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QUALITY OF LIFE IN THE ECONOMIC AND URBAN ECONOMIC LITERATURE

Bianca Biagi

Dionysia Lambiri

Vicente Royuela

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CRENoS – CAGLIARI
VIA SAN GIORGIO 12, I-09100 CAGLIARI, ITALIA
TEL. +39-070-6756406; FAX +39-070- 6756402

CRENoS - SASSARI
VIA TORRE TONDA 34, I-07100 SASSARI, ITALIA
TEL. +39-079-2017301; FAX +39-079-2017312

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Via Is Mirrionis, 1
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Quality of Life in the Economic and Urban Economic Literature

Bianca Biagi*

Dipartimento di Economia, Impresa e Regolamentazione and CRENoS
Università di Sassari, Via Torre Tonda 34, 07100 Sassari (Italy)
Tel: +39 079 2017326, Fax: +39 079 2017312
Email: bbiagi@uniss.it

Dionysia Lambiri*

School of Business, Department of Economics, University of Reading
Whiteknights PO Box 219, RG6 6AW Reading (UK)
Tel: +44 118378 8230, Fax: +44 118378 6535
Email: d.lambiri@reading.ac.uk

Vicente Royuela†

Grup d'Anàlisi Quantitativa Regional-AQR (Universitat de Barcelona)
Facultat CC. Econòmiques, Av. Diagonal, 690, 08034 Barcelona (Spain)
Tel : +34 934021412, Fax number: +34 934021821
Email: yroyuela@ub.edu

Abstract

Quality of life is increasingly becoming a concept researched empirically and theoretically in the field of economics. In urban economics in particular, this increasing interest stems mainly from the fact that quality of life affects urban competitiveness and urban growth: research shows that when households and businesses decide where to locate, quality of life considerations can play a very important role.

The purpose of the present paper is to examine the way economic literature and urban economic literature in particular, have adopted quality of life considerations in the economic thinking. Moreover, it presents the ways various studies have attempted to capture the multidimensional nature of the concept, and quantify it for the purposes of empirical research. Conclusions are drawn on the state of affairs regarding the study of quality of life in economics, as well as the problems of measurement arising mainly from the complex nature of the concept.

Keywords: Urban Economics, Quality of life.

JEL classification: R00, I31, R12.

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1. Introduction

The question of quality of life (QoL) has attracted a lot of attention in recent years and is increasingly becoming the object of theoretical and empirical research in various disciplines. The study of the concept is based on a fundamental assumption: the acceptance that the social and physical environment of an area can influence the well being of people residing in that area. Of course, the external environment doesn't influence everybody's life the same way; moreover, how happy we are in a specific location does not depend solely on how good our external world is, but also on how we view this world, which is a function of a set of psychological as well as physiological[‡] factors responsible of producing a sense of satisfaction (or non-satisfaction) from the environment that surrounds us. This internal mechanism is treated and analysed by psychologists. Economists on the other hand, mainly focus on the outcome of this physio-psychological mechanism, which is the observed individual[§] behaviour and try to understand to what extent this is influenced by environmental attributes.

In the field of economics and urban economics in particular, two are the main reasons for the increasing interest in QoL studies^{**}. The first reason is linked with the policy implications of QoL considerations. Politicians, policy makers and planners are constantly faced with decisions on environmental, social and economic issues, directly linked with QoL, at a national, regional, urban and neighbourhood levels^{††}. The possibility to measure QoL and make comparisons among local, national and international places, indeed has become increasingly important

[‡]For research on physiological mechanisms and QoL an interesting review can be found in: <http://www.uic.edu/orgs/qli/publications/publicationshome.htm>

[§] It should be noted here that by individuals we mean households and businesses. Moreover, here we should also note that recent research in the field of *Economics of Happiness* has adopted insights from psychology and has attempted to examine internal mechanisms and not only revealed preferences.

^{**} The Social Science Citation Index Database indicates that from 1981 to 1990, only two articles in scientific journals had both "Quality of Life" and "Economics" descriptors. From 1991 to 1995 we found 27 articles. Between 1996 and 2000 the number increased to 92 articles, whereas in 2000-2005 we found 103 articles. Similarly, we found that in the EconLit database (which includes mainly economic literature), the relative importance of articles on quality of Life has increased by a factor of 7 in the period 1981-2005

^{††} See Dissart and Deller, 2000 for a review of QoL in the planning literature.

exactly because of its potential use as a political tool. At the European Union (EU) level for instance, the comparison of both economic and social performances of Member States is considered fundamental in order to identify lagging regions and consequently achieve socioeconomic convergence and target inequality (Committee of the Regions, 1999, Giannias et al 1999, Moreno et al, 2005)[‡]. The “improvement of QoL” is included among the principal objectives of the EU^{§§} in the general framework of *sustainable development*. It is not coincidental that during the Barcelona Conference of EU Member Status was pointed out the need to “establish a system of local and regional indicators of the quality of life to inform policy makers” (Committee of the Regions, 1999, 13). The urban dimension of relevant European policy was developed in the framework of Urban I (1994-1999) and Urban II (2000-2006) programmes. These programmes are linked to the European Structural Funds, and aim at solving not only economic problems, but also social and environmental ones. Within Urban I and II, the Urban Audit programme searches the collection of comparable QoL data in order to examine convergence within Europe in terms of urban development. For these purposes, almost 300 indicators are used, covering various social and economic dimensions^{***}.

The second reason for the increasing attention to the study of QoL is that it is a factor that determines to a great extent location decisions of households and businesses. Rogerson (1999) discusses the clear link there is between QoL considerations and location choices of firms and individuals, justifying why QoL is used as a tool for place promotion and

[‡] With respect to the 1980s, EU funds targeting socio-economic convergence of member-states, have constantly increased. In the period 1989-1993, the Structural Funds for socio-economic development were 60 billion ECU; in the period 1994-1999 it became 141.4 billion ECU, and for 2000-2006 the amount increased to 195 billion EUR (Giannias et al 1999, Committee of the Regions, 1999).

