Forthcoming in: *Schmollers Jahrbuch*

Reported Subjective Well-Being: A Challenge for Economic Theory and Economic Policy*

Alois Stutzer and Bruno S. Frey[1]

University of Zurich

(version dated July 24, 2003)

Abstract: Over the past few years, there has been a steadily increasing interest on the part of economists in happiness research. This paper argues that reported subjective well-being is a satisfactory empirical approximation to individual utility and endeavors to provide an impression of this new, and challenging, development. We study data from the German Socio-Economic Panel to better understand (i) the role of aspirations in the relationship between income and happiness and (ii) the effect of unemployment on people's satisfaction with life. We discuss some of the consequences for economic policy and for economic theory.

JEL classification: D60, I31, J60

Keywords: aspiration level, relative income, subjective well-being, unemployment, utility

* This was the Keynote Lecture delivered at the SOEP Anniversary Conference in Berlin, July 7, 2003.

[1] University of Zurich, Institute for Empirical Research in Economics, Bluemlisalpstr. 10, CH-8006 Zurich, Switzerland. Phone +41 1 634 37 29, Fax +41 1 634 49 07, e-mail astutzer@iew.unizh.ch, bsfrey@iew.unizh.ch. We are grateful to Simon Lüchinger and various participants at the SOEP Anniversary Conference for helpful comments. Data for the German Socio-Economic Panel has been kindly provided by the German Institute for Economic Research (DIW) in Berlin.

1 Happiness and Economics

The pursuit of happiness is an important determinant of human behavior: "How to gain, how to keep, how to recover happiness is in fact for most men at all times the secret motive for all they do" (James 1902, p. 76). It follows that economics is – or should be – about individual happiness. In particular, the question is how do economic growth, unemployment and inflation, as well as institutional factors, such as good governance, affect individual well-being? Economic activity is certainly not an end in itself, but only has value in so far as it contributes to human happiness.

However, economists have so far been reluctant to carry out any direct study on individual happiness. It is argued that no cardinal measurement of utility is needed to analyze how individuals react to changes in relative prices. Welfare judgements can be made by resorting to the Pareto criterion and therefore no comparison of welfare levels among individuals is required. But today, we are witnessing a dramatic *challenge* to traditional economic thinking. Due to extensive work by numerous psychologists spanning many decades (recent surveys are Diener et al. 1999, Kahneman et al. 1999), the measurement of utility has made great progress. It is now possible to approximate individual utility in a satisfactory way, using representative surveys. With the help of a single question, or several questions on global self-reports, it is possible to get indications of individuals' evaluation of their life satisfaction or happiness. Behind the score indicated by a person lies a cognitive assessment to what extent their overall quality of life is judged in a favorable way (Veenhoven 1993). The measures of *reported subjective well-being* can thus serve as a proxy for individual utility.

This progress in measurements allows for the analysis of 'old hypotheses' in a new way. The result is a substantial amount of new and insightful empirical findings. Present research provides some preliminary insights on the question mentioned above and deals, for example, with the relationship between happiness and income, unemployment, inflation, inequality and democratic institutions (for overviews, see Easterlin 2002, Frey and Stutzer 2002a,b, Oswald 1997).

Happiness research challenges economics in yet another way, as it provides a new possibility for discriminating between models that predict the same patterns in behavior, but predict differences in experienced utility. This complementary evidence thus helps to reject particular models and their policy recommendations. Models may come from areas as different as the micro-foundation of macroeconomics (e.g. on voluntary versus involuntary unemployment)

and addiction (rational addiction versus limited self-control) (for a discussion see Frey and Stutzer 2003).

This paper endeavors to provide an impression of this new, and challenging, development in economics. In the next section, the measurement and empirical analysis of happiness is discussed. In particular, references are made to the German Socio-Economic Panel, which provides an excellent data source for studying a variety of questions in research on subjective well-being. In sections 3 and 4, the data are applied to studying two important topics. First, there is a paradoxical observation made many years ago by Easterlin (1974). Since World War II, real income in several countries has risen sharply, but the self-reported subjective well-being of the population has not increased. In Western Germany, for example, from the 1970s to the 90s, per capita real income almost doubled but, over the same period, life satisfaction showed no clear trend. For a better understanding of this phenomenon, we analyze the role of income aspirations in individual happiness and present evidence for the effect of income aspirations on people's satisfaction with life in longitudinal data for Germany. The second topic is unemployment. Since time immemorial, work has been considered a burden on individuals, but empirical research on happiness clearly suggests that being unemployed, even when receiving the same income as when employed, depresses people's well-being noticeably. We discuss this empirical finding that has been firmly established, based on data for Germany. Section 5 asks about the consequences of research on subjective well-being for economic policy and offers some concluding remarks.

2 Measuring and Empirically Analyzing Happiness

2.1 Recognizing the limits of objective utility in traditional economics

Economists have for a long time left the study of happiness to other disciplines, especially psychology. True, when the science of economics was founded by the classics, it was taken for granted that happiness could be measured and used to determine whether a particular economic policy raises or lowers the happiness of the persons affected. Thus, Jeremy Bentham assumed that utility reflects pleasures and pains, and Isidor Edgeworth was confident that happiness could be measured by a "hedonometer" (though he was not able to come up with a practical procedure). The situation changed dramatically with the advent of what was then called the "New" Welfare Economics. Subjectivist experience (e.g. captured by surveys) was rejected as being "unscientific", because it is not objectively observable.

Most importantly, cardinality of utility and interpersonal comparability was demonstrated not to be necessary for positive demand theory which, following Occam's razor, constitutes a great advantage (Robbins 1932; Hicks 1934). The axiomatic revealed preference approach holds that the choices made provide *all* the information required to infer the utility of outcomes. Moreover, the axiomatic approach is not only applied to derive individual utility, but also to measure social welfare. In order to do so, social welfare comparison is based on the consumption behavior of households (e.g. Slesnick 1998; for a critical analysis Ng 1997, 2001).

The positivistic view still dominates in economics. However, numerous scholars have challenged standard economic theory from different angles. There are countless examples of non-objectivist theoretical analyses in economics. They incorporate emotions, self-signaling (self-esteem), goal completion, mastery, meaning and status. In order to explain human behavior, interdependent utility functions are considered rather than interpersonally independent ones. In the vast literature on anomalies in decision-making, it is questioned whether utility can generally be derived from observed choices. The same reservation holds for inter-temporal choice when individuals suffer problems of self-control. Finally, the outcome orientation in economics is supplemented with individuals' concerns about the conditions and processes which lead to outcomes. People thus gain procedural utility over and above traditional outcome utility.[2] The exclusive reliance on an objectivist approach by standard economic theory is thus open to doubt, both theoretically and empirically. In any case, it restricts the possibility of understanding and influencing human well-being.

2.2 A subjective measure of utility

The subjective approach to utility offers a fruitful *complementary* path to study the world. A subjective view of utility recognizes that everybody has his or her own ideas about happiness and the good life and that observed behavior is an incomplete indicator for individual well-being. Accepting this view, individuals' happiness can nevertheless be captured and analyzed: people can be *asked* how satisfied they are with their life. It is a sensible tradition in economics to rely on the judgement of the persons directly involved. Therefore, people are reckoned to be the best judges of the overall quality of their life, and it is a straightforward strategy to ask them about their well-being. With the help of a single question, or several

[2] Many aspects of the criticism of traditional economics are developed in what is called "behavioral economics" or "economics and psychology" (see e.g. Camerer et al. 2003, Frey and Stutzer 2001, Rabin 1998). An introduction to the concept of procedural utility is provided by Frey, Benz and Stutzer (2003).

questions on global self-reports, it is possible to get indications of individuals' evaluation of their life satisfaction or happiness. People evaluate their level of subjective well-being with regard to circumstances and comparisons to other persons, past experience and expectations of the future. Measures of subjective well-being[3] can thus serve as proxies for "utility".

Individuals' happiness or life satisfaction can be captured in large surveys. A prominent example of a single-item question on an eleven-point scale is in the *German Socio-Economic Panel* (GSOEP).[4] It asks the question: "How satisfied are you with your life, all things considered?" Responses range on a scale from 0 "completely dissatisfied" to 10 "completely satisfied". Figure 1 shows the distribution of reported life satisfaction of 12,665 people surveyed in Germany in 2000. Individual responses are weighted in order to get a representative distribution. Contrary to some gloomy voices, a large proportion report high satisfaction with life. 4.78 percent even report to be completely satisfied with life (score=10) and about 44 percent report life satisfaction in the top three categories. However, there are about 5 percent at the bottom of the scale falling into the categories 0 to 3. On average, people's life satisfaction is at a level of 6.90 on the scale from 0 to 10.

[Figure 1 about here]

Another prominent survey is that of the *Eurobarometer*. Covering all members of the European Union, it asks a similar question to the GSOEP: "On the whole, are you very satisfied, fairly satisfied, not very satisfied, or not at all satisfied with the life you lead?" Among the multiple-item approaches, the most prominent is the *Satisfaction With Life Scale* (Pavot and Diener 1993), composed of five questions, rated on a scale from one to seven.[5]

As subjective survey data are based on individuals' judgements, they are prone to a multitude of systematic and non-systematic biases. It therefore needs to be checked whether people are indeed capable of and willing to give meaningful answers to questions about their well-being. Moreover, reported subjective well-being may depend on the order of questions, the wording

[3] Subjective well-being is an attitude consisting of the two basic aspects of cognition and affect. "Affect" is the label attached to moods and emotions. Affect reflects people's instant evaluation of the events that occur in their lives. The cognitive component refers to the rational or intellectual aspects of subjective well-being. It is usually assessed with measures of satisfaction. It has been shown that pleasant affect, unpleasant affect and life satisfaction are separable constructs (Lucas, Diener and Suh 1996).

[4] For a detailed description of the GSOEP, see Burkhauser et al. (2001) and Haisken-DeNew and Frick (2001).

[5] A survey about various measures of subjective well-being is provided by Andrews and Robinson (1991).

of questions, scales applied, actual mood and the selection of information processed. The relevance of these errors, however, depends on the intended usage of the data. Often, the main use of happiness measures is not to compare levels in an absolute sense, but rather to seek to identify the determinants of happiness. For that purpose, it is neither necessary to assume that reported subjective well-being is cardinally measurable, nor that it is interpersonally comparable. The subjective data can be treated ordinally in econometric analyses, so that higher reported subjective well-being reflects the higher well-being of an individual. Whether happiness measures meet this condition has been widely assessed in psychological evaluation studies.[6] It has, for example, been shown that different measures of happiness correlate well with one another. Reliability studies have found that reported subjective well-being is fairly stable and sensitive to changing life circumstances. Consistency tests reveal that happy people are more often smiling during social interactions, are less likely to commit suicide and that changes in the electrical activity of the brain and heart rate account for substantial variance in reported negative affect (see Frey and Stutzer 2002b for references). Thus, Diener (1984) concluded in an early survey that "[the] measures seem to contain substantial amounts of valid variance" (p. 551).

In addition to this precondition for studying the determinants of happiness, further conditions have to be met if welfare comparisons are undertaken on the basis of reported subjective well-being. These conditions are cardinality and interpersonal comparability of the individual statements of well-being. Economists are likely to be skeptical about both claims.[7] Evidence has, however, been accumulated that both of them may be less of a problem on a practical level than on a theoretical level (e.g. Kahneman 1999). Happy people are, for example, rated as happy by friends and family members (e.g. Sandvik et al. 1993), as well as by spouses. Ordinal and cardinal treatments of satisfaction scores generate quantitatively very similar results in microeconometric happiness functions (Frey and Stutzer 2000a). This is consistent with validation results of the income evaluation approach, which focuses on the translation of verbal evaluations into numerical figures in a context-free setting (van Praag 1991). It is shown that the meaning of a sequence of verbal labels is about the same for all the people in the sample, and that the verbal scale is efficiently used, as the underlying intervals are of about equal length. The existing state of research suggests that, for many purposes, happiness

[6] Comprehensive discussions of measurement problems are, for example, provided in Andrews and Robinson (1991), Michalos (1991), Larsen and Fredrickson (1999), Schwarz and Strack (1999) and Veenhoven (1993).

or reported subjective well-being is a satisfactory empirical approximation to individual utility.

2.3 Analyzing data of subjective well-being

Provided that reported subjective well-being is a valid and empirically adequate measure for human well-being, it can be modeled in a microeconometric happiness function $W_{it} = \alpha + \beta X_{it} + \varepsilon_t$. Thereby, true well-being serves as the latent variable. $X = x_1, x_2, ..., x_n$ are known variables, like sociodemographic and socioeconomic characteristics, or environmental, social, institutional and economic conditions for individual i at time t. The model allows for the analysis of each factor that is correlated with reported subjective well-being separately. This approach has been successfully applied in numerous studies on the correlates of happiness. Technically, multiple regression analyses are conducted. As the dependent variable is measured on a ranking scale, normally ordered logit or probit estimation techniques are applied.

