

**FULL ARTICLE**

Does urbanization matter in the expenditure-happiness nexus?

Cristina Bernini | Silvia Emili | Federica Galli

Department of Statistical Sciences, University of Bologna. P.tta Teatini 10, Rimini, Italy

Correspondence

Silvia Emili, Department of Statistical Sciences, University of Bologna. P.tta Teatini 10, Rimini, 47921, Italy.
Email: silvia.emili2@unibo.it

Abstract

This study aims to improve the regional well-being literature on the so-called “reversal issue” of the expenditure-happiness nexus, accounting for two main sources of heterogeneity: degree of urbanization and individual spending habits. Moreover, we investigate the role of happiness across the entire expenditure distribution using a quantile modelling approach. The results show that satisfaction has a positive, significant and non-linear effect on total expenditure across different urbanization categories. To better investigate the multidimensional nature of happiness, analysis of the nexus is expounded to different satisfaction domains and related spending aggregates offering a comprehensive and complex behavioural profile of individuals.

KEYWORDS

expenditure, happiness, statistical matching, two-steps quantile regression, urbanization

JEL CLASSIFICATION

D12, I31, R2, R22

1 | INTRODUCTION

The wealth prosperity of economies represents one of the main socio-cultural and economic global goals of the last century. In particular, material and subjective well-being (Carver & Grimes, 2019) are receiving growing attention from social scientists, as well as national and international organizations, with a strong interest in providing development plans and programs.

This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2021 The Authors. *Papers in Regional Science* published by John Wiley & Sons Ltd on behalf of Regional Science Association International.



Fifty years of literature on the Economics of Happiness represent researchers' significant efforts to thoroughly investigate the relationships between material and subjective well-being (for a review see Clark, 2018). Most of researchers focused on analysing the impact of economic variables on subjective well-being¹ (SWB) while the reversal relationship has received minor attention. In this framework, inspired by well-known economists' thinking (among others: - "Success is not the key to happiness. Happiness is the key to success. If you love what you are doing, you will be successful." Albert Schweitzer; "the pleasure or satisfaction derived by an individual from being in particular situation or from consuming goods or services" Bannock et al. (1987, p. 414) - as well as lesser-known people - "People who claim that money can't buy happiness just don't know where to shop." Anonymous) a remarkable and reversible relationship between economic conditions and happiness has been theorized. Following these early insights, a recent strand of studies is starting to focus on the effects of subjective well-being on several characteristics of people's lives, in principle motivated by the different behavioural attitudes of happy and unhappy individuals. Here, the main finding is represented by the positive impact of being happy on several features of people's habits: individuals with higher levels of happiness demonstrate an improvement both in abilities such as innovation and selection processes, in ethical and altruistic decisions (Isen, 2000; Kahneman & Krueger, 2006; Oswald et al., 2015), and in environmental sensitivity and sustainable habits (Carter, 2011; Corral-Verdugo et al., 2015). In labour market and productivity contexts, the literature has found evidence of the positive impact of high levels of subjective well-being on employment and career prospects (Krause, 2013; Walsh et al., 2018), as well as on work productivity (Dohmen, 2014; Oswald et al., 2015). Similarly, differentiating between happy and unhappy individuals, further results relate to differences in risk aversion or in the proportion of savings (Guvan, 2012), investment preferences (Schoemaker, 1993) and income (De Neve et al., 2013).

Concentrating on consumption expenditure, Guven (2012) and Zhu et al. (2021) depicted the notable scarcity of investigations into the analysis of happiness as a meaningful feature in affecting household and individual consumption, and even today it is still not clear whether perceived SWB positively or negatively affects individuals' spending. Indeed, Guven (2012) found that happy people save more and spend less compared to less happy individuals while Zhu et al. (2021) showed that higher levels of happiness are associated with increased expenditures in China.

Despite the direction of the causal relationship between SWB and consumption expenditures, Authors depicted a meaningful role of urbanization in characterizing the two utility measures. The World Happiness report (2020) focuses on urbanization as one of the main drivers of economic growth and increases in living standards of wealthier countries. The report depicts a growing differential between people living in urban areas and those resident in rural areas. In line with the Global Council for Happiness and Wellbeing (2019), although strong evidence on a positive relationship between happiness and degree of urbanization still persists, the idea that increasing the level of urbanization of a specific country or region could be associated with an improvement in subjective wellbeing is not always found empirically (Morrison, 2021). Beside the influence of urbanization on SWB, the urban environment in which individuals live may contribute also to shape heterogeneous consumption patterns, closely related to the socio-economic and industrial mix of cities (Currid-Halkett et al., 2017). Moreover, empirical evidence suggests likely different reactions to specific expenditure categories across urbanized areas (Handbury & Weinstein, 2015).

However, the analysis of consumer behaviour across different urbanized areas is an understudied area of research and very little attention has been dedicated to investigating the role of happiness on spending habits and whether urbanization matters to this nexus (Zhu et al., 2021). In particular, in literature there is no evidence on the association of a specific urban setting to stronger or weaker consumption-happiness relationships. Moreover, it is not yet been clarified whether different spending behaviours are related to urbanization levels or to different economic conditions observed across them. In other words, no studies have yet investigated whether in certain urbanized areas happiness matters more in affecting expenditure levels, concentrating on different expenditure quantiles and specific spending categories.

To fill these gaps, we aim to contribute to this branch of literature investigating the relevance of urbanization in determining the nexus between individuals' expenditure behaviours and SWB from several points of view. In particular, we posit the following research questions: Does urbanization matter to the (reversal) effect of happiness



on individual expenditure? Is this effect homogenous among different expenditure categories? Does this impact changes across the expenditure distribution?

Specifically, we analyse how happiness affects expenditure for different urbanized areas in Italy. In keeping with Requena (2016), we suggest that it is more accurate to consider an urban–rural continuum and thus we focus on four different levels of urbanization: metropolis, urban, semi-urban and rural areas. Moreover, in order to provide a more detailed description of individual expenditure behaviours, we perform a more in-depth analysis, differentiating between expenditure categories and satisfaction domains (i.e., leisure expenditure and leisure satisfaction, food expenditure and satisfaction with the relationship with relatives, expenditure on durable goods and satisfaction with the economic condition, work-related expenditure and job satisfaction). Finally, due to possible non-linearities in the consumption-happiness nexus and endogeneity issues, we use a two step quantile regression approach (2SQREG). This procedure enables us to estimate the impact of happiness not only on the centre but also on the tails of the expenditure distribution, offering a comprehensive overview of how expenditure elasticities to satisfaction vary depending on expenditure levels.

In order to obtain a comprehensive database on both expenditure and life satisfaction, we matched the Aspect of Daily Life Survey (ADL) with the Household Budget Survey (HBS), both collected by the Italian National Institute of Statistics (ISTAT) in 2016, by using a statistical matching method (D’Orazio et al., 2006). Thus, the final dataset provides information about different spending aggregates and different life domain satisfaction scores; moreover, it allows to identify four levels of urbanization (i.e., metropolis, urban, semi-urban and rural areas).

The remainder of this paper is organized as follows: Section 2 presents the conceptual framework for this study; Section 3 discusses the data-matching approach used in the analysis and provides some descriptive statistics; the empirical model as well as the estimation procedure are described in Section 4; and Section 5 discusses the model estimates. Final remarks are presented in Section 6.

2 | LITERATURE REVIEW

2.1 | The reversal issue: does happiness affect economic behaviour?

Recently, alongside the analysis of the determinants of SWB, a new strand of literature has focused on the so-called reversal effect (Guvan, 2012). Among others, Graham et al. (2004) studied the effect of happiness on future income, finding that both happiness and positive expectations for the future are positively correlated with higher future income. Conversely, people with negative perceptions of their own past progress and/or with a greater fear of unemployment experienced a lower average increase in income over the same period. Similarly, De Neve et al. (2013) found that subjective well-being can be considered as a predictor of productivity and income. In fact, a moderate level of happiness is associated with greater cooperation, motivation, and creativity, qualities which are in turn instrumental to success in business, and in life as a whole. This positive connection between happiness and future outcomes has also been demonstrated by Krause (2013). Using data from Germany, the author investigated the effect of individual happiness on future labour market outcomes, finding that happiness matters mainly in determining individuals' future self-reemployment and re-entry wages.

Despite the efforts of researchers in analysing the impact of subjective well-being on income and productivity, very few studies have investigated the effect of perceived satisfaction on consumption, and it is still not clear whether perceived SWB positively or negatively affects individuals' spending. Indeed, following the “broaden-and-build” theory of positive emotions it can be argued that positive emotions broaden one’s awareness and enhance individuals' ability to self-regulation, resulting in a better control over expenditure (Fredrickson, 2004). In particular, happier people may choose to save money for the future in order to cope with future income uncertainty leading to a reduced level of consumption in the present. In line with the “broaden-and-built” theory, Guvan (2012), analyzing the relationship between happiness and individual economic behaviour in Holland, showed that: (i) happy



people save more and spend less and that marginal propensity to consume is lower for happy people; (ii) happy people have a shorter time horizon while considering expenditures and savings (iii) happy people are more risk adverse and prefer safer investment tools. Conversely, taking into consideration the levels of consumption for urban and rural China, Zhu et al. (2021) found that higher levels of happiness are associated with an increase in expenditure; more specifically, there is a strong positive correlation between increased happiness and higher levels of expenditure for rural households compared to urban ones, even though the expenditure of city dwellers is higher than that observed for rural residents. A first mechanism supporting the results of Zhu et al. (2021) concerns the positive impact of being happy on several aspects of people's life such as productivity, earnings, and wealth, which can in turn contribute to raise individuals' consumption levels (Graham et al., 2004). Indeed, as demonstrated by Oswald et al. (2015) there is a causal link between human happiness and human performance while Graham et al. (2004) found that people with higher SWB levels in 1995 earned more and were wealthier and in better health conditions 5 years later thanks to factors such as self-esteem and optimism. Thus, happiness can boost productivity and personal earnings (Graham et al., 2004; Oswald et al., 2015) as well as the probability of employment (Krause, 2013) and, as a consequence, it can positively affect the level of consumption. Similarly, social interactions can play a relevant role in shaping different expenditure patterns (Güven, 2011). Indeed, happier people tend to have a more active participation in social and leisure activities such as community events, social gatherings, cultural events, local politics, and religious events, leading to higher expenditure levels.

In this framework, as highlighted by Deaton (1997) and by Koenker and Hallock (2001) in the demand analysis context, heterogeneous patterns characterize people's expenditure behaviours. Thus, the intensity of the impact of SWB may differ over different consumption's levels (Güven, 2012), suggesting possible non-linearities in this relationship. Therefore, we would give a partial view in studying the consumption-happiness nexus considering only the mean expenditure level because individuals' sensitivity to satisfaction in decision-making processes can vary depending on different economic conditions such as money availability, budget constraints and emulation processes shaping different consumption-happiness patterns (e.g., rich individuals are not supposed to have the same responsiveness to satisfaction compared to poor ones). In a similar way, considering only total expenditure can mask different patterns associated to different facets of life such as family, leisure activities, economic and working conditions. Then, aiming to account for the heterogeneity of individual expenditure patterns with respect to different spending aggregates, we investigate the impact of SWB referring to alternative expenditure categories (Aguar & Hurst, 2013).

2.2 | Urbanization, SWB and consumption expenditure

Modernization and urbanization have brought rapid improvements to average living standards, but simultaneously they have also increased the inequality levels (Okulicz-Kozaryn & Mazelis, 2018). Several studies have focused on determining the effect of urbanization on the perceived level of happiness of citizens (Arouri et al., 2017; Berry & Okulicz-Kozaryn, 2011; Hayo, 2007; Requena, 2016; Shucksmith et al., 2009). The literature has largely demonstrated that, in developed countries, subjective well-being tends to be higher in less urbanized areas, despite the advantages of living in cities such as better job opportunities and higher income (Lenzi & Perucca, 2020).