^{§§} The other objectives are “harmonious and balanced economic development, stable, non inflationary sustainable growth, convergence of economic performance, high levels of employment and social security, economic and social coherence and solidarity among the Member States” (Committee of the Regions 1999, 13).

^{***} The main areas are the following: Demography; Social Aspects; Economic Aspects; Civic Involvement; Training and Education; Environment; Travel and Transport; Information Society; Culture and Recreation (<http://www.urbanaudit.org>).

city marketing policies aiming ‘to put an area on the map’. In these terms, he sees QoL as part of the profile of a “competitive city”, one that is successful in attracting the attention of capital, and he identifies QoL factors as influential in patterns of urban growth and development. In the same lines, Hall (1995) argues that: *“Since the sources of the new economic growth are so various and finally perhaps so fickle, the possibilities are endless. But one central element is quality of life. It is no accident that, as never before, rankings of cities dominate the media”*. Hence, the improvement of QoL becomes not only a question of social equity, but also, and perhaps predominantly, one element of strategies aiming to attract people and investments in certain locations.

The purpose of the present study is to present and examine the way the economic literature and the urban economic literature in particular have “embraced” and adopted QoL considerations in the economic thinking. The study makes extensive reference to the various ways in which QoL has been “quantified” and measured in the urban economic literature. Conclusions are drawn on the state of affairs regarding the study of QoL, as well as the problems of measurement arising mainly from the multidimensional nature of the concept.

2. Quality of Life in the Economic Literature

In the field of economics, QoL has been viewed as an economic good due to its imbedded characteristics. The urban economist Wingo (1973) gives three main reasons for that.

1. QoL is scarce and people are prepared to trade it off with other things that make them equally happy, in order to have it.
2. Households and businesses make decisions on where to locate based on QoL considerations.
3. QoL is a public good; community resources need to be allocated to it.

Along the lines of Wingo, Gillingham and Reece (1979) note that QoL at an individual level is the result of the satisfaction the individual achieves as a result of the consumption of market goods, leisure, public goods and other characteristics (physical and social) of the environment in which it is located.

In mainstream economics, QoL is associated with the concept of social well-being, and traditionally has been mainly linked with monetary

factors such as GDP, price levels and cost of life. However, economic thinking moved away from this simplistic vision of QoL towards more complex definitions. The work of economists such as Townsend (1979) and the so-called Scandinavian Welfare Approach (Erikson et al, 1987, Erikson, 1993) highlights the multidimensionality of QoL as an economic good^{†††}. A major contribution in this stream of research comes from the work of Nobel price winner Amartya Sen (1987, 1993, 1997). Sen recognises income and consumption as components of QoL, but places at the centre of the QoL concept the possibility (what he calls “capability”) of individuals to achieve: *“capabilities are (...) notions of freedom, in the positive sense: what real opportunities you have regarding the life you lead”* (Sen, 1987, p.36). Based on Sen’s vision, other economists such as Slottje (1991) and Chiappero Martinetti (2000) highlight issues arising from this multidimensional approach-both in terms of its methodological and theoretical requirements, as well as the complexity of the required information. Moreover, they attempt to operationalise the concept and to measure QoL with the use of indicators and the construction of indices^{‡‡‡}.

In the analysis of QoL, significant has also been the contribution of economists in the field of environmental and ecological economics. In this line of research, pioneering has been the work of Dasgupta (2000) and Krutilla and Reuveny (2002). The focus of their work is the link between population growth, economic activity and the state of the natural environment. In the context of sustainable economic development, they introduce natural capital in the measurement of well-being.

Finally, directly linked to QoL is the growing interest in the economic literature in the study of individual happiness. As we discussed earlier, standard economic theory uses an “objectivist” view of individual happiness, based on individuals’ observed choices. Using a subjective

^{†††} As Basu and Lopez Calva (2002) point out, the Swedish researchers include in the standard of living nine groups of indicators such as: health and access to health care, employment and working conditions, economic resources, education and skills, family and social integration, housing, security of life and property, recreation and culture, political resources.

^{‡‡‡} For instance, Slottje (1991) includes as well-being indicators political and civil rights, freedom of the press, percentage of children in the labour force. Chiappero Martinetti (2000) includes indicators on health, longevity, knowledge and education, social relations and subjective feelings in the evaluation of well-being.

approach to utility borrowed from psychology, the literature on the *Economics of Happiness* (for a survey see Kahneman et al, 1999; Frey and Stutzer, 2002) looks at the link between reported^{§§§} individual happiness and factors such as income, unemployment and levels of consumption; in this context, it highlights that in the analysis of individual utility (happiness), it is crucial to look at these factors in relative and not in absolute terms: individual happiness will depend mostly on how each individual perceives its level of income, unemployment and consumption in relation to those of other individuals, as well as in relation to its own condition in the past^{****}. In the same direction some studies have also analysed the correlation between income distribution and individual happiness (Morawetz et al 1977; Alesina et al, 2001).

The brief presentation above has introduced the relevance of the study of QoL to economic research. In the part that follows we focus on the study of QoL in the context of urban areas; the urban economic literature deals extensively with QoL both directly and indirectly, especially since QoL is increasingly considered a crucial element of urban competitiveness and growth; we examine the ways urban economic research has attempted to quantify and measure QoL; in the process, we also discuss methodological issues arising from the multidimensional nature of the QoL concept.

3. Quality of life and urban economics

In urban economics, there is a long list of studies that deal with QoL. Some of them put QoL at the centre of their analysis and attempt to find ways to quantify and measure it, while others deal with QoL indirectly and examine its role as a factor determining urban processes such as growth, decline and competitiveness. In this part of our study we attempt the admittedly difficult task to classify the reviewed literature on urban areas that deal directly and indirectly with QoL.

^{§§§} “Reported” because empirical studies in the field of economics of happiness use interviews asking people questions on how they perceive their level of well-being at a particular moment in time.

