

# Bowling alone or bowling at all? The effect of unemployment on social participation

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This article examines the impact of unemployment on social participation using German panel data. We find negative and lasting effects for public social activities but also a retreat of individuals into private life. Issues of selection and endogeneity are addressed by using plant closures as exogenous entries into unemployment. Social norms and labour market prospects are shown to be relevant for explaining these findings. Our results advance the understanding of the consequences of unemployment for human well-being, highlight an hitherto unexplored channel through which unemployment influences economic outcomes (via changes in social capital) and point to an alternative explanation of unemployment hysteresis based on access to information.

**Keywords:** unemployment; social participation; plant closure; fixed effects; well-being  
**JEL Classification Numbers:** J64, I31

## 1 Introduction

Experimental sociologists and psychologists have provided ample evidence that unemployment not only causes material hardship due to the associated loss in income, but also enforces the deprivation of social, psychological and non-pecuniary benefits provided by employment.<sup>1</sup> Jahoda (1981, 1982) for example suggests that unemployment implies a loss of five latent functions of employment: (i) time structure; (ii) social

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<sup>1</sup>See, e.g., Warr (2007) for a recent survey of the psychological literature.

contacts; (iii) the experience of social purpose; (iv) status and identity; and (v) regular activities.

Subsequent empirical work has sought to determine the role of unemployment in determining health outcomes (e.g., [Schmitz \(2011\)](#) and [Marcus \(2013\)](#)) or, more generally, individuals' subjective well-being (e.g., [Winkelmann & Winkelmann \(1998\)](#) and [Kassenböhmer & Haisken-DeNew \(2009\)](#)).<sup>2</sup> While the relationship between unemployment and health remains inconclusive in general, there exists a well established negative impact of unemployment on individuals' life satisfaction even after controlling for a large number of other influences. Existing explanations for this negative impact focus on social norms (e.g., [Clark, 2003](#)) or on changes in individuals' time structure (e.g., [Martella & Maass, 2000](#)).

The impact of unemployment on social contacts and activities, however, has mostly been neglected in the economic literature so far. In fact, there is only some evidence from sociologists on how unemployment affects social interactions. In a classical study, for example, [Jahoda et al. \(1974\)](#) observed a weary community life resulting from a plant closure in Marienthal in the 1930s.<sup>3</sup> Yet, analysing the determinants of social participation is important for several reasons. First, social participation is commonly viewed as one of the constitutive elements of human well-being ([Sen, 1992, 2000](#)).<sup>4</sup> Recently, [Stiglitz et al. \(2010\)](#) have assigned a key role for human well-being to both social participation and (un-)employment. Hence, from this perspective, our analysis starts exploring the interrelations among two important domains of human well-being, similar to the analyses of health and education. Second, reduced social activity has been conjectured to be an important driver of the non-monetary costs documented by the life satisfaction literature ([Winkelmann & Winkelmann, 1998](#)). A natural precondition, however, is that unemployment indeed lowers social interactions and participation. Third, the importance of social interactions for economic outcomes has recently been emphasised in the literature on social capital, see, e.g., the seminal book, 'Bowling Alone', by [Putnam \(2000\)](#). In this literature, social capital is generally de-

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<sup>2</sup>See [Frey & Stutzer \(2012\)](#) for a recent survey.

<sup>3</sup>See also the studies by [Creed & Reynolds \(2001\)](#) and [Paul & Batinic \(2010\)](#), which provide tests of Jahoda's latent deprivation model. They find that, in general, employed individuals have better access to the five latent functions than unemployed individuals, including higher levels of social contact. However, these analyses are based on cross-section data with only a few observations implying that they are subject to the usual limitations with this kind of data.

<sup>4</sup>Throughout this paper we follow Sen's account of well-being which is elaborated within the capability approach (e.g., [Sen, 1992](#)). According to this approach, well-being is an inherently multidimensional construct, where dimensions (called functionings) are the beings and doings individuals have reason to value, e.g., being well-nourished, well-sheltered, healthy, happy and participating in social life or appearing in public without shame. The choice set of functionings is called an individuals' capability. By contrast, subjective well-being may reflect many of these achievements, but may also depend on other things (e.g., the frame of reference, experience, custom, adaptation or genetic disposition). Finally, life satisfaction is understood as the cognitive component of subjective well-being ([Diener et al. , 1999](#)).

defined as a stock concept including e.g. friendship or trust, whereas social interactions are part of the process which creates social capital (Glaeser *et al.*, 2002). Furthermore, it is well documented that social contacts and networks play a decisive role in individuals' job search (Montgomery, 1991, Ioannides & Loury, 2004). Hence, analysing the determinants of social participation may help to improve our understanding of the phenomenon of unemployment hysteresis. Yet, a thorough and systematic empirical analysis on the effect of unemployment on social participation is missing so far. To close this gap in the literature is the aim of the present paper.

Using German panel data, we measure social participation by six 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, disco and the like; performing volunteer work (all carried out in public); social gatherings; and helping out friends (both private) as well as participating actively in sports which could be either a private or public activity.<sup>5</sup> As the effect of unemployment on these participation activities is ambiguous a priori, the aim of our analysis is to establish the empirical link and to probe consistency with economic theory and the principal relevance of some possible mechanisms.

In a first step, by relying on fixed-effects methods, we document a significant negative and lasting impact of unemployment on the attendance of cultural events and cinema, pop concerts and the like, a significant positive effect for socialising and helping friends and neighbours but no effects for actively participating in sports and voluntary work. In a second step, however, in order to explicitly address the issue of selection, we also focus on plant closures as arguably more exogenous reason for entry into unemployment. Similar strategies have been used to establish a causal effect of unemployment on subjective well-being (Kassenböhmer & Haisken-DeNew, 2009) and health (Schmitz, 2011).<sup>6</sup> The qualitative results from the first step of our analysis also hold for the group of unemployed due to plant closure. Finally, we investigate whether the unemployed adjust their level of social participation over time. The importance of the length of an unemployment spell has been emphasised by many previous studies in different contexts, e.g., Eisenberg & Lazarsfeld (1938), Jahoda (1979, 1982) and Clark (2006).<sup>7</sup> In general, we find relatively strong short-run effects for some activities (i.e., cinema, helping, socialising; in particular after the first year of entry into unemployment), which however disappear with the duration of the unemployment spell in the case of socialising. By contrast, there is little evidence that unemployed quickly adjust their level of social interaction for other activities such as attending cul-

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<sup>5</sup>See section 3 for a more detailed discussion of these variables.

<sup>6</sup>See also the growing literature on job displacements using administrative data (see, e.g., Sullivan & von Wachter (2009) and Browning & Heinesen (2012)). The main finding from this literature is that job loss due to plant closure increases the overall risk of mortality.

<sup>7</sup>See Clark *et al.* (2008) for a related analysis on adaptation of subjective well-being.

tural events or cinema and helping. Rather, unemployment turns out to have a severe and lasting effect for these activities. Overall, our findings suggest a decline of public social activities and at the same time a retreat of individuals into private life.

The remainder is structured as follows. Section 2 provides a review of the related literature on unemployment and social participation and some conceptual background on how unemployment may affect social participation. Section 3 describes the data and Section 4 our econometric strategy. Section 5 presents our main results and provides several robustness checks. Section 6 discusses the main results. Section 7 concludes.

## 2 Background information on social participation and unemployment

### 2.1 Related literature

Our work is related to a growing literature on the importance of social capital for economic outcomes ([Putnam, 2000](#)). More precisely, social capital, in general, has been found to provide market and non-market returns not only on the individual level, e.g., through higher wages, better employment prospects, higher quality of social relationships, better health ([Glaeser \*et al.\*, 2002](#)), but also on the aggregate or community level. In particular, due to the existence of strong multiplier effects, the stock of social capital may increase growth, judicial efficiency and decrease governmental corruption ([Durlauf & Fafchamps, 2005](#)). Social interactions are typically considered as an investment in order to build up or maintain a certain level of the stock of social capital ([Glaeser \*et al.\*, 2002](#)). More specifically, social interactions measure the frequency of participation in associational activities such as attending cultural and religious events, volunteering or visiting friends and family. [Alesina & La Ferrara \(2000\)](#), for example, find that income inequality and racial and ethnic heterogeneity reduce the propensity to participate in a variety of social activities.<sup>8</sup> Our paper complements this literature by studying the role of unemployment in shaping social participation and thus, ultimately, social capital.

The positive link between our measures of social interactions and the level of social capital can be motivated by the correlations shown in figure 1, which plots average participation levels (for culture and cinema) by year and state against two commonly used measures of social capital, i.e. the level of trusting other people and caution

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<sup>8</sup>See also [Alesina & Giuliano \(2011\)](#) who establish an inverse relationship between family ties and political participation, [Saffer & Lamiraud \(2012\)](#) who examine the effect of hours of work on social participation and [Bauernschuster \*et al.\* \(2014\)](#) who find no significant effect of internet use on several aspects of social capital.

when dealing with strangers, respectively. Higher participation in cultural events, for instance, is associated with both a stronger agreement with the statement that on the whole one can trust people and a stronger disagreement with the statement that one should be careful with stranger before trusting them.<sup>9</sup> Overall, our findings highlight an hitherto unexplored channel through which unemployment influences economic outcomes and public policies, namely by altering the (long-run) level of social capital.

A second strand of literature has emphasised the importance of social activities as a job search mechanism. Indeed, it is well documented that people strongly rely on networks to find a job and that personal contacts and acquaintances play an important role in individuals' job search ([Montgomery, 1991](#), [Ioannides & Loury, 2004](#), [Cingano & Rosolia, 2012](#), [Zenou, 2015](#)). This literature generally distinguishes between strong and weak ties ([Granovetter, 1973, 1983](#)).<sup>10</sup> Weak ties are considered to be more beneficial than strong ties in finding a job due to a weaker overlap in personal networks between any two individuals and thus an increased information set about job openings. While our measures of social activities cannot unambiguously be related to the formal definition of strong and weak ties, there is still some evidence on how participation in specific activities is linked to individuals' social networks: [Lizardo \(2013\)](#), for example, shows that cultural variety (the number of cultural activities individuals engage in, as, e.g., the attendance of cultural events or cinema) increases the likelihood of finding a job via a weak tie. Similarly, [Uhlendorff \(2004\)](#) argues that volunteering activities enlarge individuals' networks and in particular the number of weak ties. By contrast, activities like helping and socialising with family and friends are inherently restricted to contacts with strong ties as acquaintances are ruled out by the design of the survey questions.

Our findings imply a tendency to focus on (or withdraw into) private relationships when becoming unemployed. While this focus on strong ties may be comforting in the short-run, it also clearly limits the access to information associated with a broader and more heterogeneous network and the neglect of alternative sources of information. Hence, according to our results, unemployed individuals may find it more difficult to reenter the labour market due to a lack of available information, which, in turn, points to an alternative explanation of unemployment hysteresis.<sup>11</sup>

Our work also has some connections to the literature on unemployment, subjective well-being and the non-monetary costs associated with job loss. In fact, many studies have conjectured that a large part of the non-monetary costs of unemployment con-

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<sup>9</sup>There are similar patterns for sports and volunteering. For the private activities, however, it is not possible to calculate these correlations due to a lack of data.

<sup>10</sup>According to Granovetter's formal definition, two individuals have a weak tie if the personal networks of these individuals have little or no overlap. By contrast, a tie is strong if the intersection of both networks is large.

<sup>11</sup>Existing explanations focus mainly on the evolution of social norms (see, e.g., [Lindbeck et al. \(1999\)](#)).

sist of a loss of social contacts (e.g., [Winkelmann & Winkelmann, 1998](#)). A natural precondition, however, is that unemployment indeed lowers social interactions and participation. Existing explanations focus on changes in subjective well-being due to status and identity effects. Indirect evidence on this channel is provided by [Clark \(2003\)](#), who considers the effect of changes in social work norms on subjective well-being. He finds that the well-being differential between the employed and the unemployed men in Britain decreases with the level of regional unemployment. Similarly, [Stutzer & Lalive \(2004\)](#) analyse the outcome of a Swiss referendum on the level of unemployment benefits and find that the well-being gap between the employed and the unemployed is increasing with strength of the local work ethic. More recently, [Hetschko et al. \(2014\)](#) find strong positive identity effects by analysing changes in employed and unemployed individuals' subjective well-being due to entry into retirement. Finally, [Winkelmann \(2009\)](#) examines the direct effect of social participation on life satisfaction. He shows that participation in social activities increases individuals' subjective well-being but also that participation itself cannot moderate the drop in life satisfaction resulting from an unemployment experience.

