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You're Fired! The Causal Negative Effect of Unemployment on Life Satisfaction

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Sonja C. Kassenboehmer and John P. Haisken-DeNew*

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Abstract

This paper examines the impact of unemployment on life satisfaction for Germany 1984–2006, using a sample of men and women from the German Socio-Economic Panel (SOEP). Across the board we find large significant negative effects for unemployment on life satisfaction. This paper expands on previous cornerstone research from Winkelmann and Winkelmann (1998) and explicitly identifies truly exogenous unemployment entries starting from 1991. We find that for women in East and West Germany, company closures in the year of entry into unemployment produce strongly negative effects on life satisfaction over and above an overall effect of unemployment, providing *prima facie* evidence of a reduced outside work option, large investments in firm-specific human capital or a family constraint. The compensating variation in terms of income is dramatic, indicating enormous non-pecuniary negative effects of exogenous unemployment due to company closures.

JEL Classification: Z1, J64, J65, J16

Keywords: Unemployment, life satisfaction, company closing, gender

August 2008

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1 Introduction

In recent years, economists have become increasingly interested in the factors influencing happiness (Frey and Stutzer, 2002; Frijters et al., 2004a,b). This line of research builds on the findings of psychologists who study decision-making using people's own valuations of their life satisfaction levels. The responses are usually collated on an ordinal scale (ranging, for example from 0 (very unhappy) to 10 (very happy)). Behind this self-assessed well-being lies a cognitive process that takes circumstances, aspirations, comparisons with others, one's own baseline of happiness, past experiences and dispositional outlook into consideration (Blanchflower and Oswald, 2004). The determinants of life satisfaction are usually investigated in a microeconomic life satisfaction model with life satisfaction as the dependent variable, explained by various socio-demographic and socioeconomic variables. The high level of empirical support provided for the concept of happiness by psychology has helped to promote the idea of the notion of measurable utility. The potential for new insights of this research has been demonstrated by a large empirical literature (for an overview see Clark et al., 2006).

Economists have been keenly interested in determining the effect of labour market status (especially unemployment) on life satisfaction. The previous literature such as Winkelmann and Winkelmann (1998) has sought to quantify the non-pecuniary costs of unemployment due to reduced well-being. The paper is particularly innovative in that subjective information is used to identify model outcomes in an otherwise completely objective model. The paper concludes that the non-pecuniary effect of unemployment is much larger than the effect from the associated loss of income. This is primarily due to loss of social contact, reduced self-esteem and identity in society (Goldsmith et al., 1996). The higher the pressure of the social norm for an individual to work, the higher the psychological pressure to regain employment (Akerlof, 1980). Because of the large detrimental effect of unemployment on life satisfaction, the literature concludes that unemployment is largely involuntary.

Existing studies, however, face a number of limitations. The negative effect of unemployment found in the literature, even with panel data, might simply reflect the fact that workers become dissatisfied with their jobs and therefore decide

to become voluntarily unemployed. Hence, not distinguishing between exogenous or endogenous unemployment (as was not explicitly examined in Winkelmann and Winkelmann, 1998) limits the causal interpretability of measured association between unemployment and life satisfaction.

Also, many of the studies, especially conducted by psychologists, use cross-section data and as such are subject to the usual limitations with this data. Further, the ordinal scale on which answers to life satisfaction questions are collated is often interpreted in a cardinal manner. Until recently it was unclear whether the results differ when assuming ordinality or cardinality across persons and how the results differ when using panel data as opposed to mere cross-sections. It is also uncertain how these results differ from those of Ferrer-i-Carbonell and Frijters (2004) who developed a new estimator which even relaxes the ordinal comparability assumption. Furthermore, datasets used are often small and based on narrow sub-populations. The effect of unemployment is typically only investigated for men and not for women or other samples.

This study contributes to the existing literature in that it addresses these issues directly by closely examining exogenous unemployment in order to identify causal effects. Additionally, it compares different estimation techniques. An approximation to the advanced fixed-effects conditional logit technique of Ferrer-i-Carbonell and Frijters (2004) is implemented in this study to control for time-invariant person-specific heterogeneity and this is shown to make a significant difference to the estimation results.

Different sub samples are compared: West/East Germans and men/women are compared as a robustness check. In this context, we implement the most current data for the time period 1984-2006 to take advantage of additional information. The basis for the present analysis is data from the German Socio-Economic Panel (SOEP)¹ which allow in this paper explicit identification of different reasons for

¹The data used in this paper were extracted using the Add-On package PanelWhiz v2.0 (Sep 2007) for Stata. PanelWhiz was written by Dr. John P. Haiken-DeNew (john@panelwhiz.eu). The following authors supplied PanelWhiz SOEP Plugins used to ensure longitudinal consistency, John P. Haiken-DeNew (29), Markus Hahn and John P. Haiken-DeNew (18). The PanelWhiz generated DO file to retrieve the SOEP data used here and any Panelwhiz Plugins are available upon request. Any data or computational errors in this paper are my own. Haiken-DeNew and Hahn (2006) describes PanelWhiz in detail.

entry into unemployment since 1991.

2 Background Information

While traditional economic theories suggest that the utility loss from unemployment is accompanied by the experienced loss of income and increase in leisure, the latter suggests that there are also non-pecuniary costs associated with unemployment (Carroll (2005)). This is also picked up by a large section of empirical psychological literature that investigates the impact of unemployment on psychological well-being. Psychologists (such as Jensen and Smith, 1990) who investigated the impact of unemployment on adverse individual outcomes such as increased mortality, suicide risk, and crime rates, in general found that unemployment has negative psychological effects because it leads to a substantial increase in these factors (Jensen and Smith, 1990). Many psychologists tried to quantify these non-pecuniary costs. Some of them, such as Bjoerklund and Eriksson (1998) and Korpi (1997), related the costs directly to decreased mental well-being. They related the negative effect of unemployment to certain health symptoms such as sleeplessness, stomach pain and depression. Many studies have also used the General Health Questionnaire (GHQ) which is implemented in the BHPS and asks for certain health symptoms. The economists Clark and Oswald (1994) used the first wave of the BHPS to regress a mental distress score, calculated from the answers to the GHQ, on unemployment and other factors. Here, unemployment was also found to have a significant negative effect on mental states, even when controlling for income.

Further psychological findings provide some explanation for why positive aspects associated with unemployment seem to be surpassed by negative effects.² Goldsmith et al. (1996) for example, found that unemployment lowers self-esteem, by measuring well-being through responses that reflect the individual's level of control, using the National Longitudinal Survey of Youth (NLSY). Although self-esteem is usually seen as a stable personality trait, certain important life events such as entry into unemployment may reduce it (Brickman et al., 1978). Not only current but even

²Overview over the psychological findings on unemployment are given by Argyle (1999), Burchell (1979-1992), Feather (1990), Fryer and Payne (1986), Murphy and Athanasou (1999) and Clark (2006).

previous unemployment is found to reduce self-esteem and to lead to feelings of lack of control.

Akerlof (1980) developed a model that includes a reputation component into the utility function ³. If an individual is unemployed, then this individual breaks a social custom, which may result in a loss of reputation and hence in a lower utility-level, in other words, a decline in life satisfaction results. This theoretical conclusion is difficult to prove because there is no direct measure for the intensity of a social norm.

While the studies mentioned above are mostly theoretical, qualitative, cross-sectional quantitative or longitudinal with only a few observations and not controlling for other variables, the presence of life satisfaction data in many longitudinal datasets suggests an alternative way to measure the psychological cost of unemployment. The psychological effect of unemployment is not directly measured by certain health symptoms or a mental distress score, but rather indirectly by multivariate regression analysis with individual life satisfaction as the dependent variable. This method allows controlling for income and other factors and thereby isolates the non-pecuniary costs of unemployment.

The advantage of longitudinal designs is that they permit stronger inferences about the causal effect of unemployment on life satisfaction. Gerlach and Stephan (1996) were among the first economists who explicitly investigated the effect of unemployment on life satisfaction. While they used OLS and OLS fixed effects estimation method and thus implicitly assumed that the ordinal scale of the life satisfaction questions can be cardinally interpreted, Winkelmann and Winkelmann (1998) recoded life satisfaction into a binary variable coded as 1 if life satisfaction is above the overall mean of reported life satisfaction, otherwise 0. This proceeding allowed them to maintain the ordinality of the life satisfaction scale and at the same time to be able to account for fixed effects by implementing Chamberlain's conditional logit estimation (Chamberlain, 1980). Because the latter approach is accompanied by a huge data loss due to the incapability of this estimator to use individuals who do not have changes in the dependent variable, Ferrer-i-Carbonell and Frijters (2004) developed an estimator that assigns each individual a specific threshold according to which life satisfaction is recoded into a 1/0 dichotomy.

