

# On Preferences for Being Self-Employed\*

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## Abstract

The concept of procedural utility assumes that agents do not only receive utility from outcomes, but also attach an independent value to the procedures that lead to these outcomes. This paper analyzes whether the preferences that underlie procedural utility are homogeneous, using the case of independence at the workplace. I exploit the event of German reunification to assign preferences for independence to respondents without using data on occupational choice or directly reported procedural preferences. I find that the self-employed report higher job satisfaction than the employed, even after controlling for income and hours worked. However, there is a significant amount of heterogeneity in this effect: while “independent types” experience a large increase in job satisfaction from being self-employed, “hierarchical types” could even experience a decrease.

## 1 Introduction

In the utility framework typically used in economics, agents derive utility from economic outcomes, most importantly from consumption. It is assumed that preferences are homogeneous, in the sense that e.g. all agents prefer more consumption to less consumption. Procedural utility assumes that individuals do not only value outcomes, but also attach a value to the procedures that lead to outcomes (Frey, Benz, and Stutzer, 2004).<sup>1</sup> A series of recent papers present evidence that self-employed

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<sup>1</sup>Special cases of procedural utility have been analyzed before (see e.g. Lind and Tyler, 1988, for procedures in law suits). Falk and Fehr (2002) and Bénabou and Tirole (2003) analyze the role of intrinsic vs. extrinsic motivation in general and in the specific example of the workplace.

individuals experience significantly higher job satisfaction than non self-employed, even after controlling for income and hours worked (see e.g. Benz and Frey, 2008, and Hundley, 2001).<sup>2</sup> This literature concludes that agents receive procedural utility from being independent in the workplace, on top of the outcome utility derived from income and leisure.

I test whether preferences for procedures on the job are homogeneous or heterogeneous. Homogeneous procedural preferences with regard to the workplace (as analyzed by Benz and Frey, 2008, Blanchflower, Oswald and Stutzer, 2001, and others) would mean that, *ceteris paribus*, aggregate utility could be maximized by having all individuals working as self-employed. Of course, one cannot stress this *ceteris paribus* enough, since this would clearly lead to severe adverse effects on productivity and economic growth. However, it might well be that procedural preferences are not homogeneous. It is less clear that all individuals prefer more independence on the job to less independence, than it is that all individuals prefer more consumption to less consumption. For example, working in a hierarchical situation makes it easier to blame adverse economic outcomes on others, and hence it might be easier for an individual to keep a positive self-image. Moreover, being part of a hierarchy leaves more scope for positive interpersonal feedback from senior personnel. Taking decisions independently, immediately feeling the consequences of one's actions, or receiving feedback from a superior might be perceived as positive job attributes by some, and as negative ones by others.

To test whether there exist heterogeneous preferences with regard to procedures, I test whether the positive effect of self-employment on job satisfaction is larger for a group of individuals who are likely to value independence. I rank agents according to their preferences for independence by employing the change in life satisfaction while transitioning from communism, a system with heavy state intervention in all aspects of life, to capitalism, a system that leaves much more scope for individual decision making (see e.g. Alesina and Fuchs-Schündeln, 2007). This marked transition is observed for individuals from the former German Democratic Republic (GDR) in the course of German Reunification. I assume that procedural preferences for independence do not only concern the workplace, but also other domains of life, and are homogeneous for any individual across domains.

The major advantage of my test is that I identify a group that is a-priori more likely

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<sup>2</sup>Parker (2004) gives an excellent survey of the economic literature on self-employment and entrepreneurship. Hamilton (2000) and Moskowitz and Vissing-Jorgensen (2002) provide interesting quantifications of the trade-off between procedural utility and outcome utility by showing that self-employed experience lower earnings than comparable employees and lower risk-adjusted returns on their business investment compared to public equity.

to value independence from questions that do not relate to the workplace and do not mention independence or related concepts directly. As Bertrand and Mullainathan (2001) show, survey respondents tend to report attitudes that are consistent with their behavior; i.e. behavior may shape attitudes, and not the other way round. Thus, a self-employed might be more likely to report enjoying independence on the job than an employee, even if in fact both individuals have the same attitudes. An additional advantage of this study is that the question relating to job satisfaction is the first question of the survey, while the question regarding life satisfaction is the last one - hence, it is not likely that the respondent has job satisfaction specifically in mind when reporting life satisfaction, another potential problem raised by Bertrand and Mullainathan (2001).

