

# Lecture 1: Happiness and Growth

Eugenio Proto

March 13, 2009

- Implies cardinal Utility and Interpersonal Comparison

# Happiness and Utility

- Implies cardinal Utility and Interpersonal Comparison
- Ordinalism: utility determined by choices if I choose A to B I rank  $u(A) > u(B)$ .

# Happiness and Utility

- Implies cardinal Utility and Interpersonal Comparison
- Ordinalism: utility determined by choices if I choose A to B I rank  $u(A) > u(B)$ .
- Cardinalism implies a objective measure of the Utility

# Happiness and Utility

- Implies cardinal Utility and Interpersonal Comparison
- Ordinalism: utility determined by choices if I choose A to B I rank  $u(A) > u(B)$ .
- Cardinalism implies a objective measure of the Utility
  - Unnecessary to determine a demand function

# Happiness and Utility

- Implies cardinal Utility and Interpersonal Comparison
- Ordinalism: utility determined by choices if I choose A to B I rank  $u(A) > u(B)$ .
- Cardinalism implies a objective measure of the Utility
  - Unnecessary to determine a demand function
  - Necessary for Public Choice (Arrow impossibility theorem)

# Happiness and Utility (cont'd)

- Pro-Ordinalism: How could you even tell if you like one bundle twice as much as another?

# Happiness and Utility (cont'd)

- Pro-Ordinalism: How could you even tell if you like one bundle twice as much as another?
- But: Assume that:  $A$  is your current situation,  $B$  is  $A$  plus an Ant Bite, and  $C$  is  $A$  plus being eaten by a crocodile.



# Happiness and Utility (cont'd)

- Pro-Ordinalism: How could you even tell if you like one bundle twice as much as another?
- But: Assume that:  $A$  is your current situation,  $B$  is  $A$  plus an Ant Bite, and  $C$  is  $A$  plus being eaten by a crocodile.
  - Ordinalism can say  $u(A) > u(B) > u(C)$

# Happiness and Utility (cont'd)

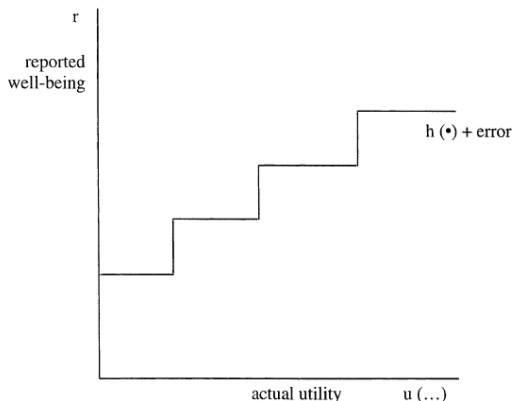
- Pro-Ordinalism: How could you even tell if you like one bundle twice as much as another?
- But: Assume that:  $A$  is your current situation,  $B$  is  $A$  plus an Ant Bite, and  $C$  is  $A$  plus being eaten by a crocodile.
  - Ordinalism can say  $u(A) > u(B) > u(C)$
  - but not that  $u(A) - u(B) > u(B) - u(C)$

# Happiness and Utility

- The main idea is that there exists a reported well-being function

$$r_{i,j} = h(u(y, z, t)) + e_{i,j}$$

$e_{i,j}$  individual specific error term,  $z$  demographic characteristics,  $y$  socioeconomic determinants



# Empirical Determinants

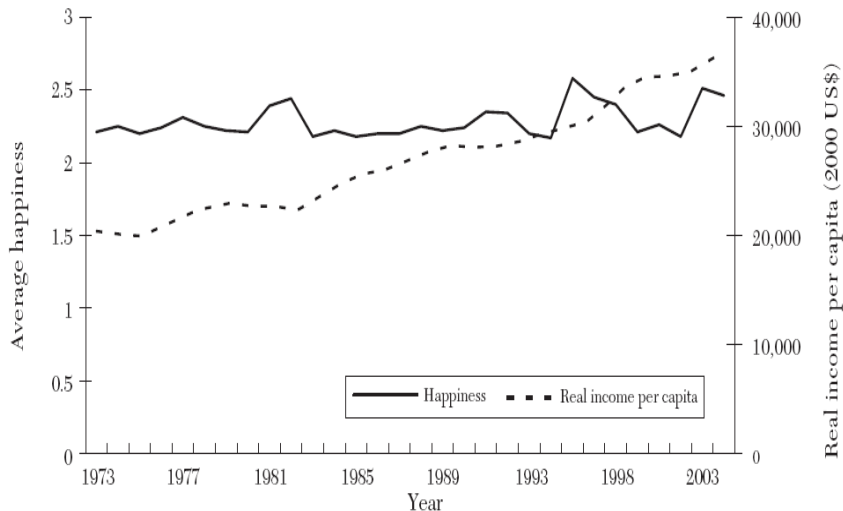
Suitable for estimation as an ordered probit or logit:

