

IZA DP No. 2237

## Is Man Doomed to Progress?

Claudia Senik

July 2006

# Is Man Doomed to Progress?

**Claudia Senik**

*Paris School of Economics,  
University Paris-IV Sorbonne,  
PSE and IZA Bonn*

Discussion Paper No. 2237  
July 2006

IZA

P.O. Box 7240  
53072 Bonn  
Germany

Phone: +49-228-3894-0

Fax: +49-228-3894-180

Email: [iza@iza.org](mailto:iza@iza.org)

Any opinions expressed here are those of the author(s) and not those of the institute. Research disseminated by IZA may include views on policy, but the institute itself takes no institutional policy positions.

The Institute for the Study of Labor (IZA) in Bonn is a local and virtual international research center and a place of communication between science, politics and business. IZA is an independent nonprofit company supported by Deutsche Post World Net. The center is associated with the University of Bonn and offers a stimulating research environment through its research networks, research support, and visitors and doctoral programs. IZA engages in (i) original and internationally competitive research in all fields of labor economics, (ii) development of policy concepts, and (iii) dissemination of research results and concepts to the interested public.

IZA Discussion Papers often represent preliminary work and are circulated to encourage discussion. Citation of such a paper should account for its provisional character. A revised version may be available directly from the author.

## ABSTRACT

### Is Man Doomed to Progress?

This paper is dedicated to the empirical exploration of the welfare effect of expectations and progress *per se*. Using ten waves of the *Russian Longitudinal Monitoring Survey*, a panel household survey rich in subjective variables, the analysis suggests that for a given total stock of inter-temporal consumption, agents are more satisfied with an increasing time-profile of consumption: they seem to have a strong “taste for improvement”.

JEL Classification: D31, D9, I31, Z13

Keywords: expectations, growth, subjective happiness, adaptation, panel data

Corresponding author:

Claudia Senik  
PSE, ENS  
48, bd Jourdan  
75014 Paris  
France  
E-mail: [senik@pse.ens.fr](mailto:senik@pse.ens.fr)

*People have a “gestalt” notion of an ideal distribution of outcomes in time (Camerer and Loewenstein, 2004).*

## **1. INTRODUCTION**

The time dimension of utility and decision-making is a challenging topic for social scientists. After decades of tests and discussions of the discounted utility model, with the hindsight of field data and experiments, the assumption of separability between different sequences of utility has been breached; beyond hyperbolic discounting, many anomalies regarding the relation between time, decision and utility are now well established. In particular, “behavioural economics” (e.g. Camerer and Loewenstein, 2004) acknowledge the possibility of inter-temporal spillovers of utility, i.e. the influence of past and future events on current utility. Doing so, one is using a notion of utility that is not defined uniquely as a value attached *ex ante* to a decision, by comparison with other choices, but as an experience, i.e. a mental state that includes emotions<sup>1</sup>.

How do lags and leads enter into current utility? Past consumption, or past utility is most often taken to exert a negative impact over current satisfaction because of benchmarking

---

<sup>1</sup> I refer to Kahneman et al. (1997) for the discussion of the difference between decision-utility and experienced-utility.

effects such as adaptation, satisfaction treadmill<sup>2</sup> (Frederick et al., 2002) and reference point effects. Helson (1947) defined adaptation as the diminished responsiveness to a repeated or continued stimulus. In a model of rational addiction à la Becker and Murphy (1988) adaptation means that current utility is a decreasing function of the stock of accumulated past consumption. Such effects can be grouped in the category of “past contrast effects” following Loewenstein’s taxonomy (1987). As opposed to the rich literature devoted to adaptation, the positive continuing effect of past consumption has been rarely documented, except as memory utility (Kahneman, 2003). Studies in child psychology could certainly provide illustrations of the benefits of an early accumulation of an initial “stock” of happiness. A recent paper by Graham and Oswald (2006) develops the notion of “hedonic capital” as a stock on which individuals can draw to smooth bad life-shocks

Concerning the effect of the future, the literature is now rich with evidence of “anticipatory feelings” (Caplin and Leahy, 2001) such as dread, savouring, hope and anxiety. The idea is that agents experience by advance the utility of future events (e.g. surgery operation or having dinner with a glamorous partner). The intuition dates back to the origin of economic thinking. *“three distinct ways are recognisable in which pleasurable or painful feelings are caused: (1) by the memory of events, (2) by the sensation of present events, (3) by the anticipation of future events”* (Bentham, quoted by Loewenstein, 1987). However, future events can also exert a negative contrast effect if one is impatient of enjoying an expected event, which, by contrast, makes the present dull. A prisoner about to be released from jail is likely to experience this type of negative anticipatory feelings.

The consequence of inter-temporal spillovers of utility is that the time profile of events matters. In particular, adaptation and anticipatory feelings mean that individuals are more satisfied at each moment if they see their dynamic consumption trajectory as a rising one. Indeed, with aspirations based on past consumption they enjoy consuming more than yesterday, and because of savouring they enjoy the perspective of a future improvement. In

---

<sup>2</sup> Adaptation is sometimes declined in two versions: hedonic treadmill and satisfaction treadmill. “Hedonic treadmill” refers to the latent pleasure variable, whereas “satisfaction treadmill” invokes the notion of a changing aspiration level: i.e. you are more satisfied, but now you aspire to a higher satisfaction level. In other terms, satisfaction itself becomes an argument of satisfaction.

sum, they enjoy progressing. This paper tries to provide empirical evidence of this phenomenon.

### **1.1 Why isn't it trivial?**

Isn't it trivial that progressing or expecting to progress influences happiness? Although this idea is very intuitive (except in the case of negative future contrast effect), it is in contradiction with some basic principles of economic thinking.

First, classically, economists consider that individuals maximize their inter-temporal utility, but they assume (for simplicity) that each period's experienced utility depends only on the contemporaneous consumption flow (separability of time sequences).

Second, when agents make choices that maximize their inter-temporal utility, they are supposed to value the flows of current consumption at a higher rate than the same flow of consumption available in, say, two years' time. In other words, they have a preference for the present. This is completely at odds with the assumption of savouring and of a preference for increasing time profiles of consumption. As pointed by Loewenstein (2003), Caplin and Leahy (2001) and Köszegi (2005), anticipated utility gives rise to apparently negative rates of discounting of the future.

Third, consumer theory considers that agents optimise their consumption over their life cycle, which leads them to smooth their consumption profile: if they are not financially constrained, they borrow and save in order to equalize the marginal utility of consumption at each period, i.e. the flows of consumption at each period. This most often does not lead to a rising time-path of consumption.

Hence, the welfare influence of pure informational phenomena like expectations are not usually acknowledged by standard economic modelling, which does not allow expected future improvement to influence immediate welfare directly.

It is important to stress that the savouring effect that is studied here differs from the obvious consumption smoothing whereby agents anticipate, in their current consumption level, the higher income due for tomorrow (e.g. Browning and Collado, 2001). The focus of the paper is not on the inter-temporal allocation of material consumption, but on the inter-temporal externality of satisfaction, i.e. on the "direct effect of information on pleasure and pain" (Loewenstein, 2006).

## **1.2 Why does it matter?**

Should economists bother taking into account inter-temporal transfers of utility? There are many arguments in favour of doing so. One of them is that inter-temporal utility spillovers complicate the understanding of what a rational behaviour should be, and constitutes a challenge for the theory of decision-making<sup>3</sup>. Consider for example, the notion of satisfaction treadmill, which lies at the foundation of the so-called Easterlin paradox. The idea is that habituation effects destroy the benefit of growth. This is because of the deleterious role of aspirations: “*Material aspirations increase commensurately with income, and as a result, one gets no nearer to or farther away from the attainment of one’s material goals, and well-being is unchanged*” (Easterlin, 2003).