Recently, panel data have increasingly been used in research on subjective well-being. In panel data, the same individuals are re-surveyed over time. The GSOEP is one of the most valuable data sets for studying individual well-being in a longitudinal framework. It was started in 1984 as a survey of private households and persons in the Federal Republic of Germany and was extended to residents in the former German Democratic Republic in 1990. Today, happiness researchers all around the world use the GSOEP and provide widely acknowledged scientific studies. At the risk of neglecting many valuable contributions, we want to mention the recent work of Gerlach and Stephan (1996), Winkelmann and Winkelmann (1998) and Clark et al. (2001) on unemployment, Schwarze and Härpfer (2002) on income inequality, Frijters et al. (in press) on German reunification, Lucas et al. (2003) and Stutzer and Frey (2003a) on marriage, Saris (2001) and Schyns (2000) on income, Stutzer and Frey (2003b) on commuting and Hamermesh (2001) and Frey and Benz (2002) analyzing job satisfaction, and van Praag et al. (2003) a wider set of domain satisfaction measures. Panel data, as in the GSOEP, allow for the control of unobserved individual characteristics that do not change over time, but are systematically correlated with reported subjective well-being, as well as with factors included in a happiness function. For example, neurotic people report, on average, lower satisfaction scores, but might also be more likely to become unemployed.

[7] But it should be noted that this skepticism coexists with well established propositions in the literature on income inequality and poverty, taxation and risk that accept implicit cardinal utility measurement and interpersonal comparability.

Without a control for this particular trait, a spurious negative correlation between unemployment and subjective well-being could emerge (see also the discussion in section 4). Practically, fixed-effect models are estimated. These models are usually applied with least square estimators, but with data from the GSOEP they were also developed for logit (Winkelmann and Winkelmann 1998) and ordered logit models (Ferrer-i-Carbonel and Frijters 2001). The systematic use of panel data is an important step towards more rigorous causal inference in research on subjective well-being.[8]

3 Aspirations and the Relationship Between Income and Happiness

3.1 Two correlations between income and happiness

How are income and consumption related to individual well-being? Economics takes it as self-evident that higher income and consumption provide higher utility. Moreover, it is assumed that people's satisfaction depends on what they have in absolute terms.[9]

Research on individual happiness allows the question to be addressed in at least two ways. First, at a given point in time, it can be studied whether people living in a household with a higher income report, on average, higher life satisfaction. Second, over time, trends in per capita income and reported subjective well-being can be compared: did the higher standards of living improve people's well-being? Both relationships are analyzed for Germany.

Figure 2 shows the correlation between real equivalence household income per year in the year 2000 and satisfaction with life. In order to get income figures that are comparable across households of different household size, income is divided by the square root of the number of household members. Average satisfaction scores are shown for income deciles. There is a clear positive correlation. Between people in the lowest income decile (with an average equivalent household income of 6,400 Euros per year) and those in the highest income decile

[8] Of course, a panel structure as such does not solve the question of causality, but can exclude some sources for spurious correlation. In order to identify causal links, additional information from qualitative studies, or in the form of instrumental variables, is necessary. The latter approach is nicely applied for the effect of mandatory schooling on life satisfaction in the United Kingdom (Oreopoulos 2003).

[9] There are, of course, scientists who oppose this notion. Frank (1985, 1999), Galbraith (1958), Hirsch (1976), Scitovsky (1976), and more recently Schor (1998), who have all studied consumer culture – in particular in the United States – and emphasize the important role of socially formed aspirations and expectations for consumer satisfaction.

(with an average equivalent household income of 41,900 Euros per year) there is a difference in reported life satisfaction of 1.06 score points. Thus, higher income is, on average, related to higher subjective well-being in a given year. Of course, this simple correlation does not establish causality, and correlated influences, e.g. of education, are not partialled out. Refined analyses, however, confirm the basic finding that people with a higher income than others in their society *do* report higher levels of happiness (see e.g. Di Tella et al. 2001 and for reviews e.g. Ahuvia and Friedman 1998, Diener and Oishi 2000).

[Figure 2 about here]

However, additional income does not raise happiness ad infinitum and not for sure. As may be seen in figure 2, the relationship between income and happiness seems to be non-linear; there is diminishing marginal utility with absolute income. Moreover, differences in income only explain a low proportion of the differences in happiness among persons. In the data set for Germany, for example, the simple correlation is 0.11 based on 12,979 observations. Sometimes these findings are misleadingly interpreted that income is not relevant for individual happiness. However, the relevance of income is assessed with regard to the size of the coefficient in a multivariate analysis (see section 3.3 for an estimate for Germany).

Does the same relationship hold between per capita income and subjective well-being over time? Figure 3 provides a first graphical test for the Old German Laender. Since 1973, Germans' life satisfaction is surveyed in the Eurobarometer. They report their well-being on a four point scale between 'not at all satisfied' (=1) and 'very satisfied (=4). Up to the mid 90s, average life satisfaction lay around a score of 3, with no clear trend. In contrast, between 1970 and 2000, real GDP per capita almost doubled.[10] This is a curious relationship, and at odds with the common wisdom in economics that higher wealth in nations brings about higher well-being.[11]

[Figure 3 about here]

[10] Data for GDP per capita is only for the Old Laender until 1992 (source: World Bank) and for the whole of Germany from 1992 until 2000 (source: OECD).

[11] The same relationship is identified for other industrialized countries like the United States, Japan or the United Kingdom (e.g. Blanchflower and Oswald in press, Easterlin 1974, 1995).

What can be inferred from this finding? One position that can be taken is to disregard the descriptive evidence because (i) one could question whether it is in principle possible to capture trends on a closed scale,[12] (ii) it depends on the observation period whether a small increase or decrease in reported subjective well-being is measured and (iii) the relationship presented between income and happiness over time is not analyzed ceteris paribus. However, multiple regression analyses for 11 European countries and the United States also do not provide clear evidence of a robust positive relationship between income and life satisfaction (see Alesina et al. 2001 and Di Tella et al. 2002). The same holds for a sample of 49 countries, including poor countries, as captured in the World Values Survey (Helliwell 2003). This neither means that the level of countries' subjective well-being is predetermined, nor that there is no correlation between per capita income and happiness across countries. People in richer countries report on average higher subjective well-being but statistically the effect of income falls out of the model if factors like health, social connections, and the quality of government are controlled for (Helliwell 2003). Research is far from identifying causality in this crucial question.

Apart from these results from country panels that provide few evidence for a direct effect of higher per capita income on subjective well-being there are exceptions. For example, higher income, together with other factors, has contributed to an increase in life satisfaction in the New Laender (Frijters et al. in press). This is reflected in figure 4. It seems that after some initial expectations had to be given up, improvements in the material standard of living, public services, as well as economic, political and personal freedom have brought considerable gains in life satisfaction.[13]

[Figure 4 about here]

If one accepts that there is no clear cut trend, positive or negative, in self-reported subjective well-being over periods of 20 to 30 years in many rich countries, and that there is a small effect, ceteris paribus, of additional income on subjective well-being over time, if any,

[12] Valuable complementary evidence could be provided by measures of mental well-being, where much less framing in terms of categories is to be expected.

[13] According to a decomposition analysis, the increase in individual income contributed 12 (18) percent to the increase in males (females) subjective well-being (Frijters et al. in press, pp. 36/37).

another position can be taken. The results can be taken as an indication that there is more to subjective well-being than just income level. One of the most important processes people go through is that of adjusting to past experiences. Human beings are unable and unwilling to make absolute judgements. Rather, they are constantly drawing comparisons from the past or from their expectations of the future. Thus, we notice and react to deviations from *aspiration levels*.

Both observations for the relationship between income and subjective well-being outlined above can be explained by introducing income aspirations in people's utility function, which capture their concerns for relative income, as well as their adaptation to previous income level (Easterlin 2001a). Even though income aspirations seem to play an important role in individual welfare, they have rarely been empirically analyzed in a direct way so far.[14]

We argue that income aspirations ought to be introduced in people's utility function in order to better understand their well-being. An individual's income aspiration can capture his or her concerns for relative income, as well as his or her adaptation to a previous income level. It is hypothesized that higher income aspirations reduce the utility people gain from a given income or consumption level. In a new and direct way, the effect of income aspirations on people's utility is empirically tested. We study GSOEP data that includes individual information on reported satisfaction with life as a proxy measure for utility, as well as an income evaluation measure as a proxy for people's aspiration levels.

3.2 Determinants of income aspirations

There are two main processes forming individuals' aspirations, and producing the relativity in people's utility evaluation.

First, people make *social comparisons*, which drive their positional concerns for income. It is not the absolute level of income that matters most, but rather one's position relative to other individuals. This idea of *relative income* is one part of the more general aspiration level theory. Many economists in the past have noted that individuals compare themselves to significant others with respect to income, consumption, status or utility. Marx (1849)

[14] Easterlin (2001b) takes the number of consumer goods like a car, a holiday home or travel abroad that a respondent cites as part of the good life, as a measure of people's material aspirations. However, as noted by the author, two respondents may have quite different conceptions of the price of these goods. Thus a direct way of capturing people's aspiration levels in monetary terms seems reasonable. McBride (2001) proposes reported parents' standard of living as a proxy variable for people's 'internal' income norm. Stutzer (2003) applies the same approach as used in this section based on cross-sectional data for Switzerland.

expressed his view about the social aspect of utility most explicitly: "Our wants and pleasures have their origin in society; we therefore measure them in relation to society; we do not measure them in relation to the objects which serve for their gratification. Since they are of a social nature, they are of a relative nature." Veblen (1899) coined the notion of 'conspicuous consumption', serving to impress other persons. The 'relative income hypothesis' has been formulated and econometrically tested by Duesenberry (1949), who posits an asymmetric structure of externalities. People look upward when making comparisons. Aspirations thus tend to be above the level already reached. Wealthier people impose a negative external effect on poorer people, but not *vice versa*. As a result, savings rates depend on the percentile position in the income distribution, and not solely on the income level, as in a traditional savings function.

Second, people adapt to their new income or consumption level. Additional material goods and services initially provide extra pleasure, but it is usually only transitory. Higher utility from material goods wears off. Satisfaction depends on change and disappears with continued consumption. This process, or mechanism, that reduces the hedonic effects of a constant or repeated stimulus, is called *adaptation*.

Processes of hedonic adaptation supplement the socially comparative, or even competitive, processes in consumption. Together, they make people strive for ever higher aspirations.[15] It is but a short step from aspirations to individual welfare. According to aspiration level theory, individual well-being is determined by the gap between aspiration and achievement (Andrews and Withey 1976, Campbell et al. 1976 and Michalos 1985).

3.3 An empirical test of the effect of income aspirations on individual well-being

A new approach is applied to study the role of income aspirations in individual well-being. We combine data on reported subjective well-being with a theoretically and empirically well-grounded concept for people's aspirations: the individual welfare functions (e.g. van Praag 1971; for a recent survey, see van Praag and Frijters 1999). In research on individual welfare functions, a cardinal relationship between income and expected welfare is established by asking individuals to add income ranges to a number of qualitatively characterized income

[15] The concept of aspiration levels is well grounded in psychology and sociology (e.g. Irwin 1944, Lewin et al. 1944 and Stouffer et al. 1949), as is adaptation level theory in psychology (in particular Helson 1964, Brickman and Campbell 1971, Parducci 1995; and, for a modern discussion, Frederick and Loewenstein 1999).

levels.[16] Answering this 'income evaluation question', they should take into account their own situation with respect to family and job. People's answers provide information about income that is sufficient to meet their aspiration levels, i.e. the income that is required to reach mean expected welfare.

Based on proxy variables for people's income aspirations and their utility level, we can test the following proposition: Individuals' judgements of well-being are affected by their aspiration level Y^*, over and above the effect of income Y and other individual characteristics X. That means that income aspirations Y^* are a characteristic of individual i's 'utility function'.[17] According to aspiration level theory, higher income aspirations lead to a lower subjective well-being, ceteris paribus.

$$U_{i,t} = f(Y_{i,t}, Y^*_{i,t}, X_{i,t}) \quad and \quad \partial U_i / \partial Y^*_i < 0 \qquad (1)$$

For the empirical test, we use the two waves of 1992 and 1997 of the GSOEP that contain information about individuals' aspiration levels. Observations for the two waves are from all the samples available in the scientific use file (samples A to E). People in the survey are asked a wide range of questions with regard to their socio-economic status and their demographic characteristics. Moreover, they report their subjective well-being (see section 2.2) and their income aspirations. Income aspirations are captured by the question "Whether you feel an income is good or not so good depends on your personal life circumstances and expectations. In your case – the net household income _____ DM is just sufficient income."[18] For the proxy of people's aspiration levels, on average, an amount of DM 3,800 per month (at prices and purchasing power parities for 1999, approx. Euro 1,950) is reported. Average household income in the sample is DM 4,800 per month (at prices and purchasing power parities for 1999, approx. Euro 2,450).

The empirical analysis starts with a standard microeconometric happiness function. In order to make the interpretation of the results easier, least squares estimations are presented.[19]

---

[16] For example, "Please try to indicate what you consider to be an appropriate amount for each of the following cases. Under my/our conditions, I would call a net household income per [month] of: about _____ very bad [...] about _____ very good. Please enter an answer on each line [...]" (van Praag 1993).

[17] For convenience, an extended utility function is used rather than a state-dependent utility function $U_i=U_{i,Y^*}(Y_i,X_i)$ with the aspiration level Y^* defining the state.

[18] The proxy measure is focused on one category of the income evaluation question. In addition, people were asked what income they consider to be 'very low', 'low', 'still insufficient', 'good' and 'very good'.

