Experienced versus Decision Utility of Income: Relative or Absolute Happiness

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Abstract

A central finding in happiness research is low correlations between income and happiness. This is paradoxical since most people seem to attach a high value to a rise in their income. The various versions of this paradox can be explained in terms of rising aspirations (Easterlin 2001) and positional externalities (Frank 1997). However, econometric/ statistical studies which test these explanations on the level of individual cross-sections are rare and have produced mixed results. A careful analysis of the results of such studies leads to the conclusion that there seems to be considerable support for the explanations mentioned. On the other hand, these explanations seem only partial and do not take into account top-down relations between life satisfaction and aspiration levels as implied by some studies. Therefore, an alternative explanation of the above paradox in terms of the intrinsic/extrinsic-goals distinction of Kasser and Ryan (1993) is investigated. This approach points to a second kind of discrepancy between decision utility and experienced utility of income and implies that life satisfaction depends on absolute rather than relative income. It has some potential, but, in its present stage, it yields less specific predictions with respect to the paradoxes than the theories of aspirations and positional externalities. On the other hand, in the case of top-down relations between life satisfaction and aspiration levels, the intrinsic/extrinsic-goals explanation seems more fundamental.

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1 Introduction

A central finding in happiness research is low correlations between income and happiness. This is remarkable since most people seem to attach a high value to a rise in their income, as indicated by their behaviour (*e.g.* labour supply) and stated preferences (see, *e.g.*, Frank 1999 and Easterlin 2001). This 'classical' paradox manifests itself on at least three levels. First, in most developed nations average happiness has not or only slightly increased in the last half of a century despite economic growth. Secondly, cross sections of average happiness levels across developed countries reveal weak or zero income effects on happiness (*e.g.* Frey and Stutzer 2002). Finally, in cross sections of individual happiness levels within a given developed country, income-happiness correlations and effects turn out to be small in comparison to those for other determinants of happiness, especially over the 75% upper percent of a country's income distribution (see, *e.g.*, Diener *et al.* 1993, Frey and Stutzer 2002).

The first (time-series) version of the paradox has been explained by Easterlin (1974, 2001) and Frank (1997) in terms of rising aspirations and positional externalities. The second version of the paradox for cross sections of developed countries can be explained in a similar way, but the third version for cross-sections of individuals has received little systematic attention in the literature (see Frey and Stutzer (2002) for a discussion of the role of relative income and treadmills) and requires a more subtle approach. Although these explanations sound convincing, econometric or statistical studies which test these explanations on the level of individual cross-sections are rare and have produced mixed results. For American and Swiss data McBride (2001) and Stutzer (2002), respectively, find econometric support for the influence of relative-income variables (see also Schyns (2001) for Russia), but Diener *et al.* (1993) find no evidence. In the view of Diener *et al.* and Veenhoven (1991), happiness is absolute rather than relative, reflects satisfaction of universal needs rather than social comparison, and represents an emotional feeling rather than a cognitive judgement.

The first purpose of this paper is to investigate the plausibility of these claims versus the claims of Easterlin and Frank by a careful analysis of the results of the econometric/statistical studies mentioned above. Our general conclusion from this analysis is that especially the estimation results of Stutzer (2002) in favour

of the aspiration-level theory of Easterlin (2001) look convincing and that the absence of any evidence for an influence of relative-income variables in the study of Diener *et al.* may be due to misspecifications of such influence. On the other hand, the results of Stutzer also suggest that the explanations of the income-happiness paradoxes in terms of rising aspirations and positional externalities may only be partial. Moreover, there is some evidence that, contrary to what is assumed in the aspiration-level theory, causality is not so much running from aspiration levels towards happiness, but rather from happiness towards aspiration levels (Headey *et al.* 1991). More specifically, people who feel unhappy tend to have higher aspiration levels. This suggests that the hedonic-level-of-affect component of happiness may be more fundamental than its cognitive-evaluation component.

This calls for a perhaps more fundamental explanation of the income-happiness paradoxes in terms of the affective component of happiness. A possible candidate for such an explanation is offered by the findings of Kasser and Ryan (1993, 1996; see also Kasser and Ahuvia 2002). They made a distinction between intrinsic goals (like self-acceptance and affiliation) and extrinsic goals (like financial success and social recognition) and found that persons who strongly focus on extrinsic goals tend to be relatively less happy. This points to a second kind of discrepancy between (ex ante) decision utility and (ex post) experienced utility of income[3] in addition to the discrepancy due to unanticipated rises in the aspiration level in Easterlin's theory. Thus, a second purpose of this paper is to investigate the extent to which this approach may offer an alternative explanation of the income-happiness paradoxes. We conclude that it has some potential, but that, in its present stage, it yields less specific predictions with respect to the paradoxes than the aspiration-level approach. Furthermore, there seem to be some intriguing interrelations between both approaches.

The organisation of this paper is as follows. First, section 2 gives a short review of the main empirical findings with respect to the paradoxes. Section 3 analyses the explanations of these paradoxes in terms of rising aspirations and positional externalities as well as the mixed evidence from individual-cross-section

[3] The distinction between decision utility and experienced utility has been introduced by Kahneman and Tversky (1984).

studies. Section 4 discusses the alternative explanation suggested by the intrinsic/ extrinsic-goals approach of Kasser and Ryan. Finally, section 5 makes some concluding remarks on the interrelations between the two approaches.

2 Main empirical findings

Most people seem to attach a high value to their level of income. This is evidenced by their economic behaviour as well as by their stated preferences. Examples of the former revealed preferences are the dominant role of the wage rate in individual labour supply decisions (Pencavel 1986; Killingsworth and Heckman 1986) and the recurrence of strikes of labour unions for a higher wage. Another example is the 'luxury fever' in consumption as documented in Frank (1999) for the USA. Stated preferences can, for instance, be inferred from the results of the well-known survey of Cantril (1965) about the concerns of people in fourteen countries (as mentioned in Easterlin 2001). In answers to open-ended questions about what people want out of life, material circumstances, especially level of living, were, in every country, mentioned most often.

