Life Satisfaction Differences between Workers and Non-Workers – The Value of Participation per se

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Abstract

Is working more than monetary income? This paper attempts to give an answer to this question on the basis of the German Socio- economic Panel data set. By comparing the satisfaction with life between workers and non–workers with the same household income, the monetary value of participating in the labour force is assessed. It is found that this monetary value is substantial for many individuals and that it varies strongly with personal characteristics such as age and gender.

Women suffer less than men when loosing their job. Individuals about 65 and over do not seem to attach much value to working besides the income it generates.

1. Introduction

For most people, participation in the labour market adds a specific dimension to life. It is frequently thought and empirically seen that individuals with a job feel better than individuals without. Nevertheless, in reality, we have to accept the idea that some individuals see having a job as an enrichment of their life, but that others perceive the working status as worsening the quality of their life. This held certainly for most people in the past and probably today in less developed countries. It is difficult to generalise. The individual situation will largely determine whether the individual is better-off working or not. For example, one would expect that a young individual with family will be better-off when working, while retired individuals will be , in general, happier with their non- working situation.

Exploring individual preferences on working attitudes via revealed preferences in a market setting gives a clue, but it is not always a reliable indicator. There is involuntary unemployment and there are working people, who long for the status of not working. Obviously the income difference between both statuses is important, but it is not the only determinant.

Alternatively, one can study individual preferences towards the working status by using direct instruments. Psychologists and sociologists have been posing subjective questions on health satisfaction, job satisfaction, or satisfaction with income as a matter of routine in large – scale surveys for various decades. The analysis of such questions has yielded very interesting and plausible results. This strong evidence implies that answers to subjective satisfaction questions are meaningful, that individuals are able and willing to answer such questions, and that responses are interpersonally comparable. Thus, subjective questions can be used to study, what are the factors that determine satisfaction. We refer for examples to Blanchflower and Oswald (2000), Clark (1997), Clark and Oswald (1994), Cutler and Richardson (1997), DiTella, McCullogh and Oswald (2001), Frey and Stutzer (2000).

In this paper, we use a subjective question, which asks individuals for their satisfaction with 'life as a whole'. One of the most frequently used modules has been developed by Cantril (1965). It requires from respondents to evaluate satisfaction with their life as a whole on a numerical scale. For a meaningful use of such questions, one

needs to assume that responses are interpersonally comparable, that is, two individuals who evaluate their life by the same number are equally happy. Clearly, this is something that can not be verified in a direct way, nor can it be refuted. There are three reasons why we believe that this assumption is acceptable. First, if respondents have the same language and the same cultural background, a question will have approximately the same meaning and significance for those respondents, because language is the main means of communication between members of a society. Second, it is empirically observed in the literature that people in objective similar situations, e.g. same income, age, and marital status, tend to answer in a similar way. Third, experiments described in Van Praag (1991, 1994) show that respondents link verbal evaluations like 'good', 'bad' outside of any subject matter with specific numerical values, once the whole finite scale has been given. So on the basis of a ten- scale the value 10 appears to correspond with the verbal label 'excellent ' and the value 5 with 'barely sufficient' and so on. In this paper, individual answers are thus assumed to be comparable. In economic terms, answers are assumed to be ordinally comparable. It is not necessary for the analysis in this paper to assume a cardinal utility concept.

In this paper, responses on the life satisfaction question are explained by means of objective variables, such as situation in the job market, age, family income, family size, education and gender. Similar analyses have been performed by, for example, Frey and Stutzer (1999), Oswald, (1997), Winkelmann and Winkelmann (1998). The focus of this paper is on the differences between individuals with and without a job. Non-working individuals are allowed to have preferences, which differ from those of working individuals. The paper shows that their value patterns differ substantially indeed.

The paper focuses on what would be the necessary income to maintain an individual equally happy after changing working status, i.e. the equivalent income. For instance, imagine a working individual with a family income of 2000 Euro per month. The equivalent income would be the income needed for her if she would not have a job in order that she would feel equally happy. The paper shows that, for some individuals, the equivalent income would have to be higher than the income when working. This is the case for people who derive non-pecuniary benefits from working. Several other studies have found significant 'non-pecuniary' costs of being unemployed, see for example,

Oswald, (1997), Winkelmann and Winkelmann (1998) and Frey and Stutzer (1999). For some other working individuals, however, the equivalent income would be lower than their income when working. For those people employment is a burden, as they prefer a lower income without the burden of a job. In this study, it is shown that the attitude to being employed varies with specific variables like age and education. In this respect this study improves upon earlier studies.

