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Are Self-Employed Really Happier Than Employees? –

An Approach Modelling Adaptation and Anticipation Effects to Self-Employment and General Job Changes

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Are Self-Employed Really Happier Than Employees? – An Approach Modelling Adaptation and Anticipation Effects to Self-Employment and General Job Changes

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Abstract

Empirical analyses using cross-sectional and panel data found significantly higher levels of job satisfaction for self-employed than for employees. We argue that those estimates in previous studies might be biased by neglecting anticipation and adaptation effects. For testing we specify several models accounting for anticipation and adaptation to self-employment and job changes. Based on data from the German Socio-Economic Panel Survey (SOEP) we find that becoming self-employed is associated with large negative anticipation effects. In contrast to recent literature we find no specific long term effect of self-employment on job satisfaction. Accounting for anticipation and adaptation to job changes in general, which includes changes between employee jobs, reduces the effect of self-employment on job satisfaction by 70%. When controlling for anticipation and adaptation to job changes, we find no further anticipation effect of self-employment and a weak positive but not significant effect of self-employment on job satisfaction for three years. Thus adaptation wipes out higher satisfaction within the first three years being self-employed. According to our results previous studies at least overestimated possible positive effects of self-employment on job satisfaction.

JEL: J23, J28, J81

Keywords: *job satisfaction, self-employment, hedonic treadmill model, adaptation, anticipation, fixed-effects panel estimations, German Socio-Economic Panel (SOEP)*

Zusammenfassung

Zahlreiche empirische Analysen kamen zu dem Ergebnis, dass Selbständige ein höheres Niveau an Arbeitszufriedenheit erreichen als abhängig Beschäftigte. Dieses Ergebnis wurde sowohl durch Querschnittsanalysen bestätigt, als auch durch Studien, die auf Paneldaten basieren. In unserem Beitrag diskutieren wir, ob dieses empirische Ergebnis möglicherweise auf die Vernachlässigung von Antizipations- und Adaptionseffekten zurückgeführt werden kann. Um den Sachverhalt empirisch zu überprüfen, spezifizieren wir fixed-effects Regressionsmodelle, die auch Antizipation und Adaption der Arbeitszufriedenheit an Selbständigkeit und Arbeitsplatzwechsel berücksichtigt. Grundlage für unsere Analyse ist das Sozio-oekonomische Panel (SOEP) der Jahre 1984-2009. Im Gegensatz zur existierenden Literatur findet sich keine positive Langzeitwirkung der Selbständigkeit, wenn Antizipation und Adaption berücksichtigt werden. Werden auch Antizipation und Adaption an Arbeitsplatzwechsel im Allgemeinen berücksichtigt, so reduziert sich der Effekt der Selbständigkeit auf die Arbeitszufriedenheit um 70%. In Modellen, die Antizipation und Adaption an Selbständigkeit und Arbeitsplatzwechsel berücksichtigen, finden sich keine separaten Antizipationseffekte der Selbständigkeit mehr. Lediglich für die ersten drei Jahre der Selbständigkeit findet sich noch ein im Durchschnitt positiver Effekt der Selbständigkeit, der allerdings nicht signifikant ist. Unsere Ergebnisse legen daher nahe, dass bisherige Studien die positive Wirkung der Selbständigkeit auf die Arbeitszufriedenheit zumindest deutlich überschätzen.

JEL: J23, J28, J81

Schlagwörter: *Arbeitszufriedenheit, Selbständige, hedonic treadmill, Adaption, Antizipation, fixed-effects Panelschätzungen, Sozio-oekonomisches Panel (SOEP)*

1 Introduction and Background

Empirical research on job satisfaction in numerous studies found that self-employed persons show substantially higher levels of job satisfaction than employees. This result was consistently confirmed across Europe (e.g. Blanchflower and Oswald 1998, Blanchflower 2000, Benz and Frey 2004, 2008, Clark and Senik 2006) and for the USA and Canada (Kawaguchi 2002, Hundley 2001, Benz and Frey 2004). Among those papers are analyses based on cross sections as well as studies exploiting individual panel data to follow individuals over time.

Most cross sectional studies have the shortcoming of being based on the comparison of two groups at one point in time, the employees and the self-employed. The reliability of the results depends on the comparability of these subgroups. As Blanchflower and Oswald (1998) noted, higher satisfaction levels among self-employed can also be due to selection of optimistic individuals into self-employment; for a review of literature on psychological characteristics of self-employed individuals see Brockhaus and Horwitz (1986). The finding that the same individuals on average experience higher job satisfaction when being self-employed compared to when working as an employee[2] is mostly interpreted as contradicting the hypothesis of more optimistic/happy people, who become self-employed.

The finding that self-employed are more satisfied with work is surprising since self-employed were found to earn lower wages (Hamilton 2000, Carrington et al. 1996) and work more hours (Eden 1975 for the United States; Hyytinen and Ruuskanen 2007 for Finland; Merz et al. 2009, Merz and Böhm 2008, and Merz and Burgert 2004a,b for Germany) than employees. Hamilton's (2000) analysis shows that lower wages of self-employed are not due to negative self selection processes. Another explanation could be, that self-employment offers non-monetary job aspects, like work autonomy which individuals appreciate. Following the theory of compensating wage differentials, self-employed should earn lower wages if non-monetary gains from self-employment are higher. This view is also supported by Blanchflower and Oswald (1998: 46), who presumed that "individuals get a non-pecuniary benefit from being their own boss."

Indeed Benz and Frey (2004, 2008) found that the higher level of job satisfaction of self-employed can largely be explained by the subjective evaluation of work autonomy. This result is in compliance with earlier studies by Eden (1975) and Hundley (2001). Benz and Frey's (2004) analysis is based on cross-sectional data taken from the International Social Survey Program 1997. Using German, British, and Swiss individual panel data and accounting for unobserved, time constant, individual heterogeneity Benz and Frey (2008) confirmed the previous cross sectional findings. The authors interpret this result as support for a concept called *procedural utility*. Whereas "procedural utility means that people do not only care about instrumental outcomes, as is usually assumed in economics, but also value the processes and conditions leading to outcomes" (Benz and Frey 2004: 98). An introduction to the concept of procedural utility can be found in Benz and Frey (2008).

Based on two results, first the result that self-employed are more satisfied even when controlling for personality[3], second the result that differences disappear when controlling for

2 Usually this is tested by estimating fixed-effects regression models on individual panel data.

3 Unobserved individual heterogeneity in fixed-effects regression models accounts for personality differences not measured elsewhere.

procedural aspects, Benz and Frey (2008) conclude that differences in job satisfaction of self-employed and employees can be explained by procedural utility, which is higher for self-employment due to higher levels of work autonomy. Benz and Frey do not explicitly mention if they consider procedural utility as a permanently experienced utility and thus an effect which is not exposed to adaptation. It seems that this assumption is made implicitly.

In view of the approach chosen by Benz and Frey it should further be remarked that using subjective variables as independent variables to explain other subjective evaluations is debatable. It might be that individuals who are satisfied with their job or optimistic in general tend to rate all aspects of a job more positively, independent of the objective job situation and thus reversing causality. For a short discussion of this problem see Hamermesh (2004). An analysis by Hanglberger (2011a) based on data for 31 European countries taken from the European Working Conditions Survey (EWCS) uses objective measures of work autonomy and finds large country differences for the effects of autonomy on employee's job satisfaction. Whereas a remarkable and significant effect is found for countries with high welfare levels (UK, Ireland, Scandinavia and Continental Europe), no effect was found for Southern and Eastern European countries and Turkey.

Another explanation of differences in job satisfaction is suggested by Blanchflower and Oswald (1998) and Blanchflower et al. (2001). Both studies find that in surveys the rate of individuals, who state that they would prefer to be self-employed to working as an employee, is far higher than the actual rate of self-employment. The authors argue that differences in job satisfaction might be due to capital constraints for getting self-employed. Capital constraints implicate that only a small part of individuals, who prefer self-employment, can afford to do so. The group of employees therefore consists at least in large parts of persons who would prefer to be self-employed and are therefore less satisfied with their employee work.

With our analysis we contribute to the literature by proposing and testing a new explanation for (a part of) the difference in job satisfaction found between self-employed and employees in individual panel data: anticipation and adaptation effects.

Both effects can distort results when estimating regression models. For example, anticipation can bias fixed-effects regression results when individuals tend to be very dissatisfied with their employee work the years before becoming self-employed. This leads to a comparable higher satisfaction level for the same individuals when being self-employed, even when there is no lasting effect of self-employment on job satisfaction. In case of adaptation effects, individuals experience short-time benefits in subjective well-being after becoming self-employed. After some years people would get used to being self-employed and satisfaction tends back to the base line level.

Thus the main questions we address in this paper are:

- Are the positive effects of being self-employed on job satisfaction, as found by many empirical studies, biased by anticipation effects?
- Is there a permanent positive effect of self-employment on job satisfaction, or does individual satisfaction adapt to self-employment resulting to an ex ante satisfaction level?

