Valuing Environmental and Social Quality Impacts on Subjective Well-Being

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Monetary metric is useful whenever it is necessary a cost/benefit assessment that implies a change of the degree of individuals and families well-being. The work is devoted to investigate and assess the impact of Environmental and Social Quality (ESQu) on Subjective Well-Being (SWB) at regional scale, keeping under control the individual heterogeneity. After a brief introduction, the application of the Life Satisfaction Approach (LSA) on a large data-base of Italian official statistical source, allows establishing the operative practicality of this method through monetization of the impact of some externalities. In this direction and by way of an example, some regional differentials, in terms of environmental and social benefits-costs, are highlighted and their impact on GDP is estimated.

1. Introduction

Researches dealing with Subjective Well-Being (henceforth SWB) and the ways in which it is measured, now boast a wide literature (Angner 2010). This debate involved different disciplines and has evolved side by side to the awareness of the need of measuring the social phenomena in an unbiased manner[2], in order to be able to intervene with corrective and distributive policies. If, on one hand, the state of SWB refers to *how* a person directly evaluates his level of life satisfaction or happiness – first of all, through the natural language, i.e. in verbal terms – on the other, there is not full consensus on methods and metrics to be employed to objectively measure this phenomenon. When we say: *I am fairly happy today* or *I*

[1] Note: Authors have shared the whole management and the assumptions underlying the research; however it should be noted that M. Bravi has contributed, in particular, to the drafting of sections 1 and 3, while M. Sichera to the paragraph 2. Conclusions were made by both Authors.

[2] Sociologists were perhaps the firsts to find experimental indicators of living standard that went beyond GDP. This 'quality of life movement' emphasizes mainly the objective ingredients for a good life, while the later happiness movement is characterized by a more subjective approach, based on self-reported evaluations (Bruni & La Porta 2004). In economics, thanks to Sen (1988), the category of quality of life tends to encompass new indicators such as democracy, social capital, health, working conditions, and individual capabilities.

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am happier today than I was yesterday, we don't actually specify the reasons of our state of happiness and we frequently do not even know why. The identification of a correct approach to this problem must consequently begin from the careful consideration of the meaning of the word *happiness*; it would appear to lie closest to the concept of SWB.

It is fairly clear that happiness is the top ambition in human life, but, at the same time, we ask ourselves whether it could be considered as a correct indicator of social progress. On an individual level, it can assume two meanings: the first is based on the emotions, while the second refers to moral judgment and subjective evaluation. It would appear to be connected to the concept of eudemonia (*εὐδαιμονία*), a Greek word that means *full life* or a *life worth living*, from the moment that it can satisfy the most profound expectations of the human being's existence. This idea also refers to a SWB interpretation as a specific lifestyle that is complete, full and enriching, in which each person's ability can be expressed and accrued (Huppert & So 2008). In this way, SWB can be considered an umbrella term that covers happiness and quality of life. It covers a wide range of aspects that are part of Man's everyday life. On that subject, the OECD definition can be considered to be fairly complete: *Good mental states, including all of the various evaluations, positive and negative, that people make of their lives and the affective reactions of people to their experiences* (OECD 2013: 8; Diener et al. 2006).

The concept of SWB has already been examined in depth in economics and other disciplines, such as behavioral sciences. For example, the concept of 'experienced utility' so named by Kahneman et al. (1999), has represented an attempt to enter the position of the subject within the experience, not solely focusing on the choice, or on the final state. «*Experienced utility is the ex post hedonic quality (satisfaction) associated with an act of choice, in contrast to decision utility which is the ex-ante expectation of experienced utility*» (Welsch 2009: 2736).

Since the utility theory revolves on the consumer's choices and his preferences system, this distinction is very useful for thinking not solely to the economic disciplines. Kahneman & Sugden (2005) underlined the inadequacy of the traditional concept of utility measured through the choices of rational agents; they stated that the experienced utility refers to Bentham's hedonic experience as a measure of pleasure and pain. On the contrary, the term utility has been used by economists over the last one hundred years, particularly in a decisional manner, as the representation of a preferences system, where these last are illustrated through choices; in other words, they are revealed by them. The conventional indifference curves and the representation of well-being as a final state, share an incorrect assumption: namely that the individual utility referring to a final state depends only on this and will not be influenced by the history of each one of us or by the process that led to a specific choice. Correcting this error was one of the goals of behavioral economics and the so-called hedonic psychology.

The concept of hedonic adaptation (Brickman & Campbell 1971) is a turning point in the theories of subjective well-being. Myers described the phenomenon of "hedonic treadmill" as a mean for completely understanding happiness. He wrote: «*The point cannot be overstated: every desirable experience – passionate love,*

a spiritual high, the pleasure of a new possession, the exhilaration of success – is transitory» (Myers, 1992: 53). Brickman & Campbell believed that, in their lives, people normally react to any good or bad event, but that sooner or later, they return to a point of neutrality. In other words, they "adapt" to the new situation. The same thing happens in the world of consumer goods, coherently with the law of decreasing marginal utility. Only referring to the material goods, Scitovsky (1986) observed that cultural heritage – music, art, literature etc. – is influenced by hedonic adaptation to a lesser degree when compared with comfort goods such as homes, cars etc. The Author stressed the importance of the time dimension in consumption. For example, in the free time, replacing intellectual activities with less demanding alternatives in terms of time will have negative consequences on the quality of the recreational experience (Bianchi 2003). Linder (1970) and Becker (1976) already emphasized the non-perfect substitution of using time for activities that necessitate intellectual ability and less-demanding activities associated with a lower well-being for the individual.

Another fundamental finding in the debate on SWB is the relationship between happiness and wealth. Easterlin (1974) was the first to highlight the existence of a non-linear relationship between population's income and degree of well-being. And this was an excellent starting point. Numerous other Authors focused on corroborating or summarizing this 'paradox'. Further suggestions can be identified in the articles by Clark et al. (2008) and Diener et al. (2009). It should be remembered that the empirical research into happiness does not simply introduce new variables to sit alongside the traditional ones, but actually modifies the structure of the relationship between income and utility (Frey & Stutzer 2002; Ferrer-i-Carbonell & Frijters 2004).

The most important variables that explain the level of SWB and which have been taken into consideration in hundreds of applications, were recently classified into micro (individual) and macro factors (economic and social). Important micro factors are age, health, gender, marital status, household composition and size, level of education, employment status, and house characteristics. On a macro level, the most important factors are: the general rate of unemployment, the rate of inflation and the economic growth rate. Despite the fact that these relationships are fairly solid – in other words they are stable across different samples – the factors mentioned explain only a small fraction of the variability in the stated SWB between individuals; normally, not more than 25-30% (Welsh 2009b). In literature, this is usually indicated as individual heterogeneity and, on the other hand, it prevents reading the social and economic phenomena only in terms of mean/median indicators.

