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# The effect of unemployment on social participation of spouses – Evidence from plant closures in Germany

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This paper estimates the effect of an individual's unemployment on the level of social participation of their spouse. Using German panel data, it is shown that unemployment has a strong negative effect on public social activities of both directly and indirectly affected spouses. Private social activities of either spouse, however, are only found to increase, if the indirectly affected spouse is not working. Conflict prevention strategies or habituation may help to rationalise this finding. Our results imply that active labour market policies should account for spillovers effects within couples and adopt a family perspective.

**Keywords**: unemployment, social participation, plant closure, entropy balancing, SOEP

**JEL Codes**: J64, I31

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# 1 Introduction

It is well-known that unemployment not only causes material hardship due to the associated loss in income, but also that it enforces the deprivation of social, psychological and non-pecuniary benefits provided by employment (Jahoda, 1982). Many empirical studies have documented the severe consequences of unemployment for individuals' subjective well-being (e.g., Kassenböhmer and Haisken-DeNew (2009)), health outcomes (e.g., Schmitz (2011)) or patterns of social participation (Kunze and Suppa, 2017). However, while the effects on the life of those directly affected are well documented, the effect on their spouses has received less attention. In fact, only a few recent studies address the consequences of unemployment for the indirectly affected spouse, see Marcus (2013) for mental health outcomes[1] and Nikolova and Ayhan (2016) for individuals' life-satisfaction. In addition, previous research also suggests that unemployment may bear a serious challenge for a relationship as it increases the probability of divorce (e.g., Doiron and Mendolia, 2012). Moreover, Anderberg *et al.* (2016) theorise and document a nuanced relation between gender-specific unemployment rates and domestic violence. Interestingly and in line with these findings, classical studies about unemployment conducted in the early 1930s, long before modern welfare states have been installed, mirror both reduced social activities and increased tension within the families. Komarovsky (1940 [2004]), for instance, summarises her observations from a study in a large industrial city close to New York as follows:

> "The unemployed man and his wife have no social life outside the family. The extent of social isolation of the family is truly striking. This refers not only to formal club affiliations but also to informal social life. [...] Family after family gave the same story of meagre social contacts." – (Komarovsky, 1940 [2004], p. 122)

Also, in the seminal Marienthal study a woman was observed reporting

> "I often quarrel with my husband because he does not care about a thing any longer and is never at home. Before unemployment it was not so bad because the factory provided a distraction." – (Jahoda *et al.*, 1974, p. 85)

Taken together, the results from these studies indicate the existence of strong spillover effects from unemployment on spouses, which have to be taken into account in order to

[1] See also Clark (2003), Bubonya *et al.* (2014) and Mendolia (2014) for similar analyses using different data sources.

properly assess the overall (non-monetary) costs of unemployment and to better understand its nature. Yet, an analysis of the effect of unemployment on social participation of the spouse is missing so far. To close this gap in the literature is the aim of the present paper.

The importance of social participation for various economic outcomes (as e.g., better employment prospects and health, or increased growth and judicial efficiency) has been emphasised in the literature on social capital, see, e.g., Putnam (2001), Alesina and La Ferrara (2000), Bauernschuster *et al.* (2014). Moreover, social participation is frequently considered to be an important dimension of human well-being which requires further scrutiny (e.g., Sen, 2000, Stiglitz *et al.*, 2009). The consequences of unemployment for social participation of directly affected individuals, however, have recently been highlighted by Kunze and Suppa (2017). They find negative and lasting effects for public social activities but also a retreat of individuals into private life, which, in turn, limits the access to information (e.g., about vacancies) associated with a broader and more heterogeneous network. The present paper complements this literature by estimating the effect of unemployment on the spouse's level of social participation.

Sociological research has developed the so-called family stress theory, which provides a conceptual framework to study the effect of shocks (or 'stressors') on family lives. This theory highlights family resources (e.g., material resources, emotional stability, and wisdom and experience of each of the members) as crucial factors which allow families to successfully handle shocks like unemployment during a period of reorganisation (Hill, 1949). Additionally, the importance of adequate coping strategies has been emphasised by McCubbin (1979). From this perspective, behavioural responses, like social participation activities, are part of a coping strategy adopted during a period of reorganisation, where some strategies may prove more and others less effective. Extracting commonalities and contrasts in social participation responses to unemployment may, therefore, be helpful to identify and evaluate these different strategies.

