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Rishabh Tyagi | tyagi@demogr.mpg.de
Peter Eibich
Vegard Skirbekk

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Deputy Head of the Research Group Labor Demography.

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Gender norms and partnership dissolution following involuntary job loss in Germany.

Rishabh Tyagi ^{1 2 3}, Peter Eibich ^{1 4}, and Vegard Skirbekk ^{2 3 5 6}

Corresponding author: Rishabh Tyagi (tyagi@demogr.mpg.de)

1 Max Planck Institute for Demographic Research, Rostock, Germany

2 Center for Fertility and Health, Norwegian Institute of Public Health

3 Department of Sociology and Human Geography, University of Oslo

4 Université Paris Dauphine-PSL

5 Columbia Aging Center, Columbia University

6 The Norwegian National Centre for Ageing and Health

Abstract

We study the impact of job loss on the risk of separation among German couples. We focus on job losses due to plant closures and involuntary dismissals as a source of variation that is likely to be independent of other individual risk factors for partnership dissolution. We use panel data from the German Socio-Economic Panel Study (1986–2019) for persons aged 20–65. We use event study design and propensity score matching combined with the difference-in-differences approach to analyse the effects of involuntary job loss on the likelihood of divorce or separation within three years. First, in our event study design, we find an increase in the probability of union dissolution in the year following job loss by around two percentage points (ppts). In our matching design combined with the difference-in-differences approach, union dissolution risk increases by 2.12 ppts for our treatment group compared to our control group within three years of the job loss. This increase in union dissolution risk is slightly higher in the case of male job loss (2.23 ppts) than for job loss among women (1.64 ppts) over three years compared to those not exposed to involuntary job loss. We analyse differences between East and West Germany and between migrants from different countries of origin to examine the role of gender norms. Gender norms in the place of origin do not seem to explain the increased union dissolution risk. However, the individual-level gender norms based on males' share of home production activities in the couple over the years show an increased risk of

union dissolution for the traditional half and no effect for the liberal half of the men losing their jobs. The effect of involuntary job loss on union dissolution risk is mediated by declining family life satisfaction, males' share of hours spent on home production and lower household income for the person experiencing involuntary job loss.

Keywords: Union dissolution; Job Loss; Time Use; Gender Norms; Germany

Introduction

Job loss does, for many, represent an involuntary, disruptive life event with potentially far-reaching effects on a person's health, finances and family outcomes. Its high incidence among younger individuals has led to an interest in studying its economic and social impacts (Brand, 2015). The consequences of job loss are not limited to financial losses, as it may adversely also influence physiological and mental health (Gallo, 2000). Previous literature has found that job loss increases separation risk among European couples (Di Nallo et al., 2021; Keldenich & Luecke, 2022).

A recent study by Anderson et al. (2021) found that for men and women aged 21-64, both unemployment and the length of the unemployment spell increase the risk of union dissolution in the UK. They also suggested three potential mechanisms through which unemployment could lead to union dissolution:

1. Unemployment will decrease financial resources and thus increase the relative cost of separation for the unemployed person while giving more incentives to the partner of the unemployed person to get divorced.
2. Based on the linked lives principle of Life Course Theory (Elder, 1998), human lives are lived interdependently on Family, and the suffering of one member is shared with other family members. So, a partner's job loss will thus increase the relationship's stress, resulting in lower quality and satisfaction and hence could lead to divorce.
3. There might be negative selection on personal characteristics that lead to job loss and union dissolution; hence, the association might be spurious.

A previous study analysing this relationship for the UK and Germany by Di Nallo et al. (2022) looked at the effect of becoming unemployed on separation between the two countries based on differences in the UK vs German welfare system for this research question. However, they did not consider differences within the country based on male breadwinner norms. Pons & Gangl (2021) used harmonised household panel data for 29 countries from 2004 to 2014. They found that male breadwinner norms are related to the association between male unemployment and separation risk. The gender norms one develops are based on the historical time and place in which one is born and lived, as an individual's life course is

embedded in and shaped by the times and places they experience (Elder, 1998). The current study investigates how involuntary job loss affects union dissolution risk in affected households within Germany based on prevailing gender norms in the person's origin place and individual gender norms. For this, we leverage the unique characteristics of Germany as a case study, given its history and its sizable and heterogeneous migrant population. The historical division of Germany post-WWII resulted in long-lasting cultural differences between East and West Germany, including gender norms around labour force participation. Germany also experienced substantial immigration in several waves. These included “guest workers” in the 1950s and 60s (which primarily came from Southern Europe and Turkey to West Germany and from Vietnam to East Germany), ethnic Germans from states of the former Warsaw Pact countries in the 1980s and '90s, and refugee migration, primarily from former Yugoslavia, Afghanistan, Iraq and Syria more recently.

Previous studies on this relationship have reported that the relationship between employment instability and partnership dissolution risks can be gender-specific, i.e., joblessness and limited-time employment among men increase union dissolution risk, while joblessness among women reduces the risk. For example, a recent study for Italy by Bastianelli and Vignoli (2021) and a study for Belgium, Finland, France, Germany, and Italy by Solaz et al. (2020) found that male unemployment is consistently associated with a greater union dissolution risk, while the consequences of female’s unemployment are mixed in these studies, and the effect size of female unemployment on divorce was also found to be smaller than male unemployment.

Potential reasons for a stronger relationship between male unemployment and separation could be that male unemployment puts more financial strain and pressure on relationships. When the husband is unemployed, stress mechanisms may predominate due to his poor performance as a breadwinner (Cherlin, 1979; Conger et al., 1990). This relationship becomes even stronger in the context of male breadwinner society. Based on an international comparison over time, Pons and Gangl (2021) argued that gender norms explain why male job loss leads to more marital conflict than female job loss. They harmonised household panel data for 29 countries from 2004 to 2014 and showed that male breadwinner norms in a country are related to the association between male unemployment and separation risk. Based on this theoretical framework, we carry out heterogeneity analysis based on the

location of native Germans' residence in 1989 before reunification (East vs West) Germany, as East Germany has more gender egalitarian attitudes than West Germany before reunification. A distinction in the analysis is also made for migrants based on gender norms in the migrant's country of origin. Finally, we also analysed how individual-level gender norms moderate this relationship between male job loss and the risk of union dissolution.

Our study examines the effects of involuntary job loss on union dissolution across Germany. We explore heterogeneity in the effects of involuntary job loss along three dimensions: (i) between males and females, (ii) between natives of East and West Germany, (iii) between migrants from different origin countries based on their countries' gender norms and (iv) between men with different stated gender norms as informed by survey data. By examining heterogeneity across these dimensions, we provide multi-faceted evidence for the moderating role of male breadwinner norms in the relationship between involuntary job loss and union dissolution. Our analysis thus complements and extends the cross-country analysis by Pons and Gangl (2021) by exploiting heterogeneity within a country and providing evidence on how individual-level gender norms result in heterogeneities in this relationship.

While prior research has predominantly utilized a discrete-time event-history logit model to gauge the impact of one partner's unemployment on the risk of couple dissolution, we adopt matching techniques in conjunction with the Difference-in-Differences methodology to construct an analogous control group to account for baseline differences in job loss and union dissolution risk in the treatment and control groups, which might arise from the selection of individuals into sectors and industries with higher job loss risk. This approach elucidates the disparities in union dissolution following unemployment across these groups. We also use an event study framework to illustrate the trajectory of divorce risk after job loss within the treatment cohort.

We use data from the German Socio-Economic Panel Study (GSOEP) covering the period 1986-2019. We did not include 2020 in our analysis to safeguard our estimates from the effects of unemployment and separations due to COVID-19. We consider involuntary job losses due to plant closures and dismissals because, in the German context, these events are plausibly unrelated to other individual characteristics that may influence union dissolution risk.

Our study contributes three insights to the literature on unemployment and union dissolution. First, we analyse whether male job loss is more likely to result in union dissolution if the man is from a region with more traditional male breadwinner norms. Second, we use more robust methods to answer this research question by using an event study for within-group comparison and matching in conjunction with the Difference-in-Differences methodology to form a control group and compare these outcomes. Finally, we propose a measure for individual-level gender norms based on males' share of home production activities in the couple over the years and add insights to the literature on whether it matters more than the regional norms for the relationship between male job loss and union dissolution.

In the next section, we provide an overview of the theoretical background. Section 3 describes our dataset and methods. Then, our results section shows how the separation rate and time-use patterns after an involuntary job loss vary for males from different gender cultures.

2 Theoretical background

2.1 The link between unemployment and union dissolution

According to Becker's (1986) theory of optimal decision-making within the household, divorce risk may increase when one partner experiences a job loss if the economic gains from staying together are insufficient to compensate for the economic losses resulting from the job loss. In particular, Becker argued that the effect of job loss on divorce could differ depending on the gender of the affected partner. According to his theory, divorce risk increases more if the husband rather than the wife becomes unemployed. This is because, traditionally, the husband has been the primary breadwinner, and the loss of his income may have a greater impact on the family's financial stability. However, Becker's theory also suggests that the effect of job loss on divorce may depend on factors such as income level and power distribution within the household. In some cases, a wife's income may be sufficient to compensate for her husband's job loss, or she may have more power within the household, making the impact of male job loss on divorce less significant.

A literature review of predictors of union dissolution by Lyngstad (2010) for Europe and the US finds that economic instability in the household tends to increase the risk of union dissolution. There is evidence from individual country-based study that people who lost their jobs have a higher likelihood of separation from their partners than those people who did not. This is supported by evidence from Germany (Kraft, 2001) and the United Kingdom (Doiron & Mendolia, 2012).

