sustainability

MDPI

Article

Rural Areas and Well-Being in EU Countries + UK: A Taxonomy and a Cluster Analysis

Domenico Marino [1,*] and Domenico Tebala [2]

[1] Department of Heritage, Architecture and Urban Planning, University "Mediterranea" of Reggio Calabria, Via dell'Università 51, 89124 Reggio Calabria, Italy
[2] National Institute of Statistics, Viale Pio X 116, 88100 Catanzaro, Italy
* Correspondence: dmarino@unirc.it

Abstract: The issue of rural and marginal areas has regained centrality in recent times, also due to the fact that rural areas actively participate in the EU's green and digital transition. The starting point of the paper is the concept of fair and sustainable well-being, which has been interpreted differently in relation to the diversity of territories and particularly in relation to the differences between urban and rural areas. The objective of this work is the construction of a synthetic index of the welfare of European countries through the Wroclaw taxonomic method and through the use of logit models for the identification of best practices of local realities and the interpretation in a more immediate way of the fair and sustainable welfare of each European country at a rural level.

Keywords: fair and sustainable well-being; rural area; complementarities; policies multidimensionality; territorial differentials

Citation: Marino, D.; Tebala, D. Rural Areas and Well-Being in EU Countries + UK: A Taxonomy and a Cluster Analysis. *Sustainability* **2022**, *14*, 15213. https://doi.org/10.3390/su142215213

Academic Editors: Mariotti Ilaria, Dario Musolino, Rodrigo Kataishi and Mina Akhavan

Received: 26 September 2022
Accepted: 12 November 2022
Published: 16 November 2022

1. Introduction

Predominantly rural areas make up half of Europe and account for about 28 percent of the population [1]. Yet, most of them are among the least privileged regions of the European Union, with a GDP per capita significantly below the European average and with an average population age higher than in urban areas, although this di-variance will only slowly begin to decrease in the next decade. Together with a lack of connectivity, insufficient infrastructure, a lack of diversified employment opportunities, and limited access to services, this makes rural areas a less attractive place to live and work. At the same time, however, rural areas actively participate in the EU's green and digital transition. Achieving the EU's digital goals for 2030 can offer more opportunities for the sustainable development of rural areas in areas other than agriculture, animal husbandry, and forestry, opening new perspectives for the growth of manufacturing and, even more, service industries and contributing to a better geographical distribution of services and industries.

The long-term vision for the EU's rural areas aims to address the above-mentioned problems and concerns by capitalizing on the new opportunities offered by the EU's green and digital transition and the lessons learned from the COVID-19 pandemic and by identifying means to improve the quality of life in rural areas, achieve balanced territorial development and stimulate economic growth.

The concept of fair and sustainable well-being must be interpreted differently in relation to the diversity of territories and, in particular, in relation to the differences between urban and rural areas. There is also no doubt that the concept of rural areas also takes on different connotations in relation to the different economic and social contexts, i.e., in relation to the different degrees of development of the territories.

These differences, then, have a strong impact on the design of the policies to be adopted in the different contexts and on the effects they produce, without forgetting that the complementarities between policies [2,3], i.e., the contagion effect, not necessarily positive,

that sectoral policies can create in other sectors, can change the assessment of the overall impact of a given policy. An organic forecast of expenditure to start a process of territorial rebalancing and recovery of inland areas is of fundamental importance in the development of rural areas. The scarcity of public financial resources and the multiplicity of objectives pursued by the public decision-maker make it desirable to develop and apply more advanced decision-making methods. In fact, in order to steer public spending towards the best decision-making alternatives, it is often necessary to consider the multidimensionality of the decision-making process by means of an analysis that allows for the appropriate integration of economic, social and environmental objectives, highlighting any trade-offs existing between criteria of satisfactory alternative solutions [4–6].

The multidimensionality of policies to improve the quality of life in rural areas is expanded by adding the multidimensionality inherent in the process of assessing social welfare. The multidimensionality of social welfare indicators [7] is, therefore, a fundamental element to be considered in evaluating the impact of policies in rural areas and, in particular, their effectiveness in bridging the existing gaps with more developed and industrialized regions. Nor can it be forgotten that in the assessment of fair and sustainable well-being, rural areas have strengths compared to urban areas, especially in relation to those variables that have to do with the quality of the environment.

In this context, the objective of this work is the construction of a synthetic index of the well-being of European countries, through the Wroclaw taxonomic method, for the identification of best practices of local realities and a more immediate interpretation of the fair and sustainable well-being of each European country at a rural level. The results of the synthetic index were then further validated with the construction of a Logit model that also made it possible to find further interesting considerations.

2. Fair and Sustainable Well-Being in Rural Areas: A Literature Review

The discussion on fair and sustainable well-being at the international level on the concept and methodology started with the Istanbul Declaration in June 2007 to 'undertake the measurement of social progress in each country, going beyond conventional economic measures such as GDP per capita' and continued with: "Measurement of Economic Performance and Social Progress" [8–11]. The core of this approach is that well-being is a multidimensional concept that changes according to times, places, and cultures and, therefore, cannot be defined simply according to a theoretical frame of reference. There is no single statistical indicator capable of fully representing the state of well-being in a given society, but one must refer to a plurality of measures. The identification of dimensions and indicators to measure this concept is always an exercise that reflects the norms, values, and priorities of those involved in the election process. Therefore, the choice of the main dimensions of well-being, and thus of the most appropriate indicators to represent them, requires the direct involvement of the various social actors. An interesting summary of the literature on fair and sustainable well-being and its measurement is contained in [12].