$$h = a + bZ + cY$$

Table 5  
Happiness equations for the United Sta

	(1) All
Age	-0.0339 (7.83)
Age <sup>2</sup>	0.0004 (9.30)
Male	-0.1800 (7.28)
Black	-0.4227 (12.14)
Other races	-0.0383 (0.57)
Unemployed	-0.8029 (11.83)
Retired	0.0075 (0.16)
Student	0.1759 (2.53)
Keeping home	-0.0705 (2.08)
Other	-0.5496 (5.67)
≥ 2nd marriage	-0.1194 (3.08)
Widowed	-1.1465 (24.50)
Divorced	-1.0141 (26.76)
Separated	-1.2697 (20.05)
Never married	-0.7830 (22.58)
Parents divorced	-0.1932 (5.49)
Education	0.0346 (8.41)
Household income (per capita) × 10 <sup>3</sup>	0.0137 (12.22)
Cut1	-2.8198
Cut2	0.1494
N	32,825
χ <sup>2</sup>	2902.0
Pseudo R <sup>2</sup>	0.0470
LR	-29,450.8

# Easterlin Paradox



# Easterlin Paradox (cont'd)

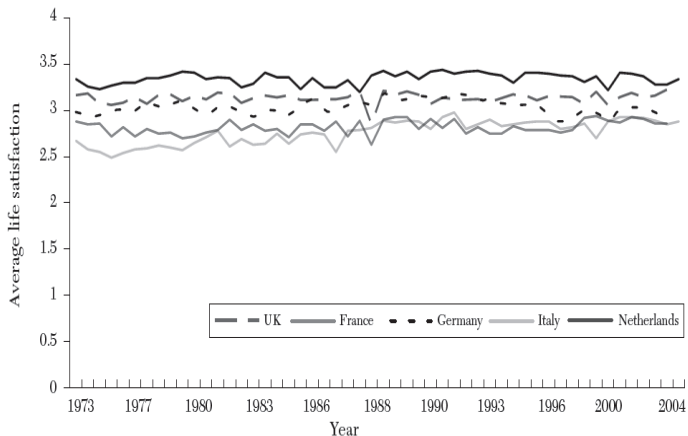


Figure 2. Life Satisfaction in Five European Countries, 1973–2004

Source: World Database of Happiness. Happiness is the average reply to the following question: "On the whole how satisfied are you with the life you lead?" The responses are coded as (4) Very Satisfied, (3) Fairly Satisfied, (2) Not Very Satisfied, and (1) Not at all Satisfied. Life satisfaction data are drawn from the

# Easterlin Paradox (cont'd)

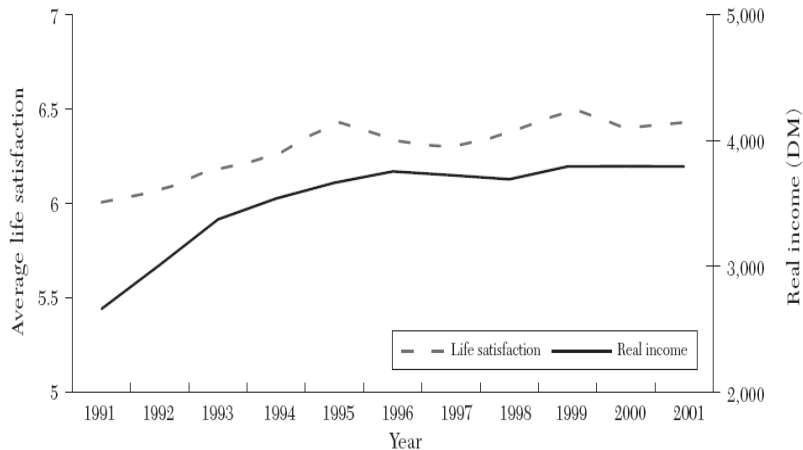


Figure 3. Life Satisfaction and Income in East Germany, 1991–2002

Source: Frijters et al. (2004a). Data are drawn from the German Socio-Economic Panel Study. Respondents are asked: "How satisfied are you at present with your life, all things considered?" The responses run from

# Easterlin Paradox (cont'd)

- 1 Regressions of happiness on income using cross-section survey data from one country generally produce a significant positive estimated coefficient on income. The income–happiness slope is larger in developing or transition than in developed economies.