Macro-level research of European countries from 1991 to 2012 suggests that divorce rates fall during periods of recession and high unemployment (Gonzalez-Val & Marcén, 2017). The reason might be that being unemployed is deemed more acceptable and affordable during periods of economic scarcity. This contrasts the case; on an individual level, people losing their jobs tend to have a higher divorce risk. Unemployment is a critical life event that leads to loss of income, self-esteem and health (Paul et al., 2018). It also is a common cause of stress for couples, which leads to depressive symptoms and hence affects the relationship quality, which leads to an increased risk of divorce (Howe et al., 2004).

There may be an altogether different explanation for an unemployment-divorce relationship, as mentioned by Anderson et al. (2021). Their research suggests that there may be negatively selected groups of people regarding personal characteristics such as young age, low education, working in low-skilled occupations and precarious firms. These characteristics lead to selection into both job loss and union dissolution. So, controlling for these factors in the model is necessary to rule out spurious selection and establish causality. There is also literature on personality and union dissolution based on the Big Five traits, where Arpino et al. (2021) studied predictors of union dissolution in Germany using random survival forests. They found that men's and women's life satisfaction and women's share of housework are the most important predictors of union dissolution.

2.2 How gender moderates the relationship between job loss and union dissolution

According to gender identity theory, when men experience job loss, it may threaten their sense of masculinity and their ability to fulfil the traditional male breadwinner role. This can lead to feelings of shame, inadequacy, and loss of self-esteem. Thus, men may experience more negative mental health outcomes following job loss that can strain their relationship with their partner, their self-view and increase their divorce risk.

The gender equality level in work and family is a key factor determining how the unemployment-union dissolution relationship varies by gender (Strandh et al., 2013). Pons and Gangl (2021) showed that in countries where the male-breadwinner norm dominates, the husband's unemployment increases union dissolution risk more than the wife's unemployment. Similarly, a Danish study found that male unemployment increased divorce risk from 1979-1985, but female unemployment did not (Jensen & Smith, 1990). However, more recent evidence from more gender-equal countries, including Finland (Jalovaara, 2003) and Norway (Hansen, 2005), suggests that male unemployment is less likely to increase divorce risk when compared to female unemployment. In Germany, where women often work part-time and have relatively low wages, women are more likely to be unemployed (Dieckhoff et al., 2015). Therefore, German women should be less prone to divorce when their male partner becomes unemployed, as they are less likely to have sufficient income to support themselves.

The effect of male unemployment on divorce risk is usually stronger as men's contribution to the household income is usually higher than their female partner. If a man contributes a larger share to the household income, their job loss will likely have a greater impact on the household's economic security. Also, the male breadwinner hypothesis states that males are considered less attractive partners if their employment is uncertain, which can create doubt about their ability to provide for a family (Kalmijn, 2011). Thus, male job loss may cause more financial stress and have a stronger negative effect on a couple's separation (Dew et al., 2012; Jalovaara, 2001). This implies that the impact of job loss on union dissolution risk differs by gender. Based on this evidence, we propose the following hypothesis:

Hypothesis 1: Involuntary job loss increases union dissolution risk more if the male rather than the female partner becomes unemployed.

2.3 The moderating role of gender norms in one's country of origin for the relationship between job loss and union dissolution

Gender identity may influence how the consequences of unemployment differ for men and women, as they may be related to gender norms and structurally different positions in the family and the labour market (Strandh et al., 2013). Female identity is often perceived as less

dependent on employment, as women have many other important roles, including wife, mother, or homemaker (Hakim, 1991). On the other hand, men's unemployment is more detrimental to their self-esteem and could lead to conflicts in couples. The reason is that, in general, men identify themselves as the couple's primary worker. This effect of unemployment on men's self-esteem can be stronger in male breadwinner societies where male unemployment can be perceived more negatively than female unemployment (Michniewicz et al., 2014). According to the first principle of historical time and place in Life course Theory by Elder Jr. (1998), an individual's life course is embedded in and shaped by the historical time and place they experienced over a lifetime. So, we expect that if an individual is born in a country where the male breadwinner norm dominates, with an expectation that men should be employed and serve as the primary breadwinners of their household (Lalivé & Stutzer, 2010), they will exhibit that behaviour when they migrate to Germany too. So, male unemployment has more detrimental effects on the couple's stability if the migrant's country of origin has a stronger stigma of male unemployment than female unemployment (Mooi-Reci & Ganzeboom, 2015). Based on this evidence, we propose the following hypothesis:

Hypothesis 2: Union dissolution risk is higher for Migrant Males from countries with more traditional male breadwinner norms who experience involuntary job loss than the less traditional male breadwinner norms Migrant Males.

2.4 Gender role differences in East and West Germany

Germany was divided into Eastern Germany and Western Germany during the Cold War (from 1949 to 1990). The two countries of Germany followed different paths, where the Federal Republic of Germany (FRG), or West Germany, was established as a parliamentary democracy with a social democratic economic system and a market economy. On the other hand, the German Democratic Republic (GDR), or East Germany, followed a socialist doctrine (Pence & Betts, 2008). In the GDR, the constitution guaranteed full gender equality, promoting females to combine full-time employment and household responsibilities (Kranz, 2005).

By contrast, West German policies followed the traditional gender norms during this period. In communities where traditional gender norms prevail, the male is expected to be the

family's sole breadwinner, and the female spouse stays at home and takes care of the children and household duties. Subsequent policies alternated between providing more or less conservative incentives for female labour market participation (see Bauernschuster and Rainer, 2012; Beblo & Gorges, 2018; Campa & Serafinelli, 2019). However, a post-reunification study by Adler and Brayfield (2005) finds that although the socialist state of East Germany successfully inculcated more progressive attitudes than West Germany for women, it could not eliminate the gender gap in ideologies about gender, work, and family.

After reunification, East German institutions and regulatory structures were largely dismantled. East German institutions were absorbed into West German institutions, which remained largely unchanged. Nevertheless, more than 30 years later, there are still differences in labour force participation, household work division, education and gender norms regarding female work participation (Lippmann et al., 2019). It is noteworthy that ten years after reunification, in 2000, the labour market participation rates of men and women in former East Germany were similar (male and female labour force participation rates were around 80%), while the gender gap in Western Germany remained wide, with 81% of men but only 65% of women participating in the labour force (Schenk, 2003). However, the first principle of historical time and place in Life course Theory by Elder Jr. (1998) states that an individual's life course is embedded in and shaped by the historical time and place they experienced over a lifetime. So, we expect that if an individual is born in West Germany, where the male breadwinner norm dominated, with an expectation that men should be employed and serve as the primary breadwinners of their household (Lalivé & Stutzer, 2010), they will exhibit that behaviour, even after the reunification of Germany too.

Lippmann et al. (2019) examined the relationship between income and housework in eastern and western Germany. They concluded that male-breadwinner norms are still widespread in Western Germany but do not exist in Eastern Germany. They found that West German women reduce their time spent on housework as their share of household income increases until they are close to equal earnings in their household. In contrast, they found no evidence of families following traditional gender roles in East Germany, as with an increase in share in household income, East German women continuously reduced their time-use in household work.

Marital stability is another sign of adherence to male breadwinner norms. In contexts where gender norms are very strong, a weaker adherence to these norms may relate to a greater risk of marriage dissolution. Brines (1994) and Cooke (2006) documented this risk. Lippmann et al. (2019) examined the association between women's relative income and marital instability. They found that for West German couples, the divorce risk in the next five years increases by about three percentage points when the wife starts earning more than her husband, while there are no similar effects for East German couples. Based on this evidence, we propose the following hypothesis:

Hypothesis 3: Union dissolution risk is higher for West German men who experience involuntary job loss than their East German counterparts.

2.5 Individual-level Gender Roles

The Gender revolution framework (Goldscheider et al., 2015) proposes that there are two stages to the transformation of gender roles: In the first half of the gender revolution, women entering the labor market in large numbers take on paid work in addition to their traditional domestic responsibilities. In the second half of the gender revolution, men increase their participation in the private sphere, particularly in housework and childcare. This phase is characterized by an equal distribution of domestic labour between men and women. Goldscheider et al argue that completing both halves of the gender revolution is necessary for achieving gender equality and stable family structures in modern societies.

Sullivan et al. (2014) found significant increases in housework carried out by men aged 20-49 for the period 1970-2010 in 13 European countries in younger and educated men, yet gender differences are still marked. So, we expect this has become the norm for men across Europe now, with men having liberal gender norms increasingly contributing to household work. There is evidence from the UK by Blom et al., 2017 that men with egalitarian gender roles who contributed time equally to family needs as their partner have higher relationship satisfaction. Those men who contribute less to housework could potentially be labelled as having traditional gender roles men and might be at higher risk of divorce following their job loss, as they still might not be contributing enough towards the household duties following job loss.

Hypothesis 4: Union dissolution risk is higher for traditional gender roles men who experience involuntary job loss than their liberal gender roles counterparts based on individual gender norms.

3. Data and Methods

3.1 Data

Our empirical analyses are based on longitudinal data from the German Socio-Economic Panel Study (SOEP), a German annual household and person panel survey started in 1984. For our purposes, these data offer two analytical benefits. First, long-run panel data are well-suited for studying how the effects of unemployment on union dissolution unfold over time. In Germany, it takes more than a year for a couple to divorce, as couples are given substantial time to reconcile their differences before finalising their divorce. Thus, it is essential to follow unemployed individuals for several years to examine changes in their marital status. Second, the GSOEP provides detailed information on employment and earnings at the individual level and about the household members. Hence, these data enable us to include almost all conditioning variables used in related studies.