^{****} A similar discussion on the need and implications of the use of relative measures of well being in utility analysis, is also found in Frank (1989).

3.a Urban growth and urban competitiveness

In the group of studies that approach QoL in an *indirect* way, we find studies that focus on urban growth through the examination of location decisions of households and firms, both at an inter-city and at an intra-city level. The main purpose of these studies is to find out what determines the capacity of cities to attract people and economic activity. The significant urban sprawl experienced by most big US and European cities at the end of the 20th century and the observed decentralisation of jobs and population, triggered academic debates on the causes behind urban decline and most importantly the future of metropolitan areas. At the same time, due to the increased international mobility as a result of the globalisation process, cities in developed countries started competing in order to attract people and investment. In this context, this strand of urban economic literature highlights the importance of location-specific attributes in generating urban growth. By location specific attributes are meant the local environment (climate and physical), public goods and services, local government policies (taxation and fiscal incentives) and social interactions. Therefore, the type, quality, and level of these location-specific attributes determines the attractiveness of a city as a place to live and work. These attributes are increasingly recognised as being as important as the pure economic factors (GDP per capita, cost of living, employment, etc) in determining urban attractiveness and growth^{††††}.

Depending on the purpose of each study and whether the analysis focuses on sustainable urban growth (the advantages of agglomeration versus dispersion/sprawl) or inter-urban competition (the advantage of a city or metropolitan area versus another one), the relevance of each location-specific attribute varies. In his discussion on the advantages of cities as urban agglomerations, Glaeser (1999) highlights the role of what he calls “non-market forces” in achieving urban growth^{###}. In a subsequent study, Glaeser et al (2001) discuss the advantages that cities as spatial agglomerations have to offer, and they link them with the importance of the role of urban amenities as a crucial factor that can determine urban viability and growth. The underlying idea is that big

†††† Firms’ location decisions are based only on cost minimisation, while workers location decisions are only driven by wage and rent considerations.

By non-market forces Glaeser means idea flows between firms, human capital transfers between workers, peer effects, social capital, the formation of values, and the role of architecture (Glaeser, 1999, p.1).

agglomerations that offer these types of advantages are viable, whereas, those that do not could potentially face serious decline. These advantages constitute what the authors call the “urban amenity”, which can be viewed as a desirable package of goods demanded by the “consumers” of urban space.

In the context of inter-urban competition, recent research attempts to explain the internal mechanism through which QoL plays a role in economic growth and consequently urban growth. In this framework, Florida (2002) discusses the importance of high quality goods and services -referring to them as “quality of place”- in attracting highly-skilled labour in US cities^{§§§§}. Following the growth models of Lucas and Romer, Florida’s underlying assumption is the importance of knowledge and human capital in generating economic growth. In this context, he underlines the importance of “*a bundle of amenities, lifestyle options, type of people (...)*” (Florida, 2002, p.6) as driving forces of the location decisions of the highly skilled labour force. Similarly, Shapiro (2006) uses a neo-classical model of city growth, to find out that 40% of employment growth for college graduates in US metropolitan areas is explained by the improvement of QoL (as opposed to 60% as a result of productivity growth). Besides, Moretti (2003) points out the importance of social return^{*****} of high agglomeration of human capital: the argument is that increasing human capital in cities should have an exponential effect on overall productivity due to the interactions among workers (the so-called *productivity spillovers*); moreover, it should also reduce criminal actions, having an indirect effect on QoL.

Always in the context of inter-urban competition, Graves (1976) is the first to explore another link, the one between environmental characteristics (more specifically weather) and urban population growth in US cities. In the European context, however, Cheshire and Magrini (2006) found for EU12 that urban population growth is driven by economic conditions rather than climatic differences. Nevertheless, their findings suggest that environmental attributes can explain mobility within countries (and consequently population growth of regions or cities).

^{§§§§} The author refers specifically to the high-tech sector of the economy.

^{*****} With the term *social return of education* Moretti indicates “*the sum of all the benefits that accrue to society resulting from an increase in the overall level of education*” (Moretti, 2003).

Depending on whether research focuses on competition between cities or within cities, the relevance attributed to every QoL factor can change. The latter- intra-urban vision, examines the link between phenomena such as urban sprawl and gentrification and QoL considerations. In this context, QoL is examined in conjunction with a debate about the reasons of this expansion, about the decline of the traditional high density city, and also about the future of cities (see Glaeser, 1998, Glaeser and Kahn, 2003 for USA, and Cheshire and Hay, 1989 for Europe).

As already mentioned, the main purpose of the studies presented so far is to either discuss the future of cities as agglomerations in space (Glaeser, 1999 and Glaeser et al, 2001) or to examine the determinants of urban growth (Graves, 1976, Cheshire and Magrini, 2006)⁺⁺⁺⁺. Hence in these studies, QoL is examined indirectly, as an important factor-together with the pure economic ones- to be included in the relevant urban economic models.

3.b Migration models, hedonic models and QoL

As mentioned in the introduction, QoL considerations enter in the decision making process of households when these choose where to live and where to buy or rent a house. In the urban economic literature we find a strand of research that studies the role of QoL as a direct input to this decision making process. The theoretical reasoning behind these studies is found in the *revealed preferences approach* that investigates the possibility to discover consumer preferences through their purchases^{####}. In the context of QoL research, this approach is used in order to explain how residents reveal their preference or dislike for a particular location that offers a given level of QoL.—The approach follows the same rationale as Tiebout’s theory (1956) where it is argued that individuals select where they will live by comparing the taxes they must pay in a particular location, with the level of public services they receive in return. When they are dissatisfied with the level of public services they receive, they “vote with their feet”, i.e. they prefer to migrate rather than wait for the situation to change or accept a sub-optimal solution. Following this

⁺⁺⁺⁺ The authors see Florida’s work as contributing in the discussion of both future of cities as spatial agglomerations and the determinants of urban growth.