The paper is structured as follows: In Chapter 2 we shortly review recent adaptation literature and theoretically discuss how neglecting adaptation and anticipation affects estimated coefficients in fixed-effects regression setting. Chapter 3 introduces the data base used for the analysis and Chapter 4 describes our empirical strategy. In Chapter 5 we present our estimation results, which are summarized and discussed in Chapter 6.

2 Theoretical considerations

Theory of adaptation of subjective well-being measures is based on Brickman and Campbell's (1971) hedonic treadmill model. The authors argue that the appearance of a new incentive causes a temporary shift in subjective well-being. After some time however, individuals return to their individual baseline or set point of happiness. Frederick and Loewenstein (1999) suggest that adaptation is an automatic habituation process, where conscious perception of incentives is reduced, when incentives appear constantly or repeatedly. As mechanisms of adaptation changes in individual ideals, attention, and interests are suggested. Diener et al. (2006: 302) reason that "*the happiness system is thus hypothesized to reflect changes in circumstances rather than the overall desirability of the circumstances themselves.*" The main conclusion of this model is that life events cannot affect measures of subjective well-being permanently. Further research on adaptation theory lead to changes of Brickman and Campbells (1971) original model. A review of related literature can be found in Diener et al. (2006).

So far studies, which found higher satisfaction levels for self-employed, did not refer to adaptation theory. By neglecting adaptation processes, those studies implicitly assume that changes in satisfaction levels are of permanent nature. Usually this assumption is not discussed. Recent empirical research on adaptation processes is so far not supporting this assumption for many life events. For instance Oswald and Powdthavee (2008) found that persons, who become disabled, partly adapt in life satisfaction to their disability. Clark et al. (2008) showed that there are different anticipation and adaptation effects of life satisfaction to different life events (divorce, birth of child, etc.). Lucas (2005) analysis of adaptation to divorce is another of that kind.

So far most interest in the adaptation literature was put on the analyses of how major life events affect measures of global satisfaction or happiness. Up to now there is no literature on adaptation effects of job satisfaction except Powdthavee (2010), who studies anticipation and adaptation effects in the context of unionization, and Hanglberger (2011b), who examined, which working conditions individuals adapt to.

Illustrating adaptation and anticipation effects

To illustrate the bias when adaptation and anticipation are neglected we will discuss effects of different combinations thereof. The discussion is referring to the estimation results of linear fixed-effects panel models and is presented in a less formal but graphical way.

Unlike standard ordinary least squares regression models based on cross-sectional data, fixed-effects regression models do not use inter-individual differences in variables to estimate coefficients, but are based on intra-individual variance of independent and dependent variables. That is, changes in individual's dependent variable over time are explained by changes in the same person's independent variables.

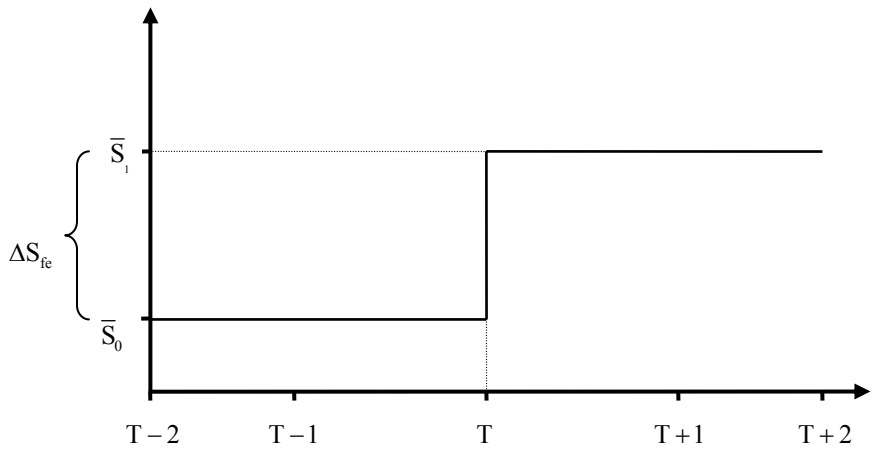
We start with a simple model with one dummy variable indicating the occupational status and assume that the dependent variable, job satisfaction, is only determined by one dummy variable indicating if an individual is self-employed or an employee. Thus fixed-effects regressions estimating the effect of self-employment on job satisfaction compare satisfaction levels of those individuals who experienced changes in employment status before and after the change occurred. In other words: the effect of self-employment is estimated as the

difference between the average satisfaction when being self-employed and the average satisfaction as employee of those who experience both states.

Transition without anticipation and adaptation

Figure 1 illustrates the case, when an individual switches from employee work to self-employment at time T assuming a constant positive effect of self-employment on job satisfaction. Since job satisfaction was assumed to be only dependent on employment status without adaptation or anticipation, job satisfaction is on a constant level $\overline{S}_0$ as employee and rises to $\overline{S}_1$ at time T. Fixed effects regressions would therefore correctly estimate ΔS_{fe} as the effect of self-employment on job satisfaction.

Figure 1: Fixed effects estimation without anticipation and adaptation effects



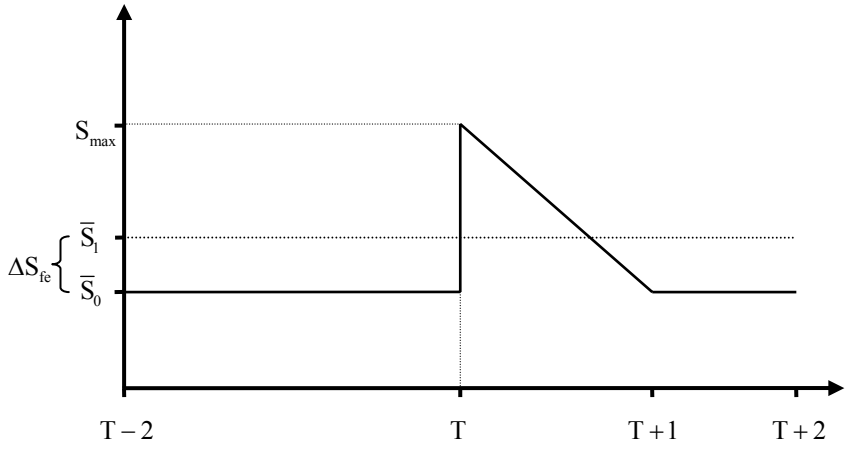
Source: Own illustration; x-coordinate: time; y-coordinate: job satisfaction.

Transition with adaptation

Let us now assume that adaptation occurs. Following a change into self-employment individuals experience a temporary shift rather than a permanently higher level of job satisfaction. This case is shown in Figure 2. At time T, when individuals become self-employed, they experience a shift in job satisfaction up to S_{max}. After T individuals fully adapt to positive properties of self-employment and the satisfaction level declines back to the base level $\overline{S}_0$. In this case fixed effects estimation compares the average satisfaction as employee $\overline{S}_0$ with the average satisfaction as self-employed. Average satisfaction as a self-employed $\overline{S}_1$ is a mixture of positive short-term effects and long-term baseline happiness $\overline{S}_0$. Thus the estimation will yield a positive value for ΔS_{fe} even if self-employment does not cause long term changes in satisfaction. Further it can be stated that the estimated effect is larger, the shorter the observation period is after changing in self-employment.

When the aim of our analysis is to estimate long term effects of self-employment on job satisfaction, in fixed-effects regressions, which do not account for adaptation, the existence of adaptation effects leads to biased results.

Figure 2: Fixed effects estimation with adaptation effect

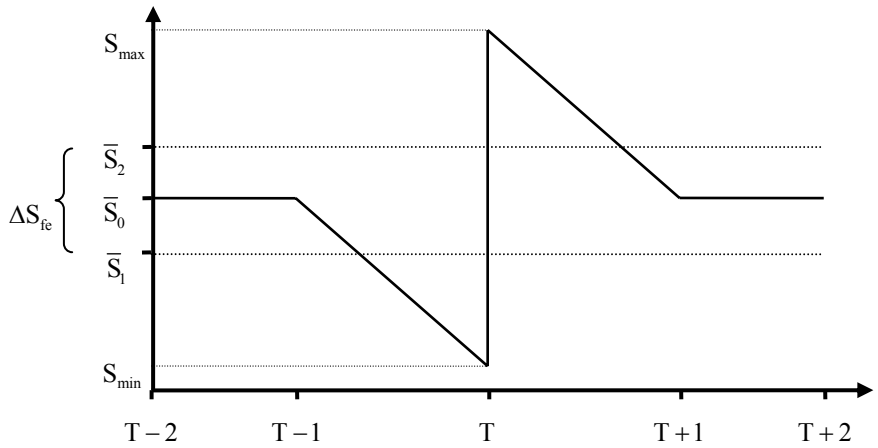


Source: Own illustration; x-coordinate: time; y-coordinate: job satisfaction.