3.1.1 Sample

Our analytical sample includes observations from 1986 to 2019 (SOEP-core version 36, release 2021). Consistent information on unemployment and union dissolution questions is available for this period. We limit our sample to the 20-65 age group and thus focus on the typical working-age population. Inclusion in our sample is also conditioned on being married at time $t-1$ and also being employed at time $t-1$. To make our control group uniform, we also removed people who suffered job loss for reasons other than dismissals and plant closures.

The sample restrictions above result in a working sample of 22,808 individuals and 139,814 person-years. Of these individuals, 2748 experienced an involuntary job loss for 3044 person-years (1084 person-years of unemployment for plant closures (35.6%) while 1960 person-years for dismissals (64.4%)) and were observed in the sample for 19507 person-years. The control group comprises 20,060 individuals in the observation sample observed for 120,307 person-years. This sample can be further divided into a subsample of (1) 1146 native East

Germans who were unemployed for 1326 person-years and observed for 7880 person-years; (2) 3987 native East Germans who were continuously employed and observed for 25,693 person-years; (3) 1387 native West Germans who were unemployed for 1492 person-years and observed for 10,810 person-years; and (4) 13,878 native West Germans who were continuously employed for 87,388 person-years.

3.1.2 The measure of union dissolution

We use divorce or separation of different-sex couples by the next calendar year from the year of job loss for our event study design. In our matching design, we look at the longer-term effects of job loss on union dissolution by choosing our dependent variable as divorce or separation of different-sex couples in the three years following the year of job loss. We considered a union dissolution to have occurred when a respondent reported having divorced or separated in this three-year period. We conditioned couples in our sample to be married at t-1, so our treatment effect estimator measures the difference in the probability of union dissolution in three years following job loss to union dissolution probability in the year before job loss.

3.1.4 Measure of Unemployment

We define the transition to unemployment based on whether the respondent has left a job since last year. The survey further asks about the reason for leaving the job. We consider plant closures and employer dismissals as reasons for job loss. Combining layoffs and plant closures into one category is common in the literature on job loss (Marcus, 2012). Looking only at plant closures is statistically challenging because the number of displacements is substantially lower (out of 68,303 job losses in the raw data, 4,281 were due to plant closures (6.27% in total), and 12,640 were due to dismissals (18.5% in total)). In addition, using the same GSOEP data as in this paper, Marcus (2013) showed that his results, considering dismissals by employers in addition to the workplace closures as the reason for job loss, did not change from when he only used plant closures as the reason for job loss.

A recent study by Anderson et al. (2021) in the UK examined the two-way relationship between unemployment and the risk of union dissolution. They found that while job loss increased the risk of union dissolution, union dissolution didn't increase the risk of job loss in the UK. So, we can infer from this that even though plant closures are less endogenous in the

context of union dissolution than dismissal by employers, it is quite unlikely that an individual's behaviour changes due to family issues will lead to their dismissal by the employer. The reason is that German dismissal protection laws put the bar very high for employers to dismiss employees for behavioural reasons (once they have passed their probationary period). As the OECD notes, Germany is among the countries that "are far stricter than the average country" regarding the employment protections against individual dismissal (OECD, 2013). Therefore, we argue in this paper that dismissal by an employer should be considered exogenous since, under the Protection Against Dismissal Act, individual layoffs are much more likely to be for business operation reasons than for behavioural reasons. When a firm is not doing well financially, it often starts downsizing the company, retaining only the most essential employees. Sullivan and von Wachter (2012) show that workers selected for downsizing are not based on the selection of less healthy workers or unstable industries or firms offering less healthy work environments.

3.1.5 Heterogeneity among native Germans regarding male-breadwinner norms

We use the evidence indicating that the male-breadwinner norm is prevalent in West Germany but has disappeared in East Germany to form our hypothesis that compared to West German men, East German men are less likely to divorce and increase their household work hours more following a job loss. We used the GSOEP question to determine where the respondents lived in 1989 to stratify our sample. The response options were East Germany, West Germany, or abroad.

3.1.6 Heterogeneity among immigrants regarding male-breadwinner norms

The male breadwinner norm is a country-level measure of the proportion of people who agree that a man's primary/main role in a household is to be a breadwinner. We classified countries according to the average responses of their citizens to a question on gender role attitudes from the World Values Surveys (WVS), a dataset designed explicitly for cross-national comparisons of values and norms. The WVS asked respondents whether they agreed or disagreed that "men should have more right to jobs than women when jobs are scarce". The response options were agree, neither, or disagree. We assume that the immigrants in our sample are randomly drawn from the origin country and that their social and gender views may be related to the ideology of the origin country, as shown by the WVS. The proportion of

respondents who agreed with the statement can reflect the degree of gender role traditionalism in the country. In this sense, we will use traditional gender role attitudes. Based on the proportion of respondents who disagreed with this statement, we divided the whole immigrant population into two groups using the median value of this measure. Throughout the paper, we refer to the more traditional half of the immigrant population as the bottom 50% (more conservative) and the less traditional half as the top 50% (more liberal). Thus, the immigrants belonging to the bottom 50% are assumed to follow more traditional male-breadwinner norms.

3.1.7 Individual-level Heterogeneity among Males Regarding Gender Norms.

There exist many indicators of gender egalitarian attitudes over time at the national level, such as the public gender egalitarianism index (Woo et al., 2022), gender role attitudes from the World Values Surveys (WVS), a dataset designed explicitly for cross-national comparisons of values and norms. UNDP also proposed a Gender Social Norms Index (GSNI) based on the WVS Waves 5, 6, and 7, capturing the attitude of people towards women's roles across politics, education, economics and physical integrity. However, these aggregate level norms represent an intention to treat design where we assume that the norms individuals were exposed to earlier in life had lasting effects (rather than changing based on their current living situation). We propose an indicator for individual-level gender norms for males based on their share of time spent in home production activities with their partners throughout the observation period. GSOEP has information on the number of hours respondents report spending on the following activities on a normal weekday, a normal Saturday, and a normal Sunday:

Job, apprenticeship; errands; housework (washing, cooking, cleaning); childcare; care and support for persons in need of care; education and further training (including school or university); repairs on and around the house, including car repairs or garden work as well as hobbies and other free-time activities. Following Schwerdt (2005) and Bonsang and van Soest (2020), our home production measure includes "errands, housework, and repairs on and around the house, including repairs or garden work on weekdays". We first calculated hours spent by an individual on home production activities. We then added the partner's home production hours using the partner ID and calculated the total hours spent on home production for a couple in a year. Following this, we calculated the males' share of home

production activities in the couple in a given year and then took the mean of the males' share of home production activities over the years they were observed in GSOEP. Finally, we distributed males into two categories, traditional and liberal, based on the median value of males' share in home production over the years.

3.1.7 Control variables

The control variables include personal characteristics such as age, sex, net labour income (quintiles) and migration background. We control for the number of children in the household, as it may influence the odds of union dissolution and household work increases following job loss. We also use one-year lagged labour market characteristics such as net labour income (quintiles), work experience, etc., as additional explanatory variables, personal traits, number of children in the household, and a period dummy in five-year groups to control for time-varying factors that may correlate with job loss and union dissolution.

3.1.8 Potential mechanisms

We examine potential mechanisms through which involuntary job loss affects the risk of union dissolution. First, we see how adding household net income following the job loss of one of the partners could affect union dissolution. This variable captures the partner's income effect, which is reflected in the household income as it is constructed by adding the monthly net income of both partners. Additionally, we consider previous findings from Arpino et al. (2021), which indicate that the life satisfaction of both men and women and the women's share of housework are the most important predictors of union dissolution. We used subjective measures of satisfaction with work, family life and life as potential mediators. In the GSOEP data, the answer to the question "How satisfied are you currently with your life in general?" is measured on a scale from 0 to 10 (completely dissatisfied to completely satisfied). Similarly, the answer to the question, "How satisfied are you today with the following areas of your life? - With your family life?" With your work?" is measured on a scale from 0 to 10 (completely dissatisfied to completely satisfied). We also considered the time spent on housework to reflect gender-egalitarian behaviour. The time spent on home production activities following job loss could be a potential mediator, as women typically expect men to contribute more to the household when they are not working. However, men often do not contribute as much as expected.

3.2 Empirical approach

This paper aims to analyse whether involuntary job loss in a couple affects their union dissolution risk and the time they spend on household work and leisure activities. In their study on unemployment and separation, Anderson et al. (2021) argued that unemployed individuals are likelier to separate because they constitute a negatively selected group of people. Characteristics such as young age, low education, private employment, a history of job losses, living in a rural area, poor health, or working in industrial or unskilled jobs may be associated with experiencing both unemployment and union dissolution. To address this issue, we use a matching design combined with the Difference in Difference approach, considered superior to cross-sectional matching of individuals (Heckman et al., 1997), also used by (Marcus, 2013). This approach matches the characteristics of individuals who lost their jobs with those who remained employed. The additional Difference-in-Differences step compares the divorce probability before and after for the matched treatment and control groups to account for baseline differences in the divorce probability, e.g., from unobservable characteristics such as personality traits. This will help uncover the actual effect of job loss.

We only consider plant closures and employer dismissals as reasons for job loss because they are less likely to be endogenous with respect to the workers' characteristics and are more likely to occur for business operational reasons. Combining layoffs and plant closures into one category is a common approach in the literature on job loss, also used by (Marcus, 2014). They did a robustness test in which they only used unemployment due to plant closures and still found the same effects on mental health. However, involuntary job loss is not entirely random; as the descriptive statistics presented in **Table 1** suggest, workers who experienced involuntary job loss due to workplace closures or employer dismissals were negatively selected. To account for the selection bias of workers into involuntary job loss, we follow Browning et al. (2006) and apply propensity score matching (Rosenbaum & Rubin, 1983).

