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Eva M. Berger

Maternal Employment and Happiness: The Effect of Non-Participation and Part-Time Employment on Mothers' Life Satisfaction

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Maternal Employment and Happiness: The Effect of Non-Participation and Part-Time Employment on Mothers' Life Satisfaction

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May 2009

Abstract

In contrast to unemployment, the effect of non-participation and part-time employment on subjective well-being has much less frequently been the subject of economists' investigations. In Germany, many women with dependent children are involuntarily out of the labor force or in part-time employment because of family constraints (e.g., due to lack of available and appropriate childcare). Using data from the German Socio-Economic Panel (SOEP) Study, this paper analyzes the impact of involuntary family-related non-participation and part-time employment on mothers' life satisfaction. Controlling for unobserved individual fixed effects, I find that both the pecuniary effects (foregone earnings) and the non-pecuniary effects (psychological costs) are significantly negative. Compensating income variations reveal that the residual household income would have to be raised by 182 percent (157 percent/77 percent) in order to just offset the negative effect of not being able to work because of family constraints (of being in short/long part-time employment). Moreover, in terms of overall happiness among mothers, non-participation is revealed to be a more serious problem than unemployment.

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Keywords: Subjective well-being, life satisfaction, labor force participation, part-time, maternal employment, work-family conflict

JEL-codes: I31, J21, J22

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1 Introduction

The purpose of this paper is to investigate the impact of non-participation in the labor force and of part-time employment on mothers' life satisfaction using German panel data.

Neoclassical labor supply theory would suggest that individuals choose their employment status and working hours according to their preferences (trade-off between income and leisure[1]) in order to maximize utility. If individuals can choose their employment status freely, non-participating individuals should presumably be just as contented as working individuals, and full-time employed individuals should be as contented as part-time employed individuals. However, this reasoning no longer applies when there are constraints either on the labor market or at the family level. Unemployed individuals, for example face labor market constraints in the way that they do not find an appropriate job. They are thus not able to adopt their preferred employment status which would be full-time or part-time employment. A number of studies investigated the impact of unemployment on subjective well-being[2] and typically found a substantial negative effect.[3] The argument of labor market constraints does not usually apply to individuals outside the labor force. However, the status of being out of the labor force may still be involuntary for certain individuals. This paper argues that in Germany many mothers are unable to combine family responsibilities with (full-time) work and this might be mainly due to insufficient access to appropriate childcare. Hence, these mothers are not able to take up employment (non-participating mothers) or to work more hours (part-time employed mothers) although they may wish to do so. This study analyzes whether this has a significant impact on these mothers' subjective well-being.

Using data from the German Socio-Economic Panel (SOEP) Study and controlling for an extensive set of socio-economic and demographic characteristics as well as for unobserved individual heterogeneity, I found at the first stage of the study that non-participation and part-time employment are associated with significantly lower life satisfaction compared to full-time employment. Since the reason for being out of the labor force may vary from individual to individual, in the second part of this paper, I distinguish between mothers who are unable to take up employment because of family constraints, mothers who face labor market constraints (discouraged workers), and mothers who simply prefer homemaking. The data show that the group of women who face family constraints is the largest. The results from panel estimations suggest that these mothers experience a significant deterioration of life satisfaction and that both the pecuniary effect (forgone earnings) and the non-pecuniary effect (psychological costs) are substantial. The findings provide an important argument in favor of improving policies supporting parents to combine work and family.

[1] Leisure here means 'time not spent in gainful employment'. In addition to real leisure time this may include time spent on housework and childcare.

[2] Several years ago, reputable economists have started to use subjective happiness measures to address economic issues, arguing that "measures of subjective well-being can [...] serve as proxies for "utility" (Frey and Stutzer 2002b, p. 405). For a general survey on happiness research see for example Frey and Stutzer (2002a,b), Kahneman, Diener, and Schwarz (1999), Van Praag and Ferrer-i Carbonell (2004), Layard (2005), Di Tella and MacCulloch (2006), Dolan, Peasgood, and White (2008).

[3] Some of the most well-known studies on the effect of unemployment on happiness are Clark and Oswald (1994), Winkelmann and Winkelmann (1998), Clark (2003, 2006).

The paper is organized as follows: in Section 2, I discuss why many mothers in Germany face family constraints in their employment decisions. Section 3 gives an overview over previous studies in the field of non-participation, part-time employment, and life satisfaction and in Section 4, I present the data used in the empirical part of the paper. In Section 5 I present and discuss the results and Section 6 outlines some conclusions.

2 Background

In this section, I will discuss why many mothers in Germany face family constraints which prevent them from taking up employment or from working more hours although they may wish to do so. The reason why I focus on mothers rather than on fathers is that in most cases in Germany it is still the woman rather than the man who is the main caregiver of the child(ren) and who withdraws from the labor market or reduces working hours if necessary.

One of the most prominent factors in the context of family constraints to maternal employment is the relatively poor availability of childcare, particularly for children under the age of three and for schoolchildren. Schoolchildren in Germany traditionally only attend classes during the morning and many schools do not even provide lunch for their students.[4] Most children between three and six years attend a daycare center, however in most cases they only attend for half a day.[5] The overall poor availability of daycare for children — particularly in Western Germany — has often been criticized, not only in Germany but also by the OECS (see e.g. OECD 2004). A recent study by Wrohlich (2008) has shown that this poor childcare availability is not due to a lack of demand but to a restricted supply policy. In assessing the demand for and the supply of subsidized childcare in Germany, the author has found that more than 50 percent of children aged zero to three years and about ten percent of children aged four to six years are waiting for a childcare place. This assessment does not even take into consideration the excess demand for full-time daycare for children who are already in half-day care. A survey undertaken by the Forsa-Institute (2004) highlights the same problem, revealing that for 32 percent of parents with children aged zero to 13 years it is/was very hard to find a daycare place for their child.

This excess demand is a result of the German childcare system:[6] There is no free entry into the childcare "market" since municipalities decide on the funding, the regulation, and the market entrance, and, furthermore, are themselves providers of daycare services. For-profit providers are almost nonexistent on the German childcare market and provide only about one percent of the total number of all daycare places. Furthermore, the predominantly supply-oriented funding system has not provided adequate incentives for providers to design their services according to parental needs (e.g., concerning flexible opening hours).[7]

[4] For more information on the half-day schooling system in Germany see, for example, Gottschall and Hagemann (2002), Radisch and Klieme (2003), Beblo, Lauer, and Wrohlich (2005).

[5] A detailed description of current childcare usage in Germany by age, childcare hours, and state can be found in Spieß, Berger, and Groh-Samberg (2008).

[6] A current and detailed overview of the German childcare system can be found in Spieß (2008).

[7] Some German states have already changed to a demand-oriented funding system; promi-

This inflexibility in opening hours also contributes to the serious constraints experienced by many parents in their employment decisions.