Transition with anticipation and adaptation

Let us now consider a case, when we have anticipation effects besides adaptation. In principle two cases – positive and negative anticipation – are possible. Positive anticipation in our context could originate from the knowledge of being self-employed soon. Unpleasant things might be easier to bear, if one knows, that it will not last for long anymore. Negative anticipation could be caused by the breakdown of psychological mechanisms, which usually lead to a positive self-perception. Another explanation for negative anticipation could be that individuals become self-employed because their satisfaction with employee work is decreasing prior to self-employment. This can be the case when working conditions or the perception of working conditions are deteriorated.

Figure 3: Fixed effects estimation with negative anticipation and full adaptation



Source: Own illustration; x-coordinate: time; y-coordinate: job satisfaction.

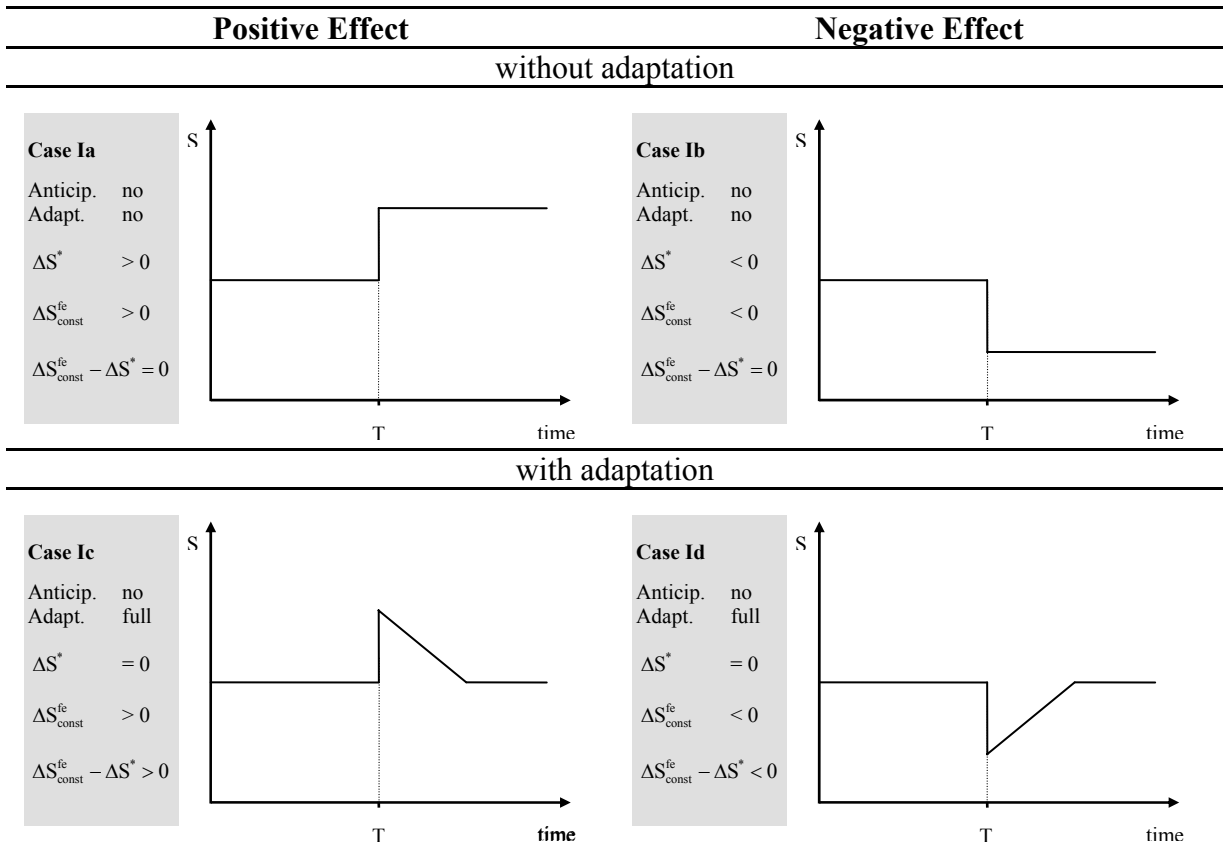
A case with negative anticipation and a temporary positive effect of self-employment is illustrated in Figure 3. Prior to self-employment satisfaction declines down to S_{min}. When becoming self-employed satisfaction increases up to S_{max} before individuals adapt to self-employment and satisfaction returns to the base level $\bar{S}_0$. As in the last example, we observe no long term change in satisfaction. Fixed-effects estimation compares average satisfaction

levels before and after becoming self-employed. Caused by the opposite sign of anticipation and temporary effect, the difference between $\overline{S}_1$ and $\overline{S}_2$ is even larger here as in the case with no anticipation effect. The bias of the estimated effect of self-employment on satisfaction ΔS_{fe} can thus be increased by anticipation effects.

Further transitions

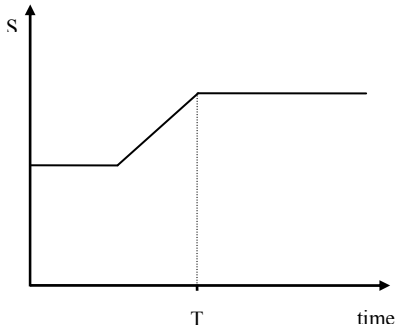
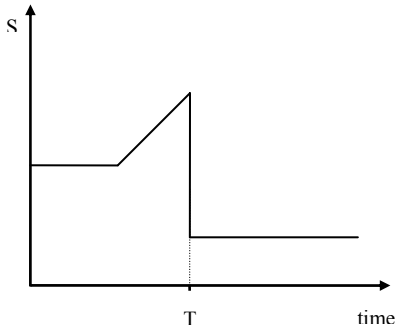
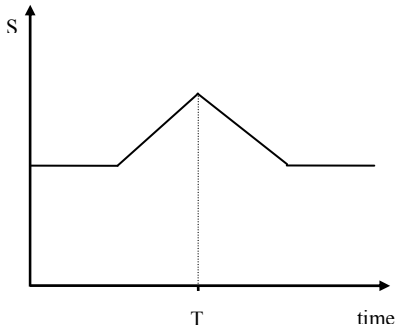
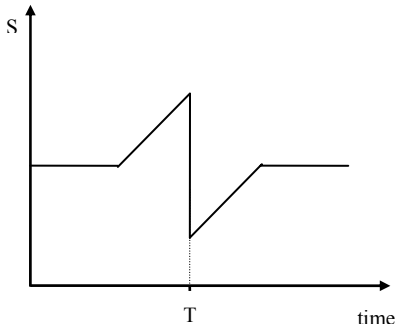
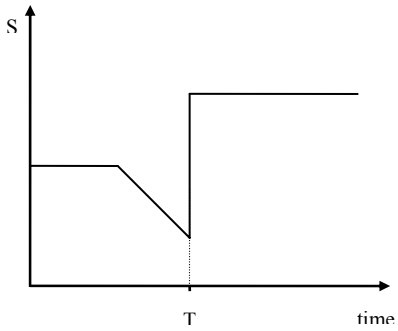
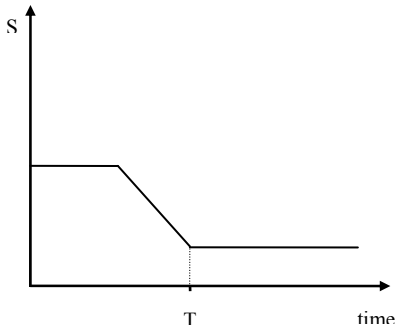
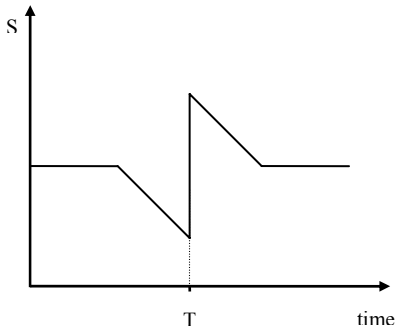
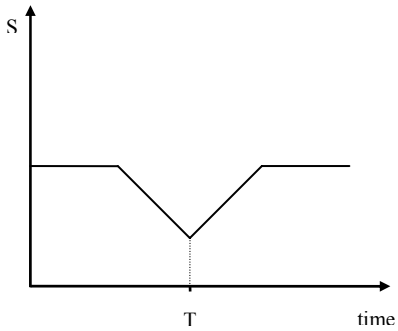
The three described cases are examples from a multitude of possible combinations of anticipation and adaptation effects associated with an incentive. In the following Figure 4 and Figure 5 an overview of different combinations can be found. For each illustrated combination it is stated how fixed-effects estimations of long term effects are biased, when anticipation and adaptation is not accounted for. We define the long term effect ΔS^* as the permanent change of baseline satisfaction caused by an event or incentive. Accordingly ΔS^{fe}_{const} is the coefficient resulting from a fixed-effects estimation without accounting for adaptation and anticipation and therefore assuming a constant effect. $\Delta S^{fe}_{const} - \Delta S^*$ is thus the bias of ΔS^{fe}_{const}, when the aim is to estimate long term effects.

