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Abstract: Does individual well-being depend on the absolute level of income and consumption or is it relative to one's aspirations? In a direct empirical test, it is found that higher income aspirations reduce people's utility, ceteris paribus. Thereby, individual data on reported satisfaction with life are used as a proxy measure for utility, and income evaluation measures are applied as proxies for people's aspiration level. Consistent with processes of adaptation and social comparison, income aspirations increase with people's income as well as with the average income in the community of their residence. (91 words)

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The Role of Income Aspirations in Individual Happiness

1 Introduction

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.[1]

In contrast, research on individual happiness has found patterns in reported subjective well-being that are at odds with this view. There is systematic evidence that people in industrialized countries are not becoming happier over time, despite economic growth (e.g. Blanchflower and Oswald 2000, Easterlin 1974; 1995). However, people with a higher income than others in their society *do* report higher happiness. Both observations 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 their previous income level (Easterlin 2001). Even though income aspirations seem to play an important role in individual welfare, they have not been directly empirically analyzed so far.

In this paper, in a new, more direct and general way the effect of income aspirations on people's utility is empirically tested. This is possible with a unique data set that includes individual data on reported satisfaction with life as a proxy measure for utility as well as income evaluation measures as proxies for people's aspiration level. We find evidence that higher income aspirations reduce satisfaction with life, ceteris paribus.

Two processes are theoretically put forward to form individual aspirations. First, there is individuals' adaptation to repeated stimuli as they are provided by people's consumption habits. Whereas additional material goods and services initially provide extra pleasure, their effects wear off over time. Thus people get used to their consumption and income level. Second, there are social comparisons with relevant others. It is not the absolute level of income that matters most but rather one's position relative to other individuals. Socially comparative or even competitive

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

processes in consumption complement processes of hedonic adaptation. Together, it is suggested, they make people strive for ever higher aspirations.

Here the determinants of income aspirations are empirically studied. The econometric results show – consistent with processes of adaptation - that income aspirations increase with one's income. For the analysis of relative income concerns, individuals' aspirations are merged with data on aggregate income in people's community of residence. The results indicate i) that a higher average income in the community increases people's level of aspiration and ii) that the estimated effects are larger for people who interact with other community members.

Finally, a potential endogeneity bias in people's reported aspiration level is addressed in a two-stage estimation approach of reported satisfaction with life. Estimates of a full and a reduced model support the basic result that higher income aspirations reduce individual well-being, ceteris paribus.

The paper proceeds as follows. Section 2 outlines the theoretical framework for our study of the effect of income aspirations on individual well-being. It introduces reported subjective well-being as a proxy measure for utility and puts forward three testable propositions that are derived from a relative utility concept. In section 3, the empirical analyses are conducted. Section 4 draws conclusions.

2 Income Aspirations and Individual Happiness

Human beings are unable and unwilling to make absolute judgements. Rather, they are constantly drawing comparisons from their environment, from the past or from their expectations of the future. Thus, we notice and react to deviations from *aspiration levels*.

There are two main processes, which form individuals' aspirations and make for 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. Positional concerns are not a new aspect of human nature but they are probably more pronounced today because of more extended possibilities of social comparison. Many economists in the past have noted that individuals compare themselves to significant others with respect to income,

consumption, status or utility. Marx (1849) 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 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 previous income or consumption level. Additional material goods and services initially provide extra pleasure, but it is usually only transitory. Higher utility with material things 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.[2] It is now 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 (Michalos 1991 and Inglehart 1990, ch. 7).

Most economists would not deny that utility is inherently relative in nature.[3] Nevertheless, most economic models of human behavior assume invariant utility functions. Presumably for reasons of testability of the basic model, changing tastes have been widely neglected. From the few exceptions, the theories of preference change have concentrated on habit formation (e.g. Marshall 1890; Modigliani 1949; Pollack 1970; and more recently Carroll, Overland and Weil 2000).

[2] 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).

[3] Even founders of traditional economics like Paul Samuelson emphasized that utility functions are not constant: "Because man is a social animal, what he regards as 'necessary comforts of life' depends on what he sees others consuming" (1973, p. 218 cit. in Holländer 2001).

Concepts of interdependent preferences due to comparisons with relevant others (see e.g. Frank 1985b; Pollak 1976; and Clark and Oswald 1998 for a survey) have remained rare.[4]

Economic models of interdependent preferences and habit formation usually focus on demand behavior. However, it has been argued that there are much stronger implications for individual welfare than for the prediction of human behavior (Holländer 2001).[5]

In this paper, we propose a new approach, which focuses on individual welfare, to test the relative utility concept. It is directly analyzed how income aspirations affect individual utility.