Given the institutional setting in Germany, the question of availability of childcare plays a more important role in the context of employment decisions made by parents in Germany than the cost of daycare, which might have an effect in other countries (see e.g. Powell 1997, Connelly 1992, Ribar 1995). Empirical studies on Germany have actually found a link between the local availability of daycare and maternal labor supply: Based on data from the German Socio-Economic Panel Study, Spieß and Büchel (2003) have found a positive association between the local availability of "Kindergarten" places and the proportion of full-time places among them on the one hand and the employment extent of women with children aged three to six years on the other hand. Beblo, Lauer, and Wrohlich (2005), analyzing labor supply of mothers with school children, have found a positive association between the local availability of full-day schools and maternal employment. Both findings suggest that childcare is an important constraint on mothers' employment decisions. This is also consistent with a recent survey conducted by the Forsa-Institute (2008), where 44 percent of mother-respondents stated that they would like to work (more hours) but the current childcare situation does not allow them to do so.

Apart from availability of childcare, there are also other factors that influence whether a mother is actually able to work the number of hours she would like to. These are, for instance, the partner's involvement in childcare, possibilities to follow a flexible working schedule and occupy a flexible employment position, and access to informal childcare options. The latter largely depends on the parents' social networks (relatives, friends, neighbors); support by the grandmother of the child frequently plays an important role in this context (see e.g. Attias-Donfut, Ogg, and Wolff 2005). Finally, whether a mother is actually able to work (the number of hours she wants to) depends on a complex variety of factors and this situation may change over time as the number and age of children as well as surrounding conditions evolve. If a mother is actually not able to take up employment or to work more hours even though she would like to do so and an appropriate job was available, she is likely to experience a deterioration in life satisfaction. This deterioration is then not due to a lack of demand for labor (which would be the reason for unemployed and for discouraged workers) but to family constraints. This study empirically analyzes the existence and magnitude of such an effect.

3 Previous studies

The large body of literature in the field of employment status and subjective well-being deals with the effect of unemployment on life satisfaction. Empirical studies have found substantial negative effects which are typically attributed to reduced social networks and self-esteem which are usually brought by employment (see e.g. Clark and Oswald 1994, Winkelmann and Winkelmann 1998, Clark 2003, 2006). Even though Winkelmann and Winkelmann (1998, p. 6) conclude that "it is 'joblessness' that matters, not just unemployment", there is much less empirical evidence on the relationship between non-participation and subjective well-being, and findings are ambiguous. In the following, I will cite

nent examples are Hamburg and Berlin (Spieß 2008).

only studies applying panel methods and thus controlling for individual heterogeneity, which is highly important in the context of subjective well-being (see e.g. Ferrer-i Carbonell and Frijters 2004).

Analyzing data from the SOEP, Winkelmann and Winkelmann (1998) found that non-participation had a negative effect on men's life satisfaction (compared to being employed). Booth and van Ours (2009), using Australian panel data from the 'Household, Income and Labour Dynamics in Australia' (HILDA) Survey, arrived at the same results for males. Moreover, the authors concluded that there is a gender difference, as for women, they found that full-time employment lowers life satisfaction compared to non-employment (non-employment here includes non-participation as well as unemployment). In contrast, analyzing data from the British Household Panel Survey (BHPS), the same authors found different results depending on parental status (Booth and van Ours 2008). Their results suggest that mothers and fathers who work full-time are significantly more satisfied than non-working parents. For childless women and men, however, they found no significant impact of employment compared to non-employment on life satisfaction.

The relationship between part-time employment and subjective well-being has also received relatively little attention in the literature. Findings are again rather ambiguous. Meier and Stutzer (2008), using data from the SOEP, found an inverse U-shaped relationship between working hours and life satisfaction with maximum happiness experienced at 44 working hours a week. This would suggest that, compared to full-time employment, part-time employment has a negative impact on subjective well-being. Bardasi and Francesconi (2004), using a sample of employed individuals from the BHPS, found no significant relationship between part-time work and life satisfaction, neither for men nor for women. The findings of Booth and van Ours (2009), however, suggest that part-time employed women are more satisfied with their lives than full-time employed women, while men prefer full-time employment. In contrast, Booth and van Ours (2008) came to the conclusion that both women and men with children are happier in full-time than in part-time employment. For childless individuals, they found no significant effect.

This paper will contribute to the existing literature in the following: Firstly, I will clearly differentiate between unemployment and non-participation and further, within the group of non-participants, I will distinguish between those who are voluntarily out of the labor force, those who face labor market constraints (discouraged workers), and those who face family constraints.

Secondly, I will analyze the *overall* happiness effect of non-participation and of part-time employment, meaning the pecuniary as well as the non-pecuniary effect. All previously cited studies include the total household income as a control variable in their estimation models. Since individuals' own labor income is part of the total household income, the latter is endogenous in employment status. Thus, these studies estimate the pure non-pecuniary effect of part-time employment and of non-participation on happiness, keeping income constant. Since women who face family constraints and therefore are not able to work (more hours) have to bear the non-pecuniary (psychological) as well the pecuniary consequences (foregone earnings), I am interested in the overall effect. For that purpose I use the *residual* household income (total household income net of own labor income) as a control in my estimation models. At a further stage, I will separate between the pecuniary and the non-pecuniary effects and illustrate

the magnitude of the effects in terms of compensating income variations.

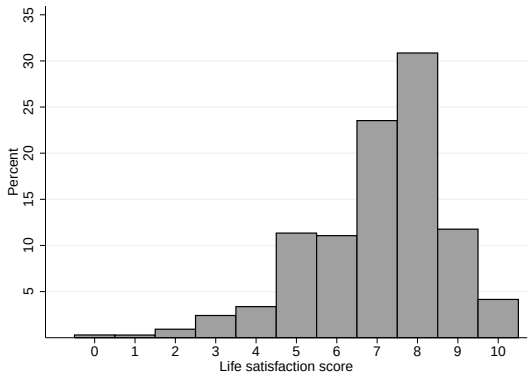
4 Data

The empirical analysis is based on data from the German Socio-Economic Panel Study (SOEP), an annual household panel study, which is representative of the population in Germany (Wagner, Frick, and Schupp 2007). I include data for the years from 1994 to 2007,[8] and restrict the sample to mothers of working age (20 to 65 years) who are neither in education nor retired and who have at least one child younger than 14 years.[9] The sample turns out to be an unbalanced panel comprising 28,429 person-year-observations from 5,706 individuals.

Dependent variable

The dependent variable used in the estimates is general life satisfaction on an 11-point scale, based on the SOEP question "How satisfied are you with your life, all things considered?". Respondents were instructed to choose a number ranging from 0 (completely dissatisfied) to 10 (completely satisfied). Figure 1 gives a histogram of pooled frequencies of the life satisfaction responses. The frequency distribution is roughly bell-shaped, while slightly skewed to the right, with a mean value of 7.05 and a modal response value of eight.

Figure 1: Reported life satisfaction of mothers



Source: Own calculations with pooled data from 14 waves (1994-2007) of the SOEP (see text).