Figure 4: Bias of long term effects in fixed-effects regression models with and without adaptation



Source: Own illustrations.

Figure 5: Models with and without adaption (no anticipation)

Positive Effect	Negative Effect
without adaptation and positive anticipation	
Case IIa Anticip. pos. Adapt. no $\Delta S^{*} > 0$ $\Delta S^{fe}_{const} > 0$ $\Delta S^{fe}_{const} - \Delta S^{*} < 0$ 	**Case IIb** Anticip. pos. Adapt. no $\Delta S^{*} < 0$ $\Delta S^{fe}_{const} < 0$ $\Delta S^{fe}_{const} - \Delta S^{*} < 0$ 
with adaptation and positive anticipation	
Case IIc Anticip. pos. Adapt. full $\Delta S^{*} = 0$ $\Delta S^{fe}_{const} = 0$ $\Delta S^{fe}_{const} - \Delta S^{*} = 0$ 	**Case IId** Anticip. pos. Adapt. full $\Delta S^{*} = 0$ $\Delta S^{fe}_{const} < 0$ $\Delta S^{fe}_{const} - \Delta S^{*} < 0$ 
without adaptation and negative anticipation	
Case IIIa Anticip. neg. Adapt. no $\Delta S^{*} > 0$ $\Delta S^{fe}_{const} > 0$ $\Delta S^{fe}_{const} - \Delta S^{*} > 0$ 	**Case IIIb** Anticip. neg. Adapt. no $\Delta S^{*} < 0$ $\Delta S^{fe}_{const} < 0$ $\Delta S^{fe}_{const} - \Delta S^{*} > 0$ 
with adaptation and negative anticipation	
Case IIIc Anticip. neg. Adapt. full $\Delta S^{*} = 0$ $\Delta S^{fe}_{const} > 0$ $\Delta S^{fe}_{const} - \Delta S^{*} > 0$ 	**Case IIId** Anticip. neg. Adapt. full $\Delta S^{*} = 0$ $\Delta S^{fe}_{const} = 0$ $\Delta S^{fe}_{const} - \Delta S^{*} = 0$ 

Source: Own illustrations.

The overview in Figure 4 and Figure 5 is of course not exhaustive. Here not covered combinations are for example events, which have only anticipation effects but don't cause

changes of satisfaction at time T or later. Further, in our illustrations adaptation and anticipation effects have the same absolute value. Of course these effects can deviate from each other.

The aim of this exercise was to show that neglecting anticipation and adaptation effects when analyzing subjective well-being measures can cause severe biases to estimation results. The bias of estimates depends on the existence and sign of anticipation and adaptation effects. Since research on anticipation and adaptation effects shows that these effects appear for many life events (see literature review above), we believe that studies of causal effects of certain events or incentives on subjective well-being should test for adaptation and anticipation effects whenever possible.

3 Data

In our analyses we used data from the German Socio-Economic Panel Study (SOEP), a nationally representative household panel which is surveyed since 1984. The last wave, which we had access to, was wave 26, which was surveyed in 2009. In 2009 10,394 households including 18,587 individuals have been interviewed. Besides the items of main interest, employment status and job satisfaction, the SOEP includes information on a wide range of personal, household, and job characteristics (including wages, working hours, and working hours preferences), job history, occupation and industry, and other firm-related characteristics. Appendix 1 gives an overview of variables and definitions used in our following analyses. Further information about sampling, survey methods and development of the SOEP can be found in Wagner et al. (2007) and Siegel et al. (2010). [4] For our analysis we used Stata 11.1 and the SOEP long data file, which at time of our investigation was available for the first time.

We restricted the sample to individuals who were either self-employed or employees at date of interview with at least five hours of work per week and between 16 and 64 years of age. To account for anticipation and adaptation effects we used lag and lead variables for four years. This implies that observations from wave 1 to 4 and 23 to 26 are not included in our analysis, since for these observations no full set of leaded and lagged information is available. Further, we can only include individuals who reported job satisfaction and to be either self-employed or employee in 9 consecutive years. Individuals with low employability might thus be underrepresented in our estimation sample, because they have higher probabilities of becoming unemployed und thereby drop out of our sample.

Job satisfaction in the SOEP is surveyed every year using the question “How satisfied are you today with the following areas of your life? How satisfied are you with your job?” Individuals rate their job on an 11-point scale ranging from 0 “totally unhappy” to 10 “totally happy”.

To analyze effects caused by changes in employment status between employee status und self-employment we separate the working population in two groups: As self-employed individuals we define self-employed farmers, free-lance professionals and other self-employed persons called entrepreneurs. Blue-collar and white-collar workers, civil servants, apprentices, trainees, interns and family members working for self-employed relatives are classified as employees. 22 individuals who stated to be self-employed as well as employees were classified as self-employed.

4 Further information including questionnaires and frequency tables for all items are accessible at: http://panel.gsoep.de/soepinfo2009/

Our estimation sample includes 8,324 individuals and 41,346 person year observations. All estimations (independent of the vector of control variables) are based on the same sample to ensure that differences in estimates of different models are not due to differing samples. Since fixed-effects estimation is based on intra-individual variation, it is important to have enough persons who move between the two groups of interest (employees and self-employed). Table 1 shows the number of movers in our estimation.

Table 1: Movers between working conditions in estimation samples

	Self-employed	Job change
T-4	159	870
T-3	189	989
T-2	201	1,213
T-1	251	1,661
T	214	1,818
T+1	182	1,849
T+2	178	1,864
T+3	166	1,915
T+4		2,567
T+4 or more	2,077	

Source: Own calculations based calculation on SOEP 1984-2009.

4 Empirical strategy

Empirical literature consistently found higher job satisfaction for self-employed. Most researchers assumed that the effect of self-employment is similar to the effect illustrated in Figure 1. Thus the hypothesis maintained by most authors is, that there is a permanent and positive effect of self-employment on job satisfaction. Our analysis aims to test if the hypothesis is still supported, when we account for anticipation and adaptation effects of subjective well-being.

As described above, we use job satisfaction measured on an 11-point satisfaction scale as a proxy for individual on job utility. Since we cannot determine exact differences in utility between points on this scale, satisfaction is measured with ordinal scaling. Ordinary least squares regression models assume metric scaling of the dependent variable. Hence the use of a regression model, which accounts for the ordinal scaling of satisfaction measures, is required. Widespread models meeting this demand are latent variable models like the ordered-logit or ordered-probit model (Long 1997, McKelvey and Zavoina 1971, 1975, and recently Greene and Hensher 2010).

A second discussed topic in analysis of subjective well-being measures is inter-individual comparability. Standard regression models as well as models accounting for ordinal scaling are based on the assumption that satisfaction scores are comparable between individuals. If individuals systematically differ in the rating of same situations, the results of empirical analyses can be doubted. Such differences in ratings might be caused by socialization, genetic, or environmental influences. Respective empirical support was found by Arvey et al. (1989), Lykken and Tellegen (1996) and De Neve et al. (2010).

Further problems arise, when components, which are not observable or available in data and therefore not incorporated in a regression model (e.g. genetic factors), do not only affect the dependent variable job satisfaction, but also independent variables like employment status. In our context it can be argued that optimistic and risk-taking individuals have higher probabilities to become self-employed and tend to rate their work in a positive way. In this

case the estimation of the effect of self-employment on satisfaction is biased. This bias is called an omitted variable bias and can also be seen as a causality problem: does self-employment increase job satisfaction or do happy people become self-employed?

Model I without anticipation and adaptation effects

A solution to deal with the problem of inter-individual comparability and with unobserved effects like genetic factors is to use fixed-effects regression models of the form:

$$S_{it} = f_{it}^{'}\alpha + \mathbf{x}_{it}^{'}\boldsymbol{\beta} + a_i + \varepsilon_{it} \qquad \text{(I)}$$

Where S_{it} is the job satisfaction of individual i at time t. f_{it} is a dummy variable indicating if an individual at time t is self-employed (f_{it}=1) or employee (f_{it}=0). α is the coefficient measuring the average effect of being self-employed on job satisfaction. $\mathbf{x}_{it}$ is a vector of control variables and $\boldsymbol{\beta}$ a vector with the respective coefficients. For a list of the extensive set of controls used in this paper and variable definitions see Appendix 1. ε_{it} is the error term and a_i represents all unobserved individual characteristics, which do not vary over the observation periods. If this unobserved individual heterogeneity is constant over time, it is cancelled out when estimating the model specified in (I) as fixed-effects regression. Therefore unobserved individual heterogeneity, which is not time varying, like genetic disposition, does not cause an omitted variable bias in fixed-effects models.

Since fixed-effects regression uses intra-individual variation over time in independent variables to explain intra-individual variation of the dependent variable, we do not have to base our analysis on the assumption of inter-individual comparability of satisfaction measures. The effect of self-employment on satisfaction is estimated by the ratings of different situations by the same individual. Hence we only need to make the assumption that ratings of an individual are consistent over the observation periods.

