Social Exclusion, Deprivation and Subjective Well-Being

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Aim and main result

This paper aims at investigating empirically the relationship between self-declared satisfaction with life and an individual's well-being as measured by the indices of deprivation and social exclusion proposed in the income distribution literature.

Results on European countries show that life satisfaction decreases with an increase in deprivation and exclusion after controlling for individual's income, relative income and other influential factors in a multivariate setting.

Happiness studies (HS)
and
income distribution studies (IDS)

Both literatures look at individual well-being and its determinants, generally little overlap.

HS: mainly empirical.

IDS: many theoretical contributions on indices to measure well-being.

Share similar recent developments of determinants of well-being ⟹

Known facts from HS

Using income as a proxy for economic well-being it has been highlighted that:

1) within each country at a given point in time, richer people are more satisfied with their lives;
2) within each country over time, an increase in average income does not increase substantially satisfaction with life;
3) across-countries, on average, individuals living in richer countries are more satisfied with their lives

These studies showed that **income matters but also other factors** are important in explaining differences in well-being, since **well-being** of a person is intrinsically **multidimensional**.

Multidimensionality in IDS

A move towards multidimensionality has been witnessed at the same time also in the income distribution literature.

Sen (1992) argued that the proper space for social evaluation is that of **functionings**.

Not only material resources, such as money, food or housing, matter but also social attributes, such as access to education and healthcare or meaningful relations with friends and relatives.

In this context, **deprivation and poverty** are **not** simply measured by a **lack of monetary resources** but by a more comprehensive concept involving the **entire quality of life** of an individual.

The capability set of a person provides information on the set of functionings that a person could achieve.

Deprivation and poverty can then be defined as a condition in which a person is **deprived of the essentials for reaching a minimum standard of well-being and life.**

The **social exclusion approach** also regards poverty and deprivation as a multidimensional issue.

Social exclusion can be broadly interpreted as the **inability of an individual to participate in the basic political, economic and social activities of the society in which she lives due to persistence in the state of deprivation.**

Social exclusion is, with poverty, the key concept in the political debate in **Europe**

In the Treaty of **Amsterdam**, signed in 1997, the European Union included the reduction of social exclusion among its objectives.

The design of policies aimed at combating social exclusion is at the heart of the `**Lisbon** strategy' agreed upon during the European Council of March 2000.

2010 has been designated by the European Commission to be the **European year** for combating poverty and social exclusion.

Promoting social inclusion is one of the five key areas of the `**Europe 2020** strategy' as agreed upon during the European Council of March 2010.

The fight against poverty and social exclusion is one of the seven flagship initiatives to **catalyze progress** on Europe 2020.

Our research question

Are the deprived and excluded less satisfied with their lives, as we would expect?

Is there a relationship, and if so of which type, between self-declared satisfaction with life and an individual's well-being as measured by the indices of deprivation and social exclusion proposed in the income distribution literature?

Do deprivation and social exclusion explain well-being in addition to income and relative income?

What are deprivation and social exclusion?

The **definition of relative deprivation** adopted in the IDS is the following:

"We can roughly say that [a person] is relatively deprived of X when

(i) he does not have X,

(ii) he sees some other person or persons, which may include himself at some previous or expected time, as having X,

(iii) he wants X, and

(iv) he sees it as feasible that he should have X"

(Runciman, 1966, p.10).

Runciman further adds: “The magnitude of relative deprivation is the extent of the difference between the desired situation and that of the person desiring it”.

One of the key variables in measuring deprivation is the **reference group**, that is the group with which a person compares himself.

Similarly, a **reference income** exists in the measurement of poverty, the poverty line.

The measurement of deprivation in a society has traditionally been conducted analyzing **incomes** of individuals, as income summarizes command over resources and is an index of the individual's ability to consume commodities.

In this framework a seminal paper is that by **Yitzhaki (1979)**. The interpretation of deprivation based on comparisons we use has been proposed by **Hey and Lambert (1980)**.

Deprivation

Income (x) & Asymmetric sentiment &
in one period of time

Each individual feels deprived only in comparison with others located at higher points of the income scale:

$$\begin{aligned} d_i(x) &= (x_j - x_i) && \text{if } x_i < x_j \\ &= 0 && \text{else} \end{aligned}$$

Comparison with others located at lower points of the income scale gives rise to “Satisfaction”

Individual deprivation

$$d_i(\mathbf{x}) = \frac{1}{n} \sum_{j=i+1}^{n} [x_j - x_i]$$

⇨ The average of all the comparisons between individual *i* and richer individuals.