However, the link between fair and sustainable welfare and rural and marginal areas has been little developed in the literature. The link between fair and sustainable welfare with reference to rural and marginal areas has, on the other hand, been little investigated from the point of view of economics and measurement. The main contributions in this field are to be referred to a certain psychological approach linking the concept of the well-being of individuals, mainly understood as mental health, with the recreational characteristics of rural areas [13–15]. Also interesting are two articles in this vein that relate the well-being of Aboriginal people in relation to the territorial context in which they live and the well-being of certain populations living in the backwoods areas of China [16,17]. However, these approaches, although interesting, remain quite marginal with respect to the main theme of the paper, which is to measure the sustainable and equitable well-being of rural and marginal areas of Europe to design and implement better economic policies. In Costanza R. et al., [18] the 17 Sustainable Development Goals (Agenda 2030) are analyzed using alternative methods to identify comprehensive measures of sustainable well-being that

can motivate and guide the process of global societal change. In particular, a Sustainable Wellbeing Index is described, which links to and complements the Sustainable Development Goals dashboard. In her paper, Karen Scott [19] presents a critical review and analysis of the recent emergence of welfare discourses in UK national politics and their relationship to the agendas of localism, emphasizing the need to consider dimensions of welfare that directly relate to the characteristics of the local system of reference. The paper of da Rosa Pires A et al. [20] aims to demonstrate that the European Union's Research and Innovation Strategies for Smart Specialisation (S3) seem able to overcome the over-emphasis on urban areas in traditional innovation policies, which underestimated the rural dimension of innovation. These same policies, despite their sectoral origins, provide a favorable and supportive framework for innovation in rural areas. The paper points out that there is a wide range of innovation activities in rural areas, often not mentioned in innovation policy literature, that can strongly benefit and strengthen the impact of the new generation of European Regional Policy. A paper by Tebala et al. [21]) studies the relationship between fair and sustainable well-being and the tourism potential of territories. Marshall and Murphy [22] start from the consideration that the literature on rural innovation suggests that the nature and needs of rural enterprises can be diverse and then reviews several key issues, including the skill needs, aspirations, and motivations of rural professionals, the suitability of target institutions and leadership. It is hypothesized that a successful rural innovation ecosystem should focus more on sustainability, well-being, and balance, rather than primarily on growth.

With respect to this literature, this paper attempts to measure the fair and sustainable welfare differentials of rural and marginal areas by giving some indications of their determinants, mainly of an economic nature, in order to obtain useful indications for policy design

3. Materials and Methods

Starting from a representation of a set of 27 European countries + UK, and 8 rural agricultural indicators, and then from the data in tabular form, an expression of a statistical matrix with "variables" and "observations", where each entity, for example, territorial (row) is associated with the value of all the selected indicators (column), For each of the indicators considered, the direction has also been specified, distinguishing those that describe a 'positive' effect with respect to the dynamics of well-being and those that, on the contrary, are correlated in the opposite direction and to which a decreasing ranking of countries corresponds. The first line contains the names of the indicators: with capital letters, the names of the indicators that have a 'positive' effect on the final rankings, with lowercase letters those that have a 'negative' effect.

Below is a list of the indicators chosen for the various countries [1,23,24] (Table 1):

Table 1. Rural indicators for 27 EU countries + UK.

Country	Income per Family Worker Compared to Average Wages in Whole Economy (Based on EUR/Hour Worked)	Income per Family Worker Compared to Average Wages in Whole Economy (Based on EUR/Hour)	Income per Family Worker Compared to Average Wages in Whole Economy (Based on EUR/Hour)	Income per Family Worker Compared to Average Wages in Whole Economy (Based on EUR/Hour)	Income per Family Worker Compared to Average Wages in Whole Economy (Based on EUR/Hour)	Income per Family Worker Compared to Average Wages in Whole Economy (Based on EUR/Hour)	Income per Family Worker Compared to Average Wages in Whole Economy (Based on EUR/Hour)	Income per Family Worker Compared to Average Wages in Whole Economy (Based on EUR/Hour)
Austria	40.7	3.3	1.2	76.9	11.3	4.8	53,267.9	86.5
Belgium	48.6	0.9	0.7	68.5	18.6	5.7	51,767.8	88.2
Denmark	44.9	2.0	1.5	74.7	14.3	4.5	67,803.0	82.5
Finland	47.6	2.7	2.7	73.2	16.3	7.2	53,982.6	81.5
France	82.0	2.3	1.8	68.1	13.9	7.4	43,518.5	95.9
Germany	67.8	1.1	0.8	79.7	15.6	3.2	50,801.8	84.6
Ireland	38.8	4.2	1.0	68.7	21.1	5.1	99,152.1	71.3
Luxembourg	25.0	0.6	0.3	66.3	18.5	4.7	135,682.8	73.4
Bulgaria	111.0	5.7	3.8	61.4	47.9	4.6	11,635.0	111.3
Greece	105.9	11.1	4.4	59.2	34.4	12.9	20,276.5	121.2
Romania	46.1	20.5	4.6	63.9	44.3	5.7	14,861.9	105.4
Spain	173.8	3.7	2.9	61.6	28.8	13.3	30,115.7	103.3
Croatia	45.1	5.2	3.6	58.9	28.7	6.6	17,398.8	109.1
Cyprus	75.7	2.1	2.0	68.1	24.9	6.4	30,798.5	101.9
Czech Republic	134.8	2.1	2.1	74.3	11.9	2.1	26,378.5	101.7
Estonia	113.0	2.0	2.9	71.3	28.5	5.4	27,280.7	84.6
Hungary	71.1	4.2	4.0	67.7	23.3	3.6	18,772.7	108.3
Italy	73.1	3.6	2.1	58.2	25.2	8.8	35,551.3	111.2
Latvia	56.5	5.0	4.3	68.4	22.4	7.4	20,642.2	103.3
Lithuania	31.8	5.5	3.6	68.0	31.2	6.6	23,433.4	106.8
Malta	70.6	0.7	0.8	77.7	32.3	3.2	33,257.4	91.2
Netherlands	77.8	1.8	1.8	81.4	10.9	3.8	58,061.0	83.2
Poland	55.2	8.7	2.7	65.5	24.1	3.2	17,840.9	105.5
Portugal	73.1	5.0	2.4	68.4	25.5	5.9	24,262.2	105.6
Slovakia	51.8	2.1	2.8	66.8	18.4	6.5	21,087.8	111.3
Slovenia	20.2	3.9	2.3	71.7	14.2	4.4	29,200.8	102.1
Sweden	51.6	1.1	1.6	77.4	20.6	8.0	60,239.0	79.5
United Kingdom	92.2	0.9	0.7	76.9	21.5	3.8	47,334.4	93.5