Using data from the German Socio-Economic Panel, we focus on plant closures as arguably exogenous reason for entry into unemployment. In addition, we apply a difference-in-difference matching estimator based on entropy balancing (see Hainmueller (2012) and Marcus (2013)) in order to address both selection on observables and unobservables (with time-invariant effects). Following Kunze and Suppa (2017), social participation is measured by five distinct indicators which are grouped according to whether they are carried out in private or public. Specifically, we use the frequencies of attending cultural events; cinema, pop concerts and the like; performing volunteer work (all carried out in public);

social gatherings; and helping out friends (both private). In order to increases statistical power, both public and private activities are aggregated into indices by using either the simple mean or principal component (factor) analysis.

Our results show that unemployment of one spouse affects social participation patterns of both the directly and the indirectly affected spouses in a similar way. More precisely, we find significant decreases for public social activities, and significant increases for private social participation. The size of the effect of being unemployed due to plant closure for the indirectly affected spouse is about the same size of the effect for the directly affected spouse for public social activities and even larger for private activities. Lower public social participation for indirectly affected partners is consistent with the stigmatising effect of unemployment but may also be driven by a lower household income. Tests whether these findings depend on the employment status of the indirectly affected partner show that both spouses only increase private social activities, if the indirectly affected partner is *not* working. This finding can be rationalised by conflict prevention strategies, i.e. partners try to evade each other, or by habituation, where partners adopt routines and only undertake activities together. Moreover, we do not find strong gender-specific effects. However, there is some evidence in favour of a slightly stronger reduction in public social activities for both spouses if the wife loses her job, whereas the increase in private social activities is slightly stronger for the indirectly affected partner if the husband loses its job.

We provide some robustness by further analysing the reasons for unemployment, by considering all plant closures and by estimating a placebo regression to add further credibility to our identifying assumption. Overall, our findings highlight the importance of spillover effects within couples and imply that active labour market policies (such as supporting the unemployed in their search process and in providing them with crucial information) should be designed to address both directly and indirectly affected individuals.

The remainder of this paper is organised as follows: Section 2 describes our data and the empirical strategy. Section 3 presents the results. Section 4 shortly concludes.

## 2 Data and Empirical Strategy

The empirical analysis uses data from the German Socio-Economic Panel, see Wagner *et al.* (2007).[2] The analysis is restricted to the time period from 1992–2011 and focuses on co-

[2]The underlying is from SOEP v30 (DOI: 10.5684/soep.v30). The data used in this paper was extracted using the Add-On package PanelWhiz for Stata. PanelWhiz (http://www.PanelWhiz.eu) was written by Dr. John P. Haisken-DeNew (john@PanelWhiz.eu). See Haisken-DeNew and Hahn (2010) for details. The PanelWhiz generated DO file to retrieve the data used here is available from us upon request. Any data or

habiting couples. Our empirical strategy uses a difference-in-difference framework, where the entry of one spouse into unemployment due to a plant closure is the treatment under consideration. A treatment can occur between any two survey periods that include the social participation variables, leaving us with eight treatment periods: 1992–1994, 94–96, 96–97, 97–99, 99–01, 05–07, 07–09 and 09–11.[3] Treatment effects are estimated pooled over all treatment periods. This setup allows us to estimate two different models. The first model reveals the effect of unemployment on changes in social participation of the same individual whose entry into unemployment is observed (the directly affected spouse). Note that in this model potentially treated individuals have to be employed in the pre-treatment period, whereas their spouses may have any kind of labour force status. By contrast, the second model uncovers the effect of unemployment on changes in social participation of the directly affected individual's *spouse* (the indirectly affected spouse). In this model, the *partner* of the potentially treated individual must be employed in the pre-treatment period whereas the indirectly affected individual may or may not be employed.