Another strand of literature focuses on the time use of employed and unemployed individuals ([Krueger & Mueller, 2012a,b](#)). The findings of these studies suggest that unemployed individuals indeed spend considerably more time on home production and leisure activities (as, e.g., tv watching and socialising) than the employed.<sup>12</sup> However, despite differing opportunities of time use (due to a larger amount of available leisure time for the unemployed), [Knabe et al. \(2010\)](#) show that both groups, employed and unemployed, experience similar levels of overall positive and negative emotions throughout the day. Hence, the allocation of additional leisure time to more enjoyable activities may offset the misery of the unemployed in terms of emotional well-being. Consistent with these findings, our analysis reveals that unemployment systematically changes the allocation of time to social activities.

Finally, our work is related to sociological work surveyed by [Sonnenberg \(2014\)](#). The main findings from this literature, which is largely cross-sectional quantitative or longitudinal with only few observations, is that unemployment tends to reduce social participation. In her independent work, however, [Sonnenberg \(2014\)](#) also uses German panel data (from 1994-2009) to investigate the effect of unemployment on social participation. Yet, her approach is based on binary response models using fixed thresholds, which implies a huge information loss as the estimator can only use in-

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<sup>12</sup>More precisely, [Krueger & Mueller \(2012b\)](#) analyse the time use of unemployed individuals before and after being reemployed. They find a sharp drop of time spent on home production and leisure-related activities after being reemployed. Moreover, [Krueger & Mueller \(2012a\)](#) analyse cross-country data for 14 countries with a particular focus on the time use of employed and unemployed individuals. Their main finding, among others, is that job search activities vary considerably across countries and that it is positively related to the level of wage dispersion.



dividuals that do have changes in the dependent variables. Consequently, she finds fewer significant effects. By contrast, our analysis is based on more advanced estimation techniques - we use both the linear fixed effects and the recently developed 'BUC' estimator ([Baetschmann \*et al.\*, 2015](#)) - which allow us to exploit much more variation in the dependent variables. Moreover, we explicitly address the role of social norms in explaining our findings and investigate how individuals adapt their levels of participation over time. This in turn allows us to document a much broader and more complete picture of the relationship between unemployment and social participation.

## 2.2 Theoretical considerations

From a conceptual point of view, social participation may be both negatively and positively affected by individual unemployment. According to standard economic theory, the two immediate consequences of unemployment are a negative income effect and additional leisure time. Consequently, as most social activities are associated with expenses of some kind, unemployment is expected to decrease social participation by reducing individuals' disposable income. The strength of this effect, however, may vary with the size of the expenses associated with the respective activity. Also, more costly activities like going to the theatre may be substituted by other less costly activities like meeting or helping friends, thereby increasing the time spent on the latter activities. In addition, as both cheaper and more expensive versions are available for most activities, there exists another margin for adjustments which may moderate the negative effect. For instance, going to your local football pitch or having some friends over tends to be less expensive than going to the opera or inviting friends to a gourmet restaurant. By contrast, having more time available should by tendency increase the frequency of participating in social activities. Indeed, studies on the time use of employed and unemployed individuals, for example, show that unemployed individuals spend more time on leisure activities such as socialising ([Krueger & Mueller, 2012a,b](#)).

A more comprehensive perspective suggests to consider several of the social activities under consideration as substitutes to regular employment, in particular voluntary work or helping out friends. This view is developed in Jahoda's account of the latent functions of work (e.g., [Jahoda \(1981\)](#)), but also in Lancaster's characteristics approach ([Lancaster, 1966a,b](#)). Among other things, these activities provide goals, time structure, self-respect and help to contribute one's share.<sup>13</sup> However, amusement activities like going to the cinema or attending cultural events, for instance, may better be viewed as complements to employment, which, in turn, implies that unemployment should have a negative effect on these activities. In fact, [Jahoda \(1981, p. 189\)](#)

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<sup>13</sup>Note that, since the concrete job characteristics vary among different jobs, a given voluntary activity may still be a substitute for one worker and a complement for another.

notes that '[l]eisure activities, from television to sports to self-improvement, are fine in themselves as a complement to employment, but they are not functional alternatives to work [...]'.<sup>14</sup>

Unemployment may also affect social participation through changes in individual job prospects and the presence of social norms. More precisely, an individual's unemployment spell or, more generally, insecurity related to one's own position in the labour market, may deteriorate future job prospects, as already pointed out by [Eisenberg & Lazarsfeld \(1938\)](#) and, more recently, by [Clark \*et al.\* \(2010\)](#) in the context of life satisfaction research. The deterioration of future job prospects, in turn, may alter social participation through either a general discouragement effect ([Jahoda \*et al.\* , 1974](#)) or, alternatively, through an increased focus on improving one's own situation ([Shah \*et al.\* , 2012](#)). In the first case, social participation may appear to be no longer worthwhile as a gloomy employment outlook causes individuals to be more pessimistic about their life in general.<sup>14</sup> In the second case, the engagement in specific problems absorbs time and resources and, moreover, results in tunneling to improve the situation ([Mani \*et al.\* , 2013](#)). While tunneling may be associated with a focus dividend (e.g. a faster return to employment), focussing itself, however, is found to come at the cost of neglecting other things, which fall outside the tunnel—as social participation in our case ([Shah \*et al.\* , 2012](#)). Similarly, individuals' perception of their own failure and the presence of social norms ([Lindbeck \*et al.\* , 1999](#)) may reduce activities like culture and cinema as unemployed individuals may feel ashamed and thus avoid appearances in public, whereas the effect on activities like meeting close friends is ambiguous a priori as unemployed individuals may also seek comfort.

Finally, note that the previous literature has emphasized two alternative points of view: Social participation can either be considered as an investment to build up or maintain a stock of social capital [Alesina & La Ferrara \(2000\)](#), [Glaeser \*et al.\* \(2002\)](#) or as a consumption activity [Saffer & Lamiraud \(2012\)](#). In the present paper, however, we assume that social activities are primarily carried out with others and that the purpose of participating in these activities is to get connected to other individuals in the real world ([Putnam, 2000](#)). For example, individuals are assumed to invest time in informal conversation when attending cultural events, going to the movies or frequenting bars, but they may also invest time in more formal engagement such as voluntary work.

Altogether, there exist many different channels through which unemployment may affect social participation and the overall effect is a priori not only ambiguous but may also depend on the specific activity under consideration.

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<sup>14</sup>In fact, [Jahoda \*et al.\* \(1974\)](#) use job prospects to classify unemployed individuals according to different categories. Her classification suggests that only 'the unbroken' have hope and plans for the future and are still 'active'—compared to 'the apathetic' or 'the in despair'.



### 3 Data

The empirical analysis uses data from the German Socio-Economic Panel (SOEP, v30), which is a representative longitudinal study of private households in Germany with annually about 20,000 participating individuals, see, e.g., [Wagner et al. \(2007\)](#).<sup>15</sup>

Our sample includes individuals aged 21 to 64 who are living in Germany. Particularly relevant to this study are the information on the reasons for a job termination (including for example own resignation, dismissal, plant closure, and end of a temporary job) and the frequencies of participating in social activities. As the question on job termination is not asked consistently before 1991 and as respondents could not check ‘plant closure’ in 1999 and 2000, we only use data from 1991 to 2011 and exclude the observations from 1999 and 2000 unless noted otherwise. Moreover, we define six dependent variables: The frequency of attending cultural events such as concerts, theatre, lectures, etc. (*culture*); attending cinema, pop music concerts, dancing, disco, sports events (*cinema*); participating actively in sports (*sports*); attending social gatherings (*socialising*); helping out friends (*helping*) and performing volunteer work (*volunteer*).<sup>16</sup> These activities represent both constitutive elements of social participation and investments in social capital (e.g., [Alesina & La Ferrara, 2000](#)).<sup>17</sup> For the purpose of our analysis, the activities are grouped according to whether they are primarily carried out in the private or the public sphere. More precisely, the variables cinema, culture and volunteer capture both informal (cinema and culture) and formal (volunteer) aspects of connecting individuals in the public sphere. By contrast, the variables socialising and helping capture essentially informal dimensions of social participation which take place in the private sphere. Finally, we hesitate to classify the variable sports as being clearly public or private since sports may incorporate both individual sport at home as well as participating in team sport.

Table 1 shows our dependent variables and the waves in which information on the respective activities have been gathered. For each dependent variable we restrict the

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<sup>15</sup>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](mailto:john@PanelWhiz.eu)). See [Hahn & Haisken-DeNew \(2013\)](#) and [Haisken-DeNew & Hahn \(2010\)](#) for details. The PanelWhiz generated DO file to retrieve the data used here is available from me upon request. Any data or computational errors in this paper are our own.

<sup>16</sup>Note that there are also three visiting variables measuring the frequency of visiting family members and relatives, neighbours and attending sport events. As these variables are only asked in five years, however, we cannot use them in our empirical analysis due to the small number of observations available. Similarly, the question on the number of close friends is only asked in three waves. Finally, the SOEP also provides information on political activities. A closer examination on how political involvement affects social participation, however, is left for future research (see, e.g., [Alesina & Giuliano \(2011\)](#) for a related analysis).

<sup>17</sup>Hence, even though our motivating evidence refers to the loss of social contacts at the workplace, the definition of our dependent variables allow us to consider a much more general framework as each of the social activities under consideration may not only be undertaken with co-workers but also with friends, family or peers.

corresponding sample to the available number of waves. 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’). In some instances and years, however, a 5-point scale (with an additional category ‘daily’) is used. Yet, the exact wording of the respective questionnaires differs in these cases so that the comparability and consistency of the responses compared to the 4-point-scale is doubtful.<sup>18</sup>

Figure 2 illustrates the distributions of our dependent variables. While some activities are carried out frequently and distributions are thus left-skewed (e.g., attending social gatherings), others are skewed to the right (e.g., volunteering). Yet other activities are exercised either very often or not at all (e.g., sports) whereas some exhibit a mode of seldom (e.g., cinema). Summary statistics can be found in Table 2. Moreover, figure 3 shows the time path of average levels of participation of employed individuals around the transition to unemployment.<sup>19</sup> More precisely, we denote by  $t = 1$  the point in time at which the first interview after entering unemployment takes place, whereas the last interview before unemployment is conducted in  $t = -1$ . Hence, entry into unemployment occurs between  $t = -1$  and  $t = 1$  (the event of unemployment is denoted by  $t = 0$ ) with the respective time interval being approximately one year.

Two findings are noteworthy. First, despite having on average more leisure (i.e. non-working) time upon entering unemployment, individuals report lower average frequencies of attending cinema, pop concerts and the like. By contrast, there is an increase in socialising and helping whereas no entry effects can be observed for volunteering, attending cultural events and participating in sports. Second, average participation levels tend to decrease over time for some activities (attending cultural events, cinema, participation in sports and socialising) while there is no change in others (voluntary work, helping). Hence, on the basis of these descriptive findings, unemployment tends to lower social participation consistent with the hypothesis put forward by the sociological literature.<sup>20</sup> However, these patterns may originate from confounding factors, such as age, family status or unobserved heterogeneity. The empirical strategy allowing us to address these issues is outlined in the next section.

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<sup>18</sup>Note that some differences are obvious only from the German questionnaires.

<sup>19</sup>Clearly, we interpret the ordinal variables as being cardinal. The descriptive statistics, however, are only used for illustrative purposes.

<sup>20</sup>Note further that the descriptive patterns, in general, do not provide any evidence in favour of anticipation effects as changes in the levels of social participation do kick in after entry into unemployment. Lead specifications using fixed effects methods confirm these patterns as we do not find any systematic and significant effects (results not shown).

## 4 Empirical strategy

In order to empirically investigate the link between unemployment and social participation, we assume that the frequency of participation in a specific activity for individual  $i$  at date  $t$ ,  $Y_{it}$ , can be modeled as:

$$Y_{it} = \gamma_1 UE_{it} + \gamma_2 OLF_{it} + \beta' x_{it} + \mu_i + \mu_t + \epsilon_{it} \quad (1)$$

where  $UE_{it}$  ( $OLF_{it}$ ) is a dummy variable which equals one if individual  $i$  at date  $t$  is unemployed (out of labour force) and zero otherwise. In addition we add a set of standard socio-demographic and economic characteristics of individuals  $x_{it}$ , such as age, health status (i.e. the individual degree of work disability) and education as well as person and time fixed effects  $\mu_i$ ,  $\mu_t$ . Note that we do not control for income and leisure time in our baseline specifications, as doing so would give rise to a ‘bad control’ problem, see [Angrist & Pischke \(2009, ch.3.2.3\)](#) for a thorough discussion of this issue.<sup>21</sup> Equation (1) is referred to as our baseline specification and serves to illustrate some general patterns regarding the impact of unemployment on social participation. A priori, as has been discussed in section 2.2, the sign of  $\gamma_1$  is ambiguous.