Multidimensional deprivation

Since we believe that income is not always a good indicator of the command over resources nor of well-being of an individual, we follow the suggestion of Bossert, D'Ambrosio and Peragine (BDP 2007) and compute the indices on **deprivation scores based on various functionings**.

We construct a measure of **functioning failure** which indicates the degree to which functionings that are considered relevant in the country are not available to the individuals.

Simple count of failure.

Deprivation: BDP

Functionings & Asymmetric sentiment & in one period

A deprivation score, q_i, is constructed for each population member, i, indicating the degree to which functionings that are considered relevant are not available to the agent.

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q_i is the functioning failure of individual i.
q_i's constitute the primary inputs of the analysis.

Deprivation: BDP

Each individual feels alienated only in comparison with others with less functioning failures.

Notation

The distinct levels of functioning failures are collected in a vector $(q_1,...,q_K)$ where $K \leq \mathbb{N}$. Let π_j indicate the population share composed of individuals suffering the same level of functioning failures, q_j. A distribution is $(\pi, q) \equiv (\pi_1, ..., \pi_K; q_1, ..., q_K)$, $q_i \neq q_j$ for all $i, j \in \{1, ..., K\}$. Let Ω be the space of all distributions. $\overline{q}$ indicates the illfare ranked permutation of the vector q, that is $\overline{q}_1 \leq \overline{q}_2 \leq ... \leq \overline{q}_K$.

Bossert, D'Ambrosio & Peragine (BDP)

The members of the class of deprivation measures, $D_i : \Omega \to \mathbb{R}_+$, characterized by BDP are such that the degree of deprivation for a distribution (π, q) is obtained as the product of two terms with the following interpretation. The first factor is a multiple of the ratio of the number of agents who have fewer functioning failures than i and the population size. This number is interpreted as an inverse indicator of agent i's capacity to identify with other members of society the lack of identification. The second factor is the average of the differences between q_i and the functioning failures of all agents having fewer functionings failure than i. This part captures the aggregate alienation experienced by i with respect to those who are better off. In particular the index is defined by:

$$D_i(\pi, q) = \left(\sum_{j=1}^{i-1} \pi_j \right) \sum_{j=1}^{i-1} (\overline{q}_i - \overline{q}_j)\pi_j,$$

for all $(\pi, q) \in \Omega$.

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Social Exclusion

Functionings & Asymmetric sentiment & over time

An individual can become socially excluded if his condition of deprivation is persistent or worsens over time.

An individual experiences a higher degree of exclusion in situations where deprivation is present in consecutive periods as compared to equal levels of deprivation interrupted by periods without deprivation.

Social Exclusion

The exclusion an individual proves depends on the number of consecutive years spent in deprivation:

$$E_i(\pi, q) = \sum \left\{ \text{number of consecutive pediods in deprivation} \left[\sum_{\text{periods}} D_i(\pi, q) \right] \right\}$$

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Deprived in periods 1, 2, 5, 6, 7, 9

$$E_i(\pi, q) = 2\left[D_i\left(\pi^1, q^1\right) + D_i\left(\pi^2, q^2\right)\right] + 3\left[D_i\left(\pi^5, q^5\right) + D_i\left(\pi^6, q^6\right) + D_i\left(\pi^7, q^7\right)\right] + D_i\left(\pi^9, q^9\right)$$

Yitzhaki

Re-written in terms of functioning failures, the individual deprivation suggested by Yitzhaki (1979), a function $I_i : \Omega \to \mathbb{R}_+$, is given by:

$$I_i(\pi, q) = \sum_{j=1}^{i-1} (\overline{q}_i - \overline{q}_j)\pi_j,$$

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To investigate empirically the relationship between self-declared satisfaction with life and an individual's well-being we also use a simpler measure of individual deprivation given by the sum of functioning failures, following the 'counting' approach (Atkinson 2003, henceforth SUMC), that is for each individual $D_i^c(q) = \bar{q}_i$. We calculate individual social exclusion with this second approach as well, that is:

$$E_i^c(q) = 0 \quad \text{if } T_i(q) = \emptyset$$

and

$$E_i^c(\mathbf{q}) = \sum_{k=1}^{\ell_i(\mathbf{q})} |T_i^k(\mathbf{q})| \sum_{\tau \in T_i^k(\mathbf{q})} \bar{q}_i^{\tau} \quad \text{if } T_i(\mathbf{q}) \neq \emptyset.$$

No comparisons with others.