³See Carroll (2005) for more information.

All studies found a detrimental effect of unemployment on life satisfaction for males. Those studies that also looked at females, also found negative effects for this subgroup. The effects for females are however smaller than the effects for males which is explained by the stronger traditional attachment of men to the labor market (for analysis based on the SOEP compare for example Gerlach and Stephan, 1996, Clark et al., 2001, Frijters et al., 2004a, Frijters et al., 2004b). We will show, basing our analysis on more advanced estimation techniques in combination with more precise data and detailed look into reasons for job termination for men and women, that this result can be turned over completely, providing *prima facie* evidence of a reduced outside work option, large investments in firm specific human capital or a family constraint for women.

Because of the stable negative coefficient for unemployment for all estimation techniques, the researchers (such as Winkelmann and Winkelmann, 1998) conclude that unemployment is involuntary. Although the literature suggests that unemployment causes decreased life satisfaction levels, reverse causation, namely that low life satisfaction leads to unemployment, is also possible. First, it is for example possible that inherently dissatisfied people are more likely to get fired. In a cross-section analysis, a negative effect of unemployment would then lead to incorrect results. Second, unemployment might be endogenous, hence chosen by the individual. In that case, a negative effect of unemployment on life satisfaction might just reflect that a worker becomes dissatisfied with his job and therefore becomes unemployed voluntarily. The first problem has been addressed amongst others by panel studies. These showed that individuals report a drop in life satisfaction only once they are unemployed and are hence not intrinsically dissatisfied.⁴ However, taking the third possibility into account, namely that unemployment is endogenous and that dissatisfaction with the job may lead to voluntary unemployment, a negative regression coefficient for unemployment might still not reflect a causal impact of unemployment on life satisfaction.

Winkelmann and Winkelmann (1998) investigated this possibility to some extent in a descriptive manner in that they calculated the change in satisfaction for transition from employment to unemployment for the involuntary unemployed and the older unemployed assuming that unemployment is more exogenous for the older

⁴In regression analysis, intrinsic differences in satisfaction can be accounted for.

unemployed since the younger have no established careers yet. They found that both groups report significant reductions in life satisfaction. In addition, they could not “reject the hypothesis that the detrimental effect of unemployment is the same independently of age or reason for termination.” Hence, they conclude that unemployment can be treated as exogenous. Therefore, in their regression analysis they did not distinguish between voluntary and involuntary unemployment. In this analysis, we explicitly include the reason for job termination and entry into unemployment in a multivariate regression analysis, controlling for unobserved individual heterogeneity and show highly differential effects.

3 Data

The SOEP is a representative longitudinal study of private households in Germany. Starting in 1984, the same private households were followed each year. In 1990, after reunification, the panel was extended to the former GDR. Apart from the samples for East and West Germany, the SOEP consists of five other subsamples, such as the Immigrant Sample which was integrated in 1994. See Haisken-DeNew and Frick (2005) for more information. The data include information on objective and subjective aspects. Objective aspects comprise information on occupational and family biography and household composition. Subjective aspects comprise questions on personality traits, health and personal satisfaction.⁵

In this study, people aged 20 to 64 who reside in Germany are included in the analysis. The analysis covers the years 1984 to 2006. The total sample consists of 286241 person-year observations (39461 people) for all 23 waves. The effect of entry unemployment on life satisfaction is investigated for several sub-samples starting in 1991. People are included in the West German sample, if they were living in West Germany in 1989. The valid person-year observations starting 1991 are: 25802 west men, 11264 east men, 25613 west women and 11964 east women.

We replicate the results of Winkelmann and Winkelmann (1998) and then expand the analysis to examine the period 1991-2006, allowing more detailed controls for the exact reasons of unemployment: voluntary quit, being fired, or company closing.

⁵<http://www.diw.de/soep>

4 Econometric Framework

The previous economic research has concluded that unemployment is involuntary because of the strong negative effect of unemployment on life satisfaction, found by regression results. This effect was found to be strong even when controlling for income. The resulting coefficient is then interpreted as psychological distress due to potentially social exclusion for example. This study investigates the effect of unemployment on life satisfaction in more detail. The first improvement of this study will be to isolate clearly the effect of voluntary and involuntary entry into unemployment. The SOEP allows making this distinction because it contains a question concerning self-reported reasons for entry job termination. Since 1985, the SOEP includes a question on the reason for termination of a job. People are asked to select all the responses that apply in their case, such as “quit for personal reasons”, “transferred by firm”, “transferred on own account”, “reaching retirement age”, “wanting to look for another job”, “personal reasons”, “time-limited work contract”, “quit on one’s own”, “giving up working”, “fired by employer” and “other reasons”. In 1991, the possible answers were extended to “company closing” and “on leave on sabbatical”. With this question, it is possible to distinguish the involuntarily unemployed from the voluntarily unemployed. In this study someone is defined as becoming involuntarily unemployed if he is fired by the employer or if the company closed within the last 12 months. If someone reports “wanting to look for another job”, “personal reasons”, “time-limited work contract”, “quit on one’s own”, “giving up working” and “other reasons” in combination with entry into unemployment he is assumed to become voluntary unemployed. It might be questionable if someone who is fired is really involuntarily unemployed: certain people might be more likely to get fired because of personality, others might set out to get fired rather than quitting in order to receive compensation. Therefore, getting fired and company closure are both included in the regression as separate variables.

Another extension will be the division of individuals into different subsamples. As argued, there might be heterogeneity in people’s reaction to unemployment, for example due to different commitments to work. Women, for example, might be less hurt by unemployment than men because the social norm’s pressure to work might be higher for men due to their role in society as the primary providers. There

might also be regional differences, for example between East and West Germany because of their different historical backgrounds concerning labour market situation and involvement with employment. Women in East Germany might be expected to be more hurt by unemployment than their western counterparts because eastern females have historically been more attached to employment in the GDR.

Therefore, the dataset will be divided into four different categories: West Males, East Males, West Females and East Females. On the different subsamples, regression analysis is conducted, such that the influences of several socio-demographic variables on life satisfaction are investigated. Because researchers in the literature have used different methodologies, these will be compared in order to determine their influences on the results. OLS and logit regression are undertaken in each case in a pooled and fixed-effect framework. For the fixed effects logit model, a conditional maximum likelihood estimator is used in order to obtain consistent estimates because the standard maximum likelihood estimator gives inconsistent estimates. Therefore, the dependent variable is collapsed into binary format. As a threshold value for the classification into the binary format, average life satisfaction is used, which is approximately 7.0. Therefore, if the reported satisfaction score on an 11-point scale is above 7, the life satisfaction variable is coded as 1, otherwise as 0. The drawback of the model is that the effect on satisfaction is only identified by individuals that change labour force states and satisfaction status. This huge data loss can be solved by the Frijters/Ferrer-i-Carbonell estimator and its approximation⁶, which applies individual specific thresholds to collapse the data into binary format. Because their method of finding the individual specific thresholds is computationally very intensive, this study uses a simpler approach to determining these thresholds, namely the individual's mean life satisfaction values over time. Hence, a binary variable (y_{it}) is generated that relates to (reported) life satisfaction (Y_{it}^*) as follows:

$$y_{it} = \begin{cases} 0 & \text{if } Y_{it}^* \leq \bar{Y}_i^* \\ 1 & \text{if } Y_{it}^* > \bar{Y}_i^* \end{cases} \quad \text{where } \bar{Y}_i^* = \sum_{t=1}^T Y_i^* / T . \quad (1)$$

This variable becomes one if life satisfaction is above the individual specific threshold, otherwise zero. On this binary variable, Chamberlain's conditional logit esti-

⁶We thank Ada Ferrer-i-Carbonell heartily for this tip.

mator can be applied that estimates coefficients conditional on the number of ones in the dependent variable.

