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Unlucky at Work, Unlucky in Love: Employment Status and Marital Stability

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Abstract

This paper analyses whether employment termination has an impact on marital stability. Using discrete survival analysis techniques, we show that a husband's involuntary job loss is associated with an increase in the risk of divorce by roughly 70 percent in the following period. The estimated relative risk of divorce is generally higher for involuntary job losses than for other types of employment termination. This result holds for both husband's who remained unemployed after the employment termination as well as those who have found a new job. However, the relation appears to be short term, typically decreasing in magnitude after the first period and becoming insignificant in some cases in the second or later years (in a new position).

Keywords: *Marriage, Job Loss, Divorce*
JEL-Codes: J12, J63, J65

1. Introduction

This paper analyses the influence of job loss on marital stability. The basic assumption in most of the economic theory of marriage and divorce is that, given marriage is voluntary, couples form and remain together if the individuals fare better living within the couple than they would otherwise (see e.g. Becker 1974a and 1974b)[1]. Job displacement has been shown to have a significant and potentially long-term impact on household income (see e.g. Jacobson et al. 1993, Stevens 1997, Eliason and Storrie 2006, Couch and Placzek 2010) which may reduce the value of remaining married compared to the outside option sufficiently to induce the dissolution of the couple[2]. It should be noted, however, that economists do not focus exclusively on pecuniary aspects when considering the gains from marriage. Becker (1974a) stresses that "*the commodity output maximized by all households is not to be identified with national output as usually measured, but includes conversation, the quantity and quality of children, and other outputs that never enter or enter only imperfectly into the usual measures*" (p. 310). In this spirit, job displacement may result in an increased probability of divorce for non-monetary reasons, including information updating regarding individual characteristics of the partner not directly linked to future earning potential (Charles and Stephens 2004) as well as stress resulting directly or indirectly from the employment termination.

The purpose of this study is to test whether there is a relation between employment termination and the risk of divorce, and to quantify the extent of the relationship if it is present. To this end, we apply discrete survival analysis techniques on data from the German Socio-Economic Panel (SOEP).

Conducting this analysis is interesting for a number of reasons. Firstly, many studies in the field of economics investigate the impact of income shocks, job displacement or unemployment on a variety of outcome variables at the household level such as household

[1] Most family economists would propose that there are some fundamental gains from partnership. Becker (1974a) focusses primarily on complementarities in the household production function, in particular regarding child rearing. Browning et al. (2014) provide a list of additional gains from marriage including the existence of household public goods and gains from shared consumption more generally, specialization according to comparative advantage and economies of scale in household production, solving credit market imperfections by extending credit within the family and sharing risks. However, they also note that an important role of the family is child rearing.

[2] Clearly, the theoretic analysis of marriage and divorce is much more involved than this gross simplification suggests, drawing amongst others on theories of optimal sorting, search and matching, bargaining and choice under uncertainty. Just as in other strands of economic theory, conclusions may change dramatically depending on the basic assumptions made in the various models. (see e.g. Browning et al. 2014)

consumption and labour supply by the other partner (see e.g. Blundell and Pistaferri 2003, Cullen and Gruber 2000, and Stephens 2002). Frequently this type of analysis is conducted on couples/families that have remained together, thus, eliminating couples/families from the sample that may have separated due to the impetus to be investigated. As Charles and Stevens (2004) have argued before, this leads to biased estimates if, as is likely, the impact on those who separated differs from the impact on those who remained together.

Secondly, an increase in the divorce probability could also serve as an indicator for a variety of individual struggles brought about by the job loss, making divorce the ex post efficient solution. One would not expect any change under perfect insurance from external sources or within the family. Clearly, the causes of divorce are typically multifaceted. Nonetheless, the labour market shock and associated income reduction may serve as the trigger for a variety of interpersonal conflicts ultimately leading to divorce.

Thirdly, divorce may have a direct negative impact on welfare. Since divorce is voluntary[3], this proposition may appear surprising. Becker et al. (1977) argue in their seminal paper, that a couple "*would separate if, and only if, their combined wealth from remaining married were expected to be less than their combined wealth when separated*." (p. 1144). This result holds irrespective of the particular laws governing divorce, but hinges on some crucial assumptions such as transferrable utility (see also Browning et al. 2014, chapter 6.5, and the literature mentioned therein). However, household public goods or the joy of living with a partner one still feels affection for cannot be transferred and there may not be sufficient funds in terms of transferrable private goods to induce the partner to remain in an otherwise efficient marriage. Zelder (1993) shows theoretically that the presence of household public goods can lead to inefficient (according to the Kaldor-Hicks criterion) divorces occurring under no-fault divorce laws and tests his theory empirically using US data from the Panel Study of Income Dynamics (PSID)[4]. A second reason why divorce may be inefficient is due to the presence of (negative) spillover effects on the children, who are not an active part in the decision making process (see e.g. the meta analysis by Amato 2001). While one might object that parents care about their children, it is not clear whether the parental utility function completely internalizes all negative effects on children. Lastly, individuals may also suffer from e.g. impact or projection bias in their affective forecasting

[3] At least this is true for Germany, which is the subject of this study.
[4] González and Viitanen, (2009) also find an increase in the divorce rate in response to a change to no-fault divorce legislation in a panel of European countries.

(see e.g. Wilson and Gilber 2003, for a helpful review article on affective forecasting) or fail to anticipate long-term negative consequences more generally. In conclusion, while divorce is not necessarily an undesirable[5] outcome in itself, there are also arguments that it may well be in some cases, besides being voluntary (for at least one of the partners). Unfortunately, the empirical evidence on the well-being consequences of divorce is not conclusive (Lucas 2005, Zimmermann and Easterlin 2006, Clark et al. 2008, and Gardner and Oswald 2006).

Our study contributes to the existing literature on the impact of employment termination on marital stability by presenting new evidence based on recent panel data from Germany. We add to the literature by allowing a preceding employment termination to have a different impact on the divorce probability once a new job was found compared to the husband being/remaining unemployed. In a number of extensions, we also take a cursory look at which variables may help explain the overall effect and investigate the role of the wife's labour market status.

We apply survival analysis based on a complementary log-log model where the estimating equation is specified at the couple level, taking information on both partners explicitly into account. An involuntary job loss is associated with a roughly 70 % increase in the dissolution probability, which we interpret as the result of information updating regarding the quality of the match as well as short term stress. The estimated risk increase is even higher (154%) after one year in the new job. This may appear puzzling since having found a new job presumably results in a (partially) offsetting positive signal about the quality of the match. We argue that the overall signal can remain negative, which, coupled with the stress associated with starting a new job and potentially adverse characteristics of the new job, results in this larger increase in dissolution risk.

The remainder of the paper is organised as follows. Section 2 reviews the previous literature related to job loss and divorce. The data and the estimation technique are introduced in section 3. Section 4 reports our key results. Section 5 presents robustness checks. Interpretation of our results as well as some limitations of our study are discussed in section 6, which also covers some model extensions. Section 7 concludes.

[5] Subject to the normative judgement about what constitutes an undesirable outcome, such as by referring to the Kaldor-Hicks efficiency criterion.

2. Literature Review

The impact of unemployment and job loss on the individual has been documented in a variety of studies. In addition to the short-term earnings loss due to the current spell of unemployment, unemployment has also been shown to reduce earnings in the long-run (see e.g. Stevens 1997, and Arulampalam et al. 2001). Even after controlling for changes in earnings, job displacement and unemployment have been shown to have a profound impact on well-being or life-satisfaction (see. e.g. Clark and Oswald 1994, Kassenboehmer and Haisken-DeNew 2009 as well as Winkelmann and Winkelmann 1998). The partner and other family members may also be indirectly affected by the job loss due to the reduction in household income[6] as well as other (psychological) stressors[7] (Nikolova and Ayhan 2018).