Thereby, reported subjective well-being is used as a proxy measure for utility.[6] Although this is not (yet) standard in economics, indicators of happiness or subjective well-being are increasingly studied and successfully applied (e.g. Clark and Oswald 1994, Di Tella et al. 2001, Easterlin 2001, Frey and Stutzer 2000, Kahneman et al. 1997 and for surveys see Frey and Stutzer 2002a,b and Oswald 1997). The existing state of research suggests that measures of reported satisfaction are a satisfactory empirical approximation to individual utility (Frey and Stutzer 2002b).

In our study, this data on reported satisfaction with life are combined with a theoretically and empirically well-grounded concept for people's aspiration: 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 levels.[7] 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 the income that is sufficient to meet their aspiration level, i.e. the income that is required to reach mean

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[4] There is another class of interdependent utility models that focuses on fairness concerns rather than positional concerns (e.g. Becker 1974, Fehr and Gächter 2000). Empirical studies that focus on individuals' distributive concerns and which use data on reported subjective well-being are e.g. Alesina et al. (2001), Hagerty (2000) Schwarze and Härpfer (2002) and Tomes (1986).

[5] Thus, a concept of relative utility may explain the strong public concerns for unemployment, inflation and income equality relative to economic growth. Its consequences for economic policy are addressed e.g. by Frank (1997), Layard (1980) and Boskin and Sheshinski (1978).

[6] Subjective well-being is the scientific term in psychology for an individual's evaluation of his or her experienced positive and negative affect, happiness or satisfaction with life. 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 (Diener et al. 1999, Kahneman et al. 1999). 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).

[7] 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).

expected welfare. Individual welfare functions have, for instance, been applied to study changes in people's aspirations with higher income (preference drift)[8], to calculate income equivalence scales on a subjective basis and to estimate the value of health. However, people's reported aspirations have as far as we are aware of not been confronted with data on their subjective well-being yet.

Related research has been conducted by Easterlin (1974, 1995, 2001) who uses the concept of aspirations as a frame of reference to resolve – as he calls it – the happiness paradox. The happiness paradox describes two striking observations in the relation between income and happiness: While people with higher income report, on average, higher satisfaction with life, raising everybody's income does, on average, not increase people's subjective well-being. It is argued that in the latter case, individuals' aspirations grow in lockstep with income. This interpretation of the data is supported by laboratory findings showing the importance of relative judgements for happiness (Smith, Diener, and Wedell 1989 and Tversky and Griffin 1991). In this paper, the presumed underlying mechanism is studied explicitly.

Based on the discussed insights from previous research, we want to study three propositions:

(i) 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'.[9] According to aspiration level theory, higher income aspirations lead to a lower subjective well-being, ceteris paribus.

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

(ii) Due to processes of hedonic adaptation, people's aspirations Y^* increase with their income and are thus positively depending on their past income Y_{t-1} (controlling for other individual characteristics W).

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

[8] In an econometric model that incorporates interdependent preferences, every increase in income seems to be accompanied by an increase of the aspiration level by the same magnitude (van de Stadt, Kapteyn, and van de Geer 1985).

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

(iii) People's aspirations are partly formed by social comparisons with relevant others. Thereby, the key question is *who* the other people are that build the relevant reference group. For Veblen (1899), rich families like the Vanderbilts are setting the reference standards. For Duesenberry (1949), the neighboring Joneses drive the consumption aspirations. However, reference groups are only partly exogenously given but to some extent actively chosen (Falk and Knell 2000). Even TV families in people's preferred soap operas may become the relevant others (Schor 1998).[10] In the following, we study the effect of other community members' income level on people's aspirations. Other community members form a reference group that can hardly be avoided in every life.[11] It is to be expected that a higher average income level in a community $\overline{Y}_{-i}$ is driving up an individual's aspiration level and that this effect is larger for people who actively interact with other members of the community.

$$Y^*_{i,t} = g(\overline{Y}_{-i,t}, Y_{i,t-1}, W_{i,t}) \quad and \quad \delta Y^*_i \big/ \delta \overline{Y}_{-i} > 0 \tag{3}$$

3 Empirical Analysis

3.1 Data

The three propositions discussed above are empirically studied using a survey based on more than 6,000 interviews with residents of Switzerland, collected by Leu, Burri and Priester (1997).[12] The proxy measure for individual utility is based on the answers to the following question: 'How satisfied are you with your life as a whole these days?' Simultaneously, the respondents were shown a table with a 10-point scale, of which only the two extreme values ('completely dissatisfied' and 'completely satisfied') were verbalized.