[19] Theoretically, ordered probit or logit estimations would be more appropriate to exploit the ranking information contained in the originally scaled dependent variable 'satisfaction with life'. The respective results show that the

Individuals' reported satisfaction is regressed on income, a number of socio-demographic and socio-economic characteristics, as well as on the size of the household. Household income is positively correlated with reported satisfaction with life, ceteris paribus. The coefficient implies that doubling household income increases life satisfaction by 0.31 points on the ten-point scale.[20] The results for household size incorporate the fact that household income has to be shared among household members. However, household size also captures the fact that people live with others in what are probably close and supportive relationships. The results in panel A of table 1 indicate that the two effects of household size on satisfaction with life have a negative net effect. Women are slightly more satisfied with life than men. People with a partner report, on average, higher satisfaction scores than those without. The partial correlation between age and life satisfaction is u-shaped, with a minimum around age 52. People with more years of education report higher satisfaction scores than those with less years of education. People living in the New German Laender, as well as non-EU foreigners report, on average, lower satisfaction scores than people in the Old Laender and nationals. Lower satisfaction scores are also reported by self-employed people, people doing some work or no work, unemployed people and retired people compared to employees. Finally, correlations with partner's employment status are assessed. While people with a self-employed partner, an unemployed partner and a partner doing some work are less happy, people with a partner doing no paid work, a partner on maternity leave or a retired partner are happier than people who's partner is an employee.

[Table 1 about here]

In panels B and C, the happiness function is extended to include the proxy measure for individuals' aspiration levels. Separate equations for the New and Old Laender are estimated (descriptive statistics are provided in table A.1 in the appendix). It is thus tested whether, according to our proposition, individuals' judgement of well-being is relative to their income aspirations. The results in both panels show that a negative effect on subjective well-being is estimated for the measure of individuals' income aspirations. This means that people

---

estimation coefficients in the least squares estimations and the average marginal effects in ordered probit estimations are very similar. The respective estimates can be obtained from the author.

[20] The coefficient in table 1 refers roughly to a tripling of household income, because the logarithmic specification means that an increase of the transformed income variable by one is equivalent to an increase of household income by a factor e, i.e. approximately 2.718.

experience lower well-being when they have higher income aspirations, given their income level. However, the size of the effect is substantially different in the New and Old Laender. A doubling of the aspiration level - measured by the income that is evaluated as 'just sufficient' - reduces reported life satisfaction, on average, by 0.10 points in the Old Laender, and 0.32 points in the New Laender. This result supports the basic underlying hypothesis that people's subjective well-being is negatively affected by their income aspiration level, controlling for the effect of income and other individual characteristics.

For the demographic control variables, coefficients similar in size to panel A are estimated for the Old Laender. However, in the New Laender, some covariates show systematically different partial correlations. While they might be interesting in themselves they are not further discussed here. Compared to panel A, the effects of household income on life satisfaction are larger: 0.546 and 0.584 respectively in panels B and C. This indicates that, for a given aspiration level, higher income has a larger effect on well-being. The change in the size of the coefficient for household income provides indirect evidence that people adjust their aspiration levels according to their income level (see also the discussion in the next subsection).

There are two possible interpretations of the results in estimations B and C. On the one hand, individuals' income aspirations might reflect personality traits that also affect reported subjective well-being. There is substantial evidence that more materialistic and extrinsically oriented people report higher aspirations and lower subjective well-being (Kasser and Ryan 2001, Solberg et al. in press). On the other hand, there might be influences independent of individual traits that are forming income aspirations, like changes in reference groups or relative changes in the standard of living of given reference groups. The two possible cases can be studied if idiosyncratic effects that are time-invariant are controlled for. This is possible because the same individuals are re-surveyed over time in the GSOEP and the specific baseline well-being for each individual can be taken into consideration. The statistical relationship between income aspirations and reported subjective well-being is then identified by the change in aspirations between 1992 and 1997 for the same person.[21]

Estimations A and B in table 2 report the results for two separate estimations with individual fixed effects for the Old and New German Laender. A more refined picture emerges. While

[21] While this approach is powerful to reject the hypothesis that mainly personality traits drive the results, less can be said if there is no correlation between income aspiration and subjective well-being when individual fixed effects are included. In particular, it is no test of whether processes of adaptation and social comparison play no role in the formation of income aspiration.

the partial correlation in the New Laender again shows a sizeable negative effect of income aspirations on life satisfaction, there is no independent effect of changes in income aspirations for observations from the same person in the Old Laender. This indicates that, in the Old Laender mainly effects of individual traits are captured. In contrast, in the New Laender, substantial changes seem to have occurred in people's environment that affected aspirations beyond individuals' predisposition. A doubling of the aspiration level reduces reported life satisfaction, on average by 0.34 points. Thus, for the New Laender, the results of the pooled estimation are confirmed.

[Table 2 about here]

3.4 Evidence for the role of adaptation in individual aspirations

The evidence presented indicates that people's well-being can be better understood when their income aspirations are taken into consideration. With this extension, one of the basic empirical observations discussed above can be explained. If average aspirations in society increase at the same rate as income per capita, it can be better understood why people in industrialized societies like the Old German Laender did not become happier over the last decades, despite substantial growth in their economic wealth. Why do changes in aspirations not equalize subjective well-being across people at a given point in time? This is the question of the factors that determine people's income aspirations. More specifically, it is the question of whether people fully adapt *individually* to higher income and whether relative income plays a role. In this section, we present some new empirical evidence for adaptation and briefly discuss some research for the second process: social comparisons.

Research on hedonic adaptation studies processes that reduce the effects of repeated sensory and cognitive stimuli (e.g. Frederick and Loewenstein 1999). With regard to income, there is the notion that we get 'used to' a higher income level Y. After a period of enjoyment, the hedonic effects of higher consumption adapt to a base level, and cognitive changes in interests, values and goals set in. In this process, people increase their aspiration level Y^*. This process is formally expressed in equation (2) (controlling for other individual characteristics W).

$$Y^*_{i,t} = g(Y_{i,t-1}, W_{i,t}) \quad and \quad \partial Y^*_{i,t} / \partial Y_{i,t-1} > 0 \qquad (2)$$

In table 3, we take advantage of the panel structure of the data set and estimate the effect of past household income on the proxy for income aspirations. Included are five variables capturing household income going back one to five years. Similar results for the Old and the New Laender are calculated.[22] As household income, as well as the dependent variable, are measured as natural logarithms, the coefficients can be interpreted as elasticities. A ten percent higher income in year t-1 results in 1.48 (1.33) percent higher aspiration in the Old (New) Laender in year t. The partial effects for past income can be aggregated if, for the past five years, a ten percent higher household income than at the sample mean is earned. In total, income aspiration would rise by 3.31 (2.75) percent in the Old (New) Laender. These effects are estimated independent of the effect of household size on income aspiration. Household size is obviously an important determinant in itself. An increase in the size of family from one to four persons (i.e. a change in the independent variable by one) increases income aspiration by 130 percent. In order to assess the exact value for a specific household composition, the effects for different marital status have to be added. Past household size enters negatively. It indicates that, in the past, a given household income had to be shared by more people and results in a lower income aspiration today (given household size today and income in the past). Table 3 also shows the effect of further socio-demographic and socio-economic covariates on income aspiration. We briefly mention three findings: (i) There is an inverted u-shaped relationship between age and income aspiration. This neatly mirrors the u-shaped relationship between age and subjective well-being. While middle aged people, ceteris paribus, report lowest life satisfaction, they report highest aspirations. (ii) People with higher education report substantially higher aspiration. This might explain some of the inconclusive findings in the literature that education sometimes has a negative effect on subjective well-being (Diener et al. 1993). (iii) The more important paid work is for the generation of household income, the higher are aspirations. Unemployed people, or people with an unemployed partner, for example, report a statistically significantly lower household income to be sufficient to make ends meet.

The evidence presented in table 3 is consistent with the findings for individual welfare functions by the Leyden group (see e.g. van Herwaarden et al. 1977, van Praag and van der Sar 1988). In cross-sections, it was found that aspirations increase with people's income level but that a higher income is not fully translated into higher income aspirations. Van Praag and his co-researchers find that the preference shift through higher individual income 'destroys'

[22] Results for the New Laender are restricted to observations from 1997, because there are no lagged variables available for 1992.

about 60 percent of the expected welfare effect of an increase in income. This effect is substantially larger than the one estimated here of about 33 percent for the Old Laender. This is probably due to the fact that, in the estimations of table 3, only the aspect of adaptation to past income is taken into consideration while other processes of aspiration formation are excluded. Overall, the evidence for adaptation suggests that *individual* income increases beyond the sample mean are only partially translated into higher income aspirations. This is consistent with the strong positive net effect of household income on individuals' well-being across the income distribution.

In addition to adaptation, there are social comparisons with relevant others forming individual aspirations. It is not the absolute level of income that matters most, but rather one's position relative to other individuals. The complementary effects of socially comparative, or even competitive, processes in consumption, however, are not empirically studied in this paper. The challenge in future research will be to identify *who* the other people are that build the relevant reference group.[23] In a first empirical study for Germany, Ferrer-i-Carbonell (2002) combines individuals with a similar education level and age to an exogenous reference group. She finds a negative effect of this group's comparison income on reported satisfaction with life.[24]

Based on the same proxy measure for income aspirations as applied here, the effect of social comparisons has been studied across Swiss communities (Stutzer 2003). It is found that individuals' aspirations are systematically affected by the average income in the community where people live. The richer one's fellow residents are, the higher is an individual's aspiration level. This effect cannot be explained by a higher cost of living alone. It is shown that the aspiration levels of community members, who interact within the community, react much more to changes in average income than those of members who do not interact.

[23] For Veblen (1899), rich families like the Vanderbilts are setting the reference standards. For Duesenberry (1949), keeping up with the neighboring Joneses drives the consumption aspirations. Even TV families in people's favorite soap operas may become the relevant others (Schor 1998). In a study of 5,000 British workers, Clark and Oswald (1996) formed the reference group, comprising persons with the same labor market characteristics. They conclude that the higher the income of the reference group, the less satisfied people are with their job.

[24] Future research has to analyze whether this correlation is causal or whether it is mainly picking up unobserved individual characteristics of people with a relatively lower income that goes with lower subjective well-being.

4 The Unhappy Unemployed

4.1 Economists' discussion of voluntary and involuntary unemployment

Is work a burden or is unemployment even worse? Most economists see unemployment as an unfortunate event to be avoided as much as possible. To become unemployed is considered to be costly and, above all, involuntary. Government should intervene in order to raise the aggregate demand for goods. To produce the additional goods, more labor would be required and unemployment would fall. This view is behind Keynesian theory, which dominated the field in the 50s and 60s, and which now experiences a comeback.

But there are also economists who hold quite a different view. According to the "new classical macroeconomics", unemployment is voluntary. People choose to leave employment because they find the burden of work and the wage paid unattractive compared to being unemployed and getting unemployment benefits and leisure. Involuntary unemployment is a disequilibrium phenomenon and is relatively short-term, until individuals and firms have adjusted. Government interventions to jack up demand result in higher future inflation and should therefore be avoided. If people choose to be unemployed, because they expect to be better off, it should not affect their happiness.

There are few politicians, social scientists or laypersons who would subscribe to this view. It is taken to be cynical, as it seems obvious that workers are dismissed, and that unemployment is an unfortunate state to be in. However, by analyzing the unemployed as having made a choice between alternatives, the economists of the new classical persuasion have drawn attention to certain aspects which are hard to dispute:

- There are certainly some workers who find it preferable not to work and to enjoy the benefits of the social security systems, which in some countries almost totally compensate for the loss of income;
- Much unemployment is transitory. The unemployed soon find work again, often in a more productive sector, paying higher wages. Dismissing workers as a reaction to demand and cost considerations also means that people will be hired again. When workers cannot be laid off for legal reasons, firms are also reluctant to hire them;
- Many persons officially unemployed are in fact working in the shadow economy, where they are not burdened by taxes and social security contributions. In recent years, this part of the economy has reached a considerable size in many countries. For Belgium, Greece,

Italy, Norway, Portugal, Spain and Sweden, it is around, and sometimes much above, 20 percent of official GDP for the period 1996-97 (Schneider and Enste 2000).

In all three cases, it is not unreasonable to assume that the unemployed do not suffer, and that some of them are even quite satisfied with their situation.

The issue of whether, and to what extent, the unemployed are dissatisfied remains unresolved. For that reason, research on subjective well-being and unemployment is of particular interest and importance.

4.2 Individual unemployment and subjective well-being

Reports on subjective well-being help to identify the level of utility of unemployed people. Here, this analysis is conducted for Germany, based on data from the GSOEP. We provide a brief review of the significant research on unemployment and happiness, based on this data (see in particular Gerlach and Stephan 1996, Winkelmann and Winkelmann 1998 and Clark et al. 2001). Instead of reporting published figures that refer to the early waves of the GSOEP, however, we conduct our own calculations. A simple first step is to compare life satisfaction scores for employed and unemployed people. There is a huge difference in reported subjective well-being. On the scale from 0 to 10, unemployed people report, on average, a satisfaction score of 5.78 points (std. dev.=2.21, n=11,285) while employed people report a satisfaction score of 7.14 points (std. dev.=1.73, n=120,212).[25] The huge difference in well-being is also reflected in figure 5, showing average reported satisfaction with life over time separately for unemployed and employed people in the Old and New German Laender.

