Potential Parenthood and Career Progression of Men and Women - A Simultaneous Hazards Approach[1]

— PRELIMINARY, COMMENTS WELCOME —

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Abstract. We analyze individual career transitions of men and women in Germany. Our particular focus is on the association between upward, downward and horizontal job changes and individual fertility. In contrast to most of the literature we focus on the association of *potential* rather than realized fertility with individual career transitions. Using multivariate proportional hazard models with competing risks we find a significant negative relationship between the probability of having a child and horizontal career transitions for women, and a positive significant association of the hazard of parenthood and upward career transitions for men. These effects persist if we apply fixed effects panel data models allowing for correlation of individual parenthood hazards with unobserved individual characteristics.

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1 Introduction

Gender differences in the labor market remain a hot topic in labor economics. Women generally earn less than men, their wage mobility is lower and they are underrepresented in top management positions (Blau/Kahn, 2000, Weichselbaumer/Winter-Ebmer, 2005, Manning/Swaffield, 2008, Bertrand/Hallock, 2001, Baerts et al., 2011). Some studies have found the existence of a 'glass ceiling' to women's career perspectives which excludes them from high-earnings and high-status positions (Albrecht et al., 2003, Arulampalam et al., 2007). Career progression is linked to wage growth, status and job satisfaction. Understanding differences in career transition patterns between men and women is a starting point for identifying the factors that hamper women's career progression and may help to explain the gender gap at the upper end of the career ladder.

Fertility related aspects have been considered to be a potential main driver of gender differences in the career course. A number of studies have established a relationship between career interruptions due to child rearing and slower wage growth or even wage losses (for some recent examples, see Anderson et al., 2002, Lalive/Zweimüller, 2009, Bertrand et al., 2010, Fitzenberger et al., 2013 and Drange/Rege, 2013). While realized fertility is certainly a major candidate for explaining differences between men and women after the birth of a child, the effect of *potential* fertility on career transitions has received less attention. There may be different mechanisms giving rise to an effect of potential fertility on career transitions. The most obvious one is that employers could shy away from hiring or promoting women who have a high hazard of becoming a mother in the near future because they fear that these women could become unavailable for work because of child birth or that their productivity after child birth could suffer due to parenting duties (Lazear/Rosen, 1990). Such a mechanism follows the theory of statistical discrimination, i.e. employers might discriminate against women with a high observable pregnancy hazard, no matter whether a given woman will actually give birth to a child or not. There may also be voluntary effects of a high pregnancy hazard on career transitions, i.e. at a time at which a woman considers the possibility to become a mother to be high, she may choose not to make certain career transitions. Effects of potential fertility on career transitions may also exist for men. Employers might interpret indicators of a high hazard of imminent parenthood (e.g. marital status) as a positive signal indicating high productivity and career commitment or such men might voluntarily make or not make certain career transitions.

The aim of this paper is to directly investigate the relationship between the hazard of becoming a parent and the propensity for directional career movements, i.e. upward, downward and horizontal career transitions. To our best knowledge, this has not been done in this form in the literature before. Measuring career status in terms of the number of subordinates directly supervised by a given person, we focus on career transitions of men and women before the birth of a first child. We do so in order to separate as completely as possible the aspect of potential fertility from that of realized fertility. The more general research question of our study is the comparative analysis of directional career transitions for men and women. We pursue this research question in the framework of simultaneous hazards (Lillard, 1993), i.e. the hazards of directional career movements are modeled jointly with the individual hazard of becoming a parent, whereby the parenthood hazard directly enters the hazards of directional career movements as an explanatory variable. We also take account of a large number of potential other determinants of career transitions as well as of aspects like state dependence, duration dependence and lagged duration dependence.

This paper is structured as follows. In section 2, we review some related literature. Section 3 describes our data. In section 4 we outline our econometric framework. Section 5 presents our empirical results. The final section 6 concludes.

2 Related Literature

There is large literature on career development of men and women. Some studies focus on promotion, some on wage growth, while others analyze job mobility covering job-to-job movements irrespective of the rank. Summarizing results on promotions is difficult, because the term promotion covers a range of different processes depending on the data used (see Gibbons/Waldman, 1999 for a theoretical overview on the term promotion and Abele et al., 2011 on career success). Many studies using survey data rely on self-reported promotions (e.g. Booth et al., 2003, Blau/DeVaro, 2007), others use employer-provided or administrative information (e.g. Pekkarinen/Vartiainen, 2006). If promotion is measured as a change in job prestige covering a job-to-job change, one needs data that have comparable scales about the hierarchical level or the job task description (see Granqvist/Persson, 2005, Pekkarinen/Vartiainen, 2006, Kunze, 2013).

An important distinction is the one between internal and external promotions (Acosta, 2010). Internal promotions happen within the employment spell at the same employer, while external promotions refer to promotions in connection with job changes. Due to data restrictions, in this paper we will only study job-to-job movements (for more details, see below). Every transition is defined as either upward, downward or as a horizontal movement. While upward movements can be interpreted as promotions, horizontal transitions come closer to what is labeled as job mobility in the literature. Promotions are often considered a main driver of wage growth (e.g. McCue, 1996). However, job mobility is theoretically and empirically also found to be closely connected to wage growth. According to the 'job shopping' theory, employees benefit from early job mobility (see e.g. Johnson, 1978, Topel/Ward 1992, Schmelzer, 2012, Bagger et al., 2014). An important implication is that, in the case of employer discrimination against women, reduced early job mobility may have more long-term consequences on the likelihood of upward and horizontal transitions.

Theoretically, lower career transition probabilities for women might be due to employers' behavior in processes of promotion and hiring, described by the theory of statistical discrimination (Becker, 1957, Phelps, 1972).[2] According to this argument, *all* women face lower promotion probabilities compared to men because *some* women will interrupt their employment as a consequence of giving birth to a child. Following Aigner/Cain (1977) this would not necessarily result in an unwarranted discrimination of women as a group, because employers have to take account of the higher separation risk of women in their hiring and promotion decisions, leading to the situation that women who give birth later are granted a higher-than-adequate promotion probability at the expense of other women who face a lower-than-adequate promotion probability. However, in a life-cycle perspective, the women who do quit for fertility reasons later will not actually benefit from their earlier 'preferential' treatment, so that there may be a net loss for the group of women as a whole. Moreover, for many, the idea that a given individual should be 'penalized' for group characteristics or for tasks considered to be essential for the reproduction of society may seem questionable.

The central theoretical contribution in the literature modeling the consequences of higher female separation rates for job promotions is Lazear/Rosen (1990). In their model, women are assumed to have more out-of-work possibilities than men and are therefore more likely to quit in their later

[2]For the following, see also the discussion in Winter-Ebmer/Zweimüller (1997).

employment path. Employers take this into account in their hiring and promotion decisions with the consequence that women have to be more able than men to get promoted to the next career stage. As a consequence, the final career rank and compensation is lower for women than for men, even under the assumption of an equal ability distribution for men and women.

The existing empirical literature generally shows that women are underrepresented in top-management and executive positions and have lower unconditional promotion rates (e.g. Cobb-Clark, 2001, Blau/DeVaro, 2007, Smith et al., 2013, Kunze/Miller, 2014). The picture becomes less clear with respect to conditional promotion probabilities. Groot/van den Brink (1996) find that women are less frequently in jobs that offer promotion possibilities, but if they are, they do not face lower promotion probabilities. The results in Blau/DeVaro (2007) suggest lower probabilities of promotion for women but no gender differences in wage growth with or without promotions. Booth et al. (2003) present a theory and empirical evidence for the 'sticky floor' hypothesis. According to their model, women are as likely as men to get promoted but they end up at the bottom of the pay scale in the new grade. Other representative examples of literature are Hersch/Viscusi (1996), Cobb-Clark (2001), Francesconi (2001) and Johnston/Lee (2012). Results on job mobility confirm the 'job shopping' hypothesis and reveal substantial gender differences. Schmelzer (2012) finds positive wage effects of direct job mobility in the early career. According to Carrillo-Tudela et al. (2014) voluntary moves tend to be upward and connected with wage gains.

