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Working Paper

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HWWI Research Paper, No. 1-24

Provided in cooperation with:
Hamburgisches WeltWirtschaftsInstitut (HWWI)

Suggested citation: Tolciu, Andreia (2009) : What a difference peers can make: The impact of social (work) norms on unemployment duration, HWWI Research Paper, No. 1-24, http://hdl.handle.net/10419/48187

Hamburg Institute
of International
Economics

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HWWI Research
Paper 1-24
by the
HWWI Research Programme
Economic Trends

Hamburg Institute of International Economics (HWWI) | 2009
ISSN 1861-504X

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ISSN 1861-504X

What a Difference Peers Can Make: The Impact of Social Work Norms on Unemployment Duration

Andreia Tolciu

Abstract

This article outlines a model of how social interactions among persons belonging to the same region might influence the individual unemployment duration. The impact is assumed to be enhanced through social work norms shared by peers within the group. Building on a range of German data sets and derived from multilevel analysis, the results show that social interactions in terms of social work norms, in conjunction with socio-demographic and regional characteristics, affect the individual unemployment duration.

JEL Classification: A13, A14, J64, Z13
Keywords: regional social interactions, social work norms, group influence, regional unemployment, religious influences

1 Introduction

Social interaction models are defined in the economic literature as models in which the behaviour of an individual is affected by other individuals' behaviour. A central idea of these models is that people interact locally, with a set of neighbours or a certain reference group (Conley and Topa, 2003).

In a broader sense, social interactions can be conceptualised as encompassing the effects of social norms, role models and social networks on human behaviour. These three aspects have been identified in the literature as diffusion channels through which the impact of social interactions among individuals emerges and their decision making process is subsequently influenced.

Building on a long history of sociological research on communities, the study of social interactions has generated a wide research agenda in all social sciences. According to Manski (2000) economists seem to have long avoided the role of social interactions in explaining individual performance. The main aspect which has led researchers to treat it with reticence is the fact that decisions based on social interactions are difficult to distinguish from other related types of behaviour and are therefore difficult to isolate empirically.[1]

The aim of the present article is to examines *if* and *to what extent* social interactions among persons belonging to the same region influence the individual unemployment duration. The impact is presumed to be enhanced through the social work norms shared by the group peers.

The analysis rests upon three results regarding social work norms and unemployment which have been endorsed by previous studies.

[1] According to Manski (2000) three types of interactions can be identified: the first one regards endogenous interactions (i.e. the 'real' social interaction effects, which are relevant for this analysis), in which the propensity of an individual to behave in a certain way varies with the behaviour of the group. The second one refers to contextual interactions, in which an individual behaves under the influence of the exogenous characteristics of the group members. Finally, there are the correlated effects, in which individuals in the same group tend to behave similarly because they are self-selected, meaning that they either have similar individual patterns or act in similar institutional frameworks.

The first one refers to the fact that unemployment exerts a serious, negative effect on the subjective well-being of jobless individuals. Clark and Oswald (1994, p.655) observe, for example, that *"joblessness depresses well-being more than any other single characteristic"* (including situations such as divorce and separation). The second finding is that the subjective well-being of the unemployed improves as the number of unemployed peers increases. In other words, unemployment becomes subjectively more bearable when it becomes a common experience. Clark (2006) finds evidence that dissatisfaction with the state of being unemployed declines over time. The reported well-being of unemployed persons may rise because they become better at budgeting (i.e. make appropriate use of reduced income), find new friends who are also unemployed and/or cut back on inefficient job search strategies. Kolm et al.(2003, p.9) confirm these results: when unemployment is high, it is socially more acceptable to be unemployed, and the employed people will have fewer incentives to avoid unemployment. The authors state that: *"an increase in unemployment among an individual's friends and acquaintances is likely to reduce the social and psychological costs of being unemployed"*.

The last main result of the current research illustrates that the well-being of unemployed people is correlated with the strength of a social work norm, meaning that the well-being of unemployed people is higher in communities where there is weaker work norm. Lindbeck et al. (1999, p.3) explain this finding by arguing that, as the number of individuals who are unemployed increases, social pressure diminishes. Thus, living on transfer payments becomes less embarrassing when more individuals are doing likewise. A 'social norm effect of unemployment' is also found by Clark et al. (2008). By using data from the GSOEP (1984-2006), the authors come to the conclusion that higher regional unemployment rates hurt the unemployed less, as their situation is more bearable if it occurs on a larger scale.

This article is organised as follows: the following section highlights some basic aspects regarding the data and methodology used for the study, as well

as a short discussion on the main controversial issues. Section three comprises a synthesis of current results obtained from multilevel estimations. Section four concludes by pointing to some political implications of this analysis.

2 Data and methodology

Although progress is being made in including social work norms into economic models, systematic empirical evidence is scarce. This doubtless reflects the data constraints and methodological problems that occur when trying to size up the impact of social work norms on individual behaviour.