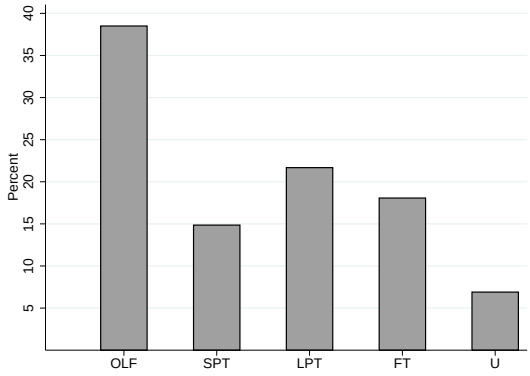
[8] Data for the years earlier than 1994 is not included because some socio-economic variables (namely whether an individual is actively looking for work, self-reported health, disability) are missing for the earlier waves. Also, data for Eastern Germany is not available before German Reunification.

[9] This age group is chosen because children of about this age are supposed to require daytime care. This is also the age range for which the German Youth Institute (DJI) collects data on childcare usage (see Section 2).

Explanatory variables

The explanatory variables of main interest are the employment states 'out of labor force' and 'part-time employment'. Since the sample comprises employed as well as non-employed individuals, I define the five categories: 'short part-time employment' (1-19 weekly working hours), 'long part-time employment' (20-34 weekly working hours), 'full-time employment' (35 or more weekly working hours), 'unemployment', and 'out of labor force'. Since part-time employment is usually a very broad definition, encompassing employment of one up to 34 hours per week — which might have very different impacts on life satisfaction — I distinguish between short and long part-time employment in the way outlined above. Unemployment is defined according to ILO norms.[10] The category of 'out of labor force' is, in a way, a residual category. It comprises all individuals who are neither employed nor self-employed and who do not meet the conditions for being unemployed, i.e. it comprises individuals who are not looking for work or who are not able to work.

Figure 2: Employment status of mothers



OLF = out of labor force, SPT = short part-time employment (1-19 hrs), LPT = long part-time employment (20-34 hrs), FT = full-time employment (35+ hrs), U = unemployment.
Source: Own calculations with pooled data from 14 waves (1994-2007) of the SOEP (see text).

The distribution of person-year observations over the five labor force categories is presented in Figure 2. A substantial proportion of mothers, 39 percent, does not participate in the labor force. Another important proportion, 37 percent, is in some type of part-time employment, and only 18 percent of mothers are employed full-time. Seven percent of the women in the sample are unemployed.[11]

[10] According to the ILO definition, an individual is considered unemployed if he/she (1) reported not to be in gainful employment or self-employment at the time of the interview, (2) had actively sought work during the four weeks prior to the date of the interview, and (3) is available for work within the next two weeks.

[11] These figures are in line with the official statistics of the German Microcensus from the Federal Statistical Office, according to which, in 2007, 37 percent of women with children under the age of 15 are out of the labor force, 41 percent are part-time employed, 15 percent

In order to analyze the effect of non-participation and part-time employment on life satisfaction in a multiple regression model, I introduce a number of socio-economic and demographic characteristics that are likely to be correlated with the employment status as well as with life satisfaction. In line with previous studies (see references in Section 3), I use the following covariates: log of net residual household income (in Euros, inflation-adjusted to the base year 2001) which is calculated as the total household income minus the own labor income, age (linear and squared), migration background (a binary variable), highest educational degree (university degree, vocational degree (reference category), no professional degree), a binary variable taking on the value one if a person in need of care lives in the household, disability (a binary variable taking on the value one if the woman is disabled or if, due to medical reasons, her ability to work is limited), self-rated health on a 5-point scale, the size of the municipality where the household lives (urban area (reference category), between rural and urban area, rural area), a binary variable for self-employment, a binary variable indicating whether the individual will have a child in the coming year,[12] partner status (partner in household (reference category), no partner, partner lives in a different household), the number of children younger than 14, the age of the youngest child (<1 year, 1-2 years, 3-6 years, and 7-13 years (reference category)), and year dummies. Table A1 in Appendix A gives descriptive statistics for these covariates.

5 Results

5.1 Non-participation, part-time employment, and life satisfaction

Column 1 of Table 1 gives the results of a regression of life satisfaction on employment status, age, age squared, and year dummies, using Ordinary Least Squares (OLS). The coefficients suggest that mothers outside the labor force and part-time employed mothers are more satisfied with their lives than full-time employed mothers (reference category). However, as soon as the individual characteristics presented in Section 4 are controlled for (column 2 of Table 1), the coefficients related to non-participation and part-time employment become negative and significant. This suggests that the positive non-participation and part-time employment coefficients in column 1 have been driven by the individual heterogeneity observed now. It emerges that full-time employed mothers are, ceteris paribus, most satisfied with their lives, while not participating in the labor force is associated with life satisfaction decreased by .24 points on the 11-point satisfaction scale. Short and long part-time employment are associated with a decrease of life satisfaction by .20 and .09 points, respectively. The reason why the coefficients related to employment status change their signs as soon as a number of controls are introduced is that some characteristics negatively correlate with labor force participation and with the number of working hours

are full-time employed, and seven percent are unemployed.

[12] It might be important to control for this since some women may stop work some time before they have a child and, at the same time, the variable is likely to be correlated with subjective well-being. This could then establish a spurious correlation between non-participation and life satisfaction.

Table 1: Estimation results: The effect of employment status on life satisfaction

	OLS		FE
	(1)	(2)	(3)
Employment status (ref.: full-time employment):			
Out of labor force	0.20**	-0.24**	-0.28**
	(0.03)	(0.03)	(0.05)
Short part-time employment	0.22**	-0.20**	-0.24**
	(0.03)	(0.03)	(0.05)
Long part-time employment	0.16**	-0.09**	-0.12**
	(0.03)	(0.03)	(0.04)
Unemployment	-0.90**	-0.89**	-0.57**
	(0.05)	(0.05)	(0.05)
Ln(Residual HH income)		0.31**	0.15**
		(0.02)	(0.02)
Age	-0.01	-0.02	
	(0.01)	(0.01)	
$Age^2/1000$	0.06	0.31+	-0.05
	(0.19)	(0.18)	(0.31)
Migration background		0.03	
		(0.03)	
Education (ref.: vocational degree):			
University degree		0.11**	-0.03
		(0.02)	(0.13)
No professional degree		-0.21**	-0.05
		(0.03)	(0.06)
Pers in need of care in HH		-0.25**	-0.02
		(0.07)	(0.12)
Disabled		-0.06	-0.10
		(0.08)	(0.12)
Self-rated health		-0.73**	-0.40**
		(0.01)	(0.01)
East Germany		-0.58**	-0.03
		(0.03)	(0.17)
Size of the municipality (ref.: urban area):			
Between rural and urban area		0.00	0.12
		(0.02)	(0.08)
Rural area		0.04	0.21*
		(0.03)	(0.10)
Self-employed		-0.00	0.03
		(0.04)	(0.07)
Have a child in the coming year		0.16**	0.10*
		(0.04)	(0.05)
Partner status (ref.: partner in HH):			
No partner		-0.43**	-0.32**
		(0.05)	(0.07)
Partner outside the HH		-0.04	-0.04
		(0.06)	(0.07)

Table continues

Table 1 (continued).