[10] 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. Social comparisons within the family are studied by Neumark and Postlewaite (1998) in order to test the role of relative income for utility. They find that the decision of a woman to go for paid work depends on whether her sisters and sisters-in-law are employed and how much they earn at their job. In a recent 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.

[11] People may, of course, self-select into communities where they feel relatively best. Thus, an empirical analysis can only capture a lower bound of the effect of average income on individual aspirations.

Household income is reported on a scale of 13 income categories with a response rate of 89 percent.[13] On average, household income is SFr. 5,653 (approx. $ 3,550) per month. Detailed information about household size and household composition allows controlling endogenously for the equivalence of income across households.

Respondents' aspiration level is captured with two different measures. First, the income level that people consider to be 'sufficient' is surveyed with a standard income evaluation question (e.g. van Praag 1993). People are asked: "What income would you indicate as good or bad in your circumstances? Please try to state what income per month (before taxes) for your entire household you consider to be […] sufficient."[14] Second, people are asked the minimum income question: "What household income per month would you consider an absolute minimum in order to make ends meet and without running into debt even if you reduce your needs to a minimum? We do not only mean housekeeping allowance but everything that is essential including insurance, rent, taxes and so on." For the first proxy of people's aspiration level, on average, a household income of SFr. 4,422 (approx. $ 2,750) is reported. The mean value for the second proxy is SFr. 3,966 (approx. $ 2,500). The mean values indicate that, on average, actual household income is higher than the household income people consider to be an 'absolute minimum' and also the one they consider to be 'sufficient'. So, it is not the case – as one might think – that people all the time aspire for an income beyond their reach. This does not mean, however, that the aspiration level cannot affect well-being. Individuals' aspiration level is supposed to serve as a reference point relative to which people evaluate their income; whether this reference point is lower or higher than actual income. Even if most people are considering a lower income to be sufficient than their actual income, the discrepancy between aspirations and actual income may vary considerably. The full descriptive statistics for the aspiration variables as well as for household income and satisfaction with life are reported in the appendix in table A.1.

The data set contains further information about individual characteristics like age, sex, education level, citizenship status, health status, employment status and cultural origin. The sample of

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[12] The survey data were collected between 1992 and 1994 in order to investigate the problem of poverty in Switzerland. The information contained in the data set is based on personal interviews.

[13] Household income is approximated by the mean of the selected class. For the open ended top class (SFr. 18,000 an more) a household income of SFr. 20,000 is assumed.

[14] For the proxy measure, it is focused on one category of the income evaluation question. In addition people were asked what income they consider to be 'very bad', 'bad', 'insufficient', 'good' and 'very good'.

observations for the empirical analysis is restricted to people who live in a private rather than in a collective household, who are not in training and who have a specified employment status.

3.2 Aspiration level and subjective well-being

The empirical analysis starts with a standard microeconometric happiness function. In order to ease the interpretation of the results, least squares estimation are presented.[15] Individuals' reported satisfaction is regressed on a number of socio-demographic characteristics as well as on the size and the composition of the household. Thereby, the results for household size and household composition incorporate the effect that household income has to be shared among household members. The results in panel A of table 1 indicate that the various effects of household size on satisfaction with life even out each other but that household composition has substantial effects. Couples are more satisfied than singles and couples with young children are much more satisfied than singles with young children. The relation between age and life satisfaction seems to be u-shaped. People with a middle education level report higher satisfaction scores than those with a low as well as those with a high education level. Men and women are equally satisfied with life ceteris paribus. Lower satisfaction scores are reported by foreigners, people in bad health and unemployed people (compared to Swiss, people in good health and employed people).

Household income is positively correlated with reported satisfaction with life, ceteris paribus. The coefficient implies that a doubling of household income increases life satisfaction by 0.185 points.[16]

In panel B and C the happiness function is extended by measures for individuals' aspiration level. It is thus tested whether according to the first proposition individuals' judgement of well-being is relative, relative to their income aspirations. The results show that a negative effect on subjective well-being is estimated for both measures of individuals' income aspirations. This means that people experience lower well-being when they have higher income aspirations given their income

[15] 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 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.

[16] The coefficient in table 1 refers to roughly 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.

level. A doubling of the aspiration level - measured by the income that is evaluated as 'sufficient' - reduces reported life satisfaction on average by 0.266 points. In case of the minimum required income the effect is -0.220. These results support the first proposition stated above, 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 of similar size as in panel A are estimated. In contrast, the effect of household income on life satisfaction is substantially larger (0.426 and 0.401 respectively) than in panel A. 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 level with their income level (see next section).