Formally, both models can be written as follows

$$\Delta SP_{it}^{DAP} = \beta_1 treat_{it}^{DAP} + \beta_2 x_{it}^{DAP} + \beta_3 x_{it}^{IAP} + \beta_4 x_{it}^{HH} + \epsilon_{it} \tag{1}$$

and

$$\Delta SP_{it}^{IAP} = \gamma_1 treat_{it}^{DAP} + \gamma_2 x_{it}^{DAP} + \gamma_3 x_{it}^{IAP} + \gamma_4 x_{it}^{HH} + \nu_{it} \tag{2}$$

where $\Delta SP_{it}$ measures the change in social participation between two survey periods, $treat_{it}$ is the treatment indicator and $x_{it}$ are vectors that include sets of standard socio-demographic and economic characteristics of individuals (see below). Furthermore, the superscripts *DAP*, *IAP* and *HH* indicate whether the variables are included for the directly affected partner, the indirectly affected partner or whether they are measured at the household level, respectively.

As the focus of this paper is on cohabiting individuals, we cannot only test novel hypothesis about the indirectly affected partner, but also more specific hypothesis about the behavioural responses of the directly affected partner—conditional on her spouses characteristics, such as his or her labour force status. Theoretically, we expect unemployment to decrease public social participation of the indirectly affected partner. This hypothesis is motivated by (i) a lower household income, (ii) a social norm effect (individuals may

computational errors in this paper are our own.

[3]Note that we do not consider the period 01-05 as four years are not comparable to the remaining periods. Our qualitative results, however, would be very similar if we added this period to the analysis. Similarly, dropping the observations from the period 96-97 would not change much.

well obtain identity utility from their partners' profession), and (iii) solidarity with and the support of their partner. Expectations regarding private social activities of the indirectly affected partner, however, are less clear cut. The indirectly affected spouse, e.g., may stay at home and provide comfort for the directly affected partner so that the level of private activities does not change much. Yet, both spouses may also spend more time with friends and relatives together, depending on the employment status of the indirectly affected spouse and thus on his available leisure time. A more detailed discussion of mechanisms for the directly affected partner is provided by Kunze and Suppa (2017).

Our analysis relies on five outcome variables: The frequency of attending cultural events such as concerts, theatre, lectures, etc. (*culture*); attending cinema, pop music concerts, dancing, disco, sports events (*cinema*); attending social gatherings (*socialising*); helping out friends (*helping*) and performing volunteer work (*volunteer*). These activities represent both constitutive elements of social participation and investments in social capital (e.g., Alesina and La Ferrara, 2000). They are aggregated into two indices in order to increase statistical power. Specifically, the information gathered in the respective questions and years on public (i.e., culture, cinema, volunteer) and private (i.e., socialising and helping) social activities are aggregated by using either the simple mean or principal component analysis.[4]

[Insert table 1 here.]

Table 1 shows our dependent variables and the waves in which information on the respective activities have been gathered.[5] The conditioning variables originate from the pre-treatment interview and are standard in the literature (e.g., Alesina and La Ferrara, 2000). They are included for both the directly and the indirectly affected spouse, except for the pre-treatment working status which is only included for indirectly affected spouses. Variables on the couple level (e.g., household income or the number of children) are only included for the directly affected spouse.

Directly affected individuals have to be aged 18 to 64 and must be employed full-time before the plant closure. We exclude those couples in which the indirectly affected spouse experienced an involuntary job loss due to a plant closure within the same treatment period. We also exclude couples from the control group in case of an employer change or in

[4]According to the eigenvalue criterion, the factor analysis suggests two underlying factors, in which the items culture, cinema and volunteer do only load on the first factor whereas socialising and helping only load on the second factor. See also Bauernschuster *et al.* (2014) for a similar aggregation procedure.
[5]Note that we only use the responses to these questions when they are recorded on a 4-point-scale (ranging from 'weekly' and 'monthly' to 'less frequently' and 'never').

case of separation, divorce or death of a partner.[6] Thus, the control group in the first model consists of potentially directly affected individuals whereas in the second model it consists of potentially indirectly affected partners. For potentially indirectly affected spouses, we apply the same restrictions as in the treatment group construction (both before and after the treatment). Altogether, we obtain more than 20000 couples for the control group and 146 couples for the treatment group.