Combining the joint probability functions of each particular sequence (each set of T observations) of $y_{it} = s_{it}$ ones and zeros leads for a sample of n person-observations to the following Log-Likelihood function which can be maximised by standard programmes (Chamberlain, 1980):

$$LL = \ln \left\{ \prod_{i=1}^n \frac{\exp \left(\beta' \sum_{t=1}^T x_{it} y_{it} \right)}{\sum_{d \in B_i} \exp \left(\beta' \sum_{t=1}^T x_{it} d_t \right)} \right\} = \sum_{i=1}^n \ln \left\{ \frac{\exp \left(\beta' \sum_{t=1}^T x_{it} y_{it} \right)}{\sum_{d \in B_i} \exp \left(\beta' \sum_{t=1}^T x_{it} d_t \right)} \right\} \quad (2)$$

where x_{it} represents a vector of explanatory variables, y_{it} the dependent binary life satisfaction variable and $d = (d_1, \dots, d_T)$ indicates the alternative set B_i varying across the observations. It consists of $\binom{T}{s}$ combinations of s_i ones and $T - s_i$

zeros with $\sum_{t=1}^T y_{it} = s$. Because the coefficients are estimated conditional on the number of ones, the heterogeneity term can be removed. As

$$p \left(y_{i1} = 1, \dots, y_{iT} = 1 \left| \sum_{t=1}^T s_{it}, \alpha_i, x_{it} \right. \right) = p \left(y_{i1} = 0, \dots, y_{iT} = 0 \left| \sum_{t=1}^T s_{it}, \alpha_i, x_{it} \right. \right) = 1,$$

observations without variation in the satisfaction variable *do not* contribute to the likelihood function. In addition, covariates that do not vary over time cannot be distinguished from α_i (the individual specific fixed effect) and drop out as well.

5 Empirical Results

5.1 Replication

We begin by replicating the results of Table 4 in Winkelmann and Winkelmann (1998) using the years 1984-1989 for men only. We compare the results of six different estimation methods in our Table 1a: (a) pooled ordinary least squares, (b) linear fixed effects, (c) pooled logit based on fixed life satisfactions thresholds of value 7, (d) same as (c) but with conditional logit, (e) pooled logit based on

individual averages, and (f) same as (e) but using the conditional logit estimator. Quite often many significant effects in the linear and non-linear pooled regressions are rendered insignificant in the fixed-effects/conditional logit regressions.

To replicate the original results from Winkelmann and Winkelmann (1998), we however choose not to include duration of unemployment directly as a regressor, as it is highly endogenous. In any case, it was not significant in the original regressions from Winkelmann and Winkelmann (1998). We present these results in Table 1a. By and large, we find very similar results with the parsimonious models: the effect of unemployment on life satisfaction is significant, large and negative as one would expect. This is true for all six estimation methods.

We also augment the simple models to differentiate the unemployment effect by age and corroborate the findings in Table 1b. There are some slightly differentiated effects by age, however they are not significantly different from each other. Differentiating out of labour force (OLF) by age produces significantly negative results for the 30-49 year category.

To test the robustness of the simple models, we expand the explanatory variables in Table 1c to include measures of family change, such as separation, divorce, death of spouse, children being born. Additionally, years of education, number of children in the household, and more health indicators are used. All of these indicators would likely influence labor supply decisions and might either mitigate or exacerbate the effects of unemployment. The large and significantly negative effect of unemployment on life satisfaction is highly stable, regardless of model. We also examine first period shock effects for entry employment, entry unemployment and entry OLF. Although in the linear pooled model and the fixed thresholds non-linear model we find significant *negative* effects of entry *employment*, upon controlling for fixed effects, these coefficients are no longer large or significant. One can interpret this as an indication that negative unobserved characteristics were largely responsible for the negative pooled effect. The coefficients on entry unemployment and entry OLF are insignificant for all models.

5.2 Disentangling Reasons for Unemployment

We take the analysis one step further by examining the time period 1991-2006. We leave out the transition year 1990 as it was an obvious outlier with German reuni-

fication. Furthermore for this period we are able to disentangle reasons for unemployment, but only starting in 1991. We will identify three types on unemployment: voluntary, being fired and company closing⁷.

Table 2a provides an excerpt of the results from six different estimation methods. The effect of unemployment across all estimation methods is negative and significant, at times being dominantly negative. We allow differential effects for the first year of unemployment and disentangle the reasons for the unemployment in the first place. As one would expect, the effects of voluntary unemployment on life satisfaction are insignificant on the year of entry. Examining the linear models (columns 1 and 2), the additional effect in the first year of being fired is about one quarter to one third again compared to the overall effect of being unemployed. However, this effect dissipates and is rendered insignificant in the conditional logit model with individual thresholds (column 6) again indicating that persons being fired have somehow in an unobserved manner negative characteristics.

Quite different is the effect of company closure across all estimation methods. Here we find an effect for the entry year similar (even greater in some cases) in size to the overall effect of being unemployed. In the first year, in column (6), the negative effect of being unemployed due to company closure doubles the overall effect and completely dominates the regression (for instance, this effect is much larger than a spouse dying in that year). In comparison, simply by being out of the labour force is still overall negative but quite smaller in magnitude: about one sixth the magnitude of being affected by a company closure, as indicated in column (6). Entry employment is seen to have no significant effect in all models controlling for individual heterogeneity, indicating somewhat of an asymmetry between movements in and out of employment. This is in contrast to the descriptive analysis in Table 2 in Winkelmann and Winkelmann (1998).

In Table 2b, we focus on interacting the the overall unemployed effect with dummy variables for (a) being German, (b) being male and (c) being from West

⁷The respondent self-reports the reason for unemployment. There may be some incentive to respond untruthfully if the respondent feels ashamed of being unemployed, and that this level of shame might be influenced by the existence of an interviewer, or the characteristics of an interviewer. We used interviewer characteristics as instruments for voluntary versus involuntary unemployment. The instruments were significant but had only very small effects and were furthermore not valid, as they affected the dependent variable directly.

Germany. We see that to a large extent, the results are being driven by gender as the male interaction term is significant in almost all models. Males are seen in general to be more negatively affected by unemployment than females. In Table 2c, entry unemployment due to voluntary reasons is disaggregated by the same 3 group indicators. Males are less affected than females by voluntary unemployment and there are no significant differences between regions. In Table 2d, entry unemployment due to being fired is for the most part not significant. Only in column (6) is it significant and positive for males, when controlling for fixed effects, indicating some sort of problem at the work place previous to being fired. Now examining the role of company closure we see a strongly negative effect for women in column (4) and (6).

We delve further into the mechanisms of the effects of unemployment on life satisfaction by examining the 4 groups separately in Table 3: West Males, West Females, East Males and East Females⁸. Here we are interested in comparing the entry effects of unemployment (regardless of reason) with those of employment. For all males and east females, there are no significant entry year effects for either unemployment or employment, when controlling for unobserved heterogeneity. For west females, there are some significant entry unemployment effects.

As we have not disaggregated the reasons for unemployment in Table 3, we augment the models to incorporate these reasons in Table 4. In all cases the overall effects of being unemployed are large, significant and negative. East males and females also experience significant negative effects of being out of the labour force, which could be attributed to the East German traditional attachment to labour force of both men and women. For males, there are no significant entry year effects for unemployment, when controlling for fixed effects. This is very different when examining women in both East and West. Women in both regions are largely affected by company closings, doubling even tripling their negative overall unemployment coefficient. These effects are stable whether examining pooled or fixed effects, linear or non-linear models. East women are also strongly negatively affected by being fired, which is stable even after controlling for fixed effects. Again this is likely due to the traditionally strong labour market attachment experienced by East women.

We attribute this specially negative effect for women to reduced flexibility in

⁸Residency in Germany determined by place of residence in 1989.

participating in the labour market. It is likely that women in partnerships supply labour conditional on the labour supply of their partners. If this were the case, then a company closure could be an indicator of reduced reemployment prospects for the woman, i.e. being a woman she is less likely to be able to leave perhaps a company that is likely to default, because she is supplying her labour dependent on her partner. A man might be likely as a bread winner to leave a potentially dying company and move elsewhere, whereas a woman might not have this flexibility. In the first year using the linear fixed effects models, women in West Germany would have to be compensated 4.7 log points $[(0.245+1.017)/0.271]$ of income (see full results in Table 4a) and in East Germany, women would have to be compensated 2.4 log points $[(0.533+0.507)/0.427]$ of income (see Table 4b) to offset their entry into unemployment due to a company closure. These are dramatic non-pecuniary costs to unemployment. (See Table 4c and 4d for West and East German men respectively.)

Pfann (2006) examines the dynamics behind plant closings in manufacturing. He finds that the firm displaces workers with low firing costs, low expected future productivity growth, and low layoff option values. He uses personnel records from a Dutch aircraft building company that went bankrupt in 1996 and shows that workers with high uncertainty associated with higher than average expected productivity growth are most likely to be retained. Thus the first waves of layoffs due to closings typically affect those whose outside options are least attractive and are easiest to fire (low severance payments or low tenure). The last waves of layoffs have some strong reason to stay with the firm even though the workers know of the potential economic plight of the firm. As such, they have much to lose upon plant closure. This effect might be even stronger for women who are often less flexible in changing their employers due to family considerations. This would be consistent with those workers who stay on to the bitter end, because they have large amounts of firm-specific human capital, and then suffer a dramatic depreciation of that capital.

