

Explaining the Easterlin paradox

- Easterlin's proposed explanations:
 - ✓ Income comparison and relative utility
 - ✓ Adaptation
- Both imply thresholds in the individual utility function
 - ✓ Benchmarks: self-regarding/ other regarding
- This section presents the empirical evidence of relative income concerns

II. Adaptation

- “*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).
- 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”.*

Leyden school (1970)

- “Preference drift” (van Praag, Kapteyn)

✓ *“What income would you indicate as good or bad in your circumstances? Please try to state what income per month (before taxes) for your entire household you consider to be sufficient.”*

✓ **“Minimum income question”**: *“What household income per month would you consider an absolute minimum in order to make ends meet and without running into debt even if you reduce your needs to a minimum? (We do not only mean housekeeping allowance but all essentials, including insurance, rent, taxes and so on).”*

✓ A \$1 increase in household income leads to a 60 cents increase (within about 2 years) in the income that individuals consider to be ‘excellent’, ‘good’, ‘sufficient’, ‘bad’ etc.

✓ Hence, 60% of the welfare effect of income is dissipated **ex post** by adaptation (Leyden School, 1970’s) and higher aspirations of agents.

Stutzer (2004): Swiss HH Survey.

Aspirations reduce well-being

TABLE 1 (part 1)
THE EFFECT OF INCOME ASPIRATIONS ON SATISFACTION WITH LIFE

Dependent variable: satisfaction with life

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

TABLE 1 (part 2)

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

Notes: White estimator for variance. Additional control variables (not shown) for 'French speaking cantons' and 'Italian speaking cantons'.

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

The gap between actual income and aspirations reduces well-being

TABLE 2

THE EFFECT OF THE DISCREPANCY BETWEEN ASPIRATIONS AND INCOME ON LIFE SATISFACTION

Dependent variable: satisfaction with life

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

Notes: White estimator for variance. Additional control variables (not mentioned) for 'French speaking cantons', 'Italian speaking cantons'.

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

TABLE 3 (part 1)
DETERMINANTS OF INCOME ASPIRATIONS: ADAPTATION

Dependent variable: income aspirations (ln)

	Weighted least squares Std. errors adjusted to clustering on communities			
	A		B	
	Coef.	t-value	Coef.	t-value
Household income (ln)	0.416	25.64	0.425	25.55
Financial situation in the past				
much worse			-0.042	-1.47
worse			-0.034	-1.96
same			Reference group	
better			0.050	4.62
much better			0.127	5.89
<i>Household size</i>				
No. of adults	0.025	1.39	0.025	1.40
No. of children	0.020	1.71	0.019	1.61
<i>Household composition</i>				
Single			Reference group	
Couple	0.094	4.10	0.091	4.00
Couple with young children	0.129	3.88	0.126	3.74
Couple with grown-up children	0.098	1.99	0.096	1.97
Single with young children	0.056	1.30	0.056	1.27
Single with grown-up children	-0.046	-0.91	-0.047	-0.94
Single with parents	0.034	0.67	0.033	0.65
<i>Socio-demographic characteristics</i>				
Age	0.013	7.24	0.012	6.58
Age ²	0.14e-3	-7.57	0.12e-3	-6.87
Low education			Reference group	
Middle education	0.043	2.93	0.042	2.80
High education	0.074	3.88	0.075	3.93
Male			Reference group	
Female	0.018	1.59	0.020	1.73
Swiss			Reference group	
Foreigner	0.031	1.91	0.022	1.41
Good health			Reference group	
Bad health	0.030	1.66	0.019	1.06

TABLE 3 (part 2)

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

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

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

Is Adaptation to Income a Rich Country Phenomenon?

- Di Tella and MacCulloch (2007):
 - ✓ In rich countries, the level of GDP per capita attained in 1960 is sufficient to explain the level of happiness as of 2005.
 - ✓ By contrast, in low-income countries, both the 1960 level and the later growth in GDP per capita exert a statistically significant impact on average subjective well-being in 2005.
- → smaller importance of adaptation in low-income countries .
 - ✓ “...for these nations, it is still the absolute level of income that matters for happiness”.

Evidence of Adaptation of Aspirations in Low-Income Countries

- Rural China (Knight and Gunatilaka, 2009)
- South Africa (Barr and Clark, 2010)
- Peru and Madagascar (Herrera et al., 2006)
 - ✓ The more individuals earn, the greater the income level they consider as the minimum necessary to sustain their household
 - ✓ Subjective well-being is negatively correlated with level of aspiration

Adaptation ... and expectations

- Adaptation → Decisions based on false expectations
 - This calls growth into question.
 - But emotions associated with future events (anticipatory feelings: Loewenstein, Caplin and Leahy, QJE, 2001)
- ⇒ Preferences for improving sequences.
- This can reconcile adaptation with growth.

Existing evidence: 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).
- “Neuro-economics”: Berns et al. (2006)
functional magnetic resonance imaging -->
relate brain activity with anticipations and
dread.

