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U N I V E R S I T Y

Annex 4.1

Role of income comparisons and habituation

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Annex 4.1

Role of income comparisons and habituation

In this Annex we review the evidence that happiness is affected not only by own income but by societal income (negatively) and by own lagged income (negatively). We begin with two studies which bring in both these factors at the same time. We then look at three studies which look at income comparisons only, and then at two which look at habituation only.

1. The US General Social Survey (Niall Flynn¹)

This shows the importance of societal income and own lagged income. It also confirms that

- (a) perceived relative income is more important than actual income as a determinant of happiness and
- (b) a fall in income hurts about twice as much as an equal rise helps.

Data

The data are for 34,000 individuals sampled once each over the years 1972-98. The variables are

H	happiness (very happy = 3, pretty happy = 2, not too happy = 1)
Y	log of real household income per adult (2 adults = 1.6; 3 adults = 2.1)
\bar{Y}	log of average household income per adult in the same year and household type
R	perceived relative income (well above average = 5, above average = 4, average = 3, below average = 2, well below average = 1) ²
$\Delta Y > 0$	dummy (compared with no change)
$\Delta Y < 0$	dummy (compared with no change)
X	age, age ² , sex, marital and employment status

Results

The first equation below regresses happiness on actual income, as well as on perceived relative income, average income and income change. The second equation

¹ Centre for Economic Performance, LSE.

² This variable is symmetrically distributed around 'average' – there is no bias in people's self-assessment.

explains perceived income by actual income and societal income and income change. The equations were also run with time trends (or time dummies) and the results were very similar. The following results show t- statistics in brackets, adjusted for clustering.

$$H = .04 Y - .05 \bar{Y} + .06 R + .10 (\Delta Y > 0) - .17 (\Delta Y < 0) + \hat{a}X \quad (r^2 = .11) \quad (1)$$

(8) (3) (14) (14) (19)

$$R = .45 Y - .29 \bar{Y} + .19 (\Delta Y > 0) - .26 (\Delta Y < 0) + \hat{b}X \quad (r^2 = .30) \quad (2)$$

(44) (18) (25) (23)

Combining (1) and (2), we have the ‘reduced form’

$$H = .07 Y - .06 \bar{Y} + .11 (\text{Dummy for } \Delta Y > 0) - .19 (\text{Dummy for } \Delta Y < 0) + \hat{c}X$$

To see the importance of any variable in explaining the variation in happiness, we multiply the coefficient in the equation by the standard deviation of the variable.

These standard deviations are

H	Y	\bar{Y}	R	$\Delta Y > 0$	$\Delta Y < 0$
.63	.85	.30	.83	.49	.41

This indicates the large role of differences in perceived income and differences in income growth in explaining the variation of happiness. As the reduced form equation shows, a low value of lagged income raises happiness, by making it more likely that $\Delta Y > 0$ and less likely that $\Delta Y < 0$.

The US General Social Survey also asks about financial satisfaction (FS). The question is “Would you say you are pretty well satisfied with your present financial situation, more or less satisfied, or not satisfied at all?” If this dependent variable is used as a 1-3 dependent variable, equation (1) becomes

$$FS = .11 Y - .12 \bar{Y} + .21 R + .22 (\Delta Y > 0) - .40 (\Delta Y < 0) + \hat{d}X \quad (r^2 = .31) \quad (1)'$$

(19) (8) (33) (24) (36)

Combining (1)' and (2), we have the reduced form

$$FS = .21 Y - .18 \bar{Y} + .26 (\Delta Y > 0) - .45 (\Delta Y < 0) + \hat{e}X$$

The standard deviation of FS is .74

This shows that perceived relative income is especially important in determining financial satisfaction. It also shows how average income and own lagged income both

reduce financial satisfaction. Falls in income again hurt twice as much as rises in income help.