6 Conclusion

This paper examines the impact of unemployment on life satisfaction for Germany 1984-2006, using a sample of men and women from the German Socio-Economic

Panel (SOEP). This paper expands on previous ground-breaking research from Winkelmann and Winkelmann (1998) and explicitly identifies exogenous unemployment entries with additional information on the reasons for unemployment: voluntary, being fired and plant closure. Further, the paper implements an approximation to the Ferrer-i-Carbonell and Frijters (2004) estimator, allowing conditional fixed effects estimation with individual-specific thresholds, thereby maximizing the number of usable observations. This technical innovation leads to significantly negative effects of unemployment due to company closing on life satisfaction for women, whereas results obtained with a common life satisfaction threshold were otherwise falsely found to be insignificant. For West German men, the negative and significant psychological effects of unemployment remain over the entire period constant. For the subgroups men/women and Germans/foreigners, the psychological detriment of the main unemployment effect does not significantly differ. For men, with few exceptions, the reason for entry into (voluntary or involuntary) unemployment has no additional effect in the year of entry into unemployment. For women, company closures in the year of entry into unemployment are strongly negative, providing *prima facie* evidence of a reduced outside work option, large investments in firm-specific human capital, or a family constraint.

Thus there is evidence to suggest that the exact reason for entry into unemployment plays an important role in determining the exogeneity of the unemployment event. With voluntary unemployment and being fired, the fixed effects results suggest some underlying unobserved negative characteristics of those becoming unemployed, although these unobservables do not explain the entire negative effect of unemployment. With company closing given as the reason for entry into unemployment, one can be most certain that the event is truly exogenous, producing dramatic negative non-pecuniary psychological costs in the order of several log points of income.

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Table 1a: Winkelmann/Winkelmann (1998) Reproduced

| | Continuous | | Fixed Thresholds | | Individual Thresholds | |
|--|---------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|
| | OLS | OLS-FE | Logit | C Logit | Logit | C Logit |
| Unemployed | -1.669** (0.068) | -1.076** (0.087) | -1.169** (0.086) | -1.025** (0.154) | -0.617** (0.076) | -0.937** (0.127) |
| Out of Labor Force (OLF) | -0.755** (0.065) | -0.346** (0.097) | -0.460** (0.073) | -0.047 (0.168) | -0.273** (0.070) | -0.177 (0.135) |
| Married | 0.310** (0.040) | 0.158* (0.091) | 0.302** (0.045) | 0.339** (0.150) | 0.239** (0.044) | 0.093 (0.133) |
| No Medical Handicap | 0.976** (0.034) | 0.476** (0.043) | 0.875** (0.038) | 0.466** (0.072) | 0.262** (0.036) | 0.564** (0.063) |
| Age | -0.093** (0.009) | -0.02 (0.039) | -0.082** (0.011) | -0.089 (0.068) | 0.031** (0.010) | -0.018 (0.058) |
| Age Squared / 10 | 0.013** (0.001) | -0.011** (0.005) | 0.011** (0.001) | -0.011 (0.008) | -0.004** (0.001) | -0.018** (0.007) |
| Log Net Real Household Income | 0.341** (0.031) | 0.285** (0.049) | 0.348** (0.035) | 0.300** (0.085) | 0.123** (0.034) | 0.342** (0.074) |
| Constant | 5.363** (0.298) | 7.380** (0.871) | -2.000** (0.335) | --- | -1.567** (0.325) | --- |
| Adj-R ² / Pseudo R ² | 0.114 | 0.04 | 0.049 | 0.032 | 0.013 | 0.033 |
| N | 16984 | 16984 | 16984 | 8690 | 16984 | 11977 |

Table 1b: Winkelmann/Winkelmann (1998) Reproduced: By Age

| | Continuous | | Fixed Thresholds | | Individual Thresholds | |
|--|---------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|
| | OLS | OLS-FE | Logit | C Logit | Logit | C Logit |
| Unemployed x Age: less than 30 | -1.517** (0.159) | -1.099** (0.200) | -0.949** (0.142) | -1.002** (0.234) | -0.613** (0.130) | -0.880** (0.209) |
| Unemployed x Age: 30-49 | -1.825** (0.145) | -1.159** (0.204) | -1.239** (0.140) | -0.945** (0.231) | -0.624** (0.116) | -0.981** (0.197) |
| Unemployed x Age: 50+ | -1.599** (0.164) | -0.964** (0.217) | -1.346** (0.163) | -1.310** (0.326) | -0.601** (0.145) | -0.991** (0.255) |
| OLF x Age: less than 30 | -0.874** (0.169) | -0.198 (0.190) | -0.597** (0.161) | -0.066 (0.314) | -0.406** (0.156) | -0.090 (0.244) |
| OLF x Age: 30-49 | -1.664** (0.231) | -1.168** (0.319) | -0.859** (0.209) | -0.637 (0.395) | -0.445** (0.179) | -0.638** (0.285) |
| OLF x Age: 50+ | -0.492** (0.092) | -0.151 (0.165) | -0.348** (0.087) | 0.145 (0.262) | -0.189** (0.088) | -0.071 (0.203) |
| Married | 0.296** (0.042) | 0.154 (0.105) | 0.295** (0.045) | 0.318** (0.157) | 0.234** (0.044) | 0.092 (0.140) |
| No Medical Handicap | 0.967** (0.036) | 0.472** (0.046) | 0.873** (0.038) | 0.465** (0.073) | 0.262** (0.037) | 0.561** (0.063) |
| Age | -0.075** (0.010) | -0.007 (0.043) | -0.074** (0.011) | -0.082 (0.072) | 0.035** (0.011) | -0.008 (0.063) |
| Age Squared / 10 | 0.010** (0.001) | -0.013** (0.005) | 0.011** (0.001) | -0.012 (0.009) | -0.005** (0.001) | -0.019** (0.007) |
| Log Net Real Household Income | 0.343** (0.033) | 0.282** (0.063) | 0.347** (0.036) | 0.304** (0.089) | 0.125** (0.034) | 0.340** (0.078) |
| Constant | 5.070** (0.320) | 7.177** (0.970) | -2.122** (0.344) | --- | -1.629** (0.330) | --- |
| Adj-R ² / Pseudo R ² | 0.116 | 0.041 | 0.049 | 0.033 | 0.014 | 0.033 |
| N | 16984 | 16984 | 16984 | 8732 | 16984 | 11977 |