The rest of the paper is organized as follows. Section 2 describes the data, the institutional background, and the empirical strategy. The following section presents the empirical results. Section 4 analyzes whether individuals self-select into self-employment according to their procedural preferences. The last section concludes.

## **2 Testing for the Heterogeneity of Procedural Preferences**

### **2.1 Data**

The data for this study come from the German Socio-Economic Panel, which was started in 1984, and from 1990 on also covers the territory of the former GDR.<sup>3</sup> GSOEP is an annual household panel that provides information on job satisfaction, self-employment, as well as income, hours worked, and other important controls. A detailed description of the survey can be found in SOEP Group (2001). I use the survey rounds from 1990 to 2000, and only the subsample covering individuals from the former GDR. I restrict the sample to 20 to 65 years old individuals who are working full-time. Self-employment is self-reported in the survey (i.e. the respondent characterizes her position in her main job as being self-employed).

At the beginning of the interview, respondents are asked “How satisfied are you today with the following areas of your life?”, where the second area mentioned (after health) is “job (if applicable)”. Respondents can answer on a scale from 0 to 10, where 0 means totally unhappy, and 10 means totally happy. The answer to this question

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<sup>3</sup>Therefore, unfortunately I do not have data on East Germans before the fall of the Berlin Wall, and thus cannot carry out an analysis comparing job satisfaction before and after reunification (see e.g. Clark et al., 2008, for an analysis of satisfaction before and after important life events).

is taken as the dependent variable in this paper. The reliability of this kind of survey data has been analyzed in different studies (for an overview see Frey and Stutzer, 2002a, and Bertrand and Mullainathan, 2001). Figure 1 shows the histogram of this variable. There is a fair amount of variation in the answers, with a mean reported job satisfaction of 6.9, and a standard deviation of 2.1.

## 2.2 Institutional Background

The difficulty of an empirical test of heterogeneous preferences lies in identifying the procedural preferences of individuals independent of their occupational choice, and without directly referring to job characteristics, which could result in cognitive dissonance (Bertrand and Mullainathan, 2001). To this end, I take advantage of certain features of German reunification in 1990. Life in communist East Germany until reunification in 1990 was very regulated as compared to life in democratic West Germany. For example, there existed only one official party in the GDR, and occupational choice was somewhat restricted. Self-employment was prohibited with a few exceptions, and most people were employed in large state-owned firms. Hence, one can expect that, *ceteris paribus*, life satisfaction in the GDR was lower for an individual who values independence a lot than for an individual who prefers being part of a hierarchy. Since it was harder to take initiatives and act independently not only in the workplace but also in the political process in general, it is valid to assume that this should have had an effect on overall life satisfaction, not only on job satisfaction.

In the summer of 1990, i.e. before the official reunification on October 3, 1990, GSOEP started interviewing East German households. In the first round of interviews with households from the former GDR, individuals are asked about their life satisfaction five years ago, i.e. in 1985. From then on, GSOEP only asks about current life satisfaction on a scale from 0 to 10.<sup>4</sup> I exploit the variation between life satisfaction before and after reunification to capture procedural preferences. I assume that an individual who values independence a lot experiences a large increase in life satisfaction through reunification, while an individual who prefers hierarchical structures experiences a smaller increase, or even a decrease.

Certainly, life satisfaction is influenced by a large variety of factors, e.g. by the family situation, income, health, etc. For this reason, I use the average life satisfaction over the years 1990 to 2000 to capture life satisfaction of individuals from the former

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<sup>4</sup>The question asks: “How satisfied are you with your life, all things considered? 0 means completely dissatisfied, 10 means completely satisfied.” In 1990, respondents from East Germany were also asked: “How satisfied were you five years ago?” This question came immediately after the question about current life satisfaction.