Focusing on the effect of urbanization on consumption expenditures, Currid-Halkett et al. (2017) demonstrated that people living in metropolitan areas are more willing to spend on conspicuous consumptions (i.e., goods showing social status and wealth) stimulated by higher income, the desire to reveal status and by a greater product availability (Glaeser, 2011). Nevertheless, Handbury and Weinstein (2015) found that luxury goods are cheaper in urban areas, suggesting economies of scale for wealthy individuals, while rural residents may hold different attitudes toward how to spend their money wisely (Zhu et al., 2021). Indeed, concentrating on rural/urban differences, Zhu et al. (2021) concluded that happiness plays a larger role in improving consumptions especially for rural households, even though urban residents' expenditure is much higher than that of people living in rural China. Focusing on consumer cities,



Glaeser et al. (2001) evidenced that the success of cities relies both on their role as centres of consumption and on their level of attractiveness for consumers. Rappaport (2009) showed that improving people's quality of life may be a driver for slow-growth metropolitan areas in attracting new residents and firms, suggesting that policies aiming to improve quality of life should focus on consumer and civic amenities. Therefore, individuals' and household's spending habits should be considered as strongly linked to the surrounding urban context.

In sum, previous literature confirms a positive effect of SWB on income as well as a significant relationship between either urbanization and happiness and urbanization and consumption, while scarce evidence is provided on the impact of happiness on expenditure and on the role of urbanization in this nexus. Positing in this stream of research, the present study aims to further investigate: (i) the role of urbanization in mediating the happiness-consumption nexus; (ii) if this effect is homogenous with respect to different expenditure categories; and (iii) if this nexus changes with respect to expenditure levels.

3 | DATA

3.1 | Statistical matching

In investigating the consumption-happiness nexus at different levels of urbanization, the availability of individual data is fundamental. However, for Italy, this information is collected by the Italian National Institute of Statistic (ISTAT) through two different surveys: the Household Budget Survey (HBS) and the Aspects of Daily Life (ADL). HBS collects data on the monthly spending habits of Italian households, grouped by purpose and categorized as periodic and occasional consumption. On the other hand, ADL provides self-reported scores about overall life satisfaction on an eleven-point scale and with respect to different life-domains items, evaluated with a four-point scale, such as economic condition, future expectations, friendships, relationships with relatives, health, leisure activities and environmental conditions. Specifically, concerning overall life satisfaction people are asked to provide information on the current level of satisfaction they are experiencing by the question “How much are you currently satisfied with your life as a whole?” while satisfaction related to the different life domains is evaluated referring to the past through the question: “Think about the past 12 months. How much are you satisfied with the following aspects that have affected your life?” Although data on consumption and subjective well-being are available in other datasets, such as the European Survey on Income and Living condition (EU-SILC), the richness of information about both satisfaction variables (in EU-SILC given on a four-point scale) and expenditure (not suitably disaggregated in EU-SILC) is provided only by ADL and HBS. A complete description of the two datasets, the variables and the approach used for the statistical matching are presented in Appendix A.

In order to obtain a synthetic file from the two datasets, the solution used for this analysis employed statistical matching methods. This technique, also known in the literature as “data fusion” or “data integration,” performs integration of information collected separately for different units in the two datasets, but referring to the same population. Intuitively, statistical matching, also interpretable as a missing value problem (D’Orazio et al., 2006), allows the combination of datasets or the investigation of key statistics of the unobservable population. These solutions are not unusual in socio-economic and statistical literature, for a review of empirical case studies see Ridder and Moffitt (2007) and references therein.

In this framework, one of the classes of procedures most widely used are the hot-deck approaches (Okner, 1972). The idea behind this class of non-parametric techniques is represented by the imputation of live values of interesting variables not available in both surveys, from a file (i.e., *donor*) to the other (intuitively called *recipient*), in line with similarity measures. These quantities are in general readable as distances calculated on common variables (i.e., *matching variables*).

Among the alternatives developed in the literature for this class of procedures, here we consider the so-called constrained-distance hot deck method. This specific technique involves the imputation of values



without replacement, that is, each live value is imputed from the donor to the recipient file only once. Moreover, this approach refers to the use of donor classes, that is, classes of records in the donor dataset, given by specific categorical variables, from which live values are imputed to units in the same class of the recipient dataset. The usage of distance hot-deck procedures is motivated by several advantages and useful properties (D'Orazio et al., 2006); in particular, Marella et al. (2008) provided evidence of a convergence of the matching noise due to statistical matching to zero through distance hot deck as the sample size of the donor dataset increases.

In order to evaluate the statistical matching procedure, we tested the coherence of the matched dataset referring to alternative measures, with the goal of comparing both marginal and joint distributions of imputed records to the observed distribution of variables in the donor dataset. Table A2 in Appendix A shows the results of Bhattacharyya coefficient, Hellinger distance, total variation distance and the overlap between the two distributions (D'Orazio et al., 2006), calculated for the imputed target variables, namely, overall and life domains satisfaction. All indices confirm that the final synthetic dataset is representative, with strong preservation of distributions of imputed variables.

Thus, the statistical matching procedure allowed us to obtain a fully comprehensive dataset that had never been used before.

Finally, as well described in the applied statistical literature, statistical matching techniques can be seen as imputation procedures. Despite the finding of Marella et al. (2008), researchers stated that the main drawback of these approaches concerns the introduction of a measurement error in the imputed covariates, that is, a proxy for the unobservable variable (McDonough & Millimet, 2017).

The presence of this possible source of endogeneity in the data, together with simultaneous causal-effect relationship between expenditure and satisfaction, are investigated and handled in the following subsections via adequate econometric techniques, aiming to account for possible endogenous issues.

3.2 | Data description

The matched dataset allowed us to obtain information for Italian citizens on overall life satisfaction, different life domains' satisfaction (i.e., *SatRel* relationship with relatives, *SatEco* economic condition, *SatWork* work, *SatTim* leisure time), household total expenditure and different spending aggregates (e.g., food and beverages, durable goods, work-related and leisure time expenditure). Preliminary insights on the non-linear relationship between SWB and material well-being are provided in Figure A1 of Appendix B.

In measuring urbanization, we supplemented the ISTAT classification contained in our recipient dataset HBS with the classification contained in ADL (donor dataset). To do so, we firstly generated three dummy variables (metropolis, urban and rural) identifying metropolitan areas (ISTAT in 2015 identified as metropolis the 12 largest cities of Italy: Turin, Milan, Venice, Genoa, Bologna, Firenze, Rome, Napoli, Bari, Palermo, Catania, Cagliari with specific physical and administrative characteristics), cities with more than 50,000 inhabitants (urban), and rural territories with less than 50,000 inhabitants following the urbanization categorization included in HBS. We then expanded our classification by splitting the third (rural) category into two further categories (semi-urban and rural) following the classification of ADL which also takes into account areas with less than 10,000 inhabitants. Finally, we created four categories to define the different urbanized areas of Italy: metropolis, urban (more than 50,000 inhabitants), semi-urban (10,000–50,000 inhabitants) and rural (less than 10,000 inhabitants). Despite the informative differentiation between the four urbanization levels, the data contained in the two surveys do not allow us to identify the municipality of residence or the distance between different urbanized areas.

Table 1 shows the descriptive statistics for the matched dataset, referring to the overall sample of Italian citizens and to the different urbanized areas. Moreover, Appendix B contains further information about the association between the key variables used in the analysis and the socio demographic variables considered.

**TABLE 1** Descriptive statistics (mean values)

	Overall	Metropolis	Urban	Semi-urban	Rural
Demographic variables					
Ncomp	2.43 (0.01)	2.40 (0.02)	2.38 (0.01)	2.47 (0.01)	2.45 (0.02)
Age	49.53 (0.15)	51.04 (0.42)	49.19 (0.28)	49.01 (0.24)	49.64 (0.30)
Male	0.64 (0.00)	0.61 (0.01)	0.65 (0.01)	0.63 (0.01)	0.65 (0.01)
Primary Education	0.19 (0.01)	0.14 (0.01)	0.17 (0.00)	0.19 (0.00)	0.26 (0.00)
Secondary Education	0.67 (0.00)	0.67 (0.00)	0.67 (0.01)	0.67 (0.01)	0.65 (0.01)
High Education	0.14 (0.00)	0.19 (0.01)	0.16 (0.01)	0.14 (0.00)	0.09 (0.00)
Married	0.32 (0.01)	0.32 (0.01)	0.32 (0.01)	0.32 (0.01)	0.32 (0.01)
Divorced	0.07 (0.00)	0.08 (0.01)	0.08 (0.00)	0.06 (0.00)	0.06 (0.00)
Widowed	0.11 (0.00)	0.11 (0.01)	0.11 (0.00)	0.11 (0.00)	0.12 (0.00)
Unemployed	0.13 (0.00)	0.11 (0.01)	0.14 (0.00)	0.13 (0.00)	0.12 (0.00)
Employee	0.34 (0.00)	0.35 (0.01)	0.33 (0.01)	0.35 (0.01)	0.34 (0.01)
Retired	0.23 (0.00)	0.22 (0.01)	0.21 (0.01)	0.24 (0.00)	0.26 (0.01)
Student	0.12 (0.00)	0.12 (0.01)	0.13 (0.00)	0.12 (0.00)	0.12 (0.00)
North	0.43 (0.00)	0.41 (0.01)	0.40 (0.01)	0.42 (0.01)	0.48 (0.01)
Center	0.18 (0.00)	0.27 (0.01)	0.19 (0.01)	0.19 (0.00)	0.10 (0.00)
South and Islands	0.39 (0.00)	0.32 (0.01)	0.41 (0.01)	0.39 (0.01)	0.41 (0.01)
Household Expenditure (€)	2621.99 (10.80)	2984.34 (35.33)	2586.80 (19.96)	2584.31 (17.38)	2537.94 (21.79)
Equivalent Expenditure (€)	1452.11 (5.71)	1695.53 (20.49)	1464.84 (10.84)	1409.74 (8.99)	1381.92 (10.62)
Expenditure categories (€)					
Food & Beverage	787.95 (2.82)	979.49 (11.07)	802.58 (5.32)	744.66 (4.16)	743.09 (5.16)
Durable Goods	113.29 (2.40)	103.95 (6.67)	99.19 (3.94)	117.72 (3.81)	129.30 (6.07)
Leisure Time	82.47 (0.95)	92.60 (2.70)	82.46 (1.70)	80.92 (1.59)	79.19 (2.09)
Work-related	279.00 (1.74)	274.34 (5.09)	281.28 (3.43)	282.54 (2.90)	273.31 (3.38)
Subjective wellbeing					
Life Sat.	7.03 (0.01)	6.99 (0.03)	7.01 (0.01)	6.96 (0.02)	7.20 (0.02)
Sat. economic situation	2.42 (0.01)	2.46 (0.01)	2.39 (0.01)	2.40 (0.01)	2.46 (0.01)
Sat. relationship with family	3.22 (0.00)	2.72 (0.01)	3.20 (0.01)	3.22 (0.01)	3.24 (0.01)
Sat. free time	2.77 (0.01)	2.76 (0.01)	2.76 (0.01)	2.76 (0.01)	2.79 (0.01)
Sat. Work	2.95 (0.01)	2.91 (0.01)	2.95 (0.01)	2.94 (0.01)	2.99 (0.01)
Expectations for the future					
Unknown	0.25 (0.00)	0.25 (0.01)	0.25 (0.01)	0.25 (0.00)	0.26 (0.01)
Bad	0.17 (0.00)	0.17 (0.01)	0.17 (0.00)	0.18 (0.00)	0.17 (0.01)

(Continues)



TABLE 1 (Continued)

	Overall	Metropolis	Urban	Semi-urban	Rural
Constant	0.32 (0.00)	0.34 (0.01)	0.31 (0.01)	0.31 (0.01)	0.31 (0.00)
Good	0.26 (0.00)	0.24 (0.01)	0.26 (0.01)	0.26 (0.00)	0.26 (0.01)
Nr. of observations	23,002	2,770	6,114	8,585	5,533

Standard error of the mean in brackets.

