

Haisken-DeNew, John P.; Kleibrink, Jan

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## Walking Wounded – The Causal Welfare Loss of Underemployment through Overeducation

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John P. Haisken-DeNew  
Jan Kleibrink

## **Walking Wounded – The Causal Welfare Loss of Underemployment through Overeducation**

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Universität Duisburg-Essen, Department of Economics  
Universitätsstr. 12, 45117 Essen, Germany

Rheinisch-Westfälisches Institut für Wirtschaftsforschung (RWI)  
Hohenzollernstr. 1-3, 45128 Essen, Germany

## Editors

Prof. Dr. Thomas K. Bauer  
RUB, Department of Economics, Empirical Economics  
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RWI, Phone: +49 (0) 201/81 49-227, e-mail: [christoph.schmidt@rwi-essen.de](mailto:christoph.schmidt@rwi-essen.de)

## Editorial Office

Sabine Weiler  
RWI, Phone: +49 (0) 201/81 49-213, e-mail: [sabine.weiler@rwi-essen.de](mailto:sabine.weiler@rwi-essen.de)

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John P. Haisken-DeNew and Jan Kleibrink<sup>1</sup>

# Walking Wounded – The Causal Welfare Loss of Underemployment through Overeducation

## Abstract

*Using data from the SOEP, we analyze the wellbeing impact of underemployment through overeducation to examine a broader definition of employment loss. Persons leaving a job through exogenous reasons but entering directly into immediate employment may not find a perfect employment match and cannot use their skills fully in the new job. We demonstrate that a „downchange“, although welfare reducing, may be more desirable than suffering the large welfare losses associated with unemployment whilst searching for a more suitable job match. Nonetheless, underemployed persons do not enter into the official job statistics, whilst their welfare loss due to „downchange“ is approximately 50% of the welfare loss of entry into unemployment.*

*JEL Classification: C23, J24, J62*

*Keywords: Life satisfaction; skill mismatch; job change*

*July 2013*

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<sup>1</sup> John P. Haisken-DeNew, The Melbourne Institute (MIAESR), The University of Melbourne; Jan Kleibrink, Ruhr Universität Bochum. – The authors acknowledge comments on earlier versions of this paper by participants of the RGS doctoral conference 2011, the ESPE 2012 and the EALE 2012. – All correspondence to Jan Kleibrink, RUB, RUB Research School, Room GC 2/148, Universitätsstr. 150, 44801 Bochum, Germany, E-Mail: [jan.kleibrink@rub.de](mailto:jan.kleibrink@rub.de).

# 1 Introduction

In European countries with strong union coverage such as Germany, collectively bargained wages have traditionally been high and have gone hand-in-hand with substantial levels of structural unemployment. As wages are sticky in Germany, especially long-term unemployment is a large problem in the labor market. Indeed the German Hartz reforms<sup>1</sup> were intended to address this high level of unsustainable non-participation through long-term unemployment and reactivate the previously unemployed. Since the Global Financial Crisis of the late 2000s, most Western countries have had to deal with even higher levels of unemployment than had historically been experienced (Eurostat, 2013). This unemployment has not been without substantial cost to the unemployed.

In general, the negative welfare impacts of entry into unemployment have been extensively studied in a life satisfaction framework as in Easterlin (1974), Clark and Oswald (1996) or Senik (2005) and have been shown to be large and significant. Clark and Oswald (1994) find that the effect of unemployment is comparable to very negative life events, such as divorce. The study of Winkelmann and Winkelmann (1998) is of particular note, as the welfare loss of unemployment, even over and above any income loss, was shown to be substantial, using data from the German Socio-Economic Panel (SOEP). Variations and extensions of these results have been confirmed by Clark (2003) and Lucas, Clark, Georgellis, and Diener (2004) for the UK and other countries. An extensive review of this strand of literature is to be found in Frey and Stutzer (2002).

Substantially later, Kassenboehmer and Haisken-DeNew (2009), also using data from the German SOEP, were able to distinguish between voluntary and involuntary entry into unemployment, using data not previously available at the time of the Winkelmann and Winkelmann (1998) study. The SOEP data allow one to identify entry into unemployment due to company closure and this can be considered to be exogenous and independent of individual worker traits. This exogenous entry can be compared to entry into unemployment through quitting, time-limited contracts running out and firing. The study demonstrates that the strongest negative impacts for the unemployed are suffered by those whose *entry* into unemployment was caused by an exogenous company closure, and are particularly strong for one period of time (year), over and above a negative effect of being in the *state of unemployment*. The effects

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<sup>1</sup>The Hartz reforms took place in Germany between 2003 and 2005. Addressing the problem of high unemployment rates, they introduced unbureaucratic ways of creating jobs, reorganized the work of public job centers and changed the assistance payments for long-term unemployed by combining it with welfare benefits (see Wirtschaftslexikon, 2013).

are substantially stronger for women than for men, as women in the German labor market may not be as flexible in finding new employment, taking family logistics into account.

This negative wellbeing impact might even exceed the individual level. In order to assess how the unemployment of a wage earner might have an indirect impact on other family members, such as children. Kind and Haisken-DeNew (2012) use panel data from the SOEP and control for the specific reason of parental entry into unemployment. The study focuses on children living with their parents in the same household and finds strong negative effects of the fathers' entry into unemployment on 17-25 year old sons living with at least one parent. The study concludes that parental exogenous entry into unemployment bears higher costs than previously assumed, due to intergenerational transmission.

Analogous to unemployment, the inability to use previously acquired labor market skills upon entry into a new job, as in the case of overeducation, may also produce negative welfare effects. The role of overeducation has been demonstrated in the economic literature and is well established, with many studies analyzing the earnings effects of overeducation (e.g. Sicherman, 1991; Groeneveld and Hartog, 2004; Bauer, 2002). As most studies find that overeducation influences personal earnings negatively, it appears likely that other aspects of life can also be influenced. Battu, Belfield, and Sloane (1999) have analyzed the effects of overeducation on job satisfaction and Korpi and Tahlin (2009) have found a negative effect of objective overeducation on job satisfaction.

