***}$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.004]$ $[0.002]$ $[0.003]$ Self Employed $-0.214^{***}$ $-0.165^{***}$ $-0.279^{***}$ $-0.154^{***}$ $-0.112^{***}$ $-0.220^{***}$ $[0.025]$ $[0.034]$ $[0.039]$ $[0.019]$ $[0.023]$ $[0.031]$ Constant $6.572^{***}$ $6.732^{***}$ $6.537^{***}$ $6.544^{***}$ $6.602^{***}$ $6.768^{***}$ $[0.042]$ $[0.051]$ $[0.069]$ $[0.037]$ $[0.044]$ $[0.065]$	Clerk/Service	0.336***	0.320***	0.268***	0.160***	0.164***	0.131***
Agric/Craft/Machine $0.151^{**}$ $0.178^{**}$ $0.077$ $0.205^{**}$ $0.192^{**}$ $0.242^{**}$ $[0.036]$ $[0.043]$ $[0.068]$ $[0.021]$ $[0.026]$ $[0.040]$ Full time $0.716^{**}$ $0.646^{***}$ $0.770^{**}$ $0.925^{***}$ $0.916^{***}$ $0.937^{***}$ $[0.014]$ $[0.018]$ $[0.023]$ $[0.017]$ $[0.024]$ $[0.026]$ Working Experience PT $0.006^{**}$ $0.008^{***}$ $0.005$ $0.004$ $0.008^{**}$ $-0.001$ $[0.002]$ $[0.003]$ $[0.004]$ $[0.003]$ $[0.004]$ $[0.004]$ Working Experience FT $0.027^{***}$ $0.030^{***}$ $0.028^{***}$ $0.029^{***}$ $0.039^{***}$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.004]$ $[0.002]$ $[0.003]$ Self Employed $-0.214^{***}$ $-0.165^{***}$ $-0.279^{***}$ $-0.154^{***}$ $-0.220^{***}$ $[0.025]$ $[0.034]$ $[0.039]$ $[0.019]$ $[0.023]$ $[0.031]$ Constant $6.572^{***}$ $6.732^{***}$ $6.537^{***}$ $6.544^{***}$ $6.602^{***}$ $[0.042]$ $[0.051]$ $[0.069]$ $[0.037]$ $[0.044]$ $[0.065]$		[0.030]	[0.038]	[0.050]	[0.023]	[0.028]	[0.040]
Full time $[0.036]$ $[0.043]$ $[0.068]$ $[0.021]$ $[0.026]$ $[0.040]$ Full time $0.716^{***}$ $0.646^{***}$ $0.770^{***}$ $0.925^{***}$ $0.916^{***}$ $0.937^{***}$ $[0.014]$ $[0.018]$ $[0.023]$ $[0.017]$ $[0.024]$ $[0.026]$ Working Experience PT $0.006^{**}$ $0.008^{***}$ $0.005$ $0.004$ $0.008^{**}$ $-0.001$ $[0.002]$ $[0.003]$ $[0.004]$ $[0.003]$ $[0.004]$ $[0.004]$ Working Experience FT $0.027^{***}$ $0.030^{***}$ $0.028^{***}$ $0.029^{***}$ $0.039^{***}$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.004]$ $[0.002]$ $[0.003]$ Self Employed $-0.214^{***}$ $-0.165^{***}$ $-0.279^{***}$ $-0.154^{***}$ $-0.220^{***}$ $[0.025]$ $[0.034]$ $[0.039]$ $[0.019]$ $[0.023]$ $[0.031]$ Constant $6.572^{***}$ $6.732^{***}$ $6.537^{***}$ $6.544^{***}$ $6.602^{***}$ $[0.042]$ $[0.051]$ $[0.069]$ $[0.037]$ $[0.044]$ $[0.065]$	Agric/Craft/Machine	0.151***	0.178***	0.077	0.205***	0.192***	0.242***