The issue is provocative and important, both for theoreticians and policy-makers. On the theoretical side, agents who underestimate the habituation effect that sweeps away part of their expected income utility should not be represented as rational utility maximizers, but rather as myopic inter-temporally inconsistent persons. They take decisions based on false expectations so that their experienced utility turns out to be different (lower) from their expected utility<sup>4</sup>. On the political side, the market economies of social democracies are based on a pro-efficiency-cum-growth consensus. If growth turns out not to be make people happy,

---

<sup>3</sup> Inter-temporal spillovers seem to question the validity of the consumer model by calling in heterodox assumptions about agents’ preferences or behaviour. But the recognition of such behaviour can help explaining a series of puzzling phenomena. The manipulation of information (strategic learning and remembering) is one of those. People who derive utility from their beliefs or representations about the future can rightly choose to “put their head in the sand”. Hence, they will not take medical tests in order to avoid thinking about the possibility of being ill, or will not prepare their retirement in order to keep away from the idea of old age and death. Governments and doctors can also carefully filter the information they give to their patients or citizens in order to maximize their welfare (Caplin and Leahy, 2003). More generally, habituation, loss-aversion and anticipatory feelings contribute to explain many anomalies and apparently time-inconsistent behaviour, such nominal price rigidities, the departure of wages from productivity, or the equity premium puzzle (Camerer and Loewenstein, 2003, Frederick et al., 2002).

<sup>4</sup> As put by Easterlin (2001): “People [...] project current aspirations to be the same throughout the life cycle, while income grows. But since aspirations actually grow along with income, experienced happiness is systematically different from projected happiness. Consequently, choices turn out to be based on false expectations”.

then other types of social organizations could be preferable. The implications of the Easterlin question thus loom large, questioning the need for paternalism and the choice of capitalism.

The Easterlin paradox is based on adaptation, i.e. the influence of past consumption on current utility. However, taking into account the emotional impact of future prospects can bring out different conclusions and reconcile adaptation with growth. Indeed, with a “taste for improvement”, working hard for money or any other goal, even in a framework with adaptation, turns out not to be a self-defeating project.

This short discussion illustrates the complexity of the interlocked dynamics of income, aspirations, expectations and satisfaction. This paper does not try to estimate a structural model of these effects; instead, it tries to estimate a reduced form of the relation between past progress or expected progress and satisfaction, taking all the possible precautions to control for other concomitant effects.

### **1.3 Existing empirical evidence**

So far, the empirical evidence about inter-temporal spillovers has mainly been collected from field studies or experiments. (Loewenstein and Sicherman, 1991, Loewenstein and Prelec, 1991, Loewenstein, Read and Baumeister, 2003, Brocas and Carillo, 2003, 2004, Camerer, Loewenstein and Rabin, 2004). A famous and intuitive experiment by Loewenstein and Prelec (1993) consisted in asking people to choose over different sequences of dinners at more or less fancy restaurants: the results revealed a strong preference for improving sequences. Recently, a new type of evidence has been provided by experiments in neuroscience and more specifically in “neuro-economics” (Camerer et al., 2004). For instance, an experiment by Berns et al. (2006) uses functional magnetic resonance imaging to relate brain activity with anticipations and dread. They, observe a significant relationship between individual differences in the measure of dread in the brain activity and individual differences in inter-temporal choice behaviour (Loewenstein, 2006).

By contrast, survey evidence is scarce. Concerning adaptation, di Tella et al. (2005) use the German GSOEP panel data and find signs of total habituation to income (but not to status). They show that the effect of past income on current satisfaction tends to fade away with time. Stutzer (2003), using a Swiss survey, finds that higher income aspirations reduce individual utility. He uses the “income evaluation question” (*in your circumstances, what income would you find sufficient?*) as a proxy for aspirations. Aspirations of agents are then found to depend

on the average income of their community and on their own income, conformingly to van Praag's earlier finding. One of the most remarkable contributions of the Leyden school is indeed the unveiling of a "preference drift", an evaporation of the *ex post* effect on satisfaction of a rise in individual income, which is due to higher aspirations of agents (see van Praag, 1971, 2001 and van Praag and Ferrer-i-Carbonell, 2004).

Concerning spillover effects from the future, Clark et al. (2003) have shown that individuals start being less happy one year before they experience job quits, layoffs and unemployment. Van Praag and Ferrer-i-Carbonell (2004) devote a chapter of their book to "The Impact of Past and Future on Satisfaction". They show that past remembered and future expected income both influence current financial satisfaction. Frank and Hutchens (2004) observe the increasing wage profiles of commercial airline pilots and intercity bus drivers; they show that in both cases, earnings grow more rapidly than productivity over time. They interpret this as a sign of a preference for rising consumption profiles, coupled with other behavioural assumptions such as lack of willpower and comparison effects which make this type of forced saving desirable when individuals are unable to defer present consumption.

This paper illustrates the fact that acknowledging or expecting an improvement in one's material situation is a motive of life satisfaction. Its main claim is that, *ceteris paribus*, for a given stock of cumulated inter-temporal consumption, people are happier when they experience a progression in their standard of living. The principal challenge of this work is to show that these results reflect of the impact of progress *per se*. In particular, I show that the results are not due to unobserved individual heterogeneity (personality) or to an omitted variable problem. I also check that the LIFE SATISFACTION variable reflects *ex post* experienced utility instead of *ex ante* decision utility (in which case the results would be trivial).

The next section presents the data and the empirical strategy. Section 3 presents the results, section 4 interprets them, section 5 concludes.

## **2. DATA AND EMPIRICAL STRATEGY**

This work is based on the waves 5 to 13 of the *Russian Longitudinal Monitoring Survey* (RLMS), a database containing many attitudinal questions related to satisfaction, expectations and past changes in individuals' living standards. These waves correspond to years 1994, 1995, 1996, 1998, 2000, 2001, 2002, 2003, 2004. This is panel data, so that it is possible to

follow the dynamics of expectations and satisfaction during nine consecutive rounds. The panel nature of the data also allows to control (at least some of the) unobserved individual heterogeneity. Finally, the Russian environment is a guarantee of sufficient variance in the dynamics of income, expectations and satisfaction. Essentially, in Russia, aggregate income and subjective well-being decline from 1994 and resume after the devaluation of August 1998 and onwards. Behind these aggregate evolutions, it is well-known that the Russian context imposes a high degree of variability and uncertainty upon Russian households (Senik, 2004).

The main *demonstrandum* of this paper is the pure effect of progression on welfare: *ceteris paribus*, given their total stock of real expenditure, agents are happier with an increasing time-profile of consumption. One thus needs to identify the welfare effects of past and expected variations in individual consumption. The next sub-section presents the attitudinal questions that are used to proxy the inter-temporal consumption flows.

## **2.1 Subjective variables as proxies for welfare**

The RLMS data contains several subjective variables that correspond to the perception of current, past and future consumption flows, allowing a distinction between notions of contrast and level effects. The descriptive statistics of the variables are presented in the Appendix.

Let  $C_t$ ,  $C_{t-1}$ ,  $C_t^a$ ,  $C_{t+1}^a$  be respectively the flows of current consumption of at time  $t$ , past consumption at time  $t-1$ , consumption at time  $t$  expected in  $t-1$  and future expected consumption at time  $t+1$  expected at time  $t$ . The future contrast effect, i.e. the difference between current and future expected living standard ( $C_{t+1}^a - C_t$ ), is proxied using the EXPECTED IMPROVEMENT subjective variable (*Do you think that in the next 12 months you and your family will live better than today or worse?*). The past contrast effect,  $C_t - C_{t-1}$ , is measured using the PAST IMPROVEMENT question (*Tell me, please: How has the financial situation of your family changed in the last 12 months?*).

The current consumption of the household  $C_t$  is proxied using the LOG REAL EXPENDITURE of the year, which is based on a detailed and exhaustive reporting of all consumption items by the household. Concerning the past level of consumption  $C_{t-1}$ , one would like to have a variable representing “remembered utility” (in the terminology of Kahneman et al., 1997) i.e. a question that would ask “what was your living standard last year?”. However, as there is no such variable in the dataset, I use LAGGED REAL EXPENDITURE as a proxy for  $C_{t-1}$ .

In some specifications, I include the unexpected change in one's financial situation ( $Ct . C^a_t$ ); to this end, I build the SURPRISE variable as the difference between the variable SITUATION HAS IMPROVED and the lagged EXPECTED IMPROVEMENT. In some robustness checks, I also use the ECONOMIC SATISFACTION variable (*Tell me, please: How satisfied are you with your economic conditions at the present time?*).