This study examines the role of underemployment through overeducation when employees move from job-to-job, bypassing unemployment, and start a new job in which they cannot fully utilize their previously acquired labor market skills. To derive causal effects, we rely on an econometric strategy focusing on job changers and differentiating between exogenous and potentially self-induced (endogenous) job changes (Kassenboehmer and Haisken-DeNew, 2009). Not only do we use information on the reason for leaving the former job, but also after leaving the former job and getting a new one, respondents state whether they can use their professional skills to the same amount they could in their previous position. Combining this information allows us to obtain the causal effect of an exogenous move to a bad job match and comparing it to that of entering unemployment or remaining in a good job match.

Results show that moving jobs voluntarily has a significant positive effect on respondents' life satisfaction, as long as they move to a good job match. If, however, people downchange, such that they cannot fully utilize their skills, the estimated wellbeing coefficients are negative. The results for people moving jobs involuntarily are even



more pronounced and show that not only does downchanging have a large negative causal effect on life satisfaction, but relatively speaking, this effect is more than half as large as the effect of becoming unemployed.

The paper is structured as follows: The next section describes the data used, section 3 explains the empirical strategy. In section 4, the results of the empirical analysis are presented while the fifth section summarizes and discusses the results.

## 2 Data

In performing the analysis, we use data from the German Socio-Economic Panel (SOEP). The SOEP is a large household panel carried out in Germany since 1984.<sup>2</sup> We use thirteen waves of observations starting in 1994 and ending in 2009.<sup>3</sup> We restrict our sample to the working age (18 to 65) and exclude the self-employed as their skill match follows a fundamentally different path.

The dependent variable in this analysis is general life satisfaction, in which respondents are asked, "How satisfied are you with your life, all things considered?". This question is answered on an 11-point scale ranging from "completely dissatisfied" (0) to "completely satisfied" (10).

The main explanatory variable is the variable *downchange*. For the definition of this variable, we use detailed information on the reasons for respondents leaving their jobs. People moving from one job to another are asked whether they can use their professional skills more, less or in a about the same way as in their previous position. This information is used to define underemployed persons.

In the economic literature, there has been a long and intense discussion about the operationalization of overeducation. Possible methods include: (a) an objective approach, (b) an empirical approach and (c) a subjective approach. The objective approach (e.g. Rumberger, 1987) uses an expert evaluation of educational requirements for a job. While this is available for the US (Dictionary of Occupational Titles), it does not exist for the German labor market. Furthermore, there is the structural weakness that it needs regular updates because otherwise the seemingly mismatched workers might indeed be in an appropriately matched position, once taking technological change into account (e.g. Kiker, Santos, and de Oliveira, 1997).

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<sup>2</sup>For a detailed description, see Wagner, Frick, and Schupp (2007) and Haisken-DeNew and Frick (2005).

<sup>3</sup>The years before 1992 are not used in this analysis to avoid the historical turbulence associated with the German reunification. The waves 1993, 1998, 1999, 2008 and 2010 - 2011 cannot be used because the main explanatory variable was not included in the annual questionnaire.

The second method is an empirical one comparing the educational endowment of an individual to the mean (e.g. Verdugo and Verdugo, 1989; Bauer, 2002) or modal (e.g. Kiker, Santos, and de Oliveira, 1997; Bauer, 2002) education in a given occupation. This method has the advantage of updating automatically with each new wave of data and has often been used in wage regressions. However, for this analysis, it does not capture the necessary information adequately. Wage regressions identify the earnings effect of being in a job that does not fit one's own education. The exact reasons for choosing this imperfect fit only play a minor role in this field of literature. This analysis aims at explaining the effects of undereducation and the knowledge of the reason for choosing this state is a crucial prerequisite for the interpretation of causal effects.

We therefore rely on the third method discussed in the literature, which is a subjective approach. One way of operationalizing this approach is to ask respondents for the necessary education to do their job (Sicherman, 1991; Sloane, Battu, and Seaman, 1999). This is already closer to the real perception of the job match of respondents. Nevertheless, it has the disadvantage that it remains unclear whether respondents answer with: (a) the mean level of education in their occupational position, (b) current hiring standards or (c) according to the real requirements of their tasks. It is also unknown whether respondents are aware of the standards in their occupation or if they answer according to observations in their company or industry (for a discussion of this approach, see Bauer, 2002).

We mainly focus on the variable downchange, which allows the respondent to sum up many different influences to arrive at a simple answer. To allow an easier integration into the overeducation literature, we also include an empirical measure of overeducation, comparing a respondent's educational endowment to the modal value of education in the occupation he works in. Including this in our regressions ensures that the effect we attribute to a downchange is not driven by objective overeducation. The control for objective overeducation remains insignificant in most regressions.

The second important feature of our data is information on the reason for leaving a job. The SOEP provides information on the reason a job was terminated. This includes the categories: (a) place of worked closed, (b) own resignation, (c) dismissal by the employer, (d) a mutual agreement, (e) the ending of a temporary contract, (f) entering retirement, (g) being on a leave of absence and (h) closing down the own business when self-employed. Of special interest for us is the first reason, the company closure. For two reasons, this is exogenous to the respondent: First, no single employee is able to influence this firm-wide outcome significantly and second, it hits all employees, regardless of characteristics. Making use of this exogeneity, we

are able to derive causal effects.