# Easterlin Paradox (cont'd)

- 1 Regressions of happiness on income using cross-section survey data from one country generally produce a significant positive estimated coefficient on income. The income–happiness slope is larger in developing or transition than in developed economies.
- 2 Recent work has used panel data to control for unobserved individual fixed effects, such as personality traits, and concludes that changes in real incomes are correlated with changes in happiness

# Easterlin Paradox (cont'd)

- 1 Regressions of happiness on income using cross-section survey data from one country generally produce a significant positive estimated coefficient on income. The income–happiness slope is larger in developing or transition than in developed economies.
- 2 Recent work has used panel data to control for unobserved individual fixed effects, such as personality traits, and concludes that changes in real incomes are correlated with changes in happiness
- 3 Recent detailed studies of the “macroeconomics of happiness” shown that happiness co-moves with macroeconomic variables including GDP, GDP growth, and inflation

# Easterlin Paradox (cont'd)

- 1 Regressions of happiness on income using cross-section survey data from one country generally produce a significant positive estimated coefficient on income. The income–happiness slope is larger in developing or transition than in developed economies.
  - 2 Recent work has used panel data to control for unobserved individual fixed effects, such as personality traits, and concludes that changes in real incomes are correlated with changes in happiness
  - 3 Recent detailed studies of the “macroeconomics of happiness” shown that happiness co-moves with macroeconomic variables including GDP, GDP growth, and inflation
- How to reconcile Easterlin Paradox with 1-3?

- Individual Utility

$$U_t = U(u_1(Y_t) + u_2(Y_t/Y_t^*) + u_3(T - l_t, Z_t))$$

For example

$$U_t = \alpha \ln(y_t) + \beta \ln(y_t/y_t^*) + \gamma Z_t$$

- Individual Utility

$$U_t = U(u_1(Y_t) + u_2(Y_t/Y_t^*) + u_3(T - l_t, Z_t))$$

For example

$$U_t = \alpha \ln(y_t) + \beta \ln(y_t/y_t^*) + \gamma Z_t$$

- $y_t^*$  reference income, example pc GDP

# Relative income (cont'd)

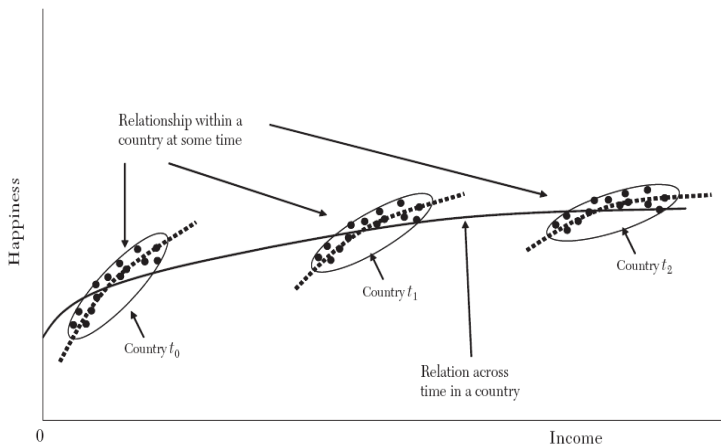


Figure 4. The Relationship between Income and Happiness at the Individual and the Aggregate Level

- Individuals' utility gain from living in a relatively successful country.

$$U_t = \beta_1 \ln(y_{i,j,t}) + \beta_2 \ln(y_{i,j,t}/y_{j,t}^*) + \beta_3 \ln(y_{j,t}/y_t^*) + \gamma Z_t$$

- Individuals' utility gain from living in a relatively successful country.

$$U_t = \beta_1 \ln(y_{i,j,t}) + \beta_2 \ln(y_{i,j,t}/y_{j,t}^*) + \beta_3 \ln(y_{j,t}/y_t^*) + \gamma Z_t$$