Kyriacou et al. (1999) mention unemployment as one of the risk factors for domestic violence. However, due to the data requirements convincing evidence on a causal link between individual job displacement and domestic violence within the affected family is scarce. Evidence based on local unemployment rates such as by Anderberg et al.(2016), albeit interesting in its own right, can only be indicative in this regard, because the "provocation effect" relevant for our study may be opposed by an "inhibition effect", caused by employed individuals fearing to lose their job if they engage in violent behaviour (Catalano et al. 1997 and 2002).

Stevens and Schaller (2011) report that parental job loss is associated with an increase in the probability of grade repetition, indicating a negative relationship between job displacement of the parent and academic achievement of the child. Oreopoulos et al. (2008) also show that children of displaced workers face worse outcomes in terms of lower earnings and an increased unemployment probability later in life. However, the effect appears to be largely restricted to low income families. In explaining the effect, Oreopoulos et al. (2008) highlight the importance of the reduction in household income, but do not rule out alternative explanations.

Jointly these studies provide some indication that a job loss constitutes an important event, which may provide a negative signal about expected future earnings, personal

[6] Stephens (2002) shows that labour supply responses by wives cannot fully compensate for the lost income. Furthermore, even if they did, the fact that the husband was working before indicates that this must have been the preferred arrangement. Taking the option to work away from the husband should not result in a better outcome for the family.

[7] See McKee-Ryan et al. (2005) for a meta analysis of studies investigating the impact of unemployment on psychological well-being and physical health.

characteristics of the partner and other aspects related to the quality of the match. This point is important in the context of Becker (1991) and Becker et al. (1977) who note that considering uncertainty in marriage markets is essential to understanding divorce and highlight the importance of information updating. Becker et al. (1977) also show that higher earnings lead to a reduction in the dissolution probability, which indicates that job loss could have an impact on divorce via the earnings loss.

Using data from the PSID Charles and Stephens (2004) show that a partner's job displacement, which may be indicative of negative personal traits of the partner, increases the probability of divorce while disability, besides having a larger long-term impact on earnings, does not. This leads the authors to argue that information regarding a partner's non-economic suitability rather than the future pecuniary value of the match is important for marital stability. The impact of the job displacement is strongest in the years immediately following the displacement and does not appear to be long-term. The authors' hypothesis is further confirmed when distinguishing between different types of job displacement. Layoffs have a significant impact on the divorce hazard, while plant closing, which should be largely independent of personal characteristics of the worker, do not.

Doiron and Mendolia (2012) use discrete time duration models and British Household Panel Survey (BHPS) data to investigate the impact of job loss on couple separation. The authors distinguish between three types of involuntary job displacements: redundancies, dismissals and temporary job endings. Dismissals and temporary job endings are shown to increase the probability of divorce significantly while redundancies only have a small, frequently insignificant, effect. The authors argue that this result is due to redundancies not conveying new information about the partner's characteristics and thus the future value of the match, while the person specific types of job displacement do.

Eliason (2012) uses Swedish linked-employer-employee data to identify causal effects from plant closures on divorce risk. Although plant closures affect all employees of a firm irrespective of their unobservable personal characteristics, Eliason (2012) acknowledges that firms that run out of business are non-random. Consequently, he applies a propensity score weighted discrete time logit model. In contrast to the aforementioned studies, he documents an increase in divorce risk following a husband's job loss due to plant closure. While the coefficient on the wife's job loss has the same sign it is smaller in magnitude and insignificantly different from zero. Eliason (2012) argues that a job loss due to plant

closure does not only cause financial strain for the family but also acts as a major stressor, affecting social networks, time structure and identity of both husband and wife.

3. Data and Estimation

Our analysis uses the 1984 to 2015 waves of the German Socio-Economic Panel (SOEP), a representative annual survey following the same households over time (see Wagner et al. 2007, for a useful introduction to the SOEP). Each individual aged 17 or over living within a selected household responds to a personal questionnaire. In addition, the head of household responds to a household questionnaire. In our study, the couple is taken as the unit of analysis, rather than the individual. Each observation thus contains information on both partners, including their labour market statuses, as well as household characteristics. The sample is restricted to married couples. Thus, cohabiting couples and singles are dropped from the sample. By requiring both partners in the household to state that they are married (and not living separately), we also drop cases where individuals cohabit with a new partner while still married to another person. Furthermore, same sex couples are dropped from the analysis, because the unit of analysis is the household and explanatory variables are coded as information on the husband and wife. After applying these sample restrictions, 116,069 couple-year observations for which the relevant information is available remain. This covers more than 13,000 different couples.

A household is defined as experiencing a dissolution if either the partners explicitly state that a divorce occurred in the previous year or the marital status indicates that the partners are currently separated (either divorced or married but living separately).[8] To avoid uncertainty about the timing of events, marital dissolution in the following year is chosen as the dependent variable. Another reason to not consider a contemporaneous correlation is that it takes some time for the dissolution to occur in response to the job loss, e.g. because it is necessary to find a new apartment.

While the underlying process is in continuous time, i.e. a couple can separate at any point during the year, a divorce is only observed at the next yearly interview. Therefore, we estimate a discrete-time proportional-hazard model, specifically a complementary log-log

[8] By German law, couples are required to have lived apart for one year before they can file for divorce.

model suitable for the analysis of interval-censored data. The general hazard function for the i^{th} couple in period t after the start of the marriage is defined as follows:

$$h_i(t) = 1 - \exp[-\exp(\beta' X_i + \gamma(t))] \quad (1)$$

X_i denotes a vector of covariates including information on job loss and controls. The key explanatory variable is an indicator variable equal to one if the husband has previously experienced an involuntary job loss at some point during the observation period and equal to zero otherwise. In particular, it captures job displacements due to plant closure or dismissal.[9] Furthermore, we include a second indicator variable capturing all other job losses. Our focus lies on analyzing changes associated with involuntary job losses. The influence of other job losses is only of secondary interest, because the heterogeneity within this group complicates the interpretation. However, including this additional dummy variable in the regression is always necessary, even if the variable itself was of no interest, because doing so excludes men with any form of employment termination from the default category. Supplementary employment status variables (pensioner, inactive, self-employed) are included to ensure that the change in divorce risk is estimated relative to the subgroup of couples where the husband *remained* employed.

Additional household level controls are house ownership, number of children, local area. We also control for the age at entry and educational attainment of both partners as well as the employment status of the wife. In an extension, we also allow for interaction effects.

The baseline hazard is defined by $\gamma(t)$, which is captured by a set of time dummies in our specification. Due to data limitations, it is not fully non-parametric. While we observe divorces at each marriage duration shorter than 40 years, and are, thus, able to include a dummy for each duration up to this point, some longer durations are missing. Therefore, we assume a constant baseline hazard for each of the periods from 40 to 50, 50 to 60 and after 60 years.

In total, we observe 9,517 employment terminations, of which 1,526 are due to dismissal or plant closure i.e. "involuntary". The remaining 7,991 employment terminations are due to other reasons. We also observe 791 divorces. Comparing the total number of divorces

[9] These job losses are involuntary in the sense that the husband did not chose to end his employment. However, they could be correlated with the characteristics (observed and unobserved) of the husband and are, thus, not necessarily fully exogenous. Indeed, the potential correlation with certain characteristics is one explanation for an increase in the divorce probability following the involuntary job loss.

to the total number of household-year observations results in an annual relative frequency of divorce (for all married couples) of roughly 0.7% within our sample[10].

