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QUALITY OF LIFE INDICES AND THE EUROPEAN FUNDING PROGRAMMES

Abstract: *Quality of life indices get special attention because of their all inclusive nature which focuses on the location specific characteristics. An analysis of consumer's decision making indicates that the weights used for the regional amenities considered and included in the index should not vary across regions. Given this, a quality of life index is computed for various countries assuming that all amenities are equally weighted. All amenities considered are scaled from 0-100 so that the index is independent of units of measurement. Countries were ranked according to the adoped quality of life criterion. A comparison of quality of life values with the per capita European Commission funding programmes indicates that the allocation of funds supports the integration process of the Central and Eastern European Countries.*

Keywords: *Quality of life indices, isocost, isoutility, microeconomic classifications, regional and environmental policies*

JEL: D 00, Q 56, R 58

1 Introduction

Various studies have investigated the existence of consumer income differentials among regions or countries. An undeniable conclusion is that they exist and have persisted for long periods of time, e.g., Bellante [1], Johnson [13], and Eberts and Stone [4]. Researchers dealing with regional policy in the EU generally assume that income disparities are caused by geographical and economic variables. The concepts of core and periphery have been the most influential geographical explanation of EU regional disparities. The idea is that regions distant from the core of activity in a country fail to develop equally with the areas closer to the core.

The EU has a core containing a high concentration of economic development, modern infrastructure, and advanced social indicators as the „golden triangle". All the attributes of post-industrial life are concentrated in the core. The periphery contains the regions traditionally designed as underdeveloped, which have been outside the main strands of European development. Regions in the periphery remain locked in the rural life styles of another age. It is also recognized that some regions are chronically poor not because of their location, but because of economic factors. Such regions had depended on one major economic activity, such as steel making or textiles. When the economic viability of the activity declined, the region lacked the resources necessary to diversify and fell into chronic recession.

Within a framework in which regions and factors are identical and all economic agents are free to move, neo-classical analysis supports the view that the output (and income) of different regions should tend to converge over time towards a steady state [14]. This view, however, has been challenged by a number of new growth models [17]. These new growth models assume non-convexity in production or externality arising from the accumulation of human capital. In these models, regional outputs per head can actually diverge [18].

We also challenge the neo-classical view by offering an alternative explanation; in the presence of free mobility, consumer income differentials can persist because some factors are inherently immobile, e.g., the environmental and climatic characteristics that are unique to a region. It is possible that several regions share the same site-specific characteristics, but it is unlikely that their distribution will be exactly the same.

Economic agents would be willing to pay or accept different level of incomes depending on the value they place on these characteristics. For example, a transportation company may find that its location in a region with good airport(s), port(s), and intra- and intercity transport system saves time and reduces its production costs. This implies that this particular firm can offer relatively higher incomes to its employees and still remain competitive with other transportation companies located in lower-income regions since the characteristics of the transport system of the region is offering it a cost advantage. Since office space and other facilities in the area are limited, the companies attracted by the transport system of the region will increase the demand for both labour and office space. These increases in the prices of labour and office space will continue until in equilibrium they have completely offset the cost advantage of the transport system of the region. Incomes and rents will vary across regions according to the value companies place on the region-specific attributes in each region and their ability to substitute between factors of production [19].

Similarly, for reasons of their own, consumers put their own value on a region. Consumers consider the overall environmental quality of a region when they make a decision concerning the place they will live in; where the environmental quality

is defined to include all aspects of their environment (natural and non-natural). Consumers are assumed to consider the distribution of the characteristics of the natural environment and of all regional amenities, including cultural, public services, transport, and other opportunities. The region, for example, with the good transport system that offered a cost advantage to some firms may be attractive to consumers because of reduced travel time to work. Consequently, as more consumers move into the area, the supply of labour increases as well as the demand for housing. Thus rents increase and wages fall until individuals are in equilibrium no longer willing to accept moving to a region with a better transport system and a better overall environmental quality as compensation for lower wages and higher rents.