Finally, our difference-in-difference framework is augmented with matching techniques (see Marcus (2013) for a similar approach). In a first step, in order to make treated couples and control couples similar, we apply entropy balancing (Hainmueller, 2012) which reweights observations in the control group so that mean and variance of observations in both groups are matched. In a second step, changes in social participation of both groups are compared using the weights obtained in the first step. This approach eliminates time-invariant effects resulting from unobserved variables (e.g., personality traits) and yields average treatment effect on the treated, i.e., the unemployment induced change in social participation of those couples which are actually affected by unemployment as a result of plant closures.[7] Table 2 presents summary statistics both before and after reweighting.

[Insert table 2 here.]

# 3 Results

## Main Results

Panels (a) and (b) of table 3 present our main results for both public and private social activities, respectively. Each panel contains the treatment effect for the directly and the indirectly affected partner from a separate regression. As can be inferred from panel (a) (models (1) and (3)) of table 3, unemployment lowers public social activities of both the directly and indirectly affected partner. These effects are of similar magnitude for both spouses. Models (2) and (4) include an additional interaction term of the treatment indicator and the employment status of the indirectly affected partner. Clearly, as the coefficient of this interaction term turns out to be insignificant, the indirectly affected

[6] We have checked that none of these restrictions changes our qualitative results.

[7] Unemployment due to plant closure can sensibly be considered to be beyond an individuals' reach. However, it may not be completely exogenous to an individual due to anticipation effects resulting in a gradual leaving process of some workers prior the closing (Kassenböhmer and Haisken-DeNew, 2009, p.460). The presence of such a mechanism would imply an underestimation of the treatment effect (see also the discussion in Kunze and Suppa (2017)).

partner's employment status seems to have no role in understanding the negative overall effects for both directly and indirectly affected partners.[8] Rather, the negative effects may result from a lower income level or, alternatively, from an involuntary violation of the social norm to work (as spouses may obtain identity utility from their spouses status).[9]

[Insert table 3 here.]

Panel (b) of table 3 presents the results for private social activities. Unemployment increases these activities for both the directly and indirectly partner (models (1) and (3)) with the impact of the spouse's unemployment being even larger for the indirectly affected partner. Allowing the treatment effect to vary with a dummy for employment of the indirectly affected partner (models (2) and (4)) shows that directly affected individuals who recently lost their job due to a plant closure only increase private social activities if their spouse is *not* employed, as the interaction effects essentially offset the main effects and the sum of main and interaction effects is not significantly different from zero. This finding could mean that he or she is either not willing or not able to engage in more private social participation activities, consistent with behavioural explanations relying on habituation (spouses may get accustomed to only undertake things together). Alternatively, previous research also highlights the challenge for a relationship associated with one spouse's unemployment (Doiron and Mendolia, 2012). Consequently, the increase of private social participation conditional on the spouse *not* working, may be viewed as a conflict prevention strategy, where spouses try to evade each other.

Indirectly affected spouses, however, only increase private social participation in response to their spouse's unemployment if they are not working. This finding could be the result of mutual comfort and support in order to prevent, e.g., cabin fever or depressions. In the light of an increased probability of divorce and reduced life satisfaction of both partners, it is, however, also consistent with the earlier mentioned conflict prevention strategy of evading each other, simply by meeting different friends. Unfortunately, we have no information with whom the social participation activities are carried out, which would allow us to further distinguish between these mechanisms.

[8]Note, however, that there is some evidence that employed indirectly affected partners reduce their public social participation more than non-working ones. While neither the treated coefficient nor its interaction turns out to be significant, the sum of these coefficients is well significantly different from zero at conventional levels of significance.

[9]Note, however, that Nikolova and Ayhan (2016) question the importance of income for the spouse's life satisfaction, whereas Kunze and Suppa (2017) cast doubt on the importance of income for public social activities.