In some specifications we also allow for a job loss to have an impact on marital stability even after a new job is found. In particular, we include additional dummy variables, coding for job take up as well as the type of the preceding employment termination. This step further separates the men, who have experienced (a specific type of) a job loss at some point in time, into those who have found a new job and those who have not. One might also argue that after some time in a new job the dissolution probability should no longer be affected and that these men should, thus, re-join the control group once dissolution probabilities have converged. Alternatively, we could (arbitrarily) define a threshold for tenure. When the threshold is passed a man would migrate into the control group. We pursue this alternative approach in an analysis presented in Appendix A and consider the timing of responses explicitly in a robustness check in section 5. Falsely excluding men no longer affected by the past job loss from the control group should not bias the coefficient estimate on the variable coding for the group of husbands that are still unemployed after a job loss since the control group is still representative of unaffected individuals. If, on the other hand, still affected men migrate into the control group a bias towards a zero effect will arise. However, the coefficient on the variable capturing the effect of having a new job after a job loss clearly depends on who is in that particular group.

The above specification does not take couple-specific time-invariant characteristics into account. Ignoring unobserved heterogeneity – or "frailty" in the survival analysis literature – will lead to an overestimation of negative duration dependence, i.e. the baseline hazard is biased downwards, and result in a bias towards zero (smaller absolute values) of the β coefficients (Jenkins 2005). We incorporate unobserved heterogeneity in all estimations via couple-specific random effects. The adjusted hazard function for each couple i is

$$h_i(t) = 1 - \exp\left[-\exp\left(\beta' X_i + \gamma(t)\right) v_i\right] \tag{2}$$

[10] According to data from the German Federal Statistical Office there were a total of 17.6 million married couples and ca. 162 000 divorces in 2016, equivalent to an annual relative frequency of divorce of roughly 0.9%. The lower relative frequency of divorce in our sample could have several possible causes. However, the most plausible explanation is that our frequency is based on several observation periods, some of which were decades earlier.

where v_i is a couple random effect. Estimating this model requires an assumption about the distribution of these random effects. The normal or gamma distribution are typical choices, however, several papers also apply Heckman and Singer's (1984) idea of a discrete distribution, characterised by a number of mass points and their probabilities. We assume a normal distribution. A simulation study by Nicoletti and Rondinelli (2010) showed that this choice results in unbiased coefficients even if the true distribution is a gamma or discrete distribution.

4. Results

All tables present the results in relative risk format, i.e. e^{β}. Thus, entries larger than 1 imply that the risk of a dissolution occurring in a given period is associated with an increase in the respective explanatory variable, while entries smaller than 1 indicate a lower relative risk of divorce.

Table 1 reports the results for our initial specification based on the complementary log-log model with normally distributed frailty and single-spell data. The lag structure of the model implies that the exponential of the coefficient is to be interpreted as follows (column 1, first entry): If a husband experienced an involuntary job loss at some point in the past, the dissolution risk in the following period is 69.9% larger than the dissolution risk of couples in which the husband remained employed. Job losses due to other reasons also associated with an increase the risk of dissolution, yet on a smaller scale of only 37%. The difference is not statistically significant.

Column (2) differentiates by employment status after the job loss occurred, i.e. whether the man is still without a job or has found new employment. Having an unemployed or inactive husband after a job loss is associated with an increase in the risk of a divorce by 67%. However, even if a new job was found, the risk of dissolution is 42.4% larger than the risk of those couples where the husband never experienced a job loss. The difference in estimates is not statistically significant.

Table 1: Divorce risk, single spell (cloglog including frailty)

	(1)	(2)	(3)
$Job\ Loss\ (involuntary)$	1.699***		
	(0.254)		
$Job\ Loss\ (other)$	1.370***		
	(0.128)		
$No\ job\ after\ job\ loss$		1.670***	1.675***
		(0.257)	(0.258)
$New\ job\ after\ job\ loss$		1.424***	
		(0.136)	
$New\ job\ after\ job\ loss\ (involuntary)$			1.753***
			(0.272)
$New\ job\ after\ job\ loss\ (other)$			1.350***
			(0.167)
No. of failures	712	712	712
No. of couples	13,407	13,407	13,407
Couple-Year observations	116,069	116,069	116,069
Log likelihood	-3,932.600	-3,932.198	-3,930.826
ρ	0.201	0.178	0.200
LR Test of $\rho = 0$ *(p-value)*	0.188	0.225	0.190

Please note: All regressions include the following variables for both men and women: age, dummies on migration background, education (in years), unemployment experience and the following household characteristics:, dummy for house ownership, dummies for the number of children, dummy on area (rural or urban) as well as dummies for woman's employment status (fulltime employed in private sector, part-time employed in private sector, fulltime self-employed, part-time self-employed, fulltime public service, part-time public service, in training, internship, pensioner; inactive is reference) and dummies for man's employment status (pensioner, inactive, (former) self-employed). ρ is the proportion of the (total) variance explained by couple-specific random components.
The baseline hazard is modelled via 42 dummies on marriage duration. A constant is not included.
* indicates that exp(coeff) is significantly different from 1 at 10% level, ** at 5% and *** at 1%.

In column (3) we repeat the analysis from column (2), but allow the estimated relative risk associated with having a new job to vary depending on the type of the initial job loss. Due to small cell size, we do not apply the same differentiation in the case where the husband is unemployed.[11] Out of the 1,526 involuntary job losses, only 243 men did not start a new job within the next year. All other men either found new employment or switched into another category, such as retirees. Just as in column (2) there is a significant relationship between job loss and marital stability in the next period, even if the husband obtained a new job in the meantime. However, the increase in the dissolution risk is larger if the job loss prior to the current employment was involuntary (75.3%) rather than another type of job loss (35.0%).

A key interpretation of our results is in terms of the informational content of the employment termination in regards to the quality of the match. A termination of the employment relationship may result in an information update about both the partner's earning potential as well as the non-pecuniary compatibility of the couple. In addition, experiencing an employment termination as well as taking up a new job could be associated

[11] This was done in an unreported regression. The point estimates of both effects are similar in magnitude, though slightly larger for involuntary job losses than for other types of job losses. However, probably due to the mentioned small cell size, the former estimated effect is not statistically significantly different from zero. Given these results, we prefer the more parsimonious specification in column (2) which combines the two types of job loss.

with high levels of stress, which in turn could lead to an increased incidence of family conflict and divorce. Since the following sections provide some additional insights, we postpone a more detailed interpretation and discussion of our results until section 5 and 6, which also includes some model extensions.

5. Robustness Analyses

This section considers two key robustness checks. Firstly, the sample is restricted to couples observed from the start of their marriage. Secondly, we allow for time-varying effects.

For some couples the start of their marriage is not directly observed in the SOEP. This delayed entry to the sample or left truncation of already married couples is unproblematic in the absence of unobserved heterogeneity. However, with unobserved heterogeneity results may be biased (Jenkins 2005). To investigate this concern, Table 2 reports results based on a sample consisting of only those couples where the start of the marriage is observed. Applying this sample restriction results in a sizeable sample size reduction of more than 75% to only 25,818 couple-year observations. As a consequence, the baseline hazard had to be adjusted and is now only fully flexible for the first 20 years of marriage and assumed to be constant thereafter.

Table 2: Divorce risk, left truncation (cloglog including frailty)

	(1)	(2)	(3)
$Job\ Loss\ (involuntary)$	2.011***		
	(0.414)		
$Job\ Loss\ (other)$	1.405**		
	(0.189)		
$No\ job\ after\ job\ loss$		1.987***	2.039***
		(0.431)	(0.450)
$New\ job\ after\ job\ loss$		1.435***	
		(0.193)	
$New\ job\ after\ job\ loss\ (involuntary)$			2.275***
			(0.489)
$New\ job\ after\ job\ loss\ (other)$			1.274*
			(0.187)
No. of failures	348	348	348
No. of couples	3,418	3,418	3,418
Couple-Year observations	25,818	25,818	25,818
Log likelihood	-1,775.982	-1,756.285	-1,752.658
ρ	0.247	0.245	0.343
LR Test of $\rho = 0$ *(p-value)*	0.240	0.251	0.133

Please note: All regressions include the following variables for both men and women: age, dummies on migration background, education (in years), unemployment experience and the following household characteristics, dummy for house ownership, dummies for the number of children, dummy on area (rural or urban) as well as dummies for woman's employment status (fulltime employed in private sector, part-time employed in private sector, fulltime self-employed, part-time self-employed, fulltime public service, part-time public service, in training, internship, pensioner; inactive is reference) and dummies for man's employment status (pensioner, inactive, (former) self-employed). ρ is the proportion of the (total) variance explained by couple-specific random components.
The baseline hazard is modelled via 20 dummies on marriage duration. A constant is not included.
* indicates that exp(coeff) is significantly different from 1 at 10% level, ** at 5% and *** at 1%.