[Table 1 about here]

The findings in panel B can be further interpreted.[17] The positive and negative coefficients for household income and aspiration level are of similar absolute size, i.e. an equal relative increase of income and aspirations does counterbalance the respective effects on well-being. This indicates that mainly the discrepancy between income and aspirations matter for well-being. In the following, the relative importance for well-being of an individual's income position vis-à-vis the gap between aspirations and achievement is studied in a refined empirical approach.

Let LS_i be the life satisfaction of individual i and Y_i be her income and Y_i^* her aspiration level. A simple regression that relates LS to income and income aspiration is:

$$LS_i = \alpha + \beta \ln Y_i + \gamma \ln Y_i^* + \delta X_i + \varepsilon_i \qquad (4)$$

where ε_i is an error term and X_i is a set of covariates which may have independent effects on an individual's reported subjective well-being. The respective equation is estimated in panel B (and C) in table 1. Equation (4) can be transformed into equation (5) so that the focus is directly on the gap between income aspirations and income:

[17] For the remainder of the paper, it is referred to reported 'sufficient' income as a proxy for individuals' aspiration level.

$$LS_i = \alpha + (\beta + \gamma)\ln Y_i + \gamma(\ln Y_i^* - \ln Y_i) + \delta X_i + \varepsilon_i$$

or (5)

$$LS_i = \alpha + (\beta + \gamma)\ln Y_i + \gamma \ln \frac{Y_i^*}{Y_i} + \delta X_i + \varepsilon_i$$

Specification (5) separates the effect that is due to the discrepancy between log income and log aspiration level (or the log ratio between them respectively) and the pure effect of the log income level. Panel A in table 2 presents the corresponding estimates. While the gap variable has a sizeable negative effect on reported satisfaction with life, a higher income level as such does only slightly increase individual well-being. The effect itself is statistically insignificant. Thus, the hypothesis that income affects individual well-being only through its effect on the gap between aspirations and achievement cannot be rejected. If (β+γ) in equation (5) is assumed to be zero, the model can be reduced to the gap variable and the effect of income on well-being is purely relative. Panel B shows the result. For a doubling of the gap (or a doubling of the log ratio) respondents' subjective well-being is decreased by 0.290 units. In summary, for the full as well as for the reduced model, there are strong counterbalancing effects of income aspirations on the benefits people gain from higher income. This is consistent with the first and basic proposition.

[Table 2 about here]

3.3 Adaptation and income aspirations

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, it is the notion that we get 'used to' a higher income level. After a time 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.

The relation between individual income and income aspirations is empirically studied in table 3. People's previous income is approximated with people's reported household income in panel A and is supplemented with financial changes in the past in panel B.

Results for both estimates show that a higher household income has sizeable effects on the aspiration level. On average, a 10 percent higher income increases income aspirations by 4.2 percent. This result supports the second proposition that aspirations increase in people's income

level. Moreover, it indicates that a higher income is not fully translated in higher income aspirations (as the coefficient is significantly smaller than one). The result is also consistent with the findings of the Leyden group (see e.g. van Herwaarden et al. 1977, van Praag and van der Sar 1988), who finds that the preference shift through higher individual income 'destroys' about 60 percent of the expected welfare effect of an increase in income.

According to adaptation theory, aspirations are formed by recent income experiences. People who adapted to a low income in the past are expected to have lower income aspirations in the present, ceteris paribus. Panel B shows corresponding estimation results for reported financial situation in the past. Four dummy variables capture the effects on income aspirations for people who do not live in the same financial situation as in the past. It is found that individuals' past financial situation has the expected effects on their aspiration level. People who suffered a much worse financial situation in the previous year report, ceteris paribus, lower aspirations, while a much better financial situation in the past is reflected in a higher aspiration level today. Evidence for actual as well as past income is thus consistent with the second proposition.

Panel B further indicates that there seems to be an asymmetric effect of past income on income aspirations. People who enjoyed a better financial situation in the past seem to adapt less to their new income situation than those with a worse financial situation in the past. In other words, upward adjustments of aspirations occur faster and to a larger extent than downward adjustment after a worsening of the financial situation.