GDR under the economic and political system of West Germany.<sup>5</sup> While the general procedures in the political and economic life do not change during this time, the hope is that some personal factors influencing life satisfaction might average out over 11 years.

To capture life satisfaction in the GDR, I can only recur to the question posed in 1990 about life satisfaction five years ago.<sup>6</sup> While retrospective questions are generally avoided in survey analyses due to recall errors, in this special case a retrospective question might even offer an advantage. Asking about life satisfaction five years ago makes it more likely that volatile factors influencing life satisfaction, e.g. the weather on the day of the interview, do not matter, while relatively stable factors, as the political and occupational system, are more likely to be recollected. Also, since the question was asked in 1990 even before official reunification, it is less likely that cognitive dissonance leads to irrational nostalgia for the old regime as pointed out by Kornai (2006). Two additional problems with life satisfaction data are that, first, arguably some individuals are just innately more happy and hence experience higher life satisfaction than others in every period of their life, and, second, respondents might interpret the scales differently. Yet, taking the difference between life satisfaction after and before reunification helps to eliminate these personal fixed effects. In taking differences, I assume cardinality of the data; evidence for the validity of this assumption is provided in Frey and Stutzer (2002b), and Ferrer-i-Carbonell and Frijters (2004).<sup>7</sup>

One worry about the use of the change in life satisfaction through reunification as a proxy for procedural preferences for independence vs. hierarchy is that the life satisfaction change might be driven mainly by income changes: individuals whose income increased a lot through reunification might experience a higher life satisfaction increase, and this same income change could also explain their higher job satisfaction after reunification. While I control for income in the regressions, income is often measured with error especially for self-employed. I include as additional control a dummy for home ownership, as well as financial and real wealth in a sensitivity analysis shown in Table 5. In another robustness check (Table 4), I use the average life satisfaction in only the years 1990 and 1991 as a proxy for life satisfaction under the capitalist system. During these two years, the political situation in the former

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<sup>5</sup>Results are qualitatively very similar if I use the average life satisfaction only over the years 1995 to 2000. As Frijters, Haisken-DeNew and Shields (2004) show, life satisfaction of East Germans increased steadily over the first half of the 1990s, but has been rather constant since 1995.

<sup>6</sup>Since potential explanatory variables for life satisfaction are missing for 1985, I cannot use the residual of a regression of life satisfaction on controls for the personal situation.

<sup>7</sup>Ng (1997) also argues in favor of cardinality of utility.

GDR had already changed and basic freedoms like freedom of occupational choice were established, but the economic conditions were still more similar to the GDR than in latter years. Therefore, less of the change in life satisfaction should be driven by potential changes in the economic situation under this alternative specification.<sup>8</sup> It is somewhat reassuring that the change in life satisfaction through reunification is more highly correlated with life satisfaction in the GDR (correlation of -0.89) than with average life satisfaction from 1990 to 2000 (correlation of 0.27). Thus, most of the variation in the change in life satisfaction through reunification comes through life satisfaction in the GDR, which should be less driven by income than life satisfaction after reunification due to the higher degree of homogeneity of incomes in the GDR.

### 2.3 Descriptive Statistics

Figure 2 shows the histogram of the individual differences in life satisfaction between the 1990s and 1985. The distribution appears to be approximately normal. The mean of the variable lies at 0.34, and the standard deviation is 2.50.

For expositional simplicity, I call individuals who have strong preferences for independence “independent type”, and individuals who have weak preferences for independence, or even preferences for hierarchy, “hierarchical type”. Table 1 shows the mean job satisfaction of employed and self-employed by type. Here, I use a simple dichotomy and assign “independent type” to an individual that experiences an increase in life satisfaction after reunification, and “hierarchical type” to an individual who experiences a decrease. Three observations are noteworthy. First, the job satisfaction of the hierarchical type is higher in employment, while the independent type experiences higher job satisfaction in self-employment. Second, while the job satisfaction levels of the independent and hierarchical types among the employed are quite similar, among the self-employed the independent type experiences larger job satisfaction than the hierarchical type by 0.8 index points. Last, even among the employed the independent type experiences higher job satisfaction than the hierarchical type.<sup>9</sup>

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<sup>8</sup>I thank one of the referees for these suggestions.