The qualitative results are robust to this adjustment. However, comparing the point estimates to those in Table 1, the estimated relative risk of marital dissolution related to employment termination with subsequent unemployment appears larger in this sample. Another notable change is that if new employment was found the type of initial job loss appears to matter more. The difference in the dissolution risk between an involuntary job loss and other types of job losses is statistically significant at the 1 % level.

There are two explanations for these changes. The first is effect heterogeneity, depending on marriage duration or age of individuals. On average, we expect the couples in this sample to have been married for a shorter period of time compared to the full sample. Thus, we might interpret these changes in the point estimates as an indication that involuntary job loss is a more important signal during the early stages of the marriage. Furthermore, the average age of individuals in the sample is lower. Changing jobs early in the career is common. Thus, job loss for other reasons could be expected and should have a lower or no impact on divorce. The second explanation for this result is unobserved heterogeneity of the couples. In particular, the left truncated couples, i.e. couples who already "survived" several years, are a specific subsample of all marriages, such that their average random effect might no longer be zero. In this case, excluding these couples corrects for the bias otherwise resulting in too conservative estimates (Gou 1993). However, since this cannot explain why the estimated the relative risk is smaller for those who have found a job after a job loss for other reasons, this does not appear to be the only explanation. Changes compared to Table 1 can, of course, also be attributed to the much smaller sample size. Due to this large reduction in the sample size and because, if anything, using the full sample results in too cautious point estimates, at least for the variables of key interest, we choose to rely on the full sample for further robustness checks and extensions.

In Table 3 we relax the assumption of proportional hazards by interacting our key variables of interest with time dummies, representing the time the husband has already spent in his respective status. We allow for different coefficients for the first year, the second year and for three or more years spent in a specific status. Thus, while we still assume a constant hazard after three years, the coefficients for the first and second year are flexible. If couples decide to divorce based on expected (future) income, expected (future) stress and updated personal characteristics, then agent's foresight must either be biased or new information must be released in subsequent periods (i.e. new shocks) for any of the

aforementioned channels to have an effect beyond the first period. A permanent reduction in the expected future value of the match due to the employment termination makes it more likely that later negative shocks push the couple over the divorce boundary later on. The point estimates in Column (1) show that a job loss is associated with an increase in the risk of divorce. However, the magnitude of the relationship is decreasing over time. This is in line with earlier results from Charles and Stephens (2004) who also found the strongest effects in the first year following a job loss. Columns (2) and (3) separate the effects for those who did not find a new job (yet) and those who did. Perhaps surprisingly, the relative risk of dissolution associated with not having a job after an employment termination is highest two years after the initial employment termination[12]. However, this could also be attributed to information updating due to the additional signal arising from the husband failing to obtain employment after a potentially expected transition period of one year. At this point he is also considered long-term unemployed, which has been shown to be associated with greater state-dependence in the labour market status (Arulampalam et al. 2000, Plum and Ayllón 2015) and thus significantly reduced financial prospects. If new employment was found, the increase in the dissolution risk appears to be large in the first year but decreases significantly over time. This indicates that the role the initial employment termination plays in determining the expected future value of the match may fade over time as newer information becomes available, e.g. that the husband is able to hold the new job. An alternative interpretation is that after some time following a job loss (after taking up a new job), the stress associated with the job loss (taking up a new job) is reduced and the family has (largely) completed the adjustment process to the new everyday life. Nonetheless, involuntary job losses are still associated with higher relative risks of dissolution than employment termination for other reasons. Strikingly, the associated increase in divorce risk in the first year in the new job following an involuntary job loss is significantly (at the 10% level) higher than for those who remained unemployed. This is consistent with our hypothesis that not only the job loss itself but also taking up a new job is a stressor for the family[13].

[12] The difference between the first and second year of unemployment is, however, not statistically significant.
[13] Coping mechanisms have been investigated e.g. by Leana and Feldman (1988), Feldman and Brett (1983) and McCarthy and Lambert (1999). Nelson (1990) gives an overview of stressors related to taking up a new job. For an overview of theoretical and empirical papers on the effect of stress on the risk of divorce see Bodenmann et al. (2007)

Table 3: Divorce risk, time-varying effects (cloglog including frailty)

	(1)	(2)	(3)
Job Loss (involuntary)			
1st year	2.395***		
	(0.466)		
2nd year	1.610		
	(0.500)		
3 or more years	1.184		
	(0.268)		
Job Loss (other)			
1st year	1.471***		
	(0.182)		
2nd year	1.457**		
	(0.228)		
3 or more years	1.236*		
	(0.144)		
No job after job loss			
1st year		1.639***	1.639***
		(0.293)	(0.293)
2nd year		1.779**	1.779**
		(0.523)	(0.523)
3 or more years		1.700*	1.701*
		(0.513)	(0.514)
New job after job loss			
1st year		1.713***	
		(0.221)	
2nd year		1.413**	
		(0.233)	
3 or more years		1.252*	
		(0.149)	
New job after job loss (involuntary)			
1st year			2.535***
			(0.527)
2nd year			1.630
			(0.529)
3 or more years			1.265
			(0.289)
New job after job loss (other)			
1st year			1.487***
			(0.222)
2nd year			1.358*
			(0.250)
3 or more years			1.248*
			(0.156)
No. of failures	712	712	712
No. of couples	13,407	13,407	13,407
Couple-Year observations	116,069	116,069	116,069
Log likelihood	-3,928.781	-3,930.018	-3,927.576
ρ	0.061	0.097	0.090
LR Test of $\rho = 0$ *(p-value)*	0.416	0.359	0.370

Please note: All regressions include the following variables for both men and women: age, dummies on migration background, education (in years), unemployment experience and the following household characteristics: dummy for house ownership, dummies for the number of children, dummy on area (rural or urban) as well as dummies for woman's employment status (fulltime employed in private sector, part-time employed in private sector, fulltime self-employed, part-time self-employed, fulltime public service, part-time public service, in training, internship, pensioner; inactive is reference) and dummies for man's employment status (pensioner, inactive, (former) self-employed). ρ is the proportion of the (total) variance explained by couple-specific random components.
The baseline hazard is modelled via 42 dummies on marriage duration. A constant is not included.
* indicates that exp(coeff) is significantly different from 1 at 10% level, ** at 5% and *** at 1%.

Table 3 also serves as a means to check whether it would be possible to assign more families to the control group. If there is no scarring effect, there should be no difference in divorce risk between those in a new job after a previous job loss and the control group after some time in the new job.

Following this argument, we also re-estimated Table 1 with a control group including men that have been in a new job for four years or more. The results displayed in Appendix A are both in size and statistical significance close to our initial results. The small and insignificant changes that did occur are in line with our discussion in section 3.

6. Discussion and Extensions

The reasons for a divorce can be multifaceted. In this section, we discuss some explanations for a marital dissolution following a job loss or employment termination that are consistent with the results presented in section 4 and 5. In addition, we present some model extensions to investigate some of the underlying reasons.