In addition, between the micro-level and the macro, there is probably a group of determinants that was still little investigated and that refers to the local Environmental and Social Quality (henceforth ESQu) relating to the place in which the individual normally lives or acts (MacKennon & Mourato 2009; Luechinger & Raschky, 2009; Ambrey & Fleming 2011; Ferreira et al 2013; Beja 2013). From a theoretical point of view, these determinants are not part, nor of the individual or family sphere, nor of those macro factors – as findings of the economic and political

choices – on which the individual cannot usually affect. The capacity – or the possibility – of the subject to influence the surrounding environment is instead a factor able to determine the level of SWB. Frey & Frey Marti (2010) document that, if the level of political participation and confidence in institutions is increasing, people are happier. Consistently, they are also in situations where the rate of political corruption is lesser (Welsch 2008). The place – the city or region – in which people live is therefore, by definition, fundamental in determining the level of SWB.

Briefly, the research on causes of happiness have, up to this point, highlighted that: (a) the concepts of utility and SWB do not match perfectly from a theoretical point of view; (b) even if there is a causal relationship between income and happiness, this one is not proportional; (c) in achieving happiness, the subjective component plays a decisive role; (d) goods and commodities are not equal in determining a certain level of utility or SWB; (e) with regard to this point, the role that the so-called local public goods (Stiglitz 1977) – also defined externalities (Tresh 2002) – play in determining the individual and, consequently, collective, happiness, is not sufficiently investigated.

This work is therefore devoted to investigate and assess the impact of ESQu on SWB at regional scale, taking into account the effect of individual variables, whose role it is very important but it should be kept under control. Recently, the regional factors affecting life satisfaction level were analyzed (Kunimitsu 2015) along with their significant covariation, also in order to determine differences in public policy at the local scale. The objective of this study is instead to monetize the effect of ESQu on SWB, outlining, in this sense, the regional differentials in terms of environmental and social benefits-costs.

The work is therefore organized as follows: after a brief introduction on the use of standard methods in valuing externalities, the arguments of the SWB function are clarified and some estimation problems are recalled. It then goes explaining an empirical experiment, which is focusing on the application of Life Satisfaction Approach (henceforth LSA) on a large data-base divided according to the Italian regions and derived from the official statistical source. The conclusions briefly summarize the results emerging from the application of the econometric models. Finally, the comparison with previous experiments indicates new developments for future researches.

2. Externalities valuation methods and Life Satisfaction Approach (LSA)

Over the years, several methods have been tested to estimate externalities, as costs/benefits related to extra-market goods or local public goods. Among these, the Hedonic Prices Method (Palmquist 2005), the Travel Cost Method (Phaneuf & Kerry Smith 2005) and the Contingent Valuation Method and Choice Experiments (Alberini & Khan 2006; Kanninen 2007). These methodologies are based on 'revealed preferences' or 'stated preferences'. In the first and second case, the principles are complementarity or substitution in consumption between ESQu and market goods and can be used to estimate the value; while the latter are based

on the direct evaluation of willingness to pay/accept for an improvement/damage by a sample of population. Scientific literature now boasts thousands of experiments using these methods and includes a broad debate on the validity/reliability of their empirical results. But, despite many applications and many decades of research, shortcomings in all techniques remain and no one is considered superior to the others in all respects.

More recently, alongside these standard valuation methods, a new approach emerged, as well as defined LSA (Welsh 2007; Frey et al. 2010). The basic idea is to use the indicators identified in the individual happiness investigations, through self-assessment – normally available in the institutional databanks – and subject them to econometric procedures. Within these parameters, SWB is placed as a function of the income and ESQu, keeping under control individual, sociodemographic and psychological variables pertinent each respondent. The estimate of these relationships is then used to compute the trade-off between the income and external effects. On the other hand, this leads to a question: how much would be necessary, in term of income increasing/decreasing, to compensate for a reduction/improvement of ESQu?

2.1. Life Satisfaction Approach (LSA)

A general formula using data on SWB could be the following:

$$SWB_{jt} = F(ESQu_{jt} , R_{ijt} , X_{jt} , D_{ijt} ,U_{ijt}) \quad (1)$$

where:

- SWB_{ijt} is the subjective well-being described by the respondent i in position j on date t;
- $ESQu_{jt}$ describes the external conditions in position j on date t;
- R_{ijt} is the income of i;
- X_{jt} includes a series of important factors, associated to the degree of well-being on a macro level;
- D_{ijt} is a series of determinants observed on individual level;
- U_{ijt} is a series of non-observed determinants, again on individual level.

Subjective Well-Being Function (henceforth SWBF) can be interpreted as the empirical description of the indirect utility function. As such, it can also include some price variables Among the determinants of the individual degree observed, Dijt represents the most important socio-demographic and psychological factors that vary from one individual to the next – factors such as age, gender, the position in their profession, educational qualifications, behavior, etc. The non-observable characteristics Uijt represent the omitted variables.

Once these parameters have been estimated, the SWBF can be used to obtain a monetary valuation of the ESQu variation. By using the simplified formula SWB = F (ESQu, R), it is possible to differentiate this function completely, using dSWB

= 0, and resolve it for the marginal value (MV) relative to the external environmental/social conditions:

$$MV = -\delta R/\delta ESQu = (\delta F/\delta ESQu)\delta ESQu/(\delta F/\delta R) \quad (2)$$

In this formula, MV will be positive if ESQu measures the quality, and negative if it measures the damage. Consequently, dR/dESQu, that is the gradient of the indifference curve on the R-ESQu plane, will be negative or positive respectively. The absolute value of MV is the marginal rate of substitution between the environmental conditions and the income level. MV is invariant with respect to the increasing monotonic transformations of SWBF; it represents the valuation, under constant utility, of the MV of the external conditions, meaning the amount of income necessary to compensate people for the marginal variation in terms of ESQu, with constant SWB.

Applying LSA requires the specification of an estimate equation that expresses the functional relationships mentioned earlier, for example, according to the following:

$$SWB_{ijt} = \alpha ESQu_{jt} + \beta R_{ijt} + \gamma X_{jt} + \delta D_{ijt} + \eta_j + \eta_t + \varepsilon_{ijt} \quad (3)$$

This equation is a linear version of the function seen in (1). Compared with the previous one, the non-observable determinants of well-being Uijt are replaced with the term $\eta_j + \eta_t + \varepsilon_{ijt}$, where the first two represent the effects of fixed localization and time, respectively. These express the invariant characteristics that are common to all people in place j and at date t; ε_{ijt} is the specific term of disturbance and it covers non-observable characteristics that refer to each individual joined by the measurement error.