<sup>9</sup>None of these differences are statistically significant.

## 2.4 Estimation Strategy

The following equation is estimated by ordered logit, as well as OLS for easier interpretation:

$$\begin{aligned} job\ satisfaction_{i,t} = & \alpha + \beta_0 selfemployed_{i,t} + \beta_1 lifesatdiff_i \\ & + \beta_2 (lifesatdiff * selfemployed)_{i,t} \\ & + \gamma' Z_{i,t} + \varepsilon_{i,t} \end{aligned}$$

where *lifesatdiff* is the difference between the average life satisfaction 1990 to 2000 and the life satisfaction in 1985. The more positive this variable, the larger was the increase in life satisfaction that the individual experienced through reunification. The dummy *selfemployed* takes on the value of 1 if an individual is self-employed, and 0 otherwise. As controls, I include the logarithm of net monthly income, working hours in level and squared, tenure in level and squared, age and age squared, a male dummy, a dummy for married individuals, a dummy for the presence of children in the household, a dummy for home ownership, dummies for birth cohort groups (born before 1946, between 1946 and 1960, and after 1960), dummies for education (5 categories), occupation (28 categories), industry (62 categories), and year dummies.<sup>10</sup> Table 2 reports the summary statistics of the main variables.<sup>11</sup>

Under the hypothesis of heterogeneous procedural preferences, the coefficient  $\beta_2$  on the interaction term between the difference in life satisfaction and the self-employment dummy should be positive and significant. This would imply that the additional job satisfaction coming from self-employment is higher among individuals who value independence than among individuals who prefer being part of a hierarchy.

One might be worried that the change in life satisfaction between 1985 and the 1990s and job satisfaction in the 1990s are positively correlated due to omitted variables. Especially, while the regression controls for current income, the change in income is unobserved. However, the distribution of household incomes in the GDR was much more egalitarian than in West Germany (see e.g. Pohl, 1979); thus, income should play a smaller role in explaining heterogeneity in life satisfaction in 1985 than it typically does in studies of industrialized countries. Moreover, the test for heterogeneity of procedural preferences involves testing for a differential effect of the life satisfaction change on current job satisfaction between the self-employed and the employed, and not simply analyzing the correlation between the change in life satisfaction and current job satisfaction, captured by the parameter  $\beta_1$ .

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<sup>10</sup>Lange and Georgellis (2007) as well as Kaiser (2007) analyze the gender-gap in job satisfaction in Europe, as well as the importance of family composition and marital status for job satisfaction.

<sup>11</sup>All monetary variables are in Deutsche Mark and inflated to year 2000 values.

## 3 Empirical Results

### 3.1 Main Results

For the estimations reported in Table 3, I pool observations over the years 1990 to 2000 and report standard errors that are corrected for pooling. The self-employed exhibit higher job satisfaction than the non self-employed (Table 3, column (i)), a result coinciding with the literature (e.g. Benz and Frey, 2008). Moreover, the coefficient on the interaction term between self-employment and the difference in life satisfaction is positive and significant (Table 3, column (ii)). Self-employed individuals who experienced a large increase in life satisfaction through reunification have a higher job satisfaction than self-employed who experienced a decrease in life satisfaction through reunification, controlling for the common effect of this increase or decrease on self-employed and employees. This gives evidence that there are different “types” of individuals with different procedural preferences.