^{####} The assumption of this approach is that, given a certain level of income and prices, when the consumer chooses one combination of goods instead of possible others, she reveals her preferences.

strand, Wall (2001) and Douglas (1997) develop the theoretical model in which every individual faces moving to another location if the evaluation of the utility that the alternative location offers, is higher than the evaluation of the utility of the current location. This implies that when individuals perceive they could improve their QoL (utility), migration will occur.

The above discussion introduces the important link between QoL and a key concept in urban economic research, that of spatial equilibrium. If households migrate in order to improve their QoL, then high house prices in the destination location should reflect high demand, assuming a rigid housing supply. With rational behaviour and efficient housing markets, we would expect high house prices to negatively affect immigration. This is not what we observe in reality. Evans (1990) exposes three ideas that allow to partly reconcile the existence of persistent migrations with the idea of equilibrium: families migrate being consistent with their life cycle; differences in growth rates of different territories can result in permanent migrations; and finally, the wealth growth in the economies can result in a higher demand of normal or superior goods, for instance bigger houses or new developments in low density areas. In any of these three situations we can certainly observe a permanent migratory movement besides a spatial dynamic equilibrium. Nevertheless, this type of equilibria will be much more consistent in local environments than in regional ones, where the migratory mechanisms or the spatial equilibrium will have a much more complex nature and surely not so tied with QoL. We understand that the latter affirmation is more valid in the European context than in the North American one, where the assumption of interregional equilibrium that is reached through the migration process is quite usual in the previously mentioned literature.

Once spatial equilibrium is assumed, a positive shock on any aspect of QoL will result on higher house prices. However, since these attributes do not have a market price, a value needs to be attached to them. For this strand of literature, this value is embodied in house prices and wages. In other words, the value of QoL is “capitalised” in the locally traded good (housing) and wages. Through what is called a *hedonic price method*^{§§§§§}, the implicit prices of local attributes can be calculated and then used either separately or inside a QoL index, in order to rank cities.

^{§§§§§} Hedonic price has been defined by Rosen (1974) “...as implicit prices of attributes and are revealed to economic agents from observed prices of differentiated products and the specific amounts of characteristics associated

The first economist to introduce this type of methodology to measure QoL in cities is Rosen (1979). In the mid 1970s, governments and scientists started to be concerned with the QoL in cities and the relative well-being indicators to measure it. The aim of Rosen was to compare the QoL in some US cities, starting with data on wages. Rosen calculated the contribution on the level of wages of different factors such as cost of living, human capital (vector of personal productivity variables such as education and work experience) and other positive or negative city attributes relevant in influencing workers' city choice. Following Rosen, many economists have used this methodology to rank cities, with variations in the functional form of the models they used and the indicators they included in measuring QoL (Roback, 1982, Blomquist et al, 1988, Gyourko and Tracy, 1991, Stover and Leven, 1992, Giannias, 1998).

3.c QoL indicators in the academic literature

A crucial point to be made after the above review of relevant urban economic literature, is that despite the fact that there is an implicit consensus on the multidimensional nature of QoL (demonstrated by the use of a bundle of variables/indicators), there is a lack of a clear definition of the term. What is implied by QoL varies according to the way the term is “operationalised” in each study. In other words, the indicators used depend on factors such as data availability, the aims of each study, the methodology used and the spatial disaggregation level examined. This variation in the way QoL has been operationalised is clearly illustrated in the Table below, which presents the QoL indicators used in various studies.

with them (...). Econometrically, implicit prices are estimated by the first step regression analysis (product price regressed on characteristics) in the construction of hedonic price indexes” (Rosen, 1974, p. 34). We ask the reader to consult this work, since a detailed analysis of hedonic estimation goes beyond the scope of this paper.

Table: Use of Quality of Life Indicators in the Urban Economic Literature (1/3)

<i>Quality of Life Studies</i>	<i>Case-Studies used</i>	<i>Main aims</i>	<i>Quality of Life Indicators</i>	<i>Results</i>
Graves (1976)	48 US SMSAs (Standard Metropolitan Statistical Areas)	To analyse the relationship between migration and other attributes into SMSA	<ul style="list-style-type: none"> · Health services: No of physicians (GPs) per 100,000 population · Crime: No of major crimes per 100,000 population · Social variable: % of non-white population · Weather: Average temperature · Pollution: Average no of suspended particulates per m³ of air 	Environmental variables (So QoL) are important in explaining the differences between cities but just the exogenous ones (he calls global, for example climate) not the local ones (such as pollution and crime). For him local variable affect the intra-SMSA migration and not the inter-SMSA migration
Rosen (1979)	19 major US SMSAs	To find out the role of QoL factors in determining location decisions, to give them a market price and to rank cities according to their attractiveness in terms of QoL.	<ul style="list-style-type: none"> · Pollution: suspended particulates, sulphur dioxide, inversion days, water pollution. · Climate: No of rainy days, No of sunny days, No of 90°F days · Crime: total crime rate · Demographics: population density, population size, central city population · Market conditions: Unemployment rate, population growth 	City characteristics factors play an important role in explaining wage and rent differences among urban areas
Roback (1982)	98 largest US cities	To find out the role of QoL factors in determining location decisions, to give them a market price and to rank cities according to their attractiveness in terms of QoL. Also to examine whether local attributes can explain regional wage differences	<ul style="list-style-type: none"> · Crime: Crime % per 10,000 population · Environment: total suspended particulates · Local unemployment rate (proxy for local demand for labour) · <i>Demographic variables</i>: population size, population growth rate, population density · <i>Weather</i>: heating degree days, total snowfall, no of cloudy days, no of clear days. · <i>Location dummies</i>: northeast, south, west 	Differences in local amenities (QoL as defined in the study) can explain to a great extent regional wage differentials.
Blomquist et al (1988)	253 urban counties within 185 US SMSAs. Many counties are located in the same SMSA	To find out the role of QoL factors in determining location decisions, to give them a market price and to rank cities according to their attractiveness in terms of QoL	<ul style="list-style-type: none"> · <i>Weather</i>: precipitation (inches p.a.), % humidity, heating degree days, cooling degree days, wind speed (miles p.h.) sunshine days · <i>Location</i>: distance from the coast/lake · <i>Violent Crime</i>: % of victims per 100,000 people p.a. · <i>Education</i>: teacher/pupil · <i>Environment</i>: total suspended particulates (mg per m³), visibility (miles), no of treatment storage and disposal facilities of hazardous wastes, licensed waste for landfills 	A QoL index that includes all QoL variables appears to be more significant than indexes grouping the same type of variables (f.e. grouped climate variables, grouped environmental variables etc). QoL together with other factors such as job availability is important in explaining location decisions. Recognition that different set of factors might yield different rankings
Cheshire and Hay (1989)	EEC12 European Functional Urban Regions (FURs), in three spatial levels of analysis: core, hinterland and FUR.	Examine urban change (growth and decline) in European urban regions, identify causes of urban problems observed and propose policy responses at a European level.	<ul style="list-style-type: none"> · % Car ownership · <i>Crime rate</i>: murder/manslaughter, violence, burglary, criminal damage · <i>(due to lack of commonly available data, the following indicators could not be used</i>: energy consumption, area of green space, atmospheric and water pollution, provision of cultural facilities) 	Improvement of obsolete and decaying infrastructure is necessary for urban growth, especially in southern European cities. Brownfield residential development and reduction of social polarisation should be targeted by urban policies. Investment in telecom services and improvement of transportation are vital features of growth for Western European cities.