Descriptive statistics in Table 1 show that people living in metropolises have the highest average education level, while the percentage of people who attended only primary school is much higher in rural areas than in other urbanization categories. As regards employment, we observe that in metropolitan areas, the unemployment rate is lower than in other areas, while in rural areas a higher percentage of residents are retired, even though the average age is approximately the same in the four urbanization categories.

With respect to the expenditure levels, the descriptive statistics confirm that people living in metropolitan areas tend to spend more money than people living in other areas, while those living in rural areas spend least (€1695.53 and €1381.92, respectively). In particular, considering the different expenditure categories, in metropolises expenditure on food & beverage and leisure time is higher, while people spend less money on work-related items than in the other urbanizations. Work-related expenditures are the highest for people living in urban and semi-urban areas. Italians who live in semi-urban and rural areas are those who spend (on average) most money on durable goods. Moreover, regarding food and beverage and leisure time expenditure, the amount spent decreases with decreasing levels of urbanization.

Focusing on happiness, people living in rural areas are on average more satisfied (7.20) than others, while those living in metropolises (6.99) are both the least satisfied with their life condition overall, and those reporting the lowest percentage of people with good expectations for the future. Furthermore, Italians living in rural areas tend to be more satisfied in every life domain that we considered (economic situation, work, relationships with relatives, free time). With regard to the economic condition, people living in metropolitan areas have the same average score as people living in rural areas, while people living in semi-urban and urban areas are the least satisfied. Moreover, people living in metropolises are the least satisfied with their relationships with relatives and with their working conditions, compared to others.

4 | THE MODEL

4.1 | Model specification

In this study, the nexus characterizing subjective well-being and expenditure is investigated in the so-called reversal form, as considered in the following equation:

$$Economic_i = f(Satisfaction_i, Control_i, Contextual_i), \quad (1)$$

where $Satisfaction_i$ is measured as a score of self-reported subjective wellbeing of individual i , $Economic_i$ is one (or a set of) variable(s) quantifying people's economic conditions, and $Control_i$ represents the set of socio-demographic and behavioural control variables related to individual specific characteristics. The equation is expanded by $Contextual_i$, as a set of regional and urbanization variables, representative of contextual conditions: following the literature, in fact, the heterogeneity in reported findings can be easily associated either with different national and



international characteristics, political situations, macroeconomic variables, or with cultural and historical bases (Giarda & Moroni, 2018; Odoardi & Muratore, 2018).

Equation 1, together with the conceptual framework in which the model has been defined, relates to the general idea that emotions play a central role in how economic agents behave (Gilbert, 2007). As pointed out by Guven (2012), this represents a key factor in the analysis of several microeconomic, financial and macroeconomic fields (Lerner et al., 2013; Oswald et al., 2015; Winkelmann, 2012), where the main findings are represented by a fundamental effect of behavioural and psychological features in understanding preferences, individuals' willingness to pay, and more generally decision-making processes (Silva et al., 2019; Zhang & Yang, 2019).

A key issue in these kinds of empirical analyses is represented by endogeneity. Indeed, the idea of considering a reversal causal relationship can lead to several problems in the empirical model estimation. In the following sections we discuss the identification of strong and valid tools to test for the presence of endogeneity in Equation 1.

4.2 | The empirical model

As pointed out by the literature, the heterogeneous behaviour of satisfaction and urbanization at different levels of expenditure requires an appropriate investigative approach able to depict the varying characteristics of this relationship. Thus, the analysis of the relationship between expenditure and satisfaction is based on the estimation of quantile regression (QR) models. The most appealing feature of QR is the ability to estimate quantile-specific effects that describe the impact of covariates not only on the centre but also on the tails of the outcome distribution (Koenker & Bassett, 1978). In this sense, the QR approach is expected to offer a more comprehensive representation of spending behaviours because it makes it possible for each determinant's effect to vary over the whole spectrum of the outcome distribution. More specifically, one may argue that the marginal effect of satisfaction can be different at different quantiles of expenditure.

In the wellbeing literature, there are very few studies making use of a quantile regression approach to investigate the impact of socio-economic variables on the distribution of subjective well-being. Going beyond the average, the heterogeneous effects of determinants on the happiness distribution have been studied by Binder and Coad (2011), Binder and Freytag (2013), Yuan and Gompelwar (2013), Hand (2018) and D'Ambrosio et al. (2020) using quantile regression, Fang and Sakellariou (2016) using unconditional quantile regression, and Binder and Coad (2015) and Fang (2017) using panel quantile regression techniques. Results from these studies highlight clear non-linearities in the effects of socio-economic determinants along the happiness distribution. Concentrating on the expenditure-happiness nexus, we are not yet aware of studies focusing on how satisfaction affects consumption expenditure for different quantiles of the expenditure distribution.

In our analysis, we considered the individual equivalent expenditure as a dependent variable, calculated applying a Carbonaro scale to the household expenditure from HBS. We thereby modelled the relationship between equivalent expenditure (*Exp*) and happiness (*Satis*) of individual $i = 1, \dots, N$ as a double-logarithmic specification within a quantile approach, as follows:

$$\ln Exp_i^r = \varphi(\tau) + \ln Satis_i^r \alpha(\tau) + \mathbf{X}_i^r \beta(\tau) + \varepsilon_i^r, \quad (2)$$

where $r = \{\text{Metropolis, Urban, Semi-urban, Rural}\}$, $\alpha(\tau)$ represents the expenditure elasticities with respect to the level of satisfaction, \mathbf{X}_i is the set of socio-demographic variables for the individual i with associated parameter vector $\beta(\tau)$, ε_i is the corresponding error and τ is the specific expenditure quantile under consideration, with $0 < \tau < 1$. The model in Equation 2 was estimated both for the overall sample and for the different urbanization categories of Italy indicated by r .

Among the socio-demographic variables collected by HBS (recipient file), we specified \mathbf{X}_i in Equation 2 by: the dummy variable *Male*; the logarithm of the mid-point of each age group, *lnMidAge* (calculated for the variable *Age*



Classes) and the squared term $\ln\text{MidAge}^2$; a dummy variable $d\text{Edu}$ for the highest level of education; the set of dummies $d\text{Civ}_j$, $j = 1, \dots, 3$ obtained from the variable *Marital Status* identifying individuals who are married, divorced and widowed, respectively; the dummies $d\text{Cond}_k$, $k = 1, 2$ representing two different categories of labour condition identifying unemployed and retired people, and two dummies for the Italian geographical macro-areas North and South.

To expand the model specification, we also included future expectations in the set of socio-demographic characteristics (Karaca et al., 2016; Knight & Gunatilaka, 2010a; Moyano-Díaz & Palomo-Vélez, 2018). The role of this variable in judging one's own living conditions is usually associated with one specific dimension of overall life satisfaction: the economic condition (Hirschman & Rothschild, 1973). Nevertheless, the concept of future expectations can be easily expanded to several aspects of life satisfaction, such as health and friendships. Here, we considered the possibility that, due to the precise temporal reference of subjective well-being to the past, expectations can capture alternative aspects of happiness that are not included in the satisfaction variable. More specifically, we included two dummy variables, *Futu1* and *Futu2*, in the specification, taking into consideration people reporting uncertainty and people with poor future expectations, respectively.

Finally, the model was enhanced by the insertion of several macroeconomic variables to evaluate the impact of contextual characteristics (Blanchflower, 2007; Di Tella et al., 2003; Malesevic Perovic & Golem, 2010), used as proxy of the economic level and wealth of the area. The determinants included in the model at regional NUTS 2 level (Capello, 2016; Giarda & Moroni, 2018) are the logarithm of: unemployment rate ($\ln\text{Unempl}$); participation rate in education and training ($\ln\text{Edu}$), calculated as the annual average of the quarterly number of individuals aged 25 to 64 who received education or training in the four weeks preceding the EU Labour Force Survey (EU-LFS) interview divided by the total population of the same age group; and the ageing index of the population ($\ln\text{Ageing}$) calculated as the ratio between the number of over-65 s and the number of under-14 s.²

Focusing on urbanization, and unlike previous literature which mainly concentrated on the rural/urban dimension (Kalyuzhnova & Kambhampati, 2008; Knight & Gunatilaka, 2010a, 2010b; Kyttä et al., 2016; Shucksmith et al., 2009), we used a scale urbanization variable in keeping with Gerdttham and Johannesson (2001), Rodríguez-Pose and Maslauskaite (2012), Peirò (2006), Hayo (2007) and Requena (2016). Making use of the extensive nature of our matched dataset with respect to the territorial detail, we used the finest territorial detail which distinguishes four different levels of urbanization. Indeed Requena (2016), using a five-scale urbanization variable, demonstrated that in wealthier countries there is no radical dichotomy between country and city life and it is more accurate to consider an urban–rural continuum. Thus, the urbanization levels should be treated as points on a continuum rather than two dichotomous categories (Wirth, 1956). Concentrating on Italy, Malanima (2005) noted that “Since a *comune* includes many small centres and the rural population beyond the city limits, its inhabitants are not just urban.” Therefore, we split urban areas into urban and semi-urban areas, using four urbanization categories overall.

The investigation was then completed by adapting Equation 2 to different expenditure aggregates and different life domains satisfaction scores. We thus considered the logarithm of individual equivalent expenditure of a specific spending aggregate representing *Food & Beverage* (hereinafter *Food* for brevity), *Durable Goods*, *Leisure* and *Work-related* expenditures for individual i in urbanized areas r , following the categorization of Aguiar and Hurst (2013). To model the four subcategories identified, we considered specific life domains satisfaction scores, with the goal of identifying specific relationships in individuals' emotional sphere. Specifically, we included the logarithm of satisfaction with the *Relationship with relatives* in the model to investigate expenditure for basic needs (*Food*), satisfaction with the *Economic conditions* with respect to spending habits for durable goods, satisfaction with *Leisure time* related to the same expenditure category, *Leisure*, and happiness with *Work conditions* as a potential factor in determining *Work-related* expenses.

5 | RESULTS

In order to estimate the model in Equation 2, in the first step of the procedure we test for possible endogenous issues between satisfaction and expenditure variables coming from different sources (e.g., economic aspects,



measurement errors and matching bias). Among the available six life domains variables, two plausible instruments are considered: *SatRel*, satisfaction scores concerning the relationship with relatives, and *SatEnv*, referring to living environmental conditions. Several economic considerations and statistical tests reported below support this choice.

The role of family relationships, social support within families, well-functioning households, and strength of family ties is nowadays strongly affirmed in explaining both society and individual well-being (Alesina & Giuliano, 2010; Bogenschneider et al., 2012). Since the strength that relates relatives and family's dimensions with a person's emotional well-being and health, Botha and Booyesen (2013), stressed the association of perceived family functioning in South Africa, with reported overall life SWB. Empirical evidence about life satisfaction and satisfaction with the family is also supported by North et al. (2008). Focusing on the level of social support observed within households, the authors focus on the impact of positive family features to individual happiness, providing evidence about the role of family on individual wellbeing. On the other hand, however, from an emotional perspective, family relationships and strength of family ties are highly representative of loneliness, belongingness needs and feelings (Seeley, 1992). In this sense, it can be assumed that economic outcomes, such as consumptions or expenditures are affected by satisfaction with relatives, only through overall life evaluation (Ward & King, 2016).