In reference to the nature of the dependent variable, the questions relative to SWB may refer to happiness or the degree of LS, while the categories can be purely verbal or can combine verbal definitions with numerical expressions. For example, a three-point scale can be used to assess the answers to the following question: «*All things considered, how would you consider your situation over the last few days: would you say that you are very happy, moderately happy or not at all happy?*» As an alternative, according to the World Values Surveys, people can be asked to assess on a scale from 1 (not at all satisfied) to 10 (completely satisfied) – known as the Cantril scale – the following question: «*All things considered, over the last few days, how would you rate your overall satisfaction with your life?*»

These data structures generate some precise questions from the estimating point of view. In particular, the basic conditions for applying on LS data – or relative to happiness – as empirical approximations of the individual utility function, are that they should be at least measured on an ordinal scale; they should be also satisfying conventional quality standards. Different measurements of SWB – in particular, relative to happiness and LS under various aspects – are well-correlated, showing that they represent a single construct.

In addition to validity and reliability, the data relative to happiness or SV, must not only be measured on an ordinal scale but must also be comparable,

meaning that people must share a common idea of what happiness is. This hypothesis is based on the support of psychology and the theory of social comparison (Suls & Wheeler 2000). Accordingly, the individuals can recognize and predict the degree of happiness in the others. In other words, happy people are generally categorized in this state by other people. While comparability is a powerful assumption, that the economists frequently do not need to make, a prerequisite of this type according to which people use the same scores in the same way is the one that supports the cardinal nature of the dependent variable, in the sense that the distance between consecutive results on SWB must be the same.

However, the cardinal dimension is not an absolutely necessary assumption for the application of the method based on SWBF: if we assume the strong hypothesis that there is comparability, this consents the evaluation of the estimate of the function using models of ordinate choices, for example Ordered Logit or Probit. In particular, the latter appears to be preferred in the international literature. Even if the coefficients estimated by these models refer to a latent non observable variable and therefore cannot be interpreted individually, the relationship between two coefficients can legitimately be used to calculate the marginal rate of substitution between the associated variables. This applies particularly for the marginal rate of substitution between the ESQu and income. From equation (2):

$$0 = (\delta F/\delta ESQu)\delta ESQu + (\delta F/\delta R)\delta R = \delta R \rightarrow -(\delta F/\delta ESQu)/(\delta F/\delta R) \rightarrow$$
$$\rightarrow \delta R/\delta ESQu \rightarrow -(\delta F/\delta ESQu)/(\delta F/\delta R) \rightarrow - \left|\alpha/\beta\right| \quad (4)$$

Where: α is the marginal coefficient relative to ESQu and β is the marginal coefficient relative to income according to (9). Consequently, the assumption of cardinality is redundant as the marginal rate of substitution is itself an ordinal concept. The same thing applies for the equivalent or compensatory variations as non-marginal monetary measurements.

As mentioned in the Introduction, using micro data involves the identification of a series of covariates that explain the observed behavior. With the end of valuing ESQu, it is very important to correctly include them in the regression models, to avoid spurious correlations. Particularly important is the problem of the treatment of non-observable micro-heterogeneity on individual level. On the other hand, as mentioned above, in determining SWB, the subjective component is very high. A classic solution to this problem is the use of aggregate models, or rather the consideration of the average happiness in a certain place *j*, on time *t*. If each group of respondents at place *j* and time *t* is a representative sample – e.g., within the ISTAT (The Italian Statistics Institute) surveys regarding the living conditions of Italians – the degree of micro-heterogeneity, observed and not observed, can be treated within an equation of estimates assuming the following specification:

$$SWB^{m}_{jt} = \alpha ESQu_{jt} + \beta R^{m}_{jt} + \gamma X_{jt} + \eta_j + \eta_t + \varepsilon_{jt} \quad (5)$$

Where SWB^{m}_{jt} is happiness or the average SV, that is presented at this point, as a continuous variable, in place j and on time t; $ESQu_{jt}$ is a local public good

and R^m_{jt} and ε_{jt} are respectively the mean income and the corresponding term of disturbance, while X_{jt} are the territorial determinants. Naturally, the term D_{jt} has disappeared because, considering aggregate data, it is usual to refer to an average individual, who does not exist in reality, or better still, to the average of SWB in a specific location and period of time. Particularly, about the term X_{jt}, it is necessary to specify what the territorial determinants are. For example, an aged population can determine a slow rate of growth and a minor level of LS. As well as the closing of a long production cycle – e. g, manufacturing industry – can lead to a high rate of unemployment which, in turn, can depress the SWB.

3. Empirical investigation

The empirical experiment was performed thanks to the use of a large database relative to the multi-purpose investigation on the living conditions of Italians, promoted and administered periodically by ISTAT (Italian National Institute of Statistics). These were released on a specific request, free-of-charge, by the proprietary body for purely research purposes. The use of micro data consents the verification of the hypotheses tested in previous studies and their validation.

Starting from December 1993, each year ISTAT performs a sample-based survey[3] in an attempt to understand the problems relative to everyday living, the satisfaction the public has with public services, health, recreational and cultural activities, the participation in politics, feeding habits, the use of computers, the use of means of transport, as well as opinions regarding the environment, security and information about home and place of residence. The reference period is usually the 12 months preceding the survey, even though some of the questions refer to the exact status quo at the time of investigation. The research is included in the 'Program of National Statistics 2011-2013' extended by Decree Law No.101 dated August 31st, 2013 – converted with modifications of Law No.125 dated October 30th 2013, and in the 'Program of National Statistics 2014-2016'[4] that include the collated statistical results considered to be essential for the country. ISTAT must

[3] The sample is two-phases with stratification of the units in the first phase, namely the Municipalities. Each survey reached approximately 20,000 families for a total of approximately 50,000 individual respondents. The information was collected through direct interviews for some of the questions. In the event an individual was not available for interview for any particular reason, the information was provided by another member of the family. Other questions required self-compilation. The survey unit was the Family Unit (FU) associated with a sampled Registered Family (RF). To obtain the estimates for the entire population under investigation, it is necessary to multiply each piece of data by the Universe reference coefficient. These coefficients have been determined to be used indifferently to construct the estimates for individuals and those for the families. The objective of the survey is to provide estimates that refer to: Italy as a whole; the five macro geographical territories (North West, North East, Central, South, the Islands); the geographical regions; six areas based on the socio-demographic characteristics of the Municipalities.

[4] http://www.istat.it/it/istituto-nazionale-di-statistica/organizzazione/normativa

carry out these surveys by law and the members of the public recruited in the studies are obliged to take part.

Within the multi-purpose investigation, there is a question on how satisfied Italians are with their lives. It is measured using a pseudo Cantrill scale; instead of a 10-point scale, it is scored on 11 points as the '0' value is also included. The people interviewed were asked the following question: «*Currently, are you satisfied of your life as a whole?*» (Score from 0 to 10). This first question was joined by an idea on how they predict things will be in the future, along the lines of: «*In five years' time, do you think that your personal situation will …. Have improved, be unchanged, have deteriorated or don't know*».