Table 1: Descriptive Statistics of Personal Characteristics

	Men		Women	
	Mean	Std.Dev.	Mean	Std.Dev.
Downchange	0.017	(0.13)	0.021	(0.14)
Enter Unemp.	0.036	(0.19)	0.030	(0.17)
Jobchange (Fit)	0.102	(0.30)	0.098	(0.30)
OE Mode(Bin)	0.258	(0.44)	0.181	(0.38)
Age	42.111	(13.08)	41.848	(12.90)
Children	0.648	(0.91)	0.680	(0.92)
Married	0.674	(0.47)	0.700	(0.46)
Educ. (Years)	12.057	(2.68)	11.834	(2.55)
Log. Household Income	7.896	(0.54)	7.866	(0.56)
Resident. Move	0.095	(0.29)	0.098	(0.30)
Nights in Hospital	1.150	(6.99)	1.298	(6.88)
Working Hours	32.168	(20.14)	19.297	(18.68)
Year Dummies	Yes		Yes	
N	75390		82415	

Note: Authors' calculations based on the SOEP.

Table 1 presents descriptive statistics of variables used. A downchange, i.e. a change from one job to another while the professional skills are not fully utilized in the new job, is observed for nearly 2% of our sample. While this appears to be quite low on the first glance, it still means more than 3,000 cases due to the large number of observations in the SOEP. Then, all job change variables are defined for the period immediately following the change, so respondents do not remain in this state longer than the one-period transition state. Hence, change-observations are individuals, not person-year observations. This means there is a profound amount of observations.

There are two other stages one can arrive at after a job change. The first of these is becoming unemployed, whilst the other is moving to a job that is a good match in terms of skill usage. These states are observed more often with 3.6% of the male sample (for women 3%) moving into unemployment and 10% moving into a skill-match. The mean age in the sample is about 42 years (42.1 for men and 41.8) for females. On average, there are about 0.7 children per individual and a 70% of respondents are married. Mean education is around 12 years (12.1 for males and 11.8 for females) and there are no large differences in the household income to be observed. It should be noted that we do not use the personal labor income, but rather the logarithm of net household income. We control for moving house, as it might be the case that people change jobs as they move with their partners and are therefore "forced" to move, personal health is measured with the objective variable of nights spent in hospital. Working hours differ most strongly between men and women, reflecting typical differences in the labor market. Males work on average 32 hours a week, females only 19 hours. This gives a first hint at a higher importance

of the labor market for men, which will play an important role in the interpretation of the results.

Table 2 shows the share of job changers over the different possible outcomes. The overall largest group of changers consists of those people voluntarily leaving their jobs and moving on to new jobs with a good skill match. The group of changers due to external reasons only includes those individuals leaving their jobs due to a company closure, so they are naturally outnumbered by the persons changing for other reasons. Still, about 6.5% of all job changes in the male and 4% of all changes in the female sample happen after a company closure. As we can make use of the large number of observation in the SOEP, there are still enough observations for the following empirical analysis.

Table 2: Descriptive Statistics of Job Changes

	Men		Women	
	Mean	Std.Dev.	Mean	Std.Dev.
Downchange other	0.104	(0.31)	0.132	(0.34)
Entry UE other	0.209	(0.41)	0.189	(0.39)
Job Change (Fit) other	0.624	(0.48)	0.638	(0.48)
Downchange external	0.008	(0.09)	0.006	(0.08)
Entry UE external	0.022	(0.15)	0.014	(0.12)
Job Change (Fit) external	0.034	(0.18)	0.021	(0.14)
N	11706		12249	

Note: Authors' calculations based on the SOEP.

### 3 Empirical Strategy

As the analysis uses a subjective dependent variable, the use of personal fixed-effects is critical, accounting for person-specific, unobserved characteristics influencing individual happiness.<sup>4</sup> In accordance with Ferrer-i Carbonell and Frijters (2004), we run linear fixed-effects regressions.

In addition to linear fixed-effects regressions, we use a fixed-effects logit estimator developed by Chamberlain (1980). In order to apply this approach, the dependent variable is collapsed into a binary variable as a conditional maximum likelihood estimator is used. This approach is in line with Ferrer-i Carbonell and Frijters (2004); Kassenboehmer and Haiken-DeNew (2009) and Kind and Haiken-DeNew (2012). To collapse the satisfaction variable into a binary format, it is coded 0 if the reported satisfaction is below a certain threshold and 1 if it above this threshold. One pos-

<sup>4</sup>For an extensive discussion of the importance of fixed-effects for the work with subjective data, see Ferrer-i Carbonell and Frijters (2004).

sibility to code this binary variable is to take the sample mean as breaking point (Winkelmann and Winkelmann, 1998). This proceeding, however, leads to a huge loss of data. To avoid this, we use an approach introduced by Ferrer-i Carbonell and Frijters (2004) and also applied by Kassenboehmer and Haisken-DeNew (2009), creating an individual mean satisfaction level for each individual to use it as threshold. This offers the possibility to get consistent results with the fixed-effects logit estimator while preventing a large-scale loss of observations.

To derive causal effects of changing jobs, we rely on the information about the reason of leaving the former employer: exogenous company closing. We perform estimations in two different models. In the first step, we do not account for the reason to leave a job but consider all changers pooled together, only differentiating between down-changers, job changers to an educational match and changers into unemployment. This gives a first hint at the direction of the results, without direct causality.

In a second step, we further disaggregate observations by the reasons to change jobs: exogenous and endogenous reasons. Exogenous changes are those due to company closure while we code all others as internal. this decreases the number of observations in each group but allows us to identify causality.