Full time $0.716^{**}$ $0.646^{**}$ $0.770^{**}$ $0.925^{**}$ $0.916^{**}$ $0.937^{**}$ Working Experience PT $0.006^{**}$ $0.008^{***}$ $0.005$ $0.004$ $0.008^{**}$ $-0.001$ Working Experience FT $0.006^{**}$ $0.003^{***}$ $0.004$ $0.008^{**}$ $-0.001$ Working Experience FT $0.027^{***}$ $0.030^{***}$ $0.028^{***}$ $0.029^{***}$ $0.039^{***}$ Working Experience FT $0.027^{***}$ $0.030^{***}$ $0.028^{***}$ $0.029^{***}$ $0.039^{***}$ Self Employed $-0.214^{***}$ $-0.165^{***}$ $-0.279^{***}$ $-0.154^{***}$ $-0.220^{***}$ Constant $6.572^{***}$ $6.732^{***}$ $6.537^{***}$ $6.544^{***}$ $6.602^{***}$ $6.768^{***}$ $[0.042]$ $[0.051]$ $[0.069]$ $[0.037]$ $[0.044]$ $[0.065]$		[0.036]	[0.043]	[0.068]	[0.021]	[0.026]	[0.040]
Initial $(0.014]$ $(0.018]$ $(0.023]$ $(0.017]$ $(0.024]$ $(0.026]$ Working Experience PT $0.006^{**}$ $0.008^{***}$ $0.005$ $0.004$ $0.008^{**}$ $-0.001$ $(0.02]$ $(0.003]$ $(0.004]$ $(0.003]$ $(0.004]$ $(0.004]$ Working Experience FT $0.027^{***}$ $0.030^{***}$ $0.028^{***}$ $0.029^{***}$ $0.039^{***}$ $0.011^{***}$ $(0.002]$ $(0.002]$ $(0.002]$ $(0.004]$ $(0.002]$ $(0.003]$ Self Employed $-0.214^{***}$ $-0.165^{***}$ $-0.279^{***}$ $-0.154^{***}$ $-0.112^{***}$ $-0.220^{***}$ $(0.025]$ $(0.034]$ $(0.039]$ $(0.019)$ $(0.023)$ $(0.031)$ Constant $6.572^{***}$ $6.732^{***}$ $6.537^{***}$ $6.544^{***}$ $6.602^{***}$ $6.768^{***}$ $(0.042)$ $(0.051)$ $(0.069)$ $(0.037)$ $(0.044)$ $(0.065)$	Full time	0.716***	0.646***	0.770***	0.925***	0.916***	0.937***
Working Experience PT $0.006^{**}$ $0.008^{**}$ $0.005$ $0.004$ $0.008^{**}$ $-0.001$ $[0.002]$ $[0.003]$ $[0.004]$ $[0.003]$ $[0.004]$ $[0.004]$ $[0.004]$ Working Experience FT $0.027^{***}$ $0.030^{***}$ $0.028^{***}$ $0.029^{***}$ $0.039^{***}$ $0.011^{***}$ $[0.002]$ $[0.002]$ $[0.004]$ $[0.002]$ $[0.003]$ $[0.003]$ $[0.003]$ Self Employed $-0.214^{***}$ $-0.165^{***}$ $-0.279^{***}$ $-0.154^{***}$ $-0.112^{***}$ $-0.220^{***}$ $[0.025]$ $[0.034]$ $[0.039]$ $[0.019]$ $[0.023]$ $[0.031]$ Constant $6.572^{***}$ $6.732^{***}$ $6.537^{***}$ $6.544^{***}$ $6.602^{***}$ $6.768^{***}$ $[0.042]$ $[0.051]$ $[0.069]$ $[0.037]$ $[0.044]$ $[0.065]$		[0.014]	[0.018]	[0.023]	[0.017]	[0.024]	[0.026]
Working Experience FT $[0.002]$ $[0.003]$ $[0.004]$ $[0.003]$ $[0.004]$ $[0.004]$ Working Experience FT $0.027^{***}$ $0.030^{***}$ $0.028^{***}$ $0.029^{***}$ $0.039^{***}$ $0.011^{***}$ $[0.002]$ $[0.002]$ $[0.004]$ $[0.002]$ $[0.002]$ $[0.003]$ Self Employed $-0.214^{***}$ $-0.165^{***}$ $-0.279^{***}$ $-0.154^{***}$ $-0.112^{***}$ $[0.025]$ $[0.034]$ $[0.039]$ $[0.019]$ $[0.023]$ $[0.031]$ Constant $6.572^{***}$ $6.732^{***}$ $6.537^{***}$ $6.544^{***}$ $6.602^{***}$ $6.768^{***}$ $[0.042]$ $[0.051]$ $[0.069]$ $[0.037]$ $[0.044]$ $[0.065]$	Working Experience PT	0.006**	0.008***	0.005	0.004	0.008**	-0.001