Using intra-individual variation also implies that our results about how self-employment affects job satisfaction are based on those individuals, who moved between both types of employment. A generalisation of our results to all individuals is only allowed, if we assume that this group is representative for the whole population (no self selection processes into self-employment); an assumption, which is rather unlikely.

A plausible solution to handle the ordinal scaling problem in a fixed-effects context would be the estimation of an ordered-probit fixed-effects model. However Greene (2002) showed that estimates of this model are biased. Recent research using panel data thus employ either linear fixed-effects models (assuming metric scaling) or use a POLS (Probit adapted ordinary least squares) approach as suggested by van Praag and Ferrer-I-Carbonell (2008). The van Praag and Ferrer-I-Carbonell model is based on an additional assumption, the assumption that subjective well-being is normally distributed.

Since the POLS model is relaxing one assumption by making another assumption and Ferrer-I-Carbonell and Frijters (2004) found that differences in estimators are rather small when assuming cardinality or ordinality of satisfaction measures, we decided to estimate linear fixed-effects models only.

In equation (I) we specified a model with one single α coefficient, which captures the ceteris paribus difference in job satisfaction between years in self-employment and years as employee. This difference is estimated based only on those individuals, who moved between employee status and self-employment during the observation periods. As discussed above, literature shows that many events or incentives do not cause constant changes of satisfaction

measures, but rather that people adapt to changes and satisfaction sometimes anticipates events.

Model II with anticipation and adaptation to self-employment

To account for anticipation and adaptation effects, we specify model (II):

$$S_{it} = f_{it,T-4}\alpha_{T-4} + f_{it,T-3}\alpha_{T-3} + f_{it,T-2}\alpha_{T-2} + f_{it,T-1}\alpha_{T-1} + f_{it,T}\alpha_{T} + f_{it,T+1}\alpha_{T+1} + f_{it,T+2}\alpha_{T+2} + f_{it,T+3}\alpha_{T+3} + f_{it,T+4}\alpha_{T+4} + \mathbf{x_{it}}\boldsymbol{\beta} + a_i + \varepsilon_{it} \quad \text{(II)}$$

$f_{it,T-4}$ to $f_{it,T+4}$ are dummy variables indicating if an individual is self-employed, how long it is self-employed or if it will become self-employed within the next years. $f_{it,T}$ is 1 only if individual i was an employee the year before t and is self-employed at time of interview in year t. Otherwise $f_{it,T}$ is 0.

Describing adaptation, the model is extended by four dummies $f_{it,T+1}$, $f_{it,T+2}$, $f_{it,T+3}$, and $f_{it,T+4}$ indicating that an individual is self-employed since and throughout 1-2, 2-3, 3-4, or more than 4 years.

Anticipation of changes in employment status are captured by the dummies $f_{it,T-1}$, $f_{it,T-2}$, $f_{it,T-3}$ and $f_{it,T-4}$. These dummies analogously indicate that i will become self-employed within the next year, 1-2, 2-3, or 3-4 years. The inclusion of this large set of lags and leads in our model obviously implies that the sample size available for estimation is remarkably reduced. Only individuals, who reported being an employee or self-employed for nine consecutive years, can be included in the analysis.

More observations could be regarded, if besides movers between being an employee and self-employed also movers from unemployment would be considered. We decided not to do that, because the special interest of our paper is to test if there are differences between self-employed and employees in satisfaction levels. This allows us to better compare our results to results from previous studies. The exclusion of unemployed individuals might lead to an estimation sample, in which individuals with low education and therefore low employability are underrepresented.

The dummies $f_{it,T-4}$ to $f_{it,T+4}$ in (II) are defined in a way so that only one of the dummies can be 1, all other dummies must be 0. If an individual is neither self-employed nor getting self-employed within the next four years, all dummy variables are 0. Hence the coefficients can be interpreted to the reference of those years, when an individual is employee and not getting self-employed in the coming 4 years.[5] For example α_T is the ceteris paribus average difference in satisfaction of individuals, who are the first year self-employed, compared to the time, when they were not self-employed and not becoming self-employed within the next 4 years.

Model III with anticipation and adaptation for any job change

Theoretically anticipation, adaptation, and long term effects of becoming self-employed found by regression estimates could be due to a general effect caused by any job change regardless of a change between being an employee and self-employed. We will test if this is the case by extending equation (I) by the dummies $g_{it,T-4}$ to $g_{it,T+4}$. Those dummies capture anticipation and adaptation effects to a change of jobs, which might also be a change between two employee jobs. The dummies are defined analogously to $f_{it,T-4}$ to $f_{it,T+4}$ introduced in equation (II) with

5 This includes years, when an individual changed from being self-employed to working as an employee.

respect to self-employment. Thus in specification (III) we control for anticipation and adaptation to job changes and capture self-employment with a single dummy variable.

$$\begin{aligned} S_{it} = {} & f_{it}'\alpha + g_{it,T-4}\gamma_{T-4} + g_{it,T-3}\gamma_{T-3} + g_{it,T-2}\gamma_{T-2} + g_{it,T-1}\gamma_{T-1} + g_{it,T}\gamma_{T} \\ & + g_{it,T+1}\gamma_{T+1} + g_{it,T+2}\gamma_{T+2} + g_{it,T+3}\gamma_{T+3} + g_{it,T+4}\gamma_{T+4} + \mathbf{x_{it}}\boldsymbol{\beta} + a_i + \varepsilon_{it} \end{aligned} \tag{III}$$

Model IV with anticipation and adaptation for any job change and self-employment

In a last specification (IV) we test if there are separate anticipation and adaptation effects to self-employment compared to job changes in general. Thus we include $g_{it,T-4}$ to $g_{it,T+4}$ to capture adaptation and anticipation to any job changes and $f_{it,T-4}$ to $f_{it,T+4}$ to account for separate anticipation and adaptation effects of self-employment.

$$\begin{aligned} S_{it} = {} & g_{it,T-4}\gamma_{T-4} + g_{it,T-3}\gamma_{T-3} + g_{it,T-2}\gamma_{T-2} + g_{it,T-1}\gamma_{T-1} + g_{it,T}\gamma_{T} \\ & + g_{it,T+1}\gamma_{T+1} + g_{it,T+2}\gamma_{T+2} + g_{it,T+3}\gamma_{T+3} + g_{it,T+4}\gamma_{T+4} \\ & + f_{it,T-4}\alpha_{T-4} + f_{it,T-3}\alpha_{T-3} + f_{it,T-2}\alpha_{T-2} + f_{it,T-1}\alpha_{T-1} + f_{it,T}\alpha_{T} \\ & + f_{it,T+1}\alpha_{T+1} + f_{it,T+2}\alpha_{T+2} + f_{it,T+3}\alpha_{T+3} + f_{it,T+4}\alpha_{T+4} \\ & + \mathbf{x_{it}}\boldsymbol{\beta} + a_i + \varepsilon_{it} \end{aligned} \tag{IV}$$

For all models we will estimate two specifications: specification a, which includes no control variables and specification b, which includes a vector **x**, which contains all controls listed in Appendix 1. This serves to test the sensitivity of the results, especially to test if changes in job satisfaction might be caused by other changes coming along with becoming self employed. This might be that self-employment involves a change of occupation or industry etc.

Table 2 summarizes all regression models, which we will present in the following Chapter.

Table 2: Overview of estimated regression models

Model	Self-employment	Job change	Controls
Ia	Dummy	–	–
Ib	Dummy	–	all
IIa	Anticipation and Adaptation	–	–
IIb	Anticipation and Adaptation	–	all
IIIa	Dummy	Anticipation and Adaptation	–
IIIb	Dummy	Anticipation and Adaptation	all
IVa	Anticipation and Adaptation	Anticipation and Adaptation	–
IVb	Anticipation and Adaptation	Anticipation and Adaptation	all

Source: Own compilation, for a detailed list and description of control variables see Appendix 1.