To analyze the magnitude of the results, I report the results of an OLS regression in column (iii) of Table 3 for ease of interpretation.<sup>12</sup> Given the estimated coefficients, on average self-employed individuals of the most independent type (which in the data corresponds to  $lifesatdiff = 8.5$ ) report 1.47 index points higher satisfaction with their job than employees of the same type, while self-employed individuals of the least independent type ( $lifesatdiff = -7.5$ ) report -0.47 index points less satisfaction with their job than employees of the same type; i.e. the positive job satisfaction effect of being self-employed disappears for some individuals who have preferences for hierarchy. The job satisfaction difference between the most and least independent types among the self-employed amounts to 2.77 index points, which is more than a standard deviation of job satisfaction. Converting into income equivalents, this means that comparing one self-employed to another one who is more of the hierarchical type by one standard deviation (of  $lifesatdiff$ ), the latter requires 46% higher income than the former to achieve the same job satisfaction.<sup>13</sup> Among the employed, the same comparison would lead to a compensating differential of only 6% of income. Note however that for the mean and median hierarchical types, job satisfaction is still higher in self-employment than in employment, i.e. the majority of the population prefer independence, though to a varying degree and thus with significant heterogeneity, and only the most extreme hierarchical types, namely those with a change in life

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<sup>12</sup>Ferrer-i-Carbonell and Frijters (2004) provide extensive evidence that assuming ordinality or cardinality of happiness scores makes little difference. Note that the estimates of the ordered logit and OLS regressions are very similar.

<sup>13</sup>The income equivalents are calculated at the mean income.

satisfaction through reunification in the lowest decile, prefer being employed over being self-employed.

The results are qualitatively similar if only the average life satisfaction in 1990 and 1991 is used to capture life satisfaction under the capitalist system. As Table 4 shows, the magnitude of the coefficient on the interaction term between self-employment and the difference in life satisfaction is somewhat smaller than in the baseline results, but it is still positive and significant (at the 6% significance level in the ordered logit regression) under both the ordered logit and OLS specifications.<sup>14</sup> The number of observations drops somewhat since life satisfaction is missing for some individuals in both 1990 and 1991.

As an additional robustness check, I include controls for wealth in the regression. GSOEP provides only a limited amount of wealth information, and unfortunately business wealth is not reported at all. One new control variable captures interest and dividend income from financial wealth, while the other one is a constructed measure of total housing wealth (see Fuchs-Schündeln and Schündeln, 2005, for a detailed description and discussion of these two wealth measures). The number of observations drops to 10,096, since I have to exclude the years 1990 and 1991 due to missing information in this regression and wealth variables are also missing for some observations in the later years. The main results are unchanged in this regression (see Table 5). The interaction term between self-employment and the change in life satisfaction is positive and significant, and of similar magnitude as in the baseline results, regardless whether the new controls are introduced only in levels (columns i and iii) or in levels and squared (columns ii and iv).<sup>15</sup>

## 3.2 Fixed Effects Regressions

Relying on a dichotomy of types, I can also proceed with fixed effects panel regressions, enabling me to control for individual scaling effects with regard to job satisfaction. I split the sample into “hierarchical” and “independent” types as described in section 2.3, and run OLS panel regressions on both subsamples separately, including individual fixed effects. The effect of self-employment is now identified through individuals who move into and out of self-employment.<sup>16</sup> The sample contains 230 observations

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<sup>14</sup>In these regressions and the regressions presented in the following tables, the same controls as in the baseline results are included, but not all reported in order to enhance the readability of the tables.

<sup>15</sup>Results are essentially unchanged if I omit the dummy for home ownership.

<sup>16</sup>One might expect quitters to report lower job satisfaction, since quits are often associated with business failure. Similarly, those entering self-employment might report higher job satisfaction due to initial enthusiasm after changing a job. Yet, both concerns should affect the independent and

of individuals entering self-employment, and 107 observations of individuals leaving self-employment.