3.1. Wroclaw Taxonomic Method

With the use of the RANKER software [25], it was decided to construct a synthetic index starting from the Wroclaw Taxonomic Method [26], which is based on the concept of an "ideal unit": a hypothetical unit that assumes the best values among those observed for each of the indicators considered.

One of the advantages of the taxonomic approach is the contextualization of the choice of parameters to define the ideal unit, which is represented by the best conditions that each elementary indicator can achieve in a defined set of socio-economic realities. It is also possible to 'construct' ideal values according to standards that are deemed optimal or that constitute policy objectives. In this case, many rests on ideological choices. However, one must take into account the possibility that the set of values constituting the ideal unit corresponds to a combination that may, in fact, prove unrealizable or incongruent (e.g., the coexistence of maximum road network extension and minimum road accident rate).

The starting point is the matrix of elementary indicators normalized into z-scores (i.e., standardized). The synthesis of the standardized indicators is obtained by calculating the

'Euclidean distance' between the actual values of the elementary indicators and those of the ideal unit: that is, the one with the best performance for each elementary indicator, obtaining a vector of ideal values that are not all associated with the same territorial unit but represent the components of a fictitious unit to which all the others should approach in order for the maximum level of the analyzed phenomenon to be reached.

With this method, it is possible to construct a ranking of the units considered with respect to their distance from the optimal situation, and an implicit weighting of the elementary indicators is implemented, which are more influential on the synthetic index, the greater the distances recorded with respect to the ideal situation.

The synthetic index assumes a value of 0 when the distance between a given unit and the ideal unit is zero (in practice, all values are coincident) and is greater the more the values differ from each other.

The synthetic indicator has decreasing values and is summarized in formulas for the *i*-units by

$$D_i = \sqrt{\sum_{j=1}^{P} \left(T_{ij} - \max\{T_j\}\right)^2} \quad (1)$$

and we then obtain the Wroclaw synthetic indicator:

$$Wroc_i = \frac{D_i}{D_0} \quad (2)$$

where $D_0 = \overline{D}_0 + 2\sigma_0$ and $\overline{D}_0$ is the arithmetic mean of the distances of each territorial unit from the ideal one, and σ_0 is the standard deviation of the distances.

3.2. Logit Models

The next step of the analysis consisted in analyzing the characteristics of the groups using statistical-econometric models. The nature of the data, which is essentially qualitative, makes classic regression models hardly usable. However, the statistical methodology makes very efficient analysis tools available to us even in these situations, such as the probit and logit models.

The aim of logit regression is to explain the occurrence of an event as the result of several explanatory variables. In logit regression, the dependent variable, called the response variable, follows a Bernoulli distribution of parameter p, where p is the mean probability of the occurrence of an event. The p-parameter is thus a linear combination of the explanatory variables. The most common functions used to link the probability p to the explanatory variables are the logistic function, hence the model logit, and the normal distribution, hence the model probit.

The probit model finds its application in economics in the study of random utility theory. Discrete choice models are useful when the variables are non-metric and/or categorical. A multinomial choice model occurs when the subject has more than two choice alternatives. In this sense, a multinomial model can be seen as a generalization of a binary model. The multinomial logit model is the simplest of the discrete choice models and is based on a number of assumptions: the operators making the choices are rational individuals, who may have their own utility function even if it is not externally definable; the utility of each decision consists of two components: a deterministic part that can be calculated on the basis of the characteristics of the decision-maker (income, education, etc.) and a random component that contains the subjective elements of the decision.

In particular, logit models make it possible to estimate the net contributions of each variable and to estimate the probabilities of participation associated with different profiles constructed by the different associations of variables. In fact, this technique allows the parameters to be interpreted in a simple manner in terms of odds ratios. In our case, we will use the logit model to test whether the ranking of the well-being of rural areas between the different EU countries that comes out of the construction of the Wroclaw index can be considered significant.