For an empirical analysis, one has to draw on specific measurement methods which can capture a person's beliefs about behaviour patterns. However, existing data sets do not typically allow for a proper evaluation. In order to overcome this problem, a mix of information streams from several databases (both individual-level data and on the NUTS1 and NUTS2 aggregated data) is used for conducting this research.

An important point to make is that the present analysis relies only on data concerning unemployed individuals living in the western part of Germany. This is due to the fact that, even almost two decades after German reunification, the structural differences regarding the labour market between the western and the eastern part are substantial. Moreover, while unemployment was perceived as an individual experience in the western part of Germany after reunification, in the eastern part it was seen as a collective fate, as it rapidly affected a large fraction of the population. As a consequence, being unemployed did not go along with stigmatisation and was not hidden as something to be ashamed of. On the contrary, it was perceived as a stroke of fate that bound people together and, therefore, received a certain social acceptance. Due to these aspects, the individual and collective behaviour towards unemployment was processed mentally and physically in a different manner. Therefore, a joint examination of both German regions

may lead to inaccurate results both from a theoretical and methodological perspective.

The main data set employed for this analysis is the IAB employment subsample (Beschäftigtenstichprobe 1975-2001, IABS-R01) provided by the Institute for Employment Research (IAB). This is a micro-level data, which captures both the employment history anf the history of unemployment benefit receipt for two percent of all German employees registred for the social insurance contributions in the period from 1975 to 2001. Self-employed people, family workers and civil servants are excluded from the data set. This data contains various socio-demographic variables at the individual level, such as age, gender, education, income while employed, occupation and data regarding periods of benefit receipt, if any.[2] This latter information is provided in spells, with exact dates at the beginning and end of the spell. An advantage of the IAB sample is the possibility to identify the regional location of each registered individual.

The second important data set used for analysis is the German General Social Survey (ALLBUS). This data set is a random, cross-section biennial survey that has been conducted since 1980 on the attitudes, behaviour, and social structure of people residing in Germany. The present analysis is based on information contained in the surveys conducted in 2000 and 2004, and takes into account only the respondents living in the western part of Germany (sample size: 4076 individuals).[3] The variables of interest for the analysis refer to details about individuals' opinions with regard to social benefits and the welfare state. This information is particularly relevant for the identification of a proxy that captures the strength of the social norm to work existing within a group of people (in this case for the people living

[2]For further details on this data see Bender et al. (2000) and Heining and Lingens (2005).

[3]As the sample size of the ALLBUS survey is relatively small, entries for these two survey years are pooled together and are used for building the social work norm proxy. The assumption behind this procedure is that social work norms emerge over time and do not easily change within short periods.

in the same administrative district, NUTS2 level). The social norm to work should illustrate the belief that unemployed people have to earn their own income.

Other data sets are provided by the Federal Statistical Office (Regional Statistical Offices) and the Protestant Church in Germany.

2.1 Measuring social work norms - a regional approach

The main challenges of the present analysis refer to the difficulty of setting and quantifying two *sine qua non* elements of social interactions models: the reference group of an individual and the work norms shared by his reference group.

Formally, an individual's reference group can be defined *"as the set of people to which he attaches a non-zero weight in making the decision of interest"* (Soetevent, 2004).

Due to data constraints, models focusing on social interaction effects strongly simplify the specific links between individuals when defining who interacts with whom in the society. Most reference group definitions put forward by empirical researchers are based either on social or geographical proximity.

The reference group definition depicted in the present analysis uses the geographical proximity (at the NUTS2 level - administrative districts) as an indicator for the reference group of an unemployed individual. Unlike the situation in other countries (such as the USA and France), in the western part of Germany there is no evidence for a pronounced residential segregation between unemployed and employed people. Therefore, there is little doubt that the reference group of an individual is mixed, gathering both employed and unemployed people. In line with this idea, for the present analysis, the reference group of an individual is considered in a very broad manner, including all people living in an administrative district (NUTS2 level).

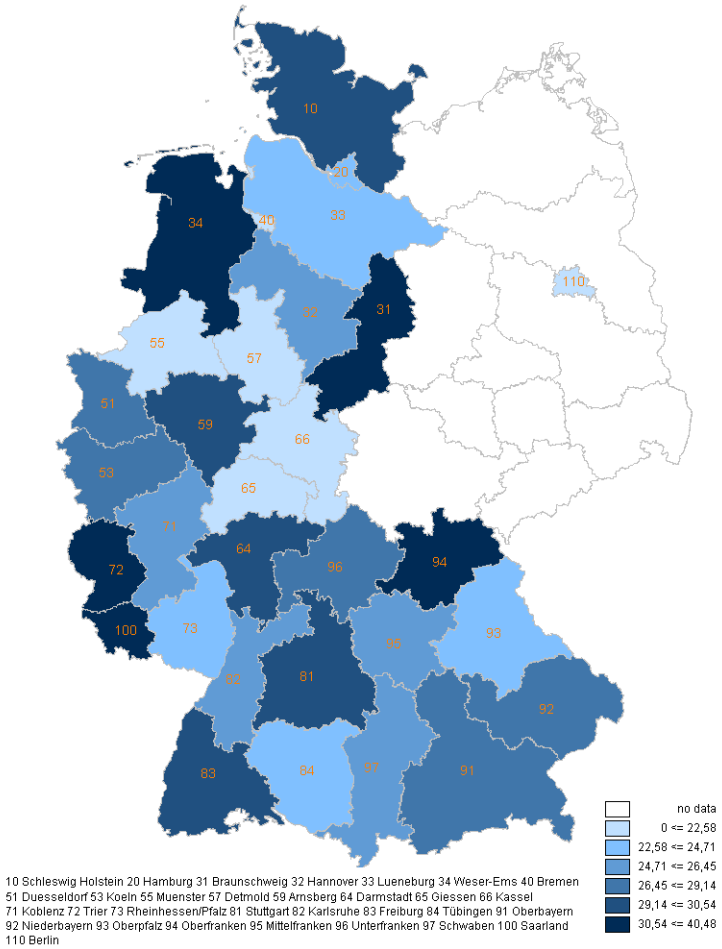
The second challenge, perhaps more nebulous, is the measurement of