Focusing in more detail on gender differences, Granqvist/Persson (2005) show that family related factors such as being married have contradictory effects on men's and women's transition probabilities to higher ranked jobs. They also find negative effects of career interruptions due to child birth on women's career mobility. The result that especially variables related to family responsibilities affect men and women in a different way is also confirmed in Kunze (2013), who finds that the probability of progressing on the career ladder is reduced through children for women but not for men. On the contrary, men with one to two children are most likely to climb the career ladder. Related to these findings, there may also be effects of partnership on career progression. The hypotheses that men benefit from being in a relationship while women's career courses are negatively affected by cohabitation are often referred to as 'marriage premium' and 'marriage penalty' respectively. The theoretical arguments are based on human capital theory but empirical evidence is mixed (Verbakel/De Graaf, 2008). Finally, Kunze/Troske (2012) exploit firm closures as a natural experiment in order to investigate gender differences in job search behavior. They

find that gender differences in job search and mobility are related to fertility decisions and are apparent in prime-childbearing years.

As indicated above, most of the empirical literature focuses on the effects of realized but not on potential or future fertility on career paths. Exceptions are Francesconi (2002) and Adda et al. (2011) who present theoretical and empirical models of intertemporal career decisions and fertility behavior. Our more modest goal in this paper is to directly investigate the potential link between the contemporaneous probability of becoming a parent and the probabilities for different career movements. To our best knowledge, this has not been done in this form in the literature before. The study that comes closest to what we have in mind is Winter-Ebmer/Zweimüller (1997) who investigate the determinants of the current career *rank* of men and women and who include as an explanatory variable aggregate fertility indicators for women. However, Winter-Ebmer/Zweimüller (1997) do not consider transitions between ranks or potential fertility effects on mens' career outcomes, and they do not explicitly model individual fertility hazards. There are also two experimental studies based on artificial job applications whose implicit research questions resemble the one considered by us. Petit (2007) presents evidence for hiring discrimination against women aged 25 applying for high-skilled administrative jobs but no discrimination of women among single and childless applicants aged 37. Baert (2014) finds evidence for discrimination of young heterosexual women (compared to homosexual women) when applying for job vacancies. Compared to the cited articles our goal is to explicitly model the relationship between the individual hazard of becoming a mother or a father and the hazards for different career movements in a joint way using the simultaneous hazards approach introduced by Lillard (1993).[3] In view of the literature, our hypothesis is that the probability of upward and horizontal career transitions is negatively related to the parenthood hazard for women, while we conjecture that high contemporaneous parenthood hazards might constitute a positive career signal for men. We further expect (other) family related variables to differently affect men's and women's career transitions.

[3]Applications of this approach are, for example, Lillard/Waite (1993), and Aassve et al. (2006) who model for married couples the hazards of conception along with the hazards of marital disruption.

3 Data

For our analysis, we need data that cover employment, partnership and fertility information in one data set. We use data from the 'Working and Learning in a Changing World' (ALWA) survey provided by the Institute for Employment Research (IAB) at the German Federal Employment Agency (BA) (see Kleinert et al., 2011). The ALWA data set contains the life histories of more than 10,400 individuals. Besides information on schooling and training, we have detailed monthly information on labor market behavior as well as on processes of family formation and regional mobility. The employment history is reported per episode, with a new episode defined by a change of employer, a change in the task performed or by an employment interruption such as unemployment, parental leave or military service. As a preparatory step, we first generate a complete employment history for every individual for which we adjust parallel spells by defining main and secondary employment and also resolve cases of overlapping schooling or training spells. In our final data set, every month from age fifteen onwards is uniquely identified as either an employment or a non-employment spell. In certain cases, e.g. if an employment spell is followed by a short interruptive spell of search unemployment, we extend the first spell to also include the short intermediate spell. We do this in order to avoid an employment spell to be classified as censored although, from a substantive point of view, there is a career transition to a subsequent employment spell. If an employment spell is artificially extended, we control for this and the exact reason why it is extended in our hazard model estimates. Employment spells that are followed by non-employment spells are treated as being censored.

For every employment episode we have information on the occupational task performed by a person as well as on individual and establishment characteristics. In order to classify job changes as upward, downward and horizontal transitions, we define the career level during a given job spell by the number of subordinates supervised by the person in question. A change in this number by three or more people defines an upward or a downward movement. In the case of no change or a change by no more than two subordinates, an employment transition is classified as a 'horizontal' career movement.[4]

We restrict our sample to the birth cohorts 1956 to 1988 and to individuals living in West Germany

[4]We experimented with different definitions of upward/downward movements but found this definition to be a good compromise between the substantive concept of an upward/downward transition and resulting number of transitions.

or East Germany after 1990. We only consider individuals (men and women) before they become parents for the first time. We do this in order to exclusively focus on the effects of potential rather than realized fertility. Moreover, we avoid in this way difficult problems of sample selection as the group of individuals who continue to work after first births is likely to be highly selective (especially women). Our final sample includes 2,883 women and 2,734 men. We observe 2.2 career spells per individual on average. Table 1 shows descriptive statistics on the number and duration of employment spells. Descriptive statistics of all relevant variables are summarized in Table 10 in the appendix.

— Table 1 about here —

For the 2,883 (2,734) women (men) in our sample we observe 5,482 (6,194) job spells. 2,355 (3,041) of those end with a transition to a subsequent job episode that can be characterized as an upward, downward or horizontal transition. Censored spells are followed by an episode without employment, which could be unemployment, educational spells or other interruptions. As Table 1 reports, the censored spells are on average three times as long as spells ending in an upward or horizontal transition and twice as long as spells leading to a downward transition. This pattern is observed for both women and men. It suggests that individuals who 'climb the career ladder' do so very quickly, while those who plan to exit the labor market or to step down on the career ladder remain longer in their current position. In order to figure out whether these transitions are driven by a pattern of duration dependence or whether and which other factors influence the duration or exit route of a job spell, further variables have to be considered in a multivariate setup.

4 Econometric Framework

4.1 Multivariate Proportional Hazard Model

Our goal is to model the pregnancy hazard – or more generally the parenthood hazard[5] – simultaneously with the hazard of making an upward, downward or horizontal career transition. For this

[5]We define the observed time of birth of a child minus nine months as the beginning of parenthood. In this way we also cover the time of pregnancy which seems to make most sense especially in the case of women.

purpose, we estimate a multivariate proportional hazard model with competing risks, in which the parenthood hazard enters as an explanatory variable in the hazards for making one of the three career transitions (see van den Berg, 2001, and Lillard, 1993).

Our simultaneous model looks as follows:

$$\ln h^p(t|x_{it}) = x_{it}^p \gamma_x^p + z_{it}^p \gamma_z^p \quad (1)$$

$$\ln h^u(t|x_{it}) = x_{it}^u \beta^u + \delta^u \ln h^p(t|x_{it}) \quad (2)$$

$$\ln h^d(t|x_{it}) = x_{it}^d \beta^d + \delta^d \ln h^p(t|x_{it}) \quad (3)$$

$$\ln h^h(t|x_{it}) = x_{it}^h \beta^h + \delta^h \ln h^p(t|x_{it}) \quad (4)$$

In this model, $h^p(t|x_{it})$ denotes individual i's hazard of starting parenthood at time t given characteristics x_{it} (which may also include past information). The variables (x_{it}^p, z_{it}^p) used to predict this hazard are assumed to be observable information available in a CV in order to mimic employers' predictions of how likely it is for a person with characteristics (x_{it}^p, z_{it}^p) to start parenthood at time t. The hazards $h^u(t|x_{it})$, $h^d(t|x_{it})$, $h^h(t|x_{it})$ denote the hazards of making an upward, downward or horizontal career transition at time t given explanatory variables x_{it}. As explanatory variables we consider socioeconomic information (educational and employment history, age, experience, partner information, employer characteristics) as well as regional information based on the person's residential history (see below for more details). We also consider the dependence of career transitions on the time already spent in the given or in previous career levels (duration dependence and lagged duration dependence). In addition, the contemporaneous parenthood hazard $h^p(t|x_{it})$ enters as an explanatory variable in each of the three directional career hazards.