For reference, the correlation coefficients are as follows:

H and Y/\bar{Y}	.17	FS and Y/\bar{Y}	.29
H and R	.19	FS and R	.39
H and FS	.29	R and Y/\bar{Y}	.52

2. The Swiss Poverty Study (Stutzer, 2003)

This study also shows the importance of societal income and of habituation. The argument is in two stages. First, happiness depends (negatively) on income aspirations. Second, income aspirations depend on societal income and own (lagged) income.

Data

The study uses a representative sample of 6,000 Swiss adults covered in the Swiss Poverty Study collected in 1992-4. The variables are

H	life-satisfaction (1-10)
Y	log household income
A	log of income aspirations ³
\bar{Y}	log average income in community (490 communities)
X	age, age ² , sex, education, health, employment status, household size and composition

Results

The first equation shows happiness as a function of income and income-aspirations. The second shows income-aspirations as a function of own income, average income and own lagged income. The findings in Stutzer's Tables 2, 3B and 4 give the following (the numbers in brackets are t- statistics):

³ The question is "What income per month for your entire household do you consider to be sufficient?"

$$H = \underset{(5)}{.43} Y - \underset{(4)}{.38} A + \hat{a}X \quad (r^2 = .11) \quad (3)$$

$$A = \underset{(26)}{.40} Y + \underset{(6)}{.19} \bar{Y} - \underset{(2)}{.04} (\Delta Y > 0) + \underset{(5)}{.09} (\Delta Y < 0) + \hat{b} X \quad (r^2 = .57) \quad (4)$$

Though Y here is current income, Stutzer also finds from a 2-period panel study (using the Swiss Household Panel) that the elasticity of A with respect to the **previous** year's income is around .45.

Combining (3) and (4), we have the 'reduced form'

$$H = .28Y - .07\bar{Y} + .015 (\text{Dummy for } \Delta Y > 0) - .030 (\text{Dummy for } \Delta Y < 0)$$

The standard deviations of the variables are⁴

H	Y	\bar{Y}	A
1.69	.60	.18	.43

This analysis shows the huge role of income aspirations. It also shows how community income and own lagged income both reduce happiness. Again falls in income hurt twice as much as rises in income help.

If equation (3) is estimated without A but with \bar{Y} , the result is

$$H = \underset{(4.5)}{.29} Y - \underset{(2.0)}{.33} \bar{Y} + \hat{a}X \quad (3)'$$

Compared with the reduced form, this gives a more powerful role to social comparisons, working through many channels besides A (which is itself measured with error).

In this analysis all equations are estimated from cross-sectional data. By contrast, Frey and Stutzer (2003a) use the German Socio-Economic Panel for 1992 and 1997 to estimate equation (3) with a fixed effect. The coefficients on actual income and income aspirations are again equal in size with opposite sign.

⁴ Private information from Alois Stutzer.

3. The US General Social Survey (Blanchflower and Oswald, 2004)

This is a pseudo-panel study which shows the (negative) effect of average income in each US state on the happiness of people in that state.

Data

The data are for 32,751 individuals sampled once during the years 1972-98. The variables are

H happiness (usual 3 answers)
Y log income per person in household
R income per person in household divided by state income per head
T time

The analysis is by ordered logit, using state dummies and 19 personal controls.

Results

The estimated logit equation is (Table 8, Col 4)

$$H = .17 Y + .08 R - .01 T + \hat{a} X$$

(7.8) (2.9) (5.6)

This gives, where y is absolute income and \bar{y} state average income,

$$\frac{\partial H}{\partial y} = .17 \frac{1}{y} + .08 \frac{1}{\bar{y}}$$

and

$$\frac{\partial H}{\partial \bar{y}} = -.08 \frac{y}{\bar{y}^2}$$

Thus, for households where $y = \bar{y}$, the negative effect of statewide income ($\partial H / \partial \bar{y}$) is about 30% of the positive effect of own income.

4. The US National Survey of Families and Households (Luttmer, 2004⁵)

This study is probably the most careful study of the effect of local incomes upon individual happiness. It makes two special contributions:

1. It confirms that the effect of neighbours' incomes is not simply an effect of local **price** differences.
2. It confirms that the reported differences in happiness are not in fact just differences in **relative** happiness (relative to neighbours' happiness).