social work norms. In order to study the effect of the social work norm on individual behaviour, one has to assess a method to measure the strength of this social norm (Stutzer and Lalive, 2004). The measurement should display the level of belief within one region that unemployed people have to support their own existance. As data for a proper analysis of social interactions models is rather scarce, researchers have to rely on their 'intuition' about which methods would most likely overcome the data constraints.

My approach of measuring the strength of the social work norm within communities is based on the concepts of 'extrinsic' and 'intrinsic' work values. Extrinsic work values refer to external job outcomes and include *"work benefits and work security"* (VanVianen et al. 2007, p.190). Furthermore, they reflect preferences for income, job security and in general benefits which are unrelated to the worker's tasks, e.g. a good pension plan or provision of generous holidays. In contrast, intrinsic work values refer to the intrinsic outcomes gained from working. They include aspects such as *"broadening one's horizons, contributing to society, and having meaningful work"* (VanVianen et al. 2007, p.190).

In order to reflect the extrinsic work values, based on a factor analysis, I have constructed an 'index of work norms' composed of several variables (see the Appendix). They can, though to a limited extent, express a certain tendency regarding social benefits and work security attitudes within the respective region. The values obtained as a result from modeling this index are displayed in Figure 1:

Figure 1: Share of persons with weak work norms – Index values by region



Source: Allbus 2000/2004, own calculations.

Note: a darker color of the region points out to a higher share of people with weak work norms.

The intrinsic work values are captured in this analysis through the inclusion of a variable denoting the share of Protestant people living in a region. The idea behind this indicator is that, as argued firstly by Weber (1934), religious beliefs of individuals go hand in hand with economic outcomes. Though

from a current perspective controversial - it is questionable whether nowadays the affiliation of a person with a church does say anything about the extent to which that individual internalises the contiguous religious thoughts - this assumption has gained increased attention in economics. Especially in the last decade, substantial progress has been made in understanding the role of religion for different economic outcomes such as labour supply, wages and wealth (among others, see the works of Keister, 2008; Chiswick and Huang, 2008; Ruffle and Sosis, 2007).[4] Following the work of Weber (1934) a range of authors have analysed the relationship between religions denominations (Protestantism among them) and attitudes towards work. Referring to Protestantism, Fukuyama (2005) states that it created a work ethic- *"that is the valuing of work for its own sake rather than for its results"* - and admonished its adherents to adopt a moral conduit also outside their families, which was particularly relevant in creating a system of social trust.

Due the code of work ethics established through interpersonal relations and common beliefs, the variable capturing the regional share of Protestant people does represent an appropriate proxy for the strength of the social work norms and social interactions within a region. Regarding the individual unemployment duration, this indicator should display an inverse relationship, meaning that in regions with a higher share of Protestants the individual duration of unemployment should be shorter.

2.2 Measuring unemployment

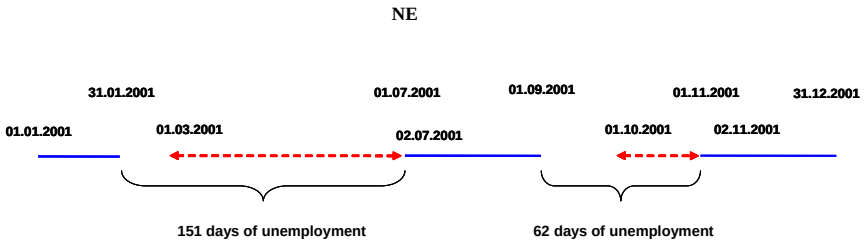
Though it provides detailed information both on individual employment and benefit receipt histories, the IABS-R01 subsample is marked by one shortcoming: due to collections procedures, the registered periods of unemployment benefit receipt can not be easily interpreted as actual periods of unemployment.

[4]For an introduction to the economics of religion see the seminal work of Iannaccone (1998).

Analysing the data without conducting several changes might lead to two problematic situations concerning the time an individual spends in unemployment: on the one hand, although transfer payments expired, an individual might still be unemployed. An underestimation of the actual unemployment duration would be the consequence. On the other hand, an unemployed individual may still receive payments, though their participating in the labour market had stopped and they had already dropped out of the labour force.