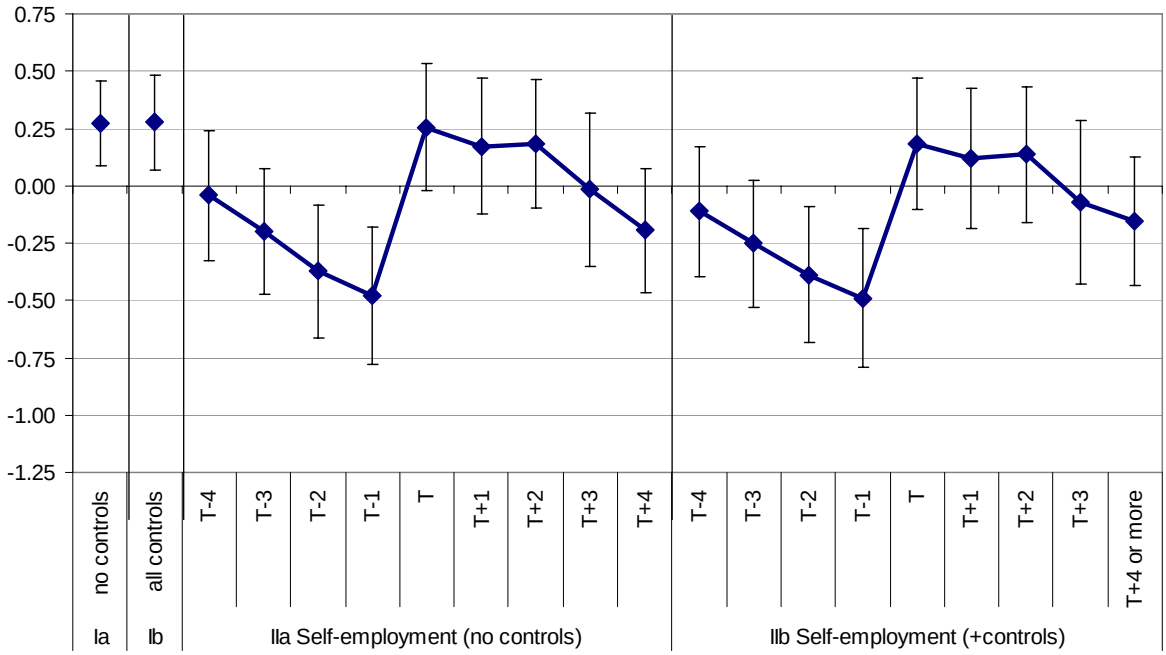
5 Results

Model I without anticipation and adaptation effects

As a first step in our analysis we estimated model Ia and Ib to reproduce the result found by several empirical studies that job satisfaction is higher for self-employed than for employees.

Since we estimated only fixed-effects models, this result can be interpreted as an on average higher satisfaction level for the same individuals when being self-employed as when working as an employee. We found that the effect of self-employment amounts to approximately 0.27 points on an 11-point satisfaction scale. The effect was found to be independent of the vector of control variables (see Figure 6 and Appendix 2). Thus the difference in satisfaction cannot be explained by differences in income, working hours, or other variables included as controls; a result which is in line with previous findings.

Figure 6: The effect of self-employment on job satisfaction in fixed-effects models with and without accounting for anticipation and adaptation



Source: Own illustration based on fixed-effects regression models Ia,b and IIa,b with SOEP data; 90% conficence intervals; for detailed regression results seeAppendix 1.

Model II with anticipation and adaptation to self-employment

To test if the effect of self-employment found in model Ia,b might be caused by anticipation and adaptation effects as discussed in Chapter 3, we estimate model IIa,b, which both include dummy variables to capture adaptation and anticipation effects to self-employment up to five years. Estimation results are shown graphically in Figure 6 and detailed by all regression results in Appendix 2. As for model Ia,b the results seem to be very stable, when controlling for personal, household, and job characteristics. The coefficients of model IIa,b can be interpreted as the average difference in job satisfaction when being in self-employment for a certain number of years (adaptation) or becoming self-employed in a certain number of years (anticipation) compared to times when working as employee with no upcoming self-employment within the next four years. Hence our results indicate that individuals who will become self-employed are significantly less satisfied during the two years before self-employment. During the first year in self-employment, those individuals experience a remarkable upward shift in job satisfaction, which amounts to 0.68 points on average. Individuals approximately hold this satisfaction level for three years, before satisfaction drops

to the baseline and the average effect of self-employment even becomes negative (not significant).

Even though the effect of self-employment in our model is found to be positive for some time, it is never significant. The 0.68 points upward shift in satisfaction only applies to a comparison of job satisfaction the year before and the year after becoming self-employed. The size of the effect is so large, because it seems that individuals are becoming increasingly dissatisfied with their work as employee the time before self-employment. On the one hand this can be due to objectively deteriorated working conditions, which induce individuals to think about becoming self-employed. On the other hand this might be due to more psychological reasons: knowing that one becomes self-employed soon, individuals do not brighten their actual work life anymore and come to a "more matter-of-fact" evaluation of working conditions.

When analysing our results graphically in Figure 6, it becomes obvious that the change from employee status to self-employment is accompanied by large increasing negative anticipation effects and adaptation to self-employment within three years. Refering to our classification of adaptation and anticipation effects discussed in Chapter 3, here we have a situation as illustrated in Case IIIc, which leads to over estimation of long term effects. This theoretically derived result fits to our empirical findings: the effect of self-employment was found to be positive when neglecting anticipation and adaptation effects, in a model with adaptation and anticipation we found only less pronounced short term and diminishing effects, which are not significant.

So far our results suggests that self-employment does not cause higher job satisfaction in the longer run, but those individuals who become self-employed improve their situation in particular in the beginning and for some time, especially because they are very dissatisfied before becoming self-employed.

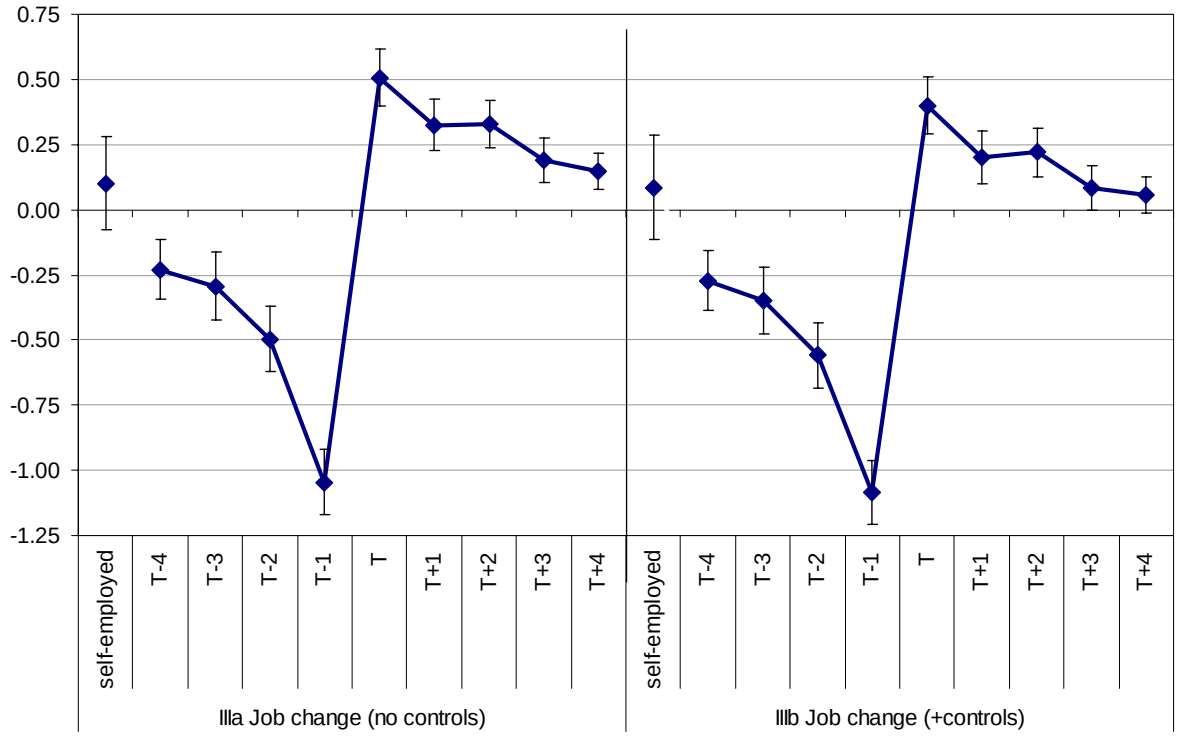
Model III with anticipation and adaptation for any job change

In model IIa,b we analysed anticipation and adaptation of movers from employee work to self-employment. Of course the same anticipation and adaptation effects might occur, when individuals move between two employee jobs. To test if the effects estimated in IIa,b are rather general effects accompanying any change of jobs rather than a specific effect of self-employment, we estimate four more regression models. Model IIIa accounts for anticipation and adaptation to a change of jobs regardless of whether the change involves a change between being an employee or self-employed. In this setting self-employment is included in the model as a single dummy variable. Model IIIb adds a vector of controls to IIIa. Model IVa,b account separately for adaptation and anticipation to job changes in general and to changes from being an employee to being self-employed.

Accounting for anticipation and adaptation of job changes reduces the effect of self-employment on job satisfaction substantially. Whereas we found a significant difference of 0.28 points in model Ib, model IIIb estimates an approximately 70% lower and not significant effect of 0.09 points. The anticipation effect to job changes is even more pronounced as the effect found for self-employment in IIa,b.

Thus the results support the view that most part of a higher job satisfaction of self-employed found by studies based on fixed-effects regressions can be explained by not accounting for anticipation and adaptation to job changes (see Figure 7 and Appendix 3).