Working Experience FT $0.027^{***}$ $0.030^{***}$ $0.028^{***}$ $0.029^{***}$ $0.039^{***}$ $0.011^{***}$ $[0.002]$ $[0.002]$ $[0.002]$ $[0.004]$ $[0.002]$ $[0.002]$ $[0.003]$ Self Employed $-0.214^{***}$ $-0.165^{***}$ $-0.279^{***}$ $-0.154^{***}$ $-0.112^{***}$ $-0.220^{***}$ $[0.025]$ $[0.034]$ $[0.039]$ $[0.019]$ $[0.023]$ $[0.031]$ Constant $6.572^{***}$ $6.732^{***}$ $6.537^{***}$ $6.544^{***}$ $6.602^{***}$ $6.768^{***}$ $[0.042]$ $[0.051]$ $[0.069]$ $[0.037]$ $[0.044]$ $[0.065]$		[0.002]	[0.003]	[0.004]	[0.003]	[0.004]	[0.004]
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Working Experience FT	0.027***	0.030***	0.028***	0.029***	0.039***	0.011***
Self Employed $-0.214^{***}$ $-0.165^{***}$ $-0.279^{***}$ $-0.154^{***}$ $-0.112^{***}$ $-0.220^{***}$ $[0.025]$ $[0.034]$ $[0.039]$ $[0.019]$ $[0.023]$ $[0.031]$ Constant $6.572^{***}$ $6.732^{***}$ $6.537^{***}$ $6.544^{***}$ $6.602^{***}$ $6.768^{***}$ $[0.042]$ $[0.051]$ $[0.069]$ $[0.037]$ $[0.044]$ $[0.065]$		[0.002]	[0.002]	[0.004]	[0.002]	[0.002]	[0.003]
Constant $(0.025]$ $(0.034]$ $(0.039]$ $(0.019]$ $(0.023]$ $(0.031]$ Constant $6.572^{***}$ $6.732^{***}$ $6.537^{***}$ $6.544^{***}$ $6.602^{***}$ $6.768^{***}$ $(0.042]$ $[0.051]$ $[0.069]$ $[0.037]$ $[0.044]$ $[0.065]$	Self Employed	-0.214***	-0.165***	-0.279***	-0.1.54***	-0.112***	-0.220***
Constant $6.572^{***}$ $6.732^{***}$ $6.537^{***}$ $6.544^{***}$ $6.602^{***}$ $6.768^{***}$ $[0.042]$ $[0.051]$ $[0.069]$ $[0.037]$ $[0.044]$ $[0.065]$	r / 2 =	[0.025]	[0.034]	[0.039]	[0.019]	[0.023]	[0.031]
$\begin{bmatrix} 0.042 \end{bmatrix} \begin{bmatrix} 0.051 \end{bmatrix} \begin{bmatrix} 0.069 \end{bmatrix} \begin{bmatrix} 0.037 \end{bmatrix} \begin{bmatrix} 0.044 \end{bmatrix} \begin{bmatrix} 0.065 \end{bmatrix}$	Constant	6.572***	6.732***	6.537***	6.544***	6.602***	6.768***
		[0.042]	[0.051]	[0.069]	[0.037]	[0.044]	[0.065]
Observations 11904 7943 3895 14556 10199 4219	Observations	11904	7943	3895	14556	10199	4219
Adjusted $R^2$ 0.569 0.520 0.643 0.572 0.545 0.642	Adjusted $R^2$	0.569	0.520	0.643	0.572	0.545	0.642

Standard errors in brackets Source: GSOEP \*p < 0.10, \*\*\*p < 0.05, \*\*\*\*p < 0.01

	All	Women	Women	All Men	Men	Men General
	Women	Vocational	General		Vocational	Education
		Education	Education		Education	