[Figure 5 about here]

Figure 5 shows two empirical facts: (i) there is no clear evidence for a narrowing of the gap between employed and unemployed people's subjective well-being over time, and (ii) unemployed people in the New Laender were even less happy with their lot during the 90s than unemployed people in the Old Laender.

There are a number of further studies that also document that individual unemployment substantially reduces the well-being of people affected. For example, there is a

[25] Mean satisfaction scores are based on the maximum number of observations available in GSOEP between 1984 and 2000.

microeconometric analysis studying the effect of unemployment in twelve European countries over the period 1975-1991, employing Eurobarometer data on satisfaction with life on a four point scale (Di Tella, MacCulloch, and Oswald 2001). The analysis, which controls for a large number of other determinants of happiness, such as income and education, finds that the self-proclaimed happiness of unemployed persons is *much* lower than employed persons with otherwise similar characteristics. The loss of subjective well-being experienced by unemployment amounts to 0.33 units on the four point satisfaction scale.[26] Similar, Clark and Oswald (1994, p. 655), in their study for Britain, summarize their results as "joblessness depressed well-being more than any other single characteristic, including important negative ones such as divorce and separation."

It could be argued that what has been found could be interpreted quite differently. While the negative correlation between unemployment and happiness is clearly established, it may well be that the causation runs in the opposite direction implied so far: unhappy people do not perform well, and therefore get laid off. Happy persons are fitter for working life, which makes it less likely that they will lose their job. A similar argument for spurious correlation is putting forward unobserved omitted variables. It is likely that the mentally poorest employees have the highest probability of loosing their job and also that the mentally strongest unemployed people have the highest probability of getting re-employed (see Kessler 1996 for health and selection). These reservations cannot be refuted based on cross-section evidence. Therefore, we study changes in employment status and related changes in satisfaction with life. The results are presented in cross-table 4.

[Table 4 about here]

An average drop in life satisfaction of 0.67 points is associated with changes from employment to unemployment. For unemployed people who get re-employed, subjective well-being is increasing, on average, by 0.84 points. Both results are at odds with a view that the effects in cross-sections are mainly due to the lower baseline well-being of those getting unemployed, generating some spurious correlation between employment status and subjective

[26] See also Björklund and Eriksson (1998) for Scandinavian countries, Blanchflower (1996) for youth unemployment in 23 countries, Blanchflower and Oswald (in press) for the United Kingdom and the United States, Clark and Oswald (1994) for the United Kingdom, Graham and Pettinato (2002) for Latin America,

well-being. The main causation thus seems to run clearly from unemployment to unhappiness.[27]

The same approach allows a refined analysis in order to see which groups of unemployed people suffer the most from their lot. Table 5 shows that people who get unemployed in the Old Laender experience, on average, a larger drop in life satisfaction than those who make this experience in the New Laender. Men, on average, report lower satisfaction scores after getting unemployed than women (compared to their satisfaction level when they were still employed). The loss in well-being due to unemployment is decreasing with age. In contrast to figure 5, the drop in life satisfaction seems to have decreased over time in the Old Laender. Prior to 1990, the change in subjective well-being is calculated to amount to –0.98 points, while in 1990 and after the change was, on average, –0.60 points. This result might be explained by the finding of Clark et al. (2001) that unemployment leaves scars. They study the effect of past unemployment on employed and unemployed people's life satisfaction in Germany. They find that the drop in well-being due to unemployment is smaller, the larger the proportion of time people were unemployed over the past three years. Moreover, they find a negative effect of past unemployment on the well-being of currently employed people. Together, the two effects reduce the size of changes in life satisfaction when people change their labor market status. After years of high unemployment in Germany, with more and more people having experienced unemployment in their past, the drop in well-being when becoming unemployed would then become smaller over time, as observed in the data.

What is the explanation for the lower subjective well-being of unemployed compared to employed people? In a first reaction, one would expect that the drop in income is lowering unemployed people's life satisfaction. However, replacement rates in Germany are high and one has to look at differences in after tax income. In order to see whether pecuniary or non-pecuniary costs cause the loss in well-being, multiple regression equations with individual fixed effects are estimated. Table 6 shows the results for a sample containing all observations of unemployed and employed people in the GSOEP data set. Estimations are for the full sample (panel A), as well as separately for the Old and the New German Laender. In all three equations, the negative effect of unemployment on individual well-being cannot be explained

---

Korpi (1997) for Sweden, Ravallion and Lokshin (2001) for Russia and Woittiez and Theeuwes (1998) for the Netherlands.

[27] Studies in social psychology also identify effects of unemployment and re-employment on mental well-being. Studies that explicitly control for individual heterogeneity with a longitudinal design are, e.g., Dew, Bromet and Penkower (1992) and Graetz (1993). For a recent survey, see Murphy and Athanasou (1999).

by the lower income level of the household. Unemployment is thus related with severe non-pecuniary costs. In the full sample, the effect of unemployment is measured to be –0.78 after controlling for income, time-invariant individual characteristics, as well as other variables that might be related with becoming unemployed, like changes in marital status. Panels B and C corroborate the results in table 5 that, on average, the drop in subjective well-being due to unemployment is smaller in the New Laender than in the Old Laender.

The non-pecuniary costs may, to a large extent, be attributed to psychological and social factors. They are usually studied, based on surveys capturing people's fears, signs of depression, self-esteem and other psychological states. Several mechanisms are distinguished in the literature (see, e.g., Feather 1990, Fryer and Payne 1986, Winefield et al. 1993):

- The loss of one's job can produce depression and anxiety, as well as a loss of personal control. People feel helpless, as there is seemingly no relationship between their effort to find a new job and their employment prospects. Of course, this sense of loss of control is dependant on the general state of the labor market (see also next sub-section).
- Unemployment often leads to reduced self-esteem, due to the big change in life circumstances. A lot of people bear past unemployment in their mind as a dramatic experience (see e.g. Goldsmith, Veum and Darity 1996).
- A regular job offers a structured working day and working week and provides personal contacts outside of the household. In contrast, being unemployed has a stigma attached to it, particularly in a world in which one's work essentially defines one's position in life and gives status, prestige and identity. These latent functions of work that restore a high subjective well-being disappear with unemployment (see also next sub-section).

4.3 General unemployment and subjective well-being

People may suffer from unemployment, even if they are not themselves put out of work. They may feel bad about the unfortunate fate of those unemployed and they may worry about the possibility of becoming unemployed themselves in the future. They may also feel repercussions on the economy and society as a whole. This conjecture can be studied with data on subjective well-being covering many countries over several years. Aggregate unemployment can then be related to average reported happiness across countries and time. Such an approach is applied by Di Tella et al. (2001). In their study of 12 European countries over the period 1975-1991 mentioned above, they find that – keeping all other influences constant, in particular individual unemployment – a one percentage point increase in the

general rate of unemployment from 9 percent (the European mean) to 10 percent reduces stated life satisfaction by 0.028 units on the four-point scale applied. This effect is of considerable size. This small rise in unemployment is equivalent to shifting more than 2 percent of the population downwards from one life-satisfaction category to another, for example from "not very satisfied" to "not at all satisfied".[28]

So far, individual and general unemployment have been discussed separately. However, there may be various interactions between the micro and the macro level, which may in turn affect the evaluation of happiness.

An important interaction refers to reference groups. As is the case for income, individuals tend to evaluate their own situation relative to other persons. For most persons, unemployment lowers their happiness less if they are not alone with their particular fate. When unemployment is seen to hit many persons one knows or hears of, both the psychic and the social effects are mitigated. Self esteem is better preserved, because it becomes obvious that being out of a job is not so much one's own fault but more due to general developments in the economy. Stigma and social disapproval are less prevalent if unemployment hits many other people at the same time. Using the employment status of one's partner as a reference group or, alternatively, the region an individual lives in, effects of social comparison on unemployed people's mental well-being have been estimated for British data over the period 1991-96 (Clark 2003). As in virtually all previous studies, the unemployed are much more dissatisfied than people with a job, and the general level of unemployment lowers happiness. In contrast, the unemployed indeed suffer less when their partner and/or a larger proportion of other people living in their region are also out of work.

Unemployed people's well-being, moreover, depends on the strength of the social norm to work. Social interaction of unemployed people with other members of the community, the reference group forced upon themselves, has the effect of showing them how they are expected to behave, and norm-conforming behavior is enforced through social sanctions. In an estimation across Swiss communities, it has been shown that the stronger the social norm

[28] The overall effect of unemployment on social well-being can be calculated by adding the loss experienced by those persons being unemployed to the overall effect of unemployment. Consider again a 1 percentage point increase in unemployment. In the previous section, it was shown that the unemployed experience a drop of 0.33 in their happiness scale. This figure must be multiplied by the one percent of the population who have been unfortunate enough to actually become unemployed: 0.33 x 0.01 = 0.0033. Added to the general effect of a one percentage point unemployment increase of 0.028, it leads to a total decrease of 0.0313 (Di Tella et al. 2001). An extension of these results, also based on Eurobarometer data, including business cycle volatility, is provided by Wolfers (2003).

to live off one's own income, the lower is unemployed people's reported satisfaction with life (Stutzer and Lalive 2002).

Reference groups are of major importance for showing the extent to which people are distressed by their own unemployment. However, what group one refers to is not given, but can to some extent be chosen. People out of work tend to associate with other people out of work, partly because they have time to do so, or partly because they retreat from normal community life. It is also known that marriages and partnerships have a high risk of breaking down when one of the partners is unemployed (e.g. Kraft 2001). In all these cases, the definition of the reference group adjusts to one's labor market status. Causation then does not run unambiguously from the reference group to the evaluation of unemployment in terms of happiness.

5 Implications and Concluding Remarks

Reported subjective well-being can for many purposes be considered a useful approximation to utility. This allows us to empirically study problems that so far could only be analyzed on an abstract theoretical level and it permits a direct analysis of what people really value.

Happiness research adds a considerable number of new insights to well-known *theoretical propositions*. This has been shown with the example of how income and unemployment affect reported individual well-being. Our analyses are based on data from the German Socio-Economic Panel, one of the best data sets available to study questions on subjective well-being with large samples. The findings in happiness research also have the potential to challenge *economic policy*.

Effects of income. Most economists take it as a matter of course that higher income leads to higher happiness. A higher income expands individuals' and countries' opportunity sets, i.e. more goods and services can be consumed. The few people not interested in more commodities need not consume them; they are free to dispose of any unwanted surplus without cost. It therefore seems obvious that income and happiness go together.

The empirical research on happiness evidence both supports and contradicts this generally held idea. In line with common thinking, it is found that, at a particular point-of-time, and within a particular country, higher income is associated with higher individual happiness. In contrast, higher per capita income in society seems not to raise reported satisfaction with life in rich western countries. Even at an income level half that of the United States, there are only

small effects of higher average income on subjective well-being. Both observations can be explained if individual aspirations are included as an argument in people's "utility functions". Income is understood to affect individual well-being relative to people's aspiration levels, whereby processes of adaptation and social comparison form people's aspirations. We argued and provided evidence for Germany that, on the one hand, individual adaptation to changes in one's own income is incomplete and thus allows for positive effects of higher income levels on subjective well-being. On the other hand, complementary processes of social comparison lead average aspirations to grow overall in line with average income.

Effects of unemployment. Economists' views about the costs of unemployment differ. According to the "new classical macroeconomics", unemployment is voluntary. People choose to go out of employment because they find the burden of work and the wage paid unattractive compared to being unemployed and getting unemployment benefits. In contrast, there are a lot of economists who take unemployment to be an unfortunate event to be avoided as much as possible. To become unemployed is considered to be burdensome and, above all, involuntary. For those affected, becoming unemployed is considered to be a most unfortunate event. Happiness research is consistent with this latter view and suggests that unemployment strongly reduces subjective well-being, both on a personal level and for society as a whole. For Germany, we find, on average, that people who lose their job experience a 0.78 point drop in reported life satisfaction (measured on a scale from 0 to 10). This effect is estimated when time-invariant individual characteristics, as well as income and other factors, are controlled for. It is thus expressing that there are high non-pecuniary costs of unemployment, mainly due to a loss in self-esteem and personal control.

The insights gained about happiness might in many respects be useful for economic policy undertaken by governments. Happiness functions have sometimes been looked at as the best existing approximation to a *social welfare function* to be maximized (explicitly e.g. Di Tella et al. 2001, p. 340). The optimal values of the determinants thus derived are – according to this view – the goals which economic policy should achieve. It seems that, at long last, the so far empirically empty social welfare maximization of the quantitative theory of economic policy (Tinbergen 1956) is given a new lease of life.

Such an endeavor is still faced with fundamental problems of social welfare maximization (Frey 1983, pp. 182-194). While the shortcoming of empirical emptiness has been overcome (provided one is prepared to accept happiness functions as a reasonable approximation to a social welfare function), the government still has little or no incentive to pursue such a policy.