## 4 Results

### 4.1 General Results

Table 3: Linear FE Regressions – General Changes

	Dep. Variable: Subjective Life Satisfaction		
	Men & Women	Men	Women
	(18-65)	(18-65)	(18-65)
Downchange	-0.057* (0.029)	-0.099** (0.045)	-0.017 (0.039)
Enter Unemp.	-0.380*** (0.025)	-0.385*** (0.037)	-0.348*** (0.035)
Jobchange (Fit)	0.051*** (0.014)	0.028 (0.019)	0.078*** (0.019)
Constant	5.813*** (0.182)	6.175*** (0.269)	5.501*** (0.246)
Other characteristics	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
N	157805	75390	82415
R <sup>2</sup>	0.03	0.04	0.03

Note: Robust standard errors in parentheses. \*, \*\* and \*\*\* denote significance level of 10%, 5% and 1% respectively. Estimations based on SOEP data 1994 - 1998; 2001 - 2007; 2009.

Table 3 presents the results of the linear fixed-effects regressions not differentiating between reasons of change. The first column shows the coefficients for the pooled sample, the second (males) and the third (females) are differentiated by sex. Coeffi-

cients for the pooled sample are of expected sign and magnitude. A downchange has a negative coefficient, which is weakly significant. A job change into a good fit has a positive coefficient while a huge negative coefficient is observed for entering unemployment. The split gender samples show that the negative downchange coefficient is mainly driven by males, where we observe a large (-0.099) and significant coefficient. The coefficient for females is also negative, but smaller and insignificant while the negative impact of becoming unemployed is found to be similar for both men and women.

Table 4: Linear FE Regressions – Reasons for Changes

	Dep. Variable: Subjective Life Satisfaction		
	Men & Women	Men	Women
	(18-65)	(18-65)	(18-65)
DC other	-0.047 (0.030)	-0.081* (0.047)	-0.012 (0.040)
UE other	-0.371*** (0.026)	-0.370*** (0.038)	-0.348*** (0.036)
JC (Fit) other	0.055*** (0.014)	0.037* (0.020)	0.077*** (0.019)
DC external	-0.231* (0.119)	-0.328** (0.165)	-0.118 (0.172)
UE external	-0.474*** (0.079)	-0.525*** (0.108)	-0.353*** (0.114)
JC (Fit) external	-0.025 (0.056)	-0.103 (0.073)	0.094 (0.087)
Constant	5.813*** (0.182)	6.172*** (0.269)	5.502*** (0.246)
Other characteristics	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
N	157805	75390	82415
R <sup>2</sup>	0.03	0.04	0.03

Note: Robust standard errors in parentheses. \*, \*\* and \*\*\* denote significance level of 10%, 5% and 1% respectively. Estimations based on SOEP data 1994 - 1998; 2001 - 2007; 2009.

A better insight into the mechanisms at work is achieved by an even further split of the groups to observe the reason for a change. Table 4 shows the results of the linear fixed-effects regressions differentiating between reasons of change. The pooled sample shows that a downchange for reasons other than a company closure is not significant. This is not unexpected, as a downchange might still be a voluntary move and for some unobserved reasons, these persons are willing to accept it. These reasons might be driven by a need for any job change or simply low ambition levels.

The coefficient on entering unemployment for other reasons is still large and significant, meeting our priors, as unemployment is known as one of the worst negative shocks a person can experience in terms of life satisfaction (e.g. Clark and Oswald, 1994). Not surprisingly, a voluntary job change has a positive and significant effect. The three following rows show the results for exogenous changes. An exogenous downchange, moving to a bad job after company closing, has a very large negative effect on a person's life satisfaction (-0.231). The coefficient is significant at the 10% level (or single-tailed 5%). The entering unemployment coefficient is even larger (-0.474) and the largest negative shock we observe, a finding consistent with the re-

sults of Kassenboehmer and Haiken-DeNew (2009). Comparing the point estimates of downchange and moving into unemployment shows that the downchange negative shock is approximately half the size of an entry into unemployment. The coefficient for a job change with a good fit is insignificant.

The male subsample shows that the combined gender downchange results are mainly driven by men. The coefficients for exogenous downchanges are larger than in the pooled sample (-0.328) and the difference to entering unemployment (-0.525) even becomes smaller. Comparing the point estimates shows that a downchange is even 60% as bad as entering into unemployment. When taking the standard errors into account, it becomes obvious that the coefficients are not statistically different from each other, so it cannot even be clearly stated that becoming unemployed after a firm closure is worse than downchanging. For the female sample, the coefficients of external unemployment and external downchange are smaller and downchange becomes insignificant. This is potentially due to the higher importance placed on labor market outcomes for males, as indicated by the sample descriptives with higher mean values for education and working hours in the male sample.

The results from the linear fixed-effects estimations are noticeable. Firstly, unemployment has a huge negative impact on individual happiness. Moving into unemployment after a company closure is the strongest negative event we observe, a result which has been previously found (e.g. Clark and Oswald, 1994; Kassenboehmer and Haiken-DeNew, 2009). However, we show that this is not the only group heavily affected by a firm closure. People staying in employment but going to a job with a bad skill match are comparably worse off. Estimates for males changing down show that the point estimate has about two thirds the size of the entry-unemployment coefficient and the coefficients cannot be told apart statistically. Hence, we observe a large hit to respondents' satisfaction levels and this observation is highly relevant as it shows the "total" costs of company closures are much higher than simple replacement rate.