Treatment	0.015	-0.018	0.111	-0.034	-0.025	-0.115
	[0.039]	[0.042]	[0.085]	[0.039]	[0.041]	[0.093]
Time	-0.029**	-0.031**	-0.017	-0.031***	-0.029**	-0.024
	[0.012]	[0.013]	[0.025]	[0.011]	[0.012]	[0.025]
Treatment*Time	-0.136***	-0.200***	0.018	0.019	-0.028	0.197**
	[0.047]	[0.051]	[0.101]	[0.043]	[0.046]	[0.100]
Age	$0.011^{***}$	$0.005^{**}$	0.018***	0.015***	$0.005^{**}$	$0.027^{***}$
	[0.002]	[0.003]	[0.004]	[0.002]	[0.002]	[0.004]
Age squared	-0.003***	-0.003***	-0.002***	-0.003***	-0.003***	-0.002***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Good health	0.024	0.012	0.048	0.094***	0.077***	0.026
	[0.021]	[0.022]	[0.044]	[0.022]	[0.023]	[0.055]
Education	***	***		0 4 0 0 ***	***	
Level 1 Vet	-0.230	-0.301		-0.199***	-0.311	
	[0.029]	[0.028]		[0.025]	[0.025]	
Level 2 Vet	-0.243	-0.293		-0.296	-0.398	
	[0.023]	[0.023]		[0.022]	[0.023]	
Level 3 Vet	-0.091	-0.138		-0.104	-0.180	
T 11 A 1	[0.025]	[0.024]	0 = 00***	[0.025]	[0.024]	0 = < 0***
Level I Acad	-0.551		-0.580	-0.44 /		-0.569
	[0.045]		[0.055]	[0.035]		[0.047]
Level 2 Acad	-0.230		-0.305	-0.080		-0.186
1 - 12 4 1	[0.044]		[0.052]	[0.044]		[0.056]
Level 3 Acad	-0.522		-0.627	-0.442		-0.390
	[0.030]		[0.038]	[0.028]		[0.035]
Level 4 Acad	0.144			0.135		
Delationship status	[0.023]			[0.024]		
Married/Palationship	0.032*	0.058***	0.070**	0.067***	0.050***	0.100***
Warned/Relationship	0.032	0.038 [0.018]	-0.079	0.007	0.050	0.100
Sanarated/Divorced	0.034	[0.018]	$\begin{bmatrix} 0.030 \end{bmatrix}$ 0.143**	0.035	0.057**	
Separated/Divorced	[0.034	[0.030]	[0.066]	[0.026]	-0.037 [0.027]	[0.072
Widowed	-0.026	_0.001	-1 165**	_0.185	-0.160	0.000
Widowed	-0.090 [0.122]	[0 117]	[0 591]	-0.105 [0.141]	[0 131]	0.000 ۲۱
Job characteristic	[0.122]	[0.117]	[0.591]	[0.141]	[0.151]	[•]
Manager/Professional	0.656***	0 491***	0 869***	$0.427^{***}$	0 359***	0 450***
ivianagen i rerebbionar	[0 036]	[0.042]	[0 069]	[0.026]	[0 029]	[0 055]
Clerk/Service	0.473***	0.318***	0.678***	0.202***	0.150***	0.221***
	[0.036]	[0.042]	[0.068]	[0.027]	[0.030]	[0.056]
Agric/Craft/Machine	0.253***	0.188***	0.135	0.234***	0.179***	0.285***
5	[0.043]	[0.049]	[0.092]	[0.025]	[0.028]	[0.056]
Full time	0.654***	0.627***	0.711***	0.852***	0.942***	0.739***
—	[0.017]	[0.021]	[0.030]	[0.021]	[0.028]	[0.035]
Working Experience PT	0.005*	0.013***	0.003	-0.001	0.003	-0.002
	[0.003]	[0.004]	[0.005]	[0.003]	[0.005]	[0.005]
Working Experience FT	0.033***	0.036***	0.035***	0.028***	0.037***	0.018***
	[0.002]	[0.003]	[0.005]	[0.002]	[0.002]	[0.004]