Against this background, it is surprising that happiness research usually yields low or at best moderate correlations between income and life satisfaction in developed countries. To bring some order into the data, we classify the empirical results by two criteria. The first criterion is the level of aggregation, where a distinction is made between an *individual focus* and a *national focus*. The second criterion is the comparison perspective, which can be either a *cross-section* or a *time-series perspective*. This classification gives rise to a two by two matrix as in table 1.

		Comparison perspective	
		Cross-section	Time series
Level of aggregation	Individual	1a	1b
	National	2a	2b

Table 1 - A classification of life-satisfaction research.

The most striking result is that the correlations between average life satisfaction and average income in developed countries over time (category 2b) are not

significantly different from zero for many countries and for most periods (see, *e.g.*, Frey and Stutzer 2002, sec. 4.3). This is consistent with Easterlin's (2001) finding from a synthetic cohort analysis that life satisfaction is practically constant over any given cohort's life cycle. This finding suggests that correlations between individual life satisfaction and income over time (category 1b) are zero or low. Even major changes in income like winning a lottery may only have positive effects on life satisfaction in the short run (Gardner and Oswald 2001), but zero or even negative effects in a longer run (*cf.* Argyle 1999). For cross-sections of average life satisfaction and average income in developed countries (category 2a), it is found that income effects and correlations are weak or zero across countries with an average income level above U.S. $10,000 (*e.g.* Diener and Suh 1999, Kenny 1999, Frey and Stutzer 2002). Moreover, for particular data sets of developed as well as developing countries, the correlations are even insignificant when variables for individualism (as defined by Hofstede 1991) or equality are controlled for (Diener *et al.* 1995).

Finally, cross-sectional correlations between individual life satisfaction and income within developed countries (category 1a) tend to be higher, but are still low in comparison to those for other determinants of life satisfaction (see, *e.g.*, Frey and Stutzer 2002, sec. 4.4.1). For example, for data for the USA, Diener *et al.* (1993) found correlations of 0.13 and 0.12 (implying that less than 2% of the variance in life satisfaction is explained by variations in income) and Easterlin (2001) found a correlation of 0.20. Moreover, they established a curvilinear pattern in the relation between income and life satisfaction.[4] For income levels above U.S. $10,000, the data of Easterlin are easily calculated to imply an average 'elasticity' of life satisfaction with respect to income of roughly 0.2, which seems small. A similar pattern can be observed in other industrialised countries (see, *e.g.*, Inglehart 1990, table 7-10). For West Germany, Glatzer (1991) found no clear income effect on life satisfaction between the second and fifth income quintile. For Switzerland, Frey and Stutzer (2002: 83-85) even found a small fall in life satisfaction for the highest income recipients.

[4] Regressing life satisfaction on log income Easterlin (2001, p. 468) finds a linear relation.

A problem in judging the size of non-zero positive income effects is that it seems very hard to assess whether these effects are smaller than the size one may expect on the basis of income-related behaviour and preferences. In the case of labour supply behaviour one should then also know the effects on life satisfaction of leisure and working time. Therefore, at this stage of research, we can only say that positive income effects on life satisfaction *seem* small in comparison to what one could expect on the basis of income-related behaviour and stated preferences. Just like the zero income effects reported above, this suggests a difference between, on the one hand, (ex ante) decision utility which is supposed to govern income-related behaviour and, on the other hand, the (ex post) life satisfaction as a result of that behaviour. In the context of this paper we assume that the *decision utility* of alternative income levels is given by the expected contributions of income levels to life satisfaction.[5] On the other hand, the ex post experienced contribution of the chosen income level to life satisfaction is referred to as *experienced utility*.

3 Dynamics of aspiration levels and positional externalities

a. General analysis

Economists like Easterlin (1974, 1991) and Frank (1997) consider as one of the important explanations for the empirical findings reported above the dynamics of rising aspiration levels and positional externalities. The working of these dynamics in the four cases of the paradox described above can be explained as follows.

There are two main effects involved, namely hedonic adaptation and positional externalities. In general terms, *hedonic adaptation* is the reduction of the hedonic, *i.e.*, happiness-relevant, response to a constant or repeated stimulus (Frederick and Loewenstein 1999: 302). It can take the form of a shift of the baseline stimulus level, *i.e.*, the stimulus experienced as neutral (*baseline shift*), or that of a reduction of the subjective experience in general without a shift of the zero point (*desensitisation*; ibid.). In this context, two kinds of adaptation processes can be distinguished: psychophysical adaptation and cognitive adaptation. The distin-

[5] For the sake of simplicity, we assume that decision utility is cardinal and that expected and actual life satisfaction are separable in income and other variables (*e.g.* leisure).

guishing feature of *psychophysical adaptation* is that the sensory response to a constant or repeated stimulus itself is reduced (*e.g.*, pupil contraction). *Cognitive adaptation*, on the other hand, involves a reassessment of an invariant perception (*e.g.*, getting used to the conveniences of one's new car). This kind of adaptation is the most relevant one for the case of life satisfaction, in which cognitive evaluation and judgement play an important role. It implies that people get used to a higher or lower income level and accordingly adjust their level of life satisfaction. This involves a baseline shift rather than desensitisation and renders a person's life satisfaction negatively dependent on her income in the past.

The second main effect can be summarised under the heading of *positional externalities*. These can should be divided into two kinds of effect. The first effect we will call *secondary inflation* (Hirata 2001: 36; *cf.* fig. 1). Analogous to the expansion of the monetary mass that reduces the value of money with respect to commodities, the expansion of the average income in "real terms" or in terms of "commodity purchasing power" (*i.e.*, corrected for what we will call "primary inflation") may lead to a reduction of the value of income with respect to what Sen (1985) calls *functionings*[6]. This effect is at work in its purest form where positional goods are involved. A positional good (Hirsch 1976: 27) is characterised by some absolute limitation on its availability to society, either because it is a rival good in fixed supply (*e.g.,* van Gogh's masterpieces) or because an increase in consumption will lead to congestion (*e.g.,* a lonely beach). Positional goods are therefore valued for their *relative* superiority, that, because of their *absolute* scarcity, does not erode as society becomes richer. In all cases the payoff of one's effort or expenditure to obtain a positional good depends to a large extent on the effort and expenditure of others because one's payoff is a function of one's position in some kind of competition. A given functioning, *e.g.*, making holidays in a lonely cottage, will then become ever more expensive because it requires finding ever more remote places as the newly rich settle on the formerly quiet spots.