While the survey includes a series of questions that focus on the respondents position within their profession, the sector of economic activity for those in work and the type of income, the economic situation of individuals and families, it is not possible to identify them using monetary income and this is the greatest limit that emerges from this type of databank. In actual fact, only two questions included in the interview allow the respondents to score their economic conditions and those of their family unit. In this experiment they are used as proxy variables of income scale[5]. First of all, the empirical valuation takes into account what specified in equation (3) and tries to identify the presence of individual heterogeneity on the estimate level. As already specified, this is one of the problems constantly encountered in experiments like this.

3.1. First estimates on individual observations

The results of the linear model (Table 1) include only the variables passing the test of statistical significance. These last are measured on cardinal, ordinal and scoring scale. Considering the high number of variables – 719 from the original dataset to be precise – and the necessity of recoding of some of these, the first effort was to reduce the initial set and identify the main indicators of SWB. Between these, one can recognize the group related to the individual, the income effect and the external effects together with some specific categories of people (Singles, Smokers, Optimists, Renters, Unemployed, and Widowers) and a group of variables related to the house conditions.

The perception of health status emerges as the most important aspect in determining the level of LS. It is immediately followed by the satisfaction for fam-

[5] ISTAT database includes the opinions on an individual's economic situation and on the household economic resources, expressed on an ordinal scale from 0 to 4 points (1= Excellent; 2 = Adequate 3 = Poor; 4 = Totally inadequate). It was therefore necessary to attribute a mean/median income value to each of these segments of population. This operation was accomplished with the help of the database of the Bank of Italy (Survey on Household Income and Wealth – SHIW) for the year 2012 that provided the median value of the fourth quartiles of the income distribution of the Italian households. See: https://www.bancaditalia.it/statistiche/tematiche/indaginifamiglie-imprese/bilanci-famiglie/.

Table 1. Estimates results on individual data and summary statistics. OLS Model. Dependent variable: Life Satisfaction. Year 2012.

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Marginal prices	Marginal prices (sample mean)	Summary Statistics				
	B	Std. Error	Beta					N.	Min	Max	Mean	St. Dev.
Constant	8.298	0.13		64.018	0							
Household's economic resources (Euro)	3.24E-05	0	0.083	13.674	0			46257	5926	37386	16129.98	4476.915
Previous economic situation (from worst to best)	-0.048	0.013	-0.022	-3.69	0	-1496.89	-5521.86	46311	1	5	3.69	0.773
Vacancy in the last three months (number of days)	0.058	0.007	0.043	8.182	0	1780.42	1183.47	46304	0	30	0.66	1.251
Alcohol consume (from worst to best)	0.089	0.014	0.032	6.149	0	2740.09	10006.25	40454	1	4	3.65	0.623
Perception of health status (from best to worst)	-0.381	0.012	-0.179	-32.947	0	-11774.82	-25319.51	46464	1	5	2.15	0.847
Newspapers reading (from worst to best)	0.047	0.006	0.04	7.652	0	1444.34	3142.52	43398	1	5	2.18	1.464
Satisfaction for family relationships (from best to worst)	-0.42	0.017	-0.147	-25.444	0	-12986.17	-22213.23	39752	1	4	1.71	0.632
Satisfaction for friends relationships (from best to worst)	-0.163	0.016	-0.065	-10.294	0	-5033.07	-9571.73	39763	1	4	1.9	0.705
Satisfaction for free time (from best to worst)	-0.246	0.013	-0.112	-19.64	0	-7608.6	-16943.52	39746	1	4	2.23	0.794
Satisfaction for environmental situation (from best to worst)	-0.119	0.013	-0.049	-8.865	0	-3684.92	-7987.71	39875	1	4	2.17	0.706
Safety (from best to worst)	-0.066	0.009	-0.041	-7.582	0	-2053.13	-5263.18	39839	1	6	2.56	1.146
Public transport (from worst to best)	0.022	0.009	0.013	2.607	0.009	692.29	2076.73	43760	1	4	3	1.016
(House) Number of rooms	0.016	0.006	0.014	2.649	0.008	489.79	2166.02	46291	1	21	4.42	1.52
(House) High expenses	-0.076	0.019	-0.021	-4.084	0	-2359.68	-1493.27	46180	0	1	0.63	0.482
(House) Bad condition	-0.216	0.042	-0.026	-5.123	0	-6683.38	-316.83	46007	0	1	0.05	0.213

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Marginal prices	Marginal prices (sample mean)	Summary Statistics				
	B	Std. Error	Beta					N.	Min	Max	Mean	St. Dev.
Singles	-0.134	0.017	-0.039	-7.678	0	-4140.95	-2338.86	39383	0	1	0.56	0.496
Smokers	-0.103	0.022	-0.025	-4.77	0	-3185.87	-658.93	41203	0	1	0.21	0.405
Optimistics	0.229	0.018	0.065	12.443	0	7089.96	2623.64	46464	0	1	0.37	0.483
Renters	-0.237	0.026	-0.049	-9.296	0	-7326.68	-1164.03	46464	0	1	0.16	0.366
Unemployeds	-0.642	0.029	-0.113	-21.982	0	-19849.88	-1693.89	46464	0	1	0.09	0.279
Widowers	-0.234	0.044	-0.027	-5.303	0	-7236.74	-620.66	46464	0	1	0.09	0.28
Absence of social degradation (scoring)	0.01	0.003	0.017	3.289	0.001	301.85	4614.19	46464	0	20	15.29	6.862
Trust in institutions (scoring)	0.013	0.001	0.124	24.033	0	387.18	13307.93	46464	0	90	34.37	21.277
CO2 from traffic (tons X 1000 in.)	-5.55E-06	0	-0.013	-2.569	0.01	-0.17	-1154.57	46464	662.8	16391.4	6732.521	4121.2062
Dependent variable = Life Satisfaction								39658	0	10	6.84	1.769
Number of observations	29642		R2 = 0.264				St. Error of estimate = 1.485 (VC = 21.7%)					

Source: ISTAT dataset processing

ily relationships and the availability of free time, as would be expected. But also the condition of unemployed and the trust in institutions[6] are very important. The significance of the subjective component as determinant of the observed phenomenon is confirmed by the presence of the group of so-called optimistic[7]. Indeed, what could be more subjective and somewhat innate, of the predisposition towards life in a positive way and regardless of what may happen?

An exception is made for the local public goods as they are where the individual lives and acts and not yet investigated on a specific territorial level, as will be seen below. The perceived security[8], the presence of an efficient public transport system, the level of CO_2 of vehicular traffic, and absence of social degradation[9] appear significant in describing the LS.