Event study design

We first used event study design to show the evolution of the risk of divorce and change in time use following job loss within the treatment group. For each year between (t-5 to t+5), we restrict our sample to married individuals in that year and then define our outcome as observing a divorce by the following calendar year. We drop individuals after they experience

the divorce (e.g., someone who is married at t-2 and gets divorced in t-1 will not be part of your sample for any observations from t-1 onward. So, at every point in time, the composition of our sample will differ. The benefit of this is that the divorce risk in pre-treatment periods is well-defined.

Implementation of propensity score matching

When we estimate the propensity score, it is essential to condition on all potential confounders that are likely to predict both the treatment (probability of experiencing an involuntary job loss) and the outcome (union dissolution). Thus, we condition on the following variables. First, we include personal characteristics such as age, sex, and migration background. We also control for the number of children in the household, as it may influence union dissolution risk and household work increases following job loss. We also use one-year-lagged labour market characteristics as covariates to control for time-varying factors that may correlate with job loss and union dissolution. It is essential to match on lagged labour market characteristics because even though our measure of involuntary job loss is exogenous (to a person's behaviour), the non-random selection of individuals into occupations and the higher dismissal risk in some occupations than in others means that there is a selection bias simply when comparing individuals who lost their job with individuals who did not. This is important because while our measure of job loss is exogenous with respect to individual behaviour, there might be selection into occupations with a higher job loss risk, and matching on the lagged labour market characteristics is primarily intended to address this selection issue.

Our study estimates the propensity score using a logistic regression model. We match the observations in the treatment and control groups based on the nearest neighbour without replacement. In our case of sampling without replacement, each control group member can be used only once. We obtained N=2969 matched observations in the control group and N=2969 observations in the treatment group. We found common support between the treatment and the control group (see Fig. 2). Our matching procedure successfully balances the observed characteristics of the treatment and control groups in our analysis.

Post-double selection LASSO

To test the robustness of our main results from propensity score matching, we use a machine learning method as our robustness check: post-double selection (PDS) LASSO or double

LASSO. This method relies on LASSO's strength in addressing covariates' high dimensionality. PDS LASSO will work here by accounting for the omitted variable bias in our propensity score matching model. The rationale for using PDS LASSO is that even though we selected control variables based on the literature that predicts involuntary job loss and union dissolution, our model may still have left out many important confounders that predict involuntary job loss and union dissolution.

We consider a model,

$$y_i = \tau d_i + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k + \epsilon_i \quad (1)$$

where y_i represents the union dissolution outcome of the individual i . $x_j = 1, \dots, k$ are covariates used for propensity score matching and some additional covariates, which could be potential confounders. We also added all possible two-way interactions between these covariates.

In our Propensity Score Matching (PSM) model, we selected the matching variables based on the relevant literature. However, we do not know perfectly which set of the covariates $\{x_1, \dots, x_k\}$ and their interaction terms are important for predicting the treatment and outcome variable. The intuition of applying PDS LASSO in our context is that our previous PSM estimates based on covariates selected for matching might be sensitive to unknowingly omitting potential covariates like personality factors, as there is no consensus or solid research on which personality traits predict union dissolution and, PDS LASSO also helps in selecting the interaction terms which predicts our treatment and outcome variable.

The PDS LASSO predicts a set of covariates and interaction terms from a large set of potential covariates that play an essential role in predicting the treatment and the outcome variable, as also used by Danquah et al., 2021. This selection of covariates is primarily based on LASSO (Tibshirani, 1996; Zou et al., 2007; Belloni et al., 2012; Mullainathan & Speiss, 2017). In Equation (2), we specified a PDS LASSO model based on Equation (1), where we estimate the effect of d_i on y_i in the presence of a selected set of covariates x by PDS LASSO. We consider a model where the treatment indicator d_i is exogenous conditional on the set of covariates x following Belloni et al. (2014a, 2014b),

$$y_i = \tau d_i + \sum_j \beta_j x_{ij} + r_{yi} + \epsilon_i \quad (2)$$

where x represents a set of k control variables, r_{yi} is an error term, and τ represents the average treatment effect of d_i on y_i .

Our basic setup for estimating the PDS LASSO model is inspired by Danquah et al. 2021, which consists of three steps. First, we regress our outcome variable y_i on the set of potential covariates x_j using LASSO, and then LASSO selects control variables that predict outcome variable y_i denoted by x_y . In Step 2, we regress treatment indicator d_i on the set of potential covariates x_j using LASSO, and then LASSO selects control variables that predict treatment indicator d_i denoted as x_d . Finally, using OLS, we regress our outcome variable y_i on treatment indicator d_i and the union of controls selected for both the treatment and outcome variable ($x_y \cup x_d$). We use the Stata package PDSLASSO, developed by Ahrens et al. (2018) for estimation.

Results

Figures 1 and 2 show the changes in union dissolution probability in the following year following involuntary job loss for the treatment group. We see an increase in the probability of union dissolution in the year of job loss by around 2.06 ppts. We also observed that the trends in the years before job loss are stable (as we would expect to see since our treatment of involuntary job loss is exogenous). The timing of the effect - for union dissolution- seems to appear in the year following the job loss ($t-1$; the coefficient shown in $t-1$ measures the change in the risk of divorce between $t-1$ and t), and afterwards, the risk returns to baseline levels until three years after job loss, where we see an increase in the risk of union dissolution, perhaps driven by those who are granted a divorce. In Germany, couples need to be separated for at least one year before they can apply for a divorce in court, where the processing time can differ from a few weeks to a few years, depending on the complexity of the case. We want to investigate further how these patterns emerge differently in treatment and control groups. We use propensity score matching combined with the difference-in-difference approach to infer how involuntary job loss affects these outcomes.

Table 1 compares the characteristics of individuals who experienced an involuntary job loss to those who did not throughout the 1986-2019 period. Individuals who lost their jobs were negatively selected in terms of monthly income, as the group that experienced a job loss earned 573.40 euros per month less than the control group in the year before job loss. In

addition, compared to the control group, the treatment group had around 0.9 fewer years of education and more unemployment experience. The treatment group also had shorter workplace tenure than the control group in which no job loss occurred. Thus, the treatment group appears to be negatively selected individuals with less education, lower income, and less stable jobs. However, **Figure 3** and **Appendix Table A1.1** show that our matching design addressed this selection issue, as the standardised mean differences between the control and the treatment group covariates for the matched sample were comparable after matching. **Figure 4** displays PS box plots that compare the propensity score distributions for units in the treatment and control groups based on all observations and matched observations. The two distributions are well-balanced for matched observations.

Table 2 shows the average treatment effect on treated (ATET) for those individuals who experienced involuntary job loss. Our ATET estimates indicate that job loss increased union dissolution risk by 2.12%. The general population in the sample had a 3.25% divorce or separation risk, which was further increased by 2.12% following involuntary job loss.

Figure 5 and **Table 2** show the ATET of job loss by sex. We find that union dissolution risk was slightly higher for males (2.23%) than for female's job loss (1.64%). The estimates for native Germans are presented in **Figure 6**. These estimates are based on propensity score matching (for the ATET Tables, see **Table 2**). These estimates show that native Germans who lived in East Germany before reunification and experienced involuntary job loss had an increased separation/divorce rate of around 2.76% over the next three years. In comparison, native Germans who lived in West Germany had more significant unification and experienced involuntary job loss, with an increased separation/divorce rate of around 1.66% over the next three years. These results are not in line with our expectations. However, as these estimates' confidence intervals overlap, it is difficult to infer whether they are statistically significantly different.

The results for male migrants who experienced involuntary job loss are similar. The estimates for migrants are presented in **Figure 7**. These estimates, which are based on propensity score matching (for the ATET Tables, see **Table 2**), show that men from countries of origin with more liberal gender norms and who experienced involuntary job loss had an insignificant separation/divorce risk in the next three years. This could be due to insufficient observations

of these two groups of migrants. It is also possible that many of these individuals emigrated from Germany following their job loss and are thus censored in our data.

Finally, we examine the results for males who experienced involuntary job loss based on their individual gender norms. The estimates for all males in our sample stratified by their gender norms are presented in **Figure 8**. These estimates show that men with traditional gender norms and who experienced involuntary job loss had a significantly increased risk of separation/divorce of 2.88 per cent in the next three years than traditional men with no job loss (for the ATET Tables, see **Table 2**). On the other hand, we found no effects of job loss on liberal men's union dissolution risk.

Mechanisms

The effects of our base model were calculated using the propensity score matching, as shown in **Table 2**. To identify the possible mechanisms driving the effect of involuntary job loss on union dissolution, we included potential mediator variables as covariates in our base propensity score matching models stepwise. **Figure 8** shows that household income explains almost the entire negative effect of involuntary job loss on union dissolution. While the effect of the base model is 0.021 (95%-CI: 0.011, 0.032), it is 0.008 (95%-CI: -0.008; 0.024) when household income is included. This indicates that household income reduces the effect of job loss on union dissolution to zero as the confidence interval overlaps zero, which means that a decline in household income is a resource driving negative job loss effects on union dissolution. Family life satisfaction also mediates the relationship between job loss and union dissolution, as when we add family life satisfaction to our base model, we get an effect size of 0.014 (95%-CI: -0.003; 0.031). The effects of job loss on union dissolution also changed significantly by including the variables on males' share of hours spent on home production (0.005, 95%- CI: -0.009; 0.019). We obtain a smaller treatment effect when including life satisfaction (0.013, 95%-CI: 0.002; 0.024). This suggests that changes in household income, family life satisfaction and males' share of hours spent on home production explain the negative impact of job loss on divorce.