Empirical Results

The purpose of this section is to illustrate the aggregate measures of deprivation and social exclusion, using the European Community Household Panel (ECHP).

We base our analysis on all available waves of ECHP, which cover the period 1994-2001.

Of the 15 EU member states, we could not consider Austria, Finland, Luxembourg and Sweden since the data for these countries were not available for all the waves.

We had to exclude also Germany and the UK since the vars we consider were not available.

The unit of our analysis is the individual. The calculation uses required sample weights, and, since we are interested in analyzing also the persistence of deprivation, we considered only individuals who were interviewed in all the waves.

Vars

1) *Financial difficulties:*

a) living in households that have great difficulties in making ends meet

b) living in households that are in arrears with (re)payment of housing and/or utility bills;

2) *Basic necessities*:

a) living in households which cannot afford meat, fish or chicken every second day;

b) living in households which cannot afford to buy new clothes;

c) living in households which cannot afford a week's holiday away from home;

3) *Housing conditions:*

a) living in the accommodation without a bath or shower;

b) living in the dwelling with damp walls, floors, foundations, etc.;

c) living in households which have a shortage of space;

4) *Durables:*

a) not having access to a car due to a lack of financial resources in the household;

b) not having access to a telephone due to a lack of financial resources in the household;

c) not having access to a color TV due to a lack of financial resources in the household;

5) *Social contact:*

a) meeting their friends or relatives less often than once a month (or never);

Vars

A dummy variable for each functioning failure has been created that takes value 1 if the individual reports a failure and 0 otherwise.
For each individual in each country we have calculated the sum over all these functioning failures.

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a) living in households th
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2) *Basic necessities*:
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a) living in the accommodation without a bath or shower;
b) living in the dwelling with damp walls, floors, foundations, etc.;
c) living in households which have a shortage of space;
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a) not having access to a car due to a lack of financial resources in the household;
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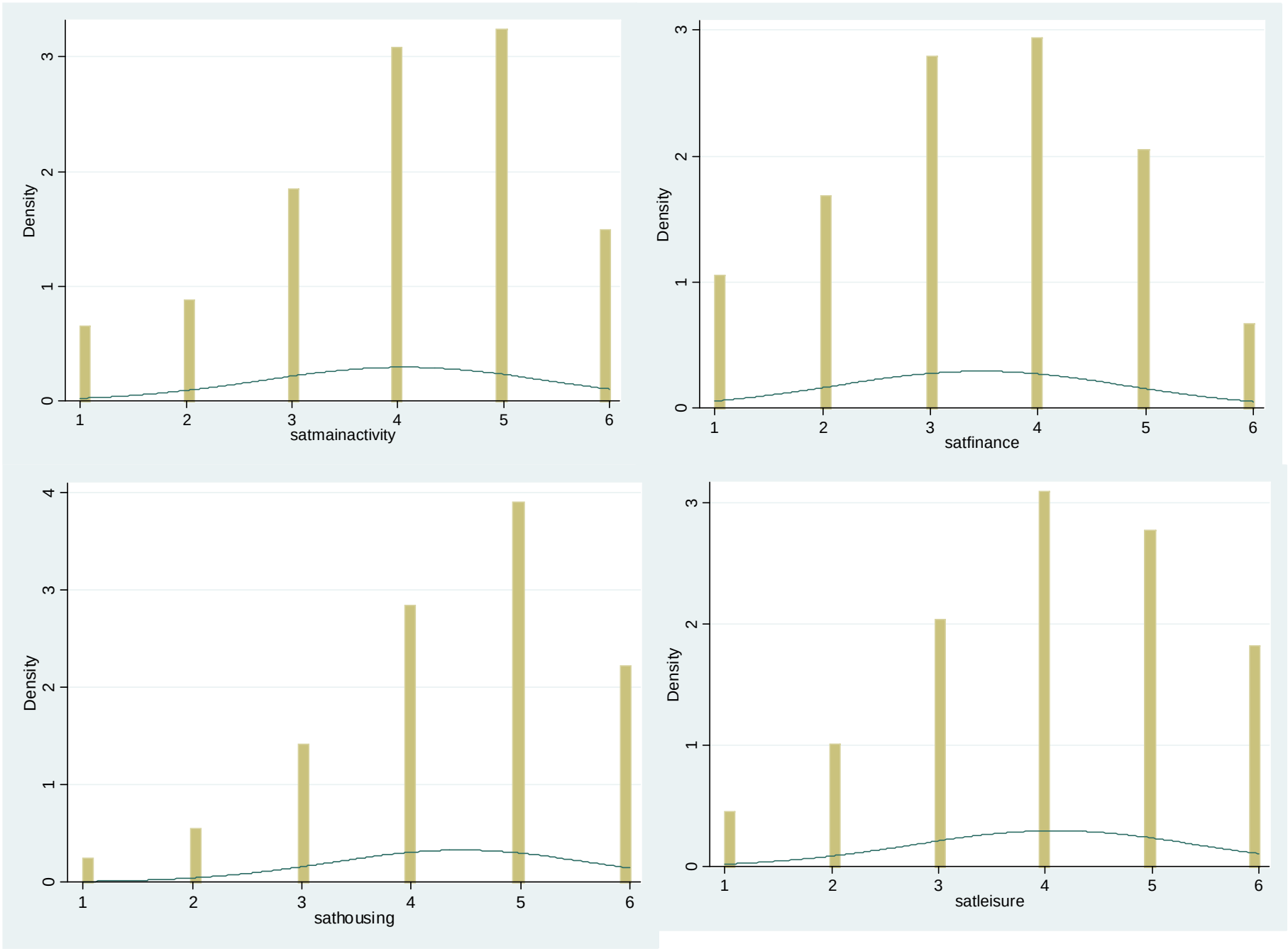
c) not having access to a color TV due to a lack of financial resources in the household;
5) *Social contact:*
a) meeting their friends or relatives less often than once a month (or never);