Figure 7: The effect of self-employment on job satisfaction in fixed-effects models when accounting for anticipation and adaptation to job changes



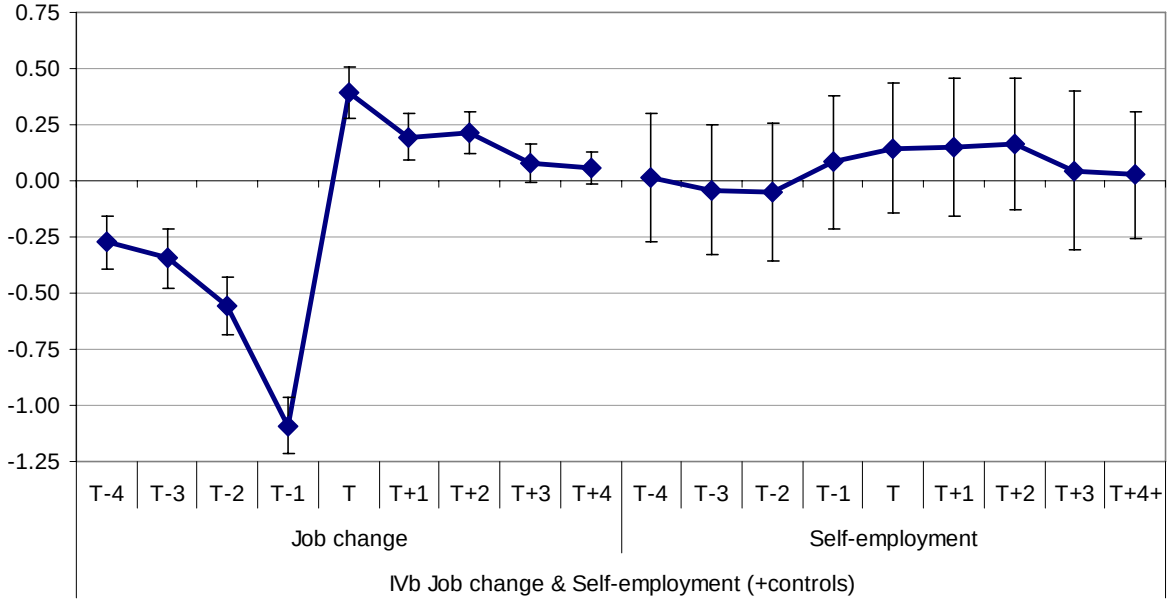
Source: Own illustration based on fixed-effects regression models IIIa,b with SOEP data; 90% confidence intervals; for detailed regression results see Appendix 1.

Model IV with anticipation and adaptation for any job change and self-employment

In model IVb (Figure 8 and Appendix 3) we account for anticipation and adaptation to job changes and self-employment. The results support the findings of IIIb: Anticipation and adaptation effects to self-employment almost disappear, when we control for anticipation and adaptation to job changes in general. However an on average positive effect of self-employment of approximately 0.15 points is found for three years after becoming self-employed, but the effect is statistically not significant.

To sum up: Our results contradict the widespread finding that self-employed individuals experience substantially higher satisfaction levels than employees. Our analysis indicates that the effect found in fixed-effects regression models can be traced back to uncovered anticipation and adaptation effects associated with job changes in general.

Figure 8: Anticipation and adaptation to job satisfaction when accounting for anticipation and adaptation to job changes in a fixed-effects regression model



Source: Own illustration based on fixed-effects regression model IVb with SOEP data; 90% conficence intervals; for detailed regression results see Appendix 1.

Main findings:

- The estimates of long-term effects on measures of subjective well-being might be biased, when anticipation and adaptation effects are neglected.
- Individuals, who become self-employed, improve their level of job satisfaction remarkably, when compared to the year before self-employment.
- Mainly this improvement can be explained by the fact that the change from employee work to being self-employed is accompanied by large and increasing negative anticipation effects.
- When controlling for anticipation and adaptation effects, which accompany every change of jobs, regardless of whether the change is connected with changing between being employee and being self-employed, no significant separate anticipation and adaptation is found for self-employment.
- Positive effects of self-employment on job satisfaction are only found for the first three years of self-employment and are not significant; individuals adapt to self-employment.

As our results show, once anticipation and adaptation is considered no longer termed differences in job satisfaction between self-employed and employees will be visible.

6 Discussion and Conclusion

The aim of this study was to test if higher levels of job satisfaction of self-employed compared to employees found by many previous studies might be due to neglecting anticipation and adaptation effects in measures of subjective well-being.

We theoretically derived how estimates of the effect of self-employment in fixed-effects regression models might be biased in presence of anticipation and/or adaptation effects. Our estimates showed that large negative anticipation effects precede the change from employee work to self-employment. Those individuals, who become self-employed, improve their level of job satisfaction remarkably, when compared to the year before self-employment. However in comparison to those years, when employee work is done and no self-employment is upcoming, self-employment causes only a slight increase in job satisfaction for no more than three years.

Further we estimated fixed-effects regression models, which account for anticipation and adaptation of job satisfaction to job changes independent of a change in self-employment. Our results showed that negative anticipation effects, which were found for self-employment, are a general effect preceding any change of jobs. A separate anticipation effect to self-employment was not found. The slight positive and not significant three years lasting effect of self-employment on job satisfaction was found in this model, too. In the long run we find that self-employed are not better off than employees; precisely: we cannot reject the hypothesis that job satisfaction is ceteris paribus the same for self-employed and employees.

So our results contradict the findings presented by e.g. Blanchflower and Oswald (1998) and Clark and Senik (2006). The concept of procedural utility as explanation for differences in satisfaction levels as proposed by Benz and Frey (2004, 2008) is also not supported by our results. If there is a utility gain from higher procedural utility of self-employment, the effect is neither large nor lasting. At least our results suggest that the experience of procedural utility is not constant or other words: procedural utility is subject to adaptation effects. Further our result does not support the hypothesis of capital constraints causing differences in job satisfaction (Blanchflower and Oswald 1998), since there is no long term effect of self-employment on job satisfaction.

The group of self-employed analysed in this paper is a very heterogeneous group. The group consists of self-employed farmers, free-lance professionals and other self-employed persons. One can imagine that working life of a self-employed farmer is quite different than working life of a free-lance professional. This variety might explain (besides the relatively small number of observations) the large variance of the estimates of self-employment on job satisfaction, when accounting for anticipation and adaptation effects. Future research could look at differences between subgroups of the self-employed like free-lancers. Furthermore, it would be interesting to see how life satisfaction or different sub domains of job satisfaction like satisfaction with pay or with hours worked respond to changes in employment status.

7 Appendix

Appendix 1: Variables and definitions

Variable	Definition
SELF EMPLOYMENT (lags and leads)	
Self-employed	Dummy
Self-employed LD4	Dummy; will become self-employed in 4-5 years, employee till then
Self-employed LD3	Dummy; will become self-employed in 3-4 years, employee till then
Self-employed LD2	Dummy; will become self-employed in 2-3 years, employee till then
Self-employed LD1	Dummy; will become self-employed in 1-2 years, employee till then
Self-employed T	Dummy; became self-employed during the last year
Self-employed LG1	Dummy; became self-employed 1-2 years ago, and is self-employed since
Self-employed LG2	Dummy; became self-employed 2-3 years ago, and is self-employed since
Self-employed LG3	Dummy; became self-employed 3-4 years ago, and is self-employed since
Self-employed LG4	Dummy; became self-employed more than 4 ago, and is self-employed since
JOB CHANGE (lags and leads)	
Job change LD4	Dummy; will change job in 4-5 years, in the same job till then
Job change LD3	Dummy; will change job in 3-4 years, in the same job till then
Job change LD2	Dummy; will change job in 2-3 years, in the same job till then
Job change LD1	Dummy; will change job in 1-2 years, in the same job till then
Job change T	Dummy; changed job during the last year
Job change LG1	Dummy; changed job 1-2 years ago, since then in same job
Job change LG2	Dummy; changed job 2-3 years ago, since then in same job
Job change LG3	Dummy; changed job 3-4 years ago, since then in same job
Job change LG4	Dummy; changed job 4-5 years ago, since then in same job
PERSONAL	
Age²	= Age in years²/100
Education (CASMIN)	8 dummies for CASMIN Classification (reference: higher tertiary education) (omitted: in school, since only employees and self-employed were of interest)
Citizenship non-German	Dummy
Hobbies (h/weekday)	Average hours spent for hobbies on a weekday
Marital status	5 dummies for married and living separated, single, divorced, widowed, and partner abroad (reference: married and living together)
Partnership	Dummy living in a partnership
HOUSEHOLD	
Household size	5 dummies for 2, 3, 4, 5, and 6 or more person households (reference: single households)
Children	3 dummies for 1, 2, 3 or more children up to the age of 16 in household (reference: no children)
Mortgage	Interest and mortgage payment per month in € /1000
Rent	Monthly rent excluding heating costs in € /1000
Owner	Owner of house or flat
Ln(Residual income)	Ln((Household net income – personal income)€ /1000)
JOB	
Job satisfaction	(Dependent variable) 11-point scale: 0= totally unhappy, 10= totally happy
Ln(Personal income)	Ln(Monthly net income (earned)€ /1000)
Experience full-time	Years of labor market experience as full-time worker
Experience part-time	Years of labor market experience as part-time worker
Experience unemployment	Years of labor market experience as unemployed
Activity is job	Activity is job
Working hours	Working hours per week
Working hours²	Working hours per week² /100
Work less	Would prefer to work X hours less, when taking into account that income