Eventually, the objective is to assess the effects of these variables on general LIFE SATISFACTION, (*To what extent are you satisfied with your life in general at the present time?*). I also use self-assessed HEALTH (*Tell me, please: How would you evaluate your health?*) as a proxy for experienced utility.

## **2.2 Empirical strategy**

The objective is to isolate the pure welfare effect of expectations and change *per se*, i.e. the relation between LIFE SATISFACTION and indicators of progress such as EXPECTED IMPROVEMENT or SITUATION HAS IMPROVED *ceteris paribus*. To this end, one must overcome the difficulty that stems from the intertwined effects of aspirations, adaptation and expectations. Suppose for instance that my current positive expectations make me happier today but create higher aspirations that render me more difficult to satisfy tomorrow. Then, what is the dynamic effect of positive expectations on inter-temporal happiness?

In order to elucidate this question, an intuitive way is to take a retrospective view. The idea is to capture the net result of these complex dynamics of expectations, progress and satisfaction by asking the following question: “after several years, for a given stock of inter-temporal consumption, do people who have more often experienced or expected a progression in their living standard have a higher score of cumulated happiness?” Hence, one needs to estimate a relationship between an aggregate indicator of progression and an aggregate score of Life Satisfaction, controlling for the total stock of real consumption of the individual over the considered period.

A technical question is what period to consider, i.e. how to aggregate the time series. It is tempting to “collapse” the whole period 1994-2004 in order to have more hindsight. However, this would not allow controlling for individual unobserved heterogeneity.

An obvious problem is indeed that happiness and expectations are probably endogenous to some idiosyncratic invariant personal feature such as “personality”. Subjective variables are particularly subject to anchoring effects that make interpersonal comparisons difficult. For

example, more extraverted persons may be systematically more satisfied and more optimistic than others, hence the “spurious” relation between the two variables. Supposing that personality is time invariant, and that it can be approximated by an additive effect, the usual method is to use introduce fixed effects<sup>5</sup>.

In order to keep the time dimension of the data so as to introduce individual fixed effects, I thus divide the observations into three blocks of three years<sup>6</sup>. I then aggregate the stock of consumption and the score of Life Satisfaction inside each block. The equation to estimate is (1):

$$\text{CUMULATED LIFE SATISFACTION}_{ib} = a_0 + a_1 \cdot \text{CUMULATED CONSUMPTION}_{ib} + a_2 \cdot \text{INDICATOR OF PROGRESS}_{ib} + a_3 \cdot X_{it} + a_4 \cdot I_t + u_{it} + e_i \quad (1)$$

where  $b=1$  for years 1994-1996,  $b=2$  for years 1997-2000 and  $b=3$  for years 2001-2004,  $\text{CUMULATED LIFE SATISFACTION}_{ib}$  is the sum of life satisfaction scores of individual  $i$  over the years of block  $b$ ,  $\text{CUMULATED CONSUMPTION}_{ib}$  is the sum of consumption flows of individual  $i$  over block  $b$ ,  $e_i$  is a time invariant individual fixed effects,  $X_{it}$  is a vector of socio-demographic controls,  $I_t$  are time dummies,  $u_{it}$  is a white noise; these three sets of variables are measured at the last year of each time block.

To be consistent, I retain the last year of each block for the variables that are not “collapsed” such as  $X_{it}$ : hence,  $t=1996$  if  $b=1$ ,  $t=2001$  if  $b=2$  and  $t=2004$  if  $b=3$ .

The estimation of equation (1) is thus run on a sample of 2808 individuals \* 3 years, i.e. 8424 observations.

---

<sup>5</sup> Subjective variables are ordinal variables, hence, in principle, they are improper to simple differences. Two solutions are then available: (i) either collapse the satisfaction and expectations variables into categories (satisfied/not satisfied, situation will improve/deteriorate) and run a conditional fixed effect logit model, which imposes an important loss of information; (ii) or ignore the ordinal nature of the variables and use classic panel models. Surprisingly, after a series of papers which cautiously respected the ordinal nature of subjective variables, economists started to go back to linear models, considering after Ferrer-i-Carbonnel and Frijters (2004) that introducing fixed effects was of primary importance. In this paper, I adopt essentially adopt the second approach, but I check that it is robust to the first one.

<sup>6</sup> I have done the same exercise collapsing the time dimension into two periods of five years: the results are identical.

In terms of INDICATOR OF PROGRESS, I consider alternatively four indicators. They measure respectively the number of times, inside each time block, a individual declares expecting an improvement, expecting a stable situation or expecting a deterioration in the material situation of his family. I also measure an objective indicator of progression, i.e. the number of times the real household income of an individual has increased during the period. All these indicators can take discrete values from 0 to 3.

This specification does not solve all the problems. Another important caveat is that happiness and financial expectations can be endogenous to some unobserved variable (omitted variable problem). A solution is then to instrument expectations. In addition, there is the suspicion that happiness influences expectations rather than the opposite (reverse causation problem). People who are unhappy at a certain point of their life could well have a bias towards pessimistic expectations of income for instance. On the contrary, people who are satisfied and in a good mood could well be more optimistic. Instrumentation also solves part of this problem. On the other hand, as long as the causality does go from expectations to happiness, one should not mind the existence of a reverse causality too. The objective is not to exclude that happiness causes optimistic expectations, but to only assess whether the reverse is true.

As it is difficult to instrument the aggregate score of expected progress, I use a different specification. I regress current Life Satisfaction over instrumented current expectations, controlling for socio-demographic variables, time dummies and individual fixed effects.

Lastly, to be sure to be dealing with experienced utility, I use self-assessed HEALTH (*Tell me, please: How would you evaluate your health?*) the endogenous variable of the above regressions, instead of LIFE SATISFACTION. The next section presents the results of the empirical analysis.

### **3. RESULTS**

The empirical analysis shows that the time profile of consumption seems to have a welfare impact *per se*. Instrumenting expectations and testing the notion of life satisfaction do not alter this result.

#### **3.1 The importance of progressing**

I start with the estimation of equation (1), which tries to answer the following questions: with hindsight, for a given stock of total cumulated consumption over three consecutive periods,

how does the fact of having nourished positive expectations feed into cumulated happiness? And how does the fact of having experienced a rising income profile affect cumulated happiness? This exercise thus tries to capture the welfare effect of the perceived and objective time profile of individuals' living standard.

Table 1 displays the estimation of equation (1), i.e. regressions of CUMULATED LIFE SATISFACTION scores of the periods 1994-1996, 1998-2001 and 2002-2004 over CUMULATED EXPENDITURE in the same periods, an INDICATOR OF CUMULATED PROGRESSION in one's living standard and other controls measured at the last year of each block (1996, 2001, 2004).

Not surprisingly, total CUMULATED REAL HOUSEHOLD EXPENDITURE exerts an important impact on CUMULATED LIFE SATISFACTION. Then, controlling for this variable, column 1 shows the positive welfare impact of the number of periods individuals objectively experienced an increase in their real household income (symmetrically, aggregate happiness decreases with the number of periods of declining living standard).

Turning to subjective variables, Table 1 suggests that the more often individuals have nourished positive expectations, the higher their total cumulated happiness score (column 2). One additional period of positive expectations increases cumulated happiness by 0.546, knowing that the cumulated happiness score over three years varies from 0 to 15 with an average of 6.9 and a standard deviation of 0.76. Expecting a stable living standard (column 3) is also a factor of cumulated happiness but by a much lower extent. Conversely, the more often individuals have expected a deterioration in their living standard, the lower their cumulated happiness score (column 4). However, expecting an improvement exerts an impact of a larger magnitude than expecting stability or a deterioration.

Hence, controlling for the total stock of real consumption over three years, there seems to be a positive relation between income mobility, both past (objective) and expected, and individual total happiness. In other words, for a given amount of consumption over time, the time-profile matters: individuals have a preference for increasing time-profiles of consumption.