Satisfaction with Life

In ECHP a question on satisfaction with life is missing. For this reason we used the four questions available on satisfaction with work or main activity, financial situation, housing situation and amount of leisure time, to construct a composite index of it.

Each of the satisfaction variables has a decreasing scale that goes from 1 to 6, with the following labels:

1.not at all satisfied
2.largely unsatisfied
3.mildly unsatisfied
4.mildly satisfied
5.largely satisfied
6.fully satisfied


Density
0
1
2
3
1
2
3
4
5
6
satmainactivity
Density
0
1
2
3
1
2
3
4
5
6
satfinance
Density
0
1
2
3
4
1
2
3
4
5
6
sathousing
Density
0
1
2
3
1
2
3
4
5
6
satleisure

We consider these variables as manifestation of various aspects of the unobserved satisfaction with life.

We constructed this new variable using **Principal Component Analysis** and **Factor Analysis**.

Principal Component Analysis

The basic idea behind this method is to determine orthogonal linear combinations of a set of observed indicators chosen in order to account for most of the variance.

The component score are thus a linear combination of the observed variables weighed by eigenvectors.

The first principal component identified account for the most of the variance in the data, in our case from **47% for France to 62% for Ireland.**

The variable Satisfaction with Life is given, with this specification, by the scores of the first principal component and it's normalized to have standard deviation 1 and mean 0.

Factor Analysis

Factor Analysis assumes that the observed variables are different manifestation of one or more underlying unobservable variables called factors.

FA finds a small number of common factors that reconstruct the original variables so that these can be seen as linear combination of an underlying and unique factor, that account for common variance in the data.

We do not have a theoretical reason for choosing a priory a certain numbers of factors, thus we based our choice of a one-factor model on the eigenvalues.

For all the country the first factor loads positively all the four variables. The variable Satisfaction with life is given by the scores of the first common factor and it's normalized to have standard deviation 1 and mean 0.

Correlation between various aspect of satisfaction and our satisfaction with life variables are reported in the following table:

	sat1	satf
satmainactivity	0.69	0.73
satfinance	0.67	0.72
sathousing	0.66	0.66
satleisure	0.51	0.46

With principal component analysis the estimated life satisfaction gives almost equal weight to these four aspects, somewhat lower on leisure satisfaction.

On the contrary, with factor analysis life satisfaction is driven mostly by satisfaction with main activity and finance.

Given that our variables are ordinal, we assume that the data arise from cut off points of the underlying continuous normal variable.

We use polychoric principal component analysis to calculate the new variable.

Regressions

Given the ordinal nature of our variables an appropriate regression model would be an ordered probit, but to full exploit the panel nature of our data, controlling for otherwise unobserved individual characteristics, we should apply a fixed effect estimator. As an approximation of such a fixed effect ordered probit estimator, we use a **fixed-effect regression** model assuming linearity (see Ferrer-i-Carbonell and Frijters,2004).

We also run a random-effect in order to investigate the effects on time invariant control variables.

Our dependent variable is the life satisfaction index obtained with FA and PCA while the dependent variable is one of the indices reported above.