Table: Use of Quality of Life Indicators in the Urban Economic Literature (2/3)

<i>Quality of Life Studies</i>	<i>Case-Studies used</i>	<i>Main aims</i>	<i>Quality of Life Indicators</i>	<i>Results</i>
Gyourko and Tracy (1991)	130 US cities	To test the importance of local fiscal environment as determinant of QoL.	<ul style="list-style-type: none"> · <i>Fiscal variables:</i> Income tax (sum of state and local tax), State corporate tax rates, effective local property tax rate, government services (police: per capita incidents of violent crime, fire: insurance company local premium, health: number of hospital beds per 1,000 people, education: student/teacher ratio). · <i>Amenities:</i> Climate/weather (average annual precipitation; relative humidity; average wind speed; sunshine days, heating and cooling degree days), Pollution (mean total suspended particulates), closeness to an amenity (Great Lake or Gulf of Mexico-dichotomous variable), Access to alternative labour market (% of workers in a city that work in another SMSA), Non-land cost of living (family metropolitan budget data-without housing costs), urban size (population in million) · <i>Community life and political participation:</i> Institutional strength of the public sector (% of local public workers in central city organised in unions) 	They demonstrate the importance of fiscal variables in explaining the differences among QoL in cities. They suggest that cities may have more control over the local QoL than previously thought
Stover and Leven (1992)	253 urban counties within 185 US metropolitan areas. Many counties are located in the same SMSA (like Blomquist et al 1988)	To find out the role of QoL factors in determining location decisions, to give them a market price and to rank cities according to their attractiveness in terms of QoL. To test the reliability of Blomquist et al (1988) type model.	<ul style="list-style-type: none"> · Same as Blomquist et al (1988) 	QoL rankings vary depending on the model specifications. Different sets of QoL indicators lead to different rankings. The level of territorial disaggregation used, is very important in QoL studies.
Suffian (1993)	98 biggest metropolitan areas in the world (45 countries)	Ranking of world cities based their standard of living and identification of those QoL aspects that should be targeted in order to improve living standards	<ul style="list-style-type: none"> · Public safety: murders per 100,000 people · Food cost: % of income spent on food · Living space: persons per room · Housing standard: % of housing with water/electricity · Communication: No of telephones per 100 people · Education: % of children in secondary school · Public health: infant deaths per 1000 live births · Peace and quiet: noise levels · Traffic flow: miles ph in rush hour 	Construction of an index of urban liveability based on the equally weighted nine QoL indicators. Outcome: Three groups of cities were found: high medium and low standard of living. Most important differentiation QoL indicator: income spent on food (the next one being telecommunications).
Giannias (1998)	13 Canadian cities	To find out the role of QoL factors in determining location decisions, to give them a market price and to rank cities according to their attractiveness in terms of QoL. Apart from site and urban attributes, housing characteristics are included in the set of variables.	<ul style="list-style-type: none"> · <i>Housing characteristics:</i> No of rooms, no of bathrooms, age of housing · <i>City characteristics:</i> Climate/weather (mean of the annual temperature in °C, No of cloudy days), air pollution (micrograms of particulate per cubic metre), population density (population per km²), Professional sports (no of professional sports teams in each Census Metropolitan Area) 	Ranking of Canadian cities based on his alternative definition of QoL produces significant results

Table: Use of Quality of Life Indicators in the Urban Economic Literature (3/3)