In a second step of the analysis, we check the validity of these results by applying a fixed-effects conditional logit estimator (Chamberlain, 1980), which is often used in the life satisfaction literature to avoid the assumption of linearity (see e.g. Ferrer-i Carbonell and Frijters, 2004; Kassenboehmer and Haiken-DeNew, 2009; Kind and Haiken-DeNew, 2012). Table 5 shows the results of the general regressions and the picture observed for the linear model remains unchanged. While the coefficients from this model may not be interpreted as marginal effects, the general pattern can be observed. Downchange remains negative and significant for men, while it is insignificant for women. Becoming unemployed remains the worst labor market

Table 5: Conditional Logit Regressions – General Changes

	Dep. Variable: Subjective Life Satisfaction		
	Men & Women	Men	Women
	(18-65)	(18-65)	(18-65)
Downchange	-0.098** (0.044)	-0.169** (0.067)	-0.031 (0.059)
Enter Unemp.	-0.458*** (0.036)	-0.456*** (0.052)	-0.427*** (0.050)
Jobchange (Fit)	0.082*** (0.022)	0.040 (0.032)	0.128*** (0.031)
Other characteristics	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
N	141386	67158	74228
Pseudo R <sup>2</sup>	0.02	0.03	0.02

Note: Robust standard errors in parentheses. \*, \*\* and \*\*\* denote significance level of 10%, 5% and 1% respectively. Estimations based on SOEP data 1994 - 1998; 2001 - 2007; 2009

shock to be experienced. Moving jobs to a good match has positive coefficients.

Table 6: Conditional Logit Regressions – Reasons for Changes

	Dep. Variable: Subjective Life Satisfaction		
	Men & Women	Men	Women
	(18-65)	(18-65)	(18-65)
DC other	-0.075* (0.045)	-0.137** (0.069)	-0.016 (0.060)
UE other	-0.443*** (0.037)	-0.432*** (0.053)	-0.424*** (0.052)
JC (Fit) other	0.094*** (0.023)	0.056* (0.033)	0.136*** (0.031)
DC external	-0.488*** (0.167)	-0.597** (0.238)	-0.366 (0.234)
UE external	-0.627*** (0.120)	-0.695*** (0.165)	-0.468*** (0.174)
JC (Fit) external	-0.164* (0.093)	-0.211* (0.120)	-0.100 (0.147)
Other characteristics	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
N	141386	67158	74228
Pseudo R <sup>2</sup>	0.02	0.03	0.02

Note: Robust standard errors in parentheses. \*, \*\* and \*\*\* denote significance level of 10%, 5% and 1% respectively. Estimations based on SOEP data 1994 - 1998; 2001 - 2007; 2009.

Table 6 shows the conditional logit results for the split case and it can again be stated that findings remain stable. There are large, negatively significant effects for unemployment (both exogenous and for other reasons), as well as a negative effect for downchanging due to company closure, which is highly significant in the male sample. For both specifications, including the reasons for the change or not, results are qualitatively equal to those of the linear regressions.

Applying a non linear model controlling for personal fixed-effects, we can verify the results of the linear regressions. As the results do not depend on the choice of the estimator, the interpretation is based on the results of the linear model as they allow an interpretation of the coefficients in terms of size.



## 4.2 Robustness Checks

One aspect that has not been considered in the analysis thus far is the aspect of job security. It might be that employees prefer more secure but poorly matched jobs to well-matched but insecure ones. Thus we include a variable controlling for this.<sup>5</sup> Table 7 and Table 8 (see Appendix) present the results of the linear fixed-effects regressions. In accordance with the theoretical expectations, the dummy indicating high job security itself is positive, large in size (about 0.21 for males and 0.18 for females, respectively) and statistically significant at the 1% level. At the same time, the coefficients of the other variables remain unchanged in terms of quality and quantity. This is true for the simple inclusion of the security dummy as well as for interactions with downchange (see Table 9 and Table 10 in the Appendix).

As a last control, we include the first lag of the variables of interest (see Table 11 and Table 12 in the Appendix). The results show that a downchange is a one-time negative shock and respondents do not continue to suffer for several years, as they do by unemployment.

## 4.3 Implications

Comparing the negative coefficient of a downchange to the positive coefficient of log household income reveals the strength of the effects found here.<sup>6</sup> In the pooled sample, the effect of an involuntary downchange is about two thirds of the effect of one log point in household income. The mean log household income in our sample is 7.89, which is about €2,650. An increase in a log point at this reference point means an increase of €4,500. Hence to be compensated for the case of an involuntary downchange, one has to be compensated with about €3,000 of additional monthly household income.

The analysis demonstrates that although not many individuals are affected by this negative shock, the welfare loss is nevertheless quite large, as indicated by the counterfactual compensating financial payment that would have to be made to keep the person at the same level of welfare ( $€3,000 \times 12 \text{ months} = €36,000$ ). People becoming unemployed, for which ever reasons, are paid unemployment benefits as well as measures which help them to reintegrate themselves into the labor market. Down-

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<sup>5</sup> Worries about job security in the SOEP is asked in the following manner: very concerned, somewhat concerned, not concerned. Here we create a dummy indicating whether someone is "not at all concerned" about job security.

<sup>6</sup> A full table including the coefficients of the standard controls can be found in the Appendix. See Table 13 and Table 14.

changers are a group of people who behave in a way that is desirable for society as they move to a new job although this does not meet their skills and thereby prevent the payment of assistance. However, they still suffer heavily from this move. As there is a small group that suffers from a strong shock to their personal satisfaction level, assistance payments limited to a 12 month period may be an inducement to take a worse job match, but avoid the even higher psychic and fiscal costs of full-blown unemployment.

## 5 Conclusion

This paper clearly demonstrates the large and significant causal effects of underemployment through overeducation on individual welfare levels. Using data from the German Socio-Economic Panel, we show that welfare losses due to entry into unemployment are substantial, confirming the established literature. However, remaining in employment, but moving into a job in which one's own professional skills are not fully utilized (downchange), is of a similar loss in welfare as entry into unemployment. Controlling for the reason of a job change, we identify individuals changing jobs due to exogenous company closure. Here the causal welfare loss due to downchange is as negative in magnitude as full-blown entry into unemployment. A downchanger would have to be compensated by an additional €3000 of monthly household income for one year to allow him to remain at the same level of welfare, as measured by life satisfaction. Of course, no employment benefit system is going to be able to finance such a large benefit for working recipients, but the idea is clear.