In order to overcome this measurement problem, Fitzenberger and Wilke (2004) suggest a proxy for assessing the unemployment durations instead of periods of transfer payments as registered in the IABS-R01. This proxy (NE-NonEmployment) consists of the time between two employment spells, containing at least one period of transfer payments by the Federal Employment Agency. If no spell of employment is registered after a period of benefit receipt, the NE spell is considered as (right-) censored. Otherwise a transition from unemployment to employment occurred.

Figure 2: Unemployment duration according to the NE proxy



Note: the blue lines represent periods of employment, while the red ones mark periods in which the individual received unemployment benefits. The total duration of unemployment in the presented example for the year 2001 was 213 days. Should it be the case that in a certain period of time an individual was employed and carried out a so-called 'Minijob' (Geringfügige Beschäftigung) but received simultaneously unemployment benefits, the spell is considered as an employment period.

The data set used for the present analysis includes individuals in the age group 17 to 64 years displaying at least one spell of unemployment between 1999 and 2001. Information regarding their gender, nationality (German or otherwise) and education is also taken into consideration, as these indicators

are assumed to play a role in explaining the individual duration of unemployment. Furthermore, information on regional indicators is included, as well as two variables which should capture a social interaction effect (the share of people with weak work norms and the share of Protestants living in a region). In the following, in order to get a better data overview, some descriptive statistics are presented. The level-1 variables are extracted from the IABS-R01 data set and are at the individual level. The level-2 and level-3 variables are extracted (created) from ALLBUS 2000 and 2004 and other statistic sources.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
		Level 1 (Individual)			
Time	61,413	202.14	183.39	0	1044
Male	61,413	.589	.491	0	1
Foreigner	59,562	.131	.338	0	1
Age	61,413	36.57	10.719	17	64
Age^2	61,413	1452.87	837.79	289	4,096
Education	61,383	1.452	1.230	0	6
		Level 2 (NUTS2)			
UnemploymentRate	61,413	7.7199	2.428	4	16.1
FirmOpenings	61,413	.016	.001	.013	.020
FirmClosings	61,413	.013	.001	.010	.017
ShareWorkMoral	61,413	27.092	4.691	13.636	40.476
		Level 3 (NUTS1)			
JobOpenings	61,413	.160	.028	.049	.214
Protestant	61,413	35.038	11.261	20	58.7

Note: 'Time' displays the individual duration of unemployment in days. 'Foreigner' is a dummy variable with a value equal to 0 if individual is German and equal to 1 otherwise. 'Male' is a dummy variable equal to 1 for males and equal to 0 for females. 'Age' is and individuals' age (in years). 'Education' is a variable displaying the education level of an individual. 'UnemploymentRate' is the regional unemployment rate, 'FirmOpenings/Closings' represent the number of firm who opened/closed in the region per employable person, 'ShareWorkMoral' captures the regional share of people with weak work norms, 'JobOpenings' represents the regional number of jobs per employable person, and finally, 'Protestant' is the share of Protestant people living in a region.

It is important to mention that, though for the second and third level variables, the apparent number of observations used in the regression analysis is round 60000, these variables are disaggregated at the individual level. Therefore, the actual number of observations is 30 (for the level-2 variables), respectively 10 (for the level-3 variables). Due to the hierarchical structure of the data (variables on the individual, NUTS2 and NUTS1 level), what actually happens is that a few data values from a small number of super-units are 'blown-up' into many more values for a larger sample of sub-units. As a consequence, the statistical analysis loses power, as the number of disaggregated cases lead to significance tests that reject the null-hypothesis far more often, meaning that it may end up with many 'significant' results which are actually spurious.

3 Results

As a first step, to set a basis for comparison, a simple OLS regression was carried out in order to gain insight into, among other things, the impact on the individual unemployment duration exerted by the portion of people with weak work norms. However, in such a model, though it was corrected for heteroskedasticity and it was taken into account that observations for the same regions may be correlated, all observations were pooled together without taking into account the hierarchical structure of the data. Accordingly, the basic OLS regression does not allow for the assessment of the influence of variables from a higher level on the dependent variable at the lowest level. Since the goal of this analysis is to determine the direct effect of individual and group-level explanatory variables, and to determine if the explanatory variables at the group level serve as moderators of individual-level relationships, a second analysis is undertaken by using a more appropriate technique.

A multilevel analysis

One solution to the criticism concerning OLS models with hierarchical data, which has evolved rapidly in recent years, is the availability of multilevel modelling methods and software. They allow for integrating the individual and aggregate-level perspective by simultaneously estimating regression equations on both levels without violating important statistical assumptions of conventional multiple regression models (Raudenbush and Bryk, 2001; Snijders and Bosker, 1999). Thus it becomes possible, in principle, to disentangle the relative importance of individual and group (respectively regional)-level effects. Through employing a multilevel methodology, it can be argued that the different unemployment duration of individuals is explainable, in part, by using variables associated with the characteristics of higher-level units.