Only a „benevolent dictator“ government would do so (Brennan and Buchanan 1985). Empirical analyses in Public Choice (see for example Mueller 1997) suggest that governments are not benevolent and do not simply follow the wishes of the population, even in well-functioning democracies, not to mention authoritarian and dictatorial governments. Hence, to maximize the happiness function neglects the crucial incentive aspect (Frey and Stutzer 2000b). Therefore, the insights from empirical analyses should serve mainly as information on favorable economic and institutional conditions. If they are considered to be convincing by political entrepreneurs and citizens, they are taken up and put forward as propositions in the political process.

This paper has reached its goal if it has left an impression concerning the potential of research on subjective well-being and, in particular, our understanding of the relationship between income, unemployment and happiness. We hope that it inspires challenging new research in economics.

APPENDIX

Descriptive statistics are for the sample used in panels B and C of table 1.

[Table A.1 about here]

REFERENCES

Ahuvia, Aaron C. and Douglas C. Friedman (1998). Income, Consumption, and Subjective Well-Being: Towards a Composite Macromarketing Model. *Journal of Macromarketing* 18(2): 153-168.

Alesina, Alberto, Rafael Di Tella and Robert MacCulloch (2001). Inequality and Happiness: Are Europeans and Americans Different? NBER Working Paper No. 8198. Cambridge, MA: National Bureau of Economic Research.

Andrews, Frank M. and John P. Robinson (1991). Measures of Subjective Well-Being. In: John P. Robinson, Phillip R. Shaver and Lawrence S. Wrightsman (eds). *Measures of Personality and Social Psychological Attitudes*. San Diego, CA: Academic Press: 61-114.

Andrews, Frank M. and Stephen B. Withey (1976). *Social Indicators of Well-Being: Americans' Perceptions of Life Quality*. New York: Plenum Press.

Björklund, Anders and Tor Eriksson (1998). Unemployment and Mental Health: A Survey of Nordic Research. *Scandinavian Journal of Social Welfare* 7: 219-235.

Blanchflower, David G. (1996). Youth Labor Markets in Twenty Three Countries: A Comparison Using Micro Data. In: David Stern (eds). *School to Work Policies and Practices in Thirteen Countries*. Cresskill: Hampton Press.

Blanchflower, David G. and Andrew J. Oswald (in press). Well-Being Over Time in Britain and the USA. Forthcoming in *Journal of Public Economics*.

Brennan, Geoffrey and James M. Buchanan (1985). *The Reason of Rules. Constitutional Political Economy*. Cambridge: Cambridge University Press.

Brickman, Philip and Donald T. Campbell (1971). Hedonic Relativism and Planning the Good Society. In: Mortimer H. Appley (ed.) *Adaptation Level Theory: A Symposium*. New York: Academic Press.

Burkhauser, Richard V., Barbara A. Butrica, Mary C. Daly and Dean R. Lillard (2001). The Cross-National Equivalent File: A Product of Cross-National Research. In: Irene Becker, Notburga Ott and Gabriele Rolf (eds). *Soziale Sicherung in einer dynamischen Gesellschaft*. Festschrift für Richard Hauser zum 65. Geburtstag. Frankfurt/New York: Campus: 354-376.

Camerer, Colin, George Loewenstein and Matthew Rabin (eds.) (2003). *Advances in Behavioral Economics*. New York and Princeton: Russell Sage Foundation Press and Princeton University Press.

Campbell, Angus, Philip E. Converse and Willard L. Rodgers (1976). *The Quality of American Life: Perceptions, Evaluations, and Satisfactions*. New York: Russell Sage Foundation.

Clark, Andrew E. (2003). Unemployment as a Social Norm: Psychological Evidence from Panel Data. *Journal of Labor Economics* 21(2): 323-351.

Clark, Andrew E. and Andrew J. Oswald (1994). Unhappiness and Unemployment. *Economic Journal* 104(424): 648-659.

Clark, Andrew E. and Andrew J. Oswald (1996). Satisfaction and Comparison Income. *Journal of Public Economics* 61(3): 359-381.

Clark, Andrew E., Yannis Georgellis and Peter Sanfey (2001). Scarring: The Psychological Impact of Past Unemployment. *Economica* 68(270): 221-41.

Dew, Mary Amanda, Evelyn J. Bromet and Lili Penkower (1992). Mental Health Effects of Job Loss in Women. *Psychological Medicine* 22(3): 751-764.

Di Tella, Rafael, Robert J. MacCulloch and Andrew J. Oswald (2001). Preferences over Inflation and Unemployment: Evidence from Surveys of Happiness. *American Economic Review* 91(1): 335-341.

Di Tella, Rafael, Robert J. MacCulloch and Richard Layard (2002). Income, Happiness and Inequality as Measures of Welfare. Mimeo, Harvard Business School.
Diener, Ed (1984). Subjective Well-Being. *Psychological Bulletin* 95(3): 542-575.
Diener, Ed and Shigehiro Oishi (2000). Money and Happiness: Income and Subjective Well-Being Across Nations. In: Ed Diener and Eunkook M. Suh (eds). *Culture and Subjective Well-Being*. Cambridge, MA: MIT Press: 185-218.
Diener, Ed, Ed Sandvik, Larry Seidlitz and Marissa Diener (1993). The Relationship Between Income and Subjective Well-Being: Relative or Absolute? *Social Indicators Research* 28(3): 195-223.
Diener, Ed, Eunkook M. Suh, Richard E. Lucas and Heidi L. Smith (1999). Subjective Well-Being: Three Decades of Progress. *Psychological Bulletin* 125(2): 276-303.
Duesenberry, James S. (1949). *Income, Savings and the Theory of Consumer Behavior*. Cambridge, MA: Harvard University Press.
Easterlin, Richard A. (1974). Does Economic Growth Improve the Human Lot? Some Empirical Evidence. In: Paul A. David and Melvin W. Reder (eds). *Nations and Households in Economic Growth: Essays in Honour of Moses Abramowitz*. New York and London: Academic Press: 89-125.
Easterlin, Richard A. (1995). Will Raising the Incomes of All Increase the Happiness of All? *Journal of Economic Behaviour and Organization* 27(1): 35-48.
Easterlin, Richard A. (2001a). Income and Happiness: Towards a Unified Theory. *Economic Journal* 111(473): 465-484.
Easterlin, Richard A. (2001b). Life Cycle Welfare: Evidence and Conjecture. *Journal of Socio-Economics* 30: 31-61.
Easterlin, Richard A. (ed.) (2002). Happiness in Economics. Cheltenham: Edward Elgar.
Feather, Norman T. (1990). *The Psychological Impact of Unemployment*. New York: Springer.
Ferrer-i-Carbonell, Ada (2002). Income and Well-being: An Empirical Analysis of the Comparison Income Effect. Tinbergen Institute Discussion Paper No. 19/3, Amsterdam.
Ferrer-i-Carbonell, Ada and Paul Frijters (2001). How Important Is Methodology for the Estimates of the Determinants of Happiness? Mimeo, University of Amsterdam.
Frank, Robert H. (1985). *Choosing the Right Pond*. New York: Oxford University Press.
Frank, Robert H. (1999). *Luxury Fever. Why Money Fails to Satisfy in an Era of Excess*. New York: Free Press.
Frederick, Shane and George Loewenstein (1999). Hedonic Adaptation. In: Daniel Kahneman, Ed Diener and Norbert Schwarz (eds). *Well-Being: The Foundations of Hedonic Psychology*. New York: Russell Sage Foundation: 302-329.
Frey, Bruno S. (1983). *Democratic Economic Policy*. Oxford: Blackwell.
Frey, Bruno S. and Matthias Benz (2002). Being Independent is a Great Thing: Subjective Evaluations of Self-Employment and Hierarchy. IEW Working Paper No. 135, University of Zurich.
Frey, Bruno S., Matthias Benz and Alois Stutzer (2003). Introducing Procedural Utility: Not Only What but also How Matters. IEW Working Paper No. 129, University of Zurich.
Frey, Bruno S. and Alois Stutzer (2000a). Happiness, Economy and Institutions. *Economic Journal* 110(446): 918-38.
Frey, Bruno S. and Alois Stutzer (2000b). Maximising Happiness? *German Economic Review* 1(2):145-167.
Frey, Bruno S. and Alois Stutzer (2001/02). Economics and Psychology: From Imperialistic to Inspired Economics. *Revue de philosophie économique* 4: 5-22.

Frey, Bruno S. and Alois Stutzer (2002a). *Happiness and Economics: How the Economy and Institutions Affect Human Well-Being*. Princeton: Princeton University Press.

Frey, Bruno S. and Alois Stutzer (2002b). What Can Economists Learn from Happiness Research? *Journal of Economic Literature* 40(2): 402-435.

Frey, Bruno S. and Alois Stutzer (2003). Testing Theories of Happiness. IEW Working Paper No. 147, University of Zurich

Frijters, Paul, John P. Haisken-DeNew and Michael A. Shields (in press). Investigating the Patterns and Determinants of Life Satisfaction in Germany Following Reunification. Forthcoming in *Journal of Human Resources*.

Fryer, David and Roy Payne (1986). Being Unemployed: A Review of the Literature on the Psychological Experience of Unemployment. In: Cary L. Cooper and Ivan T. Robertson (eds). *International Review of Industrial and Organizational Psychology*, Vol. 1. London: John Wiley and Sons: 235-277.

Galbraith, John Kenneth (1958). *The Affluent Society*. Harmondsworth: Penguin Books.

Gerlach, Knut and Gesine Stephan (1996). A Paper on Unhappiness and Unemployment in Germany. *Economics Letters* 52(3): 325-330.

Goldsmith, Arthur, Jonathan R. Veum and William Darity Jr. (1996). The Impact of Labor Force History on Self-Esteem and its Component Parts, Anxiety, Alienation and Depression. *Journal of Economic Psychology* 17(2): 183-220.

Graetz, Brian (1993). Health Consequences of Employment and Unemployment: Longitudinal Evidence for Young Men and Women. *Social Science and Medicine* 36(6): 715-724.

Graham, Carol and Stefano Pettinato (2002). *Happiness and Hardship: Opportunity and Insecurity in New Market Economies*. Washington D.C.: Brookings Institution Press.

Haisken-DeNew, John P. and Joachim R. Frick (eds) (2001). DTC – Desktop Companion to the German Socio-Economic Panel Study (GSOEP), Version 5.0. Berlin: DIW.

Hamermesh, Daniel S. (2001). The Changing Distribution of Job Satisfaction. *Journal of Human Resources* 36(1): 1-30.

Helliwell, John F. (2003). How's Life? Combining Individual and National Variables to Explain Subjective Well-Being. *Economic Modelling* 20: 331-360.

Helson, Harry (1964). *Adaptation-Level Theory: An Experimental and Systematic Approach to Behavior*. New York: Harper and Row.

Hicks, John R. (1934). A Reconsideration of the Theory of Value, I. *Economica* 1: 52-75.

Hirsch, Fred (1976). *The Social Limits to Growth*. Cambridge, MA: Harvard University Press.

Irwin, Francis W. (1944). The Realism of Expectations. *Psychological Review* 51: 120-126.

James, William (1902). *Varieties of Religious Experience*. New York: Mentor.

Kahneman, Daniel (1999). Objective Happiness. In: Daniel Kahneman, Ed Diener and Norbert Schwarz (eds). *Well-Being: The Foundations of Hedonic Psychology*. New York: Russell Sage Foundation: 3-25.

Kahneman, Daniel, Ed Diener and Norbert Schwarz (eds) (1999). *Well-Being: The Foundations of Hedonic Psychology*. New York: Russell Sage Foundation.

Kasser, Tim and Richard M. Ryan (2001). Be Careful What You Wish For: Optimal Functioning and the Relative Attainment of Intrinsic and Extrinsic Goals. In: Peter Schmuck and Kennon M. Sheldon (eds). *Life Goals and Well-Being. Towards a Positive Psychology of Human Striving*. Kirkland, WA: Hogrefe and Huber: 116-131.

Kessler, Ronald (1986). The Interplay of Research Design Strategies and Data Analysis Procedures in Evaluating the Effects of Stress on Health. In: Stan V. Kasl und Cary L. Cooper (eds). *Stress and Health*. New York: Wiley.

Korpi, Tomas (1997). Is Well-Being Related to Employment Status? Unemployment, Labor Market Policies and Subjective Well-Being among Swedish Youth. *Labour Economics* 4(2): 125-147.

Kraft, Kornelius (2001). Unemployment and the Separation of Married Couples. *Kyklos* 54(1): 67-88.

Larsen, Randy J. and Barbara L. Fredrickson (1999). Measurement Issues in Emotion Research. In: Daniel Kahneman, Ed Diener and Norbert Schwarz (eds). *Well-Being: The Foundations of Hedonic Psychology*. New York: Russell Sage Foundation: 40-60.

Lewin, Kurt, Tamara Dembo, Leon Festinger and Pauline Sears (1944). Level of Aspiration. In: J. McV. Hunt (ed.). *Personality and the Behavior Disorders*, vol. I. New York: Ronald Press: 333-378.

Lucas, Richard E., Andrew Clark, Yannis Georgellis and Ed Diener (2003). Reexamining Adaptation and the Set Point Model of Happiness: Reactions to Changes in Marital Status. *Journal of Personality and Social Psychology* 84(3): 527-539.

Lucas, Richard E., Ed Diener and Eunkook Suh (1996). Discriminant Validity of Well-Being Measures. *Journal of Personality and Social Psychology* 71(3): 616-628.