**Table 1. Happiness and Consumption Dynamics****Fixed Effects OLS of Life Satisfaction**

	-1	-2	-3	-4
NB PERIODS WITH HOUSEHOLD INCOME RISE	0,089*** [0.034]			
NB PERIODS WITH EXPECTATIONS OF IMPROVEMENT		0.546*** [0.041]		
NB PERIODS WITH EXPECTATIONS OF STABILITY			0.106*** [0.028]	
NB PERIODS WITH EXPECTATIONS OF DETERIORATION				-0.385*** [0.033]
LOG TOTAL EXPENDITURE	0,168*** [0.019]	0.152*** [0.019]	0.168*** [0.019]	0.151*** [0.019]
Constant	5.658*** [4.024]	5,653 [3.966]	5,484 [4.026]	6,003 [3.980]
Observations	8284	8214	8214	8214
Number of persons	2808	2808	2808	2808
R-squared	0,229	0,254	0,232	0,249
Log likelihood	-14844	-14532	-14653	-14561

*Controls: age, age square, number of children, working status, marital status, time dummies.*

*Regression of cumulated LIFE SATISFACTION SCORES of the periods 1994-1996, 1998-2001 and 2002-2004 over cumulated expenditure and cumulated indicators of improvement in the same periods and other controls taken at the last year of each block (1996, 2001, 2004).*

Before addressing the problem of omitted variables in a systematic way (in section 3.3), I try to rule out a possible (sceptical) interpretation of columns 2 to 4 of Table 1, namely that people tend to extrapolate the trends that they have experienced in the past. This would imply that people who have experienced a past improvement tend to have positive expectations and be happier, whereas those who have experience negative outcomes in the past tend to expect that the same evolution will happen in the future. If this is so, then Table 1 is not illustrating the effect of expected change on happiness but simply the effect of past experience.

In order to explore this issue, Table 2 presents the regression of current LIFE SATISFACTION over current EXPECTED IMPROVEMENT, controlling for real expenditure and the usual controls, over three different samples of individuals: the whole sample (column 1), the sub-sample of individuals who estimate that their situation has improved as compared to 12 months ago (column 2), and the sub-sample of people who think that their situation has worsened or remained unchanged (column 3). Table 2 shows that the effect of EXPECTED IMPROVEMENT

remains positive and significant whatever the past evolution of the agent. Hence, the effect of EXPECTED IMPROVEMENT on LIFE SATISFACTION does not just reflect the past experience of individuals.

**Table 2. The impact of expectations does not depend on past evolution**

**Fixed Effects OLS Regressions OF LIFE SATISFACTION**

	-1	-2	-3
	All	Sit. Improved	Sit. did not improve
EXPECTED IMPROVEMENT	0.343*** [0.021]	0.162** [0.080]	0.200*** [0.047]
LOG REAL EXPENDITURE	0.128*** [0.012]	0,019 [0.060]	0.084*** [0.027]
Constant	1.482* [0.781]	9,745 [7.617]	-8.218* [4.889]
Observations	17018	1771	5489
Number of persons	2551	1084	2114
R-squared	0,128	0,071	0,037
Log likelihood	-19917	-1228	-5261

*Controls: age, age square, nb kids under 7 in household, nb kids from 7 to 18 years old in household, working status, marital status, year dummies.*

*Dichotomized variable: expect improvement: yes or no.*

*The number of observations is smaller in columns 2 and 3 because variable past improvement is only available during four waves, from 2001 to 2004.*

### **3.2 Health and expected improvement**

Another, more worrying, sceptical question is the following: Does the variable LIFE SATISFACTION really measures *ex post* experienced utility and not *ex ante* expected utility? In the latter case, there would be nothing surprising about the fact that expected improvement raises expected future utility. By contrast, if declared LIFE SATISFACTION reflects (at least partly) experienced happiness, then the observation that this variable is influenced by expectations is not trivial. In other words, the question is whether declared LIFE SATISFACTION measures a feeling rather than a value judgement.

How can one depart decision-utility from experienced-utility? One route is to think about the definition of health by the World Health Organization (1946): “*Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*”; this description is almost indistinguishable from the definition of well-being, i.e. experienced utility. *De facto*, self-assessed health is highly correlated with declared satisfaction (R<sup>2</sup>=0.19). Now most specialists would agree that health is certainly an experience rather than a

judgement. It is thus interesting to use the SELF-ASSESSED HEALTH variable, which is available in the RLMS survey, as a proxy for the feeling of satisfaction and see whether it depends on past and expected progress.

I thus estimate an equation similar to (1) in which I replace LIFE SATISFACTION with SELF-ASSESSED HEALTH.

**Table 3. Health and consumption dynamics**

**Fixed effects OLS regressions of SELF-DECLARED HEALTH**

	-1	-2	-3	-4
NB PERIODS WITH HOUSEHOLD INCOME RISE	0,016 [0.019]			
NB PERIODS WITH EXPECTATIONS OF IMPROVEMENT		0.095*** [0.024]		
NB PERIODS WITH EXPECTATIONS OF STABILITY			0,024 [0.016]	
NB PERIODS WITH EXPECTATIONS OF DETERIORATION				-0.101*** [0.019]
LOG TOTAL EXPENDITURE	0,005 [0.011]	0,002 [0.011]	0,005 [0.011]	0 [0.011]
Constant	10.141*** [2.313]	10.101*** [2.323]	10.057*** [2.326]	10.181*** [2.320]
Observations	8214	8214	8214	8214
Number of persons	2808	2808	2808	2808
R-squared within	0,044	0,047	0,044	0,049
log likelihood	-10148	-10137	-10147	-10128

*Controls: age, age square, number of children, working status, marital status, time dummies.*

*Regression of cumulated Health scores of the periods 1994-1996, 1998-2001 and 2002-2004 over cumulated expenditure and cumulated indicators of improvement in the same periods and other controls taken at the last year of each block (1996, 2001, 2004).*

As shown by Table 3, self-assessed HEALTH<sup>7</sup> is sensitive to one's expected consumption trajectory. Positive and negative expectations have an impact of similar magnitude (columns 2 and 4 in Table 3) although negative prospects have a slightly more important impact. This contrasts with the regression of LIFE SATISFACTION, where the number of periods with

<sup>7</sup> It may come as a surprise that the coefficients on total expenditure and objective income rise are not significant, but this is a classical result that income is not a significant variable in the regression of subjective health.

EXPECTATIONS OF IMPROVEMENT had a larger impact than the number of periods with EXPECTATIONS OF DETERIORATION.

Hence, SELF-ASSESSED HEALTH can be considered as a proxy of LIFE SATISFACTION but seems to have its own profile. In particular, the stress generated by negative anticipatory feelings seems to be particularly harmful for subjective health. Beyond these particular feature of self-assessed health, the lesson of Tables 1 and 3 is that expected and observed progression can be considered to influence experienced-utility and not only decision-utility.

### **3.3 Ruling out the “omitted variable” interpretation**

When assessing the welfare effect of expected and perceived improvement, how can one be sure not to be evaluating the impact of a hidden variable? In this section I concentrate on the influence of expectations.

The classical response to the omitted variable problem is instrumentation, hence one needs to think of a variable that influences EXPECTATIONS directly, but only influences LIFE SATISFACTION through EXPECTATIONS. Stutzer (2003) uses aggregate income variables and contact with neighbours as instruments for aspirations. In a similar spirit, I use the typical income of one’s professional group to instrument EXPECTATIONS. I thus regress real income ( $y_t$ ) on age, gender, industry, diploma, occupation and regional price level. I then use the PREDICTED INCOME of the next period ( $\hat{y}_{t+1}$ ) as an instrument, which is what agents should expect if they had perfect foresight. (I check that indeed agents have quite reasonable forecasts about the evolution of their living standard, see section 4.1). Lastly, I verify that instrumented expectations do influence self-declared happiness.

The system of equation to estimate is thus the following:

- PREDICTED INCOME: 
$$y_t = b_0 + b_1 \cdot [\text{age, gender, education, occupation, region, industry}]_t + \varepsilon_{it} \quad (2.1)$$

- EXPECTED IMPROVEMENT : 
$$E_{it} = e_0 + e_1 \cdot \hat{y}_{i,t+1} + v_{it} + \omega_i \quad (2.2)$$

- LIFE SATISFACTION: 
$$LS_{it} = d_0 + d_1 \cdot C_{it} + d_2 \cdot \hat{E}_{it} + d_3 \cdot X_{it} + d_4 \cdot I_t + v_{it} + v_i \quad (2.3)$$

where  $\varepsilon_{it}$ ,  $v_{it}$  and  $v_i$  are white noises, and  $\omega_i$  and  $v_i$  are individual fixed effects.