Across specifications, our results show that an employment termination of the husband is associated with an increase in the dissolution risk, which we attribute, amongst other explanations addressed below, to the resulting information updating regarding the future financial status and non-pecuniary compatibility of the couple. It is also plausible that involuntary job losses convey more (negative) information than employment terminations for other reasons. In particular, other types of job losses could be voluntary quits due to the availability of better employment opportunities or because the couple jointly agreed on this course of action. We would not expect these types of employment termination to affect marital stability (negatively). However, this argument will not hold for all employment terminations for other reasons, such as a temporary contract ending which was expected to be extended. Thus, a job loss for other reasons can, but does not necessarily have to, convey any negative information. These arguments are consistent with the lower, though still significant, point estimates associated with other job losses compared to involuntary job losses across specifications.

Given the signalling argument, the large estimated relative risk associated with job displacement even after having obtained a new job (particularly if the job loss was involuntary), may appear surprising since obtaining new employment is presumably beneficial compared to remaining unemployed. We propose three explanations for this result. Firstly, it is not clear whether the new job provides the same level of income as before (Jacobson et al. 1993, Eliason and Storrie 2006, Couch and Placzek 2010; for papers that focus on German data see Couch 2001 or Fackler and Hank 2016). The couple may be

surprised by the income realisation, which causes an additional update of beliefs about the future earnings potential. Secondly, having lost a job (even if new employment was found) can still provide a negative signal about the non-pecuniary suitability as a mate relative to the comparison group where no job loss occurred, explaining part of, albeit not the entire, large relative risk estimate. Furthermore, depending on the type of job taken up, the signal may even be negative compared to being unemployed if the new job does not meet the expectations held while still being unemployed, just as argued above in the context of household income. Thirdly, job search and taking up a new job is associated with high levels of stress and uncertainty, which could lead to breakdown of the relationship. Thus, even if obtaining a new job may provide a positive signal about personal characteristics of a partner and future income, it may induce stress in the short term. In addition, the new job may have other non-monetary negative characteristics such as less desirable working hours and commuting time that place continuous strain on the couple's relationship. To investigate this issue we included a number of controls for changes in job characteristics. In particular, the role of wages is captured by the ratio of current to former wage. In addition, to evaluate the importance of (un-)desirable working hours, we construct a variable which is equal to the ratio of actual and desired hour worked in the current job over the same measure for the old job. If no new job was taken up, both of these variables are set to unity. Unfortunately, we do not have data on the exact time spent commuting. We do, however, know whether the husband commuted daily, weekly or less frequently. Thus, we decided to include two dummy variables, one indicating an increase and the other indicating a decrease in the commuting frequency, leaving no change in commuting frequency as the default category. The results are reported in table 4. Considering the results reported in columns (1) to (4), which do not allow for variation in the coefficients across time, it appears that the ratio of current to former wage individually absorbs more of the total estimated effect of obtaining a new job after an involuntary job loss than the other controls. When all controls are included jointly, no significant relationship between having obtained a new job after any form of employment termination and the risk of marital dissolution remains. When we allow for heterogeneous effects for the first, second and following years in an employment status in columns (5) to (8) a similar pattern emerges. Just as in Table 3, the estimated relative risks are the highest in the first year of a new job if the previous job loss was involuntary. Interestingly the wage ratio has the largest unilateral impact on the point estimate associated with taking up a new job if the preceding

employment termination was involuntary, while hours worked are more important if the preceding employment termination was due to other reasons. All estimated relative risks associated with taking up a new job become insignificantly different from unity if all three additional controls are included jointly, even though some point estimates remain large. The reduction in point estimates in Table 3 columns (3) and (7) compared to Table 1 column (3) and Table 2 column (3), respectively, shows that changes in the wage between former and current job explain a large part of the estimated relationship, indicating that updates of expectations regarding the husband's future income stream plays an important role.

It would also be interesting to analyse the underlying reasons, such as the income channel, for the estimated relative risks for the other changes in employment status (e.g. involuntary job loss without taking up a new job). However, unlike in the case of taking up a new job, there are no convincing additional control variables to capture each suggested channel. As a cursory investigation into the importance of the income channel as a whole, not only regarding taking up a new job, we did include current household income in an unreported regression. The key results remained largely unchanged in sign, significance level and magnitude. However, the inclusion of current household income only removes an intractable part of the actual expected lifetime-income effect, which is not observed in the SOEP. Since our primary aim is to consider the total effect of job loss/ employment termination on divorce, including the (expected lifetime-)income channel, we do not control for household income in any of the regressions reported in section 4 and 5.

Table 4: Additional New Job Controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
No job after job loss	1.682***	1.864***	1.705***	1.929***				
	(0.254)	(0.280)	(0.254)	(0.294)				
1st year					1.639***	1.763***	1.662***	1.803***
					(0.296)	(0.317)	(0.296)	(0.327)
2nd year					1.781*	2.013**	1.815**	2.098**
					(0.528)	(0.597)	(0.533)	(0.627)
3 or more years					1.742*	2.111**	1.753*	2.336***
					(0.539)	(0.661)	(0.528)	(0.745)
New job after job loss (involuntary)	1.813***	1.518*	1.188	1.184				
	(0.314)	(0.325)	(0.264)	(0.609)				
1st year					2.434***	2.336***	2.066***	1.991
					(0.623)	(0.738)	(0.566)	(1.111)
2nd year					2.019**	2.018*	1.184	1.582
					(0.703)	(0.846)	(0.438)	(1.072)
3 or more years					1.495*	0.996	0.866	0.789
					(0.364)	(0.348)	(0.238)	(0.453)
New job after job loss (other)	1.317**	1.248*	1.626**	1.452				
	(0.149)	(0.151)	(0.389)	(0.474)				
1st year					1.503**	1.012	1.979**	1.160
					(0.278)	(0.250)	(0.540)	(0.505)
2nd year					1.326	1.276	1.745*	1.327
					(0.310)	(0.333)	(0.504)	(0.592)
3 or more years					1.295*	1.394**	1.514*	1.571
					(0.179)	(0.207)	(0.376)	(0.512)
Additional Controls (interacted with type of new job):								
Changes in Commuting	yes			yes	yes			yes
Ratio hours worked		yes		yes		yes		yes
Ratio wages			yes	yes			yes	yes
No. of failures	649	584	695	556	649	584	695	556
No. of couples	13,257	13,222	13,363	13,104	13,257	13,222	13,363	13,104
Couple-Year observations	110,464	104,198	114,197	101,153	110,464	104,198	114,197	101,153
Log likelihood	-3,611.523	-3,265.960	-3,840.101	-3,117.289	-3,608.626	-3,261.786	-3,833.812	-3,113.285
ρ	0.259	0.076	0.162	0.186	0.231	0.089	0.030	0.190
LR Test of $\rho = 0$ *(p-value)*	0.113	0.409	0.256	0.256	0.155	0.392	0.459	0.249

Please note: All regressions include the following variables for both men and women: age, dummies on migration background, education (in years), unemployment experience and the following household characteristics: dummy for house ownership, dummies for the number of children, dummy on area (rural or urban) as well as dummies for woman's employment status (fulltime employed in private sector, part-time employed in private sector, fulltime self-employed, part-time self-employed, fulltime public service, part-time public service, in training, internship, pensioner; inactive is reference) and dummies for man's employment status (pensioner, inactive, (former) self-employed). ρ is the proportion of the (total) variance explained by couple-specific random components.
The baseline hazard is modelled via 42 dummies on marriage duration. A constant is not included. The control group consists of couples in which the man has never experienced a job loss while in the sample as well as couples in which the man has lost his job, found a new job and holds this job for four or more years.
* indicates that exp(coeff) is significantly different from 1 at 10% level, ** at 5% and *** at 1%.

How well a couple is able to cope with an employment termination of the husband likely also depends on the wife's labour market outcome. Whether a wife's employment increases or reduces the increase in the dissolution risk associated with the husband's employment determination is, a priori, not clear. In Table 5 we allow for different effects of job losses on the risk of separation depending on the wife's labour market position. In all instances, the estimated relative risk of separation is lower if the wife is employed compared to an unemployed or inactive wife. The reasons for this result can be manifold.