The first question , which we then consider on the basis of our estimated model, is that of equivalent incomes. For instance, suppose a worker has a family income of Euro 2000 per month, which income level is then needed for her when she would not have a job in order that she would feel equally happy? Would it have to be Euro 2500 or Euro 1500? It turns out that for some individuals the equivalent income would have to be higher than the income when working. This is the case for people who derive psychic income from working. They have to be compensated for the loss of their work. For others the equivalent income would be lower than their income when working. For those people employment is a burden, as they prefer a lower income without the burden of a job. It will be seen that the attitude to being employed varies with specific variables like age and education. The question of the equivalent income is a question of 'should'.

The second question, which we shall consider is which household income a respondent would get if he switches from one status to the other. For example, somebody is working and earning Euro 2000 , how much is the family expected to earn when he would have no job ? There is no a priori reason why the equivalent income would equal the expected income.

Actually we have looked mostly from the standpoint of a worker. Then the equivalent income when not working would give a basis for determining an unemployment allowance. From the standpoint of the non- worker it gives a benchmark for which difference is needed to induce a non – working person to enter the labour force.

The empirical analysis of the paper draws from the German Socio-Economic Panel (GSOEP). The GSOEP includes Eastern and Western individuals, but we use in this paper the Western sample only. The paper is based on the period 1992 to 1997.
In Section 2 we describe the model and in Section 3 the data. In Section 4 we present the results. In Section 5 we apply the model to derive equivalent incomes. We also consider

how many individuals would have been better off in the 'other ' situation. In Section 6 we compare the equivalent income to the income level which may be expected in the market. The difference between both is relevant for determining unemployment allowances and taxes on work. Section 7 concludes.

2. The model

2.1.The General Satisfaction question

This paper uses answers to subjective satisfaction questions as a measure of individual's general satisfaction or well-being. Psychologists have used subjective questions regarding individuals' satisfaction with life for over three decades. Cantril (1965) developed a question module for life satisfaction, which has been asked in various forms since 1965 to over a million of respondents in thousands of questionnaires all over the world (see Veenhoven, 1997). Similar question modules are the Likert (1932)-scale and the Visual Analog Scale (VAS). See also Bradburn (1969). Some of these questions are included in the German Socio – Economic Panel (GSOEP) data set used in this study. The central question we use is the following:

P*lease answer by using the following scale in which 0 means totally unhappy, and 10 means totally happy.*
How happy are you at present with your life as a whole?

The answer to this question is termed the General Satisfaction (GS) of the respondent.

2.2 The main assumptions

In order to use the GS question to elicit individual preferences, we have to make assumptions. These assumptions are briefly discussed below without entering into details. The interested reader is refereed to Van Praag, Ferrer, Frijters(2001) for further discussion.

First, we assume that responses of different persons are interpersonally comparable at an ordinal level. In other words, we postulate that individuals answering similarly to such satisfaction questions are enjoying a similar level of satisfaction or well-

being. Actually, this is the hidden assumption on which individuals communicate with each other in any language. We do not assume any kind of cardinality, which would imply that a step from 6 to 7 would be equal to the well –being or utility difference from 7 to 8 .

Second, we assume that there is a relation between what we are able to measure, i.e. the answers to the GS question, and the metaphysical concept we are actually interested in.

2.3 The model

Let *GS* be a latent variable, standing for life satisfaction, scaled on the real axis. It is discretely observed in the usual way by an index variable *GS**, where *GS** is the individual response. *GS** is linked to the latent variable by the correspondence

$GS^* = 0$ if $GS \leq m_1$

$GS^* = 1$ if $m_1 < GS \leq m_2$

……

$GS^* = 10$ if $m_{10} < GS$

The set of explanatory variables *X* includes age, education, number of children and adults in the household, gender, whether the individual lives with a partner, and leisure time. For workers, it includes, additionally, the number of working hours and the income received from work.