About the identification of a second possible candidate instrument of overall life SWB, we consider the dimension of satisfaction related to the environment of living residence. The attention of researchers in the nexus between this specific dimension of satisfaction and overall life SWB started increasing a few years ago, showing evidence of a relevant association (Helne & Hirvilammi, 2015; Hopwood et al., 2005; Mace, 2014). This aspect of life is strongly affected by external features, events and uncontrolled factors of living standards (criminality, pollution, green areas, climate, etc.). In principle, the absence of control on these factors may be not perceived by rich individuals because their high levels of disposable income allow them to spend money changing house, city, region without strong budget restrictions. On the other hand, for the main part of the population, even if they are unsatisfied by living environment conditions, the movement from a residence to another is not immediate and sometimes not possible. Therefore, considering satisfaction for the environment and expenditure, a very weak connection can be assumed. Moreover, a second insight about environmental satisfaction as a second candidate instrument concerns the nature of the data: limiting the analysis to a specific year, the investigation is unable to observe changes in monthly expenditure due to level of satisfaction about environmental conditions.

Finally, a further key aspect motivating the choice of *SatRel* and *SatEnv* as instrumental variables concerns the fact that satisfaction for the different life domains is measured referring to the previous year. The objective is to try to control for possible reverse causality issues due to simultaneous effects regarding expenditure and overall satisfaction.

By this way, satisfaction scores with these two aspects of life are investigated as possible instruments to test for endogenous relationships between individual expenditures and SWB.

First considering the model for the mean, the investigation about weakness of instruments and endogeneity of the relationship is shown in Table 2 (first left column). In particular, we used satisfaction with the relationship with relatives as instrument in all the models with the exception of the food expenditures models for which we chose *SatEnv* because *SatRel* is the possible endogenous regressor. In summary, the Cragg–Donald Wald weak identification test rejects the null hypothesis of weak instrument and the Wu–Hausman test for exogeneity does not reject the null hypothesis for most of the models (with the exception of urban model for food expenditure and of urban and semi-urban model for leisure expenditure).

However, when the interest of researchers concerns different points of the distribution, instead of its mean, endogeneity may be masked by linear regression models, even if it is affecting a few specific parts of the distribution of the dependent variable (Porter, 2015).

Therefore, to provide insights about possible endogenous relationships between spending habits and wellbeing starting from Equation 2 we consider Kim and Muller's (2017) test for exogeneity for each quantile. Results in Table 2 show that, even if the relationship is exogenous for the mean, the tests reject the null of exogeneity for several quantiles. Therefore, following Kim and Muller (2020), consistent estimates of Equation 2 are finally obtained



TABLE 2 Weak identification and endogeneity tests

H0: weak instrument	Test Statistics									
SatRel	1759***									
SatEnv	603***									
H0: exogeneity	OLS	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
Instrument: SatRel										
Total Exp.										
Overall	0.03	1.23	2.45	0.63	2.42*	3.22*	1.53	1.16	0.48	0.64
Metropolis	1.09	0.60	0.05	0.45	0.07	0.00	0.00	0.40	0.87	0.27
Urban	0.04	0.18	3.48*	1.49	1.02	1.55	1.46	1.69	0.37	0.02
Semi-urban	0.01	1.33	0.54	0.12	0.63	0.36	0.05	0.00	0.05	0.47
Rural	0.94	0.15	0.12	0.14	3.11*	3.69*	0.25	1.45	1.15	1.90
Leisure Exp.										
Metropolis	0.32	1.83	0.58	0.13	0.41	0.46	0.40	0.57	0.11	0.12
Urban	0.14	0.11	0.01	0.00	0.17	0.04	0.14	1.31	0.54	0.05
Semi-urban	0.08	0.47	0.03	0.57	6.80***	4.99**	2.68	0.32	0.77	0.35
Rural	2.75*	0.79	0.48	0.01	0.05	0.62	0.04	0.12	0.85	1.96
Durables Goods Exp.										
metropolis	0.75	0.05	0.21	0.56	1.52	3.79*	1.36	0.59	2.86*	0.85
urban	0.05	0.02	2.47	0.47	0.01	0.03	0.24	0.03	0.01	0.01
semi-urban	0.07	1.45	0.25	0.30	1.10	1.34	0.77	0.02	0.13	0.29
rural	0.03	1.20	2.80*	0.77	0.71	0.73	1.17	1.04	1.86	0.03
Work-related Exp.										
Metropolis	0.24	1.72	1.86	6.02***	2.27	0.05	0.01	0.44	0.29	0.09
Urban	0.14	0.01	2.29	1.94	0.80	0.47	0.02	0.07	0.00	0.09
Semi-urban	0.79	1.18	0.10	0.20	0.08	0.15	0.69	2.71*	1.49	2.95*



TABLE 2 (Continued)

H0: weak instrument	Test Statistics	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
SatRel	1759***									
SatEnv	603***									
H0: exogeneity	OLS	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
Rural	10.63***	0.55	3.07*	11.39***	7.64***	6.73***	9.89***	10.40***	8.42***	6.64***
Food Exp.	Instrument: SatEnv									
Metropolis	1.52	0.21	0.72	0.59	0.40	0.18	0.11	0.75	1.99	1.93
Urban	3.35*	0.30	0.52	2.33	3.33*	3.34*	2.30	2.20	2.21	1.43
Semi-urban	1.02	0.96	0.20	0.35	1.31	3.05*	3.11*	3.14*	0.51	0.79
Rural	0.05	0.10	0.05	0.27	0.01	0.08	0.23	0.00	0.00	0.16

Note: *;p-value <0.10, **;p-value <0.05***, p-value <0.01.



considering a two-stage quantile regression estimator (2SQREG), in which Equation 2 is combined with an ancillary regression for the wellbeing scores estimated on the instrumental variables and the controls. This “fitted-value approach” is built on Amemiya (1982) and Powell (1983) for the two-stage least-absolute deviations (LAD) estimator. The idea is to calculate a weighted combination of the dependent variable with its fitted value, obtained from a preliminary estimation. In this analysis, the weight q is set to be equal to the ratio between standard deviation of the reduced and structural form, aiming to control for homoscedastic residuals in the final estimates (Amemiya, 1982).

5.1 | Total expenditure and overall satisfaction

The results obtained for Italy, without distinguishing across urbanization areas, are given in the first line of Table 3 (complete estimates are shown in Table A3 of Appendix C). We visually summarized the estimates in Figure 1, comparing the coefficients obtained for the nine quantiles of expenditure distribution (green line), with OLS results (blue line), as the average effect of each determinant on expenditure.

In line with the results of Zhu et al. (2021) for China, we found that in Italy happiness has a positive and significant impact on consumption. In particular, the expenditure elasticity with respect to overall satisfaction is on average 0.10, implying, for a 1% increase in overall satisfaction, an expected 0.10% increase in expenditure. Moreover, focusing on the first panel of Figure 1, the effect of satisfaction on consumption shows a U-shaped profile (referring to the median, the first quantile and the last quantile of the distribution, the expenditure elasticities are 0.07, 0.11 and 0.11, respectively). Thus, Italians spending very little money and Italians spending a lot of money are those who are most affected by satisfaction, resulting to be more emotional in their spending decision processes than people at the centre of the expenditure distribution. As argued in the literature, the positive effect of satisfaction on expenditure can be due to mechanisms related to both productivity and earnings (Graham et al., 2004; Oswald et al., 2015), and social connection and participation in leisure activities such as community and religious events, social gatherings, cultural events and local politics (Güven, 2011), leading to an increased level of consumption.

Looking at the effect of the socio-demographic characteristics on total expenditure, it is interesting to note that the propensity to spend money tends to increase with age, especially for people showing high expenditure levels. Taking marital status into consideration, people who spend less money are more motivated to spend if they are married or widowed, while they are less motivated to spend if they are divorced. This tendency is the opposite for the highest quantiles of expenditure. As expected, unemployed people tend to spend less money than employed ones, especially considering lower levels of expenditure (Castillo et al., 1998) while retired individuals tend to spend more than employed people with an increasing tendency to spend money for the highest expenditure quantiles. Moreover, people living in the North of Italy tend to spend more than those living in the South. Finally, considering future expectations, it is interesting to note that people with poor or unknown future expectations tend to spend less money than people with good expectations for the future, demonstrating a more cautious spending behaviour (Ludvigson, 2004).

In terms of the macro-economic variables, both the level of unemployment and the ageing index have a significant effect on consumption across the entire expenditure distribution, while the education rate index impacts expenditure only for people belonging to the central quantiles. In particular, the effect of ageing decreases across the expenditure quantiles, moving from -0.23 to -0.14 , while the effect of education rate on expenditure shows an inverted U-shaped profile, showing that living in regions with higher participation in education training programs mainly affects medium spenders. Showing a similar pattern, but with negative signs (from -0.30 to -0.20), unemployment primarily decreases expenditure of lower spenders.

Distinguishing between urbanization categories, the consumption–happiness nexus provides interesting findings. Table 3 shows the results for the effect of satisfaction on expenditure for the different urbanized areas (the estimates obtained for all variables are then given in Appendix C, Tables A4–A7). In line with the results for Italy, Figure 2 shows the estimates obtained for the different urbanization areas, aimed at better identifying the four



TABLE 3 Elasticity of expenditure with respect to satisfaction, by urbanization levels and across quantiles

Ln_Exp. N = 23,002 OLS	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
Overall	0.10*** (0.01)	0.11*** (0.03)	0.10*** (0.02)	0.08*** (0.02)	0.07*** (0.02)	0.07*** (0.02)	0.07*** (0.01)	0.09*** (0.02)	0.11*** (0.02)
Metropolis	0.15*** (0.04)	0.20** (0.09)	0.19*** (0.05)	0.18*** (0.05)	0.12*** (0.04)	0.14*** (0.05)	0.16*** (0.05)	0.07 (0.06)	0.09 (0.06)
Urban	0.07*** (0.02)	0.05 (0.05)	0.05** (0.03)	0.07** (0.03)	0.05** (0.03)	0.06*** (0.02)	0.04 (0.03)	0.04 (0.03)	0.11*** (0.03)
Semi-urban	0.08*** (0.02)	0.09** (0.04)	0.10*** (0.03)	0.10*** (0.03)	0.06** (0.03)	0.02 (0.02)	0.03 (0.02)	0.05* (0.03)	0.08*** (0.03)
Rural	0.13*** (0.03)	0.13** (0.06)	0.11** (0.04)	0.09*** (0.03)	0.10*** (0.03)	0.11*** (0.03)	0.14*** (0.04)	0.16*** (0.03)	0.20*** (0.04)

Notes: *p-value <0.10, **p-value <0.05***, p-value <0.01. Standard error in brackets.