Given the structure of the model, we need to include instrumental variables z_{it}^p in the equation for the pregnancy hazard for identification. In our empirical implementation, we include the birthrate by year and federal state as well as the amount of potential child allowance as instruments in the pregnancy hazard. The full list of explanatory variables used in the four hazard equations is given in table 2.

— Table 2 about here —

For the three career hazards we assume a competing risks structure, i.e. the probability of making a particular career transition at time t is computed as the product of the probability of making

this transition at t and the probability of not making the two other career transitions until t. The resulting likelihood contribution for month t of individual i is given by

$$\begin{aligned}\mathcal{L}(t|x_{it}) &= h^u(t|x_{it})^{up_{it}} \times h^d(t|x_{it})^{down_{it}} \times h^h(t|x_{it})^{horiz_{it}} \times h^p(t|x_{it})^{p_{it}} \\ &\quad \times exp\{-\sum_{j=u,d,h} \int_{t-1}^{t} h^j(t|x_{it})\} \times exp\{-\int_{t-1}^{t} h^p(t|x_{it})\}, \end{aligned} \tag{5}$$

where $up_{it}, down_{it}, horiz_{it}$ and p_{it} are dummies indicating an upward, downward, horizontal or parenthood transition at the end of month t.

4.2 Fixed-Effects SUR Model

In order to address the aspect that the individual hazard of becoming a mother or father may be correlated with unobserved individual characteristics (such as time-constant preferences), we also consider a fixed effects panel data model in which we jointly model the monthly probabilities of upward, downward and horizontal career transitions along with the monthly probability of starting parenthood.

The resulting model is given by

$$p_{it} = x_{it}\gamma_x^p + z_{it}\gamma_z^p + \epsilon_{it}^p, \quad \hat{h_{it}^p} = x_{it}\gamma_x^p + z_{it}\gamma_z^p \tag{6}$$

$$up_{it} = x_{it}\beta^u + \delta^u \hat{h_{it}^p} + \epsilon_{it}^u + c_i^u \tag{7}$$

$$down_{it} = x_{it}\beta^d + \delta^d \hat{h_{it}^p} + \epsilon_{it}^d + c_i^d \tag{8}$$

$$horiz_{it} = x_{it}\beta^h + \delta^h \hat{h_{it}^p} + \epsilon_{it}^h + c_i^h, \tag{9}$$

where c_i^e $(e = u, d, h)$ denote time-constant person-specific fixed effects for the different career directions and ϵ_{it}^e $(e = p, u, d, h)$ idiosyncratic error terms.

Inserting the predicted pregnancy hazard into equations (7) to (9) and demeaning explanatory variables in the career equations leads the following system of equations which we estimate by efficient NLSUR (e.g., Greene, 2012):

$$p_{it} = x_{it}\gamma_x^p + z_{it}\gamma_z^p + \epsilon_{it}^p \tag{10}$$

$$(up_{it} - \overline{up}_i) = (x_{it} - \bar{x}_i)\beta^u + (x_{it} - \bar{x}_i)\gamma_x^p\delta^u + (z_{it} - \bar{z}_i)\gamma_z^p\delta^u + (\epsilon_{it}^u - \bar{\epsilon}_i^u) \tag{11}$$

$$(down_{it} - \overline{down}_i) = (x_{it} - \bar{x}_i)\beta^d + (x_{it} - \bar{x}_i)\gamma_x^p\delta^d + (z_{it} - \bar{z}_i)\gamma_z^p\delta^d + (\epsilon_{it}^d - \bar{\epsilon}_i^d) \tag{12}$$

$$(horiz_{it} - \overline{horiz}_i) = (x_{it} - \bar{x}_i)\beta^h + (x_{it} - \bar{x}_i)\gamma_x^p\delta^h + (z_{it} - \bar{z}_i)\gamma_z^p\delta^h + (\epsilon_{it}^h - \bar{\epsilon}_i^h) \tag{13}$$

As a variation, we consider spell fixed-effects, i.e. γ_i^e $(e = u, d, h)$ are assumed to be constant within career spells, but may be be different across career spells. We compute standard errors clustered at the level of the individual throughout all our estimations.

5 Empirical Results

Figure 1 presents the unconditional hazard rates for the different exit routes separately for men and women. The graphs generally suggest lower career mobility for women than for men, especially with respect to upward and horizontal movements.

— Figure 1 about here —

In order to identify the influence of certain regressors on the hazard rates of the different career directions, we estimate the models described in the previous section. Our main regressor of interest is the probability of parenthood, which is modeled as a conditional hazard rate. Figure 2 illustrates the distribution of predicted parenthood hazards as estimated by equation (6). For both men and women, the distribution of predicted parenthood hazards has two peaks which turn out to be the result of the two subgroups of married and unmarried individuals.

— Figure 2 about here —

Table 3 reports the determinants of the parenthood hazard as estimated in our multivariate proportional hazard model (i.e. eq. (1)). We find a nonlinear relationship between the parenthood hazard and age. For women, no births are reported in our data for women older than 45 years so that we group the last two age categories in order to avoid perfect predictions. The results also suggest a concave experience pattern in the probability of parenthood as well as significant and strong effects of religion, the regional birth rate, being married and living in East Germany.

— Table 3 about here —

While the effects on the timing of first birth are relatively similar in the male and female subsample, gender differences are more prevalent in the estimated coefficients of the career hazard equations.

We find that many of the effects on the three transition directions are different between men and women both in significance and magnitude. Especially variables related to fertility turn out to interact with the career development in different ways. The results for the multivariate proportional hazard model are shown in Table 9.

— Table 9 about here —

For our main variable of interest, the results suggest that the parenthood hazard is significantly negatively related to women's horizontal job mobility. Given the log-log specification, a one percent higher parenthood hazard is associated with a .16 percent lower hazard for a horizontal career transition. For upward transitions, we find a negative but not significant relationship, for downward transitions it is positive but also not significant. For men, the results suggest a significant positive association of the parenthood hazard with upward transitions and insignificant effects for downward and horizontal transitions. The results imply that for men, a one percent higher parenthood hazard translates into a .18 percent higher hazard for climbing up the career ladder. These results are consistent with the hypothesis that for employers, anticipated parental responsibilities of a male employee may be a positive signal of reliability and stability, fostering job transitions to higher hierarchical levels. For women, the results suggest that horizontal (but not upward) mobility is hampered by a high probability of becoming a mother in the near future.

Table 9 also shows other interesting effects. To identify the effect of cohabitation we use individuals with no partner as the reference category compared to those with partners with high or low education. The education variable is supposed to capture differences in human capital (Verbakel/De Graaf, 2008). It turns out that cohabiting with a partner with low education decreases women's propensity to change to a job with a higher level of personnel responsibility, while it makes an upward transition for men more likely. The same relationship is observed for horizontal transitions but with smaller magnitude. This asymmetry may reflect that men are often unwilling to be 'overtaken' by their female partners. By contrast, cohabiting with a highly educated partner increases the likelihood of upward career transitions for men and women. These cases may reflect career competition within relationships or support by the high level of human capital of the partner. Interestingly, we find no age effects for women when it comes to upward or downward career movements after we control for the parenthood hazard. This is in contrast to results in the literature that do not separately control for effects of potential fertility. A stable result across

all equations and both genders is the significant effect of the mobility indicator (i.e. number of residential changes in the last 24 months). This effect is likely to pick up the relationship between residential moves and earlier or later job changes.

We also find strong effects of state dependence for upward and horizontal transitions for both men and women. The likelihood of making an upward, downward or horizontal transition strongly depends on the current position in the career hierarchy. By contrast, we observe no strong duration dependence effects for upward or downward transitions, suggesting that no 'career automatism' exists. Evidence for duration dependence is only present in the horizontal hazard equations where we observe negative duration dependence. We also consider effects of lagged duration dependence. We do so separately for past spells with and without personnel responsibility. Having already worked in a job with subordinates is significantly positively related to the hazard of upward transitions for both men and women. This suggests dynamic effects in career paths implying that earlier disadvantages (such as the negative parenthood effect for women's horizontal transitions) or advantages (such as the positive parenthood effect for men's upward transitions) have additional long-term consequences.