Beyond the usual assumptions about the error terms, this system is based on the assumption that PREDICTED FUTURE INCOME  $\hat{y}_{i\ t+1}$  does not influence LIFE SATISFACTION directly but only via EXPECTATIONS, which means that the right-hand side variables that are used to estimate  $\hat{y}_{i\ t+1}$  should also not influence LIFE SATISFACTION directly but only via EXPECTATIONS, except those who are also present in the final regression of LIFE SATISFACTION, i.e. age and gender. One also has to avoid the risk of perfect multi-collinearity between the right-hand side variables in the estimation of  $\hat{y}_{i\ t+1}$  and the right-hand side variables of the regression of Life Satisfaction, in particular, the socio-demographic variables that are designated under the term  $X_{it}$ . As shown in Table 4,  $X_{it}$  includes age, age square, the number of children under 7 years old and between 7 and 18 years old, the working status and the marital status of the individuals. This exclusion relation should ensure that this risk is avoided.

**Table 4. Two Stage Least Square Regression of LIFE SATISFACTION EXPECTATIONS Instrumented by PREDICTED INCOME for the Next Period**

<b>Second stage regression of LIFE SATISFACTION</b>			
	<b>Coef.</b>	<b>Std. Err.</b>	<b>t</b>
<b>EXPECTED IMPROVEMENT</b>	<b>0,81</b>	<b>0,20</b>	<b>4,04</b>
Log real expenditure	0,09	0,04	2,25
Age	-0,01	0,01	-1,5
Age square	0,00	0,00	2,76
Nb child<7	-0,05	0,02	-2,93
Nb child 7<n<18	-0,04	0,01	-2,85
Working	0,18	0,03	5,58
Never married	-0,03	0,04	-0,85
Divorced	-0,10	0,04	-2,56
Widow	-0,12	0,04	-3,34
_cons	-0,57	0,47	-1,23
Number of obs	18290		
Nb clusters	2801		
F( 10, 2800)	96,98		
Prob > F	0,00		
R-squared	0,04		
Root MSE	1,05		
<b>First-stage regression of EXPECTED IMPROVEMENT</b>			
	<b>Coef.</b>	<b>Std. Err.</b>	<b>t</b>
<b>PREDICTED FUTURE INCOME</b>	<b>0,12</b>	<b>0,02</b>	<b>6,25</b>
Log real expenditure	0,20	0,01	24,15
Age	-0,04	0,00	-14,7
Age square	0,00	0,00	11,64
Nb child<7	0,02	0,01	1,65
Nb child 7<n<18	-0,05	0,01	-5,33

Working	-0,12	0,02	-7,02
Never married	0,00	0,03	0,05
Divorced	0,00	0,03	-0,09
Widow	0,03	0,02	1,34
_cons	1,22	0,18	6,79
Number of obs	18290		
nb clusters	2801		
F( 10, 18279)	156,76		
Prob > F	0,00		
R-squared	0,08		
Adj R-squared	0,08		
Root MSE	0,94		

*Regression with robust errors, cluster (individual). Dichotomic happiness variable.*

*Instrumented: Expected improvement.*

The results of Table 4 show that the predicted income of the next period does influence current expectations and that instrumented expectations, in turn, do influence Life Satisfaction. Hence, one cannot reject the assumption that the relation between EXPECTED IMPROVEMENT and LIFE SATISFACTION is not spurious.

The same doubt can be cast on SUBJECTIVE HEALTH: do optimistic persons feel more healthy or is there some unobserved reason why they feel both more optimistic and more healthy? Likewise for the regression of LIFE SATISFACTION, I try to establish the direction of the causality by instrumenting EXPECTED IMPROVEMENT on future PREDICTED INCOME, assuming that PREDICTED INCOME only influences SUBJECTIVE HEALTH via EXPECTATIONS. The result of the 2SLS estimation confirms that there is some causality going from expectations to health: in the first stage estimation of EXPECTED IMPROVEMENT, the coefficient of PREDICTED INCOME is 0,032, with a T statistics of 4; in the second stage estimation of HEALTH, the coefficient of instrumented EXPECTED IMPROVEMENT is 0,949, with a T statistics of 2,4 (controlling for the usual variables).

Hence experienced utility, as proxied by SELF-DECLARED HEALTH, seems to be influenced by expectations.

### **3.4 The elements of moment utility**

Having found that consumption profiles seem to exert an impact on Life Satisfaction, a natural question is the relative importance of past and future evolutions on the one hand, and

of contrast versus level effects on the other hand. The idea is thus to evaluate the various elements of the total moment utility (Kahneman et al., 1997) by estimating equation (3):

$$\text{LIFE SATISFACTION}_{it} = \alpha_0 + \alpha_1 \cdot \text{CURRENT CONSUMPTION}_{it} + \alpha_2 \cdot \text{LAGGED CONSUMPTION}_{it} + \alpha_3 \cdot \text{PAST IMPROVEMENT}_{it} + \alpha_4 \cdot \text{EXPECTED IMPROVEMENT}_{it} + \alpha_5 \cdot \text{SURPRISE}_{it} + \alpha_6 \cdot X_{it} + \alpha_7 \cdot I_t + \varphi_i + \eta_{it} \quad (3)$$

where  $X_{it}$  is a vector of socio-demographic controls,  $\varphi_i$  represents time invariant individual fixed effects,  $I_t$  are time dummies and  $\eta_{it}$  is a white noise. Current and lagged consumption effects are captured using the actual LOG REAL EXPENDITURE of the household.

It is important to control for current consumption in order to separate the effect of progress from that of consumption itself. Not controlling for current consumption, a positive coefficient on PAST IMPROVEMENT could be interpreted as reflecting the effect of the level of consumption reached by the individual. Similarly, a positive coefficient on EXPECTED IMPROVEMENT could be interpreted as the effect of consumption smoothing; in this case, their increased happiness cannot be attributed to the perspective of future consumption, but to the higher current consumption that they enjoy.

Table 5.A displays fixed effects OLS regressions of LIFE SATISFACTION. It confirms the importance of EXPECTED IMPROVEMENT and PAST IMPROVEMENT. The other socio-demographic controls are not displayed; they exhibit the usual properties, namely that life satisfaction is best for married people as opposed to single, divorced or widowed, that its relation with age is U shaped, and that working is positive (see for instance Frey and Stutzer, 2002, or Blanchflower and Oswald, 2004).

**Table 5.A. Fixed Effects OLS Regressions of LIFE SATISFACTION**

	LIFE SATISFACTION
<b>EXPECTED IMPROVEMENT</b>	<b>0,166***</b> [0,023]
<b>PAST IMPROVEMENT</b>	<b>0,235***</b> [0,031]
<b>SURPRISE</b>	<b>0,017</b> [0,019]
LOG REAL HOUSEHOLD EXPENDITURE	0,083*** [0,026]
LAGGED LOG REAL HOUSEHOLD EXPENDITURE	0,031 [0,025]
Constant	-6,26 [4,397]
Observations	5986
Number of persons	1995
R-squared	0,102
log likelihood	-5953,37

*Controls: age, age square, nb kids under 7 in household, nb kids from 7 to 18 years old in household, working status, marital status, year dummies.*

*Regression on years 2001-2004 for which the variable PAST IMPROVEMENT is non-missing.*

Table 5.A suggests that although past evolution exert a clear impact on LIFE SATISFACTION, it does not matter whether it is expected or unexpected. Indeed, the coefficient on the variable SURPRISE is not significant. (The variable SURPRISE captures the part of the change that was not expected at the previous period. It is defined as the difference between observed change in period t minus expected change in period t-1). This could be hiding the existence of an asymmetric effect of positive versus negative surprises. To investigate this possibility, Table 5.B presents a specification of the regression of LIFE SATISFACTION where all variables are dichotomised.