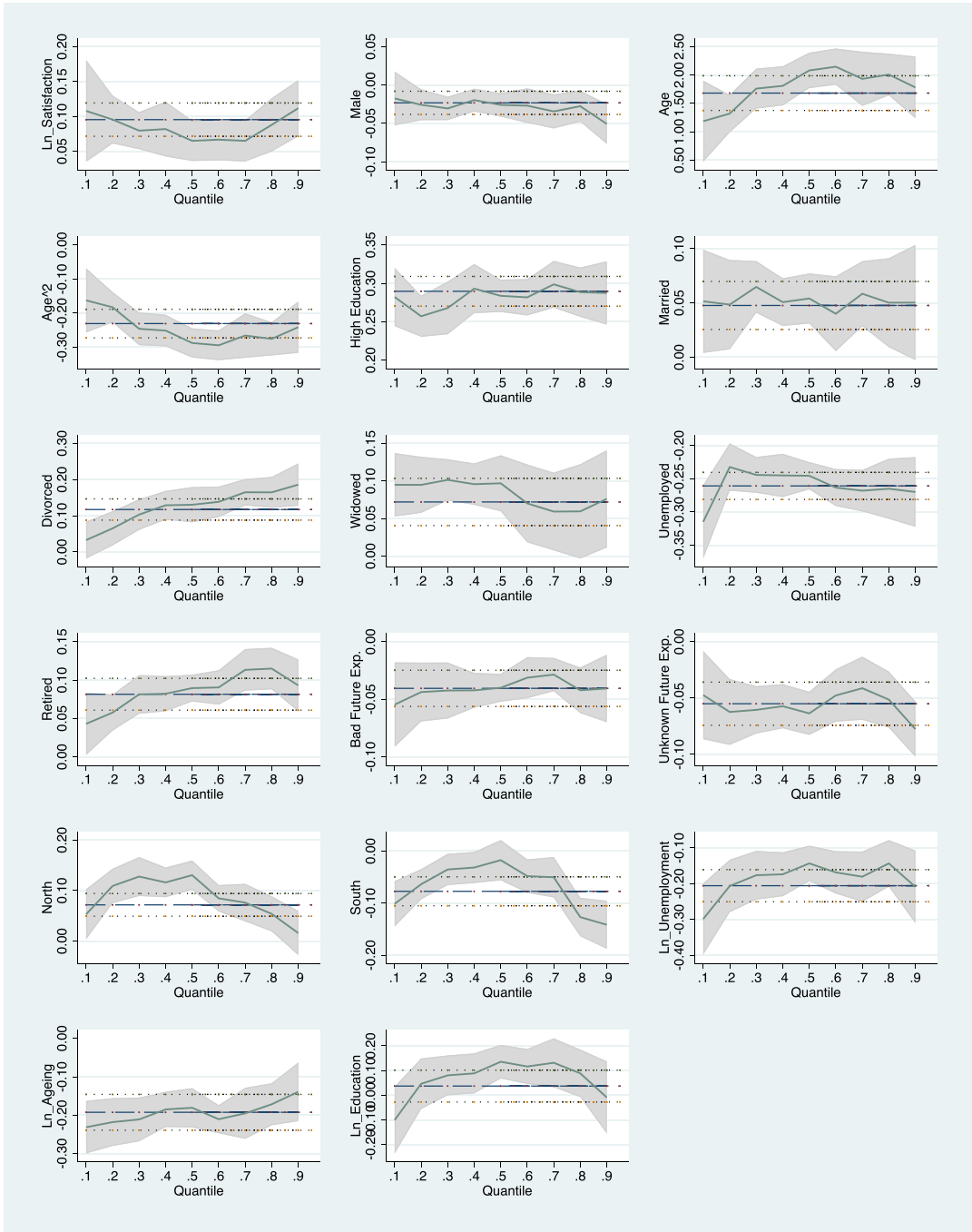


FIGURE 1 2SQREG regression estimates for the overall model

patterns of the effects of satisfaction across the different quantiles of expenditure. In particular, we used second-order polynomials to interpolate the coefficients estimated at the nine different quantiles of expenditure to obtain a clearer representation of the effect of satisfaction.

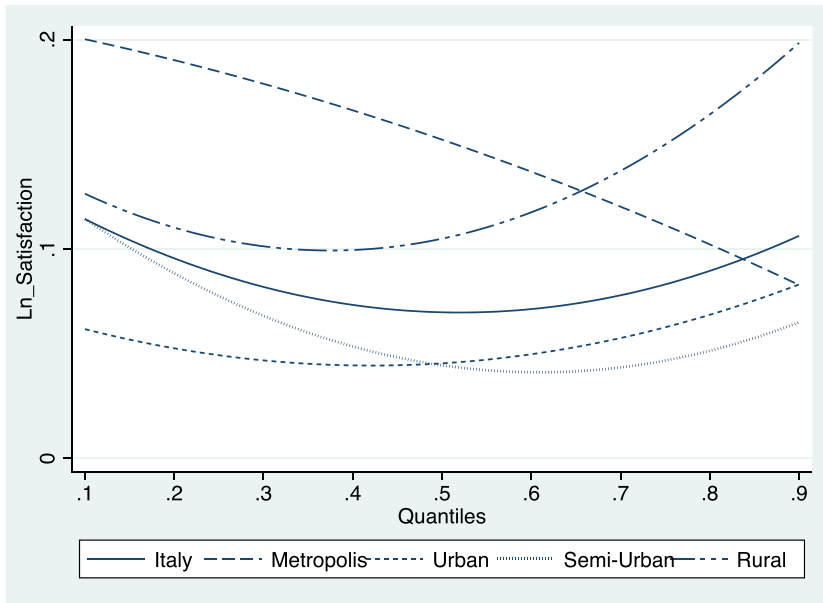


FIGURE 2 Expenditure elasticity to happiness for the different urbanization levels and across quantiles

Considering the benchmark estimates represented by least squares coefficients, the highest level of expenditure elasticity to satisfaction is observed for metropolises (0.15), followed by rural areas (0.13).

Semi-urban and urban communities show very similar coefficients to the one for Italy as a whole (0.08 and 0.07, respectively and 0.10 for the whole sample). Focusing on the quantile dimensions, for urban areas the effect of satisfaction increases across the expenditure distribution (elasticity ranging from 0.05 for the first quantile to 0.11 for the last one) and for semi-urban areas it decreases slightly (from 0.10 to 0.08 across quantiles), creating two opposing curves. Specifically, the difference in the impact of satisfaction on expenditure between urban and semi-urban areas is more pronounced for lower spenders. Indeed, the cost of living in urban areas is higher than in semi-urban areas and moving into a bigger town is worthwhile only if the increase in relative income is large enough to offset the increase in prices (Hayo, 2007). Thus, among people living in urban areas, those who can afford higher levels of expenditure may be more sensitive to the effect of satisfaction than lower spenders, the latter experiencing higher budgetary constraints. Comparing the sensitivity to happiness of inhabitants of urban and semi-urban areas, Ramchander Rao and Srinivasa Rao (2015) demonstrated that individuals belonging to these two samples have a significantly different perception of prices of goods, reinforcing the idea that people spending less money and living in less urbanized areas (i.e., semi-urban areas) may feel more motivated to spend money and satisfy their basic needs because they live in lower-costs areas (Hayo, 2007).

Conversely, the effect of satisfaction on expenditure in rural areas is greater in magnitude (0.13 on average) than the one for Italy as a whole and presents a highly accentuated U-shape profile (Figure 2). Thus, in line with Zhu et al. (2021), people living in rural areas tend to be very sensitive to satisfaction, in particular those who spend a lot of money (0.20 in the last quantile). The sensitivity to happiness in rural inhabitants' spending decision-making process has been explained by DiMaria et al. (2020), Krause (2013), Oswald et al. (2015) and Sujarwoto (2021). The general idea put forward by these authors is that happiness helps to increase the consumption capacity of rural residents, by boosting farmers' productivity, employment, income and then expenditures.

Finally, considering metropolises, the pattern for the effect of satisfaction is the opposite to the one for the other urbanization categories. Indeed, the effect of satisfaction is very high for lower spenders and then declines for higher expenditure quantiles. Considering the magnitude of the impacts, people living in metropolises tend to be



more affected by satisfaction (on average expenditure elasticity is 0.15) in their spending decision-making processes compared to others. Thus, happier metropolitan inhabitants feel more motivated and encouraged to go out, meet people and spend money compared to people living in other urbanization categories. Happier people are more trusting of others and show a high level of willingness to take part in social activities and public life (Zhu et al., 2021). More generally, happiness causes people to exhibit higher morale and help create more social capital; happier people participate more in community and cultural events, social gatherings, local politics and religious events (Güven, 2011). This tendency is particularly relevant for people living in metropolises where there is widespread access to services and availability of entertainment. However, the effect of satisfaction in metropolitan areas decreases when we consider the highest expenditure quantiles, due to the possible effect of overconsumption phenomena (Dominguez & Robin, 1992; Kaun, 2005): “beyond a threshold, absolute increases in purchasing power and consumption opportunities have no positive effects on happiness and may even detract from life satisfaction” (Layard, 2005, p. 175).

5.2 | Different expenditure categories and satisfaction domains

To take into consideration the heterogeneity in the consumption response to satisfaction across different categories of expenditure (food, durable goods, leisure time and work-related), we estimated the model presented in Equation 2 for the different urbanization levels and for different life domains (Table 4; the complete model estimates are given in Table A9–A24 of Appendix D).

Social and leisure activities have a positive and significant effect on overall life satisfaction (Becchetti et al., 2012; DeLeire & Kalil, 2010) and tend to raise happiness (Lane, 2017). Moreover, DeLeire and Kalil (2010), considering nine expenditure categories, found that the only spending aggregate positively correlated with happiness is leisure consumption. Considering the reversal effect, our results show that leisure satisfaction has a positive and significant impact on leisure expenditure, mainly for people living in metropolitan areas (leisure expenditure elasticity equals 0.22) where there is mass accessibility to services and availability of entertainment. Indeed, as shown in Table 1, people living in metropolises tend to spend more money on leisure time activities than people living in other urbanization categories. The pattern of the estimated coefficients for the effect of leisure satisfaction on leisure expenditure shows an inverted U-shape profile in metropolises, while the effect of leisure satisfaction is not significant in the other areas, with some exceptions.

Conversely, satisfaction with relatives has a significant effect in boosting expenditure for food only in rural areas; while in semi-urban areas, the only significant impact is that relating to the median expenditure. Relationship with family have a significant effect in determining food expenditure in particular for people living in rural areas and belonging to the central quantiles of the food expenditure distribution. Indeed, commensality and conviviality, as representative of numerous mealtime ideologies, are considered by literature to be powerful symbols in shaping family life (Wilk, 2010), especially in specific cultural and social contexts of countries with a prevalence of rural areas (Phull, 2019).

As regards durable goods, this expenditure category has specific characteristics with respect to other consumer goods. First, a durable good provides utility over multiple periods, allowing consumers to postpone purchases in times of economic recession. Second, the purchase of durables can often be financed using credit, which can make them more exposed to credit conditions and lending rates. Moreover, expenditure on durables tends to be volatile and pro-cyclical; the dynamics of durable goods consumption exhibit significant fluctuation (i.e., growing in times of economic expansion and contracting during recessions), in accordance with the phases of the business cycle. All these characteristics suggest that expenditure on durables may be strongly related to individual economic conditions. Our model estimates confirm this hypothesis and show that happiness due to personal material living standards boosts the purchase of durable goods such as houses, cars, etc. However, this effect is significant only for the highest quantiles of durable goods expenditure, suggesting that happiness with one's economic situation has a role only for



TABLE 4 Elasticity of expenditure categories with respect to satisfaction domains, by urbanization levels and across quantiles