Finally, note that we also experimented with a gender dummy interaction of the treatment effect. However, the results from these estimations were not entirely clear-cut, which may be due to the small number of observations, small gender-specific effects (if existent at all), or the fact that gender roles and gender-specific behaviour are in a state of flux.[10]

Overall, our results reveal that unemployment of one spouse has a differential influence on social activities of both spouses. More precisely, both directly and indirectly affected individuals reduce their participation in public social activities (a lower frequency of attending cultural events, cinema and volunteering) but at the same time intensify private social activities (an increased frequency of helping friends and neighbours) given that the indirectly affected individual is not employed. While the results for the directly affected spouse generally confirm the findings of Kunze and Suppa (2017) for couples, the novel and important aspect of this paper is that unemployment has quantitatively and qualitatively similar effects for the indirectly affected spouse. These findings illustrate that the effect of unemployment on social participation is quite substantial, which, in turn, points to potentially large costs of unemployment which have not been considered in the existing literature so far.

## Robustness

We consider three robustness checks. First, as research on the effects of unemployment is closely related to research on the consequences of job loss (see, e.g., the discussion in Marcus (2013)), we also present the main estimation results when the treatment group includes all couples that experienced a plant closure (but not necessarily an unemployment spell). Columns (2) and (5) of table 4 shows that the effects for both the directly and indirectly affected spouse are much smaller as compared to the main results and become insignificant in many cases. Hence, the unemployment experience related to a job loss turns out to be important in determining the overall effect on social participation.

Second, we look at other reasons for unemployment (cf. Kassenböhmer and Haisken-DeNew (2009)). Specifically, columns (3) and (6) of table 4 demonstrates that, when considering all possible reasons (including, e.g., also dismissal and other reasons), effects are much smaller and significant only for public activities. These differences may be attributed to a possible shock effect resulting from an unexpected job loss.[11] Moreover, en-

[10] We find some evidence for a slightly stronger reduction in public social activities for both spouses if the wife loses her job. Likewise, the increase in private social activities of the indirectly affected partner appear to be somewhat larger if the husband loses its job. These results are available upon request.

[11] Results from a more detailed analysis for different reasons of unemployment are available upon request.

dogeneity issues with respect to other reasons (or voluntary unemployment) may explain these results.

Third, we show the results from a placebo regression in which the treatment is assumed to take place two years (resp. one year) earlier (cf. Marcus (2013)) and which uses weights for conditioning variables from the last interview with social participation data before the hypothetical job loss. This is done to add some credibility to the identifying assumption of similar social participation patterns before treatment (which cannot be directly tested). As can be inferred from columns (1) and (4) of table 4, all effects are small and insignificant, which, in turn, lends support to the identifying assumption.

[Insert table 4 here.]

# 4 Concluding Remarks

This is the first paper to estimate the effect of unemployment on social participation of indirectly affected spouses. Using German panel data, we find strong negative (positive) and significant effects on public (private) social participation activities. However, our results also suggest that changes in private social participation vary with the employment status of the indirectly affected partner. Our findings highlight the importance of spillover effects within couples and imply that the previous literature has underestimated the (non-monetary) costs of unemployment as the consequences for social participation of indirectly affected spouses have not been taken into account so far. Moreover, they imply that active labour market policies should be designed to address both directly and indirectly affected spouses with a special emphasis on maintaining family and social resources. As suggested by family stress theory, changes in social participation can be considered as being part of coping strategies with unemployment. Future research should provide a better understanding of commonly adopted coping strategies and their effects on individuals well-being, the stock of social capital and labour market outcomes for both directly and indirectly affected spouses.

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Table 1: Activities, Variables, and Waves

| **Question** | **Variable** |
|---|---|
| **Gathered in 92, 94, 96, 97, 99, 01, 05, 07, 09, 11** | |
| Going to the movies, pop music concerts, dancing, disco, sports events | Cinema |
| Going to cultural events (such as concerts, theatre, lectures, etc.) | Culture |
| Volunteer work in clubs or social services | Volunteer |
| Meeting with friends, relatives or neighbours | Socialise |
| Helping out friends, relatives or neighbours | Helping |

Notes: Responses categories are *at least once a week*, *at least once a month*, *less often*, *never*.