### ***The asymmetric impact of bad versus good surprises***

I thus split all subjective variables, including LIFE SATISFACTION into categorical dummies and estimate a conditional fixed effects logit model. The variable SURPRISE has been recoded into three modalities: positive, negative or zero.

**Table 5.B. Conditional Fixed Effects Logit Regressions of LIFE SATISFACTION**

	-1	-2	-3
SITUATION WILL IMPROVE	0,557***	0,575***	0,506***
	[0,119]	[0,125]	[0,129]
SITUATION WILL WORSEN	-0,309*	-0,258	-0,305
	[0,178]	[0,191]	[0,197]
SITUATION HAS IMPROVED	0,692***		0,650***
	[0,110]		[0,145]
SITUATION HAS WORSENE	-0,450***		-0,18
	[0,143]		[0,170]
GOOD SURPRISE		0,268**	-0,061
		[0,114]	[0,136]
BAD SURPRISE		-0,552***	-0,326**
		[0,121]	[0,139]
LOG REAL EXPENDITURE	0,230***	0,304***	0,275***
	[0,085]	[0,094]	[0,095]
LAGGED LOG REAL EXPENDITURE	0,126	0,126	0,112
	[0,083]	[0,090]	[0,091]
Constant			
Observations	2988	2563	2563
Number of persons	848	729	729
log likelihood	-990,33	-856,5	-845,35

*Controls: age, age square, nb kids under 7 in household, nb kids from 7 to 18 years old in household, working status, marital status, year dummies.*

*For categorical variables, the omitted categories are respectively: “situation will remain stable”, “situation has not change” and “no surprise” (i.e. observed change=expected change).*

*Regression on years 2001-2004 for which the variable PAST IMPROVEMENT is non-missing.*

The coefficients of the first four rows of Table 5.B are not surprising. Column 2 shows that BAD SURPRISES have a greater impact than GOOD SURPRISES.

In Table 5.B, I introduce successively SITUATION HAS IMPROVED/WORSENE (column 1), SURPRISE (GOOD and BAD) (column 2), and finally all effects together (column 3). Comparing column 1 with column 2, one can see that the coefficient on GOOD SURPRISE is smaller than the coefficient on SITUATION HAS IMPROVED, whereas the coefficient on BAD SURPRISE is higher than the coefficient on SITUATION HAS WORSENE: when things worsen, this has a greater negative impact on well-being if this was not expected.

Putting the two sets of variables together, one sees (in column 3) that observed improvement “kills” the effect of a surprise improvement, whereas the reverse is true for deterioration. The coefficient on GOOD SURPRISE is not significant, whereas that on BAD SURPRISE is. In other

words, improvement is good *per se*, whether expected or not, whereas worsening is particularly harmful when it is unexpected. Mellers and MacGraw's (1999) have suggested that surprise has a greater effect on satisfaction than expected events: this seems to be particularly true of negative evolutions.

#### **4. INTERPRETATION**

This set of results suggest the following conclusions: Remembered and expected events exert an important impact on current experienced utility. They influence Life Satisfaction as well as self-assessed health. Declared Life Satisfaction thus expresses moment-utility, which, according to Kahneman (2003), is best suited for constructing a measure of objective happiness.

The finding that deterioration is more painful when it is unexpected can be related to Kahneman and Tversky's prospect theory (1979), which postulates that people evaluate outcomes relative to a neutral point, with an asymmetry of comparisons relative to this point. Well-known under the name of "loss-aversion", this asymmetry implies that the pain from a loss is greater than the pleasure from a gain (relative to the neutral point). Somehow, a negative shock constitutes a loss by reference to the outcome that was expected.

More generally, *ceteris paribus*, people are happier when they observe or expect a positive change. This suggests the existence of a preference for sequences that improve over time. As put by Camerer and Loewenstein (2004): "*A majority of subjects prefer sequences that improve over time. Preferences for improvement appear to be driven in part by savouring and dread, and in part by adaptation and loss-aversion*". This is because "*improving sequences allow decision makers to savour the best outcomes under the end of the sequence. With losses, getting undesirable outcomes over with quickly eliminates dread. Adaptation leads to a preference for improving sequences because people tend to adapt to ongoing stimuli over time and to evaluate new stimuli relative to their adaptation level [...]. Loss aversion intensifies the preference for improvement over deterioration*".

But is it rational to have a taste for improvement in the presence of adaptation? In order to answer this question, in the next section, I focus on the role of expectations.

## **4.1 Happiness out of illusion?**

Is it because agents underestimate adaptation and overestimate their future welfare that positive prospects make them happy<sup>8</sup>, as suggested by Easterlin (2001)? Partisans of economic growth could reply that even so, people who strive for money, although they may find out that the increase in their material standard is not as satisfying as expected, may nonetheless have enjoyed the perspective.

However, this raises a series of issues. First, how much value can we attach to growth if its welfare effect is due to agents' misprediction of their future utility? More importantly, when agents acknowledge that their expectations were too high, how much disutility does this generate? To what extent does the *ex post* disutility of disappointment compensate the flow of anticipatory feelings that was felt *ex ante*? Conversely, is there a possibility of a double dividend: one from the imagination, one from the realization of the event?

Column 3 in Table 5.B brings an element of answer to this question by showing that the impact of a "bad surprise" is of about the same magnitude as that of positive expectations. However, bad surprises seem to be less frequent than correct expectations; as suggested by Table 1, which shows that the inter-temporal effect of having positive expectations is to increase cumulated happiness. An interpretation of Table 1 is thus that in spite of adaptation and possible forecasting errors, positive prospects seem to exert a net positive effect on individual inter-temporal welfare.

Moreover, the data shows that agents make quite reasonable predictions about their future standard of living. In the fixed effect OLS regression of PAST IMPROVEMENT (*How has the financial situation of your family changed in the last 12 months?*) at period  $t$ , the coefficient of EXPECTED IMPROVEMENT (*Do you think that in the next 12 months you and your family will live better than today or worse?*) at period  $t-1$  is positive, important and significant at the 1% level. Identically, in the regression of current ECONOMIC SATISFACTION at time  $t$ , controlling for lagged economic satisfaction at time  $t-1$ , the coefficient of lagged EXPECTED IMPROVEMENT is positive and significant. Hence, the data do not validate the assumption that

---

<sup>8</sup> The literature is rich of examples of mistaken forecasts of future welfare. Loewenstein (1987, 2003) for instance, reports the experience of people whose degree of anxiety about a future surgery operation turns out to be much more intense than the actual pain they actually suffer during the operation.

agents are not lucid about their future prospects, and more precisely that they fail in predicting the way they will appreciate their consumption level in the future (which is what adaptation is about).

But if adaptation is total and agents are aware of it, do they still have a preference for increasing profiles? The answer could be affirmative if agents had a pure taste for progression per se. However, the data that we are using do not validate the assumption of complete adaptation: To test the extent of adaptation to income, I use the same method as Di Tella, de New and MacCulloch (2005), namely, I introduce HOUSEHOLD EXPENDITURE at time  $t$ ,  $t-1$ ,  $t-2$  and  $t-3$ , in the regression of LIFE SATISFACTION, controlling for the usual socio-demographic variables. I do not find evidence of a strong adaptation effect. The coefficients on the lagged variables are not significant. Identically, I introduce ECONOMIC SATISFACTION at time  $t$ ,  $t-1$ ,  $t-2$  and  $t-3$  in the regression of Life Satisfaction. Again, the coefficients on the lagged variables are not significant. Only consumption at time  $t-3$  is negative. Their order of magnitude is ten times as small as than the coefficient of current ECONOMIC SATISFACTION. Hence, the data hardly support the assumption of adaptation, and certainly not the assumption of complete adaptation.

In summary, expectations are not completely misled, they are consistent with agents' *ex post* evaluation of their situation, which in turn influences Life Satisfaction, as we have seen in section 3. One can conclude that agents are not completely mistaken when they rejoice at the prospect of a future improvement in their living standard. Their anticipatory feelings are not totally compensated by an *ex post* dissatisfaction.

## **4.2 A built-in disposition?**

Why do agents have a preference for time-increasing consumption profiles? Camerer and Loewenstein (2004) go as far as claiming that “*people have a “gestalt” notion of an ideal distribution of outcomes in time*”, which means that trying to progress is something like a built-in mechanism, a basic instinct. This observation finds an echo in the psychologic corpus, in particular the so-called telic theories.