In addition to the income situation, there are a number of other factors that have an effect on people's aspiration level. There are sizeable effects for the size and composition of the household. A couple with two young children reports, ceteris paribus, a 19.4 percent higher aspiration level than a single (2.5 percent for an additional adult, 4.0 percent for two children and 12.9 percent for forming a family household with two children). Income aspirations are inversely u-shaped with age. This result may provide a partial explanation for the u-shaped relation between subjective well-being and age that has been found in almost all of the previous research on individual subjective well-being. Income aspirations increase with the level of education and are also higher for people with bad health and self-employed people (in comparison to people with good health and employed people). There are no sizeable differences in the aspiration levels between women and men and foreigners and Swiss. Retired people report significantly lower income aspirations than employed people.

[Table 3 about here]

3.4 Relative income and income aspiration

The effect of social comparisons on people's aspiration level is studied within communities. It is hypothesized that a higher income of fellow residents increases individuals' aspiration level. Thus, in addition to individual characteristics, the income level in the community of residence is considered a potential determinant of income aspirations. The average income level is approximated by the average income per taxpayer as well as the share of rich people in the community (taxpayers with a pure income higher than SFr. 75,000; approx. $ 46,900).[18] Respondents in the sample are from 490 different communities.

Panel A and B in table 4 present the results for the extended equations. We use a robust estimator of variance, as random disturbances are potentially correlated within the same community.[19] It is found that a higher income level in the community is reflected in higher individual aspiration levels. According to panel A, a 10 percent higher average income increases reported income aspirations by 1.9 percent. In panel B it is shown, that a 10 percentage points larger proportion of rich people in the community is resulting in a 4.8 percent higher aspiration level.[20] Both results support the third proposition that processes of social comparison contribute to the formation of income aspirations.

[Table 4 about here]

In panel A and B, it is assumed that social interaction in the form of social comparisons is driving the estimated correlations. However, an alternative explanation could be based on differences in the costs of living. In communities with a higher average income, people may have to bear higher

[18] Data for the average income level are from the Federal Tax Administration. Total annual pure income for the assessment period 1991/92 is divided by the total number of taxpayers in the community. The same data source provides information about the share of taxpayers who reports in the assessment period 1991/92 a pure income higher than SFr. 75,000. A threshold of SFr. 75,000 is chosen because it is the only available from official tax statistics.

[19] Ignoring the clustering in the estimation model is likely to produce downward biased standard errors, due to the effects of aggregate variables on individual data (Moulton 1990). To get unbiased standard errors for the aggregate variables, the communities are used as sampling units.

[20] If both aggregate income variables are included in the same equation, the coefficient for average income is 0.127 with a t-value of 1.67 and the coefficient for the share of rich people is 0.179 with a t-value of 0.94.

costs of living, on average. These higher costs may then be reflected in higher income aspirations independently of any process of social comparison. In order to disentangle effects of the costs of living and of social comparisons, an indicator for social interaction is needed. Here, a proxy for people's interaction with other community members is applied. For each person in the sample is known, whether she has contact with her neighbors.[21] It is hypothesized that the effects of the general income level in the community on an individual's aspirations are much larger for people who interact. The respective interaction effect can thus provide a lower bound for the interdependent aspiration effects.

Panel C and D in table 4 show the results for the estimated interaction effects. The coefficients indicate that the average income situation in the community of residence is much more important for the aspiration level of people who interact with their neighbors. The general effect of a 10 percent higher average income is a 1.2 percent increase in the aspiration level. However, for people who interact, the effect is 2.3 percent, i.e. at least 1.1 percent of the effect can not be explained by potential differences in the costs of living. For the share of rich people, an increase by 10 percentage points is driving up aspirations for everybody by 2.0 percent. However, for people who have contact with their neighbors, the effect is 4.4 percent higher.

3.5 A reconsideration

Studying ideas of relative income empirically is a difficult task. With respect to social interaction, it is, for instance, often unclear with whom and in what dimensions people compare themselves. Moreover, it is often open what the affective and behavioral consequences of this interaction could be. It is therefore easy to understand that there is a repeated call for new empirical evidence in the literature. The current study sheds some new light on the relation between income aspiration and individual well-being. While the broad lines become nicely visible there are a number of aspects that need reconsideration both theoretically and empirically in the future.