Self Employed	-0.202***	-0.163***	-0.233***	-0.081***	-0.049**	-0.135***
	[0.029]	[0.036]	[0.047]	[0.020]	[0.024]	[0.038]
Constant	$6.474^{***}$	$6.685^{***}$	$6.300^{*\bar{**}}$	$6.624^{***}$	$6.645^{***}$	$6.864^{*\bar{**}}$
	[0.050]	[0.057]	[0.090]	[0.044]	[0.049]	[0.089]
Observations	8934	6362	2545	10938	8038	2811
Adjusted $R^2$	0.569	0.531	0.643	0.557	0.553	0.601

## Table A. 14 DID Treatment= giving birth in 2008 (2005-2011)

Standard errors in brackets Source: GSOEP \*p < 0.10, \*\*\*p < 0.05, \*\*\*\*p < 0.01

Table A. 15 DID Treatment=	giving birth	in 2012	(2009-2015)
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	All	Women	Women	All Men	Men	Men General
	Women	Vocational	General		Vocational	Education
		Education	Education		Education	
Treatment	0.018	-0.045	$0.118^{*}$	0.119***	$0.098^{**}$	$0.184^{***}$
	[0.037]	[0.044]	[0.066]	[0.035]	[0.040]	[0.068]
Time	0.001	0.005	0.016	-0.007	-0.007	0.009
m	[0.012]	[0.014]	[0.022]	[0.011]	[0.013]	[0.022]
Treatment*Time	-0.125	-0.175	-0.096	-0.046	-0.018	-0.088
	[0.047]	[0.057]	[0.081]	[0.041]	[0.048]	[0.077]
Age	0.017	0.010	0.026	0.013	0.003	0.025
. 1	[0.002]	[0.003]	[0.003]	[0.002]	[0.002]	[0.003]
Age squared	-0.003	-0.003	-0.001	-0.003	-0.003	-0.002
0 11 14	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Good health	0.034	0.042	0.012	0.085	0.06/	0.070
	[0.020]	[0.022]	[0.039]	[0.022]	[0.024]	[0.046]
Education	0 222***	0.221***		0 100***	0 220***	
Level I vet	-0.223	-0.321		-0.188	-0.330	
L	[0.029]	[0.029]		[0.025]	[0.02/]	
Level 2 Vet	-0.228	-0.302		-0.284	-0.414	
T1 2 W-4	[0.023]	[0.023]		[0.022]	[0.024]	
Level 3 Vet	-0.119	-0.200		-0.101	-0.214	
T 1 1 A 1	[0.025]	[0.024]	0.252***	[0.025]	[0.025]	0.520***
Level I Acad	-0.297		-0.332	-0.370		-0.520
Level 2 Acad	[0.043]		[0.049]	[0.032]		[0.038]
Level 2 Acad	-0.219		-0.204	-0.085		-0.238
T 1 2 A 1	[0.043]		[0.048]	[0.039]		[0.043]
Level 3 Acad	-0.4/4		-0.532	-0.439		-0.620
T	[0.028]		[0.032]	[0.026]		[0.029]
Level 4 Acad	0.074			0.145		
Delationship status	[0.024]			[0.023]		
Married/Palationship	0.012	0.020	0.062**	0.072***	0.060***	0.086***
Married/Relationship	-0.012	0.020	-0.005	0.075	0.000	0.080
Samaratad/Divaraad	[0.010]	[0.019]	$\begin{bmatrix} 0.030 \end{bmatrix}$	[0.010]	[0.018]	[0.030]
Separated/Divorced	-0.024	0.043	-0.211	-0.000	-0.070	0.071
Widowed	[0.030]	[0.032]	[0.003]	[0.029]	[0.033]	[0.005]
widowed	-0.297	-0.099	-0.941	0.179	0.205	0.000
Job abaractoristic	[0.140]	[0.150]	[0.331]	[0.140]	[0.139]	[.]