Table 5: Interaction with woman's employment status (cloglog including frailty)

	(1)	(2)	(3)
$Job\ Loss\ (involuntary)$	1.465**		
$\times\ woman\ employed$	(0.264)		
$Job\ Loss\ (involuntary)$	2.848***		
$\times\ woman\ unemployed\ or\ inactive$	(0.719)		
$Job\ Loss\ (other)$	1.338***		
$\times\ woman\ employed$	(0.147)		
$Job\ Loss\ (other)$	1.698***		
$\times\ woman\ unemployed\ or\ inactive$	(0.283)		
$No\ job\ after\ job\ loss$		1.610***	1.618***
$\times\ woman\ employed$		(0.294)	(0.297)
$No\ job\ after\ job\ loss$		2.089***	2.102***
$\times\ woman\ unemployed\ or\ inactive$		(0.522)	(0.526)
$New\ job\ after\ job\ loss$		1.315**	
$\times\ woman\ employed$		(0.145)	
$New\ job\ after\ job\ loss$		1.868***	
$\times\ woman\ unemployed\ or\ inactive$		(0.312)	
$New\ job\ after\ job\ loss\ (involuntary)$			1.424*
$\times\ woman\ employed$			(0.267)
$New\ job\ after\ job\ loss\ \ (involuntary)$			3.040***
$\times\ woman\ unemployed\ or\ inactive$			(0.780)
$New\ job\ after\ job\ loss\ (other)$			1.298**
$\times\ woman\ employed$			(0.152)
$New\ job\ after\ job\ loss\ (other)$			1.613***
$\times\ woman\ unemployed\ or\ inactive$			(0.297)
No. of failures	712	712	712
No. of couples	13,407	13,407	13,407
Couple-Year observations	116,069	116,069	116,069
Log likelihood	-3,927.577	-3,928.761	-3,926.072
ρ	0.204	0.153	0.189
LR Test of $\rho = 0$ *(p-value)*	0.183	0.270	0.204

Please note: All regressions include the following variables for both men and women: age, dummies on migration background, education (in years), unemployment experience and the following household characteristics: household income (adjusted for number of adults and children by the OECD equivalence scale), dummy for house ownership, dummies for the number of children, dummy on area (rural or urban) as well as dummies for woman's employment status (fulltime employed in private sector, part-time employed in private sector, fulltime self-employed, part-time self-employed, fulltime public service, part-time public service, in training, internship, pensioner; inactive is reference) and dummies for man's employment status (pensioner, inactive, (former) self-employed).
All regressions also include an interaction with women, that are either self-employed, in training, in internship or pensioners. ρ is the proportion of the (total) variance explained by couple-specific random components.
The baseline hazard is modelled via 42 dummies on marriage duration. A constant is not included.
* indicates that exp(coeff) is significantly different from 1 at 10% level, ** at 5% and *** at 1%.

Firstly, an employment termination likely has a stronger impact on the couple's finances if the wife is not employed potentially leading to more intense stress due to the financial hardship. It could also be the case that traditional gender norms are more prevalent amongst (previous) single earner couples, making the husband's deviation from the "male breadwinner norm" due to the experienced employment termination more detrimental to

the stability off these matches. Lastly, some inactive women may have only remained with their partner due to financial dependency, causing a dissolution as soon as this reason for staying with the partner is no longer present. However, even though the wife's employment reduces the estimated relative risk of divorce associated with the husband's employment termination, our findings do not rule out counteracting processes completely. For example, Knabe et al. (2016) showed that the husband's life-satisfaction is impacted less severely by unemployment if the wife is also unemployed, which presumably should have a negative impact on marital stability.

Throughout our analysis, we have distinguished between involuntary job losses and employment terminations for other reasons because we suspected that these differ in their information content and because employment termination for other reasons likely suffers from an endogeneity problem. Regarding both points one might object that, given these concerns, it would be even better to distinguish the type of involuntary job loss further, since the variable currently includes plant closings as well as individual lay-offs[14]. Charles and Stephens (2004) as well as Doiran and Mendolia (2012) have argued that both lay-offs and plant closures can be indicative of lower future earnings, but only lay-offs provide information about a partner's non-pecuniary suitability as a mate. In Appendix B we briefly examine the potential for heterogeneous effects depending on the type of involuntary job loss. The qualitative results presented in Table 1 hold for both types of involuntary job losses. There does not appear to be a considerable difference in estimated relative risks nor are the estimated relative risks consistently lower/higher for plant closings. Eliason (2012) has argued that plant closures, albeit independent of personal characteristics of the employees, may still operate as a stressor to the family, changing everyday routine, social networks and identities. We suspect that the stress brought about by any job loss can still induce conflict within the family and reveal negative aspects of the partner's personality, even if the initial employment termination did not. Therefore, we would be cautious to interpret these results as evidence that information updating regarding the partner's personal characteristics is completely irrelevant.

However, including the distinction between plant closings and lay-offs is also interesting because, even regarding our basic analysis of involuntary job losses, one could

[14] In our sample most husbands in this group were affected by lay-offs (ca. 1000) rather than plant closings (ca. 500)

object that some workers possess certain traits that increase both their risk of an individual lay-off as well as their risk of marital dissolution leading to selection bias in our estimates. On the other hand, it has been argued that plant closures constitute a truly exogenous source of job displacement. In this way, the results of the aforementioned Appendix B can also serve as a robustness check, since the results based solely on plant closures should not suffer from an endogeneity problem. We have chosen to not pursue this approach in the main section due to the resulting small sample size in each cell once we consider certain model extension, the insignificant differences in the estimates and because any potential difference in estimates could not necessarily be interpreted in terms of the underlying processes for the reasons mentioned above. Lastly, we are confident that our results are not primarily driven by time-constant personal traits. Charles and Stephens (2004) already argued in their analysis, that any time-constant personal traits driving the results would be inconsistent with declining coefficients over time.

Nonetheless, we do acknowledge that, especially when we differentiate between those who found a new job and those who remained unemployed, our results are more of descriptive nature rather than indicating a clear causal relationship. There are good reasons to believe that those who find a new job differ in their unobserved characteristics compared to those who do not find a new job, thus finding a new job is not an exogenous event. The reported correlations may provide some initial insights into the consequences of job losses regarding the risk of marital dissolution, but do not enable us to draw conclusions on how active labour market programs would affect the risk of dissolution. It should be noted that, even if time constant personality traits do not explain the estimated results, this does not mean that character traits are irrelevant for marital stability, as they can still influence the baseline hazard for the couple. Furthermore, part of our interpretation is based on information updating regarding these characteristics. However, under this interpretation, it is the perception of personal characteristics that matters for marital stability and this perception is changed due to the employment termination. Thus, while we cannot be sure that the results are necessarily causal, the proposed character trait based explanation is not, per se, add odds with a causal relationship.

Lastly, we want to note that our estimations are based only on married couples. We abstain from drawing inference on the effects of job losses on the stability of the relationship of unmarried, cohabiting couples. The analysis also exclusively considers the

effects of the husband's job loss on marital dissolution. The effects of a job loss of the wife can be different, amongst other reasons due to different role identities. In unreported regression results, we found the estimated coefficients of women's involuntary job losses to be insignificant, which is consistent with the idea of a male-breadwinner role model.

7. Conclusion

Our study analyses the relationship between (involuntary) employment termination and the risk of marital dissolution using recent micro-level data from the German Socio-Economic Panel. An employment termination affects a variety of aspects of an individual's life. These consequences could potentially be long-term and even persist after new employment has been found. Therefore, we extend the analysis by allowing a preceding employment termination to have a different impact on the divorce probability once a new job was found compared to the husband being/remaining unemployed. In a number of extensions, we also analyse the timing of the response, which variables could explain the overall effect and consider interactions with the wife's labour market status.