Marx, Karl (1849). Wage-Labour and Capital. (http://eserver.org/marx/1849-wage.labor.capital/6-labor.and.capital.txt, May 2002)

McBride, Michael (2001). Relative-Income Effects on Subjective Well-Being in the Cross-Section. *Journal of Economic Behavior and Organization* 45: 251-278.

Michalos, A. C. (1985). Multiple Discrepancies Theory (MDT). *Social Indicators Research* 16: 347-413.

Michalos, Alex C. (1991). *Global Report on Student Well-Being. Volume 1: Life Satisfaction and Happiness*. New York: Springer.

Mueller, Dennis C. (ed.) (1997). *Perspectives on Public Choice. A Handbook*. Cambridge: Cambridge University Press.

Murphy, Gregory C. and James A. Athanasou (1999). The Effect of Unemployment on Mental Health. *Journal of Occupational and Organizational Psychology* 72(1): 83-99.

Ng, Yew-Kwang (1997). A Case for Happiness, Cardinalism, and Interpersonal Comparability. *Economic Journal* 107(445): 1848-1858.

Ng, Yew-Kwang (2001). From Preference to Happiness: Towards a More Complete Welfare Economics. Mimeo, Department of Economics, Monash University.

Oreopoulos, Philip (2003). Do Dropouts Drop Out Too Soon? Evidence from Changes in School-Leaving Laws. Mimeo, University of Toronto.

Oswald, Andrew J. (1997). Happiness and Economic Performance. *Economic Journal* 107(445): 1815-1831.

Parducci, Allen (1995). *Happiness, Pleasure, and Judgment: The Contextual Theory and Its Applications*. Hillsdale, NJ: Erlbaum.

Pavot, William and Ed Diener (1993). The Affective and Cognitive Context of Self-Reported Measures of Subjective Well-Being. *Social Indicators Research* 28(1): 1-20.

Rabin, Matthew (1998). Psychology and Economics. *Journal of Economic Literature* 36(1): 11-46.

Ravallion, Martin and Michael Lokshin (2001). Identifying Welfare Effects from Subjective Questions. *Economica* 68(271): 335-357.

Robbins, Lionel C. (1932). *An Essay on the Nature and Significance of Economic Science*. London: Macmillan. Selections reprinted in Daniel M. Hausman (ed.). (1984) The Philosophy of Economics: An Anthology. New York: Cambridge University Press.

Sandvik, Ed, Ed Diener and Larry Seidlitz (1993). Subjective Well-Being: The Convergence and Stability of Self-Report and Non-Self-Report Measures. *Journal of Personality* 61(3): 317-42.

Saris, Willem E. (2001). The Relationship Between Income and Satisfaction: The Effect of Measurement Error and Suppressor Variables. *Social Indicators Research* 53(2): 117-136.

Schneider, Friedrich and Dominik Enste (2000). Increasing Shadow Economy All Over the World - Fiction or Reality? *Journal of Economic Literature* 38(1): 77-114.

Schor, Juliet B. (1998). *The Overspent American: Why We Want What We Don't Need*. New York, NY: Basic Books.

Schwarz, Norbert and Fritz Strack (1999). Reports of Subjective Well-Being: Judgmental Processes and Their Methodological Implications. In: Daniel Kahneman, Ed Diener and Norbert Schwarz (eds). *Well-Being: The Foundations of Hedonic Psychology*. New York: Russell Sage Foundation: 61-84.

Schwarze, Johannes and Marco Härpfer (2002). Are People Inequality Averse, and Do They Prefer Redistribution by the State? Evidence From German Longitudinal Data on Life Satisfaction. IZA Discussion Papers No. 430, IZA Bonn.

Schyns, Peggy (2000). The Relationship Between Income, Changes in Income and Life Satisfaction in West Germany and the Russian Federation: Relative, Absolute, or a Combination of Both? In: Ed Diener and Don R. Rahtz (eds). *Advances in Quality of Life Theory and Research,* Volume 1. Dordrecht: Kluwer: 83-109.

Scitovsky, Tibor (1976). *The Joyless Economy: An Inquiry into Human Satisfaction and Dissatisfaction*. Oxford: Oxford University Press.

Slesnick, Daniel T. (1998). Empirical Approaches to the Measurement of Welfare. *Journal of Economic Literature* 36(4): 2108-2165.

Solberg Emily C., Ed Diener and Michael D. Robinson (in press). Why Are Materialists Less Satisfied with Their Lives? In: Tim Kasser and A. Kanner (eds). *Psychology and the Culture of Consumption*. American Psychological Association.

Stouffer, Samuel A., Edward A. Suchman, Leland C. DeVinney, Shirley A. Star and Robin M. Williams, Jr. (1949). *The American Soldier: Adjustment during Army Life*. Princeton, NJ: Princeton University Press.

Stutzer, Alois (2003). The Role of Income Aspirations in Individual Happiness. IEW Working Paper No. 124, University of Zurich.

Stutzer, Alois and Bruno S. Frey (2003a). Does Marriage Make People Happy, Or Do Happy People Get Married? IEW Working Paper No. 143, University of Zurich.

Stutzer, Alois and Bruno S. Frey (2003b). Stress That Doesn't Pay: The Commuting Paradox. IEW Working Paper No. 151, University of Zurich.

Stutzer, Alois and Rafael Lalive (2002). Soziale Arbeitsnorm und Arbeitslosigkeit in der Schweiz. *Schweizerische Zeitschrift für Volkswirtschaft und Statistik* 138(3): 293-316.

Tinbergen, Jan (1956). *Economic Policy: Principles and Design*. Amsterdam: North Holland.

van Herwaarden, Floor, Arie Kapteyn and Bernard M. S. van Praag (1977). Twelve Thousand Individual Welfare Functions: A Comparison of Six Samples in Belgium and The Netherlands. *European Economic Review* 9(3): 283-300.

van Praag, Bernard M. S. (1971). The Welfare Function of Income in Belgium: An Empirical Investigation. *European Economic Review* 2: 337-369.

van Praag, Bernard M. S. (1991). Ordinal and Cardinal Utility. An Integration of the Two Dimensions of the Welfare Concept. *Journal of Econometrics* 50: 69-89.

van Praag, Bernard M. S. (1993). The Relativity of the Welfare Concept. In: Martha Nussbaum and Amarthya K. Sen (eds). *The Quality of Life*. Oxford: Clarendon: 362-416.

van Praag, Bernard M. S. and Nico L. van der Sar (1988). Household Cost Functions and Equivalence Scales. *Journal of Human Resources* 23(2): 193-210.

van Praag, Bernard M. S. and Paul Frijters (1999). The Measurement of Welfare and Well-Being: The Leyden Approach. In: Daniel Kahneman, Ed Diener and Norbert Schwarz (eds). *Well-Being: The Foundations of Hedonic Psychology*. New York: Russell Sage Foundation: 413-33.

van Praag, Bernard M. S., Paul Frijters, Ada Ferrer-i-Carbonell (2003). The Anatomy of Subjective Well-Being. *Journal of Economic Behavior and Organization* 51: 29-49.

Veblen, Thorstein (1899). *The Theory of Leisure Class*. New York: Modern Library.

Veenhoven, Ruut (1993). *Happiness in Nations: Subjective Appreciation of Life in 56 Nations 1946-1992*. Rotterdam: Erasmus University Press.

Winefield, Anthony H., Marika Tiggemann, Helen R. Winefield und Robert D. Goldney (1993). *Growing up with Unemployment: A Longitudinal Study of its Psychological Impact*. London und New York: Routledge.

Winkelmann, Liliana and Rainer Winkelmann (1998). Why Are the Unemployed So Unhappy? Evidence from Panel Data. *Economica* 65(257): 1-15.

Woittiez, Isolde und Jules Theeuwes (1998). Well-Being and Labour Market Status. In: Stephen P. Jenkins, Arie Kapteyn und Bernard M. S. van Praag (eds). *The Distribution of Welfare and Household Production: Interpersonal Perspectives*. Cambridge: Cambridge University Press.

Wolfers, Justin (2003). Is Business Cycle Volatility Costly? Evidence from Surveys of Subjective Well-Being. *International Finance* 6(1): 1-26.

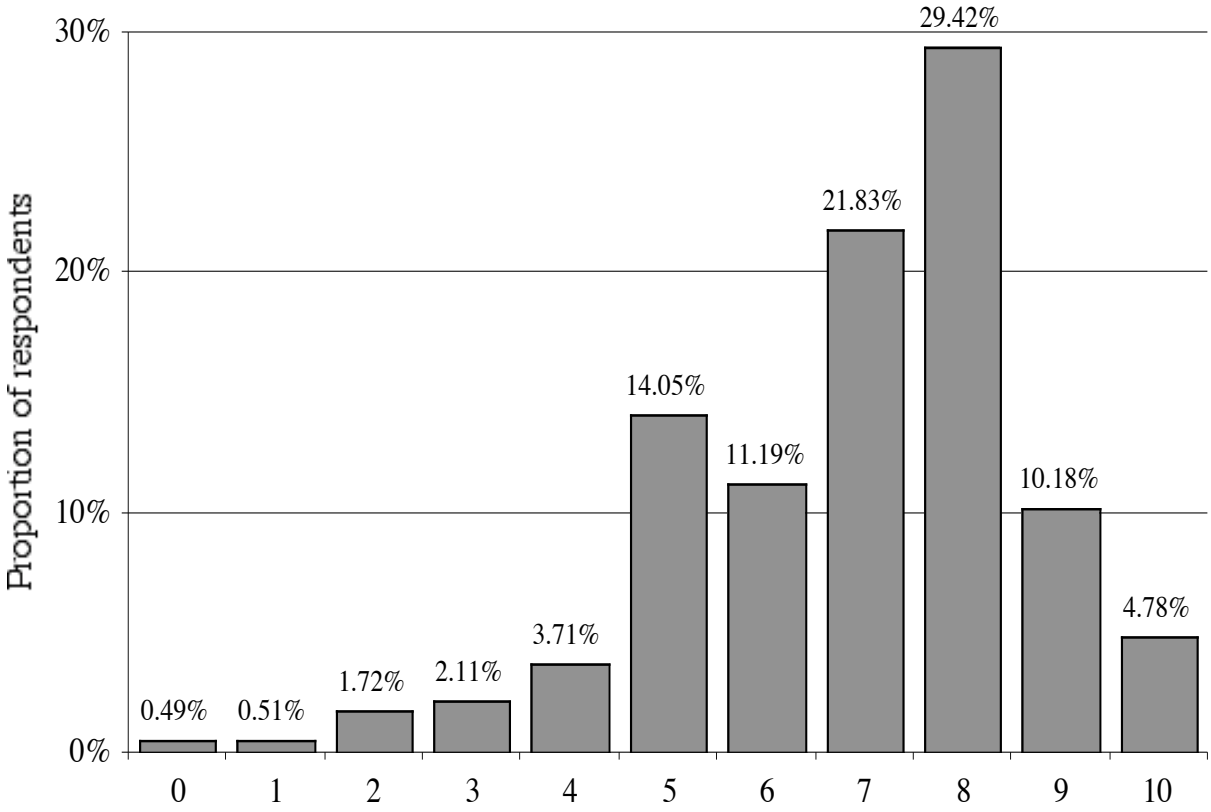

Figure 1. Satisfaction with Life in Germany in 2000

Note: Weighted distribution of life satisfaction based on 12,665 observations. 0 = "completely dissatisfied", 10 = "completely satisfied".
Source: German Socio-Economic Panel.

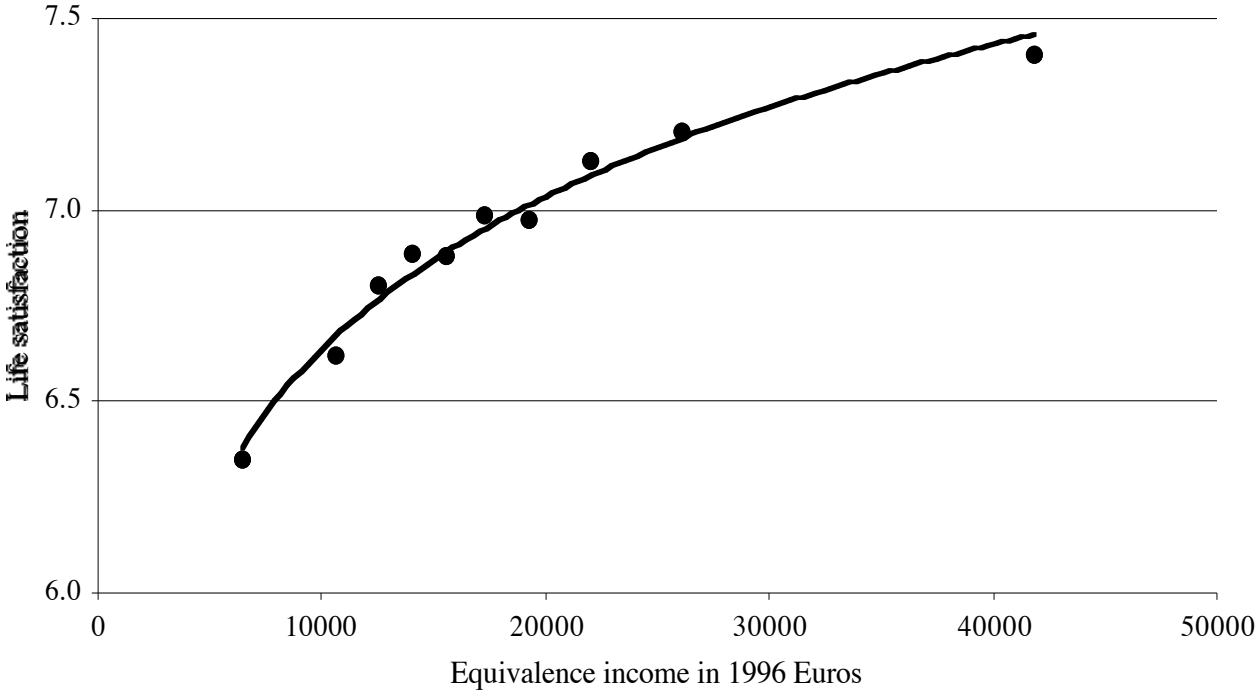

Figure 2. Satisfaction with Life and Equivalence Income in Germany in 2000

Note: The number of observations is 12,979.
Source: German Socio-Economic Panel.