A further assumption that sustains the use of a multilevel approach is that the covariance of error terms of two unemployed individuals within one region is not zero. It means that their unemployment durations are correlated to each other, partially because they are living in the same community and share a common environment. In other words, there might be some factors such as work values or regional circumstances that may affect their unemployment duration regardless of their qualifications, age, gender or nationality. The correlation between two unemployed individuals (here referred to as the 'intra-group correlation') is discussed in more detail in the Appendix.

The multilevel framework also accommodates the specification of random coefficients, as it allows intercepts and coefficients to vary across higher-level units and/or to be explained by variables belonging to higher levels. In the model, the intercept coefficients and the slope coefficient of one explanatory variable (the unemployment rate in the region) are assumed to vary across the regions. It means that the undertaken assumptions are: a) that the average individual unemployment duration is not the same across all regions (random intercepts) and b) that the effect of the unemployment rate on the individual unemployment duration also differs regionally (random slope).

Empirical Model:

The formal three-level model is illustrated here for a basic case involving predictors at each level, with both the intercepts and a slope at the second level modeled to vary randomly.

The dependent variable is denoted by Y_{ijk} referring to an unemployed individual i living in the administrative district j (NUTS2 regions), in state k (NUTS1 regions).

The level 1 model for such data with one explanatory variable may be formulated as a regression equation:

$$Y_{ijk} = \beta_{0jk} + \beta_{1jk} X_{ijk} + e_{ijk} \tag{1}$$

where β_{0jk} is the intercept in level-two unit j within level-three unit k, X is a predictor that varies over individuals (such as age, nationality, education, gender) and e_{ijk} is the random error for the ith individual in the jth administrative district, in kth state.

At level 2, the variation in the intercept is predicted by:

$$\beta_{0jk} = \delta_{00k} + \delta_{01k} Z_{01k} + u_{0jk} \tag{2}$$

where δ_{00k} is the intercept, δ_{01k} is the slope coefficient of the second level predictors Z_{01k} (such as the regional unemployment rate, the number of firms which opened/closed per region and the regional share of people with weaker work norms) and u_{0jk} is the random error component.

At level 3, variation in the intercept is predicted by:

$$\delta_{00k} = \gamma_{000} + \gamma_{00k} W_{00k} + v_{00k} \tag{3}$$

where γ_{000} is the intercept, W_{00k} is the third level predictor (such as the regional share of Protestants or the number of job openings per region) and v_{00k} is the error component, which along with the e_{ijk} and u_{0k} are assumed

to be normally distributed with zero mean.

Since it was assumed that also the slope of one second level predictor Z_{01k} is random, the appending regression to (2) can be written as follows:

$$\delta_{01k} = \gamma_{010} + \gamma_{011} W_{011} + u_{01} \tag{4}$$

where W_{011} is a predictor (in my model the regional share of Protestants) which is meant to explain the variance of the slope. This predictor is introduced as an interaction term in the model.

By substituting (4) in (2) we have:

$$\beta_{0jk} = \delta_{00k} + \gamma_{010} Z_{01k} + \gamma_{011} W_{011} Z_{01k} + u_{01} Z_{01k} + u_{0jk} \tag{5}$$

Substituting (3), (5) and (2) into equation (1) yields the three level model:

$$Y_{ijk} = \gamma_{000} + \gamma_{00k} W_{00k} + \gamma_{010} Z_{01k} + \gamma_{011} W_{011} Z_{01k} + \beta_{1jk} X_{ijk} + (e_{ijk} + u_{0jk} + \\ + u_{01} Z_{01k} + v_{00k}) \tag{6}$$

The first five terms on the right hand side make up the deterministic part of the model. The last terms in parentheses comprise the stochastic or residual portion, which in this example contains four random variables. The presence of more than one residual term distinguishes this model from standard regression models and the structure of the random part is central to the estimation procedures.

Results Multilevel Analysis

The analysis was conducted gradually, beginning with the estimation of an 'empty' model (model 0) without explanatory variables in order to establish the general variance of regional differences in unemployment duration.[5] Three random intercept models follow, into which individual variables (model

[5]The calculations were performed using HLM6 software.

1), regional variables at the NUTS2 level (model 2) and, finally, the NUTS1 indicators (model 3) are incorporated as fixed effects. In model 4 the slope of one coefficient ($UnemploymentRate$) is assumed to be random, so that the regressions are run again with this specification. An interaction term is added, which acts as a moderator on the effect displayed by the unemployment rate. The results are presented in Table 3.

The 'empty' model (M0) shows significant variance in the intercept, i.e. the differences observed in the individual duration of unemployment across regions at the aggregate level are statistically significant. This does not change when the individual variables and the macro indicators (the NUTS2 and NUTS1 variables) are successively incorporated as explanatory variables into further models.

The effect of level-1 variables (M1) can be interpreted as follows: older people, foreigners (not having German nationality) and men have a longer duration of unemployment. A higher education results in a reduction of the individual duration of unemployment.