Senik, “Is Man Doomed to Progress?”, *Journal of Economic Behavior and Organization*, 2008.

Objectives of the paper:

- Evidence a preference for improvement *ceteris paribus*?
- Impact of welfare effects of expectations and progress *per se*?
- **Data:**
 - ✓ Russian Longitudinal Monitoring Survey (RLMS)
 - ✓ Panel: 9 waves 1994-2004
 - ✓ After attrition (of the wealthiest and the youngest) about 25 272 observations, i.e. 2808 individuals surveyed at every wave.

Variables

- LIFE SATISFACTION (*To what extent are you satisfied with your life in general at the present time?*).
- EXPECTED IMPROVEMENT (*Do you think that in the next 12 months you and your family will live better than today or worse?*).
- SITUATION HAS IMPROVED (*How has the financial situation of your family changed in the last 12 months?*).
- FUTURE CONSUMPTION level (*How concerned are you about the possibility that you might not be able to provide yourself with the bare essentials in the next 12 months?*).
- log REAL EXPENDITURE of the household (annual).

Taking a retrospective view

“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?”

Caveat 1: Happiness and expectations are probably endogeneous to some idiosyncratic invariant personal feature such as “personality”, i.e. unobserved individual heterogeneity.

→ Keep the time dimension of the data so as to introduce individual fixed effects

-> divide the observations into three blocks of three years.

-> aggregate the stock of Consumption and the score of Life Satisfaction inside each block.

Estimation

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

b=1 for years 1994-1996,

b=2 for years 1997-2000

b=3 for years 2001-2004,

- Cumulated Life Satisfaction_{ib} is the sum of life satisfaction scores of individual i over the years of block b.

- 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.

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

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).

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.

Caveat 2

- Happiness and financial expectations can also be endogenous to some external variable (omitted variable problem) + reverse causation problem

→ instrument expectations

- Stutzer (2003) instruments aspirations using aggregate income variables.

- As an instrument for expectations, I use the predicted income of the next period (\hat{y}_{t+1})

- which is what agents should expect if they had perfect foresight.

- ✓ First stage regression of income on (age, age square, gender, industry, diploma, occupation and regional price level) → \hat{y}_{t+1}

- ✓ Then check that predicted expectations do influence well-being

- 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 ε_{it} , v_{it} and v_i are white noises, and ω_i and v_i are individual fixed effects.

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

Second stage regression of LIFE SATISFACTION			
	Coef.	Std. Err.	t
EXPECTED IMPROVEMENT	0,81	0,20	4,04
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		
First-stage regression of EXPECTED IMPROVEMENT			
	Coef.	Std. Err.	t
PREDICTED FUTURE INCOME	0,12	0,02	6,25
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.

Robustness. Are we sure to be dealing with experienced utility?

- Definition 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*”

=> health \approx experienced utility

- **Self-assessed HEALTH** (*How would you evaluate your health? It is: very bad/ bad/ average/ good/ very good*) **→ a proxy for experienced utility.**

=> Check whether self-assessed HEALTH depends on expectations.

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).

Are healthy people more optimistic or do optimistic persons feel more healthy?

• Likewise for the regression of life satisfaction, I instrument EXPECTED IMPROVEMENT on future predicted income. **2SLS estimation** :

- first stage estimation of EXPECTED

IMPROVEMENT : the coefficient of predicted income is 0,032, with a T statistics of 4;

- second stage estimation of HEALTH, the coefficient of instrumented expectations is 0,949, with a T statistics of 2,4

(controlling for the usual variables).

Happiness out of illusion?

Finally, the data shows that agents make quite **reasonable predictions** about their future standard of living.

- EXPECTED IMPROVEMENT in $(t-1)$ is a good predictor of PAST IMPROVEMENT (t)

- EXPECTED IMPROVEMENT in $(t-1)$ is a good predictor of CURRENT ECONOMIC SATISFACTION (t) .

=> Agents' anticipatory feelings are not totally compensated by an *ex post* dissatisfaction

A built-in disposition?

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

- **Psychologic telic theories** : Michalos (1985), Diener and Lucas (2000), Pomerantz et al. (1998), Emmons (1986).
- **Biology**: nervous system sensitive to deviations.
- **Sisyphus**: man is doomed to progress, even though attaining his goals does not always make him very much more happy.

The welfare effect of progression and the context

- Senik (2004, 2007): reference income has a strong positive welfare impact in more mobile and uncertain economies (e.g. Transition countries).
- The current paper extends this result to expected income in general.
- Growth is one of the important ingredients of national welfare.

So why doesn't growth raise aggregate happiness?

- 4 channels from income to happiness:
 - actual consumption (+)
 - comparisons (-)
 - adaptation (-)
 - expectations (+).
- The net effect of these four channels may turn out to be deceptively small if these effects more or less compensate each other. → Easterlin paradox.