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[6] "A functioning is an achievement of a person: what he or she manages to do or to be. ... It has to be distinguished from the commodities which are used to achieve those functionings. ... . It has to be distinguished also from the happiness generated by the functioning, for example, actually cycling around must not be identified with the pleasure obtained from that." (Sen 1985: 10)

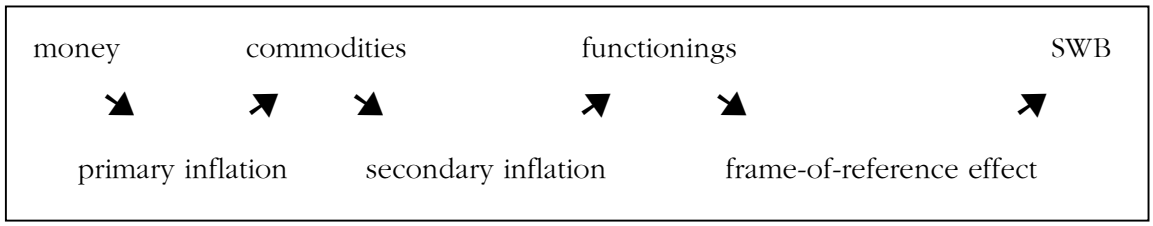


Figure 1 - The utility chain linking money and SWB (Hirata 2001: 37).

Apart from positional goods, the cost of a given functioning in terms of commodities also depends on the life styles of others as far as social interactions link individuals together. For example, as people become richer and own more cars, and society richer to build additional roads, public transport may deteriorate (as has arguably been the case in Los Angeles for example). As a consequence, some people will be forced to buy a car in order to get to places where they formerly could go by bus. The additional expenditures involved do not, however, enter into the calculation of the official (primary) inflation rate, because in terms of goods and services consumption does indeed increase. Yet, in order to express the "functioning purchasing power" of money, prices have to be corrected for secondary inflation as well.

The second kind of positional externality could be called the "frame-of-reference effect" (*cf.* Frank 1997). This effect is at work to the extent that the increase of one's reference group's consumption reduces the life satisfaction one derives from a given activity, increasing one's aspirations and evaluation standards. For example, when all families in one's neighbourhood increase their holidays spending, one's own desire to go on similarly adventurous holidays is likely to increase, and one's capacity to enjoy any given holiday trip to decrease. The frame-of-reference effect is closely linked to what in the psychological literature is called relative deprivation (Stouffer *et al.* 1949) and social comparison (Festinger 1954, Olson *et al.* 1986).

The distinction between the secondary inflation and the frame-of-reference effect can best be formulated in terms of functionings. Secondary inflation is the rate of real income growth required to maintain one's level of functionings, whereas the frame-of-reference effect alters the set of functionings that will main-

tain an individual's level of life satisfaction (fig. 1). The former is a primarily external allocative effect, while the latter is rather internal or psychological (also called practical and social-psychological effects, respectively; *e.g.*, Vendrik 1993: 112). Since functionings reflect objective living conditions, we have here an important distinction between indirect income effects on life satisfaction via living conditions and direct income effects on life satisfaction. To be sure, the two effects will often be hard to separate in practice. For example, expensive clothes may serve partly to maintain one's level of the functioning of social recognition and partly to raise this level of functioning so as to maintain one's level of life satisfaction (or perhaps to effectively raise life satisfaction). Nevertheless, the distinction between the secondary inflation and the frame-of-reference effect will be useful as a conceptual distinction which we will use below.

In both cases of positional externalities, a person's life satisfaction (*LS*) will negatively depend on the incomes of other people (*e.g.* in a person's social reference group in the case of frame-of-reference effects). Identifying which "other people" are involved is a very thorny problem, which has prompted researchers to make simplifying approximations. A useful approximation is to assume that a person's *LS* depends negatively on the average income in a person's social group Y^s, which is the group of people in the person's categories of age, sex, education, income, region of residence etc. In addition, there will be an influence from wider groups, which can be captured by the average income in a person's community or region of residence Y^r (Diener *et al.* 1993, Stutzer 2002) and/or the average income in a person's cohort (McBride 2001) or country, Y^c. These variables as well as past income Y_{-1} we call *relative income standard (RIS) variables.*

Several studies have shown the impact of RIS variables on satisfaction with income (*e.g.*, Van Praag and Frijters 1999, Kapteyn and Wansbeek 1985, Clark and Oswald 1996), but there are only few studies which have tried to estimate the effect of RIS variables on overall life satisfaction (*LS).* For our purposes, the most useful ones are statistical/econometric studies of cross-sections of individual inhabitants of developed countries (category 1a in table 1). In fact, we are aware of only two of them, namely McBride (2001) for US data and Stutzer (2002) for Swiss

data.[7] The last one is particularly interesting since it uses data for aspiration level as an intermediate variable between RIS variables and life satisfaction. The aspiration level of 4554 respondents to a Swiss survey between 1992 and 1994 was measured in two ways: (i) as the income level that people consider to be sufficient according to answers to a standard income evaluation question (*cf.* Van Praag 1993), (ii) as the household income that people consider to be an absolute minimum. Both measures have the advantage that they capture not only adaptation and frame-of-reference effects, but also secondary (together with primary) inflation. Therefore, and since Stutzer's study yields important additional insights in comparison to the other studies, we use Stutzer's model with some different relative income standard variables as our framework.

b. Specific analysis

Stutzer assumes that a person's LS is related to her income Y and her income aspiration level Y^* as

$$LS = \alpha + \beta \ln Y - \gamma \ln Y^* + \delta \ln X + e \qquad (1)$$

where X is a vector of control variables and e is an error term. The parameters β and γ are supposed to be non-negative and δ is a vector of parameters. Equation (1) can be rewritten as

$$\text{LS} = \alpha + (\beta - \gamma) \ln Y + \gamma(\ln Y - \ln Y^*) + \delta \ln X + e, \qquad (2)$$

which separates the effect of the discrepancy between log income and log aspiration level from the pure effect of the log income level. The discrepancy variable can also be written as $\ln(Y/Y^*)$. Stutzer finds that this variable has a sizeable and significantly positive effect on LS ($\gamma > 0$), whereas $\ln Y$ 'as such' has only a slight and insignificantly positive effect ($\beta \approx \gamma$). Thus, an equal relative rise of income and aspiration level will produce two completely offsetting effects on LS for these Swiss data (as assumed by Easterlin (2001: 473) in his model).