Manager/Professional	0 557***	0 / 80***	0 560***	0 302***	0 356***	0 358***
Wallagel/11016551011a1	0.337	[0.46]	[0.055]	[0.392	[0.030]	0.338 [0.042]
Clerk/Service	0.323***	0.200***	$0.267^{***}$	0.150***	0.148***	$\begin{bmatrix} 0.042 \end{bmatrix}$ 0.126***
CICINISCIVICE	0.323 [0.034]	[0.046]	[0.054]	[0.025]	[0 031]	0.120 [0.044]
Agric/Craft/Machine	0 161***	$0.174^{***}$	0.129*	$\begin{bmatrix} 0.023 \end{bmatrix}$ 0.177***	0.158***	$0.210^{***}$
Agric/Crart/Widenine	[0 040]	[0.051]	[0 074]	[0 024]	[0 029]	[0 044]
Full time	$0.721^{***}$	0.669***	0.750***	0.046***	0.029	0.044
r'un time	0.721	[0.009	[0 024]	[0.040	0.938 [0.028]	[0.028]
Working Experience	0.005**	0.008**	0.003	0.001	0.002	
PT	0.005	0.008	0.005	0.001	0.002	0.000
11	[0 003]	[0.003]	[0 004]	[0.003]	[0 004]	[0 005]
Working Experience	0.025***	0.029***	0.022***	0.030***	0.040***	0.014***
FT	0.023	0.029	0.022	0.050	0.040	0.017
11	[0 002]	[0.003]	[0 004]	[0 002]	[0 002]	[0 004]
Self Employed	-0 246***	-0 215***	-0 317***	-0 144***	-0 113***	-0 202***
Son Employed	[0 029]	[0 039]	[0 044]	[0 021]	[0 026]	[0 034]
Constant	6 569***	6 707 <sup>***</sup>	6 622***	6 506***	6 608***	6 721***
Constant	[0.047]	[0.059]	[0.075]	[0.042]	[0.051]	[0.073]
Observations	9511	6185	3266	11438	7868	3451
A diusted $R^2$	0 572	0 515	0.651	0 587	0 546	0.656
	0.014	0.010	0.001	0.002	0.2 10	0.000

Standard errors in brackets, Source: GSOEP; \*p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

	All women	Vocational	General
		Education	Education
Mother	-0.141***	-0.197***	-0.030
	[0.017]	[0.019]	[0.033]
Age	0.034***	0.034***	0.022**
6	[0.005]	[0.005]	[0.010]
Age squared	-0.003***	-0.003***	-0.003***
	[0.000]	[0.000]	[0.000]
Good health	-0.001	0.013	-0.032
	[0.012]	[0.013]	[0.025]
Education			
Level 1 Vet	0.265***	0.381***	
	[0.078]	[0.088]	
Level 2 Vet	-0.245***	-0.129*	
	[0.061]	[0.074]	
Level 3 Vet	-0.093**	-0.369***	
	[0.044]	[0.058]	
Level 1 Acad	0.215**		-0.013
	[0.088]		[0.250]
Level 2 Acad	0.006		-0.661***
	[0.071]		[0.129]
Level 3 Acad	-0.539***		-0.527***
	[0.044]		[0.043]
Level 4 Acad	$0.100^{*}$		
	[0.051]		
Relationship-status		all all all a	
Married/Relationship	-0.046***	-0.056***	-0.013
	[0.016]	[0.018]	[0.031]
Separated/Divorced	-0.024	-0.007	-0.095
	[0.030]	[0.033]	[0.063]
Widowed	-0.142	-0.111	-0.212
	[0.167]	[0.210]	[0.265]
JOD Characteristics	0 225***	0.205***	0.120**
Manager/Professional	0.235	0.303	0.139
Clash/Samaiaa	[0.029]	[0.034]	[0.054]
Clerk/Service	0.133	0.195	0.030
Agri/Craft/Machina	[0.028]	[0.055]	[0.051]
Agn/Claft/Machine	0.090	0.140 [0.020]	-0.034
Full-time	0.514***	0.482***	0.548***
run-une	[0.011]	0.402 [0.013]	0.3 <del>4</del> 8 [0.020]
Working Experience PT	0.009*	0.006	0.028**
Working Experience 1 1	[0.005]	[0.006]	[0.012]
Working Experience FT	0.007	0.001	0.037***
Working Experience 1 1	[0 005]	[0.006]	[0 011]
Self employed	-0.246***	-0.148***	-0.332***
~~~_~	[0.025]	[0.034]	[0.037]
Dummy years	Yes	Yes	Yes
Constant	7.171***	7.192***	7.102***