Food expenditure— relative satisfaction		OLS	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
Metropolis		-0.01 (0.05)	0.00 (0.09)	-0.05 (0.06)	-0.06 (0.06)	-0.04 (0.05)	-0.04 (0.04)	-0.03 (0.02)	0.01 (0.03)	0.00 (0.04)	0.00 (0.04)
Urban		-0.02 (0.03)	0.02 (0.06)	-0.01 (0.05)	-0.05 (0.05)	-0.04 (0.05)	-0.02 (0.05)	-0.02 (0.04)	0.00 (0.04)	0.01 (0.04)	0.00 (0.05)
Semi-urban		0.05* (0.03)	0.04 (0.07)	0.02 (0.04)	0.05 (0.04)	0.04 (0.04)	0.05** (0.02)	0.03 (0.03)	0.02 (0.03)	0.01 (0.03)	0.02 (0.04)
Rural		0.07* (0.04)	0.07 (0.08)	0.09 (0.06)	0.11** (0.05)	0.08* (0.04)	0.11** (0.04)	0.07 (0.05)	0.07** (0.03)	0.11** (0.05)	0.02 (0.09)
Leisure expenditure— leisure satisfaction		OLS	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
Metropolis		0.22*** (0.07)	0.09 (0.12)	0.14 (0.11)	0.19* (0.10)	0.16* (0.09)	0.18* (0.10)	0.17* (0.10)	0.12 (0.08)	0.22*** (0.07)	0.25** (0.12)
urban		0.03 (0.05)	-0.14 (0.12)	0.01 (0.08)	-0.01 (0.05)	-0.01 (0.04)	0.02 (0.07)	0.05 (0.07)	0.10* (0.06)	0.13* (0.05)	0.06 (0.08)
semi-urban		0.07 (0.05)	0.03 (0.08)	0.04 (0.06)	0.07 (0.06)	0.09 (0.06)	0.07 (0.05)	0.02 (0.04)	0.03 (0.04)	0.01 (0.04)	0.09 (0.07)
rural		0.07 (0.06)	0.04 (0.08)	0.16* (0.08)	0.11 (0.11)	0.10 (0.08)	0.09 (0.05)	0.05 (0.06)	0.00 (0.06)	-0.01 (0.06)	-0.14*** (0.05)
Durable good exp.— economic satisfaction		OLS	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
Metropolis		0.22** (0.11)	0.06 (0.17)	0.02 (0.10)	0.11 (0.10)	0.17 (0.14)	0.19* (0.11)	0.30*** (0.11)	0.40*** (0.14)	0.39*** (0.14)	0.37** (0.15)
Urban		0.14* (0.07)	0.08 (0.10)	0.13 (0.09)	0.12* (0.07)	0.03 (0.06)	0.00 (0.06)	0.10 (0.06)	0.09 (0.07)	0.30*** (0.08)	0.40*** (0.15)
Semi-urban		0.29*** (0.06)	0.14 (0.12)	0.19*** (0.08)	0.25*** (0.07)	0.21*** (0.06)	0.20*** (0.06)	0.24*** (0.06)	0.42*** (0.09)	0.42*** (0.10)	0.34* (0.20)
Rural		0.25*** (0.09)	0.14 (0.12)	0.23** (0.12)	0.14** (0.07)	0.07 (0.08)	0.17* (0.10)	0.26*** (0.08)	0.30*** (0.11)	0.41*** (0.16)	0.33 (0.25)
Work-related exp.— job satisfaction		OLS	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
Metropolis		0.21** (0.11)	0.49** (0.22)	0.19 (0.17)	0.09 (0.14)	0.17 (0.13)	0.17 (0.11)	0.11 (0.11)	0.16 (0.11)	0.17* (0.08)	0.14 (0.10)
Urban		0.03 (0.07)	0.07 (0.16)	0.01 (0.10)	0.00 (0.08)	0.00 (0.07)	0.02 (0.05)	0.06 (0.06)	0.04 (0.10)	0.10 (0.09)	0.10 (0.08)
Semi-urban		0.11* (0.06)	0.04 (0.14)	-0.02 (0.07)	-0.01 (0.06)	0.07 (0.05)	0.09 (0.06)	0.12** (0.06)	0.18** (0.06)	0.14** (0.07)	0.14 (0.10)
Rural		0.09 (0.07)	0.06 (0.10)	0.11 (0.08)	0.15 (0.10)	0.14 (0.09)	0.15** (0.07)	0.14* (0.08)	0.13 (0.08)	0.10 (0.09)	0.05 (0.10)

*:p-value<0.10, **:p-value<0.05, ***:p-value<0.01.

Standard error in brackets.



higher spenders. Besides, this effect is significant across all the urbanization levels, albeit with different magnitudes. In particular, durables expenditure elasticity is strongly relevant in metropolitan areas, reaching a level higher than 0.35 for the last quantiles. Moreover, in semi-urban areas this positive effect has a significant U-shape profile across the durable goods expenditure distribution. The relevant sensitivity in consumer behaviour of the individuals living in semi-urban areas may be due both to their increasing disposable income and to the influence (i.e., emulative behaviour) of the urban population consumption patterns.

Finally, considering the working sphere, empirical literature points out that happiness makes people more productive and that a causal link exists between human well-being and human performance (Oswald et al., 2015). Our results give new insights in this field of research, showing that work-related expenditure is also positively influenced by happiness with work conditions; in particular, the elasticity of the work-related spending category is significant for people living in metropolises and for semi-urban residents belonging to the highest quantiles of the distribution.

In short, results considering different expenditure categories and different life domains show that: (i) leisure satisfaction is particularly relevant in boosting leisure expenditure in metropolitan areas; (ii) satisfaction with the relationship with relatives is associated to higher levels of food expenditure in rural areas; (iii) satisfaction with one's economic situation relates to increases in durable goods expenditure across all urbanized areas, with a significant effect for the highest quantiles of the expenditure distribution.; (iv) job satisfaction has a significant effect on boosting work-related expenditure for individuals living in metropolises and in semi-urban areas.

6 | ROBUSTNESS CHECKS

To assess the robustness of the results for total expenditure, we finally compare the four separated specifications for urbanization degree with several nested models for the whole Italy. The reliability and robustness of the results presented in previous sections are investigated comparing the empirical likelihoods of the different specifications using several LR tests.

Specifically, we compare the results for the different urbanized areas (i.e., subsampling results identified by M0 in Appendix E) with: a model (M1) for the whole Italy without differentiating for urbanizations; a model (M2) that only includes a unique satisfaction score and three dummy variables (assuming an effect of urbanization only on the intercept); a model (M3) that only considers interactions between urbanization level and satisfaction score and a model (M4) that considers interaction variables as well as three dummies for the different urbanizations. Thus, LR tests are used to compare the M1–M4 full sample (constrained models) and the M0 sub-sampling estimation approaches (unconstrained model) for the null hypothesis of homogeneous effects of SWB on expenditure for the whole population. The tests aim at evaluating the strength of the degree of heterogeneity of the individuals' expenditure behaviour in the four urbanized areas. As shown in Appendix E Table A25 for total expenditure, the results of the LR tests reveal a dominance of the subsampling approach (estimates and LR tests for the other expenditure categories are available on request).

Moreover, a further robustness check was performed³ splitting metropolis into two different sub-categories identified by metropolises with less than 700,000 inhabitants (small metropolis) and metropolises with more than 700,000 inhabitants (big metropolis). Estimating Equation 2 over these two different sub-samples we found that the pattern of the effect of satisfaction on expenditure across different quantiles is the same as the one detected for the category metropolis, being very high for lower spenders and then declining for higher expenditure quantiles. The only two differences concern first the intensity of the effect of satisfaction that is higher for people living in big metropolis (it passes from 0.23 to 0.10 across quantiles) compared to small metropolis (it goes from 0.15 to 0.01). Second, the significance of the estimates: the effect of satisfaction on expenditure is significant only for big metropolis, maybe due to the small size of the small metropolis sub-sample. The estimation results of this second robustness check are presented in Appendix F.



7 | CONCLUSION

The novel contribution of our work to the regional well-being literature relies on the analysis of the non-linearities in the elasticity of expenditure to happiness across different urbanization categories. In particular, thanks to the wealth of information provided by the statistical matching of the ADL and HBS surveys, we examined the so-called “reversal issue” of the consumption-happiness nexus, taking into account the following for two main sources of heterogeneity, the degree of urbanization of the area in which people live and the level of expenditure. With regard to urbanization, we considered four categories, represented by metropolis, urban, semi-urban and rural areas; for the second source of heterogeneity, we made use of the differences in the individuals' emotional level over the expenditure distribution using quantile regression. This methodology allowed us to investigate how the effect of satisfaction varies across the different levels of expenditure.

Considering the first research question about the possible effect of SWB on consumption expenditures, the results of the analysis reveal an endogenous relationship, at least for some expenditure quantiles. Therefore, controlling for endogeneity using a 2SQREG estimator (Kim & Muller, 2017), we found that satisfaction has a positive and significant effect on total expenditure. Moreover, individuals who are most affected by their level of satisfaction are those spending very little money and those spending a lot (i.e., the effect of satisfaction presents with a U-shape profile).

Second, concentrating on the heterogeneous spending patterns determined by urbanization levels, we showed that people living in metropolises are the most influenced by satisfaction in their spending decision-making process, even though this effect decreases across quantiles. Conversely, individuals living in rural areas experience a very high impact of satisfaction on consumption, in particular for the highest expenditure quantiles, reinforcing the insights of Zhu et al. (2021) finding that happiness directly affects productivity of people living in rural areas, and consequently income and consumption. For urban and semi-urban areas, the magnitude of the effect of satisfaction is smaller and opposite between these two, underlying significant heterogeneity in the response to satisfaction, motivated by possible differences in purchasing power across areas with different degrees of urbanization.

Finally, inspired by Handbury and Weinstein (2015), who suggested possible different reactions to specific expenditure categories across urbanized areas, the behavioural profile of individuals' expenditure for the different urbanized areas was completed by considering several spending aggregates with respect to different life domain satisfaction scores. The results demonstrate that leisure satisfaction is particularly relevant in boosting leisure expenditure in metropolises since leisure activities and leisure time play a central role for people living in big cities; satisfaction with the relationship with relatives is significant in increasing food expenditure for people living in rural areas due to the importance of conviviality in shaping family life in these areas in particular; satisfaction with economic conditions positively affects expenditure on durable goods, suggesting that individuals who are satisfied with their economic condition are more inclined to invest in durables; people who are happy with their job are more willing to invest money for their work, strengthening the link between human well-being and human performance (i.e., happiness increases productivity).

Our findings have important policy implications. The positive impact of happiness on expenditure suggests the relevance of place-based programs aimed at improving the overall happiness of citizens, in particular for those living in metropolises and rural areas. Policy-makers might refer to a wide range of consumers (i.e., focusing on businesses such as pubs, restaurants, museums and sports-related activities) and public amenities (e.g., schools, health, transport). In particular, leisure activities are relevant in metropolises, where satisfaction for this aspect of life is largely effective in improving leisure expenditure. Policies aimed at increasing material well-being via education development and employment actions can be fundamental in exploiting individual economic happiness and then boosting expenditure on durable goods. Moreover, it is necessary for governments to further invest in supporting labour-market and economic activities, which in turn may increase job satisfaction, and thus productivity and work-related expenditures. These latter aspects are, to some extent, transversal to all urbanization levels.



Further developments of this study will consider how expenditure categories are influenced by the total expenditure (i.e., Engel demand functions) as well as the level of satisfaction for the different life domains, also considering alternative urbanization categorizations. Moreover, focusing on Italy, it could be interesting to investigate the consumption-happiness nexus across different levels of urbanization, while differentiating between Northern and Southern Italy—Italy is, indeed, characterized by a clear economic duality between its North and South (Capello, 2016; Odoardi & Muratore, 2018) and disparities in behavioural and cultural bases or income inequalities could produce disparities in the nexus (Clark, 2003; Giarda & Moroni, 2018). Finally, taking more time periods into consideration in order to evaluate the evolution of the nexus over time could be an interesting development.

ORCID

Cristina Bernini  <https://orcid.org/0000-0001-9465-8492>

Silvia Emili  <https://orcid.org/0000-0002-7086-0650>

Federica Galli  <https://orcid.org/0000-0003-4895-1529>

ENDNOTES

¹ As explained in the data section, happiness is measured here with a question on overall satisfaction. This is in line with much of the happiness literature (e.g., Kalmijn & Veenhoven, 2005; Veenhoven, 2012). In addition, Veenhoven (2012, p. 1) argues that subjective well-being ‘it is an umbrella term for all that is good. In this meaning, it is often used interchangeably with terms like “well-being” or “quality of life” and denotes both individual and social welfare’. Accordingly, we will use the terms ‘subjective well-being’, ‘happiness’ and ‘life satisfaction’ interchangeably.