Table 1c: Winkelmann/Winkelmann (1998) Extended

| | Continuous | | Fixed Thresholds | | Individual Thresholds | |
|--|---------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|
| | OLS | OLS-FE | Logit | C Logit | Logit | C Logit |
| Unemployed | -1.653** (0.156) | -0.935** (0.281) | -1.164** (0.162) | -0.868** (0.382) | -0.425** (0.134) | -0.891** (0.309) |
| Out of Labor Force (OLF) | -0.598** (0.105) | -0.259 (0.245) | -0.356** (0.101) | 0.125 (0.328) | -0.014 (0.102) | -0.072 (0.289) |
| Entry Unemployment | 0.112 (0.213) | -0.166 (0.268) | -0.030 (0.219) | -0.493 (0.406) | -0.246 (0.183) | -0.333 (0.322) |
| Entry OLF | 0.085 (0.170) | 0.144 (0.233) | 0.101 (0.168) | 0.061 (0.331) | -0.173 (0.166) | 0.039 (0.305) |
| Entry Employment | -0.522** (0.139) | 0.010 (0.190) | -0.475** (0.138) | -0.032 (0.247) | 0.100 (0.135) | -0.130 (0.205) |
| Married | 0.229** (0.057) | 0.265* (0.156) | 0.283** (0.064) | 0.431* (0.239) | 0.124** (0.061) | 0.194 (0.218) |
| Shock: Separated | -1.137** (0.228) | -0.644** (0.287) | -1.005** (0.247) | -0.296 (0.341) | -0.685** (0.219) | -0.565* (0.308) |
| Shock: Divorced | -0.383 (0.296) | -0.111 (0.419) | -0.098 (0.315) | 0.372 (0.560) | 0.091 (0.319) | 0.167 (0.454) |
| Shock: Spouse Died | -2.252** (0.833) | -1.469* (0.847) | -1.362** (0.604) | -1.889* (1.085) | -1.296** (0.661) | -2.157* (1.242) |
| Shock: Child born | 0.153* (0.088) | -0.003 (0.105) | 0.055 (0.102) | -0.059 (0.182) | 0.200** (0.100) | 0.063 (0.163) |
| No Medical Handicap | 0.969** (0.043) | 0.461** (0.062) | 0.911** (0.049) | 0.470** (0.104) | 0.318** (0.046) | 0.571** (0.088) |
| Work Disability | -0.056 (0.098) | 0.039 (0.118) | -0.076 (0.102) | 0.008 (0.175) | 0.125 (0.097) | 0.022 (0.150) |
| Nights Stayed in Hospital | -0.010** (0.003) | -0.004 (0.003) | -0.006** (0.003) | -0.005 (0.005) | -0.003 (0.002) | -0.003 (0.003) |
| Age | -0.096** (0.013) | 0.094 (0.075) | -0.091** (0.015) | -0.004 (0.128) | 0.028** (0.014) | 0.131 (0.108) |
| Age Squared / 10 | 0.013** (0.002) | -0.020** (0.009) | 0.013** (0.002) | -0.016 (0.015) | -0.004** (0.002) | -0.031** (0.013) |
| Log Net Real Household Income | 0.350** (0.042) | 0.358** (0.085) | 0.392** (0.047) | 0.564** (0.142) | 0.099** (0.044) | 0.393** (0.113) |
| Years of Education | 0.002 (0.007) | 0.082 (0.106) | 0.004 (0.008) | 0.076 (0.116) | -0.015* (0.008) | 0.095 (0.122) |
| Number of Children: 1 | -0.046 (0.047) | -0.036 (0.109) | -0.020 (0.055) | -0.074 (0.174) | 0.039 (0.053) | -0.055 (0.149) |
| Number of Children: 2 | 0.093* (0.054) | -0.049 (0.170) | 0.060 (0.063) | 0.015 (0.265) | 0.027 (0.062) | -0.026 (0.217) |
| Number of Children: 3+ | -0.125 (0.076) | -0.138 (0.246) | -0.079 (0.085) | -0.090 (0.382) | -0.039 (0.083) | -0.162 (0.320) |
| Constant | 5.361** (0.395) | 2.883 (1.855) | -2.247** (0.448) | --- | -1.164** (0.426) | --- |
| Adj-R ² / Pseudo R ² | 0.128 | 0.037 | 0.056 | 0.032 | 0.013 | 0.032 |
| N | 10849 | 10849 | 10849 | 4288 | 10849 | 6054 |

Table 2: Effects of Unemployment on Life Satisfaction: Main Results

| | Continuous | | Fixed Thresholds | | Individual Thresholds | |
|---|---------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|
| | OLS | OLS-FE | Logit | C Logit | Logit | C Logit |
| N | 79519 | 79519 | 79519 | 44636 | 79519 | 62257 |
| (a) Unemployed | -0.806** (0.035) | -0.555** (0.043) | -0.660** (0.046) | -0.499** (0.081) | -0.324** (0.038) | -0.721** (0.066) |
| Entry Unemployment: Voluntary | -0.033 (0.063) | 0.038 (0.062) | -0.113 (0.082) | -0.119 (0.120) | 0.004 (0.068) | 0.095 (0.090) |
| Entry Unemployment: Fired | -0.223** (0.066) | -0.155** (0.065) | -0.265** (0.086) | -0.171 (0.121) | -0.252** (0.070) | -0.140 (0.090) |
| Entry Unemployment: Company Closed | -0.606** (0.117) | -0.468** (0.104) | -0.446** (0.151) | -0.480** (0.218) | -0.646** (0.124) | -0.786** (0.160) |
| Out of Labor Force (OLF) | -0.054** (0.019) | -0.108** (0.031) | 0.057** (0.024) | -0.036 (0.059) | -0.022 (0.023) | -0.126** (0.052) |
| Entry OLF | -0.027 (0.047) | -0.048 (0.048) | 0.000 (0.058) | -0.057 (0.090) | -0.096* (0.054) | 0.008 (0.075) |
| Entry Employment | -0.373** (0.037) | 0.016 (0.038) | -0.397** (0.047) | 0.050 (0.069) | 0.242** (0.044) | -0.013 (0.057) |
| Adj-R ² / Pseudo R ² | 0.151 | 0.043 | 0.067 | 0.025 | 0.01 | 0.027 |
| (b) Unemployed | -0.847** (0.087) | -0.359** (0.106) | -0.718** (0.110) | -0.094 (0.184) | -0.293** (0.089) | -0.621** (0.155) |
| Unemployed x German | 0.000 (0.073) | -0.135 (0.091) | -0.025 (0.093) | -0.290* (0.154) | 0.080 (0.077) | -0.064 (0.135) |
| Unemployed x Male | -0.285** (0.050) | -0.204** (0.060) | -0.281** (0.067) | -0.292** (0.113) | -0.131** (0.054) | -0.140 (0.090) |
| Unemployed x West | 0.378** (0.056) | 0.029 (0.069) | 0.419** (0.074) | -0.086 (0.123) | -0.074 (0.060) | 0.050 (0.100) |
| Adj-R ² / Pseudo R ² | 0.152 | 0.043 | 0.068 | 0.025 | 0.011 | 0.027 |
| (c) Entry Unemployment: Voluntary | 0.207 (0.192) | 0.527** (0.196) | 0.149 (0.245) | 0.360 (0.331) | 0.563** (0.209) | 0.796** (0.287) |
| Entry Unemployment: Voluntary x German | -0.298* (0.169) | -0.384** (0.175) | -0.383* (0.214) | -0.431 (0.281) | -0.374** (0.186) | -0.550** (0.255) |
| Entry Unemployment: Voluntary x Male | -0.287** (0.106) | -0.311** (0.105) | -0.215 (0.141) | -0.248 (0.203) | -0.358** (0.115) | -0.399** (0.151) |
| Entry Unemployment: Voluntary x West | 0.392** (0.112) | 0.000 (0.116) | 0.369** (0.150) | -0.013 (0.215) | -0.143 (0.123) | -0.047 (0.164) |
| Adj-R ² / Pseudo R ² | 0.151 | 0.043 | 0.067 | 0.025 | 0.011 | 0.027 |
| (d) Entry Unemployment: Fired | -0.036 (0.202) | 0.004 (0.196) | -0.092 (0.253) | 0.079 (0.328) | -0.313 (0.215) | -0.226 (0.269) |
| Entry Unemployment: Fired x German | -0.282 (0.175) | -0.201 (0.169) | -0.233 (0.212) | -0.306 (0.275) | 0.059 (0.186) | -0.120 (0.232) |
| Entry Unemployment: Fired x Male | -0.099 (0.115) | 0.045 (0.111) | -0.243 (0.151) | 0.046 (0.201) | 0.081 (0.122) | 0.268* (0.151) |
| Entry Unemployment: Fired x West | 0.285** (0.139) | -0.049 (0.138) | 0.396** (0.174) | -0.084 (0.229) | -0.100 (0.145) | 0.074 (0.176) |
| Adj-R ² / Pseudo R ² | 0.151 | 0.043 | 0.067 | 0.025 | 0.01 | 0.027 |
| (e) Entry Unemployment: Company Closed | -0.547 (0.403) | -0.166 (0.346) | -0.810 (0.551) | -0.296 (0.740) | -0.896* (0.459) | -0.862 (0.639) |
| Entry Unemployment: Company Closed x German | -0.250 (0.376) | -0.415 (0.308) | -0.034 (0.475) | -0.656 (0.643) | 0.219 (0.421) | -0.195 (0.574) |
| Entry Unemployment: Company Closed x Male | -0.015 (0.222) | 0.216 (0.195) | 0.219 (0.299) | 0.793* (0.422) | 0.093 (0.240) | 0.590* (0.310) |
| Entry Unemployment: Company Closed x West | 0.497* (0.276) | -0.141 (0.242) | 0.702** (0.340) | -0.123 (0.492) | 0.023 (0.291) | -0.215 (0.370) |
| Adj-R ² / Pseudo R ² | 0.151 | 0.043 | 0.067 | 0.025 | 0.01 | 0.027 |