<i>Quality of Life Studies</i>	<i>Case-Studies used</i>	<i>Main aims</i>	<i>Quality of Life Indicators</i>	<i>Results</i>
Florida (2002)	50 largest Metropolitan Regions (>700,000 people)	To find out the determinants of location decisions of high human capital individuals and their effect on the geography of high tech firms	<ul style="list-style-type: none"> · Quality of place measures: cultural measures (radio broadcast time devoted to classical music, public television stations, public library book acquisitions, non profit art museums and galleries, performance of fine arts and musical groups, access to the culture of adjacent urban areas), recreation measures (restaurants, public golf courses, bowling lanes, zoos and aquariums, family theme parks, automobile race tracks, betting attractions, college and professional sports teams, miles of coast line, inland water area, national parks), climate measures (very hot and cold days, seasonal temperature variation, heating and cooling days, freezing days, 0°F days, 90° days). · Amenities: “coolness factor”(% of population aged 22-29, number of bars and nightclubs per capita, number of art galleries and museums per capita), median house value. · Diversity measure: index of gay population 	Place-based characteristics are crucial in attracting high human capital (“talented people”); therefore local authorities should place more emphasis in the generation and attraction of talent though the improvement of quality of place and reduction of barriers to entry for talent.
Glaeser et al (2001)	For the US: 19 SMSAs For Europe: London and Paris	To demonstrate the importance of the role of consumption in cities for the urban viability.	<ul style="list-style-type: none"> · Weather: temperature, dry climate · Proximity to ocean coast · Urban leisure: Restaurants per capita, art museums per capita, movie theatres per capita, bowling alleys per capita, live performance venues per capita, · Tourism: hotel rooms per capita, tourist nights per capita 	“If cities are to remain strong, they must attract workers on the basis of QoL as well as on the basis of higher wages” (p. 22).
Cheshire and Magrini (2006)	EU 12 FURs (in total 121)	To test the importance of QoL factors in explaining the differences in population growth across 121 large EU12 FURs	<i>Climate/Weather</i> ²¹ : wet day frequency (ratio of wet day between FUR and national average); frost frequency ratio (ratio of ground frost frequency between FUR and national average; maximum temperature ratio (maximum temperature percentage differences between FUR and national average); cloud cover ratio (ratio of cloud cover days between FUR and national averages); minimum temperatures ratio (ratio of minimum temperature between FUR and national averages); mean temperature ratio (ratio of mean temperature between FUR and national average); max temperature ratio (ratio of the maximum temperature between FUR and the national average)	Weather is more significant in explaining population growth differences within a single EU12 country (intra-country differences) rather than among countries (inter-country differences). Labour is less mobile among EU12 with respect to U.S. In the EU12 growth is related to pure economic conditions rather than QoL per se (in this case, weather).
Shapiro (2006)	222 US Metropolitan areas	To find out how much of the positive relationship between employment growth in cities and human capital can be explained by the growth in productivity and growth in QoL	<p>Direct indicators of QoL:</p> <ul style="list-style-type: none"> • Restaurants per capita • Serious crime per capita • High school drop out rate • No of days with Air Quality Index > 100 	Productivity is not the only explanation for urban growth; consumption and local environment (externalities) – QoL- play a role as well.

²¹ Following the robustness of results of the previous literature, weather is assumed to be a major determinant (exogenous) of urban growth.

What is observed is that in the vast majority of the studies reviewed, QoL variables-mainly associated with location (city) specific characteristics- are added to the economic variables as factors affecting location decisions and urban growth. In the absence of a general classification of indicators we propose a grouping of the identified indicators into six main categories: natural environment (climate, state of natural environment, etc.), built environment (type and state of building, etc.), socio-political environment (community life, political participation, etc.), local economic environment (local income, unemployment, etc.), cultural and leisure environment (museums, restaurants, etc.), public policy environment (safety, health care, education provision, etc.).

3.d City rankings

Apart from the academic literature on urban areas that deals with QoL, studies have also been carried out by various national and international organisations that publish city rankings based on weighted (differently each time) QoL indicators. One of the first examples of city ranking is the *Places Rated Almanac* first edited in 1981 (Boyer and Savageau, 1981), used to classify North American cities²². This Report ranks cities according to a group of indicators previously selected and weighted. This type of ranking cities has its roots in the work of Liu (1976) who used a simple statistical method in order to compare the performance (so that cities could be designated as substandard, adequate, good, excellent, or outstanding) of 240 metropolitan areas in the U.S. and ultimately rank them on the basis of 50 “environmental well-being” indicators, using five categories – economic health, political performance, environmental conditions, health and education, and social concerns.²³ Many other studies use rankings of cities for different purposes. For instance, the *European Cities Monitor Report* is a yearly report published by Cushman and Wakefield Healey and Baker with the aim to rank leading European cities according to their attractiveness for business. Among factors such as availability and costs of labour, transport and telecommunications, the offered QoL for employees appears to be entering in the decisions of all types of businesses when deciding where to locate in Europe. As an example, in 2004 *European Cities Monitor Report*, Barcelona appeared at the top of the list of cities ranked based on offered QoL, with

²²The *Places Rated Almanac* is still published today.

²³ In Liu’s study, the choice of indicators is subjective, and the final ranking of cities is unidimensional.

Stockholm, Paris and Munich to follow. At a national level, different works have ranked the cities within individual countries. Indicatively, in the UK the Department for Environment, Food and Rural Affairs in collaboration with National Statistics publishes a report that ranks UK regions based on 15 economic, social and environmental QoL indicators²⁴. In Italy, the newspaper *Sole24ore* produces annually the *Dossier Sull'Italia: Qualità della Vita* with rankings of the 103 Italian provinces based on six groups of indicators: standard of living, employment and business, services, crime, population and leisure. In Spain, the *Anuario Social de España* published by La Caixa includes rankings of provinces and cities, on eight social dimensions- population characteristics, territorial distribution of population, demography, migration, housing, employment, children and third age.

4. Conclusions

The present paper has examined the way the economic literature and the urban economic literature in particular have included QoL in the economic thinking and economic policy debate. This strand of research has been increasingly influential in the field of economics, particularly in relation to the study of urban economic growth. QoL is seen as a key factor of inter-urban competition, since it attracts high human capital individuals. In the intra-urban scale, we saw that QoL is a key factor in the study of urban sprawl and gentrification: these phenomena are directly related to QoL that individuals can achieve in different parts of the city. The increasing importance of QoL as an explanatory variable of different phenomena examined by economics and urban economics has led to the need of precise and objective measurements of it. The present paper has discussed two of the alternative methods used to “quantify” the concept: The first one has a strong theoretical base and deduces the QoL levels from migration models or from hedonic regressions, computed from housing prices or wages equations. In these works, the dynamic spatial equilibrium assumption plays a key role; this fact limits the applicability of the technique only to territories in spatial equilibrium. Moreover, this measurement approach has other limitations linked to the identification and specification of the models used.