Nevertheless, when it faced with a consistent number of covariates that pass the test, the variance explained by the model was never more of 26% with OLS. In other words, there is a strong heterogeneity – or subjective component – in determining the SWB that prevents the perfect fitting of the econometric model to the empirical data. The standard error of the estimate is in fact above the good level of tolerance that should be not more than 15%. But the sign and the amount of the marginal prices are instead encouraging. Some of these can be compared with market prices, as, for example, the price per room – the income flow of housing services – or the number of holiday days in the last three months. Finally, the renters group perceives as negative his condition. In fact, in Italy, homeownership is very important, both as a status symbol and as a form of investment of household's savings.

Considering the dependent variable to be ordinal instead of cardinal does not resolve the problem anyway. The Ordered Probit Model[10] does not appear to be

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[6] The variable represents the sum of multiple scores obtained in separated questions. These are related to the: trust in the Italian Government (0-10); trust in the European Government (0-10); trust in the Regional Government (0-10); trust in the Provincial Government (0-10); trust in the Municipal Government (0-10); trust in the political parties; trust in the judiciary system (0-10); trust in the law enforcement officers (0-10); trust in the firefighters (0-10).

[7] The dummy variable is recoded on the basis of the answer number one to the question: «*Do you think that your personal situation in the next 5 years: 1 = surely will improve; 2 = it will remain the same; 3 = it will be worse; 4 = you do not know?*»

[8] The variable is measured through six levels of perceived security near home: 1 = very secure; 2 = enough secure; 3= not secure; 4 = not at all secure; 5 = never go out alone; 6 = never go out.

[9] The variable represents the sum of multiple score obtained in separated questions. These were related to the fact that in the area where individuals live one person can see frequently: people taking or peddling drugs, or acts of vandalism against public or private goods (cars or bins burned, etc.), or prostitutes, vagabonds, homeless and nomads.

[10] It should be pointed out that this model is used when the values of the dependent variable represent the intervals within which the non-observable – latent – continuous variable of reference lies. Consequently, the unknown parameters estimated by the regression model also include the cut off points that must be significant. The position of this threshold must be verified and considered as part of the model. In actual fact, adjacent pairs must be significantly different each other. From their position, it can also be deduced whether the functional rela-

much more efficient than the linear one: the cases correctly predicted are only 31.6%, despite the fact that the probability tests and other significance criteria are good (Table 2). The standard error of estimate is a little bit worse than in the linear model. Moreover, the behavior of the covariates seems to confirm what has been reported previously and the marginal prices appear consistent in their amounts.

3.2 *Valuation on aggregated data*

Hence, in in this section, the attention is focused on aggregated (territorial) data and some social and environmental indicators affecting the LS as specified in equation (5). At the same time, the estimates consistency, on the basis of the amounts of the benefit/cost of the indicators taken into consideration, will be verified. This analysis cannot be considered exhaustive of a comprehensive system of social and environmental indicators – which, in Italy, could be, for example, represented by the ESWB (*Equitable and Sustainable Well-being*)[11] – but rather as example and proof of the methodological robustness of this approach. Table 3 contains the distribution of the LS scores split by region[12]. It can be observed that the highest value is found in Trentino Alto Adige compared to the lowest value found in Campania. Overall, it can be concluded that LS is higher in the North Italy with respect to other regions, and, in any case, the territorial distribution of SWB follows that of per capita GDP and per capita income. The coefficients of linear correlation are 0.852 and 0.842, respectively, while the maximum and minimum values are found in the same regions, confirming their position in the list.

Instead, Figure 1 highlights that the relationship between LS and the economic variables is not proportional, as has already been pointed out. The function is saddle-shaped, and well formalized by a cubic-type function, that emphasizes the major divergence between the territories, while confirming the link between SWB and the average level of wealth. In this case, the aggregate economic data represent the divergence between Italian regions and, in particular, illustrate the position of those that benefit from the status of autonomous regions in the north of the country, such as Trentino Alto-Adige.

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tionship can be interpreted as linear or not. In the case under consideration the cut off points are significant, so the OPM can be employed as correct functional form, as demonstrated in other applications.

[11] The Report on Equitable and Sustainable Well-being, born of a joint initiative of The Italian National Council for Economics and Labor (CNEL) and the Italian National Institute of Statistics (ISTAT), aims to be a useful guide for policy makers, social partners and the research community to identify priorities to be addressed both in the short and long-term in order to ensure a fair and sustainable well-being for present and future generations. It analyses the fundamental dimensions of well-being and progress in Italy and its territories, providing an overall view of the main social, economic and environmental phenomena which characterize our country (ISTAT-CNEL 2014).

[12] In the ISTAT investigations, the data for Piedmont and Val d'Aosta have been aggregated; consequently, the original territorial subdivision was maintained.

Table 2. Estimates results on individual data. MLE Ordered Probit Model. Dependent variable: Life Satisfaction. Year 2012.

Variables	Unstandardized Coefficients		Zeta	Sig.	Marginal prices	Marginal prices (sample mean)
	B	Std. Error				
Household's economic resources (Euro)	0.000024	0.000002	15.3377	<0.0001		
Previous economic situation (from worst to best)	0.088798	0.01213	7.3206	<0.0001	3629.75	13389.72
Vacancy in the last three months (number of days)	0.04224	0.004946	8.5407	<0.0001	1726.63	1147.72
Alcohol consume (from worst to best)	0.067318	0.010191	6.6056	<0.0001	2751.73	10048.78
Perception of health status (from best to worst)	-0.254408	0.009064	−28.0670	<0.0001	-10399.28	-22361.68
Newspapers reading (from worst to best)	0.034712	0.004317	8.0404	<0.0001	1418.91	3087.18
Satisfaction for family relationships (from best to worst)	-0.305107	0.012453	−24.5013	<0.0001	-12471.67	-21333.17
Satisfaction for friends relationships (from best to worst)	-0.113492	0.012204	−9.2993	<0.0001	-4639.14	-8822.57
Satisfaction for freetime (from best to worst)	-0.164218	0.009672	−16.9787	<0.0001	-6712.64	-14948.31
Satisfaction for environmental situation (from best to worst)	-0.080856	0.010277	−7.8673	<0.0001	-3305.11	-7164.4
Safety (from best to worst)	-0.03428	0.006801	−5.0401	<0.0001	-1401.22	-3592.02
Public transport (from worst to best)	0.022017	0.00611	3.6036	0.0003	899.98	2699.76
(House) Number of rooms	0.008245	0.004326	1.9058	0.0567	337.02	1490.42
(House) High expenses	-0.069612	0.012816	−5.4317	<0.0001	-2845.5	-1800.71
(House) Bad condition	-0.098845	0.031698	−3.1183	0.0018	-4040.42	-191.54
Singles	-0.023616	0.007596	−3.1091	0.0019	-965.34	-545.23
Smokers	-0.067054	0.015407	−4.3522	<0.0001	-2740.93	-566.91
Optimistics	0.181643	0.013029	13.9411	<0.0001	7424.91	2747.59
Renters	-0.158534	0.018501	−8.5688	<0.0001	-6480.3	-1029.56
Unemployeds	-0.426043	0.02235	−19.0628	<0.0001	-17415.1	-1486.12