Turning to the influence of the level 2 indicators (M2), it is showed that neither the number of firm openings, nor the number of firm closings has any significant effect on the individual unemployment duration. The examination of the regional unemployment rate reveals that it exerts a strong positive influence on the dependent variable: as expected, in regions with higher unemployment rates the individual unemployment duration is longer. Whether an individual resides in a region with a high proportion of people with weak work norms has no statistically relevant association with the individual unemployment duration.

In the third model the social interactions-specific effect caused by the regional share of Protestants is not statistically significant, even though we would have expected it, as described by the theoretical literature. Moreover, the effect of job openings on the dependent variable is also not statistically significant.

However, things change when not only the intercept, but also the slope of the variable $UnemploymentRate$ is assumed to vary across regions. In other words, it is confirmed by the multilevel modelling that the effect of the regional unemployment rate on the individual unemployment duration is not the same across all regions, i.e. the slope for some regions is steeper than for others. When allowing for random slopes across regions, there is a direct effect on the dependent variable exerted by the variable $ShareWorkMoral$, meaning that in regions with higher shares of people with weak work norms, the individual unemployment duration is longer.

In order to explain the slope variance of the regional unemployment rate, a cross-level interaction term is introduced in the regression ($Unempl * Protestant$). In this case, the $Protestant$ variable influences the effect of the regional unemployment rate, by acting as a moderator. Put differently, a larger share of Protestant people decreases the impact of the regional unemployment rate on the individual unemployment duration. This implies that the individual unemployment duration is shortened in regions with higher shares of Protestants, following a social interaction effect enforced through work norms.

4 Conclusions

In this article I have focused on the role of social interactions in explaining the individual duration of unemployment.

By using an extensive data set with precise information about individual unemployment duration (micro-level data set, including the employment history, as well as the history of unemployment benefit receipt for two percent of all German employees subject to social insurance contributions for the period 1999 to 2001), I construct an empirical model, in which I explore whether and to what extent the social work norms shared by individuals living in the same region have an impact on the length of time a person spends unemployed.

The underlying assumption of the analysis is that in regions with a high percentage of people with a weak work norms, the duration of unemployment is longer due to the lack of social pressure exerted on the unemployed individuals. The method used for the study is based on a multilevel analysis, as it contributes to the understanding of the effects regional membership has on individual performance.

The results of such an analysis are relevant not only for academic research but also for policy makers. Under the premise that social interactions are highly relevant in shaping individual choices, no additional return would be gained from policies aimed *exclusively* at improving individual characteristics, such as vocational training or the provision of welfare subsidies. Instead, if it is assumed that an individual belonging to a certain peer group or community faces disadvantages on the labour market due to this affiliation, efforts should be channelled into programs focusing on that reference group or community as a whole.

Conversely, if the endogenous personal choices and the personal characteristics of an individual are the only ones relevant in determining his out-

comes on the labour market[6], there appears to be no sense in trying to tackle inequalities by addressing group-specific problems. If the unemployment duration of one individual does not reflect the composition of his group, but rather the lack of certain individual characteristics such as education or appropriate skills necessary for finding a job, policies oriented towards vocational training, further educational measures or better work placement counseling seem to be more appropriate.

[6]Heining and Lingens (2005, p.26) using a data set for Germany, find that the overwhelming majority of differences in the hazard rate among individuals' outcomes can be explained by structural individual characteristics: *"Structural regional heterogeneity has surprisingly little effect on duration of unemployment. From this, we conclude that for leaving unemployment it does not matter where you are, but who you are*".

Table 3: Results Multilevel Analysis:

	M0	M1	M2	M3	M4
Fixed Part Predictor	Coeff.	Coeff	Coeff	Coeff	Coeff
Intercept	210.97***	210.97***	204.50***	204.12***	205.08***
Individual level variables					
Male		11.89***	11.80***	11.80***	11.84***
Age		11.25***	11.25***	11.25***	11.25***
Age^2		-0.11***	-0.11***	-0.11***	-0.11***
Foreigner		22.47***	22.82***	22.74***	22.82***
Education2		-22.06***	-22.14***	-22.12***	-22.01***
Education3		-37.01**	-22.14***	-36.95***	-36.69***
Education4		-22.30***	-22.25***	-22.18**	-21.94**
Education5		-41.77***	-41.71***	-41.69***	-41.55***
Education6		-48.85***	-48.890***	-48.90***	-48.65***
Education7		1.57	1.34	1.42	1.60
NUTS 2 Variables					
Unemployment Rate			6.21***	6.62***	6.12***
Firm Openings			-6.20	-456.11	-
Firm Closings			636.99	1293.79	-
ShareWorkMoral			0.42	0.44*	0.45*
NUTS 1 Variables					
Job Openings				43.98	97.90
Protestant				-0.17	0.04*
Interactions Term					
Unempl*Protestant					-0.16**
Random Part					
σ^2_e	33490.93	32255.25	32256.04	32256.02	32257.44
σ^2_{u0}	66.64*	60.12*	15.13***	11.34**	4.44***
σ^2_{v0}	325.69***	265.08***	3.44*	4.40*	0.16
σ^2_{u1}					0.32*