Downchanging is a negative phenomenon observed in the labor market, which has thus far been neglected in papers such as Winkelmann and Winkelmann (1998), Kassenboehmer and Haisken-DeNew (2009), Lucas, Clark, Georgellis, and Diener (2004) and in the political and economic discussion of lay-offs. As the psychic costs are similar in magnitude for the worker who exogenously lost his job through plant closing and who (a) enters into standard unemployment or (b) finds a job in which the skill match is imperfect, but the fiscal costs are avoided, there is a role for policy to play in this case. In case (a), the worker suffers a welfare loss, works zero hours, yet receives unemployment payments and in (b), the worker earns a wage and receives no benefits. To socialize the private welfare loss and avoid giving any incentive to enter into unemployment and take the payments, some targeted smaller benefit could be granted in cases of bona fide plant closures, to offset the downchange welfare loss and keep the affected workers earning and contributing to the social security system, instead of drawing from it. The benefit would be some amount, up to the difference

between previous wages in the closed plant and the current wage (if lower) and paid, once the new job has started and the duties performed or skills required verified.

## References

- BATTU, H., C. R. BELFIELD, AND P. J. SLOANE (1999): “Overeducation Among Graduates: A Cohort View,” *Education Economics*, 7(1), 21–38.
- BAUER, T. K. (2002): “Educational Mismatch and Wages: A Panel Analysis,” *Economics of Education Review*, 21(3), 221 – 229.
- CHAMBERLAIN, G. (1980): “Analysis of Covariance with Qualitative Data,” *Review of Economic Studies*, 47(1), 225–38.
- CLARK, A. E. (2003): “Unemployment as a Social Norm: Psychological Evidence from Panel Data,” *Journal of Labor Economics*, 21(2), 289–322.
- CLARK, A. E., AND A. J. OSWALD (1994): “Unhappiness and Unemployment,” *The Economic Journal*, pp. 648–659.
- CLARK, A. E., AND A. J. OSWALD (1996): “Satisfaction and Comparison Income,” *Journal of Public Economics*, 61(3), 359–381.
- EASTERLIN, R. A. (1974): “Does Economic Growth Improve the Human Lot? Some Empirical Evidence,” *Nations and Households in Economic Growth: Essays in Honour of Moses Abramowitz*, pp. 89–125.
- EUROSTAT (2013): “Unemployment Statistics - Statistics Explained,” [http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Unemployment\\_statistics](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Unemployment_statistics).
- FERRER-I CARBONELL, A., AND P. FRIJTERS (2004): “How Important is Methodology for the Estimates of the Determinants of Happiness?,” *The Economic Journal*, 114(497), 641–659.
- FREY, B. S., AND A. STUTZER (2002): “What Can Economists Learn from Happiness Research?,” *Journal of Economic Literature*, 40(2), 402–435.
- GROENEVELD, S., AND J. HARTOG (2004): “Overeducation, Wages and Promotions within the Firm,” *Labour Economics*, 11(6), 701 – 714.
- HAISKEN-DENEW, J. P., AND R. FRICK (2005): “Desktop Companion to the German Socio-Economic Panel Study (GSOEP),” *Berlin: German Institute for Economic Research*.
- KASSENBOEHMER, S. C., AND J. P. HAISKEN-DENEW (2009): “You’re Fired! The Causal Negative Effect of Entry Unemployment on Life Satisfaction\*,” *The Economic Journal*, 119(536), 448–462.

- KIKER, B., M. C. SANTOS, AND M. DE OLIVEIRA (1997): “Overeducation and undereducation: Evidence for Portugal,” *Economics of Education Review*, 16(2), 111 – 125.
- KIND, M., AND J. P. HAISKEN-DENEW (2012): “Unexpected Victims: How Parents’ Unemployment Affects Their Children’s Life Satisfaction,” *Melbourne Institute Working Paper*, 2 (12).
- KORPI, T., AND M. TAHLIN (2009): “Educational Mismatch, Wages, and Wage Growth: Overeducation in Sweden, 1974 - 2000,” *Labour Economics*, 16(2), 183 – 193.
- LUCAS, R. E., A. E. CLARK, Y. GEORGELLIS, AND E. DIENER (2004): “Unemployment Alters the Set Point for Life Satisfaction,” *Psychological Science*, 15, 8–13.
- RUMBERGER, R. W. (1987): “The Impact of Surplus Schooling on Productivity and Earnings,” *Journal of Human Resources*, 22(1), 24 – 50.
- SENIK, C. (2005): “Income Distribution and Well-being: What Can We Learn from Subjective Data?,” *Journal of Economic Surveys*, 19(1), 43–63.
- SICHERMAN, N. (1991): “Overeducation in the Labor Market,” *Journal of Labor Economics*, 9(2), pp. 101–122.
- SLOANE, P. J., H. BATTU, AND P. T. SEAMAN (1999): “Overeducation, Undereducation and the British Labour Market,” *Applied Economics*, 31(11), 1437–1453.
- VERDUGO, R. R., AND N. T. VERDUGO (1989): “The Impact of Surplus Schooling on Earnings,” *The Journal of Human Resources*, 24(4), 629–643.
- WAGNER, G. G., J. R. FRICK, AND J. SCHUPP (2007): “The German Socio-Economic Panel Study (SOEP) – Scope, Evolution and Enhancements,” *Schmollers Jahrbuch : Journal of Applied Social Science Studies / Zeitschrift für Wirtschafts- und Sozialwissenschaften*, 127(1), 139–169.
- WINKELMANN, L., AND R. WINKELMANN (1998): “Why are the Unemployed so Unhappy? Evidence from Panel Data,” *Economica*, 65(257), 1–15.
- WIRTSCHAFTSLEXIKON, G. (2013): “Hartz-Gesetze,” <http://wirtschaftslexikon.gabler.de/Archiv/5121/hartz-gesetze-v9.html>.