	would change accordingly
Work more	Would prefer to work X hours more, when taking into account that income would change accordingly
Part-time	Dummy; part time worker with 5-29 hours of work per week
Establishment size	3 dummies for self-employed without employees, less than 20, less than 200 (reference: 200 or more)
Free-lancer	Dummy
Occupation	25 dummies for occupations based on ISCO88 classification: Military; Legislators and senior officials; Corporate managers; Managers of small enterprises; Physical, mathematical, and engineering science professionals; Life science and health professionals; Teaching professionals; Other professionals; Physical and engineering science associate professionals; Life science and health associate professionals; Teaching associate professionals; Other associate professionals; Customer services clerks; Personal and protective services workers; Models, salespersons, and demonstrators; Skilled agricultural and fishery workers; Extraction and building trades workers; Metal, machinery, and related trades workers; Precision, handicraft, craft printing and related trades workers; Other craft and related trades workers; Stationary plant and related operators; Machine operators and assemblers; Drivers and mobile plant operators; Sales and services elementary occupations; Agricultural, fishery, and related laborers; Laborers in mining, construction, manufacturing, and transport (reference: office clerks)
Industry	17 industry dummies based on NACE classification: farming, forestry, fishing; mining etc.; manufacturing; energy and water supply; construction; trading; hotel and restaurant industry; traffic and transport; insurance; real estate; services for enterprises; public sector; education; health and social; private households; religion, culture and sports; other services (reference: research and databases)
REGION	
East Germany	Dummy variable
German federal states	15 dummies for German federal states: Berlin, Schleswig-Holstein; Hamburg; Bremen; Northrine-Westphalia; Hesse; Rhinel.-Palatinate; Saarland; Baden-Wuerttemberg; Bavaria; Mecklenburg-West Pomerania; Brandenburg; Saxony-Anhalt; Thuringa; Saxony (reference: lower Saxony)
YEAR	Wave dummies for 1989 to 2005; (reference: 1988)

Source: Own compilation.

Appendix 2: Fixed-effects regression results – The effect of self-employment on job satisfaction with and without anticipation and adaptation effects

Model	Ia	Ib	IIa	IIb
Self-employed	0.271*	0.278*		
	(2.42)	(2.21)		
Self-employed				
T-4			-0.0421	-0.111
			(-0.24)	(-0.65)
T-3			-0.201	-0.252
			(-1.21)	(-1.49)
T-2			-0.373*	-0.387*
			(-2.11)	(-2.17)
T-1			-0.477**	-0.491**
			(-2.62)	(-2.66)
T			0.256	0.185
			(1.53)	(1.06)
T+1			0.173	0.121
			(0.97)	(0.65)
T+2			0.184	0.138
			(1.07)	(0.77)
T+3			-0.0159	-0.0724
			(-0.08)	(-0.33)
T+4 or more			-0.194	-0.153
			(-1.17)	(-0.89)
net income (earned)/1000		0.486***		0.489***
		(7.39)		(7.47)
experience (full-time, years)		-0.0545		-0.0534
		(-0.68)		(-0.66)
experience (part-time, years)		-0.0400		-0.0392
		(-0.49)		(-0.48)
experience (unemployment, years)		0.394+		0.379+
		(1.92)		(1.84)
activity is job		0.00720		0.00662
		(0.17)		(0.16)
working hours/week		-0.00155		-0.00130
		(-0.16)		(-0.14)
working hours²/100		0.00429		0.00419
		(0.41)		(0.40)
Prefers to work # hours less		-0.0120***		-0.0120***
		(-5.30)		(-5.33)
Prefers to work # hours more		-0.0182***		-0.0181***
		(-4.27)		(-4.24)
part-time		0.0761		0.0818
		(0.81)		(0.87)
Size of Establishment (ref. 200+)				
self employed without employees		-0.259+		-0.238+
		(-1.93)		(-1.78)
< 20		-0.105		-0.0932
		(-1.44)		(-1.28)
< 200		-0.0928+		-0.0914+
		(-1.88)		(-1.85)
Free-lancer		0.215		0.218
		(1.49)		(1.53)
Further controls (details see Appendix 1)				
Occupation and industry		✓		✓
Individual & household		✓		✓

Region		✓		✓
Year		✓		✓
R^2 within	0.000378	0.0274	0.00148	0.0283
Maximum years/person	17	17	17	17
Average years/person	4.967	4.967	4.967	4.967
Persons	8324	8324	8324	8324
Person years	41346	41346	41346	41346

Note: t statistics based on robust standard errors in parentheses; + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; sample: age 15-64, working hours per week >=5.

Source: Own calculations based on SOEP 1984-2009.

Appendix 3: Fixed-effects regression results – The effect of job changes and self-employment on job satisfaction when accounting for anticipation and adaptation effects

Dep. Variable: Job satisfaction	IIIa	IIIb	IVa	IVb
Job change				
T-4	-0.229**	-0.272***	-0.237**	-0.274***
	(-3.25)	(-3.91)	(-3.29)	(-3.86)
T-3	-0.294***	-0.349***	-0.294***	-0.345***
	(-3.69)	(-4.44)	(-3.58)	(-4.27)
T-2	-0.497***	-0.559***	-0.492***	-0.555***
	(-6.47)	(-7.36)	(-6.18)	(-7.02)
T-1	-1.046***	-1.085***	-1.054***	-1.092***
	(-13.79)	(-14.51)	(-13.72)	(-14.41)
T	0.507***	0.400***	0.496***	0.392***
	(7.69)	(5.96)	(7.37)	(5.74)
T+1	0.326***	0.203**	0.317***	0.196**
	(5.32)	(3.29)	(5.04)	(3.10)
T+2	0.327***	0.220***	0.318***	0.213***
	(5.96)	(3.96)	(5.65)	(3.75)
T+3	0.191***	0.0829	0.187***	0.0815
	(3.68)	(1.59)	(3.57)	(1.56)
T+4	0.147***	0.0553	0.147***	0.0557
	(3.52)	(1.30)	(3.52)	(1.31)
Self-employed	0.101	0.0858		
	(0.93)	(0.71)		
Self-employed				
T-4			0.0801	0.0166
			(0.46)	(0.10)
T-3			-0.00840	-0.0411
			(-0.05)	(-0.23)
T-2			-0.0558	-0.0496
			(-0.31)	(-0.27)
T-1			0.0968	0.0847
			(0.55)	(0.47)
T			0.197	0.145
			(1.17)	(0.82)
T+1			0.170	0.148
			(0.96)	(0.80)
T+2			0.187	0.165
			(1.11)	(0.92)
T+3			0.0851	0.0432
			(0.42)	(0.20)
T+4 or more			0.0306	0.0267
			(0.19)	(0.16)
net income (earned)/1000		0.433***		0.434***
		(6.78)		(6.82)
experience (full-time, years)		-0.0348		-0.0345
		(-0.44)		(-0.44)
experience (part-time, years)		-0.0199		-0.0196
		(-0.25)		(-0.24)
experience (unemployment, years)		0.0934		0.0927
		(0.49)		(0.49)
activity is job		0.0204		0.0206
		(0.50)		(0.50)
working hours/week		-0.00151		-0.00150
		(-0.16)		(-0.16)
working hours²/100		0.00377		0.00372

		(0.37)		(0.37)
Prefers to work # hours less		-0.0118***		-0.0118***
		(-5.35)		(-5.34)
Prefers to work # hours more		-0.0178***		-0.0178***
		(-4.24)		(-4.24)
part-time		0.0766		0.0761
		(0.83)		(0.83)
Size of Establishment (ref. 200+)				
self employed without employees		-0.193		-0.196
		(-1.47)		(-1.49)
< 20		-0.0122		-0.0116
		(-0.17)		(-0.16)
< 200		-0.0630		-0.0626
		(-1.32)		(-1.31)
Free-lancer		0.221		0.221
		(1.61)		(1.61)
Further controls (details see Appendix 1)				
Occupation and industry		✓		✓
Individual & household		✓		✓
Region		✓		✓
Year		✓		✓
R^2 within	0.0258	0.0505	0.0260	0.0506
Maximum years/person	17	17	17	17
Average years/person	4.967	4.967	4.967	4.967
Persons	8324	8324	8324	8324
Person years	41346	41346	41346	41346

Note: t statistics based on robust standard errors in parentheses; + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; sample: age 15-64, working hours per week >=5.

Source: Own calculations based on SOEP 1984-2009.

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