The data set used in the empirical analysis is a panel data set and thus, it allows for differentiating between level and shock effects. We operationalise this idea by including as explanatory variables not only the variables at current time but also the means of them over the six- year period, $\overline{X}$. We may then re-write $b\,\overline{X} + g\,X_t = (b+g)\overline{X} + g\,(X_t - \overline{X})$. We interpret the first effect as a 'level' effect and the second effect as a 'shock' effect. For example, the level effect of income covers the permanent income concept (Friedman, 1957), while the shock effect describes the effect of a transitory income change. Obviously, this decomposition only makes sense for those

variables where we assume a differentiation between individuals and a considerable year to year deviation from the individual means[1]. The variables for which we distinguish a level effect, are, depending on the specific equation: family income, number of children and adults in the household, working income, working hours, and leisure time. Including level effects gives some simple dynamics to the model, because the average value (over six years) changes gradually when years pass by. Finally, some 'missing variables' dummies are included. These mostly non-significant values are not presented in the paper.

Hence, we explain the latent variable by the model by

$$GS_{nt} = C_t + \boldsymbol{a} + \boldsymbol{b}\ X_{nt} + \boldsymbol{g}\ \overline{X}_n + \boldsymbol{d}\ LnY_{nt} + \boldsymbol{j}\ Ln\overline{Y}_n + \boldsymbol{e}_{nt} + \boldsymbol{u}_n \qquad (1)$$

where X stands for a vector of explanatory variables, Y for household income, $\overline{X}, \overline{Y}$ for the averages of some of those variables over the period 1992-7 and where $\boldsymbol{e}$ stands for white noise and $\boldsymbol{u}$ for a random individual effect.

Next, the model assumes that the labour status has an effect on GS. The two labour market situations do not differ only with respect to the level of the family income, but also on the way an individual looks at life. Therefore, the structural parameters are assumed to differ between workers and non-workers.

We describe the labour situations by a dummy variable E, which equals one for workers and zero for non-workers. This leads to interaction terms in the model, which changes into

$$GS_{nt} = C_t + \boldsymbol{a} + \boldsymbol{l}\ E_{nt} + \boldsymbol{b}_1 E_{nt} X_{nt} + \boldsymbol{b}_2 X_{nt} + \boldsymbol{g}_1 E_{nt} \overline{X}_n + \boldsymbol{g}_2 \overline{X}_n +$$
$$\boldsymbol{d}_1 E_{nt} LnY_{nt} + \boldsymbol{d}_2 LnY_{nt} + \boldsymbol{j}_1 E_{nt} Ln\overline{Y}_t + \boldsymbol{j}_2 Ln\overline{Y}_n + \boldsymbol{e}_{nt} + \boldsymbol{u}_n \qquad (2)$$

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[1] See also Mundlak (1978), who argues in favor of the same specification but interprets the level effects as picking up the correlation between observed fixed individual characteristics and individual fixed-effects.

In words, coefficients are allowed to differ between workers and non-workers. The joint specification of GS for individuals with and without work makes it possible to compare the GS of employed and unemployed individuals under *ceteris paribus* conditions.

An individual who switches from the working to the non-working situation experiences the following change in GS:

$$- \left[l + b_1 X_{nt} + g_1 \bar{X}_n + d_1 Ln Y_{nt}^w + d_2 Ln Y_{nt}^w + j_1 Ln \bar{Y}_n^w + j_2 Ln \bar{Y}_n^w \right] + d_2 Ln Y_{nt}^{nw} + j_2 Ln \bar{Y}_n^{nw} \quad (3)$$

where the superscripts in the family income variable refer to working (*w*) and non-working (*nw*).

Assuming a steady state in which the yearly household income equals the average household income, we may write this expression as

$$- \left[l + (b_1 + g_1) \bar{X}_n + (d_1 + d_2 + j_1 + j_2) Ln \bar{Y}_n^w \right] + (d_2 + j_2) Ln \bar{Y}_n^{nw} \quad (4)$$

The difference in life satisfaction can be decomposed in three components. The first term, l, represents the change in GS caused by the loss of the employment, $(b_1 + g_1) \bar{X}_n$, is caused by the parameter changes with respect to the explanatory variables *X*. It is the difference in attitude to life between workers and unemployed. Finally we have the term $- \left[(d_1 + d_2 + j_1 + j_2) Ln \bar{Y}_n^w \right] + (d_2 + j_2) Ln \bar{Y}_n^{nw}$, which is caused by the simultaneous change in income and parameter values. Thus, even someone who does not loose income when becoming jobless may experience a welfare change.