Robustness tests

We performed robustness tests for our main result that involuntary job loss increases union dissolution risk. In the robustness tests, we compared our previous results using propensity score matching and our base model covariates with OLS using controls selected from PDS LASSO models. The PDS LASSO models selected 36 control variables, which included several covariates and their two-way interactions.

Our first robustness check presents the OLS regression using CHS LASSO orthogonalised variables. The second robustness check includes the estimated OLS using CHS post-LASSO-orthogonalised variables. The CHS method removes the selected controls x_y in Step 1 (by giving it a fixed value) from the dependent variables (y_i) only and removes the selected controls x_d in Step 2 out from the treatment d_i (involuntary job loss). In our final robustness check, we run OLS regression using the PDS-selected variables and all selected controls.

In Appendix Table A1.4, the propensity score matching model used throughout the paper shows that involuntary job loss significantly increases union dissolution risk by 2.1%. The OLS using CHS LASSO-orthogonalised variables (union dissolution and involuntary job loss) shows that involuntary job loss significantly increases union dissolution risk by 1.97%. The second robustness check, which uses the OLS using CHS post-LASSO-orthogonalised variables, and the final robustness check using the PDS-selected variables and the full set of selected controls are significant and also show that involuntary job loss increases union dissolution risk by 1.95%.

Discussion

We found that for individuals living in Germany in the 1986-2019 period, involuntary job loss was associated with an increase in union dissolution risk by 2.12% over three years compared to those not exposed to involuntary job loss. Our results align with earlier studies from other Western countries (Gonalons-Pons & Gangl, 2021; Solaz et al., 2020; Di Nallo et al., 2022), showing that unemployment increases divorce risk. We also confirmed this result by performing a robustness test using PDS-LASSO and found significant but slightly smaller effects of unemployment on union dissolution. Second, we showed that union dissolution risk following job loss was slightly higher among men than among women. However, in contrast to the findings of Dew et al. (2012), Jalovaara (2001), and Sayer (2006), differences in our analysis were very small and not statistically significant. However, this aligns with the findings

of a study by Di Nallo et al. (2021) for Germany and the UK, which, using the same GSOEP data, found no significant differences in the effects of male and female job loss on union dissolution.

Our study also raised the question of whether union dissolution risk is higher for men from more traditional male-breadwinner societies who experience involuntary job loss. We extended the analysis of Pons and Gangl (2021) to within-country variation in Germany. We adopted a matching design to answer this question for Germany, using propensity score matching on long-running GSOEP panel data. First, our estimates suggest that among males who experienced involuntary job loss, those who lived in East Germany before reunification had an increased union dissolution risk of around 2.76% in the next three years, compared to around 1.66% for those who lived in West Germany. However, as the confidence intervals of these estimates overlap, it is difficult to infer that they differ. The life course perspective based on the historical time and place one lived in also suggests that West German men would have a higher union dissolution risk than East German men due to the historically stronger male-breadwinner norms in West Germany. However, there might be two major reasons why we do not observe differences in this relationship. Firstly, it could be that other differences between East and West Germany may have played a bigger role in this relationship. East Germany strongly encouraged full-time labour market participation for mothers, whereas West Germany propagated a more traditional male breadwinner model (Lippmann & Senik, 2019). However, in regions like West Germany with stronger male-breadwinner norms, the stigma of divorce may be greater, which may explain why we did not observe a higher union dissolution risk among West German men following job loss. Other differences between East and West Germany may matter more, including the lower GDP, bankruptcies of industries, higher unemployment, lower chances of re-employment and greater reliance on welfare in the East than in the West, which could have contributed to the worse outcomes in the East. However, as our analysis extended up to three decades post-reunification (i.e., until 2019), East-West differences may matter less over time. Secondly, our regional norms approach is based on East-West stratification of the individual's location in 1989, representing an intention to treat effect, where we had to assume that the norms individuals were exposed to earlier in life had lasting effects (rather than changing based on their current living situation).

Similarly, our study found no evidence that for immigrants, the impact of job loss on their union dissolution risk varied depending on the gender attitudes in their country of origin. However, our analysis of immigrants might also have suffered from these two limitations, as the indicator used from the WVS to infer the gender norms for immigrants based on their origin country. It is also possible that these immigrants would not replicate the behaviour typical of their country of origin as immigrants are often a selected group of people who may not fully represent their country's ideology.

Finally, our individual-level measure of gender norms based on males' share of home production activities in the couple over the years shows an increased risk of union dissolution for the traditional half and no effect for the liberal half of the men losing their jobs. This could potentially mean that a male's individual gender norms might be more important than regional gender norms for the relationship between their job loss and the risk of union dissolution. There are two reasons to support this argument: First, it is a more direct measure of how much men generally contribute to household work, which will reflect their behaviour when they lose their jobs in contribution to housework. Second, we do not rely on regional gender norms of a person's place of origin, as different families within a region might be following different gender norms, and also, the gender norms that one's exposed to in their earlier life course may not stay with them in adulthood, especially if they have a partner with different gender norms ideology than the one they were exposed to in childhood.

We also tested the potential mechanisms to identify the main factors driving the effects of male unemployment on union dissolution risk. We found that family life satisfaction, household income and individual gender norms had the strongest mediating effects on the relationship between male job loss and union dissolution. Male job loss is often accompanied by significant losses in the household income, which induces stress in the couple and decreases the cost of divorce for women, so this was in line with our expectations that household income is a mediator for this relationship. When men lose their jobs, their family life satisfaction may decline due to changes in power dynamics and daily routine in the household, leading to stress in their relationship with their spouse and, hence, to union dissolution. We also found that the effect of job loss on union dissolution was changed by the male gender norms proxied by their share in home production activities over the years. This is because when individuals lose their jobs, they are expected to devote more time to home

production activities than before to support the household. Failing to meet this expectation could lead to stress and conflict in the household and, thus, to higher union dissolution risk.

Conclusion

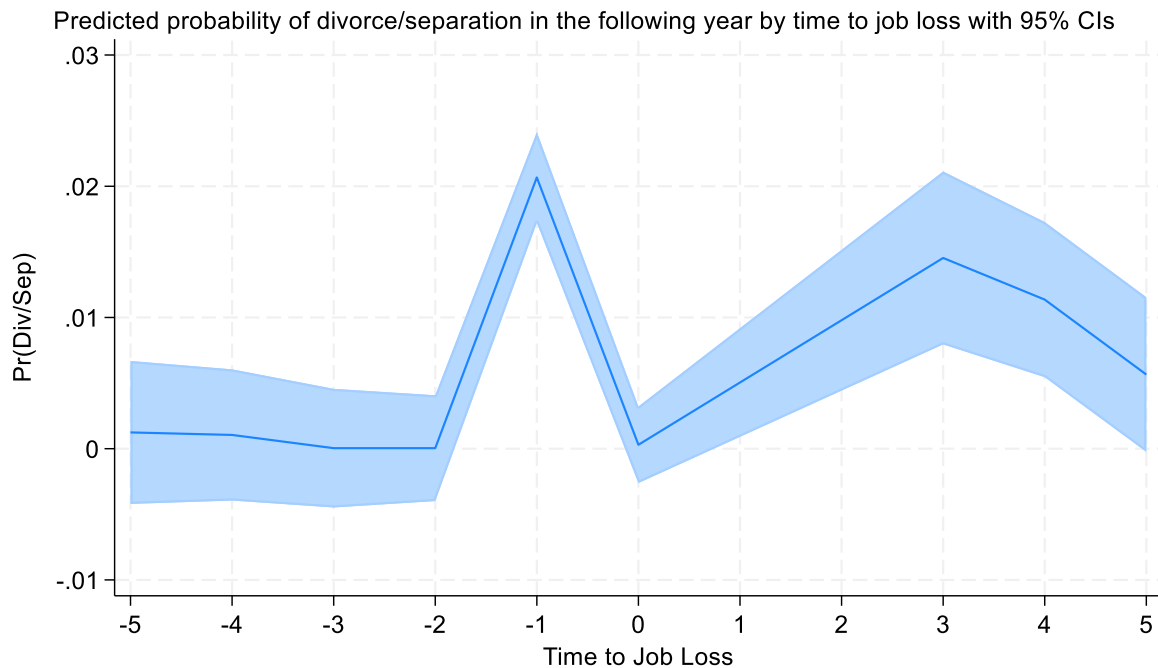
Our study contributes to the literature on how involuntary job loss affects union dissolution risk based on native German's location (East vs West) and migrant's origin countries. We found that involuntary job loss was associated with an increase in union dissolution risk by 2.12% over three years compared to those not exposed to involuntary job loss. We found mixed evidence for the research question that there is an East-West divide in Germany regarding the impact of male unemployment on union dissolution risk. Our results do not align completely with the assumption that since male-breadwinner norms are stronger in West Germany, so male unemployment in West Germany should have greater stigma effects that increase union dissolution risk. We delved deeper to address this question based on individual-level gender norms using males' share of home production activities in the couple over the years of the person to more precisely infer the moderating effect of gender norms on the relationship between male job loss and union dissolution. We found that the individual-level gender norms show negative effects for the traditional half and no effect for the liberal half of the men losing their jobs. The effect of involuntary job loss on union dissolution risk is mediated by declining family life satisfaction, males' share of hours spent on home production and lower household income for the person experiencing involuntary job loss.