The second alternative measuring method is the construction of indices through of a system of indicators, with the aim to capture as precisely as

²⁴ For the 2004 report, see <http://www.defra.gov.uk/news/2004/040622b.htm>.

possible the multidimensionality of the concept. There is a list of problems related with this approach. The main one is the inherent subjectivity in the choice firstly of the indicators, and secondly of the final weights of every indicator used for the construction of the final composite QoL index²⁵. For this reason, this measuring approach has been strongly criticised: Landis and Sawicki (1988) suggest that the factors related to the locations are mainly secondary in the determination of the individual QoL, as research indicates that most individuals rank personal causes of satisfaction and dissatisfaction as much more important factors in QoL than geographically based ones. Madden (2003) argues that factors of poverty are not included in the majority of the rankings; Becker et al (1987) and Burnell and Galster (1992) expose that the indicator is methodologically biased in favour of big cities. Attempts have been made to overcome some of these limitations: for instance, when examining British cities, Rogerson et al. (1988, 1989) and Morris et al. (1989) have allowed for different weights of the QoL dimensions according to the preferences of age or racial groups.

A clear consequence of the difficulties in defining easy, objective and homogeneous indicators of QoL, is the lack of applied research on this topic. Despite the theoretical advantages of the models that theorise with the levels of housing prices or wages, the existence of spatial disequilibrium in a country or region can lead to prefer the indicators approach.

The main conclusion of our work is that QoL still needs to be addressed more deeply both theoretically and empirically in the economic and urban economic literature. Theoretically, by recognising the direct and indirect role of QoL in influencing economic and location decisions of firms and households, as well as the circular causation of this relationship: QoL is affected by these location decisions (for instance, immigration can cause increasing levels of congestion in the cities). And empirically, with the use of theoretically consistent statistical and econometric methods.

²⁵ Some of these critiques are based on the works of Todaro (1989) and Elkan (1995). Moreover, other works (Rogerson, 1995) have underlined the fact that in many occasions the inherent subjectivity of the construction of indices has been exposed as an excuse to stop or criticise any kind of research in the area of the quality of life. In his view, the assumption and clarification of the subjectivity has to allow to advance in the applied research of the topic, with all the conditions inherent to them, that do not have to be a sufficient condition to their rejection.

References

1. Alesina, A., Di Tella, R., and McCulloch, R. (2001) *Inequality and happiness: Are European and American Different?*, NBER Working Paper, No 8198, Cambridge.
2. Basu K. and López Calva, L.F. (2002) "Functionings and Capabilities" in K. Arrow, A. Sen and K. Suzumura (eds.) *Handbook of Social Choice and Welfare*, Elsevier, North Holland.
3. Blomquist, G.C., Berger, M.C. and Hoehn, J.P. (1988) "New estimates of quality of life in urban areas", *American Economic Review*, 78, pp.89-107.
4. Becker, R.A., Denby, L., McGill, R. and Wilks, A.R. (1987) "Analysis of data from the *Places Rated Almanac*", *The American Statistician*, 41, pp. 169-186.
5. Boyer, R. and Savageu, D. (1981) *Places Rated Almanac: Your Guide to finding the best places to live in America*, New York, Rand McNally.
6. Burnell, J.D. and Galster, G. (1992) "Quality of life measurements and urban size: an empirical note", *Urban Studies*, 29, pp. 727-735.
7. Cheshire, P. and Hay, D.G. (1989) *Urban problems in Western Europe, an economic analysis*. Unwin Hyman, London.
8. Cheshire, P. and Magrini, S. (2006) "Population growth in European cities: weather matters - but only nationally", *Regional Studies*, 40-1, pp. 23-37.
9. Chiappero Martinetti, E. (2000) "A Multi-dimensional Assessment of Well-Being Based on Sen's Functioning Theory", *Rivista Internazionale di Scienze Sociali*, 3, pp. 207-231.
10. Committee of the Regions – EU (1999) *Evaluation Quality of Life in European Regions*, Brussels, Commission of The European Communities.
11. Cushman and Wakefiled Healey and Baker *European Cities Monitor Report* <http://www.cushwake.com/cwglobal/jsp/regionallHome.jsp>
12. Dasgupta, P. (2000) *Population resources and Welfare: an exploration into reproductive and environmental externalities*, working paper.
13. Dissart, J-C. and Deller, S.C. (2000) "Quality of life in the planning literature", *Journal of Planning Literature*, 1, pp. 36-61.
14. Douglas, S. (1997) "Estimating relative standard of living in the United States using cross-migration data", *Journal of Regional Science*, 37, 411-436.
15. Elkan, W. (1995) *An Introduction to Development Economics*, Harvester Wheatsheaf, London.