	(1)	(2)	(3)
Number of children (ref.: two children):			
One child		0.06**	0.04
		(0.02)	(0.05)
Three or more children		-0.09**	0.07
		(0.02)	(0.06)
Age of the youngest child (ref.: 7-13 years):			
<1 year		0.35**	0.28**
		(0.04)	(0.06)
1-2 years		0.13**	0.06
		(0.03)	(0.05)
3-6 years		0.06*	0.03
		(0.02)	(0.03)
Constant	7.28**	6.98**	6.87**
	(0.26)	(0.30)	(0.60)
No. of observations	28,429	28,429	27,542
No. of individuals			4,778
Adjusted R2 (within)	0.030	0.220	0.072

Results from OLS estimations (model 1 and 2) and fixed-effects estimations (model 3), dependent variable is life satisfaction (11-point scale). All models contain year dummies. Robust standard errors in parentheses.
+ p<0.10, * p<0.05, ** p<0.01
Source: Own calculations with data from SOEP, waves 1994-2007 (see text).

while at the same time positively affecting life satisfaction (the responsible covariates are e.g. having a very young child, expecting a child, residual household income).

Psychological literature has found that individual personality traits exert a strong influence on self-reported happiness (e.g. Diener and Lucas 1999). If these unobserved personality traits also have an impact on employment status, a pooled OLS regression produces biased estimates. Concretely, if inherently unhappy individuals are more likely to be out of the labor force or to be part-time employed, the negative effects of being out of the labor force and being part-time employed on life satisfaction will be overestimated. Applying panel methods helps to remove this self-selection problem, which has been shown to be important when analyzing the determinants of subjective well-being (Ferrer-i Carbonell and Frijters 2004). Hence, the results from a fixed-effects estimation are shown in column 3 of Table 1.[13] Most coefficients estimated by the fixed-effects model are smaller in absolute value compared to the results from the pooled OLS model. This gives evidence that unobserved heterogeneity has led to overestimation of the effect of most variables on life satisfaction in the latter model. An F-test leads to a rejection of the hypothesis that unobserved indi-

[13]Using this approach, only individuals observed in at least two time periods contribute to the estimation. This slightly reduces the sample to 27,542 person-year-observations (4,778 individuals). Furthermore, the covariates age and migration background fall out of the regression since migration background is time-invariant and age is perfectly collinear with the year dummies in the model.

vidual effects are non-existent at any conventional significance level. Moreover, testing between a fixed-effects model and a random-effects model (not shown here) using a Hausman test reveals that the individual effects are not random but correlated with the observed explanatory variables. Hence, a fixed-effects specification is actually the appropriate method to use.

The coefficients related to non-participation and part-time employment are still negative and significantly different from zero and have even increased in magnitude compared to the OLS results. This suggests that, in contrast to unemployment, for example, there is no self-selection into non-participation and part-time employment which would produce a spurious negative correlation with life satisfaction. In fact, mothers outside the labor force experience a life satisfaction level reduced by .28 points compared to full-time employed mothers. If being out of the labor force is freely chosen according to individual preferences, one should not find a negative coefficient related to non-participation. If, however, not participating in the labor force is primarily the result of constraints, the estimated negative effects on life satisfaction are plausible. As I argued in Section 1, many mothers in Germany face family constraints and are unable to combine paid work with family responsibilities. These constraints might be responsible for reduced life satisfaction. However, there might also be other factors that lead to involuntary non-participation. This will be further analyzed in Section 5.2.

The reasoning for the effect of part-time employment on life satisfaction is analogous: The estimated negative relationship suggests that the employment decisions have been subject to constraints. Being in short (long) part-time employment is associated with a deterioration of life satisfaction of .24 (.12) points (relative to the reference category full-time employment). This finding suggests that not only the question of employment versus non-employment is essential for individual well-being but also the number of working hours. The negative effect may be due to prevalent preferences for a higher number of weekly working hours among mothers. It may also reflect the less satisfying job characteristics of part-time jobs which are frequently associated with lower levels of responsibility, required qualifications, and wages. Women who, due to family constraints, are not able to work more than part-time have to bear all the disadvantages associated with part-time employment. The same, however, is true for women who cannot work more hours for other reasons, e.g. because they cannot find an appropriate full-time job, i.e. are underemployed.

In order to illustrate the magnitude of the estimated coefficients, it is useful to consider 'compensating income variations', following Winkelmann and Winkelmann (1998). A compensating income variation gives the relative increase in income that is needed to compensate an individual for the drop in satisfaction resulting from being outside the labor force or being in part-time employment. Since a 100% increase in income raises life satisfaction by β_{inc} and non-participation decreases satisfaction by β_{OLF}, income needs to be increased by $\beta_{OLF}/\beta_{inc} * 100\%$ in order to make up for the lost satisfaction resulting from non-participation. Based on the estimated income coefficient of .15, the compensating income variation for non-participation is 188 percent, i.e. residual household income would need to be increased by 188 percent in order to trigger an increase in satisfaction large enough to just offset the adverse effect of being out of the labor force. The analogous compensating income variation for short (long) part-time employment is 160 percent (78 percent).

So far, the life satisfaction scale has been interpreted as a cardinal scale, however, strictly speaking, it is an ordinal scale. Therefore, to check the robustness of the results, I have estimated the three model specifications with an ordered-fixed-effects-logit approach, which has been proposed by Ferrer-i Carbonell and Frijters (2004). The signs and significances and even the relative magnitude of the coefficients do not change substantially compared to the results from the linear fixed-effects model. This is consistent with the findings of Ferrer-i Carbonell and Frijters (2004), who conclude that it is less important whether one applies methods for ordinal or cardinal data but that it is crucial to control for individual fixed effects. Since one problem of the ordered-fixed-effects-logit estimator is that marginal effects cannot be calculated and the magnitude of the effects cannot be interpreted, the linear fixed-effects approach is preferred in this paper. The results of the ordered-fixed-effects-logit estimation and a detailed discussion of why I prefer the linear model can be found in Appendix B.

5.2 Not being able to work and life satisfaction

In this section, I will further investigate whether family constraints are the foremost reason for mothers being outside the labor force, rather than disadvantageous labor market prospects or greater preferences for homemaking, and what is the effect on life satisfaction for those women.

Unfortunately, there is no explicit information available in the data set on *why* an individual does not participate in the labor force.[14] However, I can use information on the respondents' intention to and availability for work. These stem from the SOEP-questions "Do you intend to engage in paid employment (again) in the future?" and "If someone offered you an appropriate position right now, could you start working within the next two weeks?". If a mother is currently not able to take up employment even if an appropriate job was offered to her and though she in principle intends to work, family constraints are a very likely explanation for her being out of the of labor force. If, however, a women reports to *be* able to take up employment if a job was offered, the reason for being out of the labor force is likely to be related to labor market constraints. Hence, I form three subgroups within the group of non-participants: Women who intend to work but are not able to take up employment even if an appropriate job was offered to them are classified as 'not able to work'. Those women who intend to work and are able to take up employment form the group 'discouraged'. Those who do not intend to work any more (and therefore are not asked anymore to answer the question about ability to take up employment) are summarized in the group 'no intention to work'.