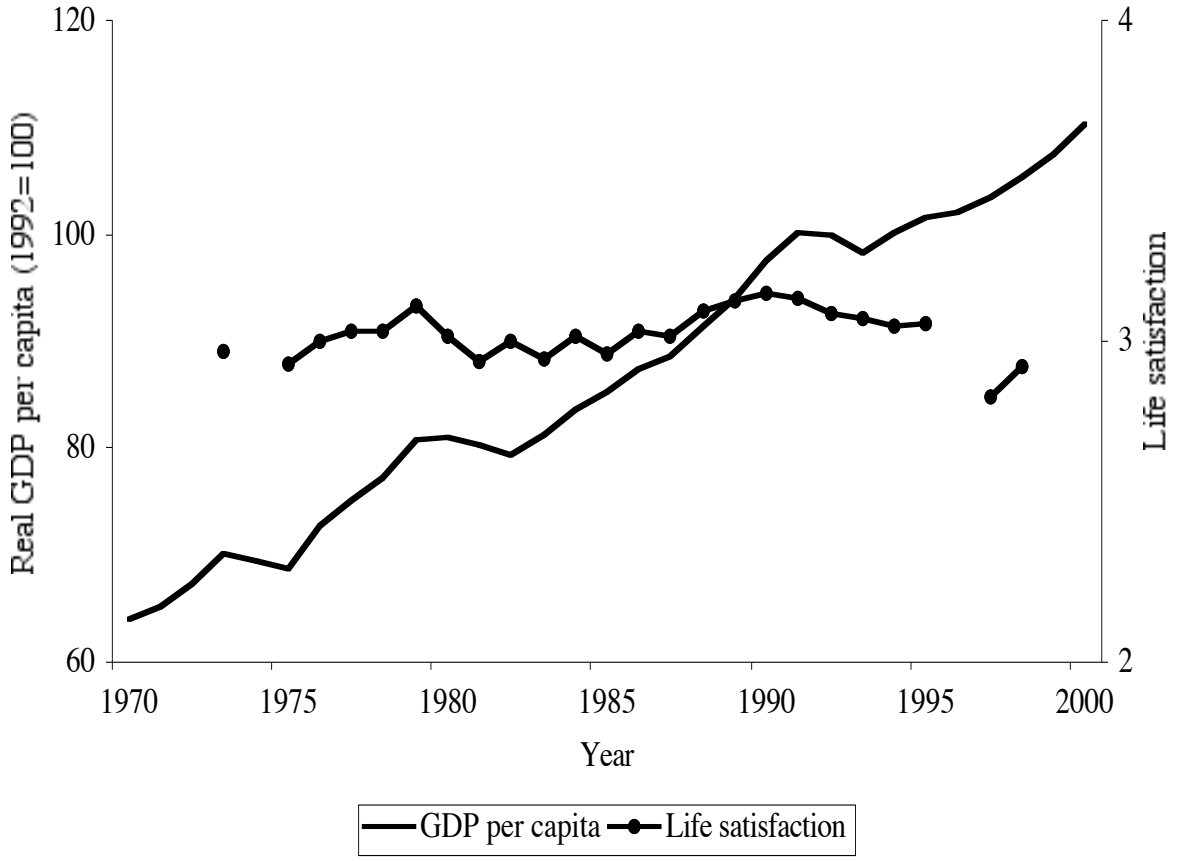

Figure 3. Satisfaction with Life and Income per Capita in Germany between 1973 and 1998

Sources: Eurobarometer, Penn World Tables and OECD.

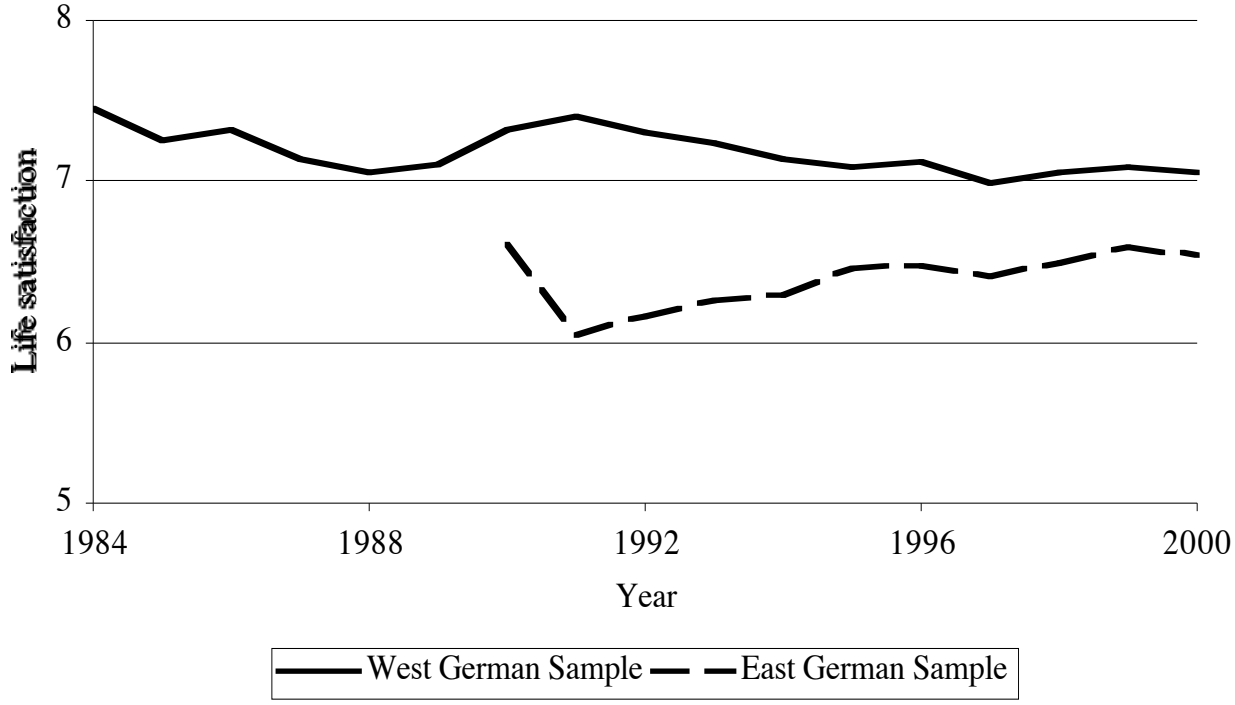

Figure 4. Satisfaction with Life in Old and New German Laender between 1984 and 2000

Source: German Socio-Economic Panel.

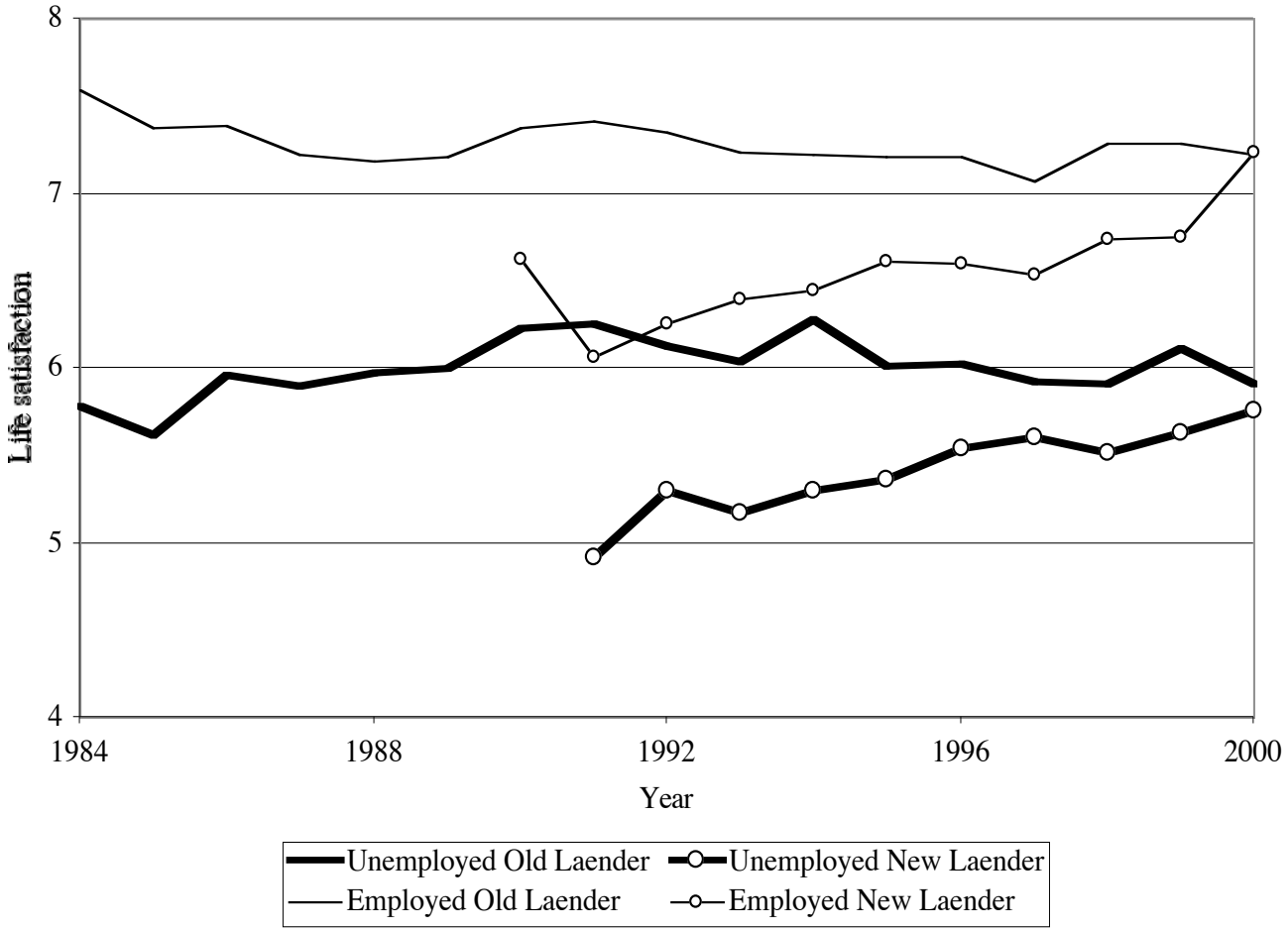

Figure 5. Satisfaction with Life of unemployed and employed people in Old and New German Laender between 1984 and 2000

Source: German Socio-Economic Panel.