- *i.e.*  $\beta_3$  is positive and significant



# Relative Income (cont'd)

Happiness equations with relative income for the United States (ordered logits)

Years	1972–1998	1972–1998	1972–1998	1972–1998	1972–1998	1972–1998	1972–1998	1980–1998
Log household income	0.2661 (17.31)				0.2155 (9.97)			
Log household income per capita		0.2209 (15.63)	0.2233 (15.88)	0.1723 (7.81)		0.1751 (7.84)	0.1349 (6.25)	0.162 (6.09)
Log state income per capita			-0.1449 (1.19)					
Relative income				0.0806 (2.87)	0.0888 (3.31)	0.0806 (2.84)	0.1253 (4.56)	0.109 (3.07)
Regional house price index							0.0003 (0.37)	
Household size	-0.0309 (3.59)				-0.0121 (1.17)			
Time trend	-0.0166 (9.67)	-0.0149 (8.76)	-0.0056 (0.70)	-0.0115 (5.59)	-0.0130 (6.40)			
State dummies (44)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Year dummies (20)	No	No	No	No	No	Yes	Yes	Yes
Personal controls (19)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$N$	32,751	32,751	32,751	32,751	32,751	32,751	32,751	22,761
$\chi^2$	3121.4	3072.7	3071.44	3080.9	3134.9	3132.7	2997.1	32,190.8
Pseudo $R^2$	0.0506	0.0498	0.0498	0.0500	0.0508	0.0508	0.0486	0.051

# Suboptimality with relative Income

- If we consider non status activity:

$$U_t = \beta_1 \ln(y_{i,t}) + \beta_2 \ln(y_{i,t}/y_t) + \gamma \ln(T - y_{i,t}/\omega_t)$$

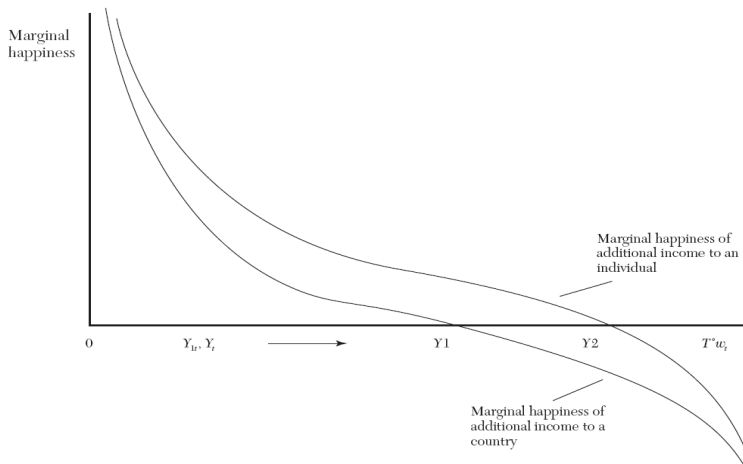


Figure 5. The Marginal Happiness of Additional Income for an Individual versus a Country

- “a reduction in the affective intensity of favorable and unfavorable circumstances”.

$$U_t = \beta_1 \ln(y_{i,t}) + \beta_2 \ln(y_{i,t}/y_t^*) + \gamma Z_t$$
$$y_t^* = (y_{t-1})^\alpha (y_{t-2})^\gamma (y_{t-3})^{1-\alpha-\gamma}$$

- “a reduction in the affective intensity of favorable and unfavorable circumstances”.

$$U_t = \beta_1 \ln(y_{i,t}) + \beta_2 \ln(y_{i,t}/y_t^*) + \gamma Z_t$$
$$y_t^* = (y_{t-1})^\alpha (y_{t-2})^\gamma (y_{t-3})^{1-\alpha-\gamma}$$

- short-run effect of an increase in log income equals  $\beta_1 + \beta_2$ , whilst the longrun effect is only  $\beta_1$ .