The dependent variable is 'Time' which displays the individual duration of unemployment in days. In this model, the intercept represents the average duration of unemployment across all regions and all individuals. The explanatory variables are defined as follows: 'Foreigner' is a dummy variable with a value equal to 0 if individual is German and equal to 1 otherwise. 'Male' is a dummy variable equal to 1 for males and equal to 0 for females. 'Age' is an individuals' age (in years). 'Education' is a variable displaying the education level of an individual (1-without education (reference category), 2-secundary school with vocational training, 3-baccalaureate without vocational training, 4-baccalaureate with vocational training, 5-degree from a university of applied science, 6-university degree, 7-unknown degree). 'UnemploymentRate' is the regional unemployment rate, 'FirmOpenings/Closings' represents the number of firm who opened/closed in the region per employable person, 'ShareWorkMoral' captures the share of people with a weak work norms per region, 'JobOpenings' represents the regional number of jobs per employable person, and finally, 'Protestant' is the share of Protestant people living in a region. All explanatory variables, except for the dummy variables are grand centered.

*p<.05; **p<.01; ***p<.001

The random part of the model is discussed in the Appendix.

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5 Appendix

5.1 Generating the proxy for the individuals' work norms

The variable indicating the proportion of people with weak work norms was constructed in this study on behalf of five statements from the ALLBUS data set which express peoples' opinions with regard to welfare benefits and the role of the state in society. The first step in this process was to build up, focusing on these statements, a proxy which reflected the extrinsic work moral of individuals. The second step was, based on the obtained values, to assess the regional share of people depicting weak (or high) work norms. The five statements which were initially selected for the construction of the proxy are succinctly presented:

I. If social benefits, such as continued payment in the case of illness, unemployment compensations and early pensions are as high as nowadays, it leads only to the fact that people do not want to work anymore. Response options: 1 'I totally agree'; 2 'I rather agree'; 3 'I rather disagree'; 4 'I totally disagree'

II. Should social benefits be cut in the future, should things stay as they are, or should social benefits be extended? Response options: 1 'should be cut'; 2 'should stay as they are'; 3 'should be extended'

III. It is the responsibility of the state to meet everyone's needs, even in case of sickness, poverty, unemployment and old age. Response options: 1 'I totally agree'; 2 'I rather agree'; 3 'I rather disagree'; 4 'I totally disagree'

IV. What one gets in life hardly depends on one's own efforts, but rather on the economic situation, job opportunities, union agreements and the social services provided by the state. Response options: 1 'I totally agree'; 2 'I rather agree'; 3 'I rather disagree'; 4 'I totally disagree'

V. Income should not be based solely on the performance of an individual. Rather, everybody should have what they and their family need for a decent life. Response options: 1 'I totally agree'; 2 'I rather agree'; 3 'I rather disagree'; 4 'I totally disagree'

The first question that has to be answered is whether these variables can be selected in creating a new variable. In other words: do all these indicators reflect, in terms of attitudes, the same thing? At first sight, the

first two statements seem to indicate individuals' opinions concerning welfare benefits (and thus reflecting their extrinsic work values), while the latter three statements seem more to express peoples' opinions regarding broader economic themes such as the role of the state in the society. The second statement was already distinguished as being relevant in assessing the work norms of an individual (see for more details on this proxy the study of Stutzer and Lalive, 2002).

However, in order to identify which statements can be combined for describing a new variable capturing the extrinsic work norms of individuals, a factor analysis was performed. Generally, factor analysis is helpful in reducing a set of observed variables into fewer unobserved variables called factors. It can also be used in grouping a range of interdependent variables into descriptive categories, such as ideology, intelligence or attitudes.

Initially, a principal components factor analysis (pcf) was conducted. Based on the stopping decision rule of eigenvalues greater than one, the five indicators loaded particularly on two factors, which explained 55.21 percent of all variance. An additional scree test also suggested that out of these five variables two factors can be built, with some variables loading more on the first factor, and some others on the second factor. Further on, a varimax rotation was performed in order to get a better interpretation and labelling of each factor. This orthogonal rotation makes sense when one wants to create a new variable, in form of an index, without inter-correlated components (Kleinbaum et al., 1997). The results after the varimax rotation show that, as expected, the first and second indicators load on the same factor (Factor2), while the last three converge towards a different factor (Factor1). For details on the factor loadings and variances see Figure 3.

In the final stage of the factor analysis, the scoring coefficients were predicted for both factors. However, for the further analysis, another option was used, namely to create an index out of each cluster of variables (Nunnally, 1994). As Factor2 reflects better the individuals' extrinsic work norms, only

the variables loading on this factor were then aggregated into an index:

$$Index(individual) = \frac{Indicator1 + Indicator2}{2}$$

This index was calculated for each individual. A further step in creating the variable capturing the share of people with lower work norms within the regions was the delimitation between individuals with 'high' or 'weak' work norms, according to the values scored on the individual work indexes. This delimitation was based on the quartiles distribution of the individual indexes over all regions. A dummy variable was created, where 1 was given to persons with scores in the upper quartile (above p75) and 0 otherwise. Finally, the variable capturing the share of people with 'weak' work norms within each region was calculated (number of individuals with 1-values per region divided through the total number of individuals per region).