Table 3: Effects of Unemployment on Life Satisfaction: By Subsample

| | WEST | | | | | | EAST | | | | | |
|--|------------|----------|----------|------------------|----------|-----------------------|------------|----------|----------|------------------|----------|-----------------------|
| | Continuous | | | Fixed Thresholds | | | Continuous | | | Fixed Thresholds | | |
| MALES | OLS | OLS-FE | C Logit | Logit | C Logit | Individual Thresholds | OLS | OLS-FE | C Logit | Logit | C Logit | Individual Thresholds |
| Unemployed | -1.093** | -0.741** | -0.818** | -0.365** | -0.926** | (0.076) | -0.854** | -0.700** | -0.883** | -0.621** | -0.395** | -0.835** |
| Out of Labor Force (OLF) | (0.067) | (0.086) | (0.163) | (0.076) | (0.142) | | (0.093) | (0.099) | (0.230) | (0.136) | (0.100) | (0.151) |
| Entry Unemployment | -0.376** | -0.176** | -0.130 | 0.069 | -0.182 | (0.057) | -0.273** | -0.294** | -0.006 | -0.006 | -0.030 | -0.429** |
| Entry OLF | (0.051) | (0.070) | (0.140) | (0.057) | (0.124) | | (0.073) | (0.106) | (0.101) | (0.233) | (0.088) | (0.177) |
| Entry Employment | 0.090 | -0.031 | 0.137 | -0.195* | 0.070 | (0.112) | -0.101 | -0.005 | -0.224 | 0.105 | -0.232* | -0.055 |
| Entry OLF | (0.105) | (0.107) | (0.129) | (0.192) | (0.157) | | (0.112) | (0.105) | (0.167) | (0.250) | (0.119) | (0.148) |
| Entry Employment | 0.068 | -0.011 | 0.081 | -0.188* | 0.023 | (0.105) | -0.088 | 0.048 | -0.226 | -0.081 | -0.244 | 0.183 |
| Entry OLF | (0.095) | (0.091) | (0.109) | (0.186) | (0.149) | | (0.160) | (0.156) | (0.214) | (0.310) | (0.178) | (0.222) |
| Entry Employment | -0.307** | 0.072 | -0.363** | 0.093 | 0.239** | 0.045 | -0.326** | -0.059 | -0.371** | -0.168 | 0.123 | -0.173 |
| Entry OLF | (0.074) | (0.077) | (0.093) | (0.134) | (0.089) | (0.114) | (0.079) | (0.074) | (0.111) | (0.159) | (0.093) | (0.122) |
| Adj-R ² / Pseudo R ² | 0.146 | 0.050 | 0.062 | 0.033 | 0.013 | 0.031 | 0.142 | 0.057 | 0.058 | 0.036 | 0.014 | 0.043 |
| N | 25802 | 25802 | 25802 | 14577 | 25802 | 19788 | 11264 | 11264 | 11264 | 5955 | 11264 | 9333 |
| | | | | | | | | | | | | |
| FEMALES | Continuous | | | Fixed Thresholds | | | Continuous | | | Fixed Thresholds | | |
| Unemployed | OLS | OLS-FE | C Logit | Logit | C Logit | Individual Thresholds | OLS | OLS-FE | C Logit | Logit | C Logit | Individual Thresholds |
| Unemployed | -0.498** | -0.242** | -0.227 | -0.270** | -0.394** | (0.084) | -0.669** | -0.542** | -0.354** | -0.424** | -0.302** | -0.760** |
| Out of Labor Force (OLF) | (0.075) | (0.097) | (0.095) | (0.165) | (0.142) | | (0.065) | (0.078) | (0.091) | (0.157) | (0.073) | (0.122) |
| Entry Unemployment | -0.006 | -0.034 | 0.034 | -0.022 | -0.056 | (0.073) | -0.328** | -0.248** | -0.231** | -0.291* | -0.013 | -0.297** |
| Entry OLF | (0.026) | (0.042) | (0.034) | (0.080) | (0.033) | | (0.056) | (0.087) | (0.083) | (0.173) | (0.072) | (0.145) |
| Entry Employment | -0.164 | -0.206* | -0.271* | -0.368* | -0.111 | -0.272 | -0.290** | -0.143 | -0.227* | -0.247 | -0.250** | -0.123 |
| Entry OLF | (0.112) | (0.119) | (0.141) | (0.202) | (0.174) | | (0.094) | (0.088) | (0.130) | (0.186) | (0.100) | (0.127) |
| Entry Employment | -0.005 | -0.057 | 0.031 | -0.103 | -0.007 | -0.018 | 0.103 | 0.084 | 0.050 | 0.215 | -0.088 | 0.330 |
| Entry OLF | (0.064) | (0.068) | (0.083) | (0.128) | (0.080) | (0.113) | (0.145) | (0.158) | (0.204) | (0.282) | (0.176) | (0.228) |
| Entry Employment | -0.237** | 0.024 | -0.220** | 0.089 | 0.185* | 0.050 | -0.281** | -0.019 | -0.135 | 0.127 | 0.220** | -0.045 |
| Entry OLF | (0.090) | (0.092) | (0.109) | (0.151) | (0.105) | (0.137) | (0.072) | (0.075) | (0.098) | (0.145) | (0.088) | (0.111) |
| Adj-R ² / Pseudo R ² | 0.134 | 0.039 | 0.064 | 0.029 | 0.010 | 0.026 | 0.150 | 0.050 | 0.059 | 0.027 | 0.014 | 0.039 |
| N | 25613 | 25613 | 25613 | 15094 | 25613 | 19683 | 11964 | 11964 | 11964 | 6540 | 11964 | 9972 |

Table 4a: Effects of Unemployment on Life Satisfaction: West Females

| | Continuous | | Fixed Thresholds | | Individual Thresholds | |
|--|-----------------|-----------------|------------------|-----------------|-----------------------|-----------------|
| | OLS | OLS-FE | Logit | C Logit | Logit | C Logit |
| Unemployed | -0.498** | -0.245** | -0.441** | -0.23 | -0.271** | -0.402** |
| | (0.075) | (0.097) | (0.095) | (0.165) | (0.084) | (0.142) |
| Out of Labor Force (OLF) | -0.007 | -0.034 | 0.033 | 0.041 | -0.023 | -0.055 |
| | (0.026) | (0.042) | (0.034) | (0.080) | (0.033) | (0.073) |
| Entry Unemployment: Voluntary | -0.123 | -0.071 | -0.268 | -0.256 | 0.091 | 0.009 |
| | (0.131) | (0.149) | (0.169) | (0.243) | (0.148) | (0.215) |
| Entry Unemployment: Fired | -0.079 | -0.182 | -0.199 | -0.323 | -0.304* | -0.365 |
| | (0.164) | (0.154) | (0.202) | (0.264) | (0.183) | (0.226) |
| Entry Unemployment: Company Closed | -0.710** | -1.017** | -0.561 | -1.225** | -0.626* | -1.765** |
| | (0.305) | (0.233) | (0.373) | (0.530) | (0.330) | (0.526) |
| Entry OLF | -0.004 | -0.057 | 0.031 | -0.101 | -0.006 | -0.018 |
| | (0.064) | (0.068) | (0.083) | (0.128) | (0.080) | (0.113) |
| Entry Employment | -0.236** | 0.028 | -0.220** | 0.092 | 0.185* | 0.055 |
| | (0.090) | (0.092) | (0.109) | (0.151) | (0.105) | (0.137) |
| Married | 0.235** | 0.065 | 0.263** | 0.094 | -0.042 | 0.076 |
| | (0.031) | (0.061) | (0.039) | (0.102) | (0.037) | (0.099) |
| Shock: Separated | -0.484** | -0.345** | -0.387** | -0.394** | -0.357** | -0.404** |
| | (0.102) | (0.102) | (0.112) | (0.151) | (0.103) | (0.131) |
| Shock: Divorced | 0.115 | -0.039 | 0.304* | 0.185 | -0.033 | 0.028 |
| | (0.139) | (0.157) | (0.172) | (0.233) | (0.169) | (0.215) |
| Shock: Spouse Died | -1.623** | -1.357** | -1.925** | -1.754** | -1.400** | -1.429** |
| | (0.250) | (0.260) | (0.418) | (0.484) | (0.307) | (0.331) |
| Shock: Child born | 0.280** | 0.240** | 0.299** | 0.415** | 0.340** | 0.350** |
| | (0.048) | (0.050) | (0.067) | (0.098) | (0.065) | (0.084) |
| No Medical Handicap | 0.946** | 0.454** | 0.955** | 0.682** | 0.339** | 0.653** |
| | (0.025) | (0.031) | (0.031) | (0.055) | (0.029) | (0.050) |
| Work Disability | -0.265** | -0.167** | -0.208** | -0.200* | -0.177** | -0.316** |
| | (0.062) | (0.063) | (0.076) | (0.108) | (0.070) | (0.093) |
| Nights Stayed in Hospital | -0.015** | -0.008** | -0.014** | -0.011** | -0.009** | -0.011** |
| | (0.002) | (0.002) | (0.003) | (0.003) | (0.002) | (0.003) |
| Age | -0.084** | -0.049** | -0.090** | -0.086** | 0.007 | -0.074** |
| | (0.007) | (0.016) | (0.009) | (0.030) | (0.009) | (0.028) |
| Age Squared / 10 | 0.010** | 0.002 | 0.010** | 0.005 | -0.001 | 0.004 |
| | (0.001) | (0.002) | (0.001) | (0.004) | (0.001) | (0.003) |
| Log Net Real Household Income | 0.523** | 0.271** | 0.555** | 0.393** | 0.053* | 0.302** |
| | (0.024) | (0.040) | (0.031) | (0.069) | (0.029) | (0.064) |
| Years of Education | 0.030** | 0.031** | 0.040** | 0.059** | -0.008 | 0.061** |
| | (0.004) | (0.014) | (0.006) | (0.027) | (0.006) | (0.024) |
| Number of Children: 1 | -0.078** | -0.007 | -0.048 | 0.038 | 0.027 | 0.041 |
| | (0.029) | (0.043) | (0.038) | (0.082) | (0.036) | (0.074) |
| Number of Children: 2 | -0.134** | -0.138** | -0.173** | -0.176 | -0.096** | -0.154 |
| | (0.032) | (0.056) | (0.043) | (0.110) | (0.042) | (0.101) |
| Number of Children: 3+ | -0.232** | -0.066 | -0.316** | -0.019 | -0.120** | -0.027 |
| | (0.047) | (0.082) | (0.061) | (0.166) | (0.058) | (0.151) |
| Constant | 3.720** | 6.130** | -3.699** | --- | -0.481* | --- |
| | (0.209) | (0.428) | (0.274) | --- | (0.258) | --- |
| Adj-R ² / Pseudo R ² | 0.135 | 0.04 | 0.064 | 0.029 | 0.011 | 0.027 |
| N | 25613 | 25613 | 25613 | 15094 | 25613 | 19683 |