In a second step, we explicitly address issues of selection and endogeneity. For example, a low level of social participation may increase the duration of unemployment spells, as both job search activities of the unemployed and actually finding a new job in many cases critically depend on personal contacts and information gathered from friends or acquaintances (see, e.g., [Montgomery \(1991\)](#) and [Granovetter \(2005\)](#)). Consequently, longer unemployment spells may imply a lower average frequency of social interactions among the unemployed. Furthermore, as information on the level of social participation are only available at discrete points in time (e.g., before and after the day of the job loss), it may well be the case that an unobservable individual shock lowers social participation and thus individuals’ performance on the job. Individuals may then lose their job due to a deterioration of social skills. Hence, addressing these issues requires an exogenous reason for unemployment, especially one that is not related to the individual frequency of participating in various social activities. To do so, we follow [Kassenböhmer & Haisken-DeNew \(2009\)](#) and [Schmitz \(2011\)](#) and divide the unemployed into two subgroups using information on the reason for a job termination and an individuals’ labour force status for the current year (i.e. working, being unemployed or out of labour force): Those who have recently lost their job due to plant closure and all other unemployed. Hence, our second model to be estimated is

$$Y_{it} = \gamma_1 UEPC_{it} + \gamma_2 UEO_{it} + \gamma_3 OLF_{it} + \beta' x_{it} + \mu_i + \mu_t + \epsilon_{it} \quad (2)$$

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<sup>21</sup>We do, however, further investigate the income channel in section 6.

where  $UEPC_{it}$  ( $UEO_{it}$ ) is a dummy variable which equals one if individual  $i$  is unemployed in year  $t$  due to plant closure (other reasons) and zero otherwise. As unemployment due to plant closure can sensibly be considered to be beyond an individuals' reach,  $\gamma_1$  identifies an effect of unemployment on participating in the respective activity that is arguably less prone to selection issues and the problem of reversed causality. More precisely,  $\gamma_1$  should be interpreted as an average effect of entry into unemployment observed from one survey period to the next. Note, however, that some (very risk-averse) people may never experience a plant closure, e.g., if they selected into the public sector (a plant which cannot be closed), while others may search for a new job as soon as they become aware of a possible closure. In this case, the plant closure itself 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 & Haiken-DeNew, 2009, p.460). The presence of such mechanisms would imply that we underestimate the treatment effect, if those individuals which anticipate a plant closure exhibited the larger change in social participation (e.g., a drop in participating in cultural activities, the intuition being a stronger stigma effect). The fact that anticipation results in underestimation of treatment effects has recently been emphasised by Malani & Reif (2015).

Finally, we investigate whether the duration of unemployment causes individuals to adjust their patterns of social participation. To do so, we use the framework suggested by Clark *et al.* (2008) and partition the unemployed according to their 'exposure time'. Our third model can thus be written as

$$Y_{it} = \gamma_1 UE_{it} + \gamma_2 UE_{it-1} + \gamma_3 UE_{it-2} + \gamma_4 UE_{it-3} + \gamma_5 OLF_{it} + \beta' x_{it} + \mu_i + \mu_t + \epsilon_{it} \quad (3)$$

where  $UE_{it}$  is a dummy variable which is equal to one if individual  $i$  is unemployed in  $t$ , but was observed to be employed in  $t - 1$ . Similarly,  $UE_{it-1}$  equals one if  $i$  is unemployed in both the current and the previous period but was employed in  $t - 2$ . Finally,  $UE_{it-3}$  equals one if  $i$  is continuously observed unemployed for at least three years, but was observed to be employed before. This set-up allows us to carry out simple tests on how individuals adjust their patterns of social participation to unemployment. Specifically, if there is no adjustment, so that unemployment has a detrimental effect on individuals' morale, paralyzes or excludes individuals from society, then we would expect all of the values of  $\gamma_i$  ( $i = 1, \dots, 4$ ) to take roughly the same negative value. However, many of our social activities under consideration are (at least partially) substitutes for conventional employment. Hence, if individuals wanted to improve their situation they could reasonably adjust and increase specific social activities, such as volunteering or helping. In this case, there is adjustment and later values of  $\gamma_i$  will be less negative or even insignificant. Note that we use data

from 1984-2011 and drop those individuals whose entry into unemployment is not observed throughout this time period.<sup>22</sup>

From a methodological point of view, it is important to note that this kind of (adaptation) analysis may generally suffer from some selection, since individuals may exit unemployment not completely at random. However, if leaving unemployment results from factors which are essentially stable over time, e.g., due to specific personality traits or other unobserved differences among individuals, a fixed effects strategy accounts for these factors. If the selection is driven by other factors, the direction of the bias remains unclear. Consider, e.g., the attendance of cultural events or cinema: On the one hand individuals who suffer more from unemployment (e.g., if they are more ashamed) may have both a larger drop in social participation and a stronger incentive to find a new job, implying that the average change in participation is less negative in later periods of unemployment. On the other hand individuals with a larger decrease in social participation in period one may seclude themselves from a key source of information about vacancies, implying an even more negative average level of social participation in later periods. Put differently, people who experience a one-year unemployment spell may be systematically different from people who experience a spell of, say, two or more years (even though both may have entered unemployment via a plant closure). Accounting for this problem in the analysis requires an instrument for the duration of unemployment, which is beyond the scope of the present study.<sup>23</sup> A more thorough analysis of this issue would be an interesting topic for future research. In section 5.2, however, we analyse the robustness of our findings by additionally taking into account the total length of an experienced unemployment spell.

In our baseline specifications, we estimate the models linearly, taking  $Y_{it}$  as a continuous variable. This allows us to control for unobserved individual fixed effects which is important in our framework, since personality traits (e.g., being an extrovert) may reasonably affect the participation in social activities. In robustness checks, however, we also estimate ordinal fixed effects models using the recently implemented BUC estimator (Baetschmann *et al.*, 2015). Consistent with the findings of Ferrer-i-Carbonell & Frijters (2004) for life satisfaction, we show that the results of both estimation methods, linear fixed effects and BUC, are very similar (see section 5.2).

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<sup>22</sup>Effectively used in the estimation are only those years in which the dependent variables are collected. However, in constructing the  $UE_{it-j}$ , ( $j = 1, \dots, 4$ ), we also exploit information from the years in between.

<sup>23</sup>See Schmiedery *et al.* (2013) for a first attempt in this direction.

## 5 Empirical results

### 5.1 Baseline

Table 3 provides the multivariate benchmark results for the linear fixed effects estimator. The first row in each table shows that the coefficient of unemployment is significant and negative for attending cultural events and cinema, significant and positive for socialising and helping whereas there is no significant effect for actively participating in sports and voluntary work. A similar pattern can also be observed for individuals that are out of labour force (with an additional significantly negative effect for sports).

Although unemployment is the most interesting variable in our study, we briefly discuss the results of the other covariates. Most of them are broadly in line with previous findings (see, e.g., [Alesina & La Ferrara \(2000\)](#)). Social participation is increasing with individuals' health status (measured by an individuals' degree of work disability)<sup>24</sup>, consistent with basic economic principles. By contrast, the presence of a care-needing person in a household has a strong negative effect. Individual shocks such as child birth reduce participation whereas separation or divorce tend to increase participation (except for volunteering). Finally, being married and having children decreases most of the social activities while education also tends to decrease participation, though mostly its coefficients are insignificant.<sup>25</sup>

Table 4 reports the main set of results when the reason of being unemployed is explicitly taken into account. The findings from these estimations generally confirm the negative impact of unemployment on the frequency of attending cultural events and cinema and the positive effects for socialising and helping friends and neighbours. Moreover, we do not find a statistical significant effects for volunteering and participating actively in sports.

What can we say about the magnitude of these effects? The size of the effect of being unemployed due to plant closure is on average about 80% of the negative effect resulting from birth of a child, which is probably one of the most dramatic and time consuming changes in a young adult's life. In case of helping friends and neighbours, for example, the effect is even larger (equal to  $0.0874/0.0856 = 1.021$ ). Similarly, the effect of unemployment is on average about 60% of the negative effect resulting from a care needing person in the household (and in particular large for the frequency of attending cinema, i.e.  $0.0746/0.0779 = 0.958$ ). These findings illustrate that the effect of unemployment on social participation is quite substantial, which, in turn, points to potentially large costs of unemployment in the first year after entry.

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<sup>24</sup>One particular advantage of this health measure is that unemployment itself should not affect the degree of an individuals' work disability.

<sup>25</sup>Note that we also experimented with specifications including lagged measures of household income and individual leisure time which, however, yielded qualitatively similar results.



Finally, the results from our adjustment analysis are summarised in figure 4. The underlying coefficients can be found in table B.1 of Appendix B. For some activities we find a strong positive short-run effect (socialising and helping) which is increasing with the duration of unemployment for the activity helping friends and neighbours, whereas it becomes insignificant after four years for socialising. Consequently, we cannot reject adjustment to unemployment for the latter activity. Furthermore, we do not find any significant effects for volunteering and actively participating in sports. This latter result (for sports) stands in contrast to the descriptive findings highlighted in figure 3 and thus points to the importance of accounting for observed and unobserved heterogeneity in the estimations. However, when considering the attendance of cultural events and cinema, we find a negative effect of unemployment on social participation (though not statistically significant for culture in the first year after entering unemployment) which tends to become even stronger with the duration of the unemployment spell. In these cases, there is little evidence of quick adjustment to unemployment. Rather, ‘unemployment starts off bad and pretty much stays bad’, consistent with recent findings in the literature on subjective well-being (see Clark (2006) and Clark *et al.* (2008)). A possible and plausible explanations for the finding that there is no adjustment for those public activities, which tend to be costly, is the presence of a precautionary saving motive.<sup>26</sup>

Overall, our findings suggest that social participation is not one single homogeneous activity. Rather, our results reveal that unemployment has a differential influence on specific social activities. More precisely, individuals reduce their participation in public social activities (a lower frequency of attending cultural events and cinema) and escape into private networks (an increased frequency of socialising and helping friends and neighbours). Put differently, there is a shift towards relying on strong ties and private activities whereas weak ties and public activities are neglected which, importantly, implies an overall deterioration of social capital.

## 5.2 Sensitivity checks

We consider several sensitivity checks in order to demonstrate that our findings are robust to assumptions and choices made.

*Estimator.* In a first step, we check the robustness with respect to the estimator. Specifically, accounting for the ordinal scale of the dependent variables, table A.1 in Appendix A present results from the ‘Blow-up and Cluster’ (BUC) fixed effects

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<sup>26</sup>Precautionary saving is additional saving that results from uncertainty about households’ anticipated future income, e.g., due to unemployment, and which, in turn, reduces or holds down consumption spending. Hence, according to the precautionary saving motive, we would expect a lower frequency of participating in costly (public) activities both before entry into unemployment and during an unemployment spell. While we cannot explicitly control for these effects in our adaptation analysis, we do not, however, find any evidence in favour of such anticipation effects.

ordered logit estimator suggested by Baetschmann *et al.* (2015) for each of the three models outlined in section 4.<sup>27</sup> Our main results are generally confirmed implying that, once individual effects are taken into account, using the linear fixed effects or the BUC estimator does not make much difference, as indicated by Ferrer-i-Carbonell & Frijters (2004) in life satisfaction research.

*Sample.* We check for gender-specific effects by including interaction terms of gender and unemployment. As panel (a) of table A.2 shows, our baseline results do not change much. Specifically, we do not find significant differences in social participation for men and women. Hence, men do not seem to be more negatively affected by unemployment than women, implying that potentially different gender roles within a household may not lead to different patterns of social participation. Similarly, we check whether our results are driven by regional difference between East and West Germany. Results for the different activities turn out to be mixed. Specifically, we find (see panel (b) of table A.2) that unemployed individuals from West Germany have a significantly lower level of participation in sports whereas there is no significant difference for the remaining activities. However, our main findings are basically unaltered.

*Private vs. public activities.* As we explicitly distinguish between private and public social activities, we also consider two indices (one for private and one for public social activities) in order to increase statistical power.<sup>28</sup> Both indices are created by aggregating 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. More precisely, they are assumed to equal the simple mean of the points given to the selected questions with all components having the same weight. Hence, our indices take on values from 1 to 4. However, we also apply principal component analysis as an alternative method to compile our indices.<sup>29</sup> Panel (a) of table A.3 shows that our main results equally hold for both indices. Specifically, we find a significant negative effect of unemployment on public activities whereas the effect on private activities is significantly positive. Importantly, table A.3 panel (b) clearly confirms these results for short-term unemployed (i.e. unemployed who lost their job due to a plant closure and who are unemployed for 12 month or less; see the next paragraph). The statistical power of the social participation indices can also be used to scrutinise potential

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<sup>27</sup>See Riedl & Geishecker (2014) for a recent overview over different ordered logit estimation approaches. Their simulation results suggest that the BUC estimator outperforms alternative approaches in terms of consistency and efficiency, in particular for a small number of response categories (as in the present framework).