As to the effect of educational qualifications on career transitions, our results suggest that women and men with a high-school degree (Abitur) or completed vocational training are more likely to make horizontal transitions compared to the reference group of individuals without such qualifications. There is an even stronger effect on horizontal transitions for individuals with a university degree. Interestingly, we find very strong effects of high qualifications on upward transitions for men but no such effects for women. Our results for the self-reported indicators for maths skills and verbal abilities conform to prior expectations: more able individuals are significantly more likely to climb up the career level while we find no effects of our ability indicators on downward and horizontal transitions. Interestingly, high competence scores are much more important for upward transitions of women than for those of men. This directly corresponds to the well-known feature of Lazear/Rosen (1990)'s model that women have to pass a higher ability threshold than men in order to proceed to a higher career level.

We now turn to the fixed effects approach to estimating our system of hazard equations. The advantage of our fixed effects model (6) to (9) is that the parenthood hazard (and all other explanatory variables) may be arbitrarily correlated with unobserved time-constant (or, alternatively, spell-constant) determinants of individual career transitions. In this way, we difference out

unobserved person-specific characteristics such as time-constant personal preferences or personal circumstances which may also influence career transitions. The results for these estimations are given in Tables 5 and 6.

— Table 5 and 6 about here —

The most important result in these tables is that our main findings concerning the effect of the parenthood hazard on career transitions survive in a fixed effects setting. The estimates for women suggest that the monthly probability for a horizontal job transition is significantly negatively related to the monthly probability of starting parenthood. More concretely, if the probability for becoming a mother increases by one percentage point, the probability for a horizontal job transition is reduced by .2 percentage points. It is not significantly related to upward or downward transitions. For men, the parenthood hazard is significantly positively related to upward transitions but unrelated to downward or horizontal transitions. In particular, the probability of an upward transition is increased by about .09 percentage points if the parenthood hazard increase by one percentage point. Note that most of the other estimated effects in Tables 8 and 7 are relatively insignificant which is a typical result for within-estimates of explanatory variables with limited temporal variation.

Finally, Tables 7 and 8 show the results for the specification in which we allow the fixed effects to vary over career spells, i.e. there may be person-specific effects that are constant within a career spell but which may vary across career spells. Again, the results confirm our findings about the relationship between the parenthood hazard and career transitions. As before, a higher parenthood hazard for women is significantly positively related to lower horizontal career mobility. Moreover, the (smaller) negative relationship between the parenthood hazard and upward transitions, which appeared in similar form in the multivariate hazard model and in the model with person-specific fixed effects, turns significant in the model with spell-specific fixed effects. This means that the model with spell-specific fixed effects provides evidence that not only horizontal but (to a lesser extent) also upward transitions are significantly negatively related to the hazard of becoming a parent. For men, the results confirm the finding of the multivariate hazard model and the model with person-specific fixed effects that a higher parenthood hazard significantly increases the likelihood of upward transitions.

— Tables 7 and 8 about here —

6 Conclusion

This paper analyzes career progression patterns of childless men and women in Germany. The descriptive analysis of career transition hazards confirms previous findings in the literature that women generally exhibit lower career mobility than men. In order to investigate the determinants of individual career transitions in more detail, we estimate a multivariate proportional hazard model with competing risks for upward, downward and horizontal transitions while simultaneously modeling the hazard of first births and its effect on career transitions. Our results suggest that a high contemporaneous probability of becoming a parent significantly lowers horizontal but not upward or downward career mobility for women. For men we find that a higher contemporaneous probability of becoming a parent increases the likelihood of upward but not of downward or horizontal career transitions. These results persist if we allow for a correlation of parenthood hazards with unobserved individual characteristics such as time- or spell-constant personal preferences. In one specification, we also find a significant (but smaller) negative effect on female upward career mobility. We believe that our findings contribute to the literature on the relationship between fertility hazards and career transition patterns. To the extent that our estimations net out unobserved differences in preferences, our results are consistent with the hypothesis that women's career mobility is hampered by the hazard of becoming a mother while that of men is increased by a high probability of becoming a father. We would certainly not go so far to interpret these findings as clean evidence for employer discrimination. Such an interpretation would rest among other things on the assumption that career preferences are time- or spell-constant which would be hard to defend. Incorporating time-varying preferences into an empirical analysis seems extremely hard but might be an interesting challenge for future research.

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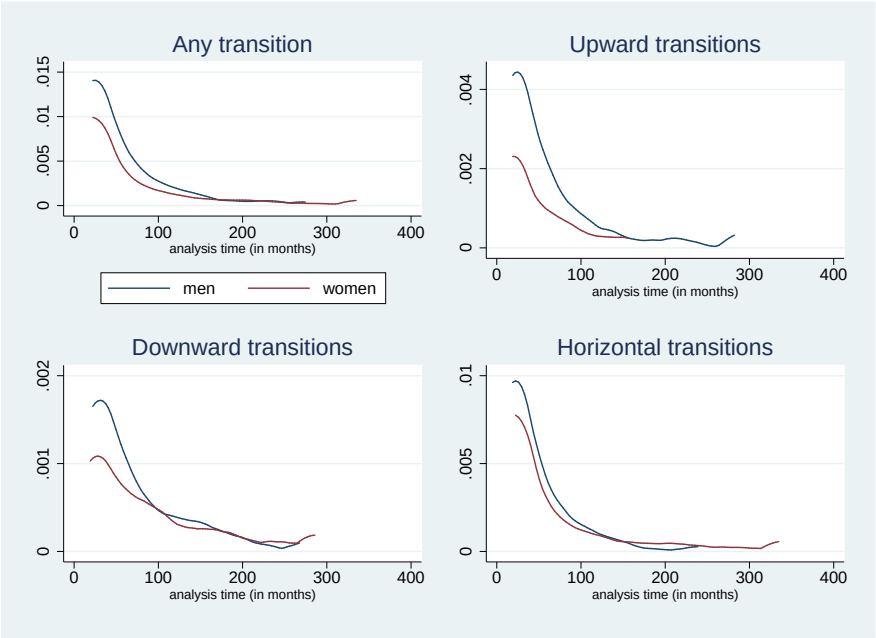
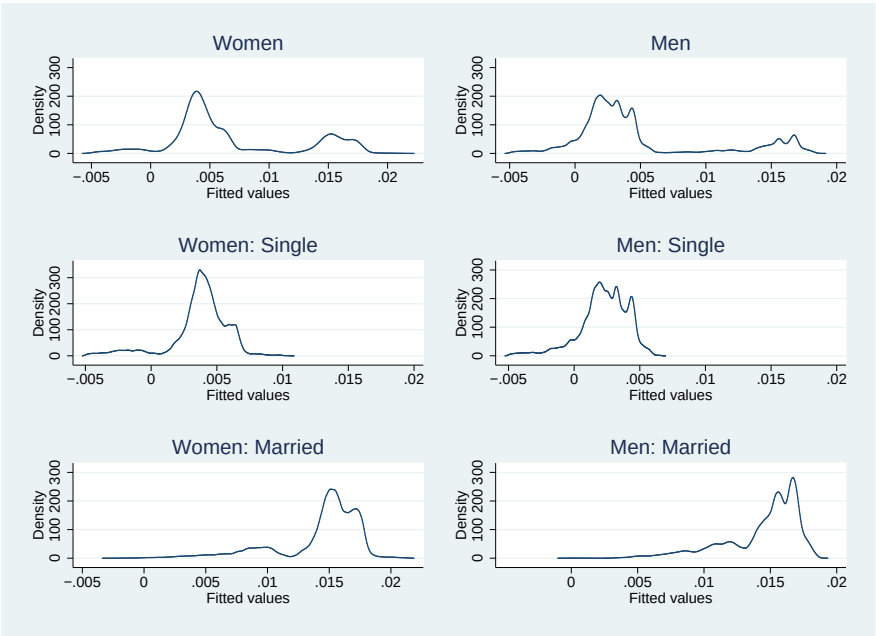
8 Graphs

Figure 1 – Unconditional Hazard Rate



Source: ALWA, own calculation

Figure 2 – Parenthood Hazard



Source: ALWA, own calculation

9 Tables

Table 1 – Career spell durations (in months)