3. The data and the estimation results

3.1 The data

The empirical analysis uses the German Socio-Economic Panel (GSOEP) [2]. The GSOEP is a longitudinal household panel that started in the Federal Republic of Germany (West-Germany) in 1984. After the reunion the (former) East-German households were included in the GSOEP from 1990 onwards. We use the period from 1992 to 1997. In this paper we study only the citizens from West Germany. The attrition rate of the panel and the causes of this attrition are discussed by Pannenberg (1997).

3.2 Estimation results

In this section, the estimation results of equation (2) are presented. General satisfaction assumes discrete values from 0 to 10. Thus, general satisfaction is an ordinal discrete variable. Therefore, we estimate it by the traditional method of ordered Probit.

The estimation accounts for the panel character of the data[3]. First, there is a correction for the fact that there are unobserved individual characteristics that are constant across time but differ among individuals. For that, individual random effects are included in the estimation. As shown in equations (1) and (2), the error is decomposed into two independent terms, i.e. an individual random effect, v_n, and the usual error term e_{nt}. It is assumed that $E(e) = 0, E(n) = 0$ and that the errors are normal and uncorrelated. The error term and the individual random effect are also assumed to be not correlated with the explanatory variables. Besides, and as usual in ordered Probit, it is assumed that $s^2(e) = 1$. The estimation also includes a fix time effect, C_t. Table 1 presents the results of equation (2).

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[2] The GSOEP is described in Wagner et al. (1993). We are grateful to the institutes that promote the GSOEP and its project director Prof. Dr. G. Wagner for making this data set available.
[3] We use LIMDEP 7.0.

Table 1 General Satisfaction, Ordered Probit Individual Random Effect

	Coeff.	t-ratio
Constant	14.480	15.233
Dummy 1992	0.345	19.668
Dummy 1993	0.262	14.463
Dummy 1994	0.190	9.846
Dummy 1995	0.153	8.457
Dummy 1996	0.112	5.693
Worker	-6.295	-4.353
Ln(age)*Worker	4.538	5.615
Ln(age) ^ 2*Worker	-0.621	-5.487
Ln(family income)*Worker	-0.027	-0.710
Ln(yrs. education)*Worker	-0.166	-2.127
Ln(children+1)*Worker	0.012	0.287
Ln(adults)*Worker	-0.010	-0.220
Male*Worker	0.259	8.437
Living together? * Worker	-0.146	-5.257
Ln(Working Hours)*Worker	-0.074	-3.723
Ln(Working Income)*Worker	0.062	4.161
Ln (Leisure Time)*Worker	0.004	0.228
Ln(age)	-8.823	-16.994
Ln(age) ^ 2	1.157	16.291
Ln(family income)	0.165	5.956
Ln(yrs. education)	0.068	0.954
Ln(children+1)	-0.034	-1.050
Ln(adults)	-0.084	-2.401
Male	-0.283	-9.947
Living together?	0.285	12.853
Ln (Leisure Time)	0.017	1.371
Mean (ln(f.inc)* Worker	-0.177	-3.174
Mean (ln(ch+1))* Worker	0.146	2.573
Mean (ln(adults))* Worker	0.256	4.002
Mean (ln(Working Hours))* Worker	-0.025	-1.882
Mean(ln(Working Income))* Worker	0.031	3.174
Mean(ln(Leisure Time))* Worker	-0.021	-0.715
Mean (ln(f.inc)	0.524	11.625
Mean (ln(ch+1))	-0.236	-4.709
Mean (ln(adults))	-0.224	-4.166
Mean(ln(Leisure Time))	0.096	4.061
Standard Deviation of v_n	1.062	115.739
Number of individuals	11555	
Log-Likelihood	-85546.9	
Number of Observations	50349	