Overall, our results are consistent with previous studies by Doiron and Mendolia (2012), Eliason (2012) as well as Charles and Stephens (2004). However, quantitatively our results indicate a smaller relationship between job loss and marital dissolution than the one estimated by Doiron and Mendolia (2012), which could be explained by country specific effects. An involuntary job loss is associated with an increase in the estimated risk of dissolution by roughly 70 %. We interpret these results primarily as a job loss conveying new (negative) information about the future value of the match, resulting in a breakdown of the match. An involuntary job loss may be indicative of both lower future earnings potential as well as other unobserved undesirable personal characteristics of the husband. Another important contributing factor could be the increase in stress brought about by the new situation. The impact is typically largest in the period immediately following the job loss or taking up a new job. The substantially lower point estimates in the second and later years after the employment termination are statistically insignificant in some cases. An exception is a small increase in the dissolution risk in the second year after an employment termination if no new job was obtained. This indicates that, conditional on surviving the initial (few) period(s)after the job loss, the impact of an employment termination fades away, at least if new employment was found. Interestingly, the highest increase in

dissolution risk, at roughly 154 %, is associated with the first year in a new job. We have suggested that obtaining a new job could also convey new (negative) information about both the husband's earnings capability as well as his personal characteristics. In addition, new sources of stress are associated with taking up a new job. The job could also have other non-monetary negative aspects such as less desirable working hours and commuting time, providing an explanation for this large estimate. These channels are generally supported by our results, which specifically indicate a prominent role of the ratio of the wage in the old and new job. The size of the estimated relative risk of dissolution is lower if the wife is employed rather than unemployed.

Since our results are based on a partial equilibrium approach they should, however, not be used to predict the impact of a fundamental labour market policy change, such as moving from high employment protection to flexicurity[15]. An economy wide increase in turnover implies that each individual employment termination would no longer be unusual and a new job typically found quickly. The negative signal regarding personal characteristics and future earnings potential would (presumably) be reduced or even eliminated. However, the influence on the level of stress experienced due to employment termination, job search and taking up a new job is unclear. Nonetheless, if workers suspect a causal relationship between job loss and divorce, which is consistent with our analysis, this would provide another explanation why insiders, i.e. (permanent) workers, prefer stricter dismissal protection. In addition to increasing their job security, they would profit from a (perceived) reduced risk of marital dissolution.

[15] A system in which firms can adjust their workforce more flexibly, while social security provisions and active labour market policies are in place to support individuals affected by a job loss.

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Appendix

Appendix A: Divorce Risk, single spell, different control group (cloglog including frailty)

	(1)	(2)	(3)
$Job\ Loss\ (involuntary)$	1.878***		
	(0.294)		
$Job\ Loss\ (other)$	1.426***		
	(0.134)		
$No\ job\ after\ job\ loss$		1.611***	1.612***
		(0.238)	(0.239)
$New\ job\ after\ job\ loss$		1.532***	
		(0.149)	
$New\ job\ after\ job\ loss\ (involuntary)$			1.975***
			(0.325)
$New\ job\ after\ job\ loss\ (other)$			1.417***
			(0.153)
No. of failures	712	712	712
No. of couples	13,407	13,407	13,407
Couple-Year observations	116,069	116,069	116,069
Log likelihood	-3,930.155	-3,930.269	-3,928.667
ρ	0.002	0.078	0.008
LR Test of $\rho = 0$ *(p-value)*	0.488	0.482	0.477

Please note: All regressions include the following variables for both men and women: age, dummies on migration background, education (in years), unemployment experience and the following household characteristics: dummy for house ownership, dummies for the number of children, dummy on area (rural or urban) as well as dummies for woman's employment status (fulltime employed in private sector, part-time employed in private sector, fulltime self-employed, part-time self-employed, fulltime public service, part-time public service, in training, internship, pensioner; inactive is reference) and dummies for man's employment status (pensioner, inactive, (former) self-employed). ρ is the proportion of the (total) variance explained by couple-specific random components.

The baseline hazard is modelled via 42 dummies on marriage duration. A constant is not included. The control group consists of couples in which the man has never experienced a job loss while in the sample as well as couples in which the man has lost his job, found a new job and holds this job for four or more years.

* indicates that exp(coeff) is significantly different from 1 at 10% level, ** at 5% and *** at 1%.

Appendix B1: Plant closures and dismissals differentiated (cloglog including frailty)

	(1)	(2)	(3)	(4)
Job Loss (plant closure)	1.930***			
	(0.328)			
1st year		3.027***		
		(0.650)		
2nd year		1.654		
		(0.635)		
3 or more years		1.204		
		(0.323)		
Job Loss (dismissal)	1.851**			
	(0.470)			
1st year		2.021*		
		(0.835)		
2nd year		2.133		
		(1.076)		
3 or more years		1.503		
		(0.543)		
Job Loss (other)	1.487***			
	(0.139)			
1st year		1.674***		
		(0.209)		
2nd year		1.581***		
		(0.256)		
3 or more years		1.293**		
		(0.149)		
No job after job loss			1.739***	
			(0.281)	
1st year				1.756***
				(0.328)
2nd year				1.964**
				(0.597)
3 or more years				1.476
				(0.503)
New job after job loss (plant closure)			1.952***	
			(0.349)	
1st year				3.118***
				(0.719)
2nd year				1.600
				(0.663)
3 or more years				1.294
				(0.354)
New job after job loss (dismissal)			1.966***	
			(0.501)	
1st year				2.210*
				(0.916)
2nd year				2.289
				(1.158)
3 or more years				1.573
				(0.577)
New job after job loss (other)			1.495***	
			(0.152)	
1st year				1.740***
				(0.261)
2nd year				1.477**
				(0.282)
3 or more years				1.335**
				(0.169)
No. of failures	712	712	712	712
No. of couples	13,407	13,407	13,407	13,407
Couple-Year observations	116,069	116,069	116,069	116,069
Log likelihood	-3,927.315	-3,921.811	-3,925.803	-3,921.097
ρ	0.200	0.025	0.199	0.055
LR Test of $\rho = 0$ *(p-value)*	0.182	0.468	0.183	0.420

Please note: All regressions include the following variables for both men and women: age, dummies on migration background, education (in years), unemployment experience and the following household characteristics: dummy for house ownership, dummies for the number of children, dummy on area (rural or urban) as well as dummies for woman's employment status (fulltime employed in private sector, part-time employed in private sector, fulltime self-employed, part-time self-employed, fulltime public service, part-time public service, in training, internship, pensioner; inactive is reference) and dummies for man's employment status (pensioner, inactive, (former) self-employed). ρ is the proportion of the (total) variance explained by couple-specific random components.

The baseline hazard is modelled via 42 dummies on marriage duration. A constant is not included. * indicates that exp(coeff) is significantly different from 1 at 10% level, ** at 5% and *** at 1%.* indicates that exp(coeff) is significantly different from 1 at 10% level, ** at 5% and *** at 1%.

Appendix B2: Plant closures and dismissals differentiated (cloglog including frailty); left truncation

	(1)	(2)
$Job\ Loss\ (plant\ closure)$	2.567***	
	(0.852)	
$Job\ Loss\ (dismissal)$	1.823**	
	(0.429)	
$Job\ Loss\ (other)$	1.404**	
	(0.189)	
$No\ job\ after\ job\ loss$		2.034***
		(0.449)
$New\ job\ after\ job\ loss\ (plant\ closure)$		2.747***
		(0.942)
$New\ job\ after\ job\ loss\ (dismissal)$		2.102***
		(0.514)
$New\ job\ after\ job\ loss\ (other)$		
No. of failures	348	348
No. of couples	3,418	3,418
Couple-Year observations	25,818	25,818
Log likelihood	-1,755.425	-1,752.282
ρ	0.255	0.347
LR Test of $\rho = 0$ *(p-value)*	0.236	0.133

Please note: All regressions include the following variables for both men and women: age, dummies on migration background, education (in years), unemployment experience and the following household characteristics, dummy for house ownership, dummies for the number of children, dummy on area (rural or urban) as well as dummies for woman's employment status (fulltime employed in private sector, part-time employed in private sector, fulltime self-employed, part-time self-employed, fulltime public service, part-time public service, in training, internship, pensioner; inactive is reference) and dummies for man's employment status (pensioner, inactive, (former) self-employed). ρ is the proportion of the (total) variance explained by couple-specific random components.
The baseline hazard is modelled via 20 dummies on marriage duration. A constant is not included.
* indicates that exp(coeff) is significantly different from 1 at 10% level, ** at 5% and *** at 1%.