3.3. The Results of the Calculation of the Wroclaw Synthetic Indicator

Applying the method described in Section 3.1 to our data, we obtain the following ranking (Table 2) from which it can be seen that all values are above 0.7, i.e., medium-high distance from the ideal country, and consequently low variability of the index (0.73–0.98).

Table 2. Value of Wroclaw index, rank, and cluster for each country.

	Index	Cluster
Netherlands	0.738	1
Ireland	0.779	1
Czech Republic	0.781	1
Denmark	0.793	1
Finland	0.797	1
Estonia	0.797	1
Austria	0.811	1
Germany	0.816	2
United Kingdom	0.829	2
France	0.838	2
Sweden	0.840	2
Poland	0.843	2
Hungary	0.856	2
Portugal	0.858	2
Latvia	0.868	3
Luxembourg	0.885	3
Romania	0.887	3
Cyprus	0.889	3
Slovenia	0.897	3
Belgium	0.899	3
Malta	0.900	3
Lithuania	0.923	4
Slovakia	0.946	4
Spain	0.950	4
Bulgaria	0.964	4
Italy	0.969	4
Croatia	0.971	4
Greece	0.985	4

Four groups were identified based on quartiles for the value of the Wroclaw index. In Table 2 and Figure 1, the different colors identify the individual clusters. The first cluster is marked by the color yellow, the second by the color orange, the third by the color light blue, and the fourth by the color white. The first quartile expresses the highest standard of living with the highest per capita income of 55,132.3€ and the lowest values of corruption (index 84.5), total unemployment (4.7%), and rural poverty (16.3%). Moving down the territorial level of this group, one can appreciate the position of Ireland, which ranks second in the index ranking and has the highest total corruption rate in Europe (71.3) and the second highest per capita income (€99,152.1). The Netherlands, first in the index ranking, has the best values in the purely rural indicators, in particular, the highest rural employment rate (81.4%) and the lowest rural poverty (10.9%).

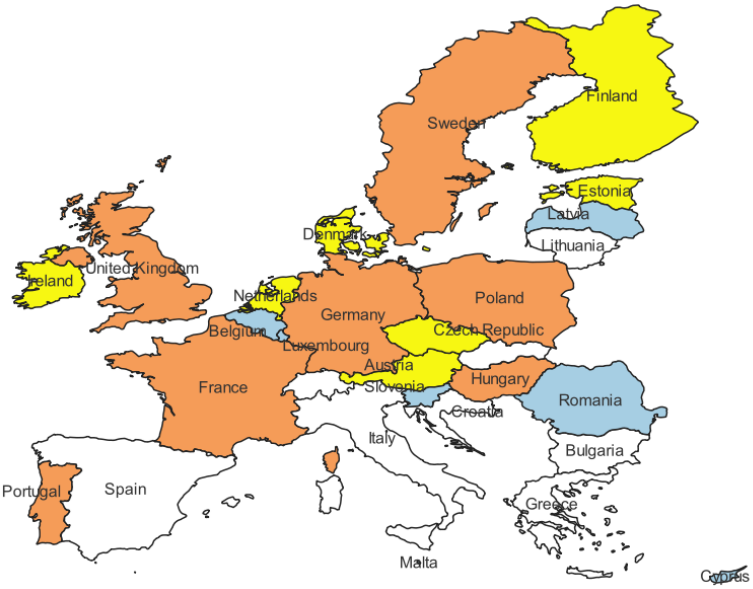

Figure 1. Georeferenced distribution of countries by synthetic index groups.

The other three clusters bring together countries with a higher value of the indicator, even if only slightly higher than the first one, and in particular, the last cluster, the worst one, represented by the white color both in the table and in the map (Figure 1), is located in the south of Europe, further confirming the North-Central and South-European binomial.

In this context, the most critical positions are occupied by the rural areas of Italy, Croatia, and Greece, and in this regard in Italy, in continuity with what was experimented with in the 2014–2020 cycle, the 2021–2027 National Strategy for Inland Areas will continue to strengthen citizenship services and promote initiatives for economic development and employment in the selected inland areas. The interventions will be supported by the European Structural Funds of the 2021–2027 programming period but also by national resources mainly related to the Fund for Development and Cohesion, along with two directives: continuity with the interventions already started and the enlargement of the Strategy, through the entry of new areas and the promotion of measures in support of inland areas as a whole or of individual municipalities.

3.4. The Results of the Logit Model

The logit model with ordinal variables examines variables that can be expressed with an ordinal modality. The variables are thus ordered according to steps representing gradually increasing levels but without a quantitative assessment of the distance between these steps. The objective of these models is to study the effect of a set of variables on a response variable of an ordinal nature. We can then investigate the effect of the individual variables on the final ordering of the response function. In our case, the logit model is primarily aimed at verifying the clustering that results from the grouping of Wroclaw index values according to quartiles. Furthermore, important indications can be drawn on the relevance and meaningfulness of the variables.

To correctly interpret the data, it is necessary to start with an analysis of the Goodness of Fit that gives certain indicators of model quality. The most important value is the Chi^2. It is the equivalent of Fisher's F-test of the linear model. It tries to assess whether the variables provide a significant amount of information to explain the variability of the response. Our model. In our case, Chi^2 is less than 0.001 for the LR (likelihood ratio), which ensures that the model is highly significant and that the variables contain a large amount of information. Passing the test described in Appendix A (Table A4) shows that the assumption that the data are randomly distributed must be rejected.