Table 4b: Effects of Unemployment on Life Satisfaction: East Females

| | Continuous | | Fixed Thresholds | | Individual Thresholds | |
|--|-----------------|-----------------|------------------|-----------------|-----------------------|-----------------|
| | OLS | OLS-FE | Logit | C Logit | Logit | C Logit |
| Unemployed | -0.669** | -0.533** | -0.424** | -0.352** | -0.301** | -0.745** |
| | (0.065) | (0.078) | (0.091) | (0.157) | (0.073) | (0.123) |
| Out of Labor Force (OLF) | -0.325** | -0.241** | -0.227** | -0.282 | -0.007 | -0.282* |
| | (0.056) | (0.087) | (0.082) | (0.173) | (0.072) | (0.146) |
| Entry Unemployment: Voluntary | -0.05 | 0.119 | -0.089 | -0.058 | 0.131 | 0.291* |
| | (0.119) | (0.107) | (0.163) | (0.234) | (0.127) | (0.162) |
| Entry Unemployment: Fired | -0.389** | -0.304** | -0.183 | -0.266 | -0.474** | -0.338* |
| | (0.135) | (0.125) | (0.181) | (0.250) | (0.140) | (0.177) |
| Entry Unemployment: Company Closed | -0.778** | -0.507** | -0.933** | -0.978** | -0.957** | -0.888** |
| | (0.181) | (0.177) | (0.330) | (0.469) | (0.226) | (0.283) |
| Entry OLF | 0.102 | 0.078 | 0.049 | 0.208 | -0.09 | 0.32 |
| | (0.145) | (0.158) | (0.204) | (0.282) | (0.176) | (0.228) |
| Entry Employment | -0.282** | -0.005 | -0.135 | 0.135 | 0.219** | -0.02 |
| | (0.072) | (0.075) | (0.098) | (0.145) | (0.088) | (0.111) |
| Married | 0.069 | 0.07 | 0.008 | -0.082 | 0.009 | 0.053 |
| | (0.043) | (0.099) | (0.061) | (0.180) | (0.053) | (0.153) |
| Shock: Separated | -0.302** | -0.328** | -0.047 | -0.022 | -0.325** | -0.313 |
| | (0.151) | (0.147) | (0.181) | (0.231) | (0.158) | (0.195) |
| Shock: Divorced | -0.054 | -0.216 | 0.161 | -0.341 | 0.252 | 0.006 |
| | (0.259) | (0.262) | (0.299) | (0.403) | (0.260) | (0.316) |
| Shock: Spouse Died | -0.871** | -0.919** | -0.432 | -0.942* | -0.836** | -0.900** |
| | (0.302) | (0.274) | (0.427) | (0.523) | (0.327) | (0.360) |
| Shock: Child born | 0.264** | 0.08 | 0.287** | 0.042 | 0.294** | 0.125 |
| | (0.094) | (0.096) | (0.130) | (0.188) | (0.125) | (0.160) |
| No Medical Handicap | 0.709** | 0.296** | 0.818** | 0.466** | 0.239** | 0.501** |
| | (0.033) | (0.042) | (0.049) | (0.084) | (0.041) | (0.068) |
| Work Disability | -0.267** | -0.215** | -0.228* | -0.480** | -0.017 | -0.282** |
| | (0.086) | (0.088) | (0.125) | (0.171) | (0.100) | (0.133) |
| Nights Stayed in Hospital | -0.015** | -0.007** | -0.013** | -0.006 | -0.012** | -0.008** |
| | (0.003) | (0.004) | (0.006) | (0.006) | (0.003) | (0.004) |
| Age | -0.159** | -0.019 | -0.143** | 0.025 | 0.023* | -0.027 |
| | (0.011) | (0.024) | (0.016) | (0.047) | (0.014) | (0.041) |
| Age Squared / 10 | 0.019** | 0.006** | 0.017** | 0.004 | -0.002 | 0.010** |
| | (0.001) | (0.003) | (0.002) | (0.005) | (0.002) | (0.005) |
| Log Net Real Household Income | 0.709** | 0.427** | 0.727** | 0.503** | 0.244** | 0.667** |
| | (0.040) | (0.060) | (0.057) | (0.119) | (0.049) | (0.104) |
| Years of Education | -0.01 | 0.061** | -0.001 | 0.053 | -0.003 | 0.073 |
| | (0.007) | (0.027) | (0.010) | (0.053) | (0.009) | (0.046) |
| Number of Children: 1 | 0.024 | 0.076 | -0.029 | -0.074 | -0.042 | 0.077 |
| | (0.041) | (0.059) | (0.058) | (0.127) | (0.053) | (0.105) |
| Number of Children: 2 | 0.083* | 0.213** | 0.061 | 0.226 | -0.014 | 0.214 |
| | (0.049) | (0.086) | (0.069) | (0.174) | (0.063) | (0.143) |
| Number of Children: 3+ | -0.055 | 0.094 | -0.103 | -0.004 | -0.046 | 0.286 |
| | (0.087) | (0.155) | (0.119) | (0.298) | (0.104) | (0.238) |
| Constant | 4.019** | 2.088** | -4.009** | --- | -2.222** | --- |
| | (0.339) | (0.675) | (0.492) | --- | (0.429) | --- |
| Adj-R ² / Pseudo R ² | 0.151 | 0.052 | 0.059 | 0.028 | 0.015 | 0.042 |
| N | 11964 | 11964 | 11964 | 6540 | 11964 | 9972 |