The final income differentials between a geographical area with a good transport system and one without depends upon the relative size of the demand and supply responses to site characteristics. If incomes are observed to be higher in the good transport system area than in the other, then the firm´s response dominates the rent determination process. If incomes are relatively lower in the good transport system area, then the consumer´s response dominates the process. In both cases rents will be higher because both households and firms value a good transport system. Rents would be lower than in otherwise comparable geographical areas if the regional transport system was not important to both parties. Consequently, by observing relative consumer incomes and rents, or by observing other variables having a monotonic relationship with them, it is possible to identify whether a region´s bundle of environmental and other characteristics has a greater net effect on company location decisions or consumer location decisions.

The purpose of this paper is to identify European Union countries according to the extend they are dominated by supply and demand responses to their net bundle of country-specific attributes. The countries are then classified into four groups based on the relative values of a country‘s per capita income and environmental quality. These are then identified as high amenity (low consumer income, high environmental quality), low amenity (high consumer income, low environmental quality), high productivity (high consumer income, high environmental quality), and low productivity (low consumer income, low environmental quality). The usefulness of this classification is twofold: First, it provides information about the relative attractiveness to consumers and companies of the total bundle of environmental and other attributes indigenous to each country of the European Union. Second it assists European policy makers to formulate the best suited regional and environmental policies in the EU. High amenity countries or regions, for example, require regional policy measures so as to increase their income. Similarly, low amenity countries or regions require environmental policy measures so as to increase their quality of life. Finally, in low productivity and low amenity areas both policies, regional and environmental, are important for increasing the consumer´s income and his/her environmental quality of life.

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Section 2 of the paper reviews regional and environmental policies of the EU, while section 3 provides a theoretical framework to determine the importance of amenity and productivity differences as sources of income differentials across countries in the EU. Section 4 presents the empirical results and discusses some possible explanations behind observed patterns. Finally, section 5 offers some conclusions and policy implications.

2 Regional and Environmental Policies in the EU

Regional and environment policies represent two of the most important policies of the EU. Regional policy aims at reducing variations in the economic performance of the different member states. The preamble of the Treaty of Rome calls for a reduction „of the differences existing between the various regions and the backwardness of the less favoured regions", while Article 2 refers to the goal of harmonious development of economic activities, a continuous and balanced expansion11. In 1975 the European Community established the European Regional Development Fund (ERDF). The European Regional Development Fund (ERDF) is one of the key Structural Funds. Its commitments for 1996 were more than ECU 11.8 billion. Although the ERDF was created in 1975, in the wake of the accession of Britain, Ireland and Denmark, it is the development of the single market which has been the catalyst for strengthening the Union's solidarity with poorer regions at risk of being left further behind. That is why the Single European Act of 1986 introduced a new Title V into the Treaty of Rome called „Economic and Social Cohesion."

When the Maastricht Treaty on the European Union laid the basis for establishing an Economic and Monetary Union (EMU) by 1999 (at the latest), it was also decided to address the risk that EMU could worsen regional disparities. The treaty's requirement that budget deficits be limited to a maximum of 3% of Gross Domestic Product (GDP) also limits the possibilities of poorer states to increase investments to catch up with their richer partners. In response, therefore, the treaty established a new Cohesion Fund to channel financial assistance to the four poorest states with a per capita GDP of less than 90% of the Union's average. Eligible projects have to be in the fields of the environment and trans-European networks.

Unlike regional policy, environmental policy is a more recent policy of the EU. When the Treaty of Rome was written in 1956-57, its authors saw no need to provide a common policy on the environment because they did not perceive any common threat. It was not until October 1972 that a conference of Heads of State or Government insisted that a common policy was needed, and since then more than 200 items of Union legislation on the environment have been enacted. These are the products of action programmes which the Council of Ministers has been endorsing since 1973. From a growth-oriented view, environmental protection measures are perceived as constraints to economic development. Growth is also seen by

environmentalists as creating adverse ecological consequences that originate from expansions of industrial activity. It is true that in the long run, the economic potential of future production factors will increasingly depend on the state of environmental conditions. This can be clearly depicted by effects that accumulated pollution levels are known to have on human health and land productivity.