The next step in interpreting the results of the model is to analyze the significance of the individual variables (Table 3).

Table 3. Model parameters (Variable Cluster).

Source	Value	Standard Error	Wald Chi-Square	Pr > Chi^2	Wald Lower Bound (95%)	Wald Upper Bound (95%)	Significance
Intercept1	59.611	34.280	3.024	0.082	−7.577	126.799	**
Intercept2	64.894	35.312	3.377	0.066	−4.315	134.104	**
Intercept3	69.850	36.048	3.755	0.053	−0.803	140.504	**
Income per family worker compared to average wages in whole economy (based on EUR/hour Worked)	0.082	0.033	6111	0.013	0.017	0.147	***
Income per family worker compared to average wages in whole economy (based on EUR/hour Worked)	0.527	0.262	4032	0.045	0.013	1,041	***
Income per family worker compared to average wages in whole economy (based on EUR/hour Worked)	1857	1009	3386	0.066	−0.121	3,836	**
Income per family worker compared to average wages in whole economy (based on EUR/hour Worked)	−0.031	0.205	0.022	0.882	−0.433	0.372	
Income per family worker compared to average wages in whole economy (based on EUR/hour Worked)	−0.464	0.162	8202	0.004	−0.782	−0.147	***
Income per family worker compared to average wages in whole economy (based on EUR/hour Worked)	−1315	0.524	6301	0.012	−2342	−0.288	***
Income per family worker compared to average wages in whole economy (based on EUR/hour Worked)	0.000	0.000	1953	0.162	0.000	0.000	*
Income per family worker compared to average wages in whole economy (based on EUR/hour Worked)	−0.550	0,212	6752	0.009	−0.964	−0.135	***

*** >95%, ** >90%, * >80%.

As can be seen, almost all the variables are highly significant. It is only the Rural Employment Ratio per capita that is not significant, while GDP per capita has a medium-high significance but is lower than that of the other three variables. The variable that most influences the ranking considering the Chi^2 test is rural poverty.

The last step in the interpretation of the results of the logit model is the verification of the actual ability of the answered variable to explain the empirical cases. The result is well expressed by Table 4, which shows that the ranking elaborated on the basis of quartiles expresses quite well the different degrees of well-being of rural areas in the 27 countries of the European Union + UK.

Table 4. Predictions and residuals (Variable Cluster).

Observation	Weight	Cluster	Pred (Cluster)	Pr(1)	Pr(2)	Pr(3)	Pr(4)
Austria	1	1	1	0.727	0.271	0.002	0.000
Belgium	1	3	3	0.003	0.396	0.590	0.010
Denmark	1	4	4	0.000	0.000	0.032	0.967
Finland	1	4	4	0.000	0.001	0.089	0.911
France	1	3	3	0.000	0.008	0.538	0.453
Germany	1	1	1	0.999	0.001	0.000	0.000
Ireland	1	1	1	0.775	0.224	0.001	0.000
Luxembourg	1	1	1	0.981	0.019	0.000	0.000
Bulgaria	1	1	1	0.779	0.219	0.001	0.000
Greece	1	2	2	0.023	0.801	0.174	0.001
Romania	1	2	1	0.929	0.071	0.000	0.000
Spain	1	4	4	0.000	0.000	0.000	1.000
Croatia	1	2	2	0.025	0.809	0.165	0.001
Cyprus	1	1	1	0.648	0.349	0.003	0.000
Czech Republic	1	4	4	0.000	0.000	0.001	0.999
Estonia	1	3	3	0.003	0.339	0.645	0.013
Hungary	1	4	4	0.000	0.000	0.019	0.981
Italy	1	3	3	0.002	0.288	0.693	0.017
Latvia	1	3	3	0.001	0.126	0.827	0.046
Lithuania	1	1	1	0.999	0.001	0.000	0.000
Malta	1	2	2	0.038	0.849	0.112	0.001
Netherlands	1	2	3	0.000	0.022	0.740	0.238
Poland	1	3	3	0.001	0.223	0.752	0.024
Portugal	1	4	4	0.000	0.001	0.143	0.856
Slovakia	1	3	3	0.004	0.423	0.564	0.009
Slovenia	1	4	4	0.000	0.004	0.334	0.662
Sweden	1	2	2	0.020	0.777	0.201	0.002
United Kingdom	1	2	2	0.021	0.785	0.192	0.002

Indeed, in clusters 1, 3, and 4, the values estimated with the logit model are perfectly coincident with those previously elaborated on the basis of the Wroclaw index. Only in cluster 2 is there a slight discrepancy, which, however, maintains the percentage of correctness at 71% (Table 5). The logit model thus confirms the result obtained on the basis of the Wroclaw index.

Table 5. Classification table for the training sample (Variable Cluster).