However, the question is: do income and aspiration levels rise at the same pace? (This is a crucial assumption in Easterlin's (2001) model (p. 473).) To answer

[7] The cross-section study of Diener *et al.* (1993) uses subjective-well-being data for hedonic level of affect (see below).

this question, we assume, in line with Stutzer, that the aspiration level Y^* depends on the RIS variables introduced above as

$$\ln Y^* = \varphi_0 + \varphi_{-1} \ln Y_{-1} + \varphi_s \ln Y^s + \varphi_r \ln Y^r + \varphi_c \ln Y^c + \chi \ln Z + e^*, \quad (3)$$

where Z is a vector of control variables and e^* is an error term. The parameters φ_{-1}, φ_s, φ_r and φ_c are supposed to be non-negative parameters and χ is a vector of parameters. Since the social influence from closer groups can be expected to be stronger than that from wider groups, we expect $\varphi_s > \varphi_r > \varphi_c$ with φ_c referring to country.[8] Stutzer approximates people's previous income Y_{-1} with people's reported household income and models social influence by the effect of average income in a person's community residence Y^r, but excludes the other social-influence variables in eq. (3).[9] He then finds significant estimates for φ_{-1} and φ_r of 0.40 and 0.19, respectively. He notes that the latter estimate may also include the positive effect on income aspirations of higher costs of living in communities with a higher average income. Interestingly, in terms of fig. 1, these higher costs of living can be explained as both an effect of higher consumer prices due a higher aggregate demand (primary inflation) and an effect of higher expenditures on positional goods to reach given levels of functionings (secondary inflation). In order to disentangle the effects of costs of living and of social comparison, Stutzer includes an indicator for social interactions with neighbours in his regressions and finds that at least 0.11 of the estimate 0.19 of φ_r can be attributed to social comparison. Together, Stutzer's estimates for φ_{-1} and φ_r imply that when a rise in income is accompanied by proportional rises in average income Y^r as well as previous income Y_{-1}, the aspiration level Y^* also rises, but at a slower pace than Y. More specifically, a 10% increase in income then leads to a 6% increase in aspiration level. Thus, Easterlin's assumption that income and aspiration levels rise at the same pace over the lifecycle is not confirmed by Stutzer's results.

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[8] An interesting hypothesis of Easterlin (2001) is that younger people have wider social reference groups than older people and that past personal experience becomes more important over the life cycle. In the context of eq. (3), this suggests that φ_s and φ_{-1} grow and φ_r and φ_c fall over the life cycle.

[9] Stutzer also estimates the effects of some other RIS variables in his regressions, which yields interesting results. However, these results are less important in the context of this paper.

For a much smaller American data set (324 usable observations) for 1994 McBride (2001) finds less significant, but possibly stronger effects of RIS variables on life satisfaction. As a proxy for the effect of Y_{-1} he uses four dummy variables which indicate the degree to which a person thinks his standard of living is better or worse than his parents' standard of living when they were his age. As a social-influence variable he adopts the average income in a person's cohort Y^c, where the cohort consists of everyone from 5 years younger than the person to 5 years older. In careful ordered-probit regressions, McBride then estimates the direct effect of these variables, Y and control variables on LS without an intermediate variable for aspirations. To assess the implications of his results in the context of our framework , we substitute eq. (3) for the aspiration level Y^* into eq. (1) for LS, yielding

$$LS = \alpha - \gamma\varphi_0 + \beta \ln Y - \gamma\varphi_{-1} \ln Y_{-1} - \gamma\varphi_s \ln Y^s - \gamma\varphi_r \ln Y^r - \gamma\varphi_c \ln Y^c + \delta \ln X - \gamma\chi \ln Z + e\text{-}\gamma e^*. \quad (4)$$

From his regressions McBride finds estimated coefficients for $\ln Y$ and $\ln Y^c$ with the expected signs. However, these coefficients are not separately significant, but only jointly significant in combination with the other coefficients. Although these estimates cannot be considered as direct estimates of β and $\gamma\varphi_c$, they strongly suggest that $\gamma\varphi_c$ is substantially larger than β. On the other hand, when a person's income Y rises over time, a considerable part of its positive effect on LS seems to run via the four dummy variables for the effect of Y_{-1} since the parents' standard of living when they were his age is likely to be more or less fixed. Since it seems impossible to infer the size of this positive effect on LS from the estimated coefficients of the dummies, we have to rely on McBride's simulations of the development of the average LS of synthetic cohorts over the life cycle (as considered by Easterlin 2001; category 1b in table 1). These simulations reveal a downward or zero trend in LS over time, where the downward trend is attributed by McBride to problems in the measurement of the dummies for Y_{-1}. Thus, McBride can replicate the approximate constancy of average LS in American cohorts over the life cycle as found by Easterlin (2001), and thus lend support to both this finding and Easterlin's explanation. McBride also aggregates the cohort simulations to simulations of average LS in the whole American population over time (category 2b in table 1) and replicates the zero trend which is found empirically. However, McBride does not consider these results conclusive because of separate insignificance of the coefficients of the in-

come and some of the RIS variables and because of structural differences of the income and RIS parameters between high and low-income groups (see the end of this section).