Due to these interrelationships, development and environment should be brought together into the same conceptual framework from which mutual beneficial objectives may be achieved. Sustainable development is the notion which entails this conceptual framework. Sustainability is defined as maintaining continuity of economic and social developments while respecting the environment and without jeopardizing future use of natural resources. The ideas and theories of sustainable development have been examined and discussed by a number of important Commission policy documents. 6 Sustainable development was made the centrepiece of the EU‘s Fifth Environmental Action Programme in alignment with the commitments made at the 1992 UNCED at Rio.

In the last chapter of the GCE White Paper (CL 1993) the basis for a new development model was explored which focused on the objectives of sustainability. Integrating environmental policy into regional policy field is essential if sustainable development is to succeed. In recognition of the more holistic approach that this intimates, Article 139r of the Maastricht Treaty states the need for all areas of EU policy to make environmental objectives an integral part of any future strategies. Finally, in a recent paper it is argued that environmental protection is easier to achieve with economic growth than without it.7 In more detail, the paper showed that since 1970 OECD Europe‘s growth rate had risen by 80 per cent and lead emissions had fallen by 50 per cent.

3 Theoretical Framework for Regional Classifications

In this section a theoretical framework is presented and then used to determine the relative importance of amenity and productivity differences as sources of income differentials across countries in the European Union. This framework assumes that regions or countries are fully described by a bundle of environmental and other attributes. These specify the environmental quality index of a country or region, EQ, which includes all aspects of natural and non-natural environment of a consumer‘s life. EQ affects the utility of consumers, U(.), and the production (where the production technologies are assumed to exhibit constant returns to scale) cost of firms, C(.). Our framework is illustrated in Figure 1. The downward sloping curves in Figure 1, labelled V(R), show combinations of income (the income of a consumer is assumed to be determined by a hedonic wage equation which depends among others (e.g.. personal characteristics, education, experience, etc.) on environmental quality.), I, and environmental quality, EQ, for which utility

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is equal to v, where v is the maximum utility that a consumer can enjoy at all sites within a country in equilibrium, so that there is no incentive for any relocation, and R is a vector of implicit prices of housing characteristics (for example. $R = (R), R_2, R_3$) is the vector of implicit prices for the vector of housing characteristics $h = (h_1, h_2, h_3)$, so that the rental price P, of a house that is described by the vector of characteristics (h_1, h_2, h_3) is $P = R\ h'$ where h' is the transpose of h).

The slope of these curves is the trade-off that households are willing to make between wage income and environmental quality for any given level of implicit prices for housing characteristics (R) and the given utility level v. Along each curve, the implicit prices of housing characteristics is fixed and the curves shift up (down) as the implicit prices of the housing characteristics increase (decrease). Combinations of EQ and I for which the unit costs of firms are equal are also depicted in Figure 1 and given by the curves C(R). The value of the environmental characteristics of a region to firms is fixed along each iso-cost curve, C(R), and the curves shift up (down) as the environmental characteristics of a region increase (decrease) the productivity of firms and the implicit prices, R, of the real estate market. Each region is characterized by an environmental quality index and a vector of implicit rental prices that are associated with a specific pair of isocost and iso-utility curves as in Figures 1. The intersection of any two curves for each region at the level of its environmental quality then determines the relative income and the implicit prices of the real estate market in equilibrium. In Figure 1, in region 1, where environmental quality equals EQ_1, the equilibrium income will be I_1 and the equilibrium implicit rental prices R_1. Using region 1 as a reference point, which could be thought asthe average region, we can see in the following how interregional differences in environmental quality will be reflected in differences in incomes and implicit rental prices.