The underlying presumption of the empirical analysis is that socially formed aspiration levels affect individual well-being. However, to some extent, there might also exist reverse causation. Unhappy people state higher aspiration levels, ceteris paribus, because they expect that they could improve their affective state with a higher income level. Therefore, in a simple robustness check, the happiness function in panel B of table 1 is estimated with a reduced sample. 137

[21] The variable 'contact with neighbors' is specified as a dummy variable.

unhappy people with a satisfaction score below 5 are excluded because their potentially overdrawn reported aspirations might drive the results. However, there are still sizeable and statistically significant effects of the aspiration level and household income on reported satisfaction, although the effects are somewhat smaller.[22]

A second reservation may be due to a potential omitted variable bias: For instance, neurotic people may report lower subjective well-being (e.g. DeNeve and Cooper 1998) as well as higher aspiration levels. The appropriate empirical strategy to deal with this as well as the previous potential alternative explanation is an instrumental variable approach. Instrumental variables ideally only have an effect on people's aspiration level but not on their satisfaction with life. With these variables an exogenous effect on people's aspirations can be estimated in a first step. In a second step, it can be studied whether this effect is actually affecting reported subjective well-being in a causal way. However, it is very difficult to find such instruments because subjective well-being as well as aspiration level are attitudes.

Here, potential candidates for instruments in a two-stage estimation approach are the aggregate income variables as well as the interaction terms for contact with neighbors that are studied in the previous subsection. These variables can be used to instrument the full model that is laid out in equation (4) above. The empirical evidence in section 3.2, however, suggests a reduced model in which only the gap between aspirations and achievements affects individual well-being. In the reduced model, household income can be used as an additional instrumental variable.

The 2SLS estimates for both models are presented in table 5. In a first test of the full model (panel A), the aspiration level is instrumented with the average income level in the community as well as the share of rich people. In a second test of the full model (panel B), the respective interactions terms for contact with neighbors are added.[23] While the coefficients for income aspirations are still negative, they are estimated much less precisely than in table 1. The estimates for the coefficients as well as for the standard errors are larger. This indicates that the instruments are not very powerful or that they are directly correlated with the dependent variable for subjective well-being. The 2SLS estimates for the reduced model include the same instrumental

[22] The coefficient for the aspiration level is –0.222 with a t-value of –2.30 and the coefficient for household income is 0.269 with a t-value of 3.73.

[23] Due to the inclusion of people in the data set who did not report whether they have contact with their neighbors or not, there are two additional interaction terms in the set of instrumental variables. These are the interaction terms between average income as well as share of rich people and the variable 'contact with neighbors not available'.

variables as in panel A and B plus the level of household income. The results show a sizeable negative effect of the gap between income aspirations and actual income on reported satisfaction with life. The effect is now measured with a low standard error and is of a similar magnitude as in table 2, panel B. Thus, overall, the results indicate a robust negative effect of higher income aspirations on individual well-being which is consistent with the first proposition of a relative utility concept.

[Table 5 about here]

4 Conclusions

This paper presents in a new, more direct and general way empirical evidence for the effect of income aspirations on individual well-being. It is found that higher income aspirations reduce people's satisfaction with life. Thereby, the negative effect on well-being of an increase in the aspiration level is of a similar absolute magnitude as the positive effect on well-being of an equal increase in income. This suggests that subjective well-being is only depending on the gap between income aspirations and actual income and not on the income level as such. Thus, the higher the ratio between aspired income and actual income the less satisfied people are with their life, ceteris paribus. This supports the notion of a relative utility concept.

The aspiration level itself is substantially increasing in individuals' previous income. However, the effects of higher income on individual well-being at a point in time are not fully counterbalanced by higher aspirations. In fact, the relative gap between income aspirations and actual income is smaller for richer people. In the present data set, this is explaining the positive correlation between income and reported subjective well-being. Over and above previous income, individuals' aspirations are also systematically affected by the average income in the community of people's residence. The richer the fellow residents, the higher an individual's aspiration level. This effect cannot be explained by higher costs of living alone. It is shown that the aspiration levels of community members who interact within the community react much more on changes in average income than those of members who do not interact.

The reported evidence for the formation of individuals' aspiration levels and their effects on subjective well-being offers an explanation for various empirical observations. For example, if

average aspirations in society increase by the same rate as income per capita, it can be understood why people in industrialized societies did not become happier over the last decades despite substantial growth in their economic wealth. This is consistent with citizens' voting behavior. It is found that citizens support the incumbent parties when the economic conditions are good whereby citizens take into consideration the unemployment rate and the inflation rate much more than the rate of income growth. Another observation that can be understood better is the low correlation between income and reported subjective well-being. If people evaluate their economic well-being relative to their aspirations rather than absolute, it is no puzzle that a fraction of people in an objectively bad economic situation is still highly satisfied and another fraction of people living under objectively good economic conditions still reports to be highly dissatisfied.

What are the consequences of research on relative income? The empirical basis is still quite small to draw firm implications for economic theory and economic policy. Caution is particularly advisable because the implications are potentially very strong. However, one might want to think about household theory in which people's desires increase with what they get. In this framework, the marginal utility of income would not be defined anymore, as the utility function changes with the income level. Moreover, one might want to study more deeply what income aspirations mean, for instance, for redistributive taxation or for public policy in general.