TABLE 1 (part 1)
THE EFFECT OF INCOME ASPIRATIONS ON SATISFACTION WITH LIFE IN GERMANY
Dependent variable: satisfaction with life

	A Full sample 1984-2000		B Old Laender 1992 and 1997		C New Laender 1992 and 1997	
	Coef.	t-value	Coef.	t-value	Coef.	t-value
Household income, ln	0.418	39.31	0.546	13.55	0.584	9.00
Income aspirations, ln			-0.133	-2.56	-0.439	-5.48
No. of household members$^{1/2}$	-0.450	-20.20	-0.292	-4.02	-0.316	-2.40
Socio-demographic factors						
Male			Reference group			
Female	0.097	9.46	0.049	1.48	0.089	1.87
Age	-0.040	-17.16	-0.036	-4.85	-0.074	-5.75
Age^2	0.38e-3	15.19	0.32e-3	3.99	0.81e-3	5.75
Years of education, ln	0.239	9.30	0.257	3.16	-0.040	-0.28
No children			Reference group			
Children	0.100	6.58	0.045	0.92	0.157	1.98
Single, no partner			Reference group			
Single, with partner	0.335	8.24	0.452	3.74	0.159	0.70
Married	0.451	11.66	0.549	4.73	0.246	1.09
Separated, with partner	0.004	0.05	0.021	0.08	-0.351	-0.68
Separated, no partner	-0.585	-12.86	-0.594	-4.26	-0.861	-3.01
Divorced, with partner	0.258	5.37	0.336	2.33	0.398	1.54
Divorced, no partner	-0.408	-13.38	-0.360	-3.67	-0.278	-1.77
Widowed, with partner	0.608	9.27	0.586	2.69	-0.140	-0.45
Widowed, no partner	-0.075	-2.45	-0.008	-0.08	0.145	0.86
Spouse abroad	-0.387	-4.65	-0.114	-0.46		
Western Germany	Reference group					
Eastern Germany	-0.655	-48.95				
Nationals			Reference group			
EU foreigners	0.043	2.43	0.069	1.24	-1.632	-1.38
Non-EU foreigners	-0.180	-10.57	-0.213	-4.39	-0.690	-1.48

TABLE 1 (part 2)

Socio-economic factors						
Employed	Reference group					
Self-employed	-0.203	-8.18	-0.277	-3.54	-0.088	-0.69
Some work	-0.129	-4.07	0.082	0.87	-0.365	-2.39
Non-working	-0.125	-8.81	-0.130	-2.78	-0.318	-3.39
Unemployed	-0.946	-45.83	-0.827	-11.64	-0.857	-11.65
Maternity leave	0.166	4.08	0.255	2.46	-0.298	-1.50
Military service	0.148	0.75	1.125	1.77	-0.142	-0.17
In education	-0.060	-1.19	0.226	1.49	-0.341	-1.43
Retired	-0.053	-1.94	-0.095	-1.09	-0.441	-2.85
Employed partner	Reference group					
Self-employed partner	-0.250	-9.24	-0.243	-2.81	-0.212	-1.57
Partner some work	-0.126	-3.53	-0.025	-0.24	0.031	0.18
Non-working partner	0.082	5.52	0.046	0.95	0.152	1.61
Unemployed partner	-0.414	-18.11	-0.308	-3.88	-0.260	-3.33
Partner on maternity leave	0.155	3.64	0.077	0.70	0.059	0.29
Partner in military service	0.108	0.45	0.872	1.16	-0.125	-0.13
Partner in education	-0.018	-0.28	0.020	0.11	0.540	2.08
Retired partner	0.079	3.34	0.264	3.49	0.192	1.49
Partner's employment status NA	0.154	4.60	0.371	3.78	0.065	0.33
Year dummies	Yes		Yes		Yes	
Constant	7.193	164.37	7.064	32.07	7.947	21.11
Number of observations	159649		13488		5642	
Adjusted R^2	0.083		0.070		0.072	

Note: Pooled least squares estimations.
Source: German Socio-Economic Panel.

TABLE 2 (part 1)

INCOME ASPIRATIONS AND SATISFACTION WITH LIFE, FIXED EFFECT ESTIMATIONS

Dependent variable: satisfaction with life

	A Old Laender 1992 and 1997		B New Laender 1992 and 1997	
	Coef.	t-value	Coef.	t-value
Household income, ln	0.310	4.60	0.359	2.93
Income aspirations, ln	-0.035	-0.44	-0.459	-3.79
No. of household members$^{1/2}$	-0.409	-2.84	-0.222	-0.81
Socio-demographic factors				
Age^2	0.02e-3	0.08	0.76e-3	2.20
Years of education, ln	-2.708	-2.95	2.051	0.83
No children	Reference group			
Children	0.172	2.17	0.16e-3	0.00
Single, no partner	Reference group			
Single, with partner	0.449	2.06	0.519	1.08
Married	0.588	2.49	0.882	1.70
Separated, with partner	0.484	1.04	-0.174	-0.22
Separated, no partner	-0.337	-1.35	0.827	1.63
Divorced, with partner	0.265	0.96	1.252	2.16
Divorced, no partner	0.264	1.16	0.644	1.43
Widowed, with partner	2.597	4.77	0.433	0.61
Widowed, no partner	0.419	1.65	0.709	1.54
Spouse abroad	0.489	1.02		
Socio-economic factors				
Employed	Reference group			
Self-employed	-0.367	-2.66	0.249	1.07
Some work	-0.147	-1.12	-0.366	-1.69
Non-working	-0.134	-1.74	-0.287	-1.80
Unemployed	-0.613	-5.94	-0.773	-7.37
Maternity leave	0.206	1.42	-0.700	-2.22
Military service	-0.033	-0.03	-0.960	-0.72
In education	-0.296	-1.32	-0.742	-1.94
Retired	-0.181	-1.41	-0.186	-0.77

TABLE 2 (part 2)

Employed partner	Reference group			
Self-employed partner	0.123	0.84	0.070	0.30
Partner some work	-0.279	-1.98	0.084	0.36
Non-working partner	-0.054	-0.67	-0.182	-1.13
Unemployed partner	-0.303	-2.66	-0.239	-2.19
Partner on maternity leave	-0.073	-0.48	-0.031	-0.09
Partner in military service	-0.864	-0.70	-1.237	-0.93
Partner in education	-0.325	-1.23	0.078	0.20
Retired partner	-0.032	-0.24	-0.058	-0.25
Partner's employment status NA	0.021	0.13	-0.382	-1.01
Year dummy	Yes		Yes	
Constant	6.441	14.82	6.855	9.57
Number of observations	13488		5642	
Within R^2	0.100		0.067	

Note: Least squares estimations with individual fixed effects.
Source: German Socio-Economic Panel.

TABLE 3 (part 1)
ADAPTATION: THE EFFECT OF PAST INCOME ON INCOME ASPIRATIONS IN GERMANY
Dependent variable: Income aspirations, ln

	A Old Laender 1992 and 1997		B New Laender 1997	
	Coef.	t-value	Coef.	t-value
Past equivalent income				
Household income$_{Year-1}$, ln	0.148	18.35	0.133	5.83
Household income$_{Year-2}$, ln	0.092	10.70	0.039	1.90
Household income$_{Year-3}$, ln	0.045	5.22	0.086	3.62
Household income$_{Year-4}$, ln	0.037	4.02	-0.020	-0.78
Household income$_{Year-5}$, ln	0.009	1.11	0.037	1.88
No. of household members$^{1/2}$	0.480	21.23	0.413	7.10
No. of household members$^{1/2}{}_{Year-1}$	-0.146	-5.67	-0.021	-0.30
No. of household members$^{1/2}{}_{Year-2}$	-0.043	-1.70	-0.025	-0.36
No. of household members$^{1/2}{}_{Year-3}$	-0.005	-0.19	-0.059	-0.86
No. of household members$^{1/2}{}_{Year-4}$	-0.077	-3.14	0.040	0.55
No. of household members$^{1/2}{}_{Year-5}$	0.011	0.61	-0.033	-0.61
Socio-demographic factors				
Male	Reference group			
Female	0.004	0.66	-0.006	-0.54
Age	0.010	6.85	0.013	3.82
Age^2	-0.10e-3	-6.38	-0.12e-3	-3.47
Years of education, ln	0.253	16.54	0.140	3.95
No children	Reference group			
Children	-0.021	-2.28	-0.090	-4.42
Single, no partner	Reference group			
Single, with partner	0.203	8.31	0.178	3.10
Married	0.199	8.86	0.191	3.48
Separated, with partner	0.220	3.06	0.058	0.41
Separated, no partner	0.046	1.64	0.006	0.10
Divorced, with partner	0.263	8.95	0.246	3.82
Divorced, no partner	0.064	3.54	-0.004	-0.09
Widowed, with partner	0.254	5.97	0.092	1.20
Widowed, no partner	0.058	3.27	0.098	2.39
Spouse abroad	0.141	2.87		
Nationals	Reference group			
EU foreigners	0.026	2.53	0.012	0.04
Non-EU foreigners	0.026	2.81	-0.041	-0.26

TABLE 3 (part 2)

Socio-economic factors				
Employed		Reference group		
Self-employed	-0.051	-3.58	-0.049	-1.56
Some work	-0.122	-7.13	-0.065	-1.78
Non-working	-0.074	-8.92	-0.059	-2.58
Unemployed	-0.068	-4.81	-0.107	-5.49
Maternity leave	-0.156	-6.83	-0.105	-1.85
Military service	-0.408	-2.55	-0.221	-1.15
In education	-0.186	-5.93	-0.039	-0.54
Retired	-0.065	-4.24	-0.109	-3.10
Employed partner		Reference group		
Self-employed partner	-0.046	-2.91	-0.066	-1.98
Partner some work	-0.133	-6.90	-0.062	-1.57
Non-working partner	-0.098	-11.35	-0.053	-2.32
Unemployed partner	-0.096	-6.20	-0.101	-4.97
Partner on maternity leave	-0.169	-7.27	-0.075	-1.21
Partner in military service			-0.262	-0.97
Partner in education	-0.113	-2.89	-0.206	-2.34
Retired partner	-0.066	-5.04	-0.013	-0.46
Partner's employment status NA	0.054	2.87	-0.006	-0.12
Year dummy		Yes		
Constant	3.687	156.53	3.730	65.51
Number of observations	10741		2288	
Adjusted R^2	0.514		0.504	

Note: Pooled least squares estimations.
Source: German Socio-Economic Panel.

TABLE 4

CHANGE IN LIFE SATISFACTION BY LABOR FORCE STATUS, GERMANY 1984-2000

Dependent variable: Satisfaction with life

Labor force status in year t-1	Labor force status in year t	
	Employed	Unemployed
Employed		
Mean	-	-
Std. error		
Observations	84962	3346
Unemployed		
Mean		
Std. error		
Observations	2635	4179

Source: German Socio-Economic Panel.

TABLE 5

CHANGE IN SUBJECTIVE WELL-BEING FOR TRANSFORMATION FROM EMPLOYMENT TO UNEMPLOYMENT, GERMANY 1984-2000

Dependent variable: Satisfaction with life

Sub-sample	Mean	Std. error	Observations
Total sample	-0.67	0.03	3346
Old Laender	-0.72	0.05	2236
New Laender	-0.56	0.05	1110
Men	-0.79	0.05	1861
Women	-0.51	0.05	1485
Age			
29 and under	-0.80	0.07	978
30 to 49	-0.72	0.05	1428
50 and older	-0.44	0.06	940
Old Laender 1984-1989	-0.98	0.10	698
Old Laender 1990-2000	-0.60	0.05	1538

Source: German Socio-Economic Panel.

TABLE 6

THE EFFECT OF UNEMPLOYMENT ON SATISFACTION WITH LIFE, GERMANY 1984-2000

Dependent variable: satisfaction with life

	A Full sample		B Old Laender		C New Laender	
	Coef.	t-value	Coef.	t-value	Coef.	t-value
Employed			Reference group			
Unemployed	-0.784	-40.41	-0.818	-34.87	-0.700	-21.07
Household income, ln	0.238	14.94	0.232	13.36	0.388	9.13
No. of household members$^{1/2}$	-0.232	-7.27	-0.246	-7.18	-0.100	-1.07
Socio-demographic factors						
Age^2	0.40e-3	6.11	0.35e-3	5.02	0.85e-3	4.18
No children			Reference group			
Children	0.059	3.19	0.055	2.70	0.186	4.09
Head of household or spouse			Reference group			
Child of head of household	-0.045	-1.03	-0.023	-0.50	-0.304	-2.57
Not child of head of household	-0.196	-2.51	-0.194	-2.28	-0.299	-1.52
Child of head of household x household inc. (mean adj.)	-0.019	-0.50	-0.016	-0.38	-0.047	-0.38
Not child of head of household x household inc. (mean adj.)	-0.065	-0.62	-0.042	-0.37	-0.371	-1.30
Single, no partner			Reference group			
Single, with partner	0.184	5.42	0.199	5.37	0.105	1.17
Married	0.228	6.58	0.239	6.48	0.291	2.56
Separated, with partner	0.067	0.77	0.005	0.05	0.522	2.34
Separated, no partner	-0.230	-4.45	-0.255	-4.55	0.156	1.05
Divorced, with partner	0.424	7.69	0.383	6.37	0.798	5.12
Divorced, no partner	-0.008	-0.16	-0.011	-0.21	0.235	1.65
Widowed, with partner	0.668	4.59	0.627	3.92	0.884	2.51
Widowed, no partner	-0.141	-1.84	-0.222	-2.62	0.390	2.05
Spouse abroad	-0.226	-2.70	-0.239	-2.79	-2.217	-1.63
Old German Laender	Reference group					
New German Laender	-0.379	-4.72				
Year dummies	Yes		Yes		Yes	
Constant	7.773	131.75	7.767	132.97	6.211	54.76
Number of observations	118145		96941		21204	
Within R^2	0.035		0.038		0.042	

Note: Least squares estimations with individual fixed effects.
Source: German Socio-Economic Panel.

Table A.1

DESCRIPTIVE STATISTICS, GERMANY 1992 AND 1997

	Mean	Standard deviation	Logarithm
Household income			
real in 1000 Marks per year			
Total sample	57.96	31.91	3.92
Old Laender	58.40	31.48	3.92
New Laender	56.92	32.89	3.91
Household income rated as sufficient			
real in 1000 Marks per year			
Total sample	46.10	20.72	3.75
Old Laender	44.81	21.02	3.72
New Laender	49.19	19.63	3.81
Years of education			
Total sample	11.39	2.48	2.41
Old Laender	11.09	2.48	2.38
New Laender	12.09	2.32	2.47

Note: Real income in prices of 1999 and corrected for purchasing power parities between the Old and New Laender. Means are based on 13,488 observations for the Old Laender and 5,643 observations for the New Laender.
Source: German Socio-Economic Panel.