Tables and Figures

Table 1: Summary statistics before propensity score matching

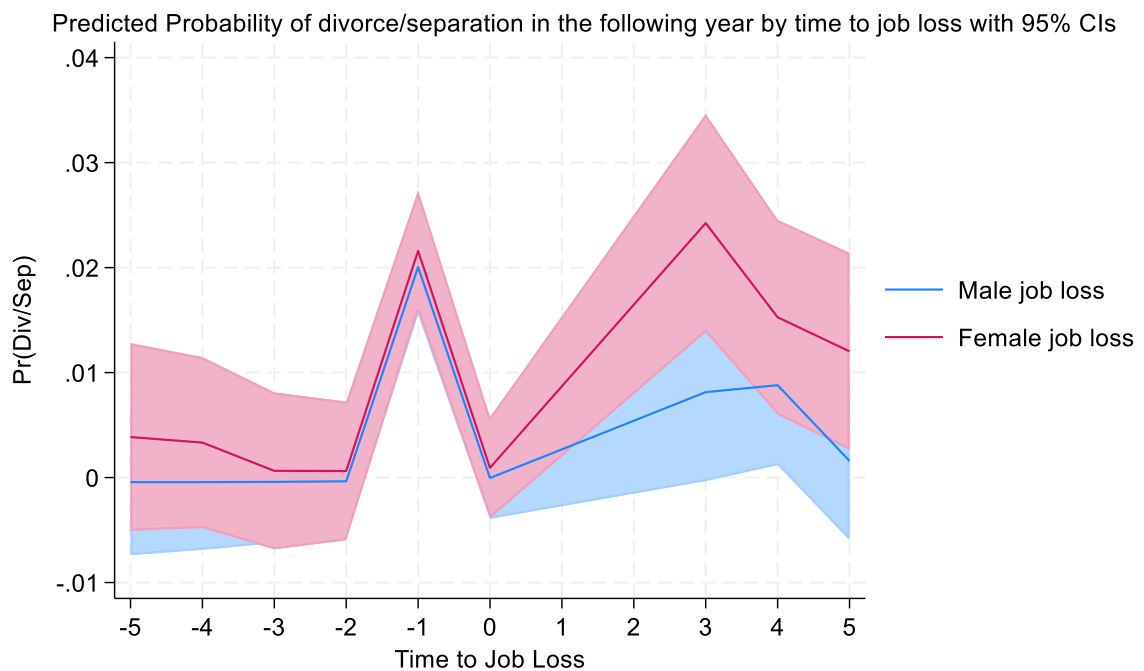
	Full Sample (M)	Full Sample (SD)	Sample size (n)	No Job Loss (M)	Job Loss (M)	Difference (M)
Union Dissolution	0.03	0.18	139814	0.03	0.05	-0.022***
Personal characteristics						
age	46.54	9.03	139814	46.56	45.62	0.933***
male	0.61	0.49	139814	0.61	0.59	0.016
female	0.39	0.49	139814	0.39	0.41	-0.016
native	0.79	0.41	139814	0.80	0.75	0.043***
Direct migration backg.	0.18	0.39	139814	0.18	0.22	-0.042***
Labour market characteristics (lagged)						
Net labour income (In EUR)	1785.19	1338.04	139806	1,797.68	1,224.29	573.387***
Required training for the job	5.11	2.11	138941	5.12	4.39	0.737***
Length of time with the firm	14.26	9.71	139688	14.33	11.05	3.285***
Education or training in years	12.33	0.01	138756	12.35	11.48	0.868***
Unemployment exp. (years)	0.35	1.13	139524	0.34	0.67	-0.330***
Work exp. (Full-time in yrs.)	19.64	10.86	139524	19.64	19.52	0.129
Number of children						
No child	0.48	0.50	139814	0.48	0.48	-0.001
One child	0.22	0.42	139814	0.22	0.24	-0.016*
Two children	0.22	0.42	139814	0.22	0.20	0.015*
Three children	0.06	0.24	139814	0.06	0.06	0.006
Four or more children	0.02	0.13	139814	0.02	0.02	-0.004
Region						
East Germany	0.23	0.42	139814	0.22	0.42	-0.191***
West Germany	0.56	0.50	139814	0.57	0.33	0.233***
Migrant groups						
top	0.08	0.27	139814	0.08	0.08	-0.006
bottom	0.07	0.26	139814	0.07	0.10	-0.025***
Time use hours						
Home production hours	2.83	1.92	118100	2.80	4.20	-1.406***
Leisure hours	1.40	1.32	133054	1.39	1.98	-0.591***

Fig 1: Event study design for union dissolution by time to job loss using logit regression



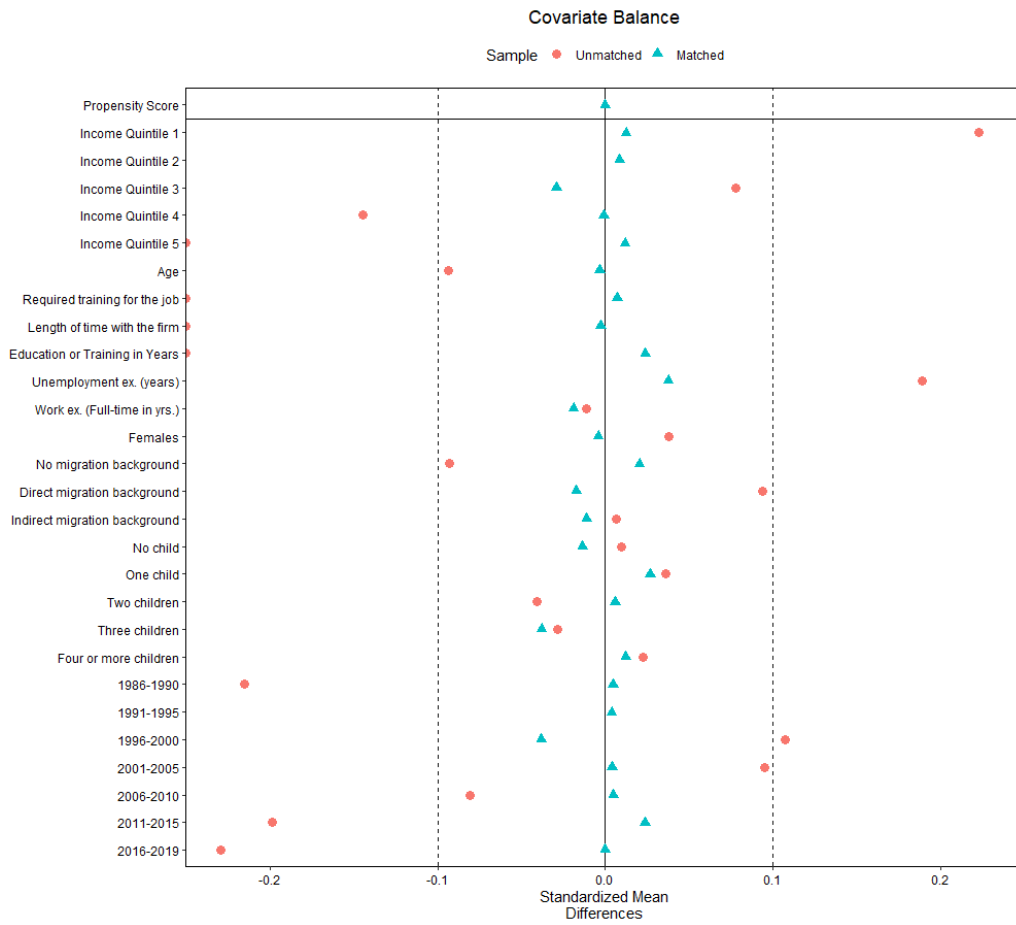
Note: Predicted probabilities from linear regression on union dissolution by time to job loss and other covariates using margins function from Stata.

Fig 2: Event study design for union dissolution by time to job loss using linear regression by sex of person losing the job.



Note: Predicted probabilities from linear regression on union dissolution by time to job loss and other covariates using margins function from Stata.

Fig 3: Standardised mean differences between the covariates for the matched and the unmatched sample



Note: This figure was created using the MatchIt package and Cobalt package in R (Greifer, 2022), both in R (R Core Team, 2022).

Figure 4: Propensity score box plot for the treatment and the control group for our propensity score matching model

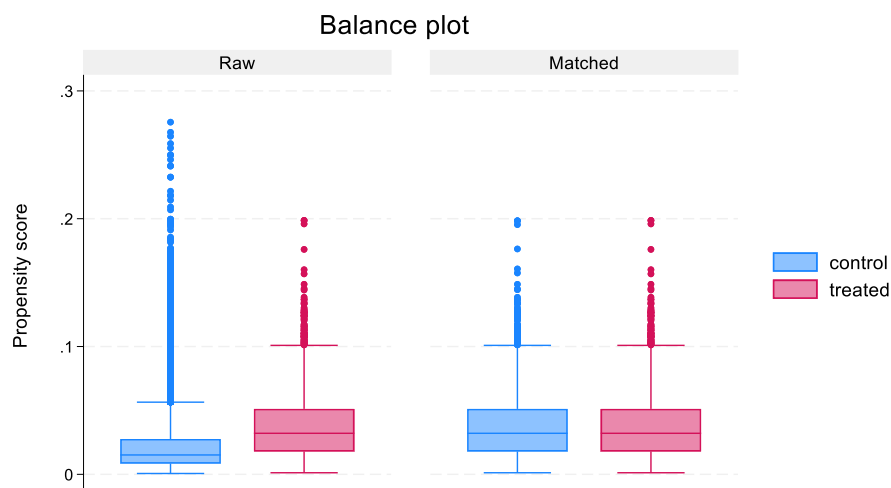


Figure 5: Effect (ATET) of involuntary job loss on union dissolution risk and time use by sex of the person losing the job