Table 6 presents the results. Among the independent types, the self-employed enjoy higher job satisfaction by 0.74 points on the 0 to 10 scale compared to the employed. Among the hierarchical types, the self-employed have higher job satisfaction by only 0.50 points, i.e. by only 68% of the effect for the independent types. Hence, the fixed effects regressions confirm that the positive effect of self-employment on job satisfaction is not homogeneous across individuals, but that independent types experience a larger increase in job satisfaction from being self-employed. A Chow-test reveals that the difference in the effect of self-employment on job satisfaction between both types is not significant (p-value of 0.33).<sup>17</sup>

## 4 Evidence for Self-Selection?

It remains the question whether procedural preferences play a significant role in the decision to become self-employed. Figure 3 reports the cumulative distribution function of the difference between the average life satisfaction in the 1990s and life satisfaction in 1985, separately for self-employed and not self-employed individuals. The cumulative distribution functions are very similar. Hence, this graph provides no evidence that procedural preferences play a role in the decision to become self-employed.<sup>18</sup>

There are several potential explanations for this. First, an entrepreneurial idea could be the single most important determinant of self-employment. Other individual characteristics that are hard to measure, for example risk aversion, might also play an important role (Fuchs-Schündeln and Schündeln, 2005). Second, a large part of the literature on self-employment, including a natural experiment by Black et al. (1996), and survey evidence by Blanchflower and Oswald (1998), cites the availability of capital as the most significant predictor for self-employment (see Blanchflower, Oswald and Stutzer (2001) for an overview of some studies). Last, it could be the case that psychological biases prevent individuals from correctly forecasting procedural utility in decision making. For example, Frey and Stutzer (2004) provide evidence

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hierarchical types the same way, and should hence not affect the difference between both.

<sup>17</sup>Given that these regressions include fixed effects, and that hence the coefficients on the self-employed dummy are identified only through the relatively small number of observations on movers, it is hard to establish significance.

<sup>18</sup>This conclusion is corroborated by simple probit estimations, which show that the variable *lifediff* does not significantly predict the probability to be self-employed, or to become self-employed. Note that neither the graph nor the probit estimations include any controls.

that individuals put too much emphasis on extrinsic vs. intrinsic attributes when making decisions.

## 5 Conclusion

I find that procedural preferences for independence are heterogeneous across the population. As a consequence, not all self-employed experience an increase in job satisfaction to the same degree. This result could influence policy recommendations. Benz and Frey (2008) conclude that “the government should at least not restrict self-employment opportunities” in their study of procedural preferences. My results confirm their conclusion, and go one step further. If factors that the government can influence, e.g. financial restrictions, inhibit the self-selection along procedural preferences, then the utility gains from removing these barriers could be even higher than previously assumed for individuals who value independence a lot. On the other hand, there are some individuals who do not experience a loss in job satisfaction due to these constraints.

Economists are just starting to analyze the importance of procedural utility and its potential role in decision making. The results of this study caution that we should be careful about the underlying preferences, and should not necessarily assume homogeneity.

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	employed	self-employed
independent type	6.95 (2.05)	7.57 (1.83)
hierarchical type	6.77 (2.11)	6.72 (2.19)

Note: Standard errors are in parentheses.

Table 1: Mean job satisfaction of employed and self-employed by type

	mean/per cent	standard deviation
self-employed	5.9%	
monthly net income (DM)	2246	1002
hours worked per week	45.0	8.4
tenure (years)	9.5	9.8
age	41.0	9.8
male	60.3%	
married	77.9%	
children in household	54.9%	
home owner	35.7%	

Note: Monetary variables inflated to year 2000 values.