From the above analysis, it can be seen that: (i) when environmental quality is valued more by consumers, ceteris paribus, $C(R_2)$ and $V(R_2)$ have both been moved up and $C(R_2)$ has moved up relatively more, and (ii) when environmental quality is valued more by firms, ceteris paribus, $C(R_3)$ and $V(R_3)$ have both moved up and $V(R_3)$ has moved up relatively more. Within this simple framework in which regions differ only in their environmental quality, we can determine whether environmental quality and income differences reflect interregional differences in amenities or productivity by examining the patterns of environmental quality and incomes across regions. If environmental quality and income differences primarily reflect amenity differences across regions, we would see a negative relationship between environmental quality and incomes. If they reflect productivity differences, the relationship would be positive. Within the same framework, we can also classify individual regions on the basis of whether their incomes and environmental quality differ from the average because of above average amenities, below average amenities, above average productivity, or below average productivity. These classifications are summarized in Table 1 and Figure 2. Environmental quality is

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higher than the average in the high amenity and high productivity regions, and lower than the average in the low amenity and low productivity ones. On the other hand, incomes are relatively higher in the high productivity and low amenity regions.

Each region is characterized by an environmental quality index, EQ, whose effect on household utility and production costs differs from region to region. The problem of classifying regions by the relative magnitude of these two effects becomes one of identifying the environmental quality and income differences in equilibrium relative to the shifts in each curve. This can be done by identifying the combinations of EQ and I in equilibrium that are associated with equal shifts of both curves and determining how incomes and environmental quality change relative to these shifts. The (EQ,I) equilibrium combinations associated with equal shifts of both curves would coincide with the E Q_1O and I_1O‘ lines in Figure 1, where EQ_1 is the mean environmental quality and h is the mean income.

For any region with above average incomes and environmental quality, the shift of the C(R) (productivity) curve must be less than the shift of the V(R) (amenity curve). The less the direct effect of environmental quality on utility, the greater the increase in consumer income needed to offset the increase in rents and, consequently, the greater the shift of the V(R) curve needed to keep the maximum utility level unchanged and equal to v in equilibrium. Therefore, any region with environmental quality and income combinations in quadrant A in Figure 2 is classified as „high productivity“ region, because the primary reason that this region‘s incomes, environmental quality, and rents differ from those of the average region is the above-average productivity effects of environmental quality. This above-average productivity effect is reflected in the ability of producers in these regions to pay above average incomes and rents for having at their disposal a greater than the average environmental quality.

Similarly regions with below average incomes and environmental quality (quadrant C in Figure 2) are classified as „low productivity“ regions, since firms in these regions are compensated for the below average environmental quality effect on productivity with below-average rental prices and income. Above average amenity effects of a region are associated with increases in rents and decreases in incomes reflecting consumers‘ willingness to pay relatively more for the effects of the regional characteristics embodied in the region‘s environmental quality. Quadrant D then identifies regions where the environmental quality is greater then the average and the dominant factor determining relative incomes and rents is the high amenity effect. For regions in quadrant B, the dominant factor is their below-average amenity value.

4 An Amenity–Productivity Classification within the European Union

The implications of the above theoretical analysis can be used for a classification of the European Union member states. To compute the environmental quality, EQ,