<sup>28</sup>One may also aggregate the social activities into one overall measure of social participation. However, as we find different qualitative effects of unemployment depending on the specific activity under consideration, such an overall measure is likely to overlay different (offsetting) effects and may thus produce insignificant results. We leave a more thorough investigation of this case for future research.

<sup>29</sup>Interestingly, the factor analysis suggests two underlying factors according to the eigenvalue criterion. Moreover, all items load on the respective factor as expected. Specifically, culture, cinema and volunteer do only load on the first factor whereas socialising and helping only load on the second factor.

behavioural adjustments for prolonging unemployment. Figure 5 suggests a lasting negative (positive) effect for public (private) social activities, irrespective of the way the index is compiled, and thus lends further support to our previous findings. Table B.1 panel (b) provides the underlying results in more detail.<sup>30</sup>

*Selection Issues.* We have focussed on unemployment due to plant closure to address problems of selection and endogeneity in the relationship between unemployment and the frequency of social participation (equation (2)). While a plant closure is largely exogenous to the individual worker, one may still argue that some individuals reenter the labour market more quickly than others in the time between job loss and the subsequent interview. To address this issue we use information on the length of the spell and the time of the interview to exclude those unemployed individuals due to plant closure who have been unemployed for more than one year. This leaves us with an average of 316 plant closure observations whose unemployment spell has been lasting for 5.6 month on average. This group of short term unemployed individuals is assuredly less prone to issues of selection. Panel (c) of table A.2 shows that our main results equally hold for this subgroup (even though there is a quantitative effect due to the loss of approximately 25% of the plant closure observations).

In order to check whether the findings from our adjustment analysis are merely an artefact of the selection *out of* unemployment, we estimate a model that explicitly takes into account the total length of an experienced unemployment spell. More precisely, we interact the unemployment variables in equation (3) with the length of an individual unemployment spell and, to increase statistical power, focus on the participation indices as dependent variables. This allows us to analyse subsamples of unemployed individuals that share the number of years they stay unemployed as a common characteristic and thereby to reveal potential differences in the change of social activities for a given length of an unemployment spell. In general, based on descriptive evidence (not shown), individuals who experience longer unemployment spells are found to report lower *levels* of social participation—also before entry into unemployment. Panel (c) of table B.1 provides the estimation results for unemployed individuals in their first and, if applicable, second year of their unemployment spell, separately for spells that last one year and spells lasting two or three years. Importantly, the qualitative results for both groups turn out to be quite similar across all specifications.<sup>31</sup> In fact, the hypothesis of equal coefficients in the first year after entry into unemployment cannot be rejected for public social activities at conventional

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<sup>30</sup>Note that despite the increased statistical power we did not find any evidence for gender- or region-specific effects (not shown).

<sup>31</sup>In these estimations, we only use individuals for which we observe an employment status in the periods before and after the unemployment spell. Note further that we have also experimented with alternative group specifications and the qualitative results are very similar. However, for the group of unemployed individuals with longer unemployment spells (i.e., more than three years), the coefficients turn out to be insignificant as there are only very few observations.

levels of significance. For private activities, however, the corresponding coefficients turn out to be insignificant and smaller as compared to the second group. A possible explanation for this finding (besides the presence of rather small cell sizes) might be a relatively high share of voluntary or search unemployment within this group of individuals.<sup>32</sup> In sum, on the basis of these robustness checks, we conclude that there is not much evidence in favor of strong selection effects out of unemployment.

*Multiple Hypotheses.* We use the same dataset to simultaneously test multiple hypotheses. More precisely, we address a family of six hypotheses in the analysis of single outcomes, i.e., our measures of social participation, and two hypotheses in the analysis of indices, i.e., private and public social activities. This procedure may generally increase the risk of false positives (an increasing number of type I errors). However, as the number of tested hypotheses is relatively small compared to other research that is aware of multiple hypotheses testing (MHT), we expect the problem of MHT not to be severe.<sup>33</sup> Still, to probe the robustness of our results, we follow the recommendation outlined in [Anderson \(2008\)](#) to construct respectively use indices and calculate adjusted  $p$ -values. More precisely, using the most conservative calculation method, the Bonferroni correction, and controlling for the so called family-wise error rate gives the following adjusted  $p$ -values for the coefficients of plant closure-induced entries into unemployment for the models with indices in Table A.3 (a): 0.038, 0.011, 0.006 and 0.017 (the corresponding unadjusted  $p$ -values are 0.019, 0.006, 0.003, 0.008). Consequently, all coefficients are still significant at  $p < .05$ . However, [Anderson \(2008\)](#) also suggests to control for the false discovery rate for families of single outcomes. Using, for instance, the approach of [Benjamini et al. \(2006\)](#) yields the following adjusted  $p$ -values for the plant closure coefficients of the models in table 4: 0.089, 0.089, 0.129, 0.089, 0.234, 0.089 (the corresponding unadjusted  $p$ -values are 0.076, 0.021, 0.194, 0.027, 0.567 and 0.044).<sup>34</sup> Clearly, all the coefficients which are significant in the baseline model remain significant at  $p < 0.1$ . Hence, we conclude that MHT is not a major issue for our analysis.

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<sup>32</sup>A further investigation of these (differential) effects with more precise data would be an interesting topic for future research.

<sup>33</sup>In the early intervention studies, for instance, it is common to test dozens or even hundreds of outcomes. Therefore, we only check the robustness of our results with respect to some of the possible and advisable refinements. In general, the literature provides different approaches to handle MHT (see, e.g., [Goemans & Solari \(2014\)](#)). One approach is to reduce the number of hypotheses by dropping some of them on theoretical grounds or by aggregating them into indices. A second approach is to control either the family-wise error rate or the false discovery rate and to adjust  $p$ -values according to different calculation methods.

<sup>34</sup>The values are calculated using the Stata code provided by [Anderson \(2008\)](#) on his website.

## 6 Discussion of results

Our empirical analysis shows that unemployment has a significant negative effect on attending cultural events and cinema, a significant positive effect for socialising and helping whereas there is no significant effect for actively participating in sports and voluntary work. But how can the differentiated unemployment effect be explained? Standard economic theory suggests that unemployed individuals suffer from a loss in income but are compensated by additional leisure time. Hence, these two channels may play an important role in determining the overall effect of unemployment on social participation. However, recent research has also emphasised additional mechanisms. The following subsection investigates both the income channel as well as two further hypotheses.

### 6.1 Explanations

*Income.* Throughout the previous analyses we excluded income as an explanatory variable due to the possibility of the ‘bad control’ problem, as outlined above. However, as income may undoubtedly be a crucial determinant of social participation, we now study its influence more carefully by adding household income to our main specifications. Table 5 presents the estimation results from our main models when income is included as an additional control variable. As can be inferred from table 5, a higher income increases the frequency of attending cultural events, cinema and active participation in sports whereas it decreases the frequency of helping neighbours and friends. Moreover, we do not find a significant effect for socialising and volunteering. These findings hold for both the baseline model and the for the group of unemployed due to plant closure and are broadly in line with economic intuition and theoretical expectations. Importantly, however, our main qualitative findings remain unchanged when including income as an additional control variable, leaving room for additional explanations. Moreover, the quantitative similarity between the plant-closure results with and without income as a control variable suggest that the ‘bad control’ problem may not be too serious which, in turn, lends support to the credibility of this section’s analysis.<sup>35</sup>

*Further explanations.* We now investigate both the importance of labor market prospects and social norms in determining social participation. To do so, we construct a dummy variable,  $badpr_{it}$ , which captures future labour market prospect of the employed and unemployed (see Clark *et al.* (2010) for more information). We expect a significant

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<sup>35</sup>Indeed, there are some reasons which may attenuate the ‘bad control’ problem in our analysis. Specifically, a household may rely on alternative income sources to moderate the income shock resulting from an unemployment spell, such as the labour income of the spouse or capital income. Additionally, the monetary shock may be cushioned by social transfers due to relatively large replacement rates in the first year after unemployment.

negative effect resulting from bad prospects as a greater focus on job search activities or insecurity related to one's current job implies less available resources for alternative activities or as individuals might simply generally be discouraged or more pessimistic about their life (as has been argued in section 2.2). In order to test the importance of social norms, the effect of others' unemployment, for one's own social participation, we follow the approach in Clark (2003). Specifically, we augment the benchmark model (equation (1)) with both the regional unemployment rate and an interaction term with the individual unemployment indicator. The distinct feature of our analysis is that we use highly detailed information on unemployment rates at the German county level, i.e. 403 'Kreise', whereas previous studies typically focus on unemployment rates of the 16 states (Clark *et al.*, 2010).<sup>36</sup> We estimate the following model:

$$Y_{it} = \gamma_1 UE_{it} + \gamma_2 OLF_{it} + \gamma_3 uerate_{st} + \gamma_4 UE_{it} \times uerate_{st} + \gamma_5 OLF_{it} \times uerate_{st} + \gamma_6 badpr_{it} + \beta' x_{it} + \mu_i + \mu_t + \epsilon_{it} \quad (4)$$

where  $uerate_{st}$  is the local unemployment rate of county  $s$  in period  $t$ . In addition, we also control for the respective local GDP per capita and individual labour market prospects. As these information are only available from 1998, however, we effectively use data from 1998-2011 in the analysis. Note that controlling for labour market prospects is important in this framework as a higher local unemployment rate may not only indicate a potential stigma effect but also mirror a decline in future labour market opportunities.

Estimation results for this model are illustrated in figure 6, which plots the social participation differential between employed and unemployed individuals for different levels of county unemployment rates. The standard errors in the underlying regressions are clustered by county and wave (two-way clustering), as regional unemployment and GDP per capita are aggregated at a higher level than is the dependent variable and clusters are non-nested (see, e.g., Cameron & Miller (2015)). As can be inferred from figure 6 (a), others' unemployment does seem to matter for the level of social participation of the unemployed. Indeed, there is a statistical significant positive interaction term for cinema and sports. Furthermore, such a social norm effect turns out to be offsetting for reasonable unemployment rates (for culture, cinema and sports), i.e. for rates around five to ten percentage points above the average level (which roughly equals ten percent). Consequently, we find both statistically and economically significant effects. Moreover, there is some evidence in favour of a negative effect resulting from bad prospects (cinema and socialising) whereas bad prospects

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<sup>36</sup>Our analysis is conducted using the service of SOEPre mote, as we exploit particular confidential data. County-level data (unemployment rates and GDP per capita) are taken from the INKAR database, available at [www.inkar.de](http://www.inkar.de). See also Kunze & Suppa (2016) for a recent discussion of the social norm effect of unemployment.



tend to increase volunteering, which can be considered as a reasonable substitute to regular employment (see table B.2 of Appendix B). Figure 6 (b) illustrates these results for the social participation indices and confirms the norm-sensitivity of the unemployment effect only for *public* social activities. The underlying results in table B.2 (b) exhibit a significant positive coefficient of the interaction term only for public social activities, but irrespective of the construction method of the indices.

Summarising, each of the two complementary mechanisms outlined above turns out to be relevant for explaining or moderating the relationship between unemployment and social participation (at least for some of the activities). However, as the negative conditional effect cannot fully be explained, other channels, which could not be tested due to data limitation, may also contribute to account for our findings. Likely candidates are a lack of time structure, a precautionary saving motive or price differentials between areas with high/low unemployment.

## 6.2 Complementary evidence

The aim of this subsection is to provide some complementary evidence in order to facilitate a better understanding of our main results.

Are unemployed individuals generally discouraged, more pessimistic or more focussed on their own situation due to bad labour market prospects as we have argued in the previous section? Jahoda *et al.* (1974) already observed the following: ‘During the summer we used to go to walks, and all those dances! Now I don’t feel like going out anymore.’, p. 36, and ‘I used to read a lot, I knew most books in the library. Now I read less. God knows, we have other problems these days!’, p. 39. We now provide additional evidence in favour of these channels. Specifically, respondents in the SOEP are asked about their worries concerning a broad number of alternative topics, including the general and one’s own economic situation, one’s own health, environmental protection, peace, and crime (possible answers are ‘Very concerned’, ‘Somewhat concerned’ and ‘Not concerned at all’). If reduced social participation results from a general discouragement, we should observe increased worries across various domains for unemployed individuals. By contrast, if individuals are indeed more focussed on their own situation, we expect unemployment to have a significant positive impact only on the degree of worrying about the economic situation. Results from table 6 suggest that the latter is indeed true for both the general and one’s own economic situation (and also independent of the reason of unemployment). Moreover, these positive effects are substantial and significantly larger for the unemployed due to plant closure. This finding points to a possible shock effect resulting from an unexpected job loss. Interestingly, there is no effect for other worries such as worries about the environment or peace which rejects a general discouragement or pessimism effect. However, unem-

ployed individuals due to plant closure report to be significantly less worried about their health relative to other unemployed, who are even more concerned than the employed. We attribute this effect to a possible crowding out of other worries as those about the (own) economic situation are particularly strong. In sum, this evidence lends further support to our hypotheses that individuals are pretty much focussed on their own economic situation which may in turn lead to a neglect of other aspects of life such as social participation.