Table 2: Summary Statistics

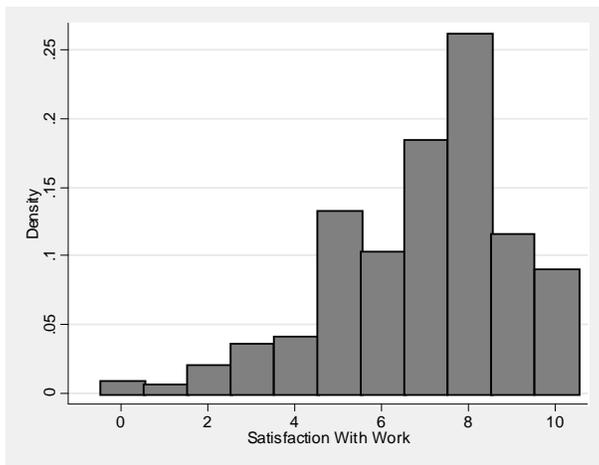


Figure 1: Histogram of job satisfaction

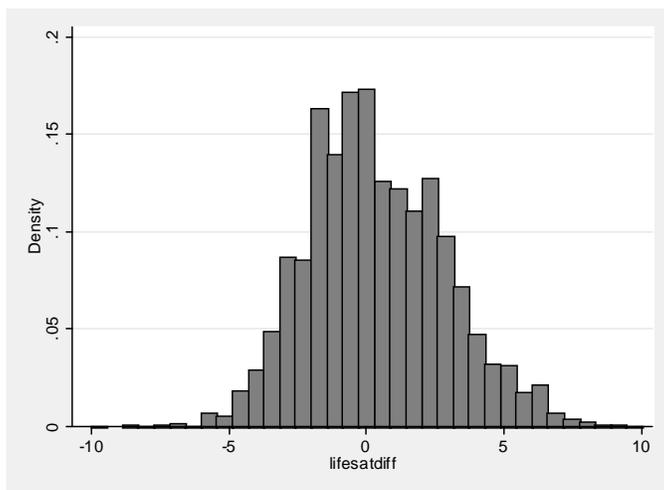


Figure 2: Histogram of the difference in life satisfaction between 1990s and 1985

Dep. variable: job satisfaction	Ordered logit (i)	Ordered logit (ii)	OLS (iii)
self-employed	0.449*** (0.114)	0.384*** (0.114)	0.441*** (0.124)
lifesatdiff		0.049*** (0.011)	0.052*** (0.012)
lifesatdiff*self-employed		0.106*** (0.037)	0.121*** (0.041)
ln (net income)	0.874*** (0.075)	0.833*** (0.075)	0.949*** (0.082)
working hours per week	0.012 (0.011)	0.011 (0.011)	0.019 (0.012)
(working hours) <sup>2</sup>	-0.0001 (0.0001)	-0.00008 (0.00011)	-0.00019 (0.00013)
tenure	-0.008 (0.007)	-0.009 (0.007)	-0.009 (0.008)
tenure <sup>2</sup>	0.0003 (0.0002)	0.0003 (0.0002)	0.00031 (0.00024)
age	0.004 (0.025)	0.0007 (0.025)	0.007 (0.027)
age <sup>2</sup>	0.00002 (0.0003)	0.0001 (0.0003)	-0.000002 (0.0003)
male	-0.142** (0.068)	-0.143** (0.067)	-0.154** (0.074)
married	-0.046 (0.069)	-0.063 (0.068)	-0.029 (0.073)
children in household	0.037 (0.054)	0.041 (0.054)	0.017 (0.060)
born 1946-1960	0.127 (0.120)	0.155 (0.119)	0.125 (0.132)
born after 1960	0.259 (0.181)	0.296 (0.180)	0.265 (0.200)
home owner	0.090* (0.051)	0.079 (0.051)	0.081 (0.056)
education dummies	5 categories	5 categories	5 categories
job dummies	28 categories	28 categories	28 categories
industry dummies	62 categories	62 categories	62 categories
year dummies	yes	yes	yes
# observations	14,766	14,766	14,766
pseudo log-likelihood / R <sup>2</sup>	-29,737	-29,691	0.060

Notes: Standard errors are in parentheses and are corrected for pooling.

Significance levels: \*\*\*1%, \*\*5%, \*10%

Table 3: Pooled regression results

Dep. variable: job satisfaction	Ordered logit (i)	OLS (ii)
self-employed	0.391*** (0.117)	0.446*** (0.128)
lifesatdiff	0.048*** (0.011)	0.053*** (0.012)
lifesatdiff*self-employed	0.070* (0.038)	0.070* (0.042)
ln (net income)	0.847*** (0.078)	0.959*** (0.086)
working hours per week	0.010 (0.011)	0.018 (0.013)
(working hours) <sup>2</sup>	-0.00006 (0.00012)	-0.00017 (0.00014)
male	-0.191** (0.070)	-0.204*** (0.077)
home owner	0.068 (0.053)	0.072 (0.058)
# observations	13,835	13,835
pseudo log-likelihood / R <sup>2</sup>	-27,777	0.061

Notes: Standard errors are in parentheses and are corrected for pooling. Significance levels: \*\*\*1%, \*\*5%, \*10%. The regressions include controls for education, job, industry, year, birth year group, marital status, presence of children in household, and age and tenure in levels and squared.