Overall, taking people's aspirations seriously helps us to better understand individuals' well-being. We submit that adaptive and comparative processes form individuals' aspirations and that these aspiration levels make for the relativity in our utility judgements.

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TABLE 1 (part 1)

INCOME ASPIRATIONS AND SATISFACTION WITH LIFE

Dependent variable: satisfaction with life

	Weighted least squares Std. errors adjusted to clustering on communities					
	A		B		C	
	Coef.	t-value	Coef.	t-value	Coef.	t-value
Household income (ln)	0.267	4.27	0.426	5.14	0.401	5.05
Aspiration level (ln)			-0.384	- 3.66		
Minimum required income (ln)					-0.318	- 3.20
Household size						
No. of adults	0.013	0.14	0.022	0.24	0.019	0.20
No. of children	-0.039	- 0.70	-0.032	- 0.57	-0.032	- 0.57
Household composition						
Single			Reference group			
Couple	0.240	1.61	0.278	1.85	0.282	1.87
Couple with adult children	0.395	1.42	0.434	1.55	0.439	1.57
Couple with young children	0.208	1.09	0.257	1.33	0.262	1.34
Single with young children	-0.288	- 1.04	-0.268	- 0.95	-0.262	- 0.93
Single with parents	0.027	0.08	0.037	0.10	0.043	0.12
Single with adult children	-0.291	- 0.95	-0.319	- 1.05	-0.312	- 1.03
Socio-demographic characteristics						
Age	-0.016	- 1.43	-0.011	- 0.96	-0.012	- 1.03
Age^2	0.24-e3	2.10	0.18-e3	1.61	0.19-e3	1.70
Low education			Reference group			
Middle education	0.178	2.13	0.195	2.32	0.190	2.28
High education	0.039	0.39	0.068	0.68	0.066	0.65
Male			Reference group			
Female	-0.046	- 0.68	-0.039	- 0.59	-0.034	- 0.51
Swiss			Reference group			
Foreigner	-0.648	- 5.38	-0.634	- 5.26	-0.632	- 5.24
Good health			Reference group			
Bad health	-0.786	- 6.82	-0.777	- 6.68	-0.773	- 6.70

TABLE 1 (part 2)

Employed	Reference group					
Self-employed	0.039	0.35	0.053	0.47	0.052	0.46
Unemployed	-1.507	- 3.50	-1.512	- 3.56	-1.509	- 3.53
Housewife	0.131	1.26	0.130	1.26	0.130	1.27
Retired	-0.024	- 0.19	-0.046	- 0.36	-0.035	- 0.27
Constant	6.145	10.63	7.811	11.59	7.445	10.81
Number of observations	4462		4462		4462	
R^2	0.109		0.113		0.112	

Notes: White estimator for variance. Additional control variables (not shown) for 'French speaking cantons' and 'Italian speaking cantons'.
Data source: Leu, Burri and Priester (1997).

TABLE 2

SATISFACTION WITH LIFE AND DISCREPANCY BETWEEN ASPIRATIONS AND INCOME

Dependent variable: satisfaction with life

	Weighted least squares Std. errors adjusted to clustering on communities			
	A		B	
	Coef.	t-value	Coef.	t-value
Household income (ln)	0.042	0.51		
Discrepancy between aspirations and income (= aspiration level (ln) – household income (ln))	-0.384	-3.66	-0.419	-5.15
Household size	Yes			
Household composition	Yes			
Socio-demographic characteristics	Yes			
Number of observations	4462		4462	
R^2	0.113		0.113	

Notes: White estimator for variance. Additional control variables (not mentioned) for 'French speaking cantons', 'Italian speaking cantons'.
Data source: Leu, Burri and Priester (1997).