From\to	1	2	3	4	Total	% Correct
1	7	0	0	0	7	100.00%
2	1	5	1	0	7	71.43%
3	0	0	7	0	7	100.00%
4	0	0	0	7	7	100.00%
Total	8	5	8	7	28	92.86%

4. Discussion

The first objective of the statistical analyses conducted was to obtain a taxonomy of rural well-being for the 27 countries of the European Union+ UK. The Wroclaw index allowed us to construct a synthetic indicator of well-being for these 27 UE countries + UK and to subsequently divide them into homogeneous clusters. The georeferenced graph makes us realize that a very important component in the explanation of the clusters is related to geographical aspects. Cluster 1 and cluster 4 coincide almost completely with the Nordic countries, except for Austria, and cluster 4 coincides with the countries bordering the Mediterranean, except for Lithuania and Bulgaria. The latter cluster is also characterized by the lowest welfare values, while the former cluster is the one with the highest values. This first evidence imposes two reflections. The first is that in the countries facing the Mediterranean, the rural areas are, to all intents and purposes, marginal areas, both because they are far from the urban centers and because they are far from the coasts that exert a form of tourist attraction displacing investments and labor force, especially in the summer months, giving rise to a progressive impoverishment both economic and demographic of the inland areas that coincide with the rural areas. On the other hand, the northern European countries represent the cluster with the highest well-being and consist of countries that generally have a low population density with a population that is, outside the urban centers, fairly evenly distributed. In this case, the strong attraction of the coasts is lacking. Rural areas are not subject to depopulation processes, nor do they suffer to a certain extent from the attraction of urban centers. They are rural areas that are not marginal because the low population density allows for fairly good living conditions in small urban centers, with a fairly good level of services, a good level of income, and also an infrastructural endowment that can meet the needs of the population. The two clusters that correspond to the intermediate levels of well-being are largely made up of these countries, which are generally industrialized but have developed some excellent agricultural or animal husbandry sectors and manage to make rural areas almost industrialized. In this case, there is still a strong push towards urban centers, which mainly affects young people, but excluding a few marginal areas, rural areas still show good levels of well-being. The third cluster is made up of small states (Luxembourg, Malta, and Cyprus) where rural areas are beginning to be at risk of marginalization, other countries such as Latvia and Romania that do not have very advanced agricultural systems and are able to develop income, and Slovenia where rural areas feel strong competition from coastal areas.

This taxonomy was then validated by means of a logit model, which showed that this division into clusters is quite robust. The model also made it possible to identify which variables have the highest information content. The variable with the highest information content is rural poverty, and this is in line with the considerations made previously. What distinguishes a rural area from a marginal area is the possibility of deriving an adequate income from productive factors. Marginal areas are those where widespread poverty is highest and where the production systems are not very advanced. The income that can be derived from family farming and the agricultural added value is consequently another variable that serves to discriminate welfare levels, while highly significant are the perceived corruption rate and the unemployment rate that negatively influence the welfare levels of rural areas, as they result in a loss of opportunities. The rural employment rate is not significant because a high agricultural employment rate may also correspond to an archaic production system. Only weakly significant is the per capita income, in the sense that this indicator may be important in some cases (see cluster 2 countries) but insignificant in other cases, with Italy being among the countries with the lowest level of welfare. Through the logit model, an attempt was made to take a step forward from the existing literature on the fair and sustainable welfare of rural and marginal areas. Until now, this concept was still strongly linked to the recreational aspects of rural areas and the well-being that can result in terms of both physical and mental health from living far from urban centers. This view is, in our opinion, not very close to reality. It is mainly the economic variables, and the regression results confirm this, that determine the level of fair and sustainable well-being of

rural and marginal areas. In particular, the poverty-related variable is the one that has the greatest explanatory content and, therefore, strongly determines the taxonomy. Measuring the fair and sustainable welfare differentials of rural and marginal areas between countries is an important result, which becomes even more valuable if it is also associated with an investigation of the determinants of these welfare differentials. A regression model can give some indications, but obviously, further studies and investigations are needed to better clarify these determinants in depth.

The results of the taxonomy are very interesting because they highlight the strong differences that exist between the 27 EU + UK countries. The four clusters identified present significantly different characteristics and economic indicators, a sign that the same concept of rural and marginal areas takes on different meanings and connotations in different territorial contexts and is associated with different well-being values. This diversity is reflected on the policy side because it seems illogical to use similar policies in such different territorial contexts.

In the analysis of economic policies to be used in rural areas, the traditional approach has always been limited to thinking of simple spatial redistribution or sectoral policies. In Martin [27], the importance of spatial rebalance is emphasized, which must be able to redress the spatial imbalance in the economic landscape. While in Margarian [28] highlights the importance of the endogenous development approach for rural areas as it emphasizes the importance of local factors in the absence of agglomeration. Woods [29] dealing with the case of the rural areas of Spain, identifies the need to intervene in the rural architectural heritage to initiate development policies, while in Wood [30] the rural question is addressed by focusing policies on the limitation of conflicts between rural and urban space. Goodwin [31] discusses the impact of devolution that has completely transformed the institutional landscape of rural policy, while Pemberton and Goodwin [32] highlight how the profound changes in rural areas in recent years require new regulatory policies. In Anania and Tenuta [33] the different distribution of wealth between urban and rural areas is highlighted. Wu et al. [34] explain how agglomeration economies affect the effectiveness of environmental regulation, highlighting the advantages of incorporating regional and urban economic insights into environmental policy analysis. Pagliacci [35] attempts a measure of urban-rural relations from a geographical perspective aimed at designing more effective policies. These approaches show a certain weakness because they do not consider the interrelationships and contagions that develop between different industrial sectors and economic agents within territories and that are decisive in identifying the degree of success of a policy.