Variables	Unstandardized Coefficients		Zeta	Sig.	Marginal prices	Marginal prices (sample mean)		
	B	Std. Error						
Widowers	-0.157448	0.031398	−5.0147	<0.0001	-6435.91	-551.98		
Absence of social degradation (scoring)	0.008659	0.002192	3.9501	<0.0001	353.96	5410.68		
Trust in institutions (scoring)	0.008245	0.000401	20.5505	<0.0001	337.03	11584.01		
CO2 from vehicular traffic (tons X 1000 in.)	-0.000006	0.000001	−3.9510	<0.0001	-0.24	-1620.44		
cut1	−3.52028	0.093678	−37.5787	<0.0001	Log-likelihood		−50985.74	
cut2	−3.31504	0.092362	−35.8916	<0.0001	Schwarz criterion		102321.3	
cut3	−3.06127	0.091163	−33.5800	<0.0001	St.Error of estimate		1.729379	
cut4	−2.73759	0.09028	−30.3232	<0.0001	Akaike criterion		102039.5	
cut5	−2.38457	0.089717	−26.5787	<0.0001	Hannan-Quinn criterion		102130	
cut6	−1.71403	0.089114	−19.2342	<0.0001	Number of cases correctly predicted		9293 (31.6%)	
cut7	−1.03463	0.088828	−11.6476	<0.0001	Likelihood ratio test: Chi-square (24)		8834.32 [0.0000]	
cut8	−0.247175	0.088678	−2.7873	0.0053	Null hypothesis: error is normally distributed			
cut9	0.682122	0.088762	7.6849	<0.0001	Chi-square (2) = 355.274			
cut10	1.18121	0.08916	13.2482	<0.0001	p-value = 7.13363e-078			
Number of observations	29380				Dependent variable = Life Satisfaction			

Source: ISTAT database processing

Table 3. Life Satisfaction, GDP and Income per capita by Italian regions. Year 2012.

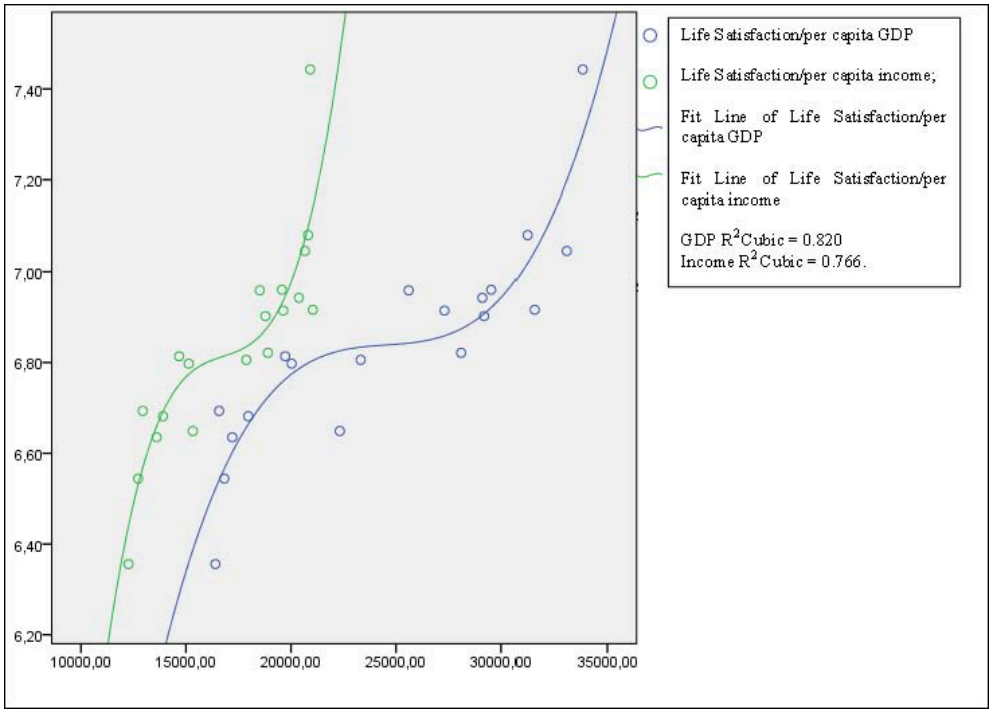
Region	Life Satisfaction				GDP	Income
	Mean	Median	St. Dev.	N.		
Piedmont -Val d'Aosta	7.0808	7	1.7298	4211	31204	20812
Lombardy	7.0457	7	1.6833	3651	33066	20666
Trentino Alto Adige	**7.4429**	**8**	**1.6295**	**2843**	**33827**	**20914**
Veneto	6.9604	7	1.727	2879	29531	19566
Friuli Venezia Giulia	6.9427	7	1.8154	1743	29106	20374
Liguria	6.9144	7	1.6127	1783	27308	19633
Emilia Romagna	6.9163	7	1.7696	2331	31538	21039
Tuscany	6.8214	7	1.6362	2528	28100	18900
Umbria	6.8059	7	1.8475	1440	23316	17870
Marches	6.9591	7	1.6955	1847	25601	18514
Lazio	6.649	7	1.7546	2572	22322	15325
Abruzzo	6.9023	7	1.8564	1892	29195	18780
Molise	6.7975	7	1.8284	1458	20034	15135
Campania	**6.356**	**6**	**1.666**	**3572**	**16400**	**12265**
Apulia	6.6352	7	1.8116	2825	17206	13603
Basilicata	6.6816	7	1.7444	1519	17964	13906
Calabria	6.6934	7	1.8961	2280	16575	12943
Sicily	6.5442	7	1.8042	3132	16826	12722
Sardinia	6.8139	7	1.9118	1958	19722	14676

Source: ISTAT data processing

Finally, Tables 4 and 5 present a synthesis about a series of experiments[13] and they include the estimates, by way of example, of three indicators, considered to be representative: in addition to GDP per capita, the first concerns the social quality, the second the environmental quality while the third measures the economic impact of tourism sector at regional scale.

[13] In order to test the ability to monetize various types of externalities, some indicators, such as those pertaining to the development policies database made available by ISTAT, have been employed. This group contains 204 indicators, available by regional level, by macro area and goals of development policies. The database is one of the products covered by the Disciplinary signed by ISTAT and the Department of development and economic cohesion, as part of the "Statistical and territorial information by sector for structural policies 2010-2015". In most cases, the time series starts from 1995 and comes until the last year available. In this case, it was considered the year 2012.