The first group, that of mothers 'not able to work', is the group of main interest for this analysis. Since these women are not able to take up employment even if a job was offered, the labor market situation (discourage worker effect) cannot be an explanation for them to be out of the labor force. The most likely explanation for these mothers to be out of the labor force is that they

[14] Also, while it is documented whether a child is enrolled in a daycare institution, there is no information on whether a child actually applied for a childcare institution but was not accepted, or whether a child was offered only half-day care where full-day care was needed. This would provide the researcher more precise information on whether family constraints actually prevent a mother from entering into gainful employment.

face family constraints. The main purpose here is to investigate if this is a group of substantial size among mothers and whether they experience significant deterioration of life satisfaction. Still, in this group there might also be women who have health problems which would also prevent them from entering gainful employment. The relevance of these alternative explanation is checked and discussed at the end of this section.

The second group is considered 'discouraged', because the most likely explanation for these women to be out of the labor force is that they are discouraged from looking for a job. Since they intend to, are able to, but are not actively looking for work (otherwise they would have been considered unemployed), according to ILO concepts these individuals are defined as discouraged workers. These women are likely to experience lower life satisfaction than employed individuals. However, this effect would not be a result of family constraints but of the labor market situation and has to be clearly separated from a potential happiness effect caused by family constraints (first group). The interpretation of such an effect would be similar to the effect of unemployment on life satisfaction even though the extent might differ. If discouraged workers make up an important share of non-participating mothers, it is possible that the negative effect of non-participation on life satisfaction, which has been found in Section 5.1, is only due to these cases rather than to the fact that mothers face family constraints. This issue will be analyzed in the following.

The third group, that with 'no intention to work', is the remaining group which mainly encompasses women who are voluntarily out of the labor force as a result of dominant preferences for homemaking. This would suggest that we should expect no negative effect on life satisfaction for this group. On the other hand, it is possible that this group also includes women who know that they will not be able to work anymore in the future because of, for example, long-term health problems or the responsibility of caring for a disabled person. If this is true for some women in this group, it might well be possible to find a negative happiness effect even for this group. In any case, this cannot be explained by family constraints (and even not by labor market constraints) and therefore is not the main focus of this paper.

The frequency distribution of non-participating mothers over the three groups is presented in Table 2.

Table 2: Mothers outside the labor force: Three groups

	N	Percent
Not able to work	6,293	57.5
Discouraged	1,865	17.0
No intention to work	2,787	25.5
Total	10,945	100.0

Source: Own calculations with pooled data from 14 waves (1994-2007) of the SOEP (see text).

Note that a majority (57.5 percent) of non-participating mothers are currently unable to take up employment. This corresponds to 22.1 percent of the total sample. Interestingly, within a comparable sample of childless women[15],

[15]With "a comparable sample of childless women" I refer to a sample of women from the

only two percent are not able to work (ten percent among non-participating childless women). For these few women, the reason for not being able to work is mostly related to health problems, care for an elderly person, or pregnancy: Twelve percent of the childless women who are unable to work are disabled, 33 percent report having bad or very bad health, six percent live in the same household with a person in need of care, and 17 percent are expecting a child in the coming year. Among the mothers who are unable to work, these figures are much lower: one percent (disability), eight percent (bad health), two percent (living in the same household with a person in need of care), and eight percent (expecting a child in the coming year), respectively. For mothers, these characteristics are very similar for both those women who are unable to work and employed women, while for childless women the aforementioned characteristics differ remarkably between women who are unable to work and employed women (cf. Table A3 in Appendix C).

It would be interesting to divide the group of part-time employed mothers in an analogous way to the group of non-participating women (i.e., according to ability to take up a full-time job if an appropriate full-time position was offered), since the reasons for being employed part-time may also vary. There might be mothers who would prefer to work full-time but are not able to do so because they cannot combine more working hours with their family responsibilities. Other mothers might be willing and able to work more hours but cannot find an appropriate full-time job. Yet others may just be contented with their part-time employment as it best suits their individual preferences. Unfortunately, I am not able to differentiate within the group of part-time employed women in this way because part-time employed respondents in the SOEP are not asked about their ability to take up full-time employment if a full-time job was offered to them.

Moving now to the analysis of the effect on life satisfaction, column 1 of Table 3 gives the fixed-effects results from regressing life satisfaction on employment status with the category of 'out of labor force' being split up into the three presented subgroups. The results show that the coefficient related to 'not able to work' is significantly smaller than zero. The life satisfaction level of mothers who are not able to take up work is lowered by .27 points compared to the reference category of full-time employed mothers. The coefficient is very similar to that related to the undifferentiated 'out of labor force' category in column 4 of Table 1. This is due to the fact that the group which is unable to work actually dominates among the non-participating mothers. Also, the larger (more negative) happiness effect for discouraged workers (-.33) and the less harmful effect of 'no intention to work' (-.19) have obviously canceled each other out in the estimation of the undifferentiated 'out of labor force' effect.

The relative increase in income needed to offset the negative happiness effect of not being able to work is 182 percent. For a mother with average residual household income this would be 4,319 Euros per month. This is the maximum amount she should be willing to pay to be able to take up employment.

Another way of illustrating the magnitude of the negative happiness effect produced by not being able to work is to compute comparable unemployment rates. This hypothetical unemployment rate would generate the same overall

same SOEP-waves (1994-2007), same age group (20-65 years), and same selection conditions (not in education, not retired), who do not have a child younger than 14 years.

Table 3: Estimation results: The effect of not being able to take up work on life satisfaction

	(1)	(2)
Employment status (ref.: full-time employment):		
Not able to work	-0.27**	-0.13**
	(0.05)	(0.05)
Discouraged	-0.33**	-0.19**
	(0.05)	(0.05)
No intention to work	-0.19**	-0.06
	(0.06)	(0.06)
Short part-time employment	-0.23**	-0.15**
	(0.05)	(0.05)
Long part-time employment	-0.11**	-0.07+
	(0.04)	(0.04)
Unemployment	-0.57**	-0.43**
	(0.05)	(0.05)
Ln(Residual HH income)	0.15**	
	(0.02)	
Ln(Total HH income)		0.38**
		(0.04)
No. of observations	27,542	27,542
No. of individuals	4,778	4,778
Adjusted R2 (within)	0.0727	0.0753

Results from fixed-effects estimations, dependent variable is life satisfaction (11-point scale).
Further covariates included in the models are the same as in column 3 of Table 1.
Robust standard errors in parentheses.
+ p<0.10, * p<0.05, ** p<0.01
Source: Own calculations with data from SOEP, waves 1994-2007 (see text).

happiness effect in the sample population as the observed share of women who are not able to take up work. Since the estimated effect of unemployment is -.57, 6.90 percent of all mothers are unemployed, and the effect of not being able to work is -.27 concerning 22.14 percent of the mothers, the comparable unemployment rate amounts to 10.5 percent. This means that the real overall subjective well-being is the same as would be predicted for a sample of mothers where another 10.51 percent were unemployed (in addition to the actually observed 6.9 percent). In other words, enabling the 'not-able-to-work' mothers to take up employment would increase the population's overall happiness to the same extent as if one reduced the unemployment rate by 10.51 percentage points (which is not possible because only 6.9 percent are actually unemployed). This illustrates that among mothers not being able to work because of family constraints is a more serious problem than unemployment.