Therefore, from a policy point of view, the results of the paper can only push towards diversified policies between countries or country groups to raise the welfare level of rural areas, differentiated policies that also consider the complementarities between policies that generally differ from country to country. This results in a difficult relationship between national policies and regional and/or local policies that have become more complicated because of the economic, political, and social changes of recent years and that has undermined the traditional multilevel governance models that, with varying fortunes, have constituted the mainstream in recent years. The European Union has focused most of its actions and organized its interventions on a national and regional scale based on these schemes. The assessment of the not-always-flattering effects of structural policies and the now incontrovertible fact that a considerable group of regions has negative development indicators in the face of substantial investments clearly highlights the need to update/change the governance scheme underlying structural policies and especially the coordination mechanism with national and European policies.

Weak regions and areas are unable to respond positively to the stimulus provided by 'traditional' regional policy, which seeks to compensate for the lack of production factors, e.g., by injecting capital to stimulate productive investment. This traditional approach runs the risk of creating the so-called "Dutch Disease" [36]. With reference to this, some interesting contributions are worth mentioning. Reisinezhad [37] makes a critical review of

Dutch Disease, showing that its effects are more intense in resource-rich countries than in resource-poor ones. Garcia-Cicco and Kawamura [38] relate Dutch Disease to fiscal rules and macro-prudential policies. Bresser-Pereira [39] discusses the economic policies needed to neutralize Dutch Disease, stating that a relatively simple policy is a variable commodity export tax. Matsen and Torvik [40] explain the link between resource abundance and weak growth.

Our point of view is that territorial systems cannot effectively absorb the additional (traditional) factor of production. It is like trying to fit a piece into a jigsaw puzzle that does not fit. A 'compensatory' or 'additional' regional development policy ends up accentuating the differences between regions, which are due to different response functions and manifest themselves in multiple and resilient balances. Instead of fostering convergence, traditional policies create underdevelopment traps) from which territorial systems struggle to escape. Peripheral and rural regions are the most exposed to the loss of competitiveness since the rules of the economic system favor the aggregation of factors, and 'classic' regional policy is unable to counteract this trend, despite generous financial compensation. If complementarities are not considered, the risk of policy ineffectiveness is high!

5. Conclusions

The objective of this work is the construction of a synthetic index of the welfare of European countries through the Wroclaw taxonomic method and using logit models for the identification of best practices of local realities and the interpretation in a more im-mediated way of the fair and sustainable welfare of each European country at a rural level.

The results showed a good degree of robustness. The taxonomy made through the Wroclaw index was confirmed by the logit model, which made it possible to identify the most relevant variables influencing the well-being of rural areas. From a policy point of view, this result can only push towards diversified policies between countries or groups to raise the welfare level of rural areas, differentiated policies that also consider the complementarities between policies that generally differ from country to country. Weak regions and areas are unable to respond positively to the stimulus provided by 'traditional' regional policy, which seeks to compensate for the lack of production factors, e.g., by injecting capital to stimulate productive investment.

This traditional approach runs the risk of creating Dutch Disease because territorial systems cannot effectively absorb the additional (traditional) factor of production. It is like trying to fit a piece into a jigsaw puzzle that does not fit. A 'compensatory' or 'additional' regional development policy ends up accentuating the differences between regions, which are due to different response functions and manifest themselves in multiple and resilient balances. These results open interesting research perspectives in relation to how regional policies for rural areas should be programmed to take these aspects into account.

This work may constitute a first step in the construction of an interpretative scheme of fair and sustainable welfare that can be applied to marginal rural areas. The work is part of a strand that is still underdeveloped in the literature but may have interesting developments in the coming years. Investigating the specific determinants of fair and sustainable well-being of rural and marginal areas in individual regions may be a promising field for the development of this work.

Author Contributions: Writing—review & editing, D.M. and D.T. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Logit Model

Table A1. Summary statistics.

Variable	Observations	Obs. with Missing Data	Obs. without Missing Data	Minimum	Maximum	Mean	Std. Deviation
Var1	28	0	28	20.183	173.799	68.775	34.514
Var2	28	0	28	0.623	20.529	4.005	4.044
Var3	28	0	28	0.250	4.563	2.321	1.235
Var4	28	0	28	58.229	81.392	69.386	6.406
Var5	28	0	28	10.900	47.900	23.164	9.197
Var6	28	0	28	2.100	13.300	5.886	2.613
Var7	28	0	28	11,634.971	135,682.794	40,157.328	27,283.990
Var8	28	0	28	71.330	121.182	96.559	13.103

Table A2. Correlation matrix.

Variables	AgriFam-WorkIncome	AgrEmploy	AgriGVA	RuralEmploy-Rate	Rural Poverty	Unemploy-Rate	GDPpercapita	CorruzTot
Var1	**1.000**							
Var2	−0.051	**1.000**						
Var3	0.186	0.686	**1.000**					
Var4	−0.148	−0.494	−0.574	**1.000**				
Var5	0.236	0.619	0.580	−0.589	**1.000**			
Var6	0.326	0.220	0.380	−0.561	0.273	**1.000**		
Var7	−0.356	−0.421	−0.720	0.316	−0.465	−0.150	**1.000**	−0.827
Var8	0.294	0.488	0.727	−0.652	0.506	0.340	−0.827	**1.000**

Table A3. Regression of Variable Cluster: Goodness of fit statistics (Variable Cluster).