# Appendix

Table 7: Linear FE Regressions – General Changes – Job Security

	Dep. Variable: Subjective Life Satisfaction		
	Men & Women	Men	Women
	(18-65)	(18-65)	(18-65)
Downchange	-0.063** (0.029)	-0.099** (0.045)	-0.025 (0.039)
Enter Unemp.	-0.380*** (0.025)	-0.386*** (0.037)	-0.347*** (0.035)
Jobchange (Fit)	0.044*** (0.013)	0.024 (0.019)	0.069*** (0.019)
High Job.Sec.	0.192*** (0.011)	0.213*** (0.015)	0.179*** (0.015)
Constant	5.805*** (0.181)	6.138*** (0.268)	5.510*** (0.245)
Other characteristics	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
N	157805	75390	82415
R <sup>2</sup>	0.04	0.05	0.03

Note: Robust standard errors in parentheses. \*, \*\* and \*\*\* denote significance level of 10%, 5% and 1% respectively. Estimations based on SOEP data 1994 - 1998; 2001 - 2007; 2009.

Table 8: Linear FE Regressions – Reasons for Changes – Job Security

	Dep. Variable: Subjective Life Satisfaction		
	Men & Women	Men	Women
	(18-65)	(18-65)	(18-65)
DC other	-0.053* (0.030)	-0.080* (0.047)	-0.021 (0.040)
UE other	-0.371*** (0.026)	-0.371*** (0.038)	-0.346*** (0.036)
JC (Fit) other	0.048*** (0.014)	0.033* (0.020)	0.068*** (0.019)
DC external	-0.240*** (0.118)	-0.336** (0.164)	-0.127 (0.172)
UE external	-0.475*** (0.079)	-0.525*** (0.107)	-0.352*** (0.114)
JC (Fit) external	-0.024 (0.056)	-0.099 (0.073)	0.092 (0.087)
High Job.Sec.	0.192*** (0.011)	0.213*** (0.015)	0.179*** (0.015)
Constant	5.804*** (0.181)	6.135*** (0.268)	5.511*** (0.245)
Other characteristics	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
N	157805	75390	82415
R <sup>2</sup>	0.04	0.05	0.03

Note: Robust standard errors in parentheses. \*, \*\* and \*\*\* denote significance level of 10%, 5% and 1% respectively. Estimations based on SOEP data 1994 - 1998; 2001 - 2007; 2009.

Table 9: Linear FE Regressions – General Changes – Job Security Interactions

	Dep. Variable: Subjective Life Satisfaction		
	Men & Women	Men	Women
	(18-65)	(18-65)	(18-65)
Downchange	-0.074** (0.037)	-0.155*** (0.055)	0.002 (0.049)
Enter Unemp.	-0.380*** (0.025)	-0.386*** (0.037)	-0.346*** (0.035)
Jobchange (Fit)	0.044*** (0.013)	0.025 (0.019)	0.069*** (0.019)
High Job.Sec.	0.191*** (0.011)	0.209*** (0.015)	0.181*** (0.015)
DC*HJS	0.033 (0.060)	0.194** (0.088)	-0.075 (0.080)
Constant	5.803*** (0.181)	6.136*** (0.268)	5.510*** (0.245)
Other characteristics	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
N	157805	75390	82415
R <sup>2</sup>	0.04	0.05	0.03

Note: Robust standard errors in parentheses. \*, \*\* and \*\*\* denote significance level of 10%, 5% and 1% respectively. Estimations based on SOEP data 1994 - 1998; 2001 - 2007; 2009.

Table 10: Linear FE Regressions – Reasons for Changes – Job Security Interactions

	Dep. Variable: Subjective Life Satisfaction		
	Men & Women	Men	Women
	(18-65)	(18-65)	(18-65)
DC other	-0.053* (0.030)	-0.080* (0.047)	-0.021 (0.040)
UE other	-0.371*** (0.026)	-0.371*** (0.038)	-0.346*** (0.036)
JC (Fit) other	0.048*** (0.014)	0.033* (0.020)	0.068*** (0.019)
DC external	-0.288* (0.159)	-0.413* (0.217)	-0.150 (0.236)
UE external	-0.475*** (0.079)	-0.525*** (0.107)	-0.352*** (0.114)
JC (Fit) external	-0.024 (0.056)	-0.099 (0.073)	0.092 (0.087)
High Job.Sec.	0.192*** (0.011)	0.213*** (0.015)	0.179*** (0.015)
DCexternal*HJS	0.147 (0.219)	0.241 (0.310)	0.070 (0.310)
Constant	5.804*** (0.181)	6.136*** (0.268)	5.511*** (0.245)
Other characteristics	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
N	157805	75390	82415
R <sup>2</sup>	0.04	0.05	0.03

Note: Robust standard errors in parentheses. \*, \*\* and \*\*\* denote significance level of 10%, 5% and 1% respectively. Estimations based on SOEP data 1994 - 1998; 2001 - 2007; 2009.

Table 11: Linear FE Regressions – General Changes (Lagged)

	Dep. Variable: Subjective Life Satisfaction		
	Men & Women	Men	Women
	(18-65)	(18-65)	(18-65)
Downchange(t-1)	0.008 (0.033)	-0.011 (0.050)	0.026 (0.043)
Enter Unemp.(t-1)	-0.146*** (0.025)	-0.140*** (0.036)	-0.148*** (0.035)
Jobchange (Fit)(t-1)	-0.005 (0.014)	0.035* (0.021)	-0.036* (0.020)
Constant	5.867*** (0.189)	6.260*** (0.281)	5.532*** (0.257)
Other characteristics	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
N	145293	69292	76001
R <sup>2</sup>	0.03	0.04	0.03

Note: Robust standard errors in parentheses. \*, \*\* and \*\*\* denote significance level of 10%, 5% and 1% respectively. Estimations based on SOEP data 1994 - 1998; 2001 - 2007; 2009.