	Women			Men		
	Mean	Std. Dev.	N	Mean	Std. Dev.	N
All spells	67.61	73.23	5482	62.59	72.62	6194
Up	33.32	31.89	377	34.66	35.34	716
Down	45.49	45.63	248	40.27	39.18	364
Horizontal	30.35	36.60	1730	29.41	31.05	1961
Censored	94.11	81.99	3127	92.15	86.65	3153

Source: ALWA, own calculations

Table 2 – List of regressors

Variable	Description	Parenthood Hazard	Career Hazard
Age categories (base category: under 26)			
AGE2-AGE6	$[26;30], [31;35], [36;40], [41;45]; [46+]$	×	×
Education (base category: no formal degree)			
EDUClow	Abitur or apprenticeship	×	×
EDUChigh	University degree	×	×
EXPER	Work experience in months	×	×
EAST	Dummy East Germany	×	×
RELIGION	Dummy for being religious (self reported)	×	×
MARRIED	Dummy for being married	×	
BIRTHRATE	Birth rate per 1,000 inhabitants by year and federal state	×	
POTCA	Potential child allowance	×	
PREGHAZ	Pregnancy/parenthood hazard		×
PARTNERhigh	Partner with university degree		×
PARTNERlow	Partner without degree		×
CAR	Duration dependence employment spell		×
MOBIL	Mobility indicator		×
LDnosub	Lagged duration dependence: Cumulated spells without supervisory responsibilities		×
LDsub	Lagged duration dependence: Cumulated spells with supervisory responsibilities		×
Current number of subordinates (base category: none)			
LEVEL2-5	$[1;3], [4;9], [10;24], [25+]$		×
Sector Dummies (base category: retail)			
MANUFACT	Manufacturing		×
CONSTRUCTION	Construction		×
AGRICULTURE	Agricultural		×
SERVICE	Service		×
SOCIAL	Social		×
PUBSEC	Dummy for job in public service		×
COMPmaths	Competence measure maths (high values=low competence)		×
COMPverbal	Verbal competence measure (high values=low competence)		×
UNEMPL	Regional unemployment rate		×
UNEMPLdev	Deviation unemployment rate from smooth trend		×
FIRMSIZE	Firm size		×
YEAR	(Quadratic) time trend		×
INTER*	Indicators for short interruptive intervals		×
PARTTIME	Indicator for part time work		×

Table 3 – Multivariate proportional hazard model: parenthood hazard

	Women		Men	
AGE2	$.123^{*}$	$(.0686)$	$.244^{***}$	$(.0928)$
AGE3	$.0390$	$(.106)$	$.209^{*}$	$(.125)$
AGE4	$-.518^{***}$	$(.194)$	$-.331^{*}$	$(.184)$
AGE5/6	-3.281^{***}	(1.021)	-1.135^{***}	$(.3331)$
AGE6			-1.822^{**}	$(.768)$
ABI/APPR	$-.0317$	$(.103)$	$.184$	$(.161)$
UNI	$-.0893$	$(.129)$	$.491^{***}$	$(.182)$
EXPER	$.0101^{***}$	$(.00185)$	$.00803^{***}$	$(.00197)$
EXPER^2	$-.0000623^{***}$	$(.00000953)$	$-.0000364^{***}$	$(.00000861)$
EAST	$.831^{***}$	$(.139)$	$.482^{***}$	$(.170)$
RELIGIOUS	$.272^{***}$	$(.0720)$	$.239^{***}$	$(.0713)$
BIRTHRATE	$.110^{***}$	$(.0314)$	$.0670^{*}$	$(.0371)$
POTCA	$.0317$	$(.0199)$	$-.0154$	$(.0236)$
MARRIED	1.414^{***}	$(.0512)$	1.823^{***}	$(.0617)$
Constant	-7.277^{***}	$(.374)$	-7.508^{***}	$(.443)$
N	273207		276443	

Standard errors in parentheses ; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: ALWA, own calculations

Table 4 – Multivariate proportional hazard model

	Women			Men		
	Up	Down	Horizontal	Up	Down	Horizontal
ln(PREGHAZ)	−.0919	.0702	−.161***	.179***	−.0106	−.0329
	(.106)	(.129)	(.0530)	(.0614)	(.0880)	(.0471)
PARTNERhigh	.317**	−.00379	.0389	.307**	.0764	−.0238
	(.150)	(.201)	(.0817)	(.147)	(.199)	(.115)
PARTNERlow	−.459***	−.256	−.145**	.279***	−.120	.123*
	(.145)	(.174)	(.0627)	(.0997)	(.139)	(.0628)
CAR2	−.106	−.166	−.298***	.0979	.0197	−.263***
	(.170)	(.204)	(.0804)	(.118)	(.155)	(.0796)
CAR3	.0965	−.137	−.596***	.101	−.590***	−.508***
	(.215)	(.254)	(.114)	(.158)	(.229)	(.113)
CAR4	−.339	−.559	−.703***	−.497*	−.702**	−.948***
	(.350)	(.372)	(.156)	(.264)	(.336)	(.168)
EXPER	−.00407	−.00539	−.00257	−.00333	.00682	.00122
	(.00422)	(.00508)	(.00188)	(.00299)	(.00418)	(.00181)
$EXPER^2$	−.0000207	.0000160	.000000629	.0000130	−.0000309**	−.00000126
	(.0000182)	(.0000179)	(.00000769)	(.0000124)	(.0000152)	(.00000737)
MOBIL	.273***	.325**	.184***	.328***	.315***	.0346
	(.0973)	(.127)	(.0472)	(.0727)	(.0939)	(.0536)
LDnosub	−.000261	.00266	−.000586	−.00132	−.000927	−.00293**
	(.00336)	(.00302)	(.00136)	(.00244)	(.00268)	(.00145)
LDsub	.00700**	.000978	.0000580	.00455**	−.00312	−.00166
	(.00285)	(.00297)	(.00133)	(.00213)	(.00289)	(.00147)
PUBSEC	−.512***	−.0631	−.383***	−.245	−.273	−.342***
	(.185)	(.222)	(.0872)	(.173)	(.260)	(.114)
ABI/VOC	−.118	.749*	.520***	1.190***	.361	.206*
	(.263)	(.426)	(.138)	(.309)	(.392)	(.107)
UNI	−.0773	.768	.790***	1.557***	.441	.432***
	(.304)	(.471)	(.160)	(.338)	(.427)	(.143)
EAST	−.744**	−.678	−.0713	−.199	−.680**	−.218*
	(.349)	(.470)	(.156)	(.239)	(.312)	(.129)
MANUFACT	−.255	.157	−.137	−.00538	−.0458	−.209***
	(.196)	(.243)	(.0847)	(.124)	(.184)	(.0706)
CONSTRUCTION	.222	.293	.0159	−.0507	.226	−.112
	(.320)	(.392)	(.147)	(.146)	(.199)	(.0770)
AGRICULTURE	.347	.447	−.192	.0676	.0334	−.154
	(.307)	(.332)	(.161)	(.189)	(.282)	(.111)
SERVICE	.133	.217	−.0663	.139	.0425	−.0181
	(.158)	(.196)	(.0704)	(.133)	(.191)	(.0774)
SOCIAL	−.0143	−.128	−.0877	−.326	.147	−.0943
	(.201)	(.247)	(.0877)	(.214)	(.295)	(.131)
RELIGION	−.451***	−.354**	−.113*	−.0477	−.150	−.0768
	(.127)	(.164)	(.0665)	(.0923)	(.130)	(.0562)
COMPmaths	−.145***	−.0201	−.00961	−.100**	.0606	−.0270
	(.0496)	(.0605)	(.0230)	(.0418)	(.0573)	(.0243)
COMBverbal	−.342***	.0119	−.0236	−.150***	.117*	−.00556

Continued on next page...