Firstly, having aspirations as such is recognized as being good for one's happiness. “*Dispositional optimism*” for instance, i.e. “*one's characteristic thoughts about the future*”, is considered by many psychologists as a correlate of happiness (Diener et al., 1999). Cantor and Sanderson (quoted by Diener et al., 1999, p 284) note that “*having goals provides a sense*

*of personal agency and a sense of structure and meaning to daily life*". Emmons (1986) reports that *"positive affect and a higher life satisfaction are associated with past fulfilment of goals and with having valued goals, independent of past success"*. Pomerantz et al. (quoted by Diener and Lucas, 2000) also claim that *"people with more goals that they consider very important have higher life satisfaction, self-esteem and positive affect"*. As a *contraposée*, not trying to progress, not having aspirations is often considered by psychologists as a sign of depression or illness.

Secondly, the mere fact of moving towards one's goals is also recognized as a source of well-being. Michalos (1985) notes that *"the process of moving towards one's aspirations may be more important to well-being than the end-state of goal attainment. Thus people with high aspirations and low current outcomes may be satisfied as long as they are making adequate progress towards their goal"*. According to Emmons (1986), *"happiness results more from the pursuit of a goal than from the attainment of a goal"*.

Some authors attribute these observations to anthropologic considerations. They see the attempt to progress as a built-in mechanism specific to humanity. Frank and Hutchens (2004, p 555) for instance, note that the biological model of human nervous system creates the condition of sensitivity to change and deviation rather than to level. It is also tempting to look at the improvement instinct as a feature selected by evolution<sup>9</sup>.

Philosophical minds will prefer to refer to the legend of Sisyphus. As a punishment inflicted by Zeus, Sisyphus was doomed to push a boulder uphill over and over again, knowing that as soon as the rock would reach the top it would immediately fall back. In a similar way, man could be doomed to progress: progressing does not always make him much more happy, but not doing so would condemn him to an even more cruel fate. A more optimistic interpretation of Sisyphus would be the view of Descartes that self-esteem is the basis of happiness. Hence, progressing, while as painstaking as pushing Sisyphus' boulder, would make man happy by generating self-esteem, or the pleasure that derives from contemplating a valuable goal.

---

<sup>9</sup> Of course, it could be argued that evolutionism is based on competition, and that it is competition that forces individuals to progress, in spite of their preference for leisure. But then the question has to be addressed why people engage into competition.

## 5. CONCLUSION

This paper has illustrated the existence of anticipatory feelings and the preference for improving sequences of consumption. Raising the incomes of all may not increase the happiness of all, but expecting a financial improvement seems to be a motive of well-being *per se*, beyond the obvious effect of consumption smoothing. To be sure, this pro-growth argument may not be decisive; in particular it does not take into account the negative externalities of growth. Similar effects could also probably be evidenced in other domains and it would be interesting to compare the relative impact of material improvement versus progress in other fields. Concerning economic growth, the lesson of this paper is that, akin to Sisyphus doom, progressing is the human lot.

## REFERENCES

- Becker G. and Murphy K., 1988, "A Theory of Rational Addiction", *Journal of Political Economy*, 96(4), 675-700.
- Berns G., Chappelow J., Cekic M., Zink C., Pagnoni G. and Martin-Skurski M., 2006, "Neurobiological Substrates of Dread", *Science*, 312, 754-758.
- Blanchflower D. and Oswald A. [2004], "Well-Being over Time in Britain and the USA", *Journal of Public Economics*, 88, 1359-1386.
- Brocas I. and Carillo J., eds, 2003, *The Psychology of Economics Decisions. Volume 1 : Rationality and Well-Being*, Oxford University Press.
- Brocas I. and Carillo J., eds, 2004, *The Psychology of Economics Decisions. Volume 2: Reasons and Choices*, Oxford University Press.
- Brocas I., Carillo J. and Dewatripont M., 2004 "Commitment Devices under Self-Control Problems: an Overview", in Brocas I. and Carillo J., eds, 2004, *op.cit.*, pp 49-66.
- Browning M. and Collado D., 2001, "The Responses of Expenditures to Anticipated Income Changes: Panel Data Estimates", *American Economic Review*, 91(3).
- Camerer C. and Loewenstein G., 2004, "Behavioural Economics: Past, Present, Future", in Camerer C., Loewenstein G. and Rabin M., eds, 2004, , *op.cit.*, pp 3-52.
- Camerer C., Loewenstein G. and Prelec D., "Neuroeconomics: How Neuroscience can Inform Economics", *Journal of Economic Literature*, forthcoming.
- Camerer C., Loewenstein G. and Rabin M., eds, 2004, *Advances in Behavioral Economics*, Princeton University Press and Russell Sage Foundation.
- Caplin A. and Leahy J., 2003, "Behavioural Policy", in Brocas I. and Carillo J., eds, 2003, *op.cit.*.
- Caplin Andrew and Leahy John, 2001, *Quarterly Journal of Economics*, volume CXVI, issue 1, pp 55-80, "Psychological expected utility and anticipatory feelings".
- Clark A., Diener E., Georgellis Y. and Lucas R., 2003, "Lags and Leads in Life Satisfaction: a Test of the Baseline Hypothesis", DELTA, mimeo (<http://www.pse.ens.fr/clark/BLINEaug03.pdf>).
- Di Tella R., Haisken de New J. and MacCulloch R., 2005, "Adaptation to Income and to Status in Individual Panel", Harvard Business School, mimeo.
- Diener E. and Lucas R., 2000, "Explaining differences in societal levels of happiness: relative standards, need fulfillment, culture, and evaluation theory", *Journal of Happiness Studies*, 1, 47-78.
- Diener Ed, Eunkook M. Suh, Lucas Richard, and Heidi L. Smith, 1999, « Subjective Well-Being : Three Decades of Progress », *Psychologic Bulletin*, 125(2), 276-302.

- Easterlin R. A., 1974, "Does economic growth improve the human lot? Some empirical evidence", in P.A. David et M.W. Reder, eds, *Nations and households in economic growth*, p 89-125, New-York, Academic Press.
- Easterlin R., 1995, "Will raising the incomes of all increase the happiness of all?" *Journal of Economic Behaviour and Organization*, 27, 35-47.
- Easterlin R., 2001, "Income and Happiness: Towards a Unified Theory", *The Economic Journal*, 111, 465-484.
- Easterlin R., 2003, "Explaining Happiness", PNAS, 100(19), ([www.pnas.org/cgi/doi/pnas1633144100](http://www.pnas.org/cgi/doi/pnas1633144100)).
- Elster J. and Loewenstein G., 1992, "*Utility from memory and anticipation*", in J. Elster and G. Loewenstein, eds., *Choice over Time*, New York: Russell Sage Foundation, pp. 213-234
- Emmons R., 1986, "Personal Strivings: An Approach to Personality and Subjective Well-Being", *Journal of Personality and Social Psychology*, 51, 1058-68.
- Frank R. and Hutchens R., 2004, "Wages, Seniority and the Demand for Rising Consumption Profiles", in Camerer C., Loewenstein G. and Rabin M., eds, 2004, *op.cit.*.
- Frederick S., Loewenstein G. and O'Donoghue T., 2002, "Time Discounting and Time Preference: a Critical Review", *Journal of Economic Literature*, 40, 351-401.
- Frey B. and Stutzer A. [2002], « What Can Economists Learn from Happiness Research ? », *Journal of Economic Literature*, XL(2), 402-35.
- Graham L. and Oswald A., 2006, "Hedonic Capital", University of Warwick, mimeo.
- Helson, H. (1947). "Adaptation-Level as a Frame of Reference for Prediction of Psychophysical Data". *American Journal of Psychology*, 60, 1-29.
- Kahneman D., 2003, "Experienced Utility and Objective Happiness: A Moment-Based Approach", in Brocas I. and Carillo J., eds, 2003, , *op.cit.*, pp 187-208.
- Kahneman D., Wakker P. and Sarin R., 1997, "Back to Bentham? Explorations of Experienced Utility", *Quarterly Journal of Economics*.
- Kőszegi B., 2005, "Utility from Anticipation and Personal Equilibrium", University of California, Berkely, mimeo.
- Loewenstein G. and Prelec D., 1991, "Negative Time Preferences", *American Economic Review, Papers and Proceedings*, 82(2), 347-352.
- Loewenstein G. and Sicherman N., 1991, "Do Workers Prefer Increasing Wage Profiles?", *Journal of Labour Economics*, 9(1), 67-84..
- Loewenstein G., 1987, "Anticipation and the Valuation of Delayed Consumption", *Economic Journal*, 97(387), 664-684.
- Loewenstein G., 2006, "The Pleasures and Pains of Information", *Science* 312, 704-706.