Figure 1. Life Satisfaction, Income and GDP per capita by Italian regions. Cubic Model. Year 2012.



Source: ISTAT database processing

In particular, it was tested to demonstrate the consistency of the estimates because the economic benefits of tourism can also be calculated through the information revealed by the market, as total contribution of travel & tourism sector to GDP, including wider effects from investment, the supply chain and induced income impacts[14].

As mentioned above, if the SV is aggregated according to territorial criteria – in this case the regions – its scale automatically passes from ordinal to cardinal. The ordered choice models lose the meaning and therefore one should use regression models with a continuous dependent variable. In this case, to simplify the estimates, it was used a bivariate linear model, while the non-linear effect of GDP per capita was ignored; in any case, the linear effect of GDP explains, by itself, more than 70% of the variation in aggregated SV. In this regard, in Table 4, three models with indicators whose coefficient is significant when it is accompanied by GDP per capita were presented. Table 5 shows the amounts of the social cost/ben-

[14] In numbers, the total contribution of tourism to the Italian economy in 2013 amounted to 159.6 billion euros, equivalent to 10.3% of GDP, while in 2012 it was 11.9% (WTTC 2014).

Table 4. Estimates results on aggregated data (regional scale). OLS Model. Dependent variable: Life Satisfaction. Year 2012.

Dependent variable: Life Satisfaction		Unstandardized Coefficients		Coefficients			
		B	Std. Error	Beta	t	Sig.	
R2 = 0,829 Adjusted R2 = 0,808 Standard Error = 0,1016	Constant	6.085	0.1		60.822	0	SOCIAL QUALITY
	GDP per capita	0.000034	0	0.898	8.607	0	
	Households reporting presence of risk of crime in the area in which they live (number)	-2.13E-07	0	-0.324	-3.105	0.007	
R2 = 0,832 Adjusted R2 = 0,811 Standard Error = = 0,1	Constant	5.803	0.124		46.675	0	ENVIRON-MENTAL QUALITY
	GDP per capita	0.000036	0	0.946	8.875	0	
	Heating system with biomass energy (% of number of households)	0.007794	0.002	0.338	3.172	0.006	
R2 = 0,839 Adjusted R2 = 0,819 Standard Error = 0,098632	Constant	6.171	0.103		59.702	0	ECONOMIC IMPACTS
	GDP per capita	0.000023	0	0.621	5.105	0	
	Days of tourists presence (domestic and foreign) on the total of hospitality facilities (days per inhabitant)	0.01	0.003	0.408	3.352	0.004	

Source: ISTA data processing

Table 5. Estimates results of costs-benefits of external effects by Italian regions. Year 2012.

Italian Regions Year 2012	GDP per capita Euro	Total GDP Euro	Number of Inhabitant	Number of Households	Risk of crime (Total Costs) Euro	Risk of crime (Number of household)	% of Total GDP	Tourism (Total Benefits) Euro	Tourists presence (Days per inhabitants)	% of Total GDP	Renewable energy (Total Benefits) Euro	Heating system with biomass energy (Number of households)	% of Total GDP
Piedmont -Val d'Aosta	31204	1.39886E+11	4482960	2012730	-56526368471	408584.19	40.4088	27631451820	13.8	**1.82**	50373073497	394898	**3.3235**
Lombardy	33066	3.23826E+11	9793326	4157078	-2.55046E+11	1205552.6	**78.7603**	14871982091	3.4	0.98	14592467974	299310	0.9628
Trentino Alto Adige	33827	34941865288	1032958	853976	-5526229967	81981.7	15.8155	19792453480	42.9	**1.31**	25845819500	245945	**1.7052**
Veneto	29531	1.42867E+11	4837863	1986995	-60221430971	629877.42	**42.1521**	28306400361	13.1	**1.87**	52864037725	359646	**3.4878**
Friuli Venezia Giulia	29106	35135792521	1207167	547760	-4142459109	94214.72	11.7899	3935952314	7.3	0.26	1022093667	106813	0.0674
Liguria	27308	42687764050	1563196	758161	-7424644091	181200.48	17.3929	6283704618	9	0.41	2605088998	72783	0.1719
Emilia Romagna	31538	1.37697E+11	4366074	1916735	-52426864779	621022.14	38.074	17355649582	8.9	1.15	19873428067	138005	1.3112
Tuscany	28100	1.03487E+11	3682795	1569378	-36208103750	414315.79	34.9882	19574209618	11.9	**1.29**	25278977942	199311	**1.6678**
Umbria	23316	20530931236	880551	367335	-2026364640	135179.28	9.8698	2674380848	6.8	0.18	471886495	120486	0.0311
Marches	25601	39043978592	1525096	624740	-5968938937	171803.5	15.2877	4904439390	7.2	0.32	1586973903	93711	0.1047
Lazio	22322	1.28674E+11	5764459	2354273	-85019014507	960543.38	**66.0731**	14418043261	5.6	0.95	13715248786	251907	0.9049
Abruzzo	29195	38241202520	1309855	524049	-4300269203	133108.45	11.2451	3334706804	5.7	0.22	733679446	122627	0.0484
Molise	20034	6191359222	309043	128137	-248081039	12044.88	4.0069	303669205	2.2	0.02	6084047	35494	0.0004
Campania	16400	94529301898	5763982	2060426	-74401263426	743813.79	**78.7071**	8753087273	3.4	0.58	5054911525	385300	0.3335
Apulia	17206	69106446456	4016416	1533468	-38584603971	510644.84	**55.8336**	5919872074	3.3	0.39	2312148295	176349	0.1525
Basilicata	17964	10202618878	567948	230182	-818993892	32455.66	8.0273	862476506	3.4	0.06	49077857	69515	0.0032
Calabria	16575	32234631588	1944774	772977	-9417517415	166963.03	29.2155	3821919976	4.4	0.25	963727430	257401	0.0636
Sicily	16826	84179587571	5002947	1963577	-61542414630	536056.52	**73.1085**	6256676197	2.8	0.41	2582726390	155123	0.1704
Sardinia	19722	32222153743	1633818	676777	-6927074977	90011.34	21.4979	5108123516	7	0.34	1721526933	272064	0.1136
Italy	24676	1.51569E+12	59685227	25038754	-7.66777E+11	7129373.7	50.5895	1.94109E+11	8.53	12.81	43570078799	197720.43	2.87

Source: ISTAT data processing

efits estimates and the different impacts that individual regions have on the national GDP. One must keep in mind that these social costs/benefits are what the GDP normally does not monetize but, at the same time, they allow measuring the economic dimension of external effects. In the tourism sector, one can see the convergence of the estimate with its assessment on national level. According to available estimates in Table 5, the Regions that contribute the most in terms of social benefits are, in 2012, Veneto, Piedmont, Trentino and Tuscany.