## 7 Concluding Remarks

This paper is the first to provide systematic evidence on the link between unemployment and social participation. Using German panel data, we find negative and lasting effects of unemployment on social participation for public activities but also a retreat of individuals into private life. We address issues of selection and endogeneity by focussing on plant closures as exogenous reason for unemployment and find significant effects for several social activities, such as the attendance of cultural events, cinema and concerts as well as the frequency of socialising and helping friends and neighbours. Moreover, we cannot rule out that individuals adjust their level of social participation to unemployment for some activities (i.e. socialising), whereas unemployment has a significant positive and lasting effect for helping friends and neighbours but a negative effect for other activities (attending cultural events or cinema).

Several non-rivaling explanations for these findings are possible, e.g., the violation of social norms and individuals' perception of own failure or an increased focus on one's own situation due to the deterioration of future job prospects. Tests of these explanations demonstrate that each of these channels turns out to be important to some degree. However, there may be additional mechanisms that could not be tested due to data limitations, e.g., a lack of time structure. Furthermore, we cannot distinguish between a precautionary saving motive and possible complementarities for the amusement activities (i.e. attending cultural events and cinema). We leave a further examination of these effects for future research.

Our analysis yields the following important policy recommendation: As unemployed individuals tend to withdraw into private social relations, an adequate response consists of active labour market policies supporting the unemployed in retaining their social networks, in their search process and, importantly, in providing them with crucial information.

We consider our paper to be a first step towards a more systematic analysis of the determinants of social participation. Important issues for future research include, e.g., a further investigation of the interaction between unemployment and political participation (see [Alesina & Giuliano \(2011\)](#)), or of possible interaction and spillover

effects of unemployment on the social participation of other family members.

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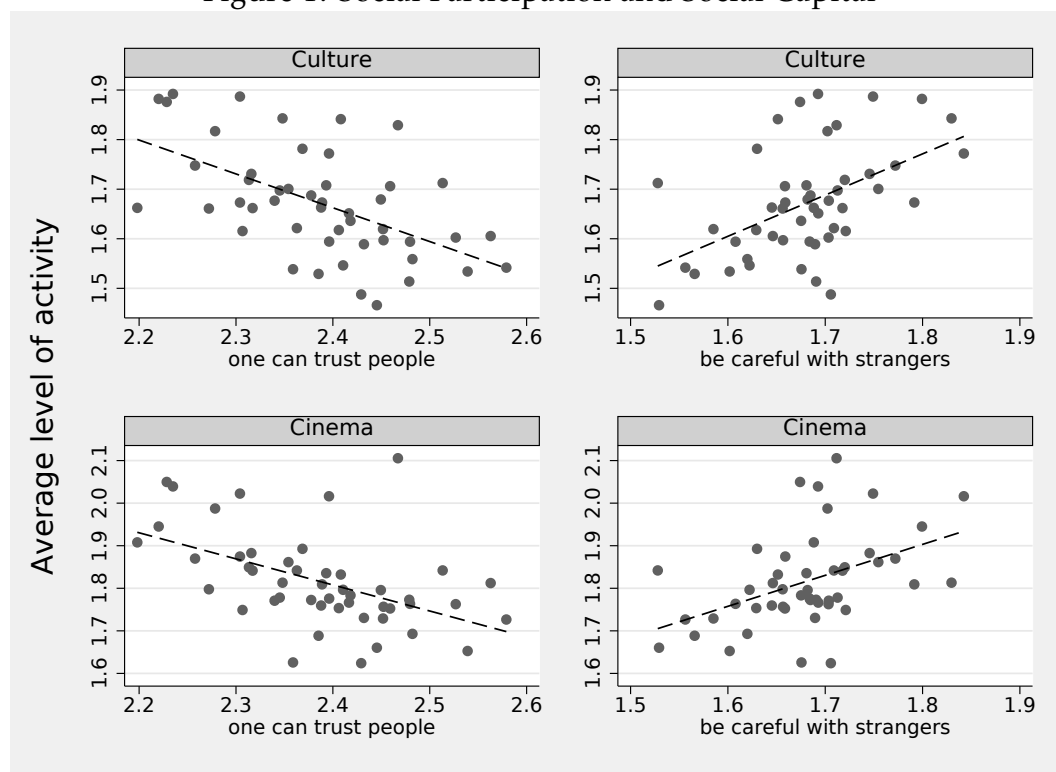
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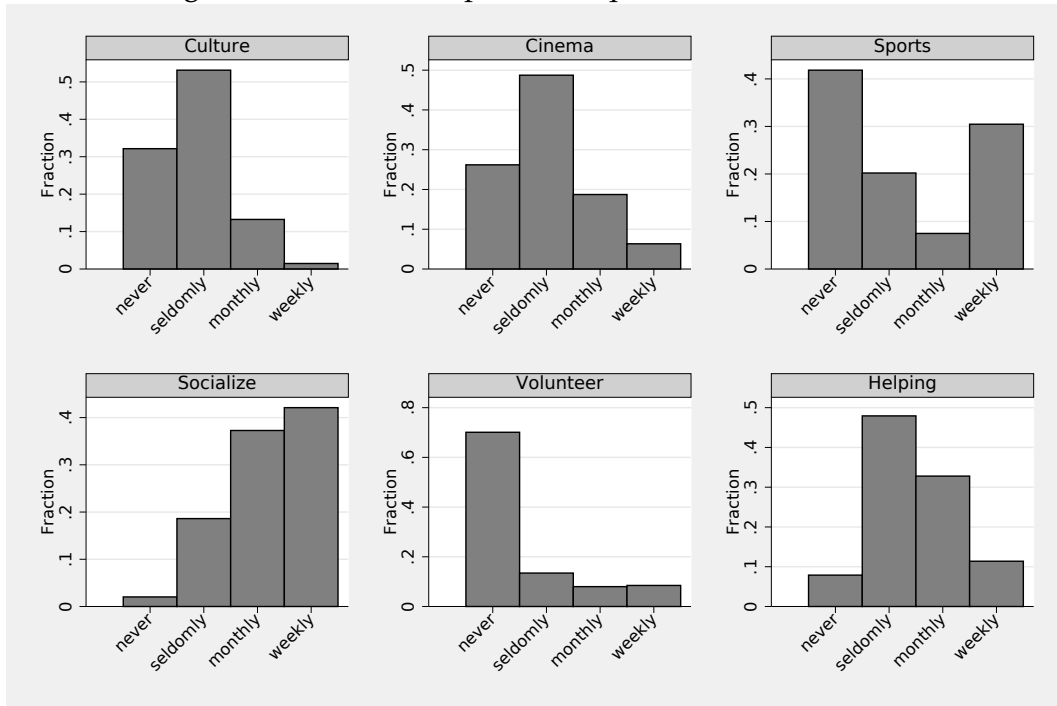
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Figure 1: Social Participation and Social Capital



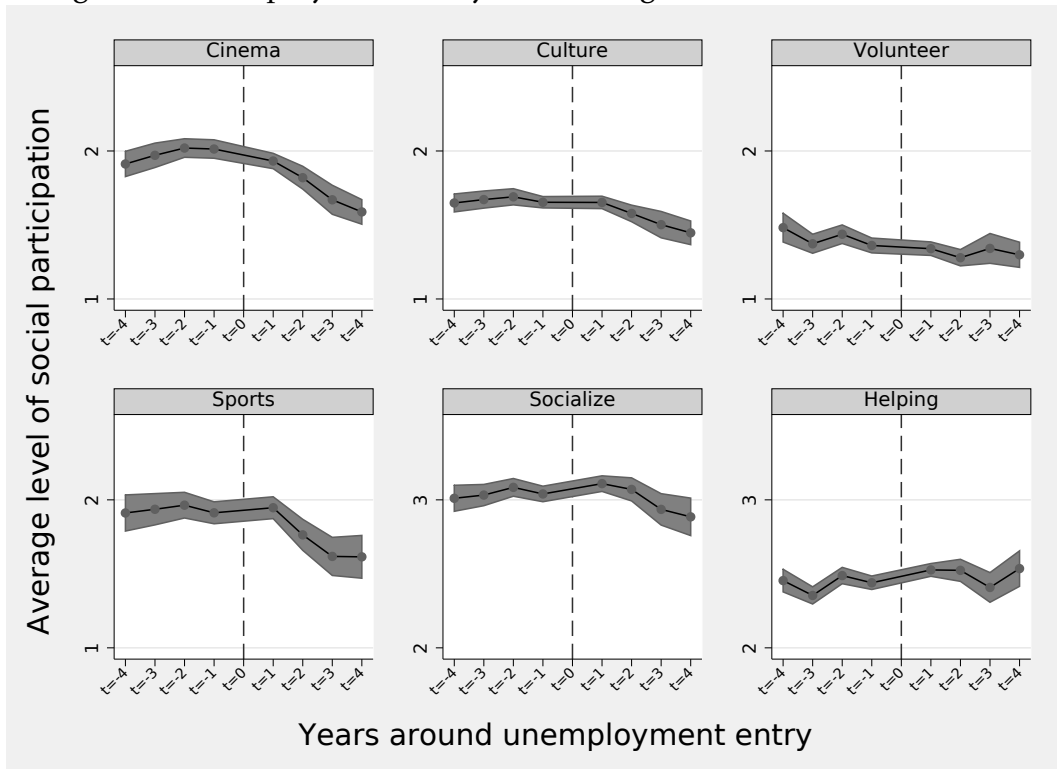
Notes: Data from SOEP 2003, 2008, 2013. (Weighted) Averages by year and state. Social capital measures are individuals' responses to the following statements "On the whole one can trust people" and "If one is dealing with strangers, it is better to be careful before one can trust them". Responses for both items are recorded on a 4-point scale ranging from totally agree (1) to totally disagree (4).

Figure 2: Relative Response Frequencies for Activities



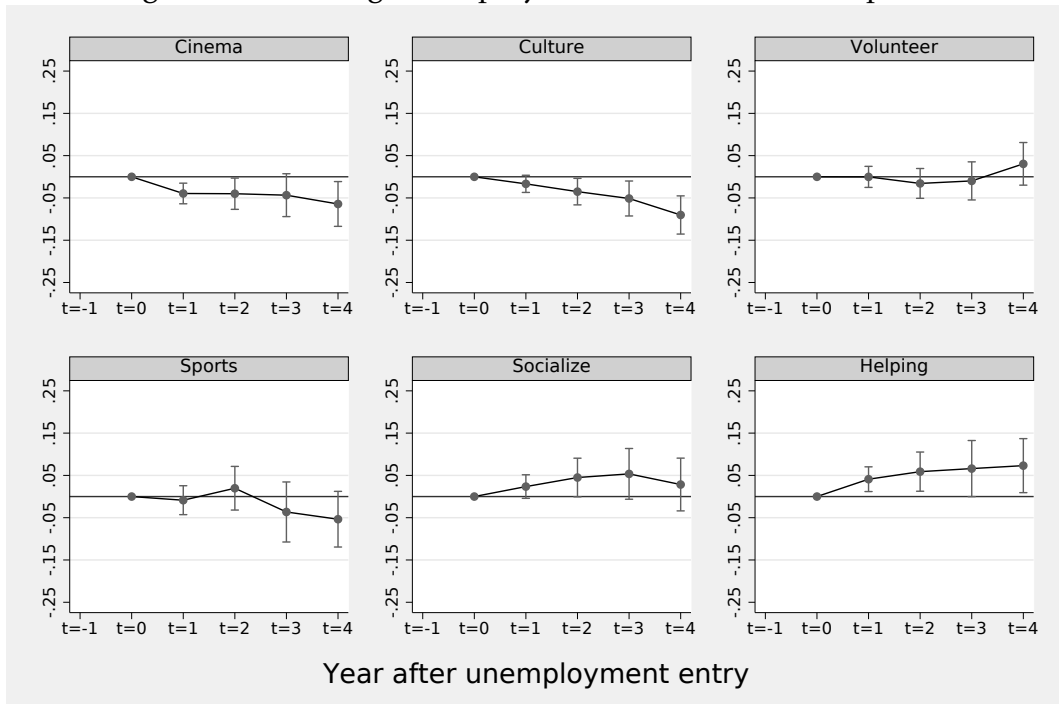
Notes: Data from SOEP 1991-2011.