² Macroeconomic indicators were obtained from ISTAT at <http://dati.istat.it/>.

³ We thank an anonymous referee for suggesting this further extension of the categorization.

REFERENCES

- Aguiar, M., & Hurst, E. (2013). Deconstructing life cycle expenditure. *Journal of Political Economy*, 121(3), 437–492. <https://doi.org/10.1086/670740>
- Alesina, A., & Giuliano, P. (2010). The power of the family. *Journal of Economic Growth*, 15, 92–125. <https://doi.org/10.1007/s10887-010-9052-z>
- Amemiya, T. (1982). Two stage least absolute deviations estimators. *Econometrica*, 50(3), 689–711. <https://doi.org/10.2307/1912608>
- Arouri, M., Ben Youssef, A., & Nguyen, C. (2017). Does urbanization reduce rural poverty? Evidence from Vietnam. *Economic Modelling*, 60(C), 253–270. <https://doi.org/10.1016/j.econmod.2016.09.022>
- Bannock, G., Baxter, R. E., & Davis, E. (1987). *The Penguin Dictionary of Economics* (4th ed.). Penguin Books.
- Becchetti, L., Ricca, E. G., & Pelloni, A. (2012). The relationship between social leisure and life satisfaction: Causality and policy implications. *Social Indicators Research*, 108(3), 453–490. <https://doi.org/10.1007/s11205-011-9887-5>
- Berry, B., & Okulicz-Kozaryn, A. (2011). An urban-rural happiness gradient. *Urban Geography*, 32(6), 871–883. <https://doi.org/10.2747/0272-3638.32.6.871>
- Binder, M., & Coad, A. (2011). From average Joe's happiness to miserable Jane and cheerful John: Using quantile regressions to analyze the full subjective well-being distribution. *Journal of Economic Behavior and Organization*, 79(3), 275–290. <https://doi.org/10.1016/j.jebo.2011.02.005>
- Binder, M., & Coad, A. (2015). Heterogeneity in the relationship between unemployment and subjective wellbeing: A quantile approach. *Economica*, 82(328), 865–891. <https://doi.org/10.1111/ecca.12150>
- Binder, M., & Freytag, A. (2013). Volunteering, subjective well-being and public policy. *Journal of Economic Psychology*, 34(C), 97–119. <https://doi.org/10.1016/j.joep.2012.11.008>
- Blanchflower, D. G. (2007). Is unemployment more costly than inflation? NBER Working Paper 13505.
- Bogenschneider, K., Little, O. M., Ooms, T., Benning, S., Cadigan, K., & Corbett, T. (2012). The family impact lens: A family-focused, evidence-informed approach to policy and practice. *Family Relations*, 61(3), 514–531. <https://doi.org/10.1111/j.1741-3729.2012.00704.x>
- Botha, F., & Booysen, F. (2013). Family functioning and life satisfaction and happiness in South African households. *Social Indicators Research*, 119, 163–182. <https://doi.org/10.1007/s11205-013-0485-6>
- Capello, R. (2016). What makes Southern Italy still lagging behind? A diachronic perspective of theories and approaches. *European Planning Studies*, 24(4), 668–686. <https://doi.org/10.1080/09654313.2015.1128402>



- Carter, D. M. (2011). Recognizing the role of positive emotions in fostering environmentally responsible behaviors. *Ecopyschology*, 3, 65–69. <https://doi.org/10.1089/eco.2010.0071>
- Carver, T., & Grimes, A. (2019). Income or consumption: Which better predicts subjective well-being? *Review of Income and Wealth*, 65(S1), 256–280. <https://doi.org/10.1111/roiw.12414>
- Castillo, S., Dolado, J. J., & Jimeno, J. F. (1998). The fall in consumption from being unemployed in Spain and Portugal, CEPR Discussion Paper 1953.
- Clark, A. E. (2003). Unemployment as a social norm: Psychological evidence from panel data. *Journal of Labor Economics*, 21(2), 289–322. <https://doi.org/10.1086/345560>
- Clark, A. E. (2018). Four decades of the economics of happiness: Where next? *Review of Income and Wealth*, 64(2), 245–269. <https://doi.org/10.1111/roiw.12369>
- Corral-Verdugo, V., Tapia-Fonllem, C., & Ortiz-Valdez, A. (2015). On the relationship between character strengths and sustainable behavior. *Environment and Behavior*, 47(8), 877–901. <https://doi.org/10.1177/0013916514530718>
- Currid-Halkett, E., Lee, H., & Painter, G. D. (2017). Veblen goods and urban distinction: The economic geography of conspicuous consumption. *Journal of Regional Science*, 59, 83–117. <https://doi.org/10.1111/jors.12399>
- D'Ambrosio, C., Jäntti, M., & Lepinteur, A. (2020). Money and happiness: Income, wealth and subjective well-Being. *Social Indicators Research*, 148(1), 47–66. <https://doi.org/10.1007/s11205-019-02186-w>
- De Neve, J., Diener, E., Tay, L., & Xuereb, C. (2013). The objective benefits of subjective well-being. CEP Discussion Paper 1236.
- Deaton, A. (1997). *The analysis of household surveys*. Johns Hopkins.
- DeLeire, T., & Kalil, A. (2010). Does consumption buy happiness? Evidence from the United States. *International Review of Economics*, 57(2), 163–176. <https://doi.org/10.1007/s12232-010-0093-6>
- Di Tella, R., MacCulloch, R. J., & Oswald, A. J. (2003). The macroeconomics of happiness. *Review of Economics and Statistics*, 85(4), 809–827. <https://doi.org/10.1162/003465303772815745>
- DiMaria, C. H., Peroni, C., & Sarracino, F. (2020). Happiness matters: Productivity gains from subjective well-being. *Journal of Happiness Studies*, 21, 139–160. <https://doi.org/10.1007/s10902-019-00074-1>
- Dohmen, T. (2014). Behavioral labor economics: Advances and future directions. *Labour Economics*, 30, 71–85. <https://doi.org/10.1016/j.labeco.2014.06.008>
- Dominguez, J., & Robin, V. (1992). *Your money or your life*. Penguin.
- D'Orazio, M., Di Zio, M., & Scanu, M. (2006). *Statistical matching, theory and practice*. Wiley.
- Fang, Z. (2017). Panel quantile regressions and the subjective well-being in urban China: Evidence from RUMiC data. *Social Indicators Research*, 132, 11–24. <https://doi.org/10.1007/s11205-015-1126-z>
- Fang, Z., & Sakellariou, C. (2016). Social insurance, income and subjective well-being of rural migrants in China—an application of unconditional quantile regression. *Journal of Happiness Studies*, 17, 1635–1657. <https://doi.org/10.1007/s10902-015-9663-3>
- Fredrickson, B. L. (2004). The broaden-and-build theory of positive emotions. *Philosophical Transactions of the Royal Society, B: Biological Sciences*, 359(1449), 1367–1377. <https://doi.org/10.1098/rstb.2004.1512>
- GCHW - Global Council for Happiness and Wellbeing. (2019). Global happiness and wellbeing policy report. URL: <https://www.happinesscouncil.org/report/2019/>
- Gerdtham, U. G., & Johannesson, M. (2001). The relationship between happiness, health, and socio-economic factors: Results based on Swedish microdata. *The Journal of Socio-Economics*, 30(6), 553–557. [https://doi.org/10.1016/S1053-5357\(01\)00118-4](https://doi.org/10.1016/S1053-5357(01)00118-4)
- Giarda, E., & Moroni, G. (2018). The degree of poverty persistence and the role of regional disparities in Italy in comparison with France, Spain and the UK. *Social Indicators Research*, 136(1), 163–202. <https://doi.org/10.1007/s11205-016-1547-3>
- Gilbert, D. (2007). *Stumbling on happiness*. Knopf.
- Glaeser, E. L. (2011). *Triumph of the city*. Penguin Press.
- Glaeser, E. L., Kolko, J., & Saiz, A. (2001). Consumer city. *Journal of Economic Geography*, 1(1), 27–50. <https://doi.org/10.1093/jeg/1.1.27>
- Graham, C., Eggers, A., & Sukhtankar, S. (2004). Does happiness pay? An exploration based on panel data from Russia. *Journal of Economic Behavior and Organization*, 55(3), 319–342. [https://doi.org/10.1016/S0167-2681\(04\)00047-2](https://doi.org/10.1016/S0167-2681(04)00047-2)
- Güven, C. (2011). Are happier people better citizens? *Kyklos*, 64(2), 178–192. <https://doi.org/10.1111/j.1467-6435.2011.00501.x>
- Güven, C. (2012). Reversing the question: Does happiness affect consumption and savings behavior? *Journal of Economic Psychology*, 33(4), 701–717. <https://doi.org/10.1016/j.joep.2012.01.002>
- Hand, C. (2018). Do the arts make you happy? A quantile regression approach. *Journal of Cultural Economics*, 42, 271–286. <https://doi.org/10.1007/s10824-017-9302-4>



- Handbury, J., & Weinstein, D. E. (2015). Good prices and availability in cities. *Review of Economic Studies*, 82(1), 258–296. <https://doi.org/10.1093/restud/rdu033>
- World Happiness. (2020). World Happiness report. URL: <https://worldhappiness.report/ed/2020/>
- Hayo, B. (2007). Happiness in transition: An empirical study on Eastern Europe. *Economic Systems*, 31(2), 204–221. <https://doi.org/10.1016/j.ecosys.2006.08.003>
- Helne, T., & Hirvilampi, T. (2015). Wellbeing and sustainability: A relational approach. *Sustainable Development*, 23(3), 167–175. <https://doi.org/10.1002/sd.1581>
- Hirschman, A., & Rothschild, M. (1973). The changing tolerance for income inequality in the course of economic development with a mathematical appendix. *The Quarterly Journal of Economics*, 87(4), 544–566. <https://doi.org/10.2307/1882024>
- Hopwood, B., Mellor, M., & O'Brien, G. (2005). Sustainable development: Mapping different approaches. *Sustainable Development*, 13(1), 38–52. <https://doi.org/10.1002/sd.244>
- Isen, A. M. (2000). Positive affect and decision making. In M. Lewis & J. M. Haviland-Jones (Eds.), *Handbook of emotions* (pp. 417–435). Guilford.
- Kahneman, D., & Krueger, A. B. (2006). Developments in the measurement of subjective well-being. *The Journal of Economic Perspectives*, 20, 3–24. <https://doi.org/10.1257/089533006776526030>
- Kalmijn, W., & Veenhoven, R. (2005). Measuring inequality of happiness in nations: In search for proper statistics. *Journal of Happiness Studies*, 6, 357–396. <https://doi.org/10.1007/s10902-005-8855-7>
- Kalyuzhnova, Y., & Kambhampati, U. (2008). The determinants of individual happiness in Kazakhstan. *Economic Systems*, 32(3), 285–299. <https://doi.org/10.1016/j.ecosys.2008.02.001>
- Karaca, S., Karakoc, A., Bingol, F., Eren, N., & Andsoy, I. I. (2016). Comparison of subjective wellbeing and positive future expectations in between working and nonworking adolescents in Turkey. *Iranian Red Crescent Medical Journal*, 18(2), e21055. <https://doi.org/10.5812/ircmj.21055>
- Kaun, D. E. (2005). Income and happiness: Earning and spending as sources of discontent. *The Journal of Socio-Economics*, 34(2), 161–177. <https://doi.org/10.1016/j.socec.2004.09.005>
- Kim, T. H., & Muller, C. (2017). A robust test of exogeneity based on quantile regressions. *Journal of Statistical Computation and Simulation*, 87(11), 1–14. <https://doi.org/10.1080/00949655.2017.1319947>
- Kim, T. H., & Muller, C. (2020). Inconsistency transmission and variance reduction in two-stage quantile regression. *Communications in Statistics: Simulation and Computation*, 49(4), 1044–1077. <https://doi.org/10.1080/03610918.2018.1493505>
- Knight, J., & Gunatilaka, R. (2010a). Great expectations? The subjective well-being of rural-urban migrants in China. *World Development*, 38(1), 113–124. <https://doi.org/10.1016/j.worlddev.2009.03.002>
- Knight, J., & Gunatilaka, R. (2010b). The rural-urban divide in China: Income but not happiness? *Journal of Development Studies*, 46(3), 506–534. <https://doi.org/10.1080/00220380903012763>
- Koenker, R., & Bassett, G. (1978). Regression quantiles. *Econometrica*, 46(1), 33–50. <https://doi.org/10.2307/1913643>
- Koenker, R., & Hallock, K. F. (2001). Quantile regression. *Journal of Economic Perspectives*, 15(4), 143–156. <https://doi.org/10.1257/jep.15.4.143>
- Krause, A. (2013). Don't worry, be happy? Happiness and reemployment. *Journal of Economic Behavior and Organization*, 96, 1–20. <https://doi.org/10.1016/j.jebo.2013.09.002>
- Kyttä, M., Broberg, A., Haybatollahi, M., & Schmidt-Thomé, K. (2016). Urban happiness: context-sensitive study of the social sustainability of urban settings. *Environment and Planning. B, Planning & Design*, 43(1), 34–57. <https://doi.org/10.1177/0265813515600121>
- Lane, T. (2017). How does happiness relate to economic behaviour? A review of the literature. *Journal of Behavioral and Experimental Economics*, 68, 62–78. <https://doi.org/10.1016/j.socec.2017.04.001>
- Layard, R. (2005). *Happiness: Lessons from a new science*. Penguin Books.
- Lenzi, C., & Perucca, G. (2020). Urbanization and subjective well-being. In T. S. Della, S. Cattaneo, C. Lenzi, & A. Zanelli (Eds.), *Regeneration of the built environment from a circular economy perspective*. Research for development. Springer.
- Lerner, J. S., Li, Y., & Weber, E. U. (2013). The financial costs of sadness. *Psychological Science*, 24(1), 72–79. <https://doi.org/10.1177/0956797612450302>
- Ludvigson, S. C. (2004). Consumer confidence and consumer spending. *Journal of Economic Perspectives*, 18(2), 29–50. <https://doi.org/10.1257/0895330041371222>
- Mace, G. M. (2014). Whose conservation? *Science*, 345, 1558–1560. <https://doi.org/10.1126/science.1254704>
- Malanima, P. (2005). Urbanisation and the Italian economy during the last millennium. *European Review of Economic History*, 9, 97–122. <https://doi.org/10.1017/S1361491604001327>
- Malesevic Perovic, L., & Golem, S. (2010). Investigating macroeconomic determinants of happiness in transition countries. *Eastern European Economics*, 48(4), 59–75. <https://doi.org/10.2753/EEE0012-8775480403>