for each country, the following variables of the natural and non-natural environment of a country were available and considered:
$Y_{1,j}$: Emissions of traditional air pollutants in kgs per 1,000 people,
$Y_{2,j}$: Annual internal renewable water resources per capita,
$Y_{3,j}$: Wilderness area as a % of total land area,
$Y_{4,j}$: % of national land area protected for wildlife and habitat,
$Y_{5,j}$: Number of threatened mammals per 10,000 km2,
$Y_{6,j}$: Number of threatened birds per 10,000 km2,
$Y_{7,j}$: Number of threatened reptiles per 10,000 km2,
$Y_{8,j}$: Number of threatened amphibians per 10,000 km2,
$Y_{9,j}$: Endemic flora as a % of total,
$Y_{10,j}$: Number of botanical gardens,
$Y_{11,j}$: Forest area as a % of land area,
$Y_{12,j}$: Average annual reforestation,
$Y_{13,j}$: Municipal waste generation per capita,
$Y_{14,j}$: Industrial waste per unit of GDP (tons per million US$),
$Y_{15,j}$: Hazardous and special waste generation (metric tons per km2),
$Y_{16,j}$: Waste paper recycled as % of paper consumption,
$Y_{17,j}$: Average annual fertilizer use (kgs per hectare of cropland),
$Y_{18,j}$: Average annual pesticide use (metric tons of active ingredient),
$Y_{19,j}$: Per capita carbon dioxide emissions,
$Y_{20,j}$: Daily travel time to and from work,
$Y_{21,j}$: Urban population as a % of total,
$Y_{22,j}$: Population density (per 1,000 hectares),
$Y_{23,j}$: Life expectancy at birth (years),
$Y_{24,j}$: Adult literacy rate,
$Y_{25,j}$: Mean years of schooling (25+),
$Y_{26,j}$: Population per doctor,
$Y_{27,j}$: Maternal mortality rate,
$Y_{28,j}$: Daily newspaper circulation per 1,000 people,
$Y_{29,j}$: Television per 1,000 people,
$Y_{30,j}$: Telephones per 1,000 people,
$Y_{31,j}$: Passenger cars per 1,000 people,
$Y_{32,j}$: Deaths from road accidents per 100,000 people,
$Y_{33,j}$: Suicides per 100,000 people,

An environmental quality index that takes into consideration all aspects of the natural and non-natural environment of a consumer´s life could be taken to be equal to the mean of these variables. However, the mean cannot be computed directly, because of differences in the units of measurement of the above variables. Therefore, these variables need to be scaled before the mean is computed. To be more specific,

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the above variables for each country are scaled from 0 to 100 using the following transformations:

$$y_{ij}^{*} = 100\ (Y_{ij} - Y_{ij\ min})/(Y_{ijmax} - Y_{ijmin}) \qquad (1)$$

where, y $ is the transformed variable, Y_{ijmin} is the minimum value of Y_{ij}, and Y_{ijmax} is the maximum value, for i - 2, 3, 4, 10, 11, 12, 16, 22, 23, 25, 28, 29, 30, 31, that is, for all variables having a positive relationship with EQ, and all j, and

$$y_{ij}^{*} = [100\ (Y_{ij} - Y_{ijmm})/(Y_{iimas} - Y_{ljmin})] \qquad (2)$$

where, y_{ij} is the transformed variable, Y_{ijmin} is the minimum value of Y_{ij} in the sample of countries and Y_{ijmax} is the maximum value, i = 1,5,6, 7,8,9, 13, 14, 15, 17, 18, 19,20,21,24,26,27, 32, 33, that is, for all variables having a negative relationship with EQ, and all j. Finally, to compute the environmental quality EQ for each country we have (i) used data from the World Resources 1992-1993 and the Human Development 1993, and (ii) taken the mean of the scaled variables y_{ij}.

The per capita income, I, of each country is also scaled from 0 to 100 using the following transformation:

$$I_{j}^{*} = 100\ (I_{j} - I_{\ min})/(I_{\ max} - I_{\ min}) \qquad (3)$$

where, I_{j}^{*} is the transformed index, $I_{\ min}$ is the minimum index value in the sample of countries and Imax is the maximum value, and j - 1, 2, 3, ..., m.