Table 12: Linear FE Regressions – Reasons for Changes (Lagged)

	Dep. Variable: Subjective Life Satisfaction		
	Men & Women	Men	Women
	(18-65)	(18-65)	(18-65)
DC other(t-1)	0.014 (0.034)	-0.009 (0.052)	0.032 (0.044)
UE other(t-1)	-0.135*** (0.026)	-0.110*** (0.037)	-0.153*** (0.037)
JC (Fit) other(t-1)	-0.006 (0.015)	0.033 (0.021)	-0.035* (0.020)
DC external(t-1)	-0.170 (0.131)	-0.047 (0.161)	-0.306 (0.217)
UE external(t-1)	-0.274*** (0.084)	-0.408*** (0.121)	-0.113 (0.112)
JC (Fit) external(t-1)	-0.035 (0.053)	-0.019 (0.068)	-0.041 (0.083)
Constant	5.852*** (0.189)	6.238*** (0.280)	5.521*** (0.257)
Other characteristics	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
N	145866	69620	76246
R <sup>2</sup>	0.03	0.04	0.03

Note: Robust standard errors in parentheses. \*,\*\* and \*\*\* denote significance level of 10%, 5% and 1% respectively. Estimations based on SOEP data 1994 - 1998; 2001 - 2007; 2009.

Table 13: Linear FE Regressions – General Changes – Full Table

	Dep. Variable: Subjective Life Satisfaction		
	Men & Women	Men	Women
	(18-65)	(18-65)	(18-65)
Downchange	-0.057* (0.029)	-0.099** (0.045)	-0.017 (0.039)
Enter Unemp.	-0.380*** (0.025)	-0.385*** (0.037)	-0.348*** (0.035)
Jobchange (Fit)	0.051*** (0.014)	0.028 (0.019)	0.078*** (0.019)
OE Mode(Bin)	0.016 (0.016)	0.052** (0.022)	-0.021 (0.024)
Age	-0.070*** (0.006)	-0.088*** (0.009)	-0.054*** (0.008)
Age Squarred	0.001*** (0.000)	0.001*** (0.000)	0.000*** (0.000)
Children	0.048*** (0.010)	0.054*** (0.014)	0.030* (0.014)
Married	0.094*** (0.025)	0.066* (0.038)	0.092*** (0.034)
Educ. (Years)	0.009 (0.007)	-0.024** (0.010)	0.040*** (0.010)
Log. Household Income	0.331*** (0.016)	0.356*** (0.024)	0.307*** (0.021)
Resident. Move	0.139*** (0.013)	0.137*** (0.019)	0.139*** (0.018)
Nights in Hospital	-0.010*** (0.001)	-0.011*** (0.001)	-0.008*** (0.001)
Working Hours	0.005*** (0.000)	0.007*** (0.001)	0.002*** (0.001)
Constant	5.813*** (0.182)	6.175*** (0.269)	5.501*** (0.246)
Year dummies	Yes	Yes	Yes
N	157805	75390	82415
R <sup>2</sup>	0.03	0.04	0.03

Note: Robust standard errors in parentheses. \*,\*\* and \*\*\* denote significance level of 10%, 5% and 1% respectively. Estimations based on SOEP data 1994 - 1998; 2001 - 2007; 2009.



Table 14: Linear FE Regressions – Reasons for Changes – Full Table

	Dep. Variable: Subjective Life Satisfaction		
	Men & Women	Men	Women
	(18-65)	(18-65)	(18-65)
DC other	-0.047 (0.030)	-0.081* (0.047)	-0.012 (0.040)
UE other	-0.371*** (0.026)	-0.370*** (0.038)	-0.348*** (0.036)
JC (Fit) other	0.055*** (0.014)	0.037* (0.020)	0.077*** (0.019)
DC external	-0.231* (0.119)	-0.328** (0.165)	-0.118 (0.172)
UE external	-0.474*** (0.079)	-0.523*** (0.108)	-0.353*** (0.114)
JC (Fit) external	-0.025 (0.056)	-0.103 (0.073)	0.094 (0.087)
OE Mode(Bin)	0.016 (0.016)	0.052** (0.022)	-0.021 (0.024)
Age	-0.070*** (0.006)	-0.088*** (0.009)	-0.054*** (0.008)
Age Squarred	0.001*** (0.000)	0.001*** (0.000)	0.000*** (0.000)
Children	0.048*** (0.010)	0.054*** (0.014)	0.030** (0.014)
Married	0.094*** (0.025)	0.066* (0.038)	0.092*** (0.034)
Educ. (Years)	0.009 (0.007)	-0.024** (0.010)	0.040*** (0.010)
Log. Household Income	0.331*** (0.016)	0.356*** (0.024)	0.307*** (0.021)
Resident. Move	0.139*** (0.013)	0.136*** (0.019)	0.140*** (0.018)
Nights in Hospital	-0.010*** (0.001)	-0.011*** (0.001)	-0.008*** (0.001)
Working Hours	0.005*** (0.000)	0.007*** (0.001)	0.002*** (0.001)
Constant	5.813*** (0.182)	6.172*** (0.269)	5.502*** (0.246)
Year dummies	Yes	Yes	Yes
N	157805	75390	82415
R <sup>2</sup>	0.03	0.04	0.03

Note: Robust standard errors in parentheses. \*, \*\* and \*\*\* denote significance level of 10%, 5% and 1% respectively. Estimations based on SOEP data 1994 - 1998; 2001 - 2007; 2009.