Appendix B3: Plant closures and dismissals differentiated (cloglog including frailty); additional new job controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
No job after job loss	1.682***	1.866***	1.708***	1.932***				
	(0.254)	(0.281)	(0.254)	(0.294)				
1st year					1.639***	1.764***	1.663***	1.805***
					(0.296)	(0.317)	(0.296)	(0.327)
2nd year					1.780*	2.015**	1.817**	2.100**
					(0.528)	(0.598)	(0.533)	(0.628)
3 or more years					1.741*	2.113**	1.756*	2.337***
					(0.539)	(0.661)	(0.528)	(0.746)
New job after job loss (plant closure)	1.769**	1.257	1.022	0.896				
	(0.479)	(0.490)	(0.322)	(0.555)				
1st year					2.016	0.679	1.640	0.629
					(0.922)	(0.683)	(0.739)	(0.689)
2nd year					2.578*	3.087*	1.154	1.666
					(1.328)	(1.820)	(0.692)	(1.478)
3 or more years					1.442	1.011	0.779	0.835
					(0.574)	(0.598)	(0.341)	(0.613)
New job after job loss (dismissal)	1.838***	1.642**	1.266	1.350				
	(0.378)	(0.403)	(0.300)	(0.712)				
1st year					2.650***	3.104***	2.254***	2.781*
					(0.795)	(1.039)	(0.667)	(1.606)
2nd year					1.716	1.504	1.195	1.551
					(0.792)	(0.882)	(0.523)	(1.188)
3 or more years					1.522	0.990	0.905	0.770
					(0.443)	(0.418)	(0.281)	(0.494)
New job after job loss (other)	1.317**	1.248*	1.625**	1.451				
	(0.149)	(0.151)	(0.389)	(0.474)				
1st year					1.503**	1.013	1.980**	1.161
					(0.278)	(0.250)	(0.540)	(0.505)
2nd year					1.325	1.276	1.746*	1.327
					(0.309)	(0.333)	(0.503)	(0.592)
3 or more years					1.294*	1.393**	1.512*	1.569
					(0.179)	(0.206)	(0.375)	(0.511)
Additional Controls (interacted with type of new job):								
Changes in Commuting	yes			yes	yes			yes
Ratio hours worked		yes		yes		yes		yes
Ratio wages			yes	yes			yes	yes
No. of failures	649	584	695	556	649	584	695	556
No. of couples	13,257	13,222	13,363	13,104	13,257	13,222	13,363	13,104
Couple-Year observations	110,464	104,198	114,197	101,153	110,464	104,198	114,197	101,153
Log likelihood	-3,611.516	-3,265.773	-3,839.858	-3,116.916	-3,608.295	-3,259.842	-3,833.526	-3,111.886
ρ	0.259	0.069	0.158	0.182	0.228	0.082	0.024	0.186
LR Test of $\rho = 0$ (p-value)	0.113	0.417	0.261	0.262	0.159	0.401	0.468	0.255

Please note: All regressions include the following variables for both men and women: age, dummies on migration background, education (in years), unemployment experience and the following household characteristics: dummy for house ownership, dummies for the number of children, dummy on area (rural or urban) as well as dummies for woman's employment status (fulltime employed in private sector, part-time employed in private sector, fulltime self-employed, part-time self-employed, fulltime public service, part-time public service, in training, internship, pensioner; inactive is reference) and dummies for man's employment status (pensioner, inactive, (former) self-employed). ρ is the proportion of the (total) variance explained by couple-specific random components.

The baseline hazard is modelled via 42 dummies on marriage duration. A constant is not included. The control group consists of couples in which the man has never experienced a job loss while in the sample as well as couples in which the man has lost his job, found a new job and holds this job for four or more years.

* indicates that exp(coeff) is significantly different from 1 at 10% level, ** at 5% and *** at 1%.

Appendix B4: Plant closures and dismissals differentiated (cloglog including frailty); Interaction with woman's employment status (cloglog including frailty)

	(1)	(2)	(3)
$Job\ Loss\ (plant\ closure)$	1.125		
$\times\ woman\ employed$	(0.374)		
$Job\ Loss\ (plant\ closure)$	3.321***		
$\times\ woman\ unemployed\ or\ inactive$	(1.358)		
$Job\ Loss\ (dismissal)$	1.625**		
$\times\ woman\ employed$	(0.331)		
$Job\ Loss\ (dismissal)$	2.676***		
$\times\ woman\ unemployed\ or\ inactive$	(0.783)		
$Job\ Loss\ (other)$	1.339***		
$\times\ woman\ employed$	(0.147)		
$Job\ Loss\ (other)$	1.700***		
$\times\ woman\ unemployed\ or\ inactive$	(0.284)		
$No\ job\ after\ job\ loss$		1.610***	
$\times\ woman\ employed$		(0.294)	
$No\ job\ after\ job\ loss$		2.089***	
$\times\ woman\ unemployed\ or\ inactive$		(0.522)	
$New\ job\ after\ job\ loss$		1.315**	
$\times\ woman\ employed$		(0.145)	
$New\ job\ after\ job\ loss$		1.868***	
$\times\ woman\ unemployed\ or\ inactive$		(0.312)	
$New\ job\ after\ job\ loss\ (plant\ closure)$			1.162
$\times\ woman\ employed$			(0.386)
$New\ job\ after\ job\ loss\ \ (plant\ closure)$			3.505***
$\times\ woman\ unemployed\ or\ inactive$			(1.433)
$New\ job\ after\ job\ loss\ (dismissal)$			1.556**
$\times\ woman\ employed$			(0.334)
$New\ job\ after\ job\ loss\ \ (dismissal)$			2.857***
$\times\ woman\ unemployed\ or\ inactive$			(0.859)
$New\ job\ after\ job\ loss\ (other)$			1.299**
$\times\ woman\ employed$			(0.152)
$New\ job\ after\ job\ loss\ (other)$			1.615***
$\times\ woman\ unemployed\ or\ inactive$			(0.298)
No. of failures	712	712	712
No. of couples	13,407	13,407	13,407
Couple-Year observations	116,069	116,069	116,069
Log likelihood	-3,925.582	-3,928.761	-3,924.372
ρ	0.206	0.153	0.192
LR Test of $\rho = 0$ *(p-value)*	0.180	0.270	0.200

Please note: All regressions include the following variables for both men and women: age, dummies on migration background, education (in years), unemployment experience and the following household characteristics: household income (adjusted for number of adults and children by the OECD equivalence scale), dummy for house ownership, dummies for the number of children, dummy on area (rural or urban) as well as dummies for woman's employment status (fulltime employed in private sector, part-time employed in private sector, fulltime self-employed, part-time self-employed, fulltime public service, part-time public service, in training, internship, pensioner; inactive is reference) and dummies for man's employment status (pensioner, inactive, (former) self-employed).

All regressions also include an interaction with women, that are either self-employed, in training, in internship or pensioners. ρ is the proportion of the (total) variance explained by couple-specific random components.

The baseline hazard is modelled via 42 dummies on marriage duration. A constant is not included.

* indicates that exp(coeff) is significantly different from 1 at 10% level, ** at 5% and *** at 1%.

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