Model 1, over time

Consequently, we first estimate a reduced form model of life satisfaction (LS) expressed by:

$$LS_i^\tau = \alpha D_i^\tau + \theta y_i^\tau + \varphi \bar{y}^\tau + \beta X_i^\tau + \eta_i + \varepsilon_i^\tau \quad (2)$$

where D_i^τ is the measure of deprivation of individual i at time $\tau \in \{1, \ldots, 8\}$. We include individual income y_i^τ to capture its contribution to life satisfaction independent of deprivation. Following the subjective well-being literature, we also include the mean income ($\bar{y}^\tau$) of the country of residence of individual i at time τ to take into account the relative position of the individual in the income distribution. Consistently with previous works on this topic,[7] X_i^τ is a vector of socio-demographic variables including sex, age (age squared), marital status, education, household composition and unemployment. The individual-specific error, η_i, captures unobserved individual heterogeneity in life satisfaction and ε_i^τ is an independent error term. In our context, individual fixed effects allow for the existence of individual heterogeneity in preferences and fixed regional attributes.

Model 2, last wave

To further explore the relationship between life satisfaction and deprivation over time, we consider a second reduced form model of life satisfaction expressed by:

$$LS_i^8 = \theta \mathrm{y}_i^8 + \varphi \bar{y}^8 + \gamma \hat{y}_i + \alpha \mathrm{SE}_i + \beta X_i^8 + \varepsilon_i \tag{3}$$

where SE_i measures social exclusion experienced by individual i in all the years under consideration and $\hat{y}_i$ is the individual 'permanent income' as measured by the individual mean income across all waves, and ε_i is an independent error term. We estimate Eq. (3) on the pooled sample of all individuals in the last wave of ECHP, wave 8.

In all the specifications we compute the 'cluster robust' standard errors at the individual level to make our inference fully robust to heteroskedasticity and serial dependence.

Correlations:

Deprivation and income not the same.

SWB and deprivation vs. SWB and income.

The focus in this paper is to document how deprivation and social exclusion affect life satisfaction. Simple correlations between subjective well-being and deprivation, reported in Table 2, suggest that this association is much stronger (0.4 on average among all the countries in our sample) than that between subjective well-being and own income (about 0.16 on average). The correlation between individual income and the deprivation variables is significantly negative but never exceeding −0.3 confirming the low overlap between income and multidimensional well-being.

To control if this association still holds in a multivariate setting we first estimate, as baseline model, Eq. (2) including only 'single-adult equivalent household income' and all the contributing factors mentioned in the previous section (Model 1). Our second specification also includes country specific average income to control for the relative income effect on satisfaction with life (Model 2). As a last step, we introduce (in separate regressions), the simple sum of individual functioning failures, SUMC, and the BDP index of deprivation (Model 3).

Variables	satlife(PCA)	satlife(PCA)
eq inc	0.0426*** (0.006)	0.0467*** (0.007)
mean inc	0.0456 (0.043)	0.0707 (0.044)
perm inc		
SUMC	−0.170*** (0.002)	
BDP		−0.226*** (0.003)
SUMC_SE		
BDP_SE		

Variables	satlife(FA)	satlife(FA)
eq inc	0.0262*** (0.004)	0.0287*** (0.004)
mean inc	0.0538** (0.025)	0.0696*** (0.026)
perm inc		
SUMC	−0.106*** (0.001)	
BDP		−0.143*** (0.002)
SUMC_SE		
BDP_SE		

Variables	satlife(PCA)	satlife(PCA)
eq inc	0.0740* (0.037)	0.0736 (0.040)
mean inc	−0.824*** (0.054)	−0.348*** (0.071)
perm inc	0.0331 (0.030)	0.0727* (0.037)
SUMC		
BDP		
SUMC_SE	−0.00501*** (0.000)	
BDP_SE		−0.0102*** (0.001)

Variables	satlife(FA)	satlife(FA)
eq inc	0.0483* (0.023)	0.0481* (0.025)
mean inc	−0.475*** (0.034)	−0.183*** (0.043)
perm inc	0.0164 (0.017)	0.04 (0.022)
SUMC		
BDP		
SUMC_SE	−0.00307*** (0.000)	
BDP_SE		−0.00629*** (0.000)

Our results corroborate the findings of the happiness studies: individual income matters together with many other factors.

We have proposed to include among them some indices of multidimensional well-being recently introduced in the income distribution literature.

Our results also confirm that deprived and excluded individuals are less satisfied with their lives.

This finding supports the decision of the EU to include the fight of social exclusion among its central objectives.