Figure 3: Unemployment Entry and Average Level of Social Activities



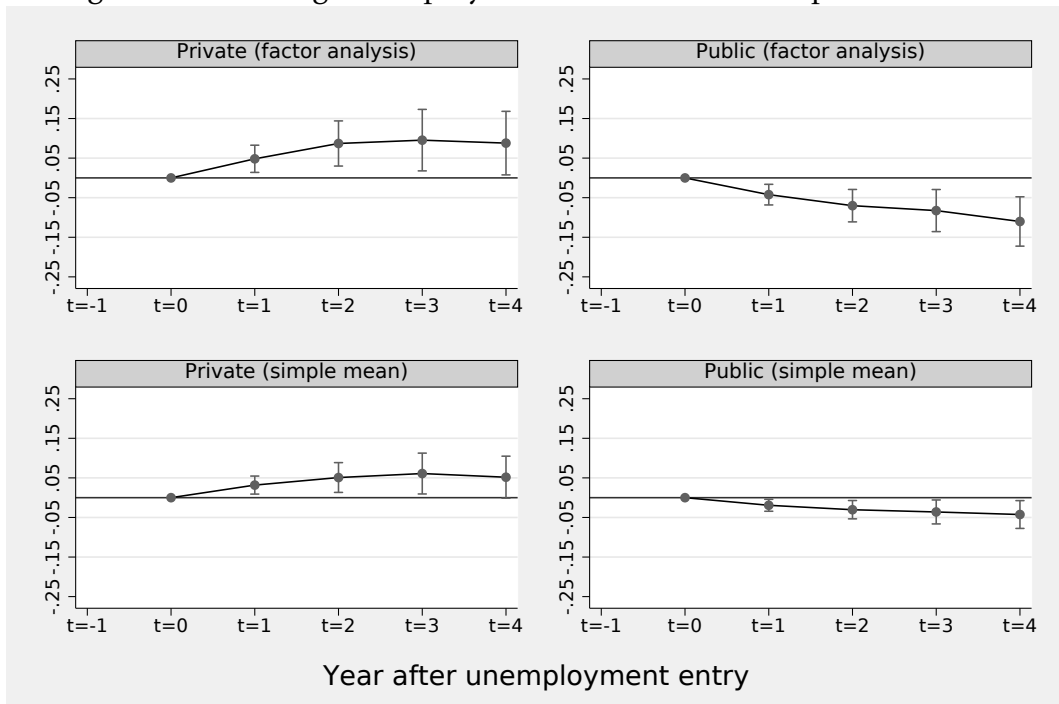
Notes: Data from SOEP 1991-2011. Average level of each activity corresponds to simple mean.

Figure 4: Enduring Unemployment and Social Participation



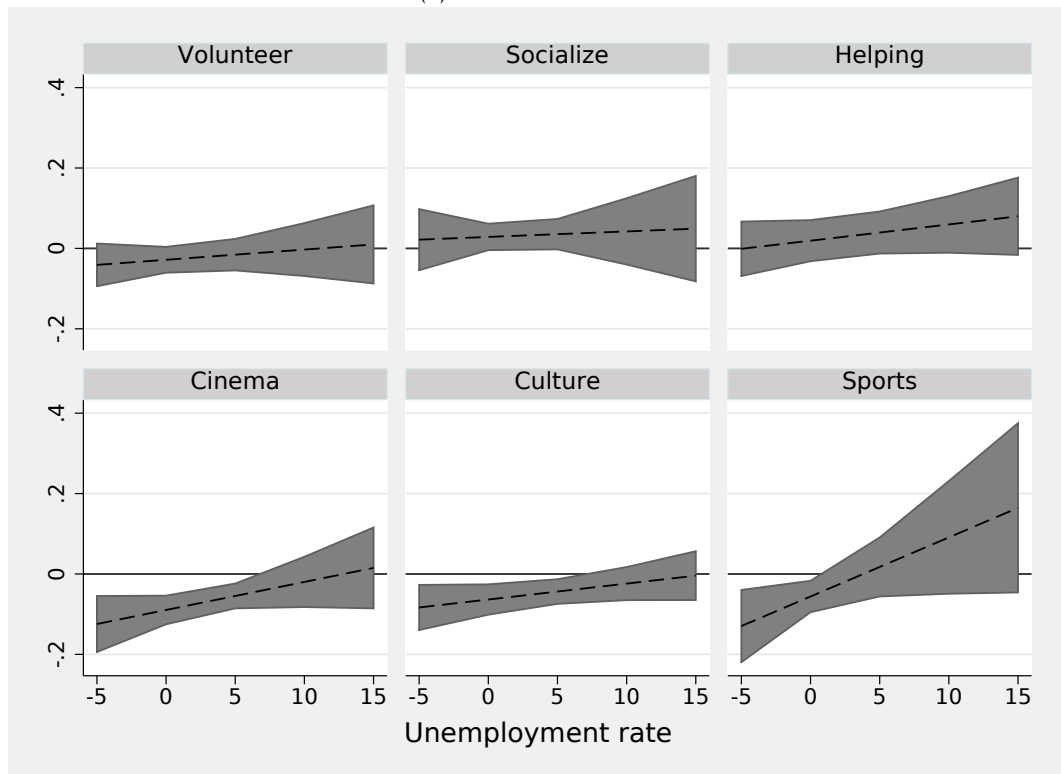
Notes: Data from SOEP 1984-2011. Number of years after the event of unemployment, 95% confidence intervals. Underlying model (equation 3) is estimated using linear fixed effects. See table B.1 for detailed results. Standard errors are clustered on individual level.

Figure 5: Enduring Unemployment and Social Participation Indices

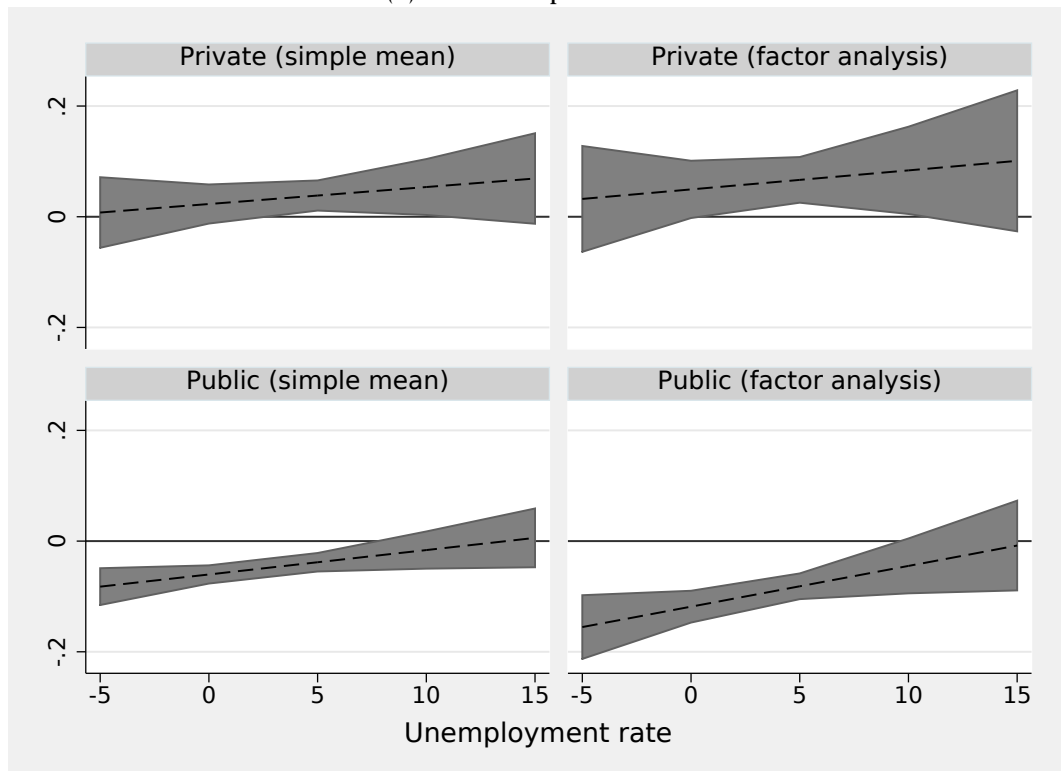


Notes: Data from SOEP 1984-2011. Number of years after the event of unemployment, 95% confidence intervals. Activities in public index are *Culture*, *Cinema*, and *Volunteer*; the private index contains *Helping* and *Socialise*. Underlying model (equation 3) is estimated using linear fixed effects. See table B.1 for detailed results. Standard errors are clustered on individual level.

Figure 6: Social Participation Differential (Employed vs. Unemployed)  
(a) Individual Activities



(b) Social Participation Indices



Notes: Data from SOEP 1998-2011. Social participation differential for different levels of county unemployment, 95% confidence intervals. Activities in public index are *Culture*, *Cinema*, and *Volunteer*; the private index contains *Helping* and *Socialise*. Unemployment rates are centred around mean. Figures are based on the estimation results of table B.2.

Table 1: Activities, Variables, and Waves

Question	Variable
<b>Gathered in 85, 86, 88, 92, 94, 96, 97, 99, 01, 05, 07, 09, 11</b>	
Going to the movies, pop music concerts, dancing, disco, sports events	Cinema
Going to cultural events (such as concerts, theatre, lectures, etc.)	Culture
Doing sports yourself	Sports
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*. These items were also collected during 1990, however, only in East-Germany.

Table 2: Summary Statistics

	(1) mean	(2) mean	(3) mean	(4) mean	(5) mean	(6) mean
Culture	1.841					
Cinema		2.045				
Sports			2.262			
Socialize				3.191		
Volunteer					1.553	
Helping						2.476
Employed	0.724	0.724	0.724	0.724	0.724	0.724
Unemployed	0.069	0.069	0.069	0.069	0.069	0.069
Out of Labour Force (OLF)	0.207	0.207	0.207	0.207	0.207	0.207
Plant closure unemployed	0.004	0.004	0.004	0.004	0.004	0.004
Other unemployed	0.065	0.065	0.065	0.065	0.065	0.065
Age (in years)	42.579	42.563	42.565	42.575	42.562	42.569
Years of Education	12.058	12.058	12.060	12.057	12.059	12.057
Work Disability	0.091	0.091	0.090	0.091	0.091	0.091
Married	0.660	0.660	0.660	0.660	0.660	0.660
Number of Children: 0	0.594	0.594	0.594	0.594	0.594	0.594
Number of Children: 1	0.202	0.202	0.202	0.202	0.202	0.202
Number of Children: 2	0.152	0.152	0.152	0.152	0.152	0.152
Number of Children: 3+	0.052	0.052	0.052	0.052	0.052	0.052
Shock: Spouse Died	0.002	0.002	0.002	0.002	0.002	0.002
Shock: Child Born	0.031	0.031	0.031	0.031	0.031	0.031
Shock: Divorce or Separated	0.020	0.020	0.020	0.020	0.020	0.020
West Germany	0.744	0.744	0.744	0.744	0.744	0.744
Person needing care in HH	0.027	0.027	0.027	0.027	0.027	0.027
N	115562	115463	115197	115558	115301	115465
Individuals	34640	34634	34618	34663	34605	34648

Notes: Data from SOEP 1991-2011. Each of the dependent variables implies a different sample. Therefore, the lower part reports means for the covariates for the different samples used.