... table 4 continued

	(.0697)	(.0828)	(.0296)	(.0462)	(.0625)	(.0266)
UNEMPL	.00207	.0272	−.0164	−.0203	.0283	.0105
	(.0257)	(.0326)	(.0123)	(.0186)	(.0247)	(.0111)
UNEMPLdev	−.0158	−.148**	−.0617***	−.00266	−.0412	−.00525
	(.0468)	(.0579)	(.0218)	(.0342)	(.0483)	(.0204)
FIRMSIZE	−.0351	−.0857**	−.0999***	−.0347	−.0953***	−.0859***
	(.0311)	(.0433)	(.0147)	(.0231)	(.0366)	(.0138)
YEAR	.106**	−.00137	.0207	.0285	−.0321	−.0124
	(.0437)	(.0537)	(.0178)	(.0312)	(.0478)	(.0169)
$YEAR^2$	−.00184**	.0000883	−.000349	−.000758	.000963	.000263
	(.000911)	(.00112)	(.000384)	(.000653)	(.000960)	(.000358)
LEVEL2	−.570***		−.383***	−.592***		−.189***
	(.144)		(.0613)	(.114)		(.0596)
LEVEL3	−.404**	.145	−1.102***	−.608***	.113	−.878***
	(.171)	(.175)	(.113)	(.117)	(.162)	(.0882)
LEVEL4	−.654***	.122	−1.477***	−1.050***	.374**	−1.256***
	(.237)	(.200)	(.180)	(.165)	(.172)	(.131)
LEVEL5	−1.114**	.191	−2.718***	−1.371***	.637***	−1.722***
	(.457)	(.271)	(.579)	(.258)	(.200)	(.246)
AGE2	.201	−.175	.0144	−.260**	−.176	−.114
	(.156)	(.209)	(.0772)	(.121)	(.171)	(.0767)
AGE3	.0119	−.0733	−.378***	−.373**	−.0841	−.160
	(.250)	(.310)	(.134)	(.176)	(.238)	(.114)
AGE4	.190	.400	−.0851	−.725***	.00678	−.600***
	(.367)	(.431)	(.188)	(.276)	(.325)	(.179)
AGE5	.234	−.205	−.697*	−1.055**	−.00846	−.818***
	(.657)	(.838)	(.367)	(.471)	(.494)	(.296)
AGE6	−12.11	.348	−1.721***	−2.257**	−.0857	−1.074**
	(392.1)	(1.120)	(.657)	(1.146)	(.912)	(.493)
INTERunempl	2.354***	3.180***	2.715***	2.306***	3.162***	2.869***
	(.159)	(.185)	(.0657)	(.125)	(.149)	(.0657)
INTERser.other	−.702	1.490**	1.286***			
	(1.003)	(.587)	(.189)			
PARTTIME	−.151	−.0876	.199	.400	1.180***	.725***
	(.301)	(.461)	(.124)	(.311)	(.358)	(.174)
INTETservice				.830***	.815**	2.205***
				(.158)	(.321)	(.0651)
INTERoth				.218	−.241	1.817***
				(.450)	(1.003)	(.147)
Constant	−6.229***	−5.619***	−5.359***	−5.039***	−6.499***	−4.615***
	(.863)	(1.111)	(.407)	(.646)	(.932)	(.403)
N	273207			276443		

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: ALWA, own calculations

Table 5 – Person-specific fixed effects estimation: female sample

	Up		Down		Horizontal	
PREGHAZ	$-.0280333$	$(.0279115)$	$-.0306534$	$(.0700451)$	$-.2039898^{***}$	$(.0514375)$
PARTNERhigh	$.0008415$	$(.0005616)$	$.0005675$	$(.0011767)$	$-.0000802$	$(.0009209)$
PARTNERlow	$-.0006848^{**}$	$(.0003115)$	$-.0000375$	$(.0008542)$	$-.0001081$	$(.0006293)$
CAR2	$.0002763$	$(.0002408)$	$.000996$	$(.0006661)$	$.0038256^{***}$	$(.0005057)$
CAR3	$.0004348$	$(.000319)$	$.0012827$	$(.0008383)$	$.006367^{***}$	$(.0006536)$
CAR4	$-.0002395$	$(.0003994)$	$.0004538$	$(.0011381)$	$.0102058^{***}$	$(.0009272)$
EXPER	$1.24e-07$	$(.0000202)$	$-.0000164$	$(.0000708)$	$-.0002328^{***}$	$(.0000375)$
EXPER^2	$-2.51e-08$	$(2.63e-08)$	$2.54e-08$	$(6.13e-08)$	$2.88e-07^{***}$	$(5.07e-08)$
MOBIL	$.0001766$	$(.000288)$	$.0005485$	$(.0008125)$	$.0008366$	$(.0005519)$
LDnosub	$.0000185^{***}$	$(6.91e-06)$	$-.0001002^{***}$	$(.0000224)$	$.0000254^{*}$	$(.0000144)$
LDsub	$-.0000817^{***}$	$(.0000103)$	$-.0000607^{***}$	$(.0000151)$	$4.28e-06$	$(.0000121)$
PUBSEC	$-.0009364$	$(.0011332)$	$-.0000876$	$(.0036183)$	$-.0028432$	$(.0021861)$
ABI/VOC	$.004899$	$(.0035599)$	$.0135954^{*}$	$(.008004)$	$.0153755$	$(.0115449)$
UNI	$.0046393$	$(.0042368)$	$.0019266$	$(.0112662)$	$.0163484$	$(.0128393)$
EAST	$.0001646$	$(.0021086)$	$.003989$	$(.0180648)$	$.0026045$	$(.0053766)$
MANUFACT	$.00153$	$(.0010278)$	$-.0053652$	$(.0037976)$	$-.006566^{**}$	$(.0025905)$
CONSTRUCTION	$.0008653$	$(.0018412)$	$.0023527$	$(.005811)$	$-.0020253$	$(.0036741)$
AGRICULTURE	$.0039976^{*}$	$(.0021998)$	$.0001842$	$(.0076309)$	$-.0058412$	$(.0046375)$
SERVICE	$.0011994$	$(.0011494)$	$-.0012413$	$(.0035575)$	$-.0034947$	$(.0024127)$
SOCIAL	$.0006297$	$(.0014716)$	$-.0063529$	$(.0051461)$	$-.005573^{*}$	$(.0030569)$
UNEMPL	$-.0000473$	$(.0002315)$	$.0005962$	$(.0008492)$	$-.0004233$	$(.0004905)$
UNEMPLdev	$-.000082$	$(.0002482)$	$-.0010277$	$(.0008615)$	$-.0001725$	$(.0005148)$
FIRMSIZE	$-.0003816^{*}$	$(.0001957)$	$-.0015552^{**}$	$(.0006255)$	$-.0016956^{***}$	$(.0004452)$
YEAR	$.0002401$	$(.0002644)$	$-.0000254$	$(.0009214)$	$.0014175$	$(.0005109)$
YEAR^2	$-2.03e-06$	$(3.00e-06)$	$2.46e-06$	$(9.12e-06)$	$-8.85e-06$	$(5.89e-06)$
LEVEL2	$-.0070598^{***}$	$(.0009382)$			$-.008666^{***}$	$(.0016823)$
LEVEL3	$-.0158091^{***}$	$(.0012725)$	$.0169519^{***}$	$(.0019517)$	$-.0107609^{***}$	$(.0015458)$
LEVEL4	$-.0216506^{***}$	$(.0016265)$	$.0208939^{***}$	$(.0020841)$	$-.0084517^{***}$	$(.0016913)$
LEVEL5	$-.0246685^{***}$	$(.0022321)$	$.0231794^{***}$	$(.0030145)$	$-.0033044$	$(.0020785)$
AGE2	$.0004841$	$(.0003372)$	$-.0000577$	$(.0008414)$	$.0006123$	$(.0006589)$
AGE3	$.0002004$	$(.0005712)$	$.0005588$	$(.0014123)$	$.000223$	$(.0010955)$
AGE4	$.0003397$	$(.0008152)$	$.0027507$	$(.0022471)$	$.002256$	$(.0016282)$
AGE5	$.0008609$	$(.0012588)$	$.0022148$	$(.0030956)$	$.0023135$	$(.0022515)$
AGE6	$.0005111$	$(.0016679)$	$.0034523$	$(.0046516)$	$-.0021998$	$(.0031592)$
INTERunempl	$.0155397^{***}$	$(.0025826)$	$.0666775^{***}$	$(.0117196)$	$.1077493^{***}$	$(.0070592)$
INTERserv.oth	$-.0015069$	$(.0010074)$	$.0102134$	$(.0069874)$	$.0180104^{***}$	$(.0048254)$
PARTTIME	$.001063$	$(.0010354)$	$.0004203$	$(.0035468)$	$.0002793$	$(.0026495)$
N	273207					