Loewenstein G., Read D. and Baumeister R., eds., 2003, *Time and Decision*, Russell Sage Foundation.

Mellers B. and McGraw P., 2004, “Self-Serving Beliefs and the Pleasures of Outcomes”, in Brocas I. and Carillo J., eds, 2004, , *op.cit.*, pp31-48

Palacios-Huerta I., 2004, “Consistent Intertemporal Decision-Making through Memory and Anticipation”, in Brocas I. and Carillo J., eds, 2004, , *op.cit.*, pp 67-80.

Senik C., 2004, “ When Information Dominates Comparison. Learning from Russian Subjective Panel Data ”, *Journal of Public Economics*, 88 (9-10), 2099-2133.

Stutzer A., 2004, “The role of Income Aspirations in Individual Happiness”, *Journal of Economic Behavior and Organization*”, 54, 89-109.

Van Praag B. and Ferrer-I-Carbonell, 2004, *Happiness Quantified*, Oxford University Press.

Van Praag B., 1971, “The Welfare Function of Income: an Empirical Investigation”, *European Economic Review*, 2, 337-69.

Van Praag B., 1991, « Ordinal and Cardinal Utility », *Journal of Econometrics*, 50(7), 69- 89.

## APPENDIX. DESCRIPTIVE STATISTICS

Source RLMS rounds 5 to 13 (1994-2004), population from 18 to 65 years old.

**LIFE SATISFACTION.** To what extent are you satisfied with your life in general at the present time?

LIFE SATISFACTION	1994	1995	1996	1998	2000	2001	2002	2003	2004	Total
Not at all satisfied	576	759	873	1071	661	504	365	410	368	5587
Less than satisfied	1153	1029	1006	978	1114	1094	895	1016	911	9196
Both yes and no	525	540	538	482	602	656	707	645	714	5409
Rather satisfied	244	203	200	214	324	447	695	616	725	3668
Fully satisfied	76	80	48	45	76	86	139	112	74	736
<i>Total</i>	<i>2574</i>	<i>2611</i>	<i>2665</i>	<i>279</i>	<i>2777</i>	<i>2787</i>	<i>2801</i>	<i>2799</i>	<i>2792</i>	<i>24596</i>

**PAST IMPROVEMENT.** Tell me, please: How has the financial situation of your family changed in the last 12 months?

PAST IMPROVEMENT	2001	2002	2003	2004	Total
Greatly worsened	239	179	177	194	789
Slightly worsened	427	400	395	413	1635
Has not changed	1495	1521	1592	1633	6241
Slightly improved	564	611	575	475	2225
Greatly improved	62	79	35	54	230
<i>Total</i>	<i>2787</i>	<i>279</i>	<i>2774</i>	<i>2769</i>	<i>1112</i>

**ECONOMIC SATISFACTION.** Tell me, please: How satisfied are you with your economic conditions at the present time?

ECONOMIC SATISFACTION	2000	2001	2002	2003	2004	Total
Not at all satisfied	1096	904	830	809	855	4494
Less than satisfied	1099	1155	1066	114	1085	5545
Both yes and no	348	420	444	468	463	2143
Rather satisfied	207	285	398	332	360	1582
Fully satisfied	42	37	64	51	37	231
<i>Total</i>	<i>2792</i>	<i>2801</i>	<i>2802</i>	<i>28</i>	<i>28</i>	<i>13995</i>

**EXPECTED IMPROVEMENT.** Do you think that in the next 12 months you and your family will live better than today or worse?

EXPECTED IMPROVEMENT	1994	1995	1996	1998	2000	2001	2002	2003	2004	Total
You will live much worse	595	593	573	748	233	143	119	111	138	3253
You will live somewhat worse	597	533	507	548	355	279	293	300	332	3744
Nothing will change	894	949	1006	797	1249	1411	1475	1413	1438	10632
You will live somewhat better	293	249	247	209	397	485	479	458	411	3228
You will live much better	45	45	33	33	54	53	70	36	68	437
<i>Total</i>	<i>2424</i>	<i>2369</i>	<i>2366</i>	<i>2335</i>	<i>2288</i>	<i>2371</i>	<i>2436</i>	<i>2318</i>	<i>2387</i>	<i>21294</i>

**HEALTH. Tell me, please: How would you evaluate your health? It is:**

HEALTH	1994	1995	1996	1998	2000	2001	2002	2003	2004	Total
Very bad	52	37	32	51	73	66	67	68	95	541
Bad	375	373	391	409	414	448	465	514	491	388
Average, not good, but not bad	1697	1589	1584	1608	1658	169	1653	1626	1607	14712
Good	643	762	761	663	602	574	581	564	577	5727
Very good	35	31	33	66	53	26	36	27	23	330
<i>Total</i>	<i>2802</i>	<i>2792</i>	<i>2801</i>	<i>2797</i>	<i>28</i>	<i>2804</i>	<i>2802</i>	<i>2799</i>	<i>2793</i>	<i>2519</i>

**TOTAL REAL EXPENDITURE OF THE HOUSEHOLD**

Year	1994	1995	1996	1998	2000	2001	2002	2003	2004
Mean	10356	8757	7722	5749	6830	7752	7622	8620	8342
Standard deviation	8930	8800	8316	5914	7879	7734	6834	13291	8528

**CUMULATED SUBJECTIVE VARIABLES BY BLOCKS OF YEARS**

	Obs.	Mean	Std, Dev.	Min	Max
<b>1994-1996</b>					
Number of periods with objective income rise	8424	0,77	0,61	0	2
Number of periods with expectations of improvement	8424	0,32	0,66	0	3
Number of periods with expectations of stability	8424	1,01	0,94	0	3
Number of periods with expectations of stability	8424	1,21	1,05	0	3
Cumulated Life Satisfaction score	8424	6,05	2,61	0	15
<b>1998-2001</b>					
Number of periods with objective income rise	8424	1,64	0,70	0	3
Number of periods with expectations of improvement	8424	0,44	0,74	0	3
Number of periods with expectations of stability	8424	1,23	0,94	0	3
Number of periods with expectations of stability	8424	0,82	0,87	0	3
Cumulated Life Satisfaction score	8424	6,70	2,37	0	15
<b>2002-2004</b>					
Number of periods with objective income rise	8424	1,79	0,69	0	3
Number of periods with expectations of improvement	8424	0,54	0,85	0	3
Number of periods with expectations of stability	8424	1,54	1,02	0	3
Number of periods with expectations of stability	8424	0,46	0,78	0	3
Cumulated Life Satisfaction score	8424	8,10	2,57	0	15

## TABLE OF CONTENTS

<i>Abstract</i> .....	1
<i>1. Introduction</i> .....	2
1.1 Why isn't it trivial? .....	4
1.2 Why does it matter? .....	5
1.3 Existing empirical evidence .....	6
<i>2. Data and empirical strategy</i> .....	7
2.1 Subjective variables as proxies for welfare.....	8
2.2 Empirical strategy .....	9
<i>3. Results</i> .....	11
3.1 The importance of progressing .....	11
3.2 Health and expected improvement .....	14
3.3 Ruling out the "omitted variable" interpretation .....	16
3.4 The elements of moment utility .....	18
The asymmetric impact of bad versus good surprises.....	20
<i>4. Interpretation</i> .....	22
4.1 Happiness out of illusion? .....	23
4.2 A built-in disposition? .....	24
<i>5. Conclusion</i> .....	26
<i>References</i> .....	27
<i>Appendix. Descriptive Statistics</i> .....	30