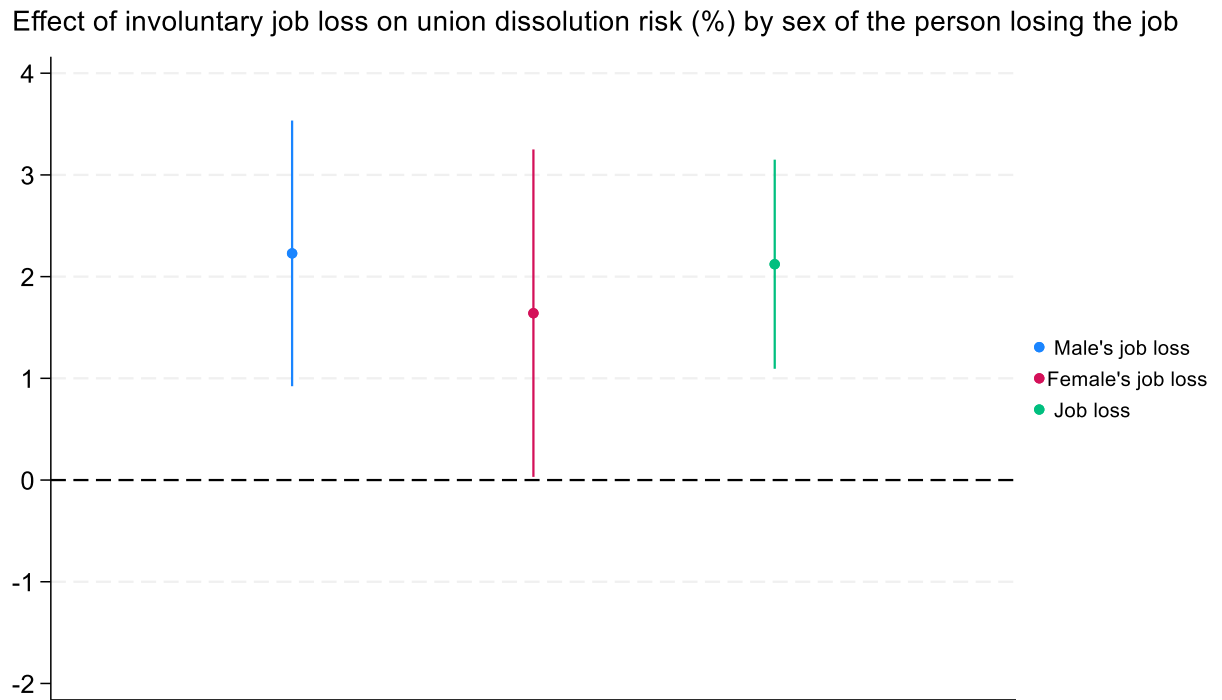


Figure 6: Effect (ATET) of involuntary job loss of male natives on their union dissolution risk and time use by region

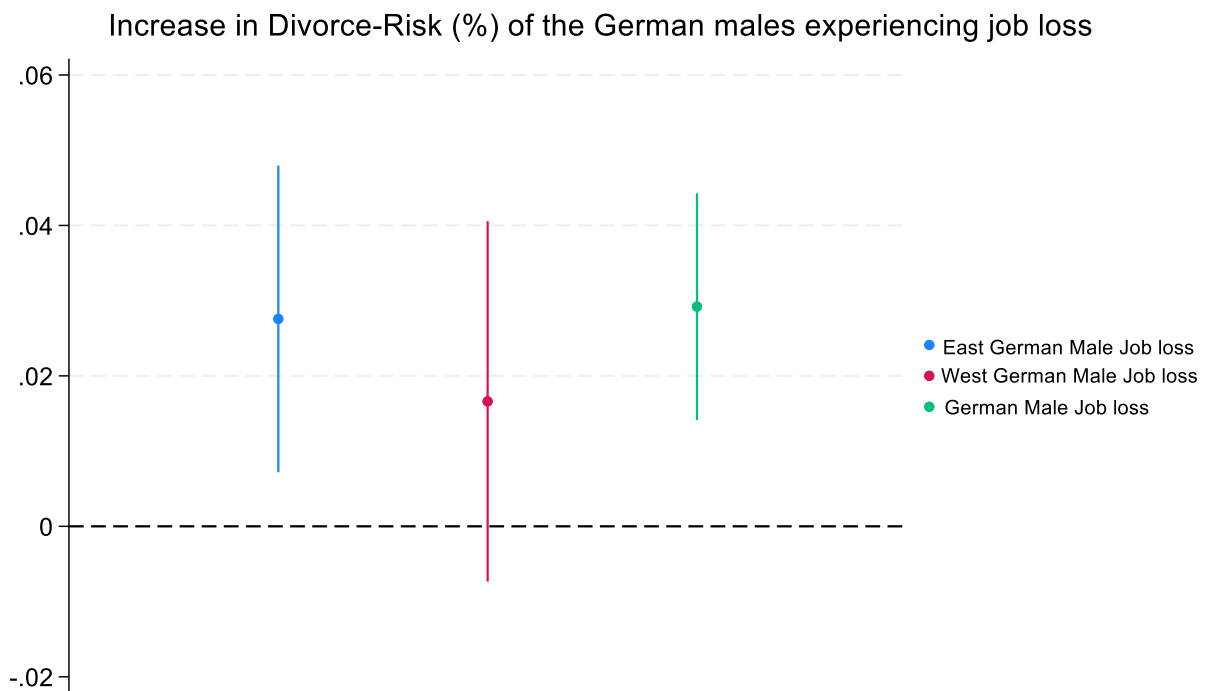


Figure 7: Effect of involuntary job loss of male migrants on their union dissolution risk and time use

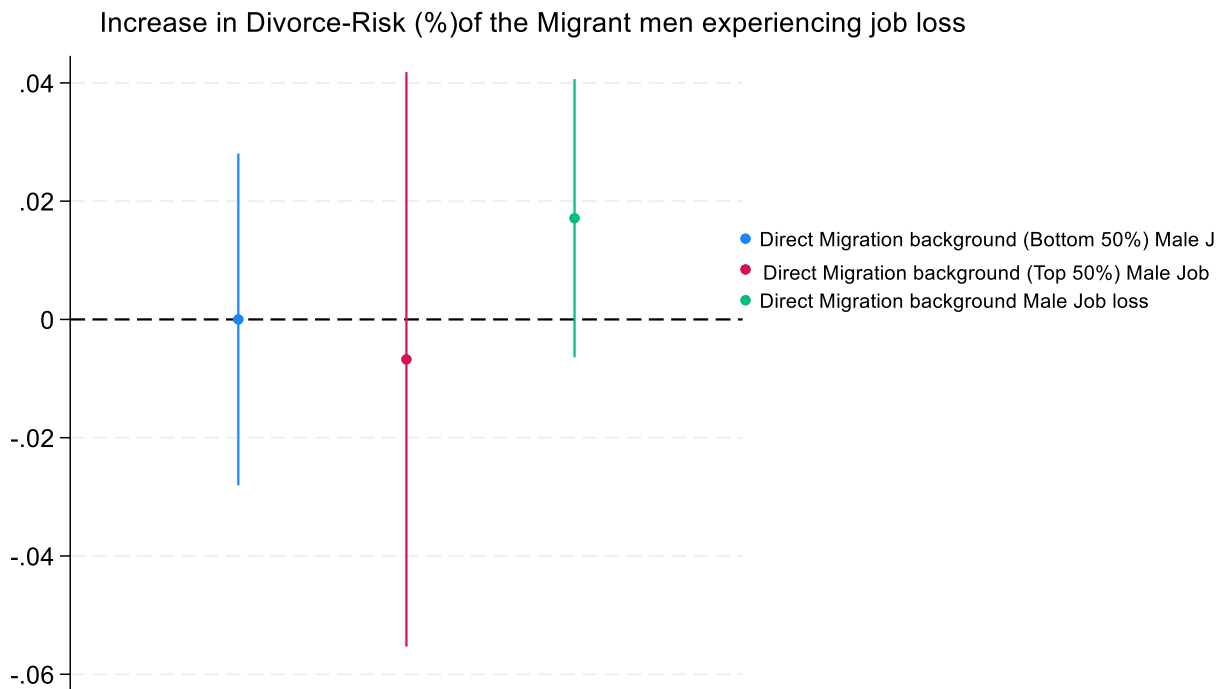


Figure 8: Effect of involuntary job loss of males on their union dissolution risk based on their gender norms.