Similar zero trends for other developed countries like Switzerland can only be partially explained from Stutzer's estimation results reported above. For example, a full explanation of zero trends in average LS in developed countries over time would require that the sum of the RIS coefficients $\varphi_{-1} + \varphi_s + \varphi_r + \varphi_c$ in eq. (3) would be approximately equal to one. In this national time-series case a rise in average income is accompanied by a proportional rise in all average RIS variables, and this would then lead to a proportional rise in the aspiration level Y^* by virtue of eq. (3), implying no change in *LS* according to eq. (2) with $\beta \approx \gamma$. Stutzer does not estimate effects of the RIS variables Y^s and Y^c in eq. (3), but since Y^s (the average income in a person's social group of people with similar income) is probably strongly positively correlated with Y_{-1} the effect of Y^s is likely to be included for the greater part into the estimated φ_{-1} = 0.40. Moreover, an additional effect of Y^c (in cohort or country) can be expected to be smaller than the estimated effect φ_r = 0.19 of Y^r. So, even if Stutzer would have been able to estimate the effects of Y^s and Y^c (which is of course impossible for a country's Y^c in a national cross-section), the total estimated sum of the RIS coefficients in eq. (3) would probably be substantially lower than one. Still, Stutzer's estimation results can account for a large part of an explanation of the zero trends in average *LS* in developed countries over time.

By the same token, the weak or zero income effects on average *LS* in cross-sections of developed countries (category 2a in table 1), in which all RIS variables vary along with average income, can at least partially be explained by Stutzer's results. The zero trends in average LS of cohorts in developed countries over time (category 1b) are explained for a smaller part since then the RIS variables Y^r and Y^c for community or region of residence and country will not fully follow variations in average Y in the cohort over time. This as well as the previous analysis is summarised in table 2. Here the "++" signs in the second column indicate the relatively strong positive effects of a rise in Y on *LS* or decision utility (*DU)*. A "-" indicates that a rise in Y is counteracted in its effect on *LS* by a proportional rise in the

respective RIS variable, a "0" indicates no rise in the respective RIS variable or *LS*, and "0/-" indicates an in-between case of a less-than-proportional rise in the respective RIS variable. Finally, the signs in the last column indicate the overall reaction of *LS* or *DU* to a rise in *Y*.

	Y	Y_{-1}	Y^s	Y^r	Y^c	*LS or DU*
National *LS* over time	++	-	-	-	-	0
Cross-sect. of national *LS*	++	-	-	-	-	0
Cohort *LS* over time	++	-	-	0/-	0/-	0
Cross-sect. of individual *LS*	++	-	-	0/-	0	+
Decision utility *DU*	++	0	0	0	0	++

Table 2 – The effect of a rise in income on relative income standards and on life satisfaction and decision utility.

Finally, the aspiration-level approach can give an explanation of the empirical finding that the income effects on *LS* are higher in cross-sections of individuals in a developed country (category 1a) than in the other cases. In that case past income Y_{-1} and average income in a person's social group (with similar income) Y^s will be proportionally higher for rich persons than for poor persons, but the average income in the country Y^c is the same for rich as for poor persons and the average income in the community or region of residence Y^r may not differ very much between rich and poor people. As a result, the positive effect of a higher income Y on *LS* is counteracted only (or primarily) by the negative effects of higher Y_{-1} and Y^s on *LS*.

At the same time, this result can also form the basis for an explanation why the income effects on *LS* in individual cross-sections in a developed country are lower than what one may expect on the basis of the high value that people seem to attach to their level of income, as indicated by their behaviour and stated preferences (see sec. 2). Following Easterlin (2001), we assume that in decisions related to income individuals maximise their expected life satisfaction *LS* as given by equation (1). However, they are assumed not to anticipate that when they get a higher income Y, their past income Y_{-1} and some of the other three relative income

standards will rise as well (over time, that is). Hence, a doubling of their income will raise their decision utility by 0.74β points[10], so 0.32 points for Stutzers estimated β of 0.43. However, the life satisfaction that individuals experience after an income-raising decision has been made (*i.e.*, their experienced utility) will be lower than expected since some or all of the RIS variables will have risen along with their income. In the context of the individual cross-sections, the RIS variables which have higher values for higher Y are primarily Y_{-1} and Y^s. This raises the aspiration level of a rich as compared to a poor person, and hence suppresses the difference in *LS* between the rich and the poor. A doubling of Y, and hence of Y_{-1} and Y^s (at constant Y^r), will now imply a difference in *LS* of $0.74\times(\beta - \gamma\varphi_{-1} - \gamma\varphi_s)$ = 0.21 points for Stutzers estimates (β = 0.43, γ = 0.38, φ_{-1} = 0.40, assuming that the effect of φ_s is included in the estimate of φ_{-1}). Thus, according to Stutzer's estimates, the income effect on *LS* in individual cross-sections is about two third (.21/.32) of the supposed income effect in people's average decision utility. Hence, we can say that the impression of a lower income effect on *LS* in individual cross-sections as compared to the income effect on decision utility is consistent with what the aspiration-level approach predicts. Nevertheless, the former impression has still to be underpinned by quantitative estimates.

An important point to note is that even when people fully anticipate rises in their past income Y_{-1} and in the average income in their social environment, there is a Prisoner's dilemma effect of positional externalities on their decision utility. In that case, people anticipate that a rise in their income Y will only lead to a moderate or zero rise in their *LS*, but also that no rise in Y will imply a *fall* in their *LS* when the income in their social environment rises. This gives them an incentive to take income-raising decisions, but if everybody does so, nobody will gain much in *LS*. This represents an explanation of the above paradoxes in terms of collective irrationality, which does not require the individual irrationality of a discrepancy between decision and experienced utility.