16. Erikson, R. (1993) "Description of Inequality: The Swedish Approach to Welfare Research", in Nussbaum M. and A.K. Sen, Eds. *The Quality of Life*, Clarendon Press, Oxford.
17. Erikson, R., Hansen, E.J., Ringen, S. and Uusitalo, H. (1987) *The Scandinavian Model: Welfare States and Welfare Research*, M.E. Sharpe, New York.
18. Evans, A. (1990) "The assumption of equilibrium in the analysis of migration and interregional differences: a review of some recent research", *Journal of Regional Science*, 30(4), pp. 515-531.
19. Florida, R. (2002), "The economic geography of talent", *Annals of the Association of American Geographers*, 92 (4), pp.743-75.
20. Frank, R.H. (1989), "Frames of Reference and the Quality of Life", *The American Economic Review*, Vol. 79 (2), pp. 80-85.
21. Frey, S.B. and Stutzer, A. (2002), "What can economists learn from happiness research?", *Journal of Economic Literature*, 40, pp. 402-435.
22. Giannias, D. (1998) "A quality of life based ranking of Canadian cities", *Urban Studies*, 35(12), pp. 2241-2251.
23. Giannias, D., Liargovas, P. and Manolas, G. (1999) "Quality of life indices for analysing convergence in the European Union", *Regional Studies*, 33(1), 27-35.
24. Gillingham, R. and Reece, W.S. (1979) "A new approach to quality of life measurement", *Urban Studies*, 35(12), pp. 2241-2251.
25. Glaeser, E.L. (1998) "Are cities dying?", *The Journal of Economic Perspectives*, 12(2), pp. 139-160.
26. Glaeser, E.L. (1999) "The future of urban research. Non-Market interactions", discussion paper.
27. Glaeser, E.L. and Kahn, M.E. (2003) "Sprawl and urban growth", HIER discussion paper, N. 2004.
28. Glaeser, E.L., Kolko, J., and Saiz, A. (2001) "Consumer city", *Journal of Economic Geography*, 1(1), pp.27-51.
29. Graves, P. (1976) "A re-examination of migration, economic opportunity, and the quality of life", *Journal of Regional Science*, 12(1), pp. 107-112.
30. Gyourko, J. and Tracy, J. (1991) "The structure of local public finance and the quality of life", *Journal of Political Economy*, 99(4), pp. 774-806.
31. Hall, P. (1995) "Towards a general urban theory", in *Cities in Competition*, Brothie, Batty y Blakely (Eds), Longman, Melbourne.
32. Kahneman, D., Diener, E. and Schwarz, R. (1999) *Well being: The Foundations of Hedonic Psychology*, Russell Sage Foundation, New York.

33. Krutilla, K. and Reuveny, R. (2002) "The quality of life in the dynamics of economic development", *Environment and Development Economics*, 7, pp. 23-45.
34. La Caixa (Various years) Anuario Social de España, Fundación La Caixa, Barcelona.
35. Landis, J.D. and Sawicki, D.S. (1988) "A planner's guide to the *Places Rated Almanac*", *Journal of the American Planning Association*, 54, pp. 336-346.
36. Liu, B.C. (1976) *Quality of life indicators in U.S. Metropolitan areas: a Statistical Analysis*, N.Y. Praeger Publishers.
37. Madden, J.F. (2003) "The changing spatial concentration of income and poverty among suburbs of large metropolitan areas", *Urban Studies*, 40, pp. 481-503.
38. Morawetz, D. et al (1977), "Income Distribution and Self-Rated Happiness: Some Empirical Evidence", *The Economic Journal*, 87, pp. 511-522.
39. Moreno, R., Royuela, V. and Vayá, E. (2005) "Monitoring the Lisbon Strategy's Targets", *Investigaciones Regionales*, 7, pp. 155-192.
40. Moretti, E. (2003) "Human Capital Externalities in cities", in J. Vernon Henderson and J.F. Thisse (eds.) *Handbook of Urban and Regional Economics*, Elsevier, North Holland.
41. Morris, A., Findlay, A. Paddison, R. and Rogerson, R. (1989) "Urban quality of life and the north-south divide", *Town and country planning*, 58, pp. 207-211.
42. Roback, J. (1982) "Wages, rents, and quality of life", *Journal of Political Economy*, 90, pp. 1257-1278.
43. Rogerson, R.J. (1995) "Environmental and Health-related quality of life: conceptual and methodological similarities", *Soc. Sci. Med.*, 41(10), pp. 1373-1382.
44. Rogerson, R.J. (1999) "Quality of life and city competitiveness", *Urban Studies*, 36(5-6), pp. 969-985.
45. Rogerson, R., Findlay, A. and Morris, A. (1988) "The best cities to live in", *Town and country planning*, 57, pp. 270-273.
46. Rogerson, R.J. Findlay, A., Morris, A. and Coombes, M.G. (1989) "Indicators of quality of life: some methodological issues", *Environment and Planning A*, 21, 1655-1666.
47. Rosen, S. (1974) "Hedonic prices and implicit markets: product differentiation in pure competition", *Journal of Political Economy*, 82, 34-55.

48. Rosen, S. (1979) "Wage-based indexes of urban quality of life", 74-104, in P. Mieszkowski and M. Stratzheim (eds.) *Current issues in urban economics*, John Hopkins Press, Baltimore.
49. Sen, A. (1987) *The standard of living*, University Press, Cambridge.
50. Sen, A. (1993) *Capability and well being*, in M.C. Nussbaum and A. Sen (eds.), *The quality of life, Wider studies in development economics*, Clarendon Press, Oxford.
51. Sen, A. (1997), *On economic inequality*, Expanded edition with substantial annexe by James Foster and Amartya Sen, Clarendon Press, Oxford.
52. Shapiro, J.M (2006) "Smart Cities: Quality of Life, Productivity, and the Growth Effects of Human Capital." *Review of Economics and Statistics*, 88(2), Forthcoming.
53. Slottje, D. (1991) "Measuring the quality of life across countries", *The Review of Economics and Statistics*, 73, 4., pp. 684-693.
54. Sole24ore, *Dossier sull'Italia: Qualità di vita*, <http://www.ilsole24ore.com/>
55. Stover, M.E. and Leven, C.L. (1992) "Methodological issues in the determination of the quality of life in urban areas", *Urban Studies*, 29(5), 737-754.
56. Sufian, A.J.M. (1993), "A Multivariate Analysis of the Determinants of Urban Quality of Life in the World's Largest Metropolitan Areas", *Urban Studies*, 30 (8), pp. 1319-1329.
57. Tiebout, C.M. (1956) "A pure theory of local expenditures", *Journal of Political Economy*, 64, pp. 416-424.
58. Todaro, M.P. (1989) *Economic Development in the Third World*, Longman, New York.
59. Townsend, P. (1979) *Poverty on the United Kingdom*, Penguin, London.
60. Wall, H.J. (2001) "Voting with your feet in the United Kingdom: Using cross-migration rates to estimate relative living standards", *Journal of Regional Science*, 80, pp. 1-23.
61. Wingo, L. (1973) "The quality of life: toward a microeconomic definition", *Urban Studies*, 10, pp. 3-18.

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