	[0.069]	[0.084]	[0.112]
Observations	22439	15254	7067
Adjusted $R^2$	0.002	-0.078	-0.017

Table A. 16 Fixed effect Log Wage Results-Women (2005-2015)

Standard errors in brackets Source: GSOEP.dta \*p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

	All men	Vocational Education	General
Father	0.002	-0 009	0.039
1 unior	[0.013]	[0.015]	[0.026]
Age	0.096***	$0.107^{***}$	0.057***
nge	[0 004]	[0.005]	[0 011]
Age squared	-0.002***	-0.002***	-0.002***
ngo squarea	[0 000]	[0 000]	[0 000]
Good health	0.011	0.017	-0.013
Good noulli	[0 011]	[0 012]	[0 023]
Education	[0.011]	[0:012]	[0.025]
Level 1 Vet	0.243***	0.260***	
201011100	[0 050]	[0 057]	
Level 2 Vet	-0 307***	-0 267***	
	[0.043]	[0.051]	
Level 3 Vet	-0.163***	-0 470***	
	[0 038]	[0 054]	
Level 1 Acad	0 223***	[0.024]	-0.623***
20,01 1 / 10uu	[0.057]		[0 204]
Level 2 Acad	0 121**		-0 644***
Level 2 Acad	[0.058]		[0 157]
Level 3 Acad	-0.628***		_0 722***
Level 5 Acad	-0.028		-0.722
Level / Acad	0.015		[0.039]
Level 4 Acad	0.013		
	[0.044]		
Relationshin Status			
Married/Relationship	0.028**	0.002	0.065***
Warned/Relationship	0.028 [0.013]	0.002 [0.01/1]	[0.005 [0.025]
Saparated/Divorced	0.010	[0.014]	0.023
Separated/Divorced	[0.019	0.021	0.004
Widowed	0.180	[0.027]	0.230
Widowed	[0 377]	0.000 F 1	0.239 [0.385]
Job Characteristics	[0.377]	[.]	[0.365]
Manager/Professional	0.017	-0.024	0 1/13***
Wallagel/1101essional	0.017 [0.017]	-0.024 [0.020]	[0.036]
Clerk/Service	[0.017]	-0.076***	0.060*
	[0.031	-0.070 [0 021]	[0.035]
Agri/Craft/Machine	0.010	_0.021] _0.026	0.076**
Agii Ciair machine	[0.016]	-0.020 [0.019]	[0 033]
Full-time	0.655***	0.670***	0.546***
	[0.033	Γ <u>0</u> 0171	[0.0 <b>-</b> 1]
Working Experience DT	_0 020***	[0.01/] _0.023***	_0 000
working Experience r I	-0.029 [0.006]	-0.023	-0.009
Working Experience FT	[0.000] 0.059***	[0.007] 0.060***	0.012
working Experience r I	-0.038	-0.009	-0.010
Salfamplayed	[0.003]	[0.003] 0.062***	[0.012] 0.112***
Sen employed	-0.090 [0.01 <i>7</i> 1	-0.002 [0.022]	-0.112
Dummy years	[U.U1/]	[0.022] Vaa	[0.029] Vos
Constant	1 es 7 005***	1 es 9 116***	I es 7 670***
Constant	1.903	8.110 [0.072]	/.0/9
	[0.060]	[0.0/3]	[0.113]
Observations $A = \frac{1}{2}$	2/409	19193	/808
Aajusted K <sup>2</sup>	0.104	0.030	0.02/

Table A. 17 Fixed Effect Log Wage Results- Men (2005-2015)

Standard errors in brackets Source: GSOEP.dta \*p < 0.10, \*\*p < 0.05, \*\*\*p < 0.01

# APPENDIX B



Figure B.1 Common trend: Raw data monthly wage by gender



Figure B.2 Common trend: Logarithm of the monthly wage by education type (Women)

Note: In the upper part of the graph, the trend for women with a vocational qualification as highest qualification is inspected, in the lower one for women with a general qualifications as highest qualification. The graphical inspections, which are based now on a smaller number of women observed, continue to show a generally parallel trend both among women with a general and vocational background.