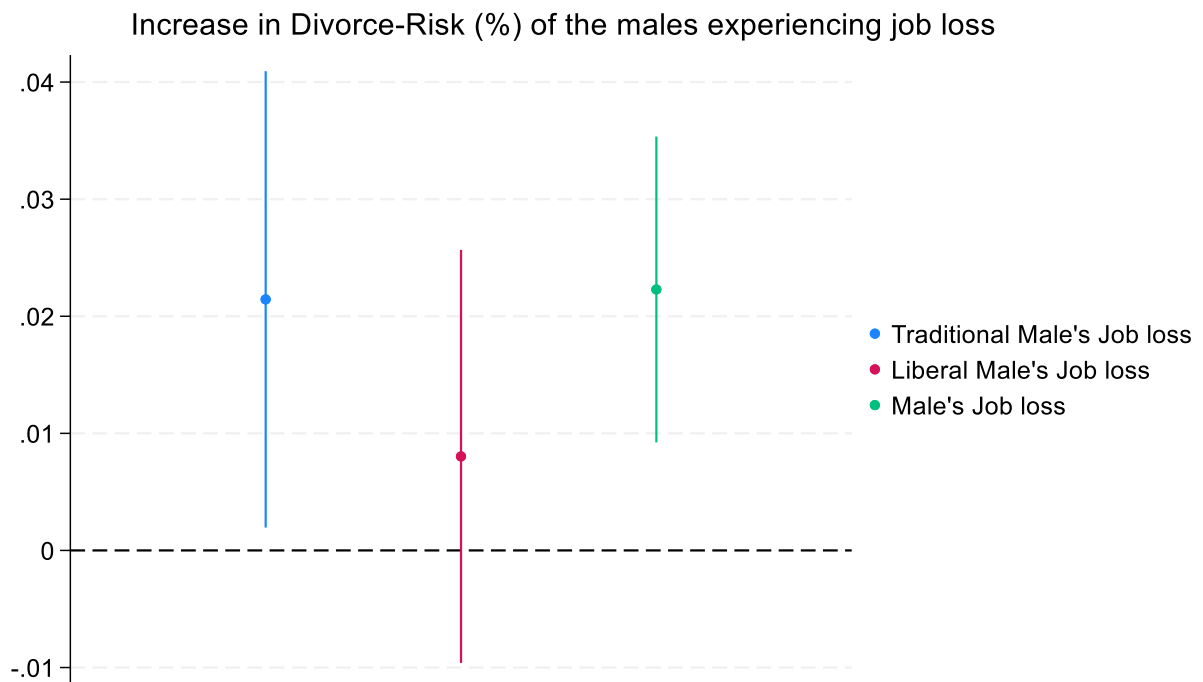
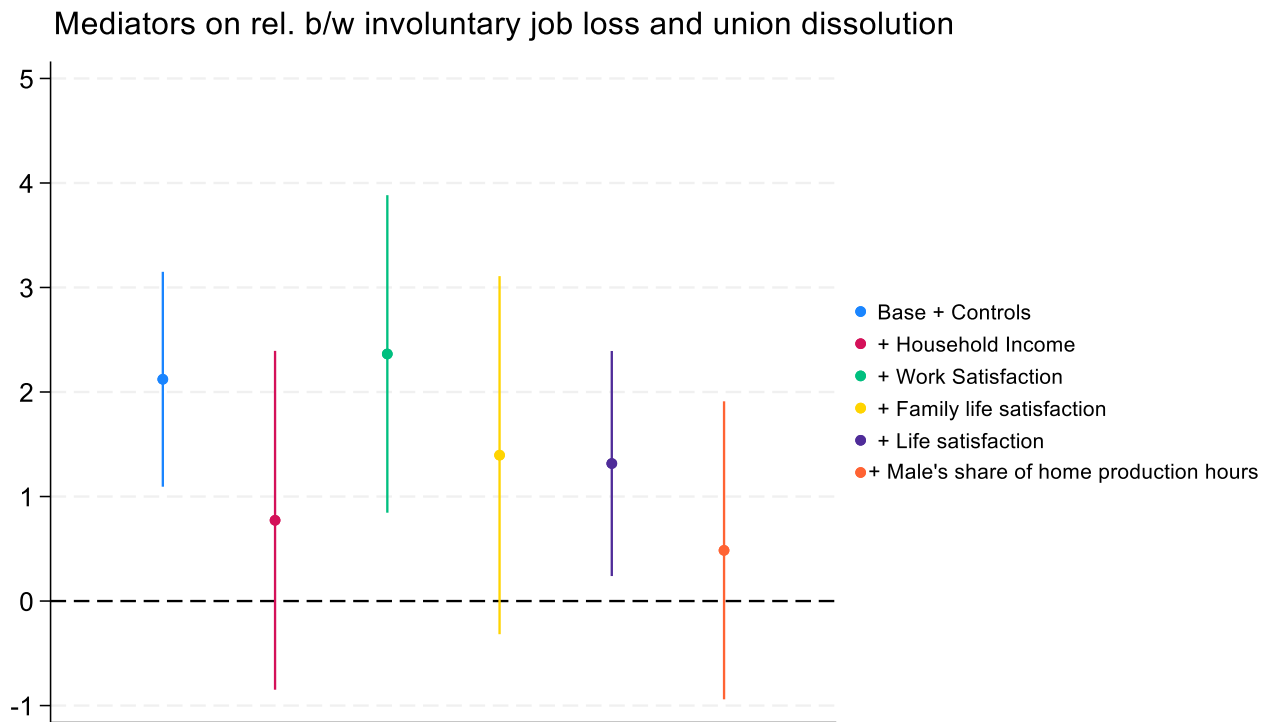


Figure 9: Mediation analysis of the relationship between involuntary job loss and union dissolution risk



Note: ATET estimates from different propensity score matching models (with the addition of a new covariate in each model, as mentioned in the figure).

Table 2: Average treatment effect of a person’s involuntary job loss on their union dissolution risk by sex, male’s location in Germany and male immigrant’s origin country.

Outcome variables	Male job loss	Female job loss	Job loss
Divorce/separation (%)	2.23***	1.64***	2.12***
	0.007	0.008	0.005
	83,539	53,925	137,464
	East Germany	West Germany	Germany
		Male job loss (Native)	
Divorce/separation (%)	2.76**	1.66	2.92***
	0.01	0.01	0.01
	16,345	48,759	65,448
	Bottom 50%	Top 50%	Migrants
		Male job loss (Migrant)	
Divorce/separation (%)	0	-0.68	1.71
	0.01	0.03	0.01
	6,883	6,555	16,167
		Male job loss	
	Traditional Men	Liberal Men	Men
Divorce/separation (%)	2.88**	0.51	2.23***
	0.012	0.010	0.007
	27,497	25,231	83,539

Note: ATET estimates from propensity score matching (nearest neighbour without replacement). Standard errors in parentheses. *** p<0.01, ** p<0.05 * p<0.1.

Gender norms and partnership dissolution following involuntary job loss in Germany.

Online Appendix

Main analyses: - Table A1.1

Robustness checks: - Table A1.2: Robustness tests for union dissolution following job loss using OLS by PSM, CHS-LASSO, CHS Post-LASSO, and PDS-LASSO

Table A1.1: Summary statistics – matched sample.

Covariates	Before Matching			After Matching		
	Means Treated	Means Control	Std. Mean Diff.	Means Treated	Means Control	Std. Mean Diff.
Age	45.73	46.62	-0.09	45.73	45.62	0.01
Income Quintiles						
Income Quintile 1	0.17	0.09	0.22	0.17	0.17	0.01
Income Quintile 2	0.31	0.19	0.27	0.31	0.31	0.01
Income Quintile 3	0.22	0.19	0.08	0.22	0.24	-0.03
Income Quintile 4	0.19	0.24	-0.15	0.19	0.19	0.00
Income Quintile 5	0.11	0.29	-0.59	0.11	0.11	0.01
Labour market characteristics (lagged)						
Required training for the job	4.40	5.13	-0.40	4.40	4.38	0.01
Length of time with the firm	11.12	14.38	-0.34	11.12	11.14	0.00
Education or training in years	11.49	12.35	-0.38	11.49	11.43	0.02
Unemployment ex. (years)	0.67	0.34	0.19	0.67	0.61	0.04
Work ex. (full-time in yrs.)	19.58	19.70	-0.01	19.58	19.79	-0.02
Sex						
Male	0.59	0.61	-0.04	0.59	0.59	0.04
Female	0.41	0.39	0.04	0.41	0.41	-0.04
Migration background						
No migration background	0.76	0.80	-0.09	0.76	0.75	0.02
Direct migration background	0.22	0.18	0.09	0.22	0.23	-0.02
Indirect migration background	0.02	0.02	0.01	0.02	0.03	-0.01
Number of children in the household						
No child	0.48	0.48	0.01	0.48	0.49	-0.01
One child	0.24	0.22	0.04	0.24	0.23	0.03
Two children	0.20	0.22	-0.04	0.20	0.20	0.06
Three children	0.06	0.06	-0.03	0.06	0.07	-0.04
Four or more children	0.02	0.02	0.02	0.02	0.02	0.01
Year group						
1986-1990	0.05	0.10	-0.22	0.05	0.05	0.01
1991-1995	0.24	0.11	0.29	0.24	0.24	0.00
1996-2000	0.16	0.12	0.11	0.16	0.17	-0.04
2001-2005	0.21	0.17	0.10	0.21	0.21	0.00
2006-2010	0.14	0.16	-0.08	0.14	0.13	0.01
2011-2015	0.12	0.19	-0.20	0.12	0.11	0.02
2016-2019	0.09	0.15	-0.23	0.09	0.09	0.00

Table A1.2: Robustness tests for union dissolution risk following job loss using OLS by PSM, CHS-LASSO, CHS Post-LASSO, and PDS-LASSO

OLS using propensity score matching

	Coeff.	SE	z	P>z	[95% conf.	interval]
Union dissolution						
Involuntary job loss	0.0212***	0.0053	4.03	0.000	0.011	0.032

OLS using CHS LASSO-orthogonalised variables

	Coeff.	SE	z	P>z	[95% conf.	interval]
Union dissolution						
Involuntary job loss	0.0197***	0.0033	5.99	0.000	0.013	0.026

OLS using CHS post-LASSO-orthogonalised variables

	Coeff.	SE	z	P>z	[95% conf.	interval]
Union dissolution						
Involuntary job loss	0.0195***	0.0033	5.92	0.000	0.013	0.0025

OLS with PDS-selected variables

	Coeff.	SE	z	P>z	[95% conf.	interval]
Union dissolution						
Involuntary job loss	0.0195***	0.0106	5.93	0.000	0.013	0.0259

Note: *** p<0.01, ** p<0.05 * p<0.1

References

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