Some data emerge on the others: on the one hand, the considerable impact of the crime – measured as the perceived risk – in terms of social costs, particularly in some regions that are placed on the top of the list by GDP per capita, as Lombardy and Veneto. In fact, the social degradation was already emerged as defeating factor for the SV on the individual level, but the estimation, in terms of contribution to GDP, assumes a broader meaning in respect of social policies. It is worth mentioning that, starting from 2014, in line with the recommendations of Eurostat, all EU countries have to insert – including Italy –, in the accounts of GDP, a valuation of illegal activities, such as drug traffic, prostitution services and smuggling of cigarettes or alcohol. Besides the fact that the estimation procedures of illegal and criminal activities have not been exactly identified, it still does not take into account the social cost, in addition to the possible net benefit. The approach described here represents instead a fairly simple procedure to identify at least an order of magnitude of certain external economies.

Finally, in Table 4, the contribution of the territories to improvement of environmental quality is estimated considering households' consumption and their propensity to use renewable energy sources. It should be noted that this is a result independent of the greater or lesser awareness of the presence of certain pollutants in the environment and of the need to measure their impact on health. The fact that many social and environmental indicators are available at regional scale could allow testing their performance in valuing ESQu. Therefore, the findings reported here are only indicative of a methodology that should be gradually consolidated through a comparison of the economic results.

4. Conclusions

The main goal of this work was to demonstrate that the LSA can be beneficially exploited in the valuation of external effects at territorial level. In this context, starting from individual observations, an empirical application – which has been implemented for the first time in Italy – has found some problems that have been observed in previous studies.

First of all and despite the high number of variables that we used into the models, the component relative to individual heterogeneity is quite high. This last is simply a variation across individuals, and since we cannot explain it, we can define it as unobserved heterogeneity. Measuring SWB by means of a self-stated variable (LS) involves surely this kind of problem. Nevertheless, a share of unexplained variation, in our case, could be due to underestimation of the income ef-

fect. The heterogeneity problem is overcome by aggregating data and applying a new model to a greater territorial scale. In international literature, starting from the Welsh's work (2002), there are several examples of these applications. This experiment has followed the main line but it does not mean that other solutions cannot be found.

Moreover, the degree of LS is significantly linked to GDP or income per capita, as it has been largely demonstrated elsewhere. But, in applying LSA, there is another limitation to consider: the estimation of the income coefficient and the rates of substitution. In this regard, the ISTAT data-base shows, first of all, the limit of a not directly collection of household – or per capita – income level; it only collects a self-explicative proxy variable: the family economic resources, expressed on an ordinal scale. This limitation forced us to rely on other information – in this case, the survey on balance sheets of Italian families of the Bank of Italy – to be able to assign a monetary scale to the main economic variable. In the future, another solution of household income measurement, directly handled by the National Institute of Statistics, would be highly welcome.

Despite methodological limitations, the regression models at regional scale showed that the income compensation effect is important, but it is precisely the overcoming of this first and robust conclusion that can increase our ability to know and represent ourselves 'beyond GDP'. This attitude has been motivated, at least in part, by dissatisfaction with traditional measuring of economic progress, as clearly evidenced, in the past, by the findings of the Commission on the Measurement of Economic Performance and Social Progress (Stiglitz et al. 2008). More recently, the concept of ESWB was consolidated – in Italy and across Europe – as a complementary indicator to the GDP, and suitable for measuring the satisfaction of people's lives and living standards[15].

The attempt of valuing ESQu in monetary terms goes precisely in the direction to point out the economic impacts of different type of externalities on the public balance sheet. See, in this regard, the proportion – although hypothetical – of risk of crime, as social quality, on GDP (Table 5). Also making the assumption of its overestimation – due, in turn, to undervaluation of the effect of income on life satisfaction, with a resulting overestimation of the marginal willingness-to-pay – the sign and strength of the relationship between variables could provide interesting results for the policy makers. In fact, always observing the Table 5, a large differential of percentage between some southern regions – Campania, Puglia and Sicily – and the rest of Italy emerges. But also the Lombardy seems to be affected by this problem, despite the fact that it presents, with Trentino Alto Adige,

[15] It was stated that: «*The reflection on the dimensions of well-being and how to measure them is, in actual fact, a reflection on which phenomena must be taken into consideration to improve a society, on how to define the objectives in the short and the long-term and how to assess the results of the public action. In this way, the indicators of ESWB aspire to becoming a sort of 'statistical constitution' that is a constant reference shared across Italian society and it is in a position to mark the direction of progress for the future*» (ISTAT-CNEL 2014: 3-4).

the highest value in terms of GDP per capita. This finding shows once again what was stated earlier: the GDP, by itself, cannot be a good indicator of human development, particularly in benchmarking between territories.

From an estimation point of view, we would need to underline the positive aspects of this approach compared to the tried and tested methods that do not lack contradictions. In general, from the application of this technique, several advantages, with respect to the standard methods, are emerged. From one point of view, there is no obligation to assume excessively restrictive implications, in relation to the agents rationality and market condition (e.g. the equilibrium state) that are peculiar to the revealed preferences; while, on the other, there is no obligation to use hypothetical scenarios that may result in unreliable findings and a series of strategic behavioral patterns in the case of stated preferences. In other words, this approach offers several advantages over more conventional non-market valuation techniques, particularly those used for valuing environmental and social qualities at the local level.

Briefly, the LSA strength is that it allows the monetization of all external effects – that are relevant to the individual or pertain to the environment – regardless the awareness or unconsciousness of the cause-effect relationships between LS and the level of ESQu. This is a prerequisite that should not be underestimated, if we consider the critical aspect of a method as the Contingent Valuation in which the individual is asked – directly or indirectly – to evaluate the trade-off between his willingness to pay and the actual or future condition of a public good or service. Furthermore, with this approach, it is possible to make reference only to a specific good, such as, for example, a recreational site or the air quality in a geographical location. Preferences aggregation and benefits-costs transfer almost always pose problems of substitution and complementarity effects.

Summarizing, what this study aims to demonstrate is the real possibility of using LSA to monetize any type of external effects and how LS is a criterion that is useful for the valuation of social policies focused on the territory aiming to improve the quality of life. In other words, happiness is an important objective in human existence and is sufficiently sensitive to improvement or deterioration affecting the material and immaterial conditions influencing the everyday life. The good news is that, from a scientific point of view and on par with other phenomena of behavioral nature, it can be measured with a beneficial return on the utility theory.

Finally, widespread applications of this approach are numerous, and very probably, in Italy, we have started moving in this direction. Conversely, this methodological path could be a harbinger of innovative findings in the field of quality of life research.

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