- Marella, D., Scanu, M., & Conti, P. L. (2008). On the matching noise of some nonparametric imputation procedures. *Statistics & Probability Letters*, 78, 1593–1600. <https://doi.org/10.1016/j.spl.2008.01.020>
- McDonough, I. K., & Millimet, D. L. (2017). Missing data, imputation, and endogeneity. *Journal of Econometrics*, 199(2), 141–155. <https://doi.org/10.1016/j.jeconom.2017.05.006>
- Morrison, P. S. (2021). Wellbeing and the region. In M. M. Fischer & P. Nijkamp (Eds.), *Handbook of Regional Science* (pp. 779–798). Springer. https://doi.org/10.1007/978-3-662-60723-7_16
- Moyano-Díaz, E., & Palomo-Vélez, G. (2018). Satisfaction with the country and well-being: future expectations/Satisfacción con el país y bienestar: expectativas acerca del futuro. *Revista de Psicología Social*, 33(3), 504–528. <https://doi.org/10.1080/02134748.2018.1482059>
- North, R. J., Holahan, C. J., Moos, R. H., & Cronkite, R. C. (2008). Family support, family income, and happiness: A 10-year perspective. *Journal of Family Psychology*, 22(3), 475–483. <https://doi.org/10.1037/0893-3200.22.3.475>
- Odoardi, I., & Muratore, F. (2018). The Italian regional dualism: A MARS and panel data analysis. *The Review of Regional Studies*, 48(3), 323–346. <https://doi.org/10.52324/001c.7991>
- Okner, B. A. (1972). Constructing a new data base from existing microdata sets: The 1966 merge file. *Annals of Economic and Social Measurement*, 1(3), 325–342.
- Okulicz-Kozaryn, A., & Mazelis, J. M. (2018). Urbanism and happiness: A test of Wirth's theory of urban life. *Urban Studies*, 55(2), 349–364. <https://doi.org/10.1177/0042098016645470>
- Oswald, A. J., Proto, E., & Sgroi, D. (2015). Happiness and productivity. *Journal of Labor Economics*, 33(4), 789–822. <https://doi.org/10.1086/681096>
- Peirò, A. (2006). Happiness, satisfaction and socio-economic conditions: Some international evidence. *The Journal of Socio-Economics*, 35(2), 348–365. <https://doi.org/10.1016/j.socec.2005.11.042>
- Phull, S. (2019) A comparative study of conviviality and family mealtime experiences in Spain and the UK. PhD Thesis, University of Hertfordshire.
- Porter, S. R. (2015). Quantile regression: Analyzing changes in distributions instead of means. In M. B. Paulsen (Ed.), *Higher Education, Vol. 30: Handbook of Theory and Research* (pp. 335–381). Springer.
- Powell, J. (1983). The asymptotic normality of two-stage least absolute deviations estimators. *Econometrica*, 51(5), 1569–1575. <https://doi.org/10.2307/1912290>
- Ramchander Rao, V., & Srinivasa Rao, T. (2015). Retail buying behaviour of urban and semi-urban consumers - A comparative study. *International Research Journal of Management Science and Technology*, 6(5), 184–196. <https://doi.org/10.32804/IRJMST>
- Rappaport, J. (2009). The increasing importance of quality of life. *Journal of Economic Geography*, 9(6), 779–804. <https://doi.org/10.1093/jeg/lbp009>
- Requena, F. (2016). Rural–urban living and level of economic development as factors in subjective well-being. *Social Indicators Research*, 128(2), 693–708. <https://doi.org/10.1007/s11205-015-1051-1>
- Ridder, G., & Moffitt, R. (2007). The econometrics of data combination. In J. J. Heckman & E. E. Leamer (Eds.), *Handbook of econometrics* (Vol. 6, Part B) (pp. 5469–5547). Elsevier.
- Rodríguez-Pose, A., & Maslouskaite, K. (2012). Can policy make us happier? Individual characteristics, socio-economic factors and life satisfaction in Central and Eastern Europe. *Cambridge Journal of Regions, Economy and Society*, 5(1), 77–96. <https://doi.org/10.1093/cjres/rsr038>
- Schoemaker, P. (1993). Determinants of risk taking: Behavioural and economic views. *Journal of Risk and Uncertainty*, 6, 493–501. <https://doi.org/10.1007/BF01065350>
- Seeley, E. (1992). Human needs and consumer economics: The implications of Maslow's theory of motivation for consumer expenditure patterns. *The Journal of Socio-Economics*, 21(4), 303–324. [https://doi.org/10.1016/1053-5357\(92\)90002-O](https://doi.org/10.1016/1053-5357(92)90002-O)
- Shucksmith, M., Cameron, S., Merridew, T., & Pichler, F. (2009). Urban-rural differences in quality of life across the European union. *Regional Studies*, 43(10), 1275–1289. <https://doi.org/10.1080/00343400802378750>
- Silva, A., Von Hausen, N., & Higgins, L. M. (2019). The interaction effect of socioeconomic status and emotions on willingness to pay. *The International Review of Retail, Distribution and Consumer Research*, 29(1), 118–124. <https://doi.org/10.1080/09593969.2018.1556180>
- Sujarwoto, S. (2021). Does happiness pay? A longitudinal family life survey. *Applied Research in Quality of Life*, 16, 679–701. <https://doi.org/10.1007/s11482-019-09798-x>
- Veenhoven, R. (2012). Happiness: Also known as 'life satisfaction' and 'subjective well-being'. In K. Land, A. Michalos & M. Sirgy (Eds.), *Handbook of Social Indicators and Quality of Life Research* (pp. 63–77). Springer. https://doi.org/10.1007/978-94-007-2421-1_3
- Walsh, L. C., Boehm, J. K., & Lyubomirsky, S. (2018). Does happiness promote career success? Revisiting the evidence. *Journal of Career Assessment*, 26(2), 199–219. <https://doi.org/10.1177/1069072717751441>



- Ward, S. J., & King, L. A. (2016). Poor but happy? Income, happiness, and experienced and expected meaning in life. *Social Psychological and Personality Science*, 7(5), 463–470. <https://doi.org/10.1177/1948550615627865>
- Wilk, R. (2010). Power at the table: Food fights and happy meals. *Cultural Studies & Critical Methodologies*, 10(6), 428–436. <https://doi.org/10.1177/1532708610372764>
- Winkelmann, R. (2012). Conspicuous consumption and satisfaction. *Journal of Economic Psychology*, 33, 183–191. <https://doi.org/10.1016/j.joep.2011.08.013>
- Wirth, L. (1956). *Community life and social policy: Selected papers*. The University of Chicago Press.
- Yuan, H., & Gompelwar, M. (2013). Testing subjective well-being from the perspective of social quality: Quantile regression evidence from Shanghai, China. *Social Indicators Research*, 113, 257–276. <https://doi.org/10.1007/s11205-012-0091-z>
- Zhang, H., & Yang, K. (2019). The influence of emotion on inter-temporal choice: Based on evaluation tendency framework theory. *Canadian Social Science*, 15(3), 53–61. <https://doi.org/10.3968/10952>
- Zhu, Z., Ma, W., Leng, C., & Nie, P. (2021). The relationship between happiness and consumption expenditure: Evidence from rural China. *Applied Research in Quality of Life*, 16, 1587–1611. <https://doi.org/10.1007/s11482-020-09836-z>

SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

How to cite this article: Bernini, C., Emili, S., & Galli, F. (2021). Does urbanization matter in the expenditure-happiness nexus? *Papers in Regional Science*, 100(6), 1403–1428. <https://doi.org/10.1111/pirs.12642>



Resumen. El objeto de este estudio es mejorar la literatura del bienestar regional sobre el así llamado “problema de inversión” del nexo gasto-felicidad, teniendo en cuenta dos fuentes principales de heterogeneidad: el grado de urbanización y los hábitos de gasto individuales. Además, se investigó el papel de la felicidad en la totalidad de la distribución del gasto utilizando un enfoque de modelización de cuantiles. Los resultados muestran que la satisfacción tiene un efecto positivo significativo y no lineal sobre el gasto total en las diferentes categorías de urbanización. Para investigar mejor la naturaleza multidimensional de la felicidad, el análisis del nexo se expuso a diferentes ámbitos de satisfacción y de agregados de gasto relacionados, lo que ofrece un perfil integral y complejo del comportamiento individual.

抄録: 本研究は、不均一性の2つの主な要因、すなわち都市化の程度と個人の消費性向の原因となる、消費と幸福度の関連のいわゆる「逆転問題」に関する地域の福祉(well-being)の研究の改善を目的とする。さらに、定量的モデリングの手法を用いて総支出の構成比における幸福の役割を調べる。結果から、満足度は、種々の都市化のカテゴリー間の総支出に対し、プラスかつ有意な非線形の影響を与えていることが示される。幸福の様々な性質をさらに検討すると、関連の分析は、個人の包括的で複雑な行動プロファイルを示す満足度の異なる領域と関連する支出総額として解釈される。