Table 1 indicates that GS has constantly decreased in West Germany from 1992 to 1997. The dummy for worker has a negative sign, which might lead to the wrong interpretation that non-workers would be more satisfied than working individuals. However, we have to interpret the value jointly with the interaction terms and then any interpretation of the dummy variable on its own is meaningless. The second block in Table 1 shows that for non-workers GS decreases with age until around 45 years old, after which age GS starts to increase with age. For workers, this age-behaviour is similar with a minimum at 54 years old. The household income has, for workers and non-workers, a positive and significant impact on GS. Nevertheless, this effect is smaller for workers than for non-workers. In other words, if two individuals enjoy the same family income, the one that is not-working has a higher probability to be more satisfied with life. Education has been generally found to correlate negatively with GS, once we correct for income levels. This may be due to the fact that higher education leads to more stressful work. Table 1 shows indeed that workers with higher education have a higher probability to be less content than their colleagues with low education. Nevertheless, the education coefficient reverses sign when we look at the non-workers. The coefficient for children and adults has a negative sign for both, workers and non-workers. In both cases, the negative sign is larger for non-workers than for workers, although the difference is not significant. Non-working males have a higher probability to be discontent than non-working females. For working individuals the same is true, but the coefficient is rather small. Living in partnership seems to be a joyful event, especially for non-workers. For workers, the number of worked hours is negatively correlated to GS, and the working income positively. The individual random effects explain a bit more than 50% of the total residual variance.

4. Equivalent income.

An individual switching from one working status to another experiences a change in his or her GS. We saw already that it may change for the better or for the worse. When switching we may make two different and competing assumptions. The first states that household income will not change by the change of status. Evidently, this is rather irrealistic as one of the primary consequences of such a change is that the working income vanishes and is mostly replaced by a pension and/or a social benefit.

Alternatively, if a non –worker gets a job she gets an income from work, which is mostly more than what she got when not – working.

The second assumption, which we will pursue in the next section, is that we know *how* the present income will change. Given hes present income, we know what income she might expect when she would switch to the other status.

Let us write for the equivalent income in the alternative situation $\widetilde{Y}^{nw}$ if the alternative situation is 'non- working' and $\widetilde{Y}^{w}$ if we consider a switch from 'non-working' to 'working'. The difference $Y^{w} - \widetilde{Y}^{nw}$ may be interpreted as the shadow price or the non- monetary cost of the loss of employment. Notice that this difference may be negative or positive. In the second case the switch from working to non- working is welcomed by the individual. For example, if somebody earns DM4000 when active and his equivalent income when non- working would be DM 5900, it means that the non-monetary cost of the job loss and hence exclusion from participation would be DM 1900 per month. On the other hand when his equivalent income would be DM 3500, it means that the job loss would be DM 500 worth to him.

Apart from this non- monetary cost there is a monetary cost if the income earned when non- working is smaller than when working. The expected GS changes for a worker when becoming a non-worker is described by equation (4). Utilising that equation one can calculate the income necessary for a worker to stay equally happy when loosing his job. This *equivalent* income is found by solving the equation

$$\left[\boldsymbol{l} + \boldsymbol{b}_1 X_{nt} + \boldsymbol{g}_1 \bar{X}_n + (\boldsymbol{d}_1 + \boldsymbol{d}_2 + \boldsymbol{j}_1 + \boldsymbol{j}_2) Ln Y_{nt}^{w} \right] = (\boldsymbol{d}_2 + \boldsymbol{j}_2) Ln \widetilde{Y}_{nt}^{nw} \qquad (5)$$

where $Ln\widetilde{Y}_{nt}^{nw}$ stands for the *equivalent income* when not working. Notice that this last income is *not* the income the individual gets while not working, but which he *should* have to get to compensate for the loss in General Satisfaction.