Figure 3: Factor Analysis

Factor analysis/correlation Number of obs = 4061
Method: principal-component factors Retained factors = 2
Rotation: orthogonal varimax (Horst off) Number of params = 9

Factor	Variance	Difference	Proportion	Cumulative
Factor1	1.47027	0.17995	0.2941	0.2941
Factor2	1.29032	.	0.2581	0.5521

LR test: independent vs. saturated: chi2(10) = 1189.94 Prob>chi2 = 0.0000

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Uniqueness
Indicator 1	-0.1689	**0.7639**	0.3880
Indicator 2	0.2668	**0.6998**	0.4390
Indicator 3	**0.5334**	0.4273	0.5329
Indicator 4	**0.7530**	-0.1307	0.4159
Indicator 5	**0.7205**	0.1317	0.4636

Factor rotation matrix

	Factor1	Factor2
Factor1	0.8074	0.5900
Factor2	-0.5900	0.8074

Note: Factor loadings are the weights and correlations between each variable and the factor. The higher the load of one indicator, the more relevant is this indicator in defining the factors dimensionality. A negative value indicates an inverse impact on the factor. In the above example, the two factors were retained because both had eigenvalues over 1. It seems that Indicator 1 and Indicator 2 define Factor1 while the other indicators define Factor2.

5.2 How much variance is explained by the model?

In multilevel modelling, the first step of analysis is usually to compute the so-called 'intercept-only model' with no explanatory variables in order to examine whether a significant proportion of variance is attributable to the aggregate level, comparable to a conventional ANOVA (Raudenbush and Bryk, 2001).

The intra-group correlation coefficient (IGC) computed from the variance components shows how large (as a percentage of total variance) a possible group/regional effect is. The equation is as follows: $Y_{ijk} = \gamma_{000} + e_{ijk} + u_{0jk} + v_{00k}$, where γ_{000} is the usual intercept, v_{00k} is the residual at the third level, u_{0jk} is the residual at the second level and e_{ijk} is the residual at the individual level.

The 'empty model' does not explain any variance in Y, it only decomposes the variance into three independent components. Their variances are denoted by: $var(e_{ijk}) = \sigma_e^2$, $var(u_{0jk}) = \sigma_{u0}^2$ and $var(v_{00k}) = \sigma_{v0}^2$.

The expected correlation between two individuals living in the same administrative district is calculated as follows (and it takes into consideration that two individuals in the same administrative district must also be in the same state):

$$\rho_{level2} = \frac{\sigma_{v0}^2 + \sigma_{u0}^2}{\sigma_{v0}^2 + \sigma_{u0}^2 + \sigma_e^2}$$

and equals 0.11. In other words, the expected correlation of two individuals living in the same administrative district is 0.11 and meanwhile, 11 percent of all variance of the dependent variable is at the higher levels.

On behalf of the level variances one can calculate the squared multiple correlation R^2, which in the multiple regression analysis is interpreted as the proportion of variance modeled by the explanatory variables. However, in multilevel regression analysis, the issue of explained variance is more complex, as there is unexplained variance at several levels to contend with. Moreover, if there are random slopes, the model is more complex and in this case the

concept of explained variance has no unique definition anymore. Among the approaches that have been proposed, the one used for the present analysis consists of a sequence of models in which the amount of variance explained is calculated at each level.

The variance explained by introducing the Level1 variables is given by

$$R_1^2 = \left(\frac{\sigma^2_{e|mo} - \sigma^2_{e|m1}}{\sigma^2_{e|mo}} \right),$$

where $\sigma^2_{e|mo}$ is the lowest level residual variance for the baseline model (intercept-only model) and $\sigma^2_{e|m1}$ is the lowest level residual variance for M1 and equals 0.036. In other words, 3.6 percent of the variance at the individual level is explained by the variables that were introduced in the model (age, nationality, education and gender).

The variance at the second level explained by the Level2 variables is given by:

$$R_2^2 = \left(\frac{\sigma^2_{u0|mo} - \sigma^2_{u0|m2}}{\sigma^2_{u0|mo}} \right),$$

where $\sigma^2_{u0|mo}$ is the second level residual variance for the baseline model and $\sigma^2_{u0|m2}$ is the second level residual variance for M2 and equals 0.3638. In other words, 36.38 percent of the variance at the second level is explained by the variables that are part of the model. Finally, the variance at the third level explained by adding the third level variables is given by:

$$R_3^2 = \left(\frac{\sigma^2_{v0|mo} - \sigma^2_{u0|m3}}{\sigma^2_{u0|mo}} \right),$$

where $\sigma^2_{v0|mo}$ is the third level residual variance for the baseline model and $\sigma^2_{u0|m3}$ is the third level residual variance for M3 and equals 0.9864. That means, that 98.64 percent of the variance at the third level is explained by the Level3 variables.

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