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: ALWA, own calculations

Table 6 – Person-specific fixed effects estimation: male sample

	Up		Down		Horizontal	
PREGHAZ	.0861926**	(.0376452)	−.0309038	(.0538252)	−.0076479	(.0481807)
PARTNERhigh	.0004136	(.0008665)	−.00124	(.0013127)	−.0001926	(.0010883)
PARTNERlow	−.0004376	(.0003938)	−.0003266	(.0006299)	.0002497	(.0005933)
CAR2	.0006848*	(.0003513)	.001573***	(.0005977)	.0035793***	(.0004793)
CAR3	.000541	(.0004168)	.0003413	(.0007066)	.0057835***	(.0005813)
CAR4	−.0008306	(.0005141)	−.0006604	(.0010196)	.0092123***	(.0008519)
EXPER	−.0000153	(.0000198)	$-6.73e-08$	(.0000389)	−.0004992***	(.0000488)
EXPER^2	$-3.21e-08$	$(2.51e-08)$	$-3.18e-08$	$(5.31e-08)$	$3.43e-07$***	$(4.18e-08)$
MOBIL	.0011213***	(.0004237)	.0002697	(.0004987)	−.0003089	(.0005684)
LDnosub	.00005***	(.0000114)	−.0001329***	(.0000174)	−.0000105	(.0000144)
LDsub	−.0001022***	$(9.92e-06)$	−.0000917***	(.0000126)	.0000295**	(.0000115)
PUBSEC	.0000783	(.00154)	−.0001879	(.0038755)	−.0052722**	(.0025751)
ABI/VOC	.0017896	(.0038506)	.0070413	(.0048646)	−.0053021	(.0059815)
UNI	.0031714	(.0050635)	.0095765	(.0072518)	−.0173794**	(.0078944)
EAST	−.0060876**	(.0025719)	−.0060509**	(.0029412)	.0035717	(.0051529)
MANUFACT	−.0003987	(.001116)	.0011342	(.0023957)	−.0049072**	(.0021494)
CONSTRUCTION	.0008129	(.0012649)	.0066327**	(.0031729)	−.0011015	(.0024171)
AGRICULTURE	$-5.20e-06$	(.0018633)	−.0012215	(.0044646)	−.0038454	(.0034324)
SERVICE	−.001001	(.0012556)	.0014102	(.0027513)	−.0021572	(.0024001)
SOCIAL	−.0029687*	(.0017814)	.00282	(.0042867)	−.0045543	(.003342)
UNEMPL	.0002708	(.0002396)	.0004994	(.0004428)	.0005555	(.0003453)
UNEMPLdev	−.0004027	(.0002568)	−.0006284	(.0004736)	−.0005822	(.0003716)
FIRMSIZE	−.0005912***	(.0002262)	−.0005931	(.0004397)	−.0018947***	(.0003736)
YEAR	.0004485*	(.0002677)	−.000339	(.0005126)	.004147***	(.0005991)
YEAR^2	$1.02e-06$	$(3.62e-06)$	.0000103	$(6.50e-06)$	$2.02e-06$	$(5.11e-06)$
LEVEL2	−.009755***	(.0010673)			−.0037401**	(.0016152)
LEVEL3	−.0172546***	(.0011223)	.0159106***	(.0015521)	−.0043812***	(.0011742)
LEVEL4	−.0233175***	(.0014359)	.0194518***	(.0017842)	−.0021511	(.0013623)
LEVEL5	−.0263202***	(.0017914)	.0238704***	(.0020169)	−.0015049	(.0013826)
AGE2	−.000183	(.0004676)	.0006777	(.0007508)	−.0008168	(.0006963)
AGE3	−.0002799	(.000758)	.001754	(.0012011)	−.000662	(.0011442)
AGE4	−.000608	(.0010298)	.0029101*	(.0016569)	−.0025314	(.0016339)
AGE5	−.000958	(.001342)	.0029077	(.0023386)	−.0045773**	(.0022332)
AGE6	−.0010931	(.0017616)	.0032473	(.0030662)	−.0078848**	(.0031417)
INTERunempl	.0223537***	(.0027591)	.0669854***	(.0089325)	.0984838***	(.0061121)
INTERservice	.0031792***	(.000889)	.0036697*	(.0019109)	.0545995***	(.0022176)
INTERoth	.0000627	(.0015519)	.0002815	(.0021529)	.0302719***	(.0050242)
PARTTIME	.0016187	(.0027144)	−.00563	(.005721)	.0143681***	(.0049361)
N	273207					

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: ALWA, own calculations

Table 7 – Spell fixed effects estimation: female sample

	Up		Down		Horizontal	
PREGHAZ	$-.0540707^{**}$	$(.0224183)$	$.0449155$	$(.0744042)$	$-.1900483^{***}$	$(.0478201)$
PARTNERhigh	$.0007601$	$(.0005875)$	$.0009931$	$(.0014505)$	$.0021117^{**}$	$(.0010181)$
PARTNERlow	$-.0004582^{*}$	$(.0002726)$	$.000195$	$(.0008063)$	$.0010007$	$(.0006316)$
CAR2	$-.0001755$	$(.0002411)$	$2.92e-06$	$(.000679)$	$-.001301^{**}$	$(.0005326)$
CAR3	$-.0008643^{***}$	$(.000335)$	$-.0016241$	$(.0009909)$	$-.0061387^{***}$	$(.0007591)$
CAR4	$-.0025501^{***}$	$(.0004574)$	$-.0049779^{***}$	$(.0014869)$	$-.0120894^{***}$	$(.001135)$
EXPER	$.0001217^{***}$	$(.0000219)$	$.0002486^{***}$	$(.0000625)$	$.0004453^{***}$	$(.00005)$
EXPER^2	$-1.81e-07^{***}$	$(2.25e-08)$	$3.56e-07^{***}$	$(6.71e-08)$	$-7.16e-07^{***}$	$(5.38e-08)$
MOBIL	$.000036$	$(.0002823)$	$.0004735$	$(.0009576)$	$.002501^{***}$	$(.0005529)$
EAST	$.0040091$	$(.0041378)$	$-.0399682$	$(.0682243)$	$.0043514$	$(.0099558)$
UNEMPL	$.0001734$	$(.0002201)$	$.0013374^{**}$	$(.0006105)$	$-.0004695$	$(.0005094)$
UNEMPLdev	$-.0002958$	$(.0002337)$	$.0010335$	$(.0006412)$	$-.0002207$	$(.0005333)$
YEAR	$-.0009687^{***}$	$(.0002753)$	$-.0007947$	$(.0007882)$	$-.0013786^{**}$	$(.0006172)$
YEAR^2	$8.96e-06^{***}$	$(2.80e-06)$	$5.75e-06$	$(7.03e-06)$	$9.17e-07$	$(6.11e-06)$
AGE2	$.0004608$	$(.0003382)$	$-.0011735$	$(.0008163)$	$-.0015297^{**}$	$(.0006149)$
AGE3	$-.0002356$	$(.0005528)$	$-.0010796$	$(.0014353)$	$-.0055214^{***}$	$(.0009645)$
AGE4	$-.0011728$	$(.0008127)$	$.0004319$	$(.0022352)$	$-.0069981^{***}$	$(.0014449)$
AGE5	$-.000446$	$(.0011933)$	$.0015046$	$(.0028624)$	$-.0053833^{**}$	$(.002099)$
AGE6	$.0001061$	$(.0015041)$	$.0058994$	$(.0047028)$	$-.00168$	$(.0027767)$
INTERunempl	$.0195162^{***}$	$(.0028929)$	$.0801229^{***}$	$(.0134066)$	$.118624^{***}$	$(.0076946)$
INTERserv.oth	$.0015035$	$(.001124)$	$.0128446^{*}$	$(.0070863)$	$.027272^{***}$	$(.0053196)$
PARTTIME	$.0114122^{***}$	$(.0040631)$	$.0649453^{***}$	$(.0147665)$	$.0271924^{*}$	$(.0153646)$
N	273207					