Doing the same for part-time employment (short + long), the comparable unemployment rate is 10.47 percent. This means that enabling (and offering) part-time employed mothers to work full-time would improve overall happiness to the same extent as if one reduced the unemployment rate by 10.47 percent. However, as I have already indicated, this part-time effect can be due to both family constraints and labor market constraints rather than to family constraints. The effects of these two different constraints could not be disentangled for part-time employment, unlike for non-participation.

The findings of this analysis cannot be attributed to between-individual endogeneity because the model has been estimated with a fixed-effects approach and thus all time-invariant individual characteristics have been controlled for. Hence, personality traits that might influence both the employment decisions and the reported life satisfaction do not bias the results presented. If, however, there were external shocks during the observation period affecting life satisfaction as well as employment decisions, this could bias my results. In other words, if an exogeneous event like a sudden disease makes an individual less happy and at the same time also makes her withdraw from the labor market or reduce working hours, the effects are overestimated. However, since I have shown that between-individual endogeneity does not distort my main findings, it seems plausible to assume that within-individual endogeneity may not distort the results either. Nevertheless, I have performed another robustness check on this: In order to ensure that it is not the exogenous shock of health problems that have driven my results, in a sensitivity check, I have dropped from the sample all women who have not good or very good health. However, there is no notable change in the results.

Pecuniary and non-pecuniary effects

So far, I have estimated the *overall* effect of non-participation and part-time employment on happiness and this overall effect includes a pecuniary effect (due to forgone earnings) and a non-pecuniary effect which is related to psychological costs. This overall effect has been estimated controlling for the *residual* household income, which is the household income net of own labor earnings. A mother who is not able to work because of family constraints or who can only work part-time has to bear both the psychological and the monetary consequences. The possibility of being out of the labor force while earning a full-time labor income simply does not exist and this is why I have not calculated only the pure psy-

chological effect which would result from this theoretical case. Analogously, not being able to work more than part-time also implies not to be able to earn more than a part-time income, which is frequently made up of an even smaller hourly wage than in full-time employment, particularly in part-time jobs with a very low number of hours.

Nevertheless, the question arises as to whether there is actually a pure non-pecuniary effect of non-participation and of part-time employment on happiness or whether the estimated effect is exclusively due to pecuniary reasons. In order to identify the pure non-pecuniary effect, the model is re-estimated replacing *residual* household income by *total* household income within the set of covariates. This corresponds to the specifications used in previous studies cited in Section 3. The results from this alternative specification are shown in column 2 of Table 3. The coefficient related to 'not being able to work' decreases in absolute value from .27 to .13, the coefficients related to short (long) part-time employment from .23 (.11) to .15 (.07). However, all three coefficients are still significantly smaller than zero. This suggests that, while forgone earnings are responsible for part of the deterioration of happiness, non-pecuniary (psychological) consequences also play an important role.

The explanation for the existence of psychological costs of non-participation (not being able to participate) may be similar to the reasoning for psychological costs of unemployment discussed by Feather (1990), for example. Employment usually expands people's social networks and enhances self-esteem. Furthermore, for mothers, employment may be a welcome 'distraction' from domestic tasks. Also, knowing that career chances decline as soon as human capital devaluates during the period in which a woman does not work, might also affect her current satisfaction with life.

One explanation for the psychological costs of part-time employment might be the number of working hours themselves. If an individual prefers to work more hours because she enjoys her occupation, but she does not find an appropriate full-time job (labor market constraints) or because she is not able to work more hours even if an appropriate full-time job was offered because of family constraints, it is plausible to find negative non-pecuniary effects of part-time employment. A second explanation might be job quality. Part-time jobs are frequently jobs requiring lower levels of skills and responsibility than full-time positions. The poorer quality of part-time jobs as compared to full-time jobs may be an important reason for the deterioration of life satisfaction. As already mentioned, it is, unfortunately, not possible to distinguish underemployed part-time individuals (labor market constraints) from those who are part-time employed because of family constraints (those who are not able to work more hours even if an appropriate full-time job was offered to them). Hence, the effect of part-time employment only for mothers facing family constraints cannot be accurately detected. But still, the finding of a significantly negative non-pecuniary effect of part-time employment for mothers is an interesting result.

The magnitude of the pure non-pecuniary effects can, again, be illustrated by compensating income variations which, this time, are based on total household income instead of residual household income. Based on the income coefficient of .38, the compensating variation to offset the non-pecuniary 'not-able-to-work' effect is 35 percent, i.e., income would need to be increased by more than one third in order to offset the non-pecuniary effect of not being able to work. The analogous compensating income variation for the non-pecuniary effect of short

(long) part-time employment is 39 percent (18 percent).

Interaction effects

In order to investigate whether the adverse effects of non-participation (not being able to work) and of part-time employment on life satisfaction differ between certain population groups, I have interacted the variables 'not able to work', 'short part-time employment', and 'long part-time employment' with several characteristics, those being: income, partner status, age of the youngest child, education, region (Eastern versus Western Germany), age of the mother, and yearly dummies (the latter are not shown in the table). The results are shown in Table 4. In column 1 the set of covariates incorporates the residual household income and thus the overall (pecuniary + non-pecuniary) effect is displayed. In column 2 the set of covariates incorporates the total household income and thus the pure non-pecuniary effect is displayed.

Firstly, the results suggest that for mothers in the lower part of the income distribution, being unable to work and part-time employment are worse than for mothers in the middle or upper part of the income distribution (see column 1 of Table 4).[16] One reason for that is that gaining an additional labor income is more important for them than for higher income groups. As soon as the total household income is controlled for and the pure non-pecuniary effects are estimated (column 2 of Table 4), the significance of the interaction effects with income disappear (low income * NAW and low income * LPT) or decrease (low income * SPT).

Secondly, for mothers with a child younger than three years, short part-time employment is less harmful than for mothers with older children. This interaction effect is due to a difference in the non-pecuniary effect, which can be seen from column 2 of Table 4 where the effect is still existent. The reason for that might be that, when children are very young, mothers are more likely to voluntarily choose fewer working hours. As soon as the children grow older, the mothers might want to work more hours and if this is not possible, they feel increasingly dissatisfied.

Interactions with partner status, educational degree, Eastern Germany, mothers' age, and yearly dummies have not produced significant results. Though there is no difference in the 'not able to work'-effect and in the part-time employment-effect on life satisfaction between Eastern and Western Germany, there is a difference in the occurrence of it: While in Western Germany, 25 percent of all mothers are not able to take up employment, in Eastern Germany this is only true for 13 percent. Also, while in Western Germany, 18 percent of mothers are in short part-time jobs, in Eastern Germany, it is only four percent. The full-time rate among mothers in Eastern Germany is much higher (39%) than in Western Germany (12%). Also, while interactions of employment status with year dummies do not yield significant results, one can observe that the share of mothers who are not able to take up employment has decreased between 2000 and 2007 from 23 percent to 15 percent. Hence, the problem seems to have reduced in significance over the last few years. However, those who are still unable to work continue to experience the same negative consequences as previously. On the other hand, the share of mothers in part-time employment has

[16] The segmentation into low-income and high-income groups has been effectuated using the 25 and the 75 percentile of the distribution of residual household income.

sharply increased from 26 percent in 1994 to 47 percent in 2007. This suggests that it is worth further investigating the consequences of part-time employment on subjective well-being.