[10] It is easily shown that decision utility will rise by $2/e$ times β points, where e = 2.718.

c. Critical studies

Thus, the aspiration-level (and positional externalities) approach seems quite successful in explaining at least partially the empirical findings of zero or low correlations between income and life satisfaction on different levels of analysis. However, individual and national cross-section studies by Diener *et al.* (1993) and Diener *et al.* (1995) raise doubts about the empirical relevance of the aspiration-level approach. The former study analyses 10 year longitudinal data for subjective well-being (SWB) and a lot of determining variables in a probability sample of 4942 American adults. This comprises one cross-section of individuals surveyed between 1971-1975 and another one for the same individuals between 1981 and 1984. The correlations between family income and SWB were 0.13 and 0.12, respectively, and curvilinear relations between income and SWB were established. However, no evidence for the influence of RIS variables on SWB was found. Possible adaptation effects were examined by exploring the effect which income changes from the first to the second period had on SWB, controlling for the *level* of income. This did not yield significant results. Furthermore, the SWB levels of people with comparable incomes living in poorer versus richer geographical areas (a county or contiguous counties) were compared to each other. This did not yield significant differences either. Similarly insignificant effects of RIS variables were found in cross-national studies by Diener *et al.* (1993, 1995). The latter study is the more extensive one and comprises SWB data for 55 countries as reported in probability surveys and a large college student sample. Possible adaptation effects were examined by correlating the growth of per capita real GDP of nations with SWB. This produced insignificant or inconsistent correlations with the main correlation being insignificantly negative when absolute levels of income were controlled for. Social comparison was taken into account by investigating its effects on SWB in three ways. One of the correlations had the "wrong" sign and was significant, the other two correlations were insignificant.

These results of Diener *et al.* are striking when we compare them with the results of Stutzer and those of McBride as discussed above. However, the following points on Diener *et al.*'s results can be made. First, in the individual cross-section study of Diener *et al.* (1993), SWB was measured as a hedonic-level-of-affect balance (the preponderance of pleasant over unpleasant affect). Although

such hedonic measures of SWB tend to be strongly positively correlated with life satisfaction measures, hedonic affect seems to be less sensitive to adaptation and social comparison than the more cognitive evaluation measure of life satisfaction (see Frey and Stutzer (2002, Sec. 1.2) for a discussion).

Secondly, Diener *et al.* (1993) themselves raise the point that the ten year period over which the income change was measured in their cross-section study might be too long since complete adaptation is likely to occur within a shorter time period. Still, they had expected some correlation with SWB from recent changes in the income of some individuals in the cross-section. On the other hand, in the national cross-section study of Diener *et al.* (1995), correlations with SWB of *growth* of per capita GDP, which represents income changes over one year, were insignificant or inconsistent as well. Stutzer's result that approximating people's previous income Y_{-1} with their *current* income yields a significant estimated coefficient φ_{-1} in eq. (3) for the aspiration level Y^* suggests that the insignificant results of Diener *et al.* (1993, 1995) may be due to an adaptation of Y^* to Y within much less than a year. In that case a large part of the effects of adaptation in the analyses of Diener *et al.* would be included as a negative effect of Y on SWB within the net positive effect of Y. The insignificant or inconsistent correlations of Diener *et al.* (1993, 1995) may also be due to an "overshooting" of aspiration levels over fast rising income levels in countries with rapid economic growth (as mentioned by Diener *et al.* 1995: 852). This may be modelled by assuming that the coefficient φ_{-1} in eq. (3) for the aspiration level is an increasing function of relative income growth $\Delta \ln Y$. The important thing to note here is that the insignificant adaptation results of Diener *et al.* are not necessarily inconsistent with the aspiration-level approach.

Diener *et al.*'s insignificant or negative results for social comparison can have different possible reasons, as extensively discussed by Diener *et al.* (1993: 217-221). Going into that is beyond the scope of this paper, but we would like to suggest here one other possible reason. Living as a rich person in a poor country might not only have the benefits of a higher relative income (in terms of SWB), but also have costs due to worse general living conditions such as less security and worse public facilities. Conversely, living as a poor person in a rich area may

not only have the costs of a lower relative income, but also benefits due to better general living conditions. These benefits and costs may more or less counterbalance each other, leading to no significant net effect of the economic prosperity in one's living area on SWB.[11] Such possible differences in living conditions are not likely to affect aspiration levels such as modelled in Stutzer's eq. (3) nor to play a role in the impact of average cohort incomes in the model of McBride.

Another paper which is critical about the aspiration-level approach and the implied happiness-is-relative view is Veenhoven (1991). In a general analysis he argues that extreme claims on the basis of that view are unwarranted. Again, it is beyond the scope of this paper to discuss all his arguments, but one criticism is particularly important and interesting in the present context. He finds that the higher the GDP of a country, the lower the correlation between individual happiness and income. This is inconsistent with the assumption that relative-income effects are just as strong (or weak) at low income levels as they are at high income levels. Indeed, McBride (2001) finds that RIS variables appear to have much stronger effects on life satisfaction for those in higher-income groups than for those in lower-income groups, while the effect of an increase in income is much smaller. This can explain Veenhoven's finding, but it raises the question where these differences in reactions to relative (and absolute) income come from. However, an important point to note is that this explanation does not require abandoning the relative-income approach. More in general, the negative results of Veenhoven (1991) and Diener *et al.* (1993, 1995) with respect to this approach seem to apply to particular specifications of the relative-income hypothesis, and hence are not able to reject more general and flexible versions of the relative-income hypothesis, which allow some impact of absolute income on LS as well.

Our conclusion from this short survey is that a lot more empirical research is needed to test the aspiration-level approach, but that first econometric results, in particular of Stutzer (2002), look promising. Together with empirical analyses like those of Easterlin (2001), they suggest that the aspiration-level (and positional externalities) approach can explain a large part of the stylised facts with respect to

[11] Results of Schyns (2002) even suggest dominant living-conditions effects of national wealth on SWB.

the correlations of income and life satisfaction. However, the suggestion from Stutzer's estimates that this explanation may only be partial leaves room for other possible explanations. Moreover, there are indications (Headey *et al.* 1991) that causality is not so much running from aspiration levels towards happiness, but rather from happiness towards aspiration levels. This possibility is analysed in the context of an alternative explanation of a discrepancy between decision utility and experienced utility of income in the next section.

4. Intrinsic versus extrinsic goals

Veenhoven (1991) emphasises that overall life satisfaction does not entirely depend on cognitive comparison, but also on how one feels affectively. In his view, overall life satisfaction does not only have a cognitive component which indicates the 'degree to which an individual perceives her aspirations to be met' (*contentment*). It also has an affective component representing the 'degree to which the various affects a person experiences are pleasant' (*hedonic level*). This hedonic level of affect draws on the gratification of basic bio-psychological needs. To the extent that life satisfaction depends on this need gratification, it hinges, in Veenhoven's view, on absolute levels of income rather than relative levels. This view finds support in the empirical results of Diener *et al.* (1993, 1995) as discussed at the end of the previous section.