The environmental quality and per capita income combinations, (EQ, I^{*}), for Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom are given in Table 2 (Missing values for a Y_{ij} variable have been replaced by the mean of the existing ones. These missing values were for Luxembourg: Y_{1} Y_{11} Y_{12}, Y_{14}, Y_{16}, Y_{17}, Y_{18}. Y_{30}. Denmark: Y_{12}. Greece: Y_{15}, Y_{17}, Germany: Y_{32}. Belgium: Y_{33}, Ireland: Y_{1} , Y_{16}). Table 2 and the results of our theoretical analysis imply the positioning mapping of Figure 3, where m(EQ) and m(I^{*}) are the means of EQ and I^{*}, respectively. This identifies four group of countries, namely, the high-productivity ones: Sweden, Finland, Germany, Denmark, Austria, and the Netherlands, the low-productivity ones: Italy, Ireland, Spain, Portugal, and Greece, the low-amenity ones: France, Belgium, and Luxembourg, and United Kingdom which is the only country being characterised as a high-amenity country.

Our findings suggest that the notion of sustainable development is best suited in the low productivity group of countries. As mentioned before, this group includes Greece, Portugal, Spain, Ireland and Italy. Sustainable development brings together amenity and productivity into the same conceptual framework from which mutually beneficial objectives may be achieved. In the low amenity group, which includes

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France, Belgium and Luxembourg, emphasis should be given to environmental measures, since this group is characterized by its high income and low environmental quality. Finally, in the case of the UK, an emphasis should be placed on regional policy, since the country is characterized by low income and high environmental quality. Using the computational approach employed to obtain the above environmental quality indices, EQ, we can compute another environmental quality index for each country, EQ', that includes only aspects of the natural environment, that is, only the scaled values of the variables $Y_{1,j}$, ..., $Y_{19,j}$. The EQ' values are given in Table 3.Table 3 also gives EQ for each country, where EQ* = [(EQ'/EQ)-l]. For countries for which EQ>0, its position on the amenity-productivity mapping is based more on the Y_{1j}, ..., $Y_{19,j}$ values, that is, on the characteristics of the natural environment of the country, than on the other aspects of its environment. These are Austria, Finland, France, Germany, Ireland, Portugal, and Sweden.

Rankings based on the EQ, EQ', and per capita income are given in Table 4. The EQ and EQ' rankings are different and the R_{EQ}-$R_{EQ'}$ differences show that these are significant for Portugal, Denmark, and Ireland, where R_i is a ranking based on i, i = EQ, EQ', I. From Table 4 we obtain the sum of the absolute values of the differences: $\Sigma_1 = 30$, $\Sigma_2 = 36$, $\Sigma_3 = 54$, where S is the sum of the absolute values of the $R_{EQ} - R_{EQ'}$ differences, Σ_2 is the sum of the absolute values of the $R_{EQ} - R_I$ differences, and Σ_3 is the sum of the absolute values of the $R_{EQ'}$- R_I differences. These imply that overall the differences among the EQ' and per capital income rankings are greater than the others since $\Sigma_1 > \Sigma_2$ and $\Sigma_3 > \Sigma_1$.

5 Conclusions and Policy Proposals

This paper identified European Union countries according to the extent they are dominated by supply and demand responses to their net bundle of country-specific attributes. This kind of classification is useful because it provides information about the relative attractiveness to consumers and producers of the total bundle of environmental and other attributes indigenous to each region. A theoretical framework is used to position European Union member countries on an amenity-productivity map. The analysis shows that United Kingdom is the only country that can be characterized as high-amenity. Among the rest, Sweden, Finland, Germany, Denmark, Austria, and the Netherlands are high-productivity, Belgium, France and Luxemburg are low-amenity and all the rest (Italy, Ireland, Spain, Portugal, Greece) are low-productivity. A ranking of European Union countries based on the environmental quality (incorporating either all aspects of the environment or only those relevant to the natural environment) shows that Greece and Luxembourg are at the bottom of the ranking and Sweden, and Finland on the top. Our findings suggest that the notion of sustainable development is best suited for productivity group of countries. As mentioned before, this group includes Greece, Portugal, Spain,

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Ireland and Italy. Sustainable development maintains continuity of economic and social developments while respecting the environment without jeopardizing future use of natural resources.