Table 4: Estimation results: The effect of not being able to take up work on life satisfaction – interaction effects

		(1)	(2)
Low income[a]	* NAW	-0.20**	-0.11
		(0.07)	(0.07)
	* SPT	-0.20*	-0.16+
		(0.08)	(0.08)
	* LPT	-0.10+	-0.09
		(0.06)	(0.06)
High income[b]	* NAW	0.06	0.02
		(0.05)	(0.05)
	* SPT	0.07	0.03
		(0.05)	(0.05)
	* LPT	-0.00	-0.03
		(0.05)	(0.05)
No partner in HH	* NAW	-0.07	-0.03
		(0.11)	(0.11)
	* SPT	-0.08	-0.05
		(0.14)	(0.14)
	* LPT	-0.01	-0.04
		(0.10)	(0.10)
Youngest child <3 years	* NAW	0.07	0.07
		(0.08)	(0.08)
	* SPT	0.15+	0.15+
		(0.08)	(0.08)
	* LPT	0.05	-0.02
		(0.06)	(0.08)
Youngest child 3-6 years	* NAW	0.10	0.11
		(0.08)	(0.08)
	* SPT	0.07	0.07
		(0.06)	(0.06)
	* LPT	0.04	0.05
		(0.06)	(0.06)

Table continues

Table 4 (continued).

		(1)	(2)
University degree	* NAW	0.02	0.03
		(0.08)	(0.08)
	* SPT	0.07	0.06
		(0.10)	(0.10)
	* LPT	-0.04	-0.06
		(0.08)	(0.08)
No vocational degree	* NAW	-0.08	-0.09
		(0.07)	(0.07)
	* SPT	0.00	-0.00
		(0.10)	(0.09)
	* LPT	-0.04	-0.05
		(0.09)	(0.09)
East Germany	* NAW	-0.01	-0.01
		(0.08)	(0.08)
	* SPT	-0.01	-0.00
		(0.13)	(0.12)
	* LPT	0.09	0.08
		(0.08)	(0.08)
Age >40	* NAW	0.09	0.09
		(0.07)	(0.07)
	* SPT	0.01	0.01
		(0.06)	(0.06)
	* LPT	-0.03	-0.04
		(0.05)	(0.05)

[a] Low income refers to a residual household income below the 25 percentile.
[b] High income refers to a residual household income below the 75 percentile.
Results from fixed-effects estimations, dependent variable is life satisfaction (11-point scale). The explanatory variables are the same as in column 3 of Table 1 plus one set of the here shown interaction terms per estimation. NAW = not able to work, SPT = short part-time employment (1-19 hrs), LPT = long part-time employment (20-34 hrs).
Robust standard errors in parentheses.
+ p<0.10, * p<0.05, ** p<0.01
Source: Own calculations with data from SOEP, waves 1994-2007 (see text).

6 Conclusions

There is a fairly large and growing literature on the impact of unemployment on subjective well-being, whereas many fewer economists have analyzed the happiness effect of non-participation and of part-time employment. This is due to the fact that unemployment is clearly seen as involuntary while non-participation and part-time employment are usually seen as voluntarily chosen. However, in Germany, it is very difficult for both parents to reconcile full-time work with family responsibilities and, therefore, many mothers reduce working hours or completely withdraw from the labor market although they may wish to work (more hours). To my knowledge, no previous study addresses the question of how these family constraints, which prevent women from working full-time,

affect subjective well-being. The data analyzed in this paper reveal that a large share of women with children under 14 years is out of the labor force and most of them intend to work but would not be able to do so even if an appropriate job was offered to them. This suggests that family constraints are the reason for their labor market non-participation, not bad labor market prospects, nor preference for non-participation. Investigating the impact on subjective well-being, I have shown that not being able to take up employment negatively affects mothers' life satisfaction. Also, part-time employed mothers are less satisfied with their lives than full-time employed mothers. Compensating income variations reveal that the magnitudes of the effects are substantial: Residual household income would have to be raised by a tremendous amount in order to offset the adverse happiness effects, which are due to forgone earnings as well as to psychological costs.

To sum up, the results have shown that employment is an important factor for mothers' subjective well-being. Not only unemployment has a negative impact on individual life satisfaction (which has been proven by a number of previous studies and is also confirmed by the estimation results in this paper), but also non-participation and part-time employment, being the result of family constraints, negatively influence happiness. It has been shown that, in terms of overall deterioration of happiness, for women with children, family constraints to employment are even more harmful than unemployment.

This paper's findings provide another argument in favor of improving policies that support parents to reconcile work and family life. Since mothers have to bear not only the pecuniary but also the psychological costs if they are not able to work (more hours), the government should place more emphasis on supporting parental employment than on replacing income. One crucial instrument in this context is the childcare infrastructure which, in many German regions, is still poorly developed. Advocates of policies to support parental employment often refer to the argument of the increasing scarcity of skilled labor and to the argument of the beneficial educational effect of preschool care, especially for children from disadvantaged families. The aspect of mothers' subjective well-being, which is substantially influenced by her employment status, has not yet been a major argument in this debate. This study shows that paid work is important for mothers both for monetary and psychological reasons. If the ultimate political aim is to improve general well-being, the improvement of mothers' individual well-being should be a very obvious argument for the improvement of family-work support.

One limitation of this study is that the motivation for part-time employment — in contrast to the motivation for labor market non-participation — could not be identified. I could not detect how many part-time employed women face family constraints (i.e., would not be able to work full-time even if a full-time job was offered to them), how many face labor market constraints, i.e., are underemployed (do not find a full-time job although they are looking for one and would be able to work full-time), and how many simply prefer to work part-time rather than full-time. Although I have found that part-time employed mothers are less happy than full-time employed mothers, it is still unclear to what extent this is due to family constraints. This question remains for further research.

Appendix

Appendix A

Table A1: Descriptive statistics of the control variables

	Mean	St. dev. [a]
Residual HH income	2,371	1,416
Total HH income	2,881	1,502
Age	35.9	6.4
Migration background	0.20	
Education		
University degree	0.16	
Vocational degree	0.63	
No professional degree	0.21	
Person in need of care in HH	0.02	
Disabled	0.02	
Self-rated health	2.37	0.82
East Germany	0.22	
Size of the municipality		
Urban area	0.51	
Between rural and urban area	0.35	
Rural area	0.14	
Self-employed	0.04	
Have a child in the coming year	0.04	
Partner status		
Partner in HH	0.90	
Partner outside the HH	0.03	
No partner	0.07	
Number of children		
One child	0.33	
Two children	0.43	
Three or more children	0.24	
Age of the youngest child		
<1 year	0.10	
1-2 years	0.19	
3-6 years	0.28	
7-13	0.43	

[a] Displayed only for non-binary variables.
Source: Own calculations with pooled data from 14 waves (1994-2007) of the SOEP (see text).