However, Diener *et al.* (1993: 220-221) also discuss some reasons why income may make a difference in happiness even beyond the level of meeting one's elementary biological needs. Two reasons they mention are remarkable and important in the present context. First, status may accrue to people with greater wealth, even at high levels of income. Secondly, society may generate needs in people which can be met with an increasing income. For example, the structure of richer societies may make it difficult to do one's grocery shopping by bus (*cf.* p. 8). Interestingly, both reasons imply that the hedonic level of affect emphasised by Veenhoven depends on relative income, the former via a frame-of-reference effect, the latter via secondary inflation (see the explanations on p. 8). This suggests that a need approach to happiness has some overlap with the relative-income-standard approach. It also suggests that we should make a distinction between a category

of needs the satisfaction of which primarily depends on absolute income, and a category of needs the satisfaction of which primarily depends on relative income.

An approach which implies such a distinction and which moreover implies a second source of difference between decision utility and experienced utility of income can be based on research results of Kasser and Ryan (1993, 1996; see also Kasser and Ahuvia 2002) about intrinsic and extrinsic goals. Their data show first of all that a distinction between intrinsic goals—self-acceptance, affiliation, community feeling, and physical fitness—and extrinsic goals—financial success, social recognition, and appealing appearance—makes sense: the mutual correlation of the importance scores given to each goal is substantial *within* each group of goals, but negligible *across* the two groups. That is, someone who declares financial success to be a relatively important goal will in general place more importance on other extrinsic goals than on intrinsic goals.

As a second result, it turned out that subjects giving relative centrality to extrinsic goals tended to score lower on subjective well-being measures than subjects for whom intrinsic goals were more central[12], and this result appeared not to be influenced by the actual income of respondents (see also Richins and Dawson 1992: 313). For brevity, we will call this the *motivational SWB theory*. On the whole it seems safe to conclude (1) that it makes sense to distinguish between intrinsic and extrinsic goals and (2) that giving priority to extrinsic goals over intrinsic ones is generally associated with reduced well-being.

To relate the motivational SWB theory back to the distinction between decision and experienced utility, these findings can be interpreted as follows. It seems reasonable to assume that the relative importance an individual attaches to a particular goal will determine with how large a weight this dimension will impact on *decision* utility. *Experienced* utility, however, appears to be more or less independent from the goal priorities an individual holds. In other words, the fact that a person finds financial success particularly important does not mean that he will

[12] Sagiv and Schwartz (2000) argue that this effect depends on whether the environment encourages or discourages such values, but Kasser and Ahuvia (2002) produce evidence to the contrary (examining a sample of Singaporean business students) and claim that Sagiv and Schwartz's study refers to different concepts ("power" instead of "extrinsic values") and suffers from small sample sizes (n=42).

actually derive more satisfaction from achieving financial success than anybody else. As a consequence, a person who overemphasises extrinsic goals will be characterised by a discrepancy between decision and experienced utility: his decisions will not effectively maximise experienced utility. Decision and experienced utility will only coincide when there is some optimal assignment of relative weights to extrinsic and intrinsic goals in decision utility.

There is a conspicuous parallel between the extrinsic/intrinsic distinction and the respective roles of relative and absolute income. As it seems, the satisfaction of extrinsic desires—in particular social recognition and financial success—is to a large extent relative, while the satisfaction of intrinsic desires—especially affiliation and community feeling—is much less dependent on comparison parameters. Strong evidence supporting this view comes from studies of pay satisfaction which regularly find a strong correlation between (experienced) satisfaction with income and relative-income variables (Kapteyn and Wansbeek 1985, Clark and Oswald 1996). Hence, for a person who gives high priority to extrinsic goals, decision utility may be expected to be strongly influenced by relative-income considerations and adapting aspiration levels. On the other hand, the experienced utility of such a person depends more strongly on the satisfaction of intrinsic needs, which is much less sensitive to relative income. Although the results of Diener *et al.* (1993) suggest that, even in higher income brackets, experienced utility is still somewhat sensitive to absolute income, overall it will depend less on income than the decision utility of people focusing on extrinsic goals. If in developed countries the overemphasis on extrinsic goals is pervasive (as argued by Lane 2000, *e.g.*), we can expect a substantial effect from the discrepancy between decision and experienced utility of these people that will be felt on all levels of aggregation.

The motivational SWB theory can now be related to the aspiration-level theory discussed above as follows. There is some evidence (Diener 1984, Headey *et al.* 1991, Schyns 2001) that causality may not only be running from domain satisfactions towards life satisfaction ("bottom-up"), but also from life satisfaction towards domain satisfactions ("top-down"). In particular, for Australian data (1981-1987) Headey *et al.* found top-down causation for satisfaction with material living standard, which comes close to financial situation. This raises the question how then life satisfaction is determined. According to the motivational SWB theory the

hedonic level of life satisfaction depends strongly on the satisfaction of intrinsic needs and this tends to be lower for persons who give higher priority to extrinsic goals. The latter persons will then declare to be less satisfied with more or less all domains, including financial situation. However, the hedonic and the cognitive levels of satisfaction of such a person may be inconsistent: While out of his general mood he will claim to be unhappy with his financial situation (hedonic level), his cognitive evaluation of matters will give him little reason to complain about his finances (cognitive level). To reduce this cognitive dissonance, he may revise his aspiration level upwards, much as if he thought, "my financial situation doesn't seem to be that bad at first sight, but I would certainly be a happier person if I had more money". In the context of eq. (3) for the aspiration level Y^* (p. 11), this could be modelled by assuming that the φ coefficients are higher the more unhappy the person is. At the same time, his focus on financial success (and, more generally, extrinsic goals) will be reinforced, which further suppresses his hedonic level of life satisfaction. Thus, we would have a loop of reinforcing feedbacks between focus on extrinsic goals and hedonic level of life satisfaction, with the cognitive levels of life and domain satisfactions and aspiration levels only being derivatives. Exogenous determinants of this feedback loop would be culture on a collective level and personality traits on an individual level.