The equivalent income can be rewritten as $\widetilde{Y}^{nw} = Y^{w}(1+\boldsymbol{k})$, where $\boldsymbol{k}$ stands for the compensation percentage. Thus, we can substitute $Ln(Y^{nw}) = Ln(Y^{w}) + Ln(1+\boldsymbol{k})$ in equation (5), obtaining

$$(\boldsymbol{d}_2 + \boldsymbol{j}_2)Ln(1+\boldsymbol{k}) = \boldsymbol{l} + \boldsymbol{b}_1 X_{nt} + \boldsymbol{g}_1 \overline{X}_n + (\boldsymbol{d}_1 + \boldsymbol{j}_1)LnY_{nt}^w \qquad (6)$$

Equation (6) shows that the compensation percentage depends on personal variables X and on the level of household income when working. We find for the average worker a κ equal to 0.466. This implies that for the average worker the switch to the non-worker's situation would cause a cost of 1.466 times the income of the worker in order to remain equally happy. Thus, the equivalent family income is higher than the income of the worker when working. Concretely, the worker needs 46% more of the income she had when working. This 46% of the actual income corresponds to the non-monetary costs of loosing one's job. The average family income for a worker during the period considered is DM 4024 per month. The equivalent family income when not working is DM 5906 per month . Hence, for workers the average psychological benefit from working in monetary terms is worth about DM 1900 per month.

Similarly, one can calculate the equivalent income for a non-worker when becoming employed. The κ value is then equal to -0.034, i.e. almost negligible. This result indicates a clear asymmetry between the costs when switching from working to non-working and the costs when switching from non-working to working.

5.2 Non – monetary costs depend on individual characteristics

In Section 5.1 it becomes clear that the relative ratio of equivalent income to actual income is not equal for all the individuals. The value $\boldsymbol{k}$ depends on personal characteristics, and on present income.

In this section, the values of $\hat{e}$ for different individual characteristics are presented. Let us first consider a switch from working to non-working. The base case is as presented in Section 5.1. The specific sub –samples considered in this section are differentiated according to age, gender, education and according to whether the individuals have children. Consistently with the previous section, the average X and family income for the workers in the relevant sub-samples are taken. This implies for example for individuals between 16 and 25 years old, that not only their average age is

different but that this also holds for the other characteristics such as the average income and the average number of children. Table 2 presents the results.

In Table 2 it is seen that the differences between subgroups are striking. For example, individuals older than 66 do not suffer any non-monetary cost for being non-working. Contrarily, they are even willing to pay a small percentage of their income for the not working- status. Females appear to extract less non-monetary value from their job than males. The difference between individuals with and without children (at home) is also striking. Of course, this is a picture for the *average* male and female worker in Germany.

Table 2. Estimated κ value when switching from work to non- work.

Individual Characteristics	$\hat{e}$ value
X Mean workers	0.466
Age 16 - 25	0.238
Age 26 - 45	0.569
Age 46 - 65	0.437
Age 66 or older	-0.010
Male	0.752
Female	0.134
12 or less years of education	0.486
More than 12 years of education	0.385
Individuals with no children	0.318
Individuals with children	0.668

Next, let us consider the inverse situation where individuals who are non- working are placed in the situation with work. The results are presented in Table 3.

Table 3. Estimated κ value when switching from non- work to work.

Individual Characteristics	ê value
X Mean workers	-0.034
Age 16 – 25	-0.094
Age 26 – 45	-0.252
Age 46 – 65	-0.083
Age 66 or older	0.366
Male	-0.272
Female	0.121
12 or less years of education	-0.047
More than 12 years of education	0.061
Individuals with no children	0.065
Individuals with children	-0.220

Here the *k* -value is mostly negative, which means that individuals attach a positive shadow price to the working status. Again, for individuals in the retirement age this is different. Non-working males are eager to participate in the labour marker while women on average are not. A similar difference holds for the individuals with and without children. Individuals with children at home but with no job are eager to participate in the labour force.

Tables 2 and 3 show a consistent although asymmetric picture. From the results, it can be concluded that benefits in terms of well-being associated with the working status vary a lot among the various subgroups.

6. How many individuals would be happier by changing their situation?

In this section, the respondents are studied individually. Therefore, the actual individual values of *X* and family income are taken, instead of the averages over subgroups. For each respondent, the GS as estimated for his actual situation is compared with the expected GS he would experience by a change in his labour market situation. If the estimated actual GS is lower than the expected GS, one can say that the individual would be happier by changing working status, and *vice versa*. The estimated GS is calculated by applying the results as found in Table 1. The expected GS for switching labour status

requires more attention. First, there is no information available with respect to the number of working hours and the working income a non-worker would receive if working. To solve this, the variables working hours and working income are set to zero and the dummy variables for missing working hours and working income are set to one. Second, the income that the non-worker would receive if working, and *vice versa*, is unknown. For that, a *predicted or expected income* is used. This is calculated as follows: First, a household income equation is estimated. In Appendix A, the equation and the results are presented. Using that income equation, it is possible to predict for each individual the income they would receive, if they would be in the alternative labour situation.