# Adaptation (cont'd)

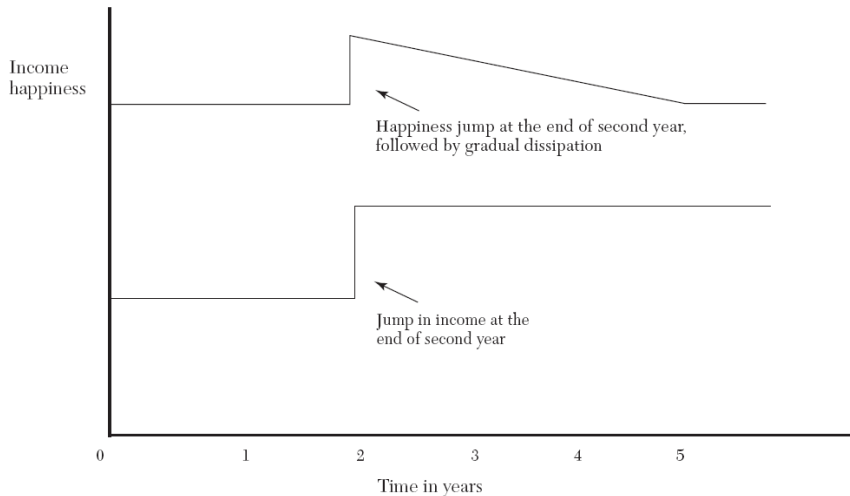
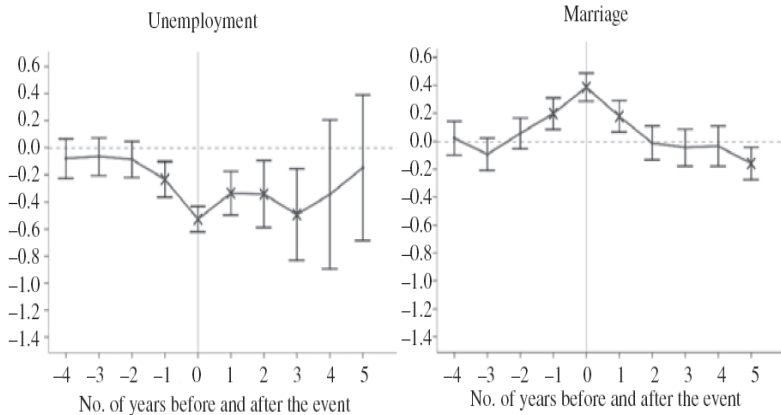


Figure 6. Change in Happiness Following an Income Shock

# Adaptation (cont'd)



# Growth and Happiness

- Growth has little impact on happiness, in developing countries since increase in  $U(c)$  is low for high  $c$  and the term  $u_2(y_t/y_t^*)$  might not change since they tend to move together (“keeping up with the Joneses”)

# Growth and Happiness

- Growth has little impact on happiness, in developing countries since increase in  $U(c)$  is low for high  $c$  and the term  $u_2(y_t/y_t^*)$  might not change since they tend to move together (“keeping up with the Joneses”)
- Importance of the income distribution during the growth process.



# Growth and Happiness

- Growth has little impact on happiness, in developing countries since increase in  $U(c)$  is low for high  $c$  and the term  $u_2(y_t/y_t^*)$  might not change since they tend to move together (“keeping up with the Joneses”)
- Importance of the income distribution during the growth process.
- However we must consider other effect of growth that do not change happiness. Length of Life, Induced long run Progress, capacity of withstand foreign aggressor

# Growth and Happiness

- Growth has little impact on happiness, in developing countries since increase in  $U(c)$  is low for high  $c$  and the term  $u_2(y_t/y_t^*)$  might not change since they tend to move together (“keeping up with the Joneses”)
- Importance of the income distribution during the growth process.
- However we must consider other effect of growth that do not change happiness. Length of Life, Induced long run Progress, capacity of withstand foreign aggressor
- Since  $u_1'(y)$  is decreasing individuals should supply less labour, but term  $u_2(y_t/y_t^*)$  may have the opposite effect (“keeping up with the Joneses”).

# Growth and Happiness

- Growth has little impact on happiness, in developing countries since increase in  $U(c)$  is low for high  $c$  and the term  $u_2(y_t/y_t^*)$  might not change since they tend to move together (“keeping up with the Joneses”)
- Importance of the income distribution during the growth process.
- However we must consider other effect of growth that do not change happiness. Length of Life, Induced long run Progress, capacity of withstand foreign aggressor
- Since  $u_1'(y)$  is decreasing individuals should supply less labour, but term  $u_2(y_t/y_t^*)$  may have the opposite effect (“keeping up with the Joneses”).
- Same reasoning for saving, if we assume that individuals have a reference point increasing with their ages, they have an incentive to save again to “keeping up with the Joneses”