What is still missing in this tentative theory is an explanation of the bias towards financial success or extrinsic goals in general. It is not obvious why cognitive dissonance between (higher) hedonic level of affect and (lower) cognitive satisfaction should be reduced by revising extrinsic aspiration levels only, and not also by revising aspirations of intrinsic goals as well. The mechanism described above, one might think, could as well lead an unhappy nature to place priority on the pursuit of intrinsic goals such as friendship and community feeling. The reason why an unhappy character is more likely to focus on extrinsic than intrinsic values might be the perceived control over the respective domain satisfactions. One may (perhaps correctly) believe to have more control over one's earning power than over the number and quality of friendships. People indeed appear to spend much more time and effort on education aimed at improving one's value on the labour market than on enhancing the ability to make friends. While this explanation

seems to be a plausible one, we concede that further research is needed to substantiate this argument.

Apart from the question through which mechanism exactly the bias towards extrinsic goals operates, it should be noted that the *existence* of a systematic bias against (experienced) utility maximisation, which is also posited by the aspiration-level theory, would clearly be an embarrassment to the rational behaviour hypothesis that is central to much of economic theory. While this hypothesis does not claim that people will always succeed in maximising utility in an absolute sense, it does claim that people learn from past mistakes and will not commit a particular type of error systematically. Rationality in this sense would require that a financially well-endowed individual who has for some while sought happiness in ever more material affluence, realises that aspiring more wealth does not pay off as expected. As a consequence she would revise her value priorities in favour of intrinsic goals and discover that this is the more efficient strategy.

So, do people really fail to learn? Are they irrational after all? Psychologists who examined human decision processes closer indeed tend to subscribe to such a view.[13] Loewenstein and Schkade (1999), *e.g.*, conclude that

> "Learning from experience does not seem to offer a broad cure for prediction errors because intuitive theories are often resistant to change, memories of experience are often themselves biased or incomplete, and experiences rarely repeat themselves often enough to make diagnostic patterns noticeable." (p. 85)

They even doubt that expected hedonic payoff is a conscious deliberation in everyday decision making in the first place:

> "In fact, as Langer (1989) and others have pointed out, many decisions involve little conscious deliberation. People decide based on rules ..., habits ..., and gut feelings, none of which involve explicit predictions of future feelings. The most common source of experimental surprise could therefore be the absence of an explicit prediction in the first place."[14] (p. 100)

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[13] In fact not only psychologists do. Easterlin (2001) is an economist who also breaks with the identity of decision and experienced utility in the context of his aspiration-level theory.

[14] The rational behavior hypothesis can of coursed be saved—once more—by claiming that, at the end of the day, following imperfect rules and "gut feelings" is more efficient than spending much effort looking for the perfect decision. Whether this argument is valid in this context will depend on how bad these rules and habits really are.

This interpretation is also strengthened by neurophysiological evidence. As Berridge (1999) reports, wanting and liking (corresponding to decision and experienced utility, respectively) emerge from two separate neural substrates (p. 541). In experiments involving the manipulation of particular brain regions of rats, it is possible to demonstrate states of "wanting without liking" and "liking without wanting". Such states have also been observed in human drug addicts. Even though it is difficult to verify the existence of this dissociation between wanting and liking in healthy individuals, the physiological separation of wanting and liking suggests that they will not, as assumed in most of economic decision theory, naturally coincide, but that some—possibly complex—intermediary process is at work in human decision making. Observed choice might therefore not accurately reflect where people derive satisfaction from.

The evidence reviewed in this section has been merged to a theory in which there is a mutual interaction between focus on extrinsic goals and hedonic level of life satisfaction. On the one hand, people who overemphasise extrinsic goals will end up less happy than those who place higher priority on intrinsic goals because their decisions will be based on systematically biased predictions of experienced utility. The failure to draw the appropriate lessons from the consistent failure to realise the hoped-for happiness payoff will perpetuate such a pattern. On the other hand, it can be argued that a predisposition to be unhappy will make a person prioritise extrinsic goals, probably because people believe to have more control over the satisfaction of extrinsic than of intrinsic desires and because they do not realise that the adaptation of aspiration levels renders the pursuit of extrinsic goals partly self-defeating.

By means of the motivational SWB theory we are able to account for the finding that the observed behaviour and the stated preference for income overstate the contribution of income to actual life satisfaction. People who overemphasise extrinsic over intrinsic goals will neglect those needs whose fulfilment would durably enhance well-being while excessively focusing on those needs whose pursuit will not bring lasting increases of happiness.

5. Conclusions

Let us take stock of the relative merits of the two approaches discussed in Sections 3 and 4. Both approaches point to sources of discrepancies between decision utility and experienced utility of income. However, the theory of positional externalities supplements these explanations in terms of individual irrationality with the implications of collective irrationality. Together with the aspiration-level theory it yields much more specific predictions on the stylised facts of zero or low correlations between income and life satisfaction at different levels of analysis (see table 2) than the intrinsic/extrinsic-goals approach so far. On the other hand, the aspiration-level approach presupposes bottom-up relations between aspiration levels/domain satisfactions and life satisfaction, while there is some evidence to the contrary.[15] When aspiration levels and domain satisfactions are endogenously determined by life satisfaction (top-down), the intrinsic/extrinsic-goals approach may explain why focusing on financial success in decision utility yields little gain in experienced utility. There is now some evidence (*e.g.* Schyns 2001) that top-down and bottom-up relations may work at the same time, resulting in feedback loops. This may then imply that the low sensitivity of life satisfaction to fulfilment of extrinsic goals may be partly due to the dynamics of aspiration levels and positional externalities. At the very least, a clear-cut dichotomy between aspiration-level approaches in terms of relative happiness and needs approaches in terms of absolute happiness does not appear to be appropriate.

[15] This evidence as well as the contribution of intrinsic domain satisfactions to life satisfaction are neglected in economic approaches like that of Van Praag *et al.* (2002).

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