Table 3: Unemployment and Social Participation

	(1) Culture	(2) Cinema	(3) Sports	(4) Socialize	(5) Volunteer	(6) Helping
Unemployed	-0.0334*** (-3.98)	-0.0679*** (-6.96)	-0.00804 (-0.58)	0.0362*** (3.08)	-0.00871 (-0.86)	0.0697*** (5.86)
OLF	-0.0254*** (-3.68)	-0.0733*** (-8.98)	-0.0292** (-2.30)	0.0368*** (4.21)	-0.00938 (-0.98)	0.0352*** (3.66)
26 ≤ age ≤ 30	0.00688 (0.62)	-0.179*** (-13.35)	-0.00575 (-0.30)	-0.0161 (-1.28)	-0.0226 (-1.61)	0.0195 (1.36)
31 ≤ age ≤ 35	0.00160 (0.10)	-0.244*** (-13.06)	-0.0665** (-2.44)	-0.0689*** (-3.69)	-0.0122 (-0.60)	0.00414 (0.20)
36 ≤ age ≤ 40	0.00242 (0.12)	-0.208*** (-8.80)	-0.0263 (-0.75)	-0.0907*** (-3.67)	0.0554** (2.12)	0.000146 (0.01)
41 ≤ age ≤ 45	0.0232 (0.94)	-0.155*** (-5.41)	0.0250 (0.59)	-0.114*** (-3.74)	0.0869*** (2.75)	-0.0317 (-0.97)
46 ≤ age ≤ 50	0.0109 (0.37)	-0.137*** (-4.06)	0.00585 (0.12)	-0.126*** (-3.46)	0.0681* (1.83)	-0.0322 (-0.82)
51 ≤ age ≤ 55	-0.0239 (-0.70)	-0.115*** (-2.91)	-0.00639 (-0.11)	-0.128*** (-2.98)	0.0283 (0.66)	-0.0402 (-0.87)
56 ≤ age ≤ 60	-0.0347 (-0.89)	-0.0661 (-1.46)	-0.0146 (-0.22)	-0.0900* (-1.84)	-0.00871 (-0.18)	-0.0240 (-0.45)
61 ≤ age ≤ 65	-0.00439 (-0.10)	0.0129 (0.26)	0.0460 (0.61)	-0.0465 (-0.84)	-0.0174 (-0.31)	-0.00418 (-0.07)
Shock: Spouse Died	-0.141*** (-3.52)	-0.186*** (-3.99)	-0.0911 (-1.37)	-0.000811 (-0.01)	-0.0516 (-1.09)	0.108* (1.71)
Shock: Child Born	-0.129*** (-12.44)	-0.232*** (-19.07)	-0.161*** (-8.48)	-0.0386*** (-2.94)	-0.0899*** (-6.62)	-0.0857*** (-6.19)
Shock: Divorce or Separated	-0.00698 (-0.51)	0.0795*** (4.70)	0.0665*** (2.76)	0.0277 (1.57)	-0.0393** (-2.29)	0.0432* (2.47)
Person needing care in HH	-0.0808*** (-5.10)	-0.0786*** (-4.07)	-0.0862*** (-3.21)	-0.188*** (-7.99)	-0.0576*** (-2.70)	-0.214*** (-8.91)
Years of Education	-0.0124*** (-3.66)	-0.0238*** (-6.21)	-0.00820 (-1.41)	0.00303 (0.80)	-0.0149*** (-2.85)	-0.00270 (-0.67)
Work Disability	-0.0376*** (-3.43)	-0.0394*** (-3.01)	-0.0204 (-0.95)	-0.00976 (-0.65)	-0.0355** (-2.26)	-0.0516*** (-3.18)
Married	-0.0937*** (-10.08)	-0.216*** (-19.07)	-0.100*** (-5.92)	-0.0562*** (-4.87)	-0.0107 (-0.86)	-0.0251** (-2.11)
Number of Children: 1	-0.0708*** (-10.27)	-0.111*** (-13.33)	-0.0979*** (-7.67)	-0.0728*** (-8.59)	0.00859 (0.89)	-0.0349*** (-3.92)
Number of Children: 2	-0.102*** (-11.38)	-0.129*** (-11.66)	-0.0949*** (-5.45)	-0.109*** (-9.51)	0.0530*** (3.86)	-0.0448*** (-3.81)
Number of Children: 3+	-0.108*** (-7.45)	-0.114*** (-6.36)	-0.0493* (-1.90)	-0.134*** (-7.24)	0.0999*** (4.43)	-0.0691*** (-3.58)
West Germany	-0.0205 (-0.79)	-0.0582** (-1.99)	0.0865* (1.87)	-0.0817*** (-2.64)	-0.00209 (-0.06)	-0.0660** (-2.20)
Constant	2.145*** (38.66)	2.566*** (40.59)	2.526*** (26.01)	3.256*** (49.24)	1.809*** (23.06)	2.544*** (36.42)
Year dummies	yes	yes	yes	yes	yes	yes
N	115562	115463	115197	115558	115301	115465
Individuals	34640	34634	34618	34663	34605	34648

Notes: Data from SOEP 1991-2011. Indicated levels of significance are \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ , t-statistics in parentheses. All models are estimated using linear fixed effects. Standard errors are clustered on individual level.

Table 4: Unemployment due to Plant Closure and Social Participation

	(1) Culture	(2) Cinema	(3) Sports	(4) Socialize	(5) Volunteer	(6) Helping
Unemployed plant closure	-0.0495* (-1.77)	-0.0746** (-2.31)	0.0595 (1.30)	0.0866** (2.21)	-0.0219 (-0.57)	0.0874** (2.02)
Unemployed other reason	-0.0334*** (-3.84)	-0.0696*** (-6.90)	-0.0136 (-0.94)	0.0305** (2.50)	-0.0107 (-1.03)	0.0687*** (5.60)
OLF	-0.0250*** (-3.61)	-0.0738*** (-8.98)	-0.0284** (-2.22)	0.0370*** (4.20)	-0.0117 (-1.22)	0.0362*** (3.74)
Constant	2.144*** (38.46)	2.574*** (40.43)	2.532*** (25.96)	3.265*** (49.05)	1.815*** (23.02)	2.551*** (36.24)
Controls	yes	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes	yes
N	114276	114176	113916	114270	114015	114177
Individuals	34560	34554	34538	34583	34525	34568

Notes: Data from SOEP 1991–2011. Indicated levels of significance are \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ , t-statistics in parentheses. All models are estimated using linear fixed effects and include the same controls as in table 3. Standard errors are clustered on individual level.

Table 5: Controlling for Income  
(a) Unemployment and Social Participation

	(1) Culture	(2) Cinema	(3) Sports	(4) Socialize	(5) Volunteer	(6) Helping
Unemployed	-0.0294*** (-3.50)	-0.0616*** (-6.32)	-0.00182 (-0.13)	0.0365*** (3.11)	-0.00825 (-0.81)	0.0664*** (5.57)
OLF	-0.0213*** (-3.07)	-0.0665*** (-8.11)	-0.0228* (-1.79)	0.0371*** (4.22)	-0.00897 (-0.93)	0.0316*** (3.27)
Log Real Net Household Equivalence Income (in Euro)	0.0368*** (5.32)	0.0573*** (7.23)	0.0567*** (4.89)	0.00281 (0.33)	0.00494 (0.54)	-0.0300*** (-3.35)
Constant	1.783*** (20.45)	2.007*** (19.99)	1.974*** (13.44)	3.229*** (30.32)	1.761*** (15.02)	2.836*** (25.32)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	115531	115432	115166	115528	115269	115433
Individuals	34635	34628	34613	34658	34600	34643

(b) Unemployment due to Plant Closure and Social Participation

	(1) Culture	(2) Cinema	(3) Sports	(4) Socialize	(5) Volunteer	(6) Helping
Unemployed plant closure	-0.0508* (-1.83)	-0.0765** (-2.37)	0.0574 (1.25)	0.0865** (2.21)	-0.0221 (-0.58)	0.0884** (2.04)
Unemployed other reason	-0.0290*** (-3.34)	-0.0627*** (-6.21)	-0.00677 (-0.47)	0.0307** (2.52)	-0.0101 (-0.97)	0.0651*** (5.29)
OLF	-0.0208*** (-2.98)	-0.0669*** (-8.11)	-0.0218* (-1.70)	0.0372*** (4.20)	-0.0112 (-1.16)	0.0325*** (3.33)
Log Real Net Household Equivalence Income (in Euro)	0.0376*** (5.40)	0.0579*** (7.24)	0.0579*** (4.96)	0.00212 (0.24)	0.00589 (0.65)	-0.0302*** (-3.34)
Constant	1.774*** (20.24)	2.008*** (19.83)	1.968*** (13.31)	3.244*** (30.20)	1.758*** (14.92)	2.844*** (25.15)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	114245	114145	113885	114240	113983	114145
Individuals	34555	34548	34533	34578	34520	34563

Notes: Data from SOEP 1991–2011. Indicated levels of significance are \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . All models are estimated using linear fixed effects and include the same controls as in table 3. Income is the log real net household equivalence income. Standard errors are clustered on individual level.

Table 6: Unemployment due to Plant Closure and Worries

	(1) Economy	(2) Own economic situation	(3) Health	(4) Environment	(5) Peace	(6) Crime
Unemployed plant closure	0.121*** (6.11)	0.308*** (14.30)	-0.0605** (-2.05)	-0.0195 (-0.99)	0.0169 (0.79)	0.00597 (0.28)
Unemployed other reason	0.0548*** (9.11)	0.221*** (33.59)	0.0284*** (3.50)	0.00609 (1.04)	-0.00401 (-0.63)	-0.00294 (-0.46)
OLF	0.00289 (0.61)	0.0399*** (7.70)	-0.00447 (-0.73)	0.00926** (1.98)	0.000224 (0.04)	-0.00693 (-1.39)
Constant	2.551*** (71.97)	2.162*** (57.14)	1.751*** (35.00)	2.253*** (65.33)	2.596*** (69.60)	2.452*** (65.70)
Controls	yes	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes	yes
N	236951	236901	164027	236783	236748	216182
Individuals	37748	37754	30653	37758	37754	35784

Notes: Data from SOEP 1991-2011. Indicated levels of significance are \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ , t-statistics in parentheses. All models are estimated using linear fixed effects and include the same controls as in table 3. Standard errors are clustered on individual level.

# Appendix A

Table A.1: Robustness I (BUC Estimator)

(a) Unemployment and Social Participation						
	(1) Culture	(2) Cinema	(3) Sports	(4) Socialize	(5) Volunteer	(6) Helping
Unemployed	-0.163*** (-3.70)	-0.255*** (-6.14)	-0.0246 (-0.56)	0.123*** (3.16)	-0.0437 (-0.75)	0.217*** (5.89)
OLF	-0.120*** (-3.49)	-0.308*** (-9.05)	-0.0706* (-1.95)	0.140*** (4.27)	-0.0298 (-0.70)	0.112*** (3.63)
Controls	yes	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes	yes
N	83482	104952	143309	112660	93807	125063
Individuals	13901	15170	14109	16004	10534	17256

(b) Unemployment due to Plant Closure and Social Participation						
	(1) Culture	(2) Cinema	(3) Sports	(4) Socialize	(5) Volunteer	(6) Helping
Unemployed plant closure	-0.270* (-1.70)	-0.314** (-2.16)	0.191 (1.27)	0.298** (2.06)	-0.123 (-0.58)	0.286* (1.94)
Unemployed other reason	-0.162*** (-3.55)	-0.262*** (-6.09)	-0.0426 (-0.93)	0.106*** (2.62)	-0.0535 (-0.89)	0.213*** (5.64)
OLF	-0.119*** (-3.45)	-0.311*** (-9.09)	-0.0686* (-1.88)	0.141*** (4.27)	-0.0402 (-0.94)	0.115*** (3.71)
Controls	yes	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes	yes
N	81990	103080	140973	110681	92170	122999
Individuals	13788	15053	14026	15909	10447	17148

(c) Enduring Unemployment and Social Participation						
	(1) Culture	(2) Cinema	(3) Sports	(4) Socialize	(5) Volunteer	(6) Helping
Entered Unemployment in t	-0.0834 (-1.55)	-0.147*** (-2.86)	-0.0261 (-0.48)	0.0801* (1.68)	-0.00616 (-0.09)	0.129*** (2.80)
Entered Unemployment in t-1	-0.194** (-2.24)	-0.143* (-1.79)	0.0525 (0.58)	0.151** (1.98)	-0.107 (-0.91)	0.172** (2.45)
Entered Unemployment in t-2	-0.278** (-2.31)	-0.169 (-1.50)	-0.143 (-1.10)	0.178* (1.74)	-0.0534 (-0.37)	0.203** (1.99)
Entered Unemployment in t-3	-0.463*** (-3.69)	-0.242* (-1.93)	-0.185 (-1.37)	0.101 (0.97)	0.252 (1.54)	0.224** (2.25)
OLF	-0.111*** (-3.83)	-0.255*** (-8.87)	-0.0542* (-1.75)	0.122*** (4.51)	-0.0733** (-1.99)	0.0515** (1.97)
Controls	yes	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes	yes
N	114278	145038	192147	154188	127761	173400
Individuals	15994	17433	15952	18403	11995	19780

Notes: Panels (a) and (b) use data from SOEP 1991-2011. Panel (c) uses data from SOEP 1985-2011. Indicated levels of significance are \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ , t-statistics in parentheses. All models are estimated using the BUC estimator and include the same controls as in table 3. Standard errors are clustered on individual level.