Four cases may be distinguished, summarised in the table below, where GS(1) – GS(0) stands for the difference between the GS when working *minus* the GS when non-working.

Table 4 Possible cases

	Working	Non- working
GS(1) – GS(0) >0	Better off working	Better off working
GS(1) – GS(0) <0	Better off non-working	Better off non– working

The individuals in the diagonal cells are content with their actual situation, while the ones in the non-diagonal cells are better off after switching. Calculating this difference for all the individual respondents, the following percentages of individuals are found .

Table 5. Happier changing?

	Working	Non- working
GS(1) – GS(0) >0	93.094%	61.678%
GS(1) – GS(0) <0	6.906%	38.322%

In Table 5 it is shown that nearly all the working individuals are better–off in their present situation. For the non- working, the situation is completely different as about 60% would feel better off when working. When repeating the same exercise excluding people who are retired, i.e. non-workers older than 65 years old, it is found that 69.28 % of the non-workers would be better-off by working.

7. Conclusions

In this paper the difference in life satisfaction between those who participate in the labour force and those who do not is considered. Evidently, both populations are very heterogeneous and therefore do not necessarily enjoy or suffer the same well-being impact when switching their labour market status. In the paper this is corrected for by taking into account a number of personal variables such gender, age, education and household composition. The results indicate that a large majority of the workers would be considerably worse-off if they were to leave the labour force, even if they had their old family income. Concretely, the average worker with an average income of about DM 4000 would have to get a household income of DM 5900 to feel equally satisfied with life if loosing the job. Thus, next to the income reduction, loosing the job has also non-monetary costs, the countervalue of which in monetary terms equals about 1900DM per month. For non-working individuals, the results are not symmetric. German males tend to value their working status more than working females.

Methodologically, this paper gives evidence that it is possible to distinguish and to identify the shadow value of participation and non –participation in the labour force. It is found that the non-monetary costs are substantial for most individuals below the retirement age. Similar qualitative results have also been found by, e.g., Clark, Clark and Oswald or Winkelmann and Winkelmann. In this paper we succeeded in refining those outcomes by assigning quantitative money values to those non- monetary subjective costs, which vary between individuals.

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Appendix A. Estimating a Household Income Equation to calculate Expected Income.

In this Appendix, the regression results for the household income equation are presented. This section estimates an earning equation model for workers and non-workers together, allowing for different parameters for each sub-sample. The empirical analysis is based on the same individuals as the GS equation. The equation to be estimated is

$$LnY_{nt} = a + l\ E_{nt} + b_1 X_{nt} E_{nt} + b_2 X_{nt} + g_1 \overline{X}_n E_{nt} + g_2 \overline{X}_n + e_{nt} + u_n \qquad \text{(A1)}$$

where x stands for a vector of explanatory variables, v_n is the individual random effect, and e_{nt} is the usual error term. In Table A1 the results are presented.

Table A1. Household Income Equation

Ln(family Income)	Coefficient	Z
Ln(Age)*Worker	1.981	9.112
Ln2(Age)*Worker	-0.265	-8.692
Ln(Years Education)*Worker	0.130	5.610
Ln(Numb.Childr+1)*Worker	-0.093	-11.919
Ln(Numb Adults)*Worker	-0.079	-10.273
Male*Worker	0.037	4.239
Ln(Age)	-1.205	-7.976
Ln2(Age)	0.177	8.509
Ln(Years Education)	0.358	16.525
Ln(Numb.Childr+1)	0.252	38.770
Ln(Numb Adults)	0.542	83.778
Male	-0.023	-2.668
Constant	8.726	-9.935
Worker	-3.716	33.557
S (individual effect)	0.321	
S (error term)	0.272	
R^2		
within	0.188	
between	0.356	
overall	0.330	
Number of Observations	52095	
Number of Individuals	11637	