Table 4c: Effects of Unemployment on Life Satisfaction: West Males

| | Continuous | | Fixed Thresholds | | Individual Thresholds | |
|--|-----------------|-----------------|------------------|-----------------|-----------------------|-----------------|
| | OLS | OLS-FE | Logit | C Logit | Logit | C Logit |
| Unemployed | -1.094** | -0.742** | -0.950** | -0.816** | -0.386** | -0.933** |
| | (0.067) | (0.086) | (0.089) | (0.163) | (0.076) | (0.142) |
| Out of Labor Force (OLF) | -0.376** | -0.174** | -0.197** | -0.129 | 0.069 | -0.185 |
| | (0.051) | (0.070) | (0.060) | (0.140) | (0.057) | (0.124) |
| Entry Unemployment: Voluntary | 0.275** | 0.101 | 0.222 | 0.112 | -0.072 | 0.120 |
| | (0.137) | (0.135) | (0.167) | (0.242) | (0.147) | (0.201) |
| Entry Unemployment: Fired | -0.029 | -0.118 | 0.040 | 0.092 | -0.223 | 0.138 |
| | (0.141) | (0.143) | (0.169) | (0.241) | (0.144) | (0.192) |
| Entry Unemployment: Company Closed | -0.101 | -0.151 | 0.191 | 0.269 | -0.578** | -0.413 |
| | (0.258) | (0.252) | (0.290) | (0.433) | (0.282) | (0.351) |
| Entry OLF | 0.069 | -0.012 | 0.081 | 0.061 | -0.188* | 0.026 |
| | (0.095) | (0.091) | (0.109) | (0.186) | (0.105) | (0.149) |
| Entry Employment | -0.307** | 0.070 | -0.364** | 0.092 | 0.239** | 0.047 |
| | (0.074) | (0.077) | (0.093) | (0.134) | (0.089) | (0.114) |
| Married | 0.222** | 0.084 | 0.304** | 0.261** | 0.041 | 0.166* |
| | (0.029) | (0.053) | (0.039) | (0.114) | (0.037) | (0.101) |
| Shock: Separated | -0.643** | -0.434** | -0.464** | -0.489** | -0.389** | -0.509** |
| | (0.103) | (0.098) | (0.119) | (0.180) | (0.110) | (0.135) |
| Shock: Divorced | -0.064 | 0.109 | -0.055 | 0.385 | 0.039 | 0.131 |
| | (0.158) | (0.159) | (0.197) | (0.293) | (0.191) | (0.234) |
| Shock: Spouse Died | -1.842** | -1.705** | -1.852** | -2.131** | -1.170** | -1.554** |
| | (0.357) | (0.436) | (0.651) | (0.832) | (0.458) | (0.665) |
| Shock: Child born | 0.230** | 0.148** | 0.268** | 0.214** | 0.266** | 0.315** |
| | (0.043) | (0.045) | (0.064) | (0.097) | (0.063) | (0.081) |
| No Medical Handicap | 0.924** | 0.424** | 0.932** | 0.693** | 0.367** | 0.630** |
| | (0.026) | (0.031) | (0.033) | (0.062) | (0.031) | (0.053) |
| Work Disability | -0.119** | -0.130** | -0.121* | -0.234** | -0.058 | -0.201** |
| | (0.057) | (0.056) | (0.069) | (0.107) | (0.064) | (0.088) |
| Nights Stayed in Hospital | -0.016** | -0.010** | -0.015** | -0.018** | -0.011** | -0.014** |
| | (0.002) | (0.002) | (0.003) | (0.004) | (0.002) | (0.003) |
| Age | -0.103** | -0.019 | -0.103** | -0.056* | 0.019** | -0.034 |
| | (0.008) | (0.016) | (0.010) | (0.032) | (0.009) | (0.029) |
| Age Squared / 10 | 0.012** | -0.001 | 0.012** | 0.000 | -0.003** | -0.001 |
| | (0.001) | (0.002) | (0.001) | (0.004) | (0.001) | (0.003) |
| Log Net Real Household Income | 0.466** | 0.238** | 0.539** | 0.426** | 0.104** | 0.389** |
| | (0.024) | (0.037) | (0.032) | (0.076) | (0.030) | (0.067) |
| Years of Education | 0.005 | 0.007 | 0.010* | -0.013 | -0.005 | 0.000 |
| | (0.004) | (0.012) | (0.005) | (0.026) | (0.005) | (0.022) |
| Number of Children: 1 | -0.045 | -0.008 | -0.022 | 0.035 | -0.018 | -0.010 |
| | (0.028) | (0.040) | (0.038) | (0.084) | (0.037) | (0.074) |
| Number of Children: 2 | -0.093** | -0.043 | -0.178** | -0.073 | -0.123** | -0.109 |
| | (0.031) | (0.052) | (0.043) | (0.107) | (0.042) | (0.095) |
| Number of Children: 3+ | -0.192** | 0.006 | -0.271** | -0.056 | -0.272** | -0.112 |
| | (0.045) | (0.081) | (0.058) | (0.160) | (0.057) | (0.145) |
| Constant | 4.741** | 5.866** | -3.133** | --- | -1.203** | --- |
| | (0.229) | (0.425) | (0.302) | --- | (0.288) | --- |
| Adj-R ² / Pseudo R ² | 0.146 | 0.050 | 0.062 | 0.033 | 0.013 | 0.031 |
| N | 25802 | 25802 | 25802 | 14577 | 25802 | 19788 |

Table 4d: Effects of Unemployment on Life Satisfaction: East Males

| | Continuous | | Fixed Thresholds | | Individual Thresholds | |
|--|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| | OLS | OLS-FE | Logit | C Logit | Logit | C Logit |
| Unemployed | -0.855** (0.093) | -0.704** (0.099) | -0.622** (0.136) | -0.899** (0.231) | -0.395** (0.100) | -0.840** (0.152) |
| Out of Labor Force (OLF) | -0.274** (0.073) | -0.295** (0.106) | -0.008 (0.100) | -0.069 (0.234) | -0.028 (0.088) | -0.430** (0.177) |
| Entry Unemployment: Voluntary | -0.174 (0.138) | -0.026 (0.125) | -0.365* (0.221) | -0.125 (0.319) | -0.200 (0.151) | -0.062 (0.187) |
| Entry Unemployment: Fired | 0.042 (0.130) | 0.061 (0.125) | -0.135 (0.191) | 0.201 (0.286) | -0.173 (0.140) | 0.015 (0.173) |
| Entry Unemployment: Company Closed | -0.439* (0.235) | -0.176 (0.200) | -0.187 (0.318) | 0.360 (0.432) | -0.574** (0.238) | -0.270 (0.283) |
| Entry OLF | -0.086 (0.160) | 0.048 (0.156) | -0.225 (0.214) | -0.069 (0.311) | -0.244 (0.178) | 0.184 (0.222) |
| Entry Employment | -0.327** (0.079) | -0.060 (0.074) | -0.371** (0.111) | -0.172 (0.159) | 0.123 (0.093) | -0.173 (0.122) |
| Married | 0.090* (0.048) | 0.122 (0.105) | 0.025 (0.070) | 0.358* (0.198) | -0.002 (0.061) | 0.125 (0.163) |
| Shock: Separated | -0.404** (0.156) | -0.318** (0.148) | -0.418* (0.217) | -0.782** (0.317) | -0.392** (0.175) | -0.551** (0.200) |
| Shock: Divorced | -0.202 (0.271) | -0.108 (0.253) | -0.146 (0.359) | 0.049 (0.527) | -0.660** (0.307) | -0.702* (0.368) |
| Shock: Spouse Died | -0.702* (0.403) | -0.705 (0.464) | -0.125 (0.517) | -0.391 (0.639) | -0.769* (0.422) | -0.790* (0.450) |
| Shock: Child born | 0.386** (0.095) | 0.059 (0.088) | 0.415** (0.137) | 0.080 (0.196) | 0.373** (0.137) | 0.225 (0.166) |
| No Medical Handicap | 0.738** (0.036) | 0.314** (0.042) | 0.874** (0.053) | 0.599** (0.097) | 0.295** (0.044) | 0.510** (0.072) |
| Work Disability | -0.064 (0.088) | -0.115 (0.090) | 0.167 (0.116) | -0.025 (0.175) | -0.064 (0.099) | -0.136 (0.124) |
| Nights Stayed in Hospital | -0.015** (0.003) | -0.009** (0.003) | -0.011** (0.005) | -0.007 (0.007) | -0.006* (0.003) | -0.008* (0.005) |
| Age | -0.120** (0.012) | -0.061** (0.025) | -0.120** (0.017) | -0.113** (0.049) | 0.008 (0.015) | -0.028 (0.044) |
| Age Squared / 10 | 0.014** (0.001) | 0.011** (0.003) | 0.014** (0.002) | 0.020** (0.006) | -0.001 (0.002) | 0.011** (0.005) |
| Log Net Real Household Income | 0.595** (0.040) | 0.497** (0.063) | 0.636** (0.057) | 0.671** (0.128) | 0.204** (0.049) | 0.790** (0.108) |
| Years of Education | 0.004 (0.007) | 0.007 (0.025) | 0.008 (0.009) | 0.077 (0.052) | -0.018** (0.009) | 0.012 (0.054) |
| Number of Children: 1 | 0.000 (0.042) | 0.137** (0.059) | -0.035 (0.060) | -0.057 (0.128) | -0.082 (0.054) | 0.092 (0.101) |
| Number of Children: 2 | 0.054 (0.051) | 0.235** (0.089) | -0.013 (0.073) | -0.204 (0.175) | -0.027 (0.066) | 0.180 (0.151) |
| Number of Children: 3+ | -0.267** (0.095) | 0.141 (0.171) | -0.189 (0.130) | -0.210 (0.329) | 0.100 (0.116) | 0.114 (0.269) |
| Constant | 3.833** (0.368) | 2.823** (0.669) | -3.964** (0.524) | --- --- | -1.465** (0.463) | --- --- |
| Adj-R ² / Pseudo R ² | 0.142 | 0.058 | 0.058 | 0.037 | 0.015 | 0.043 |
| N | 11264 | 11264 | 11264 | 5955 | 11264 | 9333 |