Table 4: Sensitivity analysis: Life satisfaction in FRG captured by average life satisfaction in 1990 and 1991

Dep. variable: job satisfaction	Ordered logit (i)	Ordered logit (ii)	OLS (iii)	OLS (iv)
self-employed	0.384*** (0.143)	0.388*** (0.142)	0.398*** (0.144)	0.400*** (0.142)
lifesatdiff	0.072*** (0.014)	0.072*** (0.014)	0.073*** (0.014)	0.073*** (0.014)
lifesatdiff*self-employed	0.098** (0.044)	0.096** (0.044)	0.107** (0.046)	0.104** (0.045)
ln (net income)	0.884*** (0.096)	0.876*** (0.095)	0.947*** (0.098)	0.935*** (0.098)
working hours per week	0.022 (0.014)	0.022 (0.014)	0.027* (0.014)	0.027* (0.014)
(working hours) <sup>2</sup>	-0.00023 (0.00015)	-0.00023 (0.00015)	-0.00029* (0.00016)	-0.00029* (0.00016)
male	-0.141* (0.084)	-0.141* (0.084)	-0.140* (0.086)	-0.139* (0.086)
home owner	-0.019 (0.069)	0.027 (0.075)	0.007 (0.073)	0.072 (0.079)
financial income(*10 <sup>4</sup> )	0.054 (0.294)	0.367 (0.258)	-0.067 (0.279)	0.348 (0.271)
financial income <sup>2</sup> (*10 <sup>9</sup> )		-1.64*** (0.42)		-1.78*** (0.48)
housing wealth(*10 <sup>6</sup> )	0.256 (0.274)	-0.522 (0.558)	0.188 (0.292)	-0.899 (0.601)
housing wealth <sup>2</sup> (*10 <sup>13</sup> )		7.94* (4.38)		11.4** (4.83)
# observations	10,096	10,096	10,096	10,096
pseudo log-likelihood / R <sup>2</sup>	-19,906	-19,899	0.080	0.081

Notes: Standard errors are in parentheses and are corrected for pooling. Significance levels: \*\*\*1%, \*\*5%, \*10%. The regressions include controls for education, job, industry, year, birth year group, marital status, presence of children in household, and age and tenure in levels and squared.

Table 5: Results with additional controls for wealth

Dep. variable: job satisfaction	Independent types	Hierarchical types
self-employed	0.739*** (0.162)	0.500** (0.181)
ln (net income)	1.121*** (0.108)	0.950*** (0.103)
working hours per week	0.0145 (0.0146)	0.0162 (0.0154)
(working hours) <sup>2</sup>	-0.00013 (0.00015)	-0.00013 (0.00016)
tenure	-0.052*** (0.010)	-0.034*** (0.011)
tenure <sup>2</sup>	0.0008** (0.0003)	0.0008** (0.0003)
age	0.066* (0.037)	0.017 (0.038)
age <sup>2</sup>	-0.002*** (0.0004)	-0.002*** (0.0004)
home owner	0.015 (0.094)	-0.014 (0.105)
fixed effects	yes	yes
# observations	7,437	7,329
R <sup>2</sup>	0.057	0.073

Notes: Fixed effects OLS panel regressions. Standard errors are in parentheses. Significance levels: \*\*\*1%, \*\*5%, \*10%. The regressions include controls for education, job, industry, year, marital status, and presence of children in household.

Table 6: Fixed effects regression results



Figure 3: Cumulative distribution function of difference between average life satisfaction in 1990s and life satisfaction in 1985, separately for self-employed and non self-employed