Table 1

Country	QOL	R(QOL)
AUSTRIA	55,51845	5
BELGIUM	50,09458	9
DENMARK	55,60092	4
FINLAND	61,62236	2
FRANCE	51,1665	8
GERMANY	60,9489	3
GREECE	42,94626	15
IRELAND	49,98765	10
ITALY	47,98761	11
LUXEMBURG	44,90285	14
NETHERLANDS	54,02812	6
PORTUGAL	45,84456	13
SPAIN	46,75081	12
SWEDEN	74,47721	1
UNITED KINGDOM	53,6395	7

Table2

Country	EU regional development funding	population	[1[/[2[	ranking based on [1]/[2]	Sum of QOL and [1]/[2] based ranking
AUSTRIA	1574	7,7	204,42	12	17
BELGIUM	2096	10	209,60	11	20
DENMARK	843	5,1	165,29	14	18
FINLAND	1652	5	330,40	6	8
FRANCE	14938	57	262,07	8	16
GERMANY	21724	79,9	271,89	7	10
GREECE	15131	10,2	1483,43	3	18
IRELAND	6103	3,5	1743,71	1	11
ITALY	21646	57,7	375,15	5	16
LUXEM-BURG	104	0,4	260,00	9	23
NETHER-LANDS	2615	15	174,33	13	19
PORTU-GAL	15038	9,9	1518,99	2	15
SPAIN	34443	39	883,15	4	16
SWEDEN	1377	8,6	160,12	15	16
UNITED KINGDOM	13155	57,6	228,39	10	17

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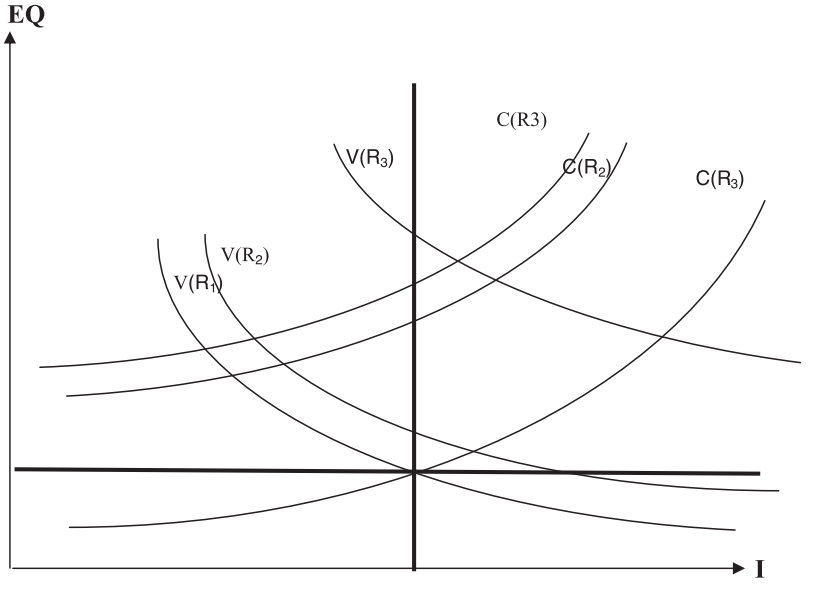
The EU development funding was taken keeping into consideration total 1994-1999 EU funding allocated to member states for regional development; mlns. ff ECU. Population is assumed to be mlns of people.