Appendix B: Results from an ordered-fixed-effects-logit model

In the linear models discussed so far, the life satisfaction variable has been interpreted as a cardinal scale, i.e. distances between the eleven life satisfaction scores have been assumed to be equal. Some economists argue that this is not

correct because a change from, for example, five to six on the scale is not equal to a change from nine to ten. This would imply that ordinal methods have to be applied when analyzing subjective well-being scores. Since usual methods for ordinal data cannot be applied because these models do not control for fixed effects (which is important as has been shown by Ferrer-i Carbonell and Frijters (2004)), some authors use an arbitrary fixed cut-off point to reduce the 11-point scale to a binary variable in order to be able to apply Chamberlain's method for a conditional logit model (Winkelmann and Winkelmann 1998, Bardasi and Francesconi 2004). Since this method comes along with an enormous efficiency loss in the data (only individuals moving across the cut-off point contribute to the estimation), Ferrer-i Carbonell and Frijters (2004) have proposed the so-called "ordered-fixed-effects-logit" estimator. This method consists in using defining individual cut-off points (e.g. individual means) instead of a global cut-off point to transform the original satisfaction scale into a binary variable. Finally, they also estimate a conditional (binary) logit model. This method is now widely used in economic happiness literature.[17]

In order to check the robustness of my results, I re-estimate the results from Table 1 and 3 using the ordered-fixed-effects-logit approach. The results are presented in Table A2. The signs and significances and even the relative magnitude of the coefficients are very similar to the results from the linear fixed-effects model. Apparently, the cardinality assumption does not lead to serious distortions. This is also confirmed by the founders of the new estimator themselves, Ferrer-i Carbonell and Frijters (2004).

I would like to mention two disadvantages of the estimator which pushed me in the direction of the conventional linear fixed-effects model: Firstly, coefficients from conditional logit models cannot be interpreted quantitatively and cannot be compared across models, because marginal effects depend not only on its own coefficients but also on the coefficients related to all other variables including the unobserved and uncalculated individual fixed effects. Therefore, marginal effects cannot be calculated without making strict assumptions on the distribution of the individual effect.

Secondly, reducing the happiness scale to a binary scale still comes along with a large information loss (even when individual cut-off points are used). Transitions between two scores on the original satisfaction scale that are both above the cut-off point or both below that point are no longer visible in the binary variable. Such a change in satisfaction is not recognized as a change, while a move across the cut-off point is fully accounted for, no matter how small the change actually is on the original 11-point scale. Furthermore, the scope of a change in satisfaction is not taken into account at all. A change of one point on the original satisfaction scale is reflected in the transformed binary variable equally as a change of five points, for example, as long as both transitions pass the cut-off point. For example, if 6.5 is the individual cut-off point (individual mean), a move on the original satisfaction score from zero to six is not interpreted as any improvement in satisfaction while a change from six to seven is interpreted as a change from unsatisfied to satisfied (zero to one in the binary variable). I argue that this is less (and certainly not more) plausible than assuming equal distances between the original life satisfaction scores which

[17] See for example Frijters, Haisken-DeNew, and Shields (2004b,a), Booth and van Ours (2008, 2009) who use this approach.

Table A2: Estimation results: The effect of employment status on life satisfaction

	(1)	(2)	(3)
Employment status (ref.: full-time employment):			
Out of labor force	-0.43**		
	(0.07)		
Not able to work		-0.42**	-0.23**
		(0.08)	(0.08)
Discouraged		-0.52**	-0.33**
		(0.08)	(0.08)
No intention to work		-0.29**	-0.11
		(0.09)	(0.09)
Short part-time employment	-0.34**	-0.34**	-0.22**
	(0.07)	(0.07)	(0.07)
Long part-time employment	-0.24**	-0.24**	-0.17*
	(0.07)	(0.07)	(0.07)
Unemployment	-0.80**	-0.81**	-0.61**
	(0.08)	(0.08)	(0.08)
Ln(Residual HH income)	0.20**	0.20**	
	(0.04)	(0.04)	
Ln(Total HH income)			0.52**
			(0.06)
Age^2/1000	-0.87+	-0.87+	-0.79
	(0.51)	(0.51)	(0.52)
Education (ref.: vocational degree):			
University degree	-0.00	-0.01	-0.01
	(0.22)	(0.22)	(0.22)
No professional degree	-0.10	-0.11	-0.09
	(0.10)	(0.10)	(0.10)
Pers in need of care in HH	-0.04	-0.05	-0.07
	(0.16)	(0.16)	(0.16)
Disabled	-0.18	-0.18	-0.17
	(0.18)	(0.18)	(0.18)
Self-rated health	-0.57**	-0.57**	-0.57**
	(0.02)	(0.02)	(0.02)
East Germany	-0.10	-0.09	-0.04
	(0.22)	(0.22)	(0.22)
Size of the municipality (ref.: urban area):			
Between rural and urban area	0.23+	0.22+	0.23+
	(0.12)	(0.12)	(0.12)
Rural area	0.34*	0.34*	0.35*
	(0.15)	(0.15)	(0.15)
Self-employed	-0.04	-0.03	-0.02
	(0.12)	(0.12)	(0.12)
Have a child in the coming year	0.16*	0.14+	0.15*
	(0.07)	(0.07)	(0.08)

Table continues

Table A2 (continued).

	(1)	(2)	(3)
Partner status (ref.: partner in HH):			
No partner	-0.43**	-0.42**	-0.34**
	(0.09)	(0.09)	(0.09)
Partner outside the HH	-0.09	-0.09	-0.00
	(0.10)	(0.10)	(0.10)
Number of children (ref.: two children):			
One child	0.12	0.12	0.13
	(0.08)	(0.08)	(0.08)
Three or more children	0.16	0.16	0.14
	(0.10)	(0.10)	(0.10)
Age of the youngest child (ref.: 7-13 years):			
<1 year	0.34**	0.32**	0.32**
	(0.09)	(0.09)	(0.09)
1-2 years	-0.00	-0.01	-0.01
	(0.08)	(0.08)	(0.08)
3-6 years	-0.02	-0.03	-0.03
	(0.05)	(0.05)	(0.05)
No. of observations	26,149	26,149	26,149
No. of individuals	4,275	4,275	4,275

Results from ordered-fixed-effects-logit estimations, dependent variable is life satisfaction (11-point scale). All models contain year dummies.
Robust standard errors in parentheses.
+ p<0.10, * p<0.05, ** p<0.01
Source: Own calculations with data from SOEP, waves 1994-2007 (see text).

would allow to fit a linear model.

Since the results from the linear fixed-effects model seem not to be biased by the cardinality assumption and they can be interpreted straightforward, this model is used in the main sections of this paper.

Appendix C

Table A3: Some characteristics of mothers 'not able to work' vs. employed mothers and of childless women 'not able to work' vs. employed childless women[a]

	Mothers		Childless women	
	Not able to work	Employed	Not able to work	Employed
Person in need of care in HH	0.019	0.014	0.059	0.017
Disabled	0.013	0.020	0.123	0.062
Bad or very bad health	0.079	0.089	0.329	0.122
Have a child in the coming year	0.080	0.029	0.171	0.021

[a] With 'Childless women' I refer to a comparable sample of women who do not have a child under the age of 14, cf. footnote 15 in the text.
Source: Own calculations with pooled data from 14 waves (1994-2007) of the SOEP (see text).

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