Standard errors in parentheses $^{*}\ p<0.10$, $^{**}\ p<0.05$, $^{***}\ p<0.01$

Source: ALWA, own calculations

Table 8 – Spell fixed effects estimation: male sample

	Up		Down		Horizontal	
PREGHAZ	.1166563***	(.0386469)	.039482	(.0570163)	.0394359	(.0463135)
PARTNERhigh	.0009483	(.0008793)	.0002504	(.0013811)	−.000181	(.0010413)
PARTNERlow	−.0003685	(.0004104)	−.0001006	(.0006492)	.0001854	(.0005884)
CAR2	.0004355	(.0003826)	.0009813	(.0006416)	−.0008447*	(.0004997)
CAR3	−.0009161*	(.0004804)	−.001777**	(.0008157)	−.0043038***	(.0006891)
CAR4	−.0042525***	(.0006507)	−.0042969***	(.0012072)	−.0096201***	(.0010747)
EXPER	.0001884***	(.0000309)	.0002507***	(.0000544)	−.0002607***	(.0000599)
EXPER^2	$-2.51e-07$***	$(2.71e-08)$	$-2.98e-07$***	$(5.56e-08)$	$-4.65e-07$***	$(4.50e-08)$
MOBIL	.0015496***	(.0004359)	−.0005034	(.0005545)	.0000107	(.0005959)
EAST	−.0050807	(.0039189)	−.007611***	(.002861)	−.0090281	(.0081951)
UNEMPL	.0003303	(.0003708)	.0010661	(.0006841)	.0007442	(.0005561)
UNEMPLdev	−.0005068	(.0003782)	−.0011281	(.0006882)	−.000942*	(.0005601)
YEAR	−.0008516**	(.0004277)	−.0023646***	(.0007388)	.0053911***	(.0007746)
YEAR^2	$1.45e-06$	$(4.62e-06)$	.0000195**	$(8.04e-06)$	$6.01e-06$	$(6.54e-06)$
AGE2	−.0008481*	(.0004556)	.0002278	(.0008546)	.0005414	(.0007078)
AGE3	−.0012173*	(.0007346)	−.00049	(.0013156)	.000563	(.0011178)
AGE4	−.0018206*	(.0009952)	−.0010178	(.0017907)	−.0004227	(.0015194)
AGE5	−.0018103	(.0012952)	−.00092	(.0024949)	.0003543	(.0019917)
AGE6	−.0013805	(.0015954)	−.0004373	(.0032617)	.0021818	(.0025348)
INTERunempl	.0246627***	(.0029487)	.0749512***	(.0096498)	.1095025***	(.0067148)
INTERservice	.0062004***	(.0010454)	.0066948***	(.0019418)	.0652505***	(.0033119)
INTERoth	.0030104*	(.0017402)	.0023176	(.0024276)	.0361165***	(.0057739)
PARTTIME	.0088799	(.0063073)	.0265244**	(.0119177)	.0409623***	(.0143636)
N	276443					

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: ALWA, own calculations

10 Appendix

Table 9 – Summary statistics: female sample

Variable	Mean	Std. Dev.	Min.	Max.	N
AGE2	0.278	0.448	0	1	273207
AGE3	0.141	0.348	0	1	273207
AGE4	0.074	0.262	0	1	273207
AGE5	0.038	0.192	0	1	273207
AGE6	0.014	0.117	0	1	273207
Age	27.527	6.473	15	51	273207
EDUClow	0.804	0.397	0	1	273207
EDUChigh	0.142	0.35	0	1	273207
EXPER	80.341	70.911	1	399	273207
EAST	0.034	0.182	0	1	273207
RELIGION	0.820	0.384	0	1	273207
BIRTHRATE	9.967	1.104	4.8	12.2	273207
POTCA	3.02	1.641	1.309	6.459	273207
MARRIED	0.287	0.453	0	1	273207
PARTNER_high	0.16	0.367	0	1	273207
PARTNER_low	0.353	0.478	0	1	273207
MOBIL	0.148	0.399	0	6	273207
LDnosub	9.15	26.364	0	357	273207
LDsub	8.283	27.615	0	377	273207
PUBSEC	0.292	0.455	0	1	273207
MANUFACT	0.175	0.38	0	1	273207
CONSTRUCTION	0.023	0.15	0	1	273207
AGRICULTURE	0.027	0.161	0	1	273207
SERVICE	0.285	0.452	0	1	273207
SOCIAL	0.323	0.468	0	1	273207
COMPmaths	2.713	1.067	1	5	273207
COMPverbal	2.033	0.836	1	5	273207
UNEMPL	8.734	3.14	2.1	22.1	273207
UNEMPLdev	0.269	1.355	-4	5.03	273207
FIRMSIZE	4.428	1.805	1	7	273207
INTERunempl	0.011	0.104	0	1	273207
INTERser.oth	0.004	0.066	0	1	273207
PARTTIME	0.037	0.19	0	1	273207
LEVEL2	0.237	0.425	0	1	273207
LEVEL3	0.131	0.337	0	1	273207
LEVEL4	0.081	0.272	0	1	273207
LEVEL5	0.029	0.168	0	1	273207
Start parenthood	0.007	0.081	0	1	273207
Up	0.001	0.037	0	1	273207
Down	0.001	0.03	0	1	273207
Horizontal	0.006	0.079	0	1	273207

Person-month observations, Source: ALWA, own calculations

Table 10 – Summary statistics: male sample

Variable	Mean	Std. Dev.	Min.	Max.	N
AGE2	0.288	0.453	0	1	276443
AGE3	0.186	0.389	0	1	276443
AGE4	0.101	0.301	0	1	276443
AGE5	0.047	0.212	0	1	276443
AGE6	0.016	0.125	0	1	276443
Age	28.779	6.608	15	51	276443
EDUClow	0.763	0.425	0	1	276443
EDUChigh	0.19	0.392	0	1	276443
EXPER	81.463	70.114	1	435	276443
EAST	0.051	0.22	0	1	276443
RELIGION	0.74	0.439	0	1	276443
BIRTHRATE	9.868	1.18	4.8	12.2	276443
POTCA	3.242	1.687	1.309	7.109	276443
MARRIED	0.198	0.398	0	1	276443
PARTNER_high	0.079	0.269	0	1	276443
PARTNER_low	0.311	0.463	0	1	276443
MOBIL	0.125	0.394	0	6	276443
LDnosub	11.348	27.643	0	275	276443
LDsub	8.85	25.483	0	324	276443
PUBSEC	0.193	0.395	0	1	276443
MANUFACT	0.339	0.473	0	1	276443
CONSTRUCTION	0.126	0.332	0	1	276443
AGRICULTURE	0.046	0.209	0	1	276443
SERVICE	0.192	0.394	0	1	276443
SOCIAL	0.163	0.369	0	1	276443
COMPmaths	2.207	0.96	1	5	276443
COMPverbal	2.179	0.882	1	5	276443
UNEMPL	9.129	3.254	2.1	22.1	276443
UNEMPLdec	0.283	1.343	-4.056	5.03	276443
FIRMSIZE	4.891	1.755	1	7	276443
INTERunempl	0.013	0.113	0	1	276443
INTERservice	0.028	0.164	0	1	276443
INTERother	0.006	0.075	0	1	276443
PARTTIME	0.013	0.113	0	1	276443
LEVEL2	0.169	0.375	0	1	276443
LEVEL3	0.171	0.377	0	1	276443
LEVEL4	0.117	0.322	0	1	276443
LEVEL5	0.059	0.236	0	1	276443
Start parenthood	0.005	0.068	0	1	276443
Up	0.003	0.051	0	1	276443
Down	0.001	0.036	0	1	276443
Horizontal	0.007	0.084	0	1	276443

Person-month observations, Source: ALWA, own calculations