Table 3

Country	% of Country eligible for funding	Ranking based on [1]	Sum of QOL and [1] based ranking
AUSTRIA	40.6	10	15
BELGIUM	31.3	12	21
DENMARK	15.8	15	19
FINLAND	53.6	6	8
FRANCE	47.6	7	15
GERMANY	39.1	11	14
GREECE	100	1	16
IRELAND	100	1	11
ITALY	55.8	5	16
LUXEMBURG	42	8	22
NETHERLAND	24.15	14	20
PORTUGAL	100	1	14
SPAIN	82.9	4	16
SWEDEN	24.6	13	14
UNITED KINGDOM	41.9	9	16

Fig. 1

Correlations between EQ and I



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References

[1] BELLANTE, D.: The North-South Differential and the Migration of Heterogeneous Labor. In: *The American Economic Review*, 1979, Vol. 69, No 1

[2] BLOMQUIST, G. – BERGER, M. – HOHEN, J.: New Estimates of Quality of Life in Urban Areas. In: *The American Economic Review*, 1988, pp 89-107.

[3] BLOMQUIST, G. –BERGER, M. – WALDNER, W.: *Quality of Life: Ranking Urban Areas Using a Wage and Rent Based Index.* University of Kentucky, Department of Economics, Working papers, 1985, No. E-85-85

[4] EBERTS, R.– STONE, J. : *Metropolitan Wage Differentials: can Cleveland Still Compete?* Federal Reserve Bank of Cleveland, 1986, Quarter 2.

[5] EUROPEAN OMNIBUS SURVEY, Les Europeens et environmement en 1988, European Omnibus Survey, Brussels , 1988.

[6] GIANNIAS, D.: Regional amenity and productivity classifications within the EU. In: *European Environment*, 96 Conference Proceeding, 1996.

[7] GOULD, L.– GARDNER, G. – DELUCA, D. – TIEMANN, A. – DOOB, L. – STOLWIJK, J.: *Perceptions of technological risks and benefits, Russell Sage Foundation,* 1988.

[8] HOPE, C. – PARKER, J.: Environmental indices for all - the need for a monthly index. In: *Energy Policy*, 1990, 312-319.

[9] HOPE, C. – PARKER, J. – PEAKE, S. : A pilot index for the UK – results of the last decade. In: *Statistical Journal of the UN, Economic Commission for Europe*, 1991, 8(1), pp. 85-107.

[10] HOPE, C. – PARKER, J. – PEAKE, S.: A pilot environmental index for the UK in the 80s. In: *Energy Policy*, 1992, pp. 335-343.

[11] HOPE, C. – PARKER, J.: Environmental indices for France, Italy, and the UK. In: *European Environment,* 1995, Vol. 5, No. 1.

[12] HUMAN DEVELOPMENT REPORT 1993, Oxford University Press.

[13] JOHNSON, G.: *Inter-metropolitan Wage Differentials in the United States, in Jack E. Triplett, ed.,* The Measurement of Labor Cost Chicago: University of Chicago Press, 1983.

[14] KRUGMAN, P. – VENESABLES, A.: *Integration and the competitiveness of Peripheral Industry,* in Bliss, C., and Braga de Macedo, J. (eds.), *Unity with Diversity in the European Economy: The community's Southern Frontier,* Cambridge University Press, 1990, pp. 56-75.

[15] OTT, W.R.: *Environmental indices: Theory and practice*. Ann Arbor Science, Ann Arbor, 1978.

[16] PEARCE, D. – TURNER, R. – BROWN, D. – BATERMAN, I.: *The development of environmental indicators, report to the DOE, University College London,* 1991.

[17] ROMER, P.M.: Increasing Returns and Long Run Growth. In: *Journal of Political Economy,* 98, S71-S102.

[18] SOLOW, R.M.: A Contribution to the Theory of Growth. In: *Quarterly Journal of Economics*, 70, 65-94.

[19] VAN DER PLOEG AND TANG: The Macroeconomics of Growth: An International Perspective. In: *Oxford Review of Economic Policy*, 8, 4, p. 15-28

[20] WORLD RESOURCES 1992-93, *A Guide to the Global Environment, Towards Sustainable Development*. Oxford University Press, 1992.