Table 2: Summary Statistics

| | Treated | Control | |
|---|---|---|---|
| | (1) | (2) Unbalanced | (3) Balanced |
| **Directly affected spouse** | | | |
| Age ≤ 30 | 0.116 | 0.122 | 0.117 |
| Age 31–40 | 0.205 | 0.295 | 0.205 |
| Age 41–50 | 0.322 | 0.333 | 0.322 |
| Age 50+ | 0.356 | 0.250 | 0.356 |
| Female | 0.541 | 0.548 | 0.540 |
| Years of Education | 11.216 | 12.191 | 11.189 |
| Work Disability | 0.055 | 0.053 | 0.055 |
| **Indirectly affected spouse** | | | |
| Age ≤ 30 | 0.123 | 0.125 | 0.124 |
| Age 31–40 | 0.199 | 0.275 | 0.199 |
| Age 41–50 | 0.301 | 0.332 | 0.301 |
| Age 50+ | 0.377 | 0.267 | 0.376 |
| Female | 0.459 | 0.452 | 0.458 |
| Years of Education | 11.086 | 12.147 | 11.060 |
| Work Disability | 0.144 | 0.085 | 0.144 |
| Partner Employed | 0.616 | 0.714 | 0.615 |
| Log Net Real HH Eq. Income (in Euro) | 7.285 | 7.487 | 7.268 |
| **Household Variables** | | | |
| No Children | 0.555 | 0.505 | 0.555 |
| 1 child | 0.226 | 0.236 | 0.226 |
| 2 children | 0.151 | 0.199 | 0.151 |
| 3+ children | 0.068 | 0.060 | 0.069 |
| Shock: Child born | 0.014 | 0.028 | 0.014 |
| Care needing person in HH | 0.027 | 0.017 | 0.027 |
| West Germany | 0.486 | 0.698 | 0.485 |
| 1992 | 0.329 | 0.114 | 0.329 |
| 1994 | 0.226 | 0.118 | 0.226 |
| 1996 | 0.144 | 0.142 | 0.144 |
| 1997 | 0.055 | 0.110 | 0.055 |
| 1999 | 0.027 | 0.113 | 0.027 |
| 2005 | 0.055 | 0.145 | 0.055 |
| 2007 | 0.089 | 0.137 | 0.089 |
| 2009 | 0.075 | 0.121 | 0.075 |
| **Social participation of directly affected spouse** | | | |
| Public (simple man) | 1.582 | 1.793 | |
| Private (simple man) | 2.675 | 2.779 | |
| Public (factor analysis) | -0.329 | 0.036 | |
| Private (factor analysis) | -0.133 | -0.007 | |
| **Social participation of indirectly affected spouse** | | | |
| Public (simple man) | 1.637 | 1.787 | |
| Private (simple man) | 2.589 | 2.776 | |
| Public (factor analysis) | -0.224 | 0.038 | |
| Private (factor analysis) | -0.272 | -0.005 | |
| Observations | 146 | 23195 | 23195 |

Notes: Data from SOEP 1992-2011. Summary statistics for treated couples, all control couples and matched control couples. The first two columns present means before treatment for treated and controls. The third column show the means for the reweighted control group according to entropy balancing.

Table 3: Unemployment and Social Participation – Main results

| | Simple Mean | | Factor Analysis | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| **(a) Public Social Participation** | | | | |
| **Directly affected partner** | | | | |
| Treated | -0.0949*** | -0.0874* | -0.187*** | -0.186** |
| | (-3.12) | (-1.80) | (-3.43) | (-2.10) |
| Ind. aff. partner employed | -0.00629 | -0.000954 | -0.000842 | 0.000348 |
| | (-0.16) | (-0.04) | (-0.01) | (0.01) |
| Treated × Ind. aff. partner employed | | -0.0122 | | -0.00272 |
| | | (-0.19) | | (-0.02) |
| **Indirectly affected partner** | | | | |
| Treated | -0.0901** | -0.0455 | -0.167*** | -0.0977 |
| | (-2.39) | (-0.84) | (-2.63) | (-1.02) |
| Ind. aff. partner employed | -0.00902 | 0.0227 | -0.00831 | 0.0410 |
| | (-0.20) | (0.85) | (-0.11) | (0.88) |
| Treated × Ind. aff. partner employed | | -0.0726 | | -0.113 |
| | | (-0.99) | | (-0.89) |
| **(b) Private Social Participation** | | | | |
| **Directly affected partner** | | | | |
| Treated | 0.0906* | 0.213*** | 0.157** | 0.331*** |
| | (1.95) | (3.01) | (2.18) | (2.99) |
| Ind. aff. partner employed | -0.0524 | 0.0348 | -0.0654 | 0.0580 |
| | (-0.92) | (0.90) | (-0.74) | (0.96) |
| Treated × Ind. aff. partner employed | | -0.199** | | -0.282* |
| | | (-2.11) | | (-1.92) |
| **Indirectly affected partner** | | | | |
| Treated | 0.141*** | 0.317*** | 0.233*** | 0.487*** |
| | (2.80) | (3.62) | (3.03) | (3.64) |
| Ind. aff. partner employed | -0.0861 | 0.0395 | -0.120 | 0.0609 |
| | (-1.52) | (0.94) | (-1.41) | (0.95) |
| Treated × Ind. aff. partner employed | | -0.287*** | | -0.413*** |
| | | (-2.74) | | (-2.58) |