Table A.2: Robustness II

(a) Gender-specific Results						
	(1) Culture	(2) Cinema	(3) Sports	(4) Socialize	(5) Volunteer	(6) Helping
Unemployed	-0.0348*** (-2.97)	-0.0676*** (-4.74)	-0.0187 (-0.99)	0.0240 (1.41)	-0.00574 (-0.40)	0.0711*** (4.26)
Out of Labour Force (OLF)	-0.0253*** (-3.67)	-0.0733*** (-8.97)	-0.0288** (-2.26)	0.0373*** (4.26)	-0.00951 (-0.99)	0.0352*** (3.65)
Unemployed × female	0.00275 (0.17)	-0.000701 (-0.04)	0.0212 (0.80)	0.0242 (1.06)	-0.00589 (-0.30)	-0.00261 (-0.11)
Constant	2.145*** (38.66)	2.566*** (40.59)	2.526*** (26.00)	3.256*** (49.24)	1.809*** (23.06)	2.544*** (36.42)
Controls	yes	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes	yes
N	115562	115463	115197	115558	115301	115465
Individuals	34640	34634	34618	34663	34605	34648
(b) Region-specific Results (East versus West)						
	(1) Culture	(2) Cinema	(3) Sports	(4) Socialize	(5) Volunteer	(6) Helping
Unemployed	-0.0372*** (-3.00)	-0.0586*** (-4.28)	0.0353* (1.82)	0.0548*** (3.22)	0.000386 (0.03)	0.0695*** (4.22)
Out of Labour Force (OLF)	-0.0254*** (-3.68)	-0.0734*** (-8.98)	-0.0294** (-2.31)	0.0367*** (4.20)	-0.00942 (-0.98)	0.0352*** (3.66)
Unemployed × West Germany	0.00691 (0.43)	-0.0167 (-0.90)	-0.0776*** (-2.94)	-0.0333 (-1.46)	-0.0163 (-0.86)	0.000511 (0.02)
West Germany	-0.0211 (-0.81)	-0.0568* (-1.94)	0.0930** (2.01)	-0.0789** (-2.55)	-0.000722 (-0.02)	-0.0660** (-2.20)
Constant	2.145*** (38.67)	2.565*** (40.57)	2.522*** (25.97)	3.255*** (49.21)	1.809*** (23.05)	2.544*** (36.42)
Controls	yes	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes	yes
N	115562	115463	115197	115558	115301	115465
Individuals	34640	34634	34618	34663	34605	34648
(c) Short-Term Unemployment						
	(1) Culture	(2) Cinema	(3) Sports	(4) Socialize	(5) Volunteer	(6) Helping
Unemployed plant closure	-0.0434 (-1.44)	-0.0598* (-1.71)	0.0477 (1.00)	0.0767* (1.78)	-0.0213 (-0.53)	0.0816* (1.77)
Unemployed other reason	-0.0335*** (-3.86)	-0.0698*** (-6.91)	-0.0137 (-0.95)	0.0305** (2.50)	-0.0110 (-1.05)	0.0685*** (5.58)
OLF	-0.0250*** (-3.61)	-0.0738*** (-8.98)	-0.0285** (-2.23)	0.0371*** (4.20)	-0.0119 (-1.24)	0.0360*** (3.71)
Constant	2.144*** (38.46)	2.574*** (40.42)	2.534*** (25.97)	3.267*** (49.07)	1.815*** (23.02)	2.550*** (36.22)
Controls	yes	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes	yes
N	114198	114098	113838	114192	113937	114099
Individuals	34526	34520	34504	34549	34491	34534

Notes: Data from SOEP 1991-2011. Indicated levels of significance are \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ , t-statistics in parentheses. All models are estimated using linear fixed effects and include the same controls as in table 3. Standard errors are clustered on individual level.

Table A.3: Robustness III (Social Participation Indices)

(a) Unemployment due to Plant Closure and Social Participation Indices				
	Simple Mean		Factor Analysis	
	(1) Public	(2) Private	(3) Public	(4) Private
Unemployed plant closure	-0.0491** (-2.35)	0.0879*** (2.76)	-0.108*** (-2.98)	0.128*** (2.64)
Unemployed other reason	-0.0374*** (-5.74)	0.0497*** (4.96)	-0.0850*** (-7.54)	0.0822*** (5.42)
OLF	-0.0375*** (-6.84)	0.0359*** (4.73)	-0.0742*** (-7.94)	0.0575*** (5.02)
Constant	2.183*** (50.28)	2.915*** (52.09)	0.622*** (8.32)	0.0631 (0.74)
Controls	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes
N	114460	114504	113230	113230
Individuals	34578	34599	34473	34473

(b) Short-Term Unemployment				
	Simple Mean		Factor Analysis	
	(1) Public	(2) Private	(3) Public	(4) Private
Unemployed plant closure	-0.0418* (-1.90)	0.0802** (2.34)	-0.0935** (-2.45)	0.116** (2.23)
Unemployed other reason	-0.0375*** (-5.76)	0.0496*** (4.96)	-0.0853*** (-7.55)	0.0820*** (5.41)
OLF	-0.0376*** (-6.84)	0.0359*** (4.72)	-0.0742*** (-7.94)	0.0574*** (5.00)
Constant	2.183*** (50.27)	2.916*** (52.09)	0.622*** (8.32)	0.0634 (0.74)
Controls	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes
N	114382	114426	113152	113152
Individuals	34544	34565	34439	34439

Notes: Data from SOEP 1991-2011. Indicated levels of significance are \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ , t-statistics in parentheses. All models are estimated using linear fixed effects and include the same controls as in table 3. Standard errors are clustered on individual level. Activities in public index are *Culture*, *Cinema*, and *Volunteer*; the private index contains *Helping* and *Socialise*. Models (3) and (4) rely on factor analysis (principal components). Factor scores predicted after varimax rotation.

# Appendix B

Table B.1: Enduring Unemployment and Social Participation

(a) Individual Activities						
	(1) Culture	(2) Cinema	(3) Sports	(4) Socialize	(5) Volunteer	(6) Helping
Entered Unemployment in $t$	-0.0167 (-1.61)	-0.0395*** (-3.17)	-0.00863 (-0.49)	0.0236* (1.66)	-0.000208 (-0.02)	0.0410*** (2.75)
Entered Unemployment in $t-1$	-0.0351** (-2.19)	-0.0401** (-2.13)	0.0197 (0.75)	0.0451* (1.93)	-0.0157 (-0.87)	0.0589** (2.49)
Entered Unemployment in $t-2$	-0.0513** (-2.43)	-0.0434* (-1.68)	-0.0365 (-1.01)	0.0536* (1.75)	-0.00975 (-0.42)	0.0662* (1.95)
Entered Unemployment in $t-3$	-0.0903*** (-3.92)	-0.0643** (-2.38)	-0.0536 (-1.59)	0.0285 (0.89)	0.0306 (1.19)	0.0731** (2.24)
N	142443	142338	142020	142489	142122	142350
Individuals	38660	38646	38632	38674	38615	38651

(b) Social Participation Indices				
	Simple Mean		Factor Analysis	
	(1) Public	(2) Private	(3) Public	(4) Private
Entered Unemployment in $t$	-0.0192** (-2.49)	0.0318*** (2.74)	-0.0423*** (-3.18)	0.0482*** (2.75)
Entered Unemployment in $t-1$	-0.0304** (-2.57)	0.0509*** (2.65)	-0.0702*** (-3.36)	0.0870*** (2.99)
Entered Unemployment in $t-2$	-0.0361** (-2.33)	0.0610** (2.32)	-0.0825*** (-3.04)	0.0954** (2.41)
Entered Unemployment in $t-3$	-0.0426** (-2.37)	0.0517* (1.91)	-0.110*** (-3.46)	0.0879** (2.15)
N	142709	142772	141106	141106
Individuals	38680	38686	38547	38547

(c) Length of Unemployment Spells				
	Simple Mean		Factor Analysis	
	(1) Public	(2) Private	(3) Public	(4) Private
Entered Unemployed in $t$ × Year 1 of Spell	-0.0377*** (-3.87)	0.0202 (1.43)	-0.0704*** (-4.18)	0.0344 (1.61)
Entered Unemployed in $t-1$ or $t-2$ × Year 1 of Spell	-0.0350*** (-2.83)	0.0681*** (3.58)	-0.0830*** (-3.89)	0.105*** (3.58)
Entered Unemployed in $t-1$ or $t-2$ × Year 2 of Spell	-0.0132 (-1.02)	0.0702*** (3.36)	-0.0426* (-1.88)	0.112*** (3.52)
N	137200	137259	135659	135659
Individuals	37678	37684	37544	37544

Notes: Data from SOEP 1985-2011. Indicated levels of significance are \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ , t-statistics in parentheses. Activities in public index are *Culture*, *Cinema*, and *Volunteer*; the private index contains *Helping* and *Socialise*. All models are estimated using linear fixed effects and contain the same controls as in table 3, including year dummies, an out of labour force dummy and a constant. Standard errors are clustered on individual level.



Table B.2: Others' Unemployment and Social Participation

(a) Individual Activities						
	(1) Culture	(2) Cinema	(3) Sports	(4) Socialize	(5) Volunteer	(6) Helping
Unemployed	-0.0635*** (-3.30)	-0.0896*** (-4.93)	-0.0561*** (-2.81)	0.0286* (1.70)	-0.0282* (-1.72)	0.0193 (0.74)
OLF	-0.0472*** (-3.97)	-0.101*** (-9.02)	-0.0594*** (-3.37)	0.0273** (2.09)	-0.0151 (-1.16)	0.00980 (0.83)
Bad Prospects	-0.00103 (-0.24)	-0.0126*** (-2.83)	0.00835 (0.64)	-0.0322*** (-5.92)	0.0138* (1.73)	0.00951 (1.32)
Employed × Unemployment rate	0.000382 (0.19)	0.000592 (0.24)	-0.00203 (-0.35)	0.000595 (0.32)	0.000944 (0.47)	0.000565 (0.20)
Unemployed × Unemployment rate	0.00396 (1.56)	0.00698* (1.69)	0.0147** (2.00)	0.00137 (0.27)	0.00255 (0.74)	0.00404 (1.23)
OLF × Unemployment rate	0.00390* (1.65)	0.00193 (0.45)	0.00550 (0.72)	0.00118 (0.30)	0.00119 (0.56)	0.00601 (1.53)
GDP per capita	0.00160*** (3.16)	0.000886*** (4.40)	-0.000182 (-0.31)	0.00103*** (4.39)	-0.00338*** (-3.63)	-0.000928 (-1.32)
Constant	1.917*** (27.61)	2.664*** (28.59)	2.171*** (11.63)	3.106*** (34.32)	1.674*** (22.51)	2.391*** (16.12)
Year dummies	yes	yes	yes	yes	yes	yes
Controls	yes	yes	yes	yes	yes	yes
N	70405	70353	70261	70353	70227	70322
Individuals	26347	26344	26331	26351	26323	26346
Cluster	2335	2335	2335	2335	2335	2335

(b) Social Participation Indices				
	Simple Mean		Factor Analysis	
	(1) Public	(2) Private	(3) Public	(4) Private
Unemployed	-0.0602*** (-7.19)	0.0230 (1.28)	-0.118*** (-8.09)	0.0494* (1.87)
OLF	-0.0553*** (-7.92)	0.0181* (1.67)	-0.104*** (-8.24)	0.0326* (1.87)
Bad Prospects	-0.000123 (-0.03)	-0.0120*** (-2.65)	-0.00235 (-0.41)	-0.0168** (-2.54)
Employed × unemployment rate	0.000607 (0.42)	0.000790 (0.46)	0.000747 (0.27)	0.000911 (0.31)
Unemployed × unemployment rate	0.00440** (2.11)	0.00307 (0.88)	0.00737** (2.18)	0.00344 (0.64)
OLF × unemployment rate	0.00225 (0.99)	0.00386 (1.06)	0.00330 (0.86)	0.00535 (1.00)
GDP per capita	-0.000362 (-1.04)	-0.0000503 (-0.13)	0.000781 (1.02)	-0.0000798 (-0.10)
Constant	2.090*** (38.40)	2.749*** (42.34)	0.395*** (3.67)	-0.149 (-1.51)
Year dummies	yes	yes	yes	yes
Controls	yes	yes	yes	yes
N	70477	70481	69817	69817
Individuals	26358	26362	26284	26284
Cluster	2335	2335	2335	2335

Notes: Data from SOEP 1998-2011. Indicated levels of significance are \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ , t-statistics in parentheses. Standard errors are clustered by county and year (two-way clustering). Activities in public index are *Culture*, *Cinema*, and *Volunteer*; the private index contains *Helping* and *Socialise*. All models are estimated using linear fixed effects and include the same controls as in table 3. Local unemployment rates (centred) on county level.