Data

About 10,000 married or cohabiting adults, studied once in 1987-8 and once in 1992-4. The variables are

H	happiness (1-7)
Y	log household income
\bar{Y}	log of average local earnings (computed on localities of about 100,000 people). Local earnings are computed by taking the local industryX occupation mix in 1990 and applying to it the national industryX occupation earnings levels in each year. (This thus excludes local price-level effects.)
X	race, household size, age, religion.

Results

The first equation below uses no individual fixed effect but instruments own income. It finds that neighbours' earnings hurt happiness almost as much as own income increases it.

$$H = .37Y - .28\bar{Y} + \hat{a}X$$

(4) (4)

The second equation introduces a fixed effect and confirms the importance of neighbours' earnings.

$$H = .05Y - .23\bar{Y} + \hat{b}X$$

(1.0) (1.8)

⁵ E. Luttmer (2004), 'Neighbours as negatives: relative earnings and well-being', NBER Working Paper 10667.

To examine the validity of the dependent variable, the study also uses as dependent variable a question about financial worries (FS) – a clearly absolute concept. The question is: “How often do you worry that your total family income will not be enough to meet your family’s expenses and bills?” Answers vary from 1 (never) to 5 (almost all the time). Using this as dependent variable, the result is

$$FS = .39Y - .22\bar{Y} + \hat{c}X$$

(11) (4)

The study also regresses happiness on the earnings of people in the same educational group as the respondent, and in different educational groups. The effect coming from the same educational group’s earnings is much the strongest. The study also shows that neighbours’ earnings matter more to people who socialise in their neighbourhood and less to people who socialise outside – a powerful piece of evidence.

Luttmer’s paper also contains useful references to further studies on social comparison effects.

5. The British Household Panel Survey (Clark and Oswald, 1996)

This study finds that job satisfaction depends negatively on the expected pay for a person like yourself, and positively (though less strongly) on your own income..

Data

5,197 British employees in late 1991. The variables are

H	job satisfaction (1-7)
Y	log earnings
\bar{Y}	log earnings predicted from a typical earnings equation

Results

Estimation by ordered probit gives the following results (their Table 3):

$$H = .11Y - .20\bar{Y} - .12 \log \text{Hours} + \hat{a}X$$

(2.2) (3.1) (2.3)

6. The Leydon School's Income Evaluation Studies (Van Praag and Frijters, 1999)

This study, repeated in many countries, asks people

“While keeping prices constant, what after-tax total monthly income would you consider for your family to be: Very bad; Bad; Insufficient; Sufficient; Good; Very good?”

From the six numbers supplied by a respondent a measure of his central tendency (A) is derived, which corresponds essentially to the income lying between Insufficient and Sufficient.

This is an ‘aspiration’ income. The study then shows how this aspiration income is affected by actual income. The elasticity of aspiration income with respect to actual income is around .4 (as in Stutzer, 2003).

Data

Questionnaires administered in 9 countries. Variables are

- A log aspiration income
- Y log actual income
- X family composition, etc

Results

When estimating

$$A = bY + \hat{a}X$$

values of b are

Britain	.36
Belgium	.43
Denmark	.63
France	.50
West Germany	.58
Ireland	.45
Italy	.38
Netherlands	.54
Russia	.50

7. The British Household Panel Survey (Clark, 1999)⁶

This shows that job-satisfaction depends on wage change.

Data

4,430 employees, interviewed in 1991 and again in 1992 who had not changed jobs nor been promoted. The variables are

H job satisfaction (1-7)

Y log earnings

Y₋₁ lagged log earnings

Results

Estimation by ordered probit yields

$$H = \underset{(2.9)}{.49} Y - \underset{(1.5)}{.43} \log \text{Hours} - \underset{(2.7)}{.44} Y_{-1} + \underset{(1.8)}{.52} \log \text{Hours}_{-1} + \hat{\alpha}X$$

⁶ A. Clark (1999), 'Are wages habit-forming? Evidence from micro data', Journal of Economic Behaviour and Organisation, 39, 179-200.