Notes: Data from SOEP 1992-2011. Indicated levels of significance are * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, t-statistics based on robust standard errors in parentheses. The table presents the effect of one spouse's entry into unemployment on the level of social participation of both spouses for private and public activities. The regressions in each column and panel are based on the matching difference-in-difference estimator with more than 20,000 couples in the control group and 146 couples in the treatment group and include all conditioning variables listed in table 2.

Table 4: Unemployment and Social Participation – Robustness

| | Simple Mean | | | Factor Analysis | | |
|---|---|---|---|---|---|---|
| | (1) Placebo regression | (2) All plant closures | (3) All reasons for unemployment | (4) Placebo regression | (5) All plant closures | (6) All reasons for unemployment |
| **(a) Public Social Participation** | | | | | | |
| **Directly affected partner** | | | | | | |
| Treated | -0.0421 | -0.0344 | -0.0353** | -0.0754 | -0.0695* | -0.0674*** |
| | (-1.05) | (-1.49) | (-2.44) | (-1.05) | (-1.65) | (-2.66) |
| N | 17417 | 23341 | 23341 | 17417 | 23341 | 23341 |
| $N_{treated}$ | 75 | 362 | 1050 | 75 | 362 | 1050 |
| **Indirectly affected partner** | | | | | | |
| treated | 0.0293 | -0.0430* | -0.0349** | 0.0261 | -0.0701 | -0.0598** |
| | (0.53) | (-1.77) | (-2.54) | (0.29) | (-1.63) | (-2.49) |
| N | 17417 | 23341 | 23341 | 17417 | 23341 | 23341 |
| $N_{treated}$ | 75 | 362 | 1050 | 75 | 362 | 1050 |
| **(b) Private Social Participation** | | | | | | |
| **Directly affected partner** | | | | | | |
| Treated | -0.0228 | 0.0554 | -0.000155 | -0.0334 | 0.0904* | 0.00375 |
| | (-0.45) | (1.61) | (-0.01) | (-0.43) | (1.69) | (0.11) |
| N | 17417 | 23341 | 23341 | 17417 | 23341 | 23341 |
| $N_{treated}$ | 75 | 362 | 1050 | 75 | 362 | 1050 |
| **Indirectly affected partner** | | | | | | |
| Treated | -0.0695 | 0.0309 | -0.0104 | -0.111 | 0.0540 | -0.0112 |
| | (-1.10) | (0.93) | (-0.48) | (-1.16) | (1.05) | (-0.34) |
| N | 17417 | 23341 | 23341 | 17417 | 23341 | 23341 |
| $N_{treated}$ | 75 | 362 | 1050 | 75 | 362 | 1050 |

Notes: Data from SOEP 1992-2011. Indicated levels of significance are * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, t-statistics based on robust standard errors in parentheses. The table presents the effect of one spouse's entry into unemployment on the level of social participation of both spouses for private and public activities. Each cell displays the ATT from a separate regression (including all conditioning variables listed in table 2) based on the matching difference-in-difference estimator. Columns (1) and (4) present the results from a placebo regression in which the treatment is assumed to take place during the previous treatment period. Columns (2) and (5) show the results when all couples that experienced a plant closure (but necessarily an unemployment spell) are included in the treatment group. Columns (3) and (6) display the results when the treatment group includes couples with all reasons for unemployment (not just due to a plant closure).