TABLE 3 (part 1)
ADAPTATION AND INCOME ASPIRATIONS

Dependent variable: income aspirations (ln)

	Weighted least squares Std. errors adjusted to clustering on communities			
	A		B	
	Coef.	t-value	Coef.	t-value
Household income (ln)	0.416	25.64	0.425	25.55
Financial situation in the past				
much worse			-0.042	-1.47
worse			-0.034	-1.96
same			Reference group	
better			0.050	4.62
much better			0.127	5.89
Household size				
No. of adults	0.025	1.39	0.025	1.40
No. of children	0.020	1.71	0.019	1.61
Household composition				
Single		Reference group		
Couple	0.094	4.10	0.091	4.00
Couple with adult children	0.098	1.99	0.096	1.97
Couple with young children	0.129	3.88	0.126	3.74
Single with young children	0.056	1.30	0.056	1.27
Single with parents	0.034	0.67	0.033	0.65
Single with adult children	-0.046	-0.91	-0.047	-0.94
Socio-demographic characteristics				
Age	0.013	7.24	0.012	6.58
Age^2	0.000	-7.57	0.000	-6.87
Low education		Reference group		
Middle education	0.043	2.93	0.042	2.80
High education	0.074	3.88	0.075	3.93
Male		Reference group		
Female	0.018	1.59	0.020	1.73
Swiss		Reference group		
Foreigner	0.031	1.91	0.022	1.41
Good health		Reference group		
Bad health	0.030	1.66	0.019	1.06

TABLE 3 (part 2)

Employed			Reference group	
Self-employed	0.038	2.08	0.035	1.94
Unemployed	-0.015	-0.36	-0.068	-1.51
Housewife	-0.006	-0.37	-0.010	-0.60
Retired	-0.057	-3.24	-0.056	-3.23
Constant	4.334	30.74	4.274	30.26
Number of observations	4554		4554	
R^2	0.567		0.575	

Notes: White estimator for variance. Additional control variables (not shown) for 'French speaking cantons', 'Italian speaking cantons' and 'Past financial situation not available'.
Data source: Leu, Burri and Priester (1997).

TABLE 4

RELATIVE INCOME AND INCOME ASPIRATIONS

Dependent variable: income aspirations (ln)

	Weighted least squares Std. errors adjusted to clustering on communities			
	A	B	C	D
Household income (ln)	0.404	0.404	0.403	0.403
	(25.47)	(25.57)	(25.46)	(25.47)
Average income (ln)	0.188		0.119	
	(5.57)		(2.18)	
Share of rich people		0.483		0.201
		(5.83)		(1.53)
Average income x contact with neighbors			0.109	
			(1.91)	
Share of rich people x contact with neighbors				0.442
				(3.04)
No contact with neighbors			Reference group	
Contact with neighbors			- 0.018	- 0.020
			(-1.46)	(-1.57)
Household size		Yes		
Household composition		Yes		
Socio-demographic characteristics		Yes		
Number of observations	4554	4554	4554	4554
R^2	0.573	0.573	0.574	0.575

Notes: T-values in parentheses. White estimator for variance. The effect for 'contact with neighbors' is calculated for mean average income and mean share of rich people respectively. Additional control variables (not shown) for 'French speaking cantons', 'Italian speaking cantons', 'Contact with neighbors not available' and the respective interaction terms with average income in the community.

Data sources: Federal Tax Administration and Leu, Burri and Priester (1997).

TABLE 5

2SLS ESTIMATES OF THE EFFECT OF INCOME ASPIRATIONS ON SATISFACTION WITH LIFE AND

Dependent variable: satisfaction with life

	Std. errors adjusted to clustering on communities			
	Full model		Reduced model	
	A	B	C	D
Aspiration level (ln)	-1.661	-1.172		
	(-1.90)	(-1.61)		
Household income (ln)	0.948	0.746		
	(2.50)	(2.32)		
Discrepancy between aspirations and income (= aspiration level (ln) – household income (ln))			-0.459	-0.456
			(-4.18)	(-4.15)
Household size	——— Yes ———			
Household composition	——— Yes ———			
Socio-demographic characteristics	——— Yes ———			
Number of observations	4554	4554	4554	4554
R^2	0.071	0.102	0.113	0.118

Notes: Instruments for aspiration level in panel A: average income and share of rich people. In panel B: average income, share of rich people and their interaction terms with 'contact with neighbors'. Instruments for discrepancy in panel C: like A plus household income. In panel D: like B plus household income. White estimator for variance. Additional control variables (not mentioned) for 'French speaking cantons' and 'Italian speaking cantons'.

Data source: Federal Tax Administration and Leu, Burri and Priester (1997).

TABLE A.1
DESCRIPTIVE STATISTICS

	Mean	Standard deviation
Satisfaction with life	8.24	1.69
Household income (SFr. per month)	5652.59	3334.63
Aspiration level (SFr. per month)	4422.19	1938.71
Minimum required income (SFr. per month)	3965.69	1793.92
Average income (SFr. per year)	54307.56	11901.31
Share of rich people	17.35%	6.77%
Share of people with contact to neighbors	60.53%	48.88%

Data sources: Federal Tax Administration and Leu, Burri and Priester (1997).

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