Statistic	Independent	Full
Observations	28	28
Sum of weights	28.000	28.000
DF	25	17
−2 Log(Likelihood)	77.632	25.102
R^2(McFadden)	0.000	0.677
R^2(Cox and Snell)	0.000	0.847
R^2(Nagelkerke)	0.000	0.903
AIC	83.632	47.102
SBC	87.629	61.756
Iterations	0	7

Table A4. Test of the null hypothesis H0: Y = 0 (Variable Cluster): Statistic.

Statistic	DF	Chi-Square	Pr > Chi^2
−2 Log(Likelihood)	8	52.530	<0.0001
Score	8	41.979	<0.0001
Wald	8	11.904	0.156

Table A5. Standardized coefficients (Variable Cluster).

Source	Value	Standard Error	Wald Chi-Square	Pr > Chi^2	Wald Lower Bound (95%)	Wald Upper Bound (95%)
Var1	1.536	0.621	6.111	0.013	0.318	2.753
Var2	1.153	0.574	4.032	0.045	0.028	2.278
Var3	1.242	0.675	3.386	0.066	−0.081	2.564
Var4	−0.106	0.712	0.022	0.882	−1.502	1.290
Var5	−2.312	0.807	8.202	0.004	−3.894	−0.730
Var6	−1.860	0.741	6.301	0.012	−3.312	−0.408
Var7	−1.252	0.896	1.953	0.162	−3.009	0.504
Var8	−3.900	1.501	6.752	0.009	−6.841	−0.958

Where

Var1: Income per family worker compared to average wages in whole economy (based on EUR/hour worked)

Var2: Employment in agriculture (% of total employment)

Var3: Distribution of GVA by economic sector (primary sector, % of total)

Var4: Employment rate for the age group 15–64 (rural areas, %)

Var5: Poverty rate in rural areas (% of the population)

Var6: Unemployment rate (%)

Var7: GDP per capita

Var8: Corruption Total Index

References

1. Available online: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Population_structure_and_ageing/it&oldid=391192 (accessed on 10 September 2022).
2. Marino, D.; Trapasso, R. The new approach to regional economics dynamics, Growth and innovation of competitive regions. In *Growth and Innovation of Competitive Regions*; Senn, F., Ed.; Springer: Berlin/Heidelberg, Germany, 2009; ISBN 978-3-540-70923-7.
3. Marino, D.; Trapasso, R. Servitization and territorial self-reinforcing mechanisms: A new approach to regional competitiveness. *Investig. Reg. J. Reg. Res.* **2020**, *48*, 85–93.
4. Cuomo, C.; Marino, D. The LOCAL WORK PLANS (LWP) and Territorial Economic System (TES): Assessment and Evaluation. In *Economy, Business and Uncertainty: New Ideas for a Euro-Mediterranean Industrial Policy*; Gil-Lafuente, J., Marino, D., Morabito, F., Eds.; AEDEM 2017. Studies in Systems, Decision and Control; Springer: Cham, Switzerland, 2019; Volume 180.
5. Marino, D. *Scelte Sociali, Decisioni Pubbliche e Sostenibilità*; ESI: Naples, Italy, 2004.
6. Available online: http://www.economiaepolitica.it/lavoro-e-diritti/diritti/giustizia-e-ordine-pubblico/corruzione-misurazione-e-soluzioni-alternative/ (accessed on 10 September 2022).
7. Nussbaum, M. Capabilities and Social Justice. *Int. Stud. Rev.* **2002**, *4*, 123–135. [CrossRef]
8. Alleva, G. *DGINs Conference 2015: Indicators for Decision Making and Monitoring*; Italian National Institute of Statistics: Lisbon, Portugal, 2015.
9. *e-Frame EU FP7 Project Final Conference Amsterdam, 10–11 February 2014*; Statistics Netherlands in Cooperation with Istat: Rome, Italy, 2014.
10. *GDP and Beyond: Measuring Progress in a Changing World*; European Union: Maastricht, The Netherlands, 2009.
11. Stiglitz, J.; Sen, A.K.; Fitoussi, J. The Measurement of Economic Performance and Social Progress Revisited: Rections and Overview. 2009. Available online: https://ideas.repec.org/p/spo/wpmain/infohdl2441-5l6uh8ogmqildh09h4687h53k.html (accessed on 10 September 2022).
12. Voukelatou, V.; Gabrielli, L.; Miliou, I.; Cresci, S.; Sharma, R.; Tesconi, M.; Pappalardo, L. Measuring objective and subjective well-being: Dimensions and data sources. *Int. J. Data Sci. Anal.* **2021**, *11*, 279–309. [CrossRef]
13. Bechtel, R.B.; Corral-Verdugo, V. Happiness and sustainable behaviour. In *Psychological Approaches to Sustainability: Current Trends in Theory, Research and Applications*; Nova Science Publishers, Inc.: Hauppauge, NY, USA, 2013.
14. Houlden, V.; Weich, S.; de Albuquerque, J.P.; Jarvis, S.; Rees, K. The relationship between greenspace and the mental wellbeing of adults: A systematic review. *PLoS ONE* **2018**, *13*, e0203000. [CrossRef]
15. Scheyvens, R.A.; Movono, A.; Auckram, S. Pacific peoples and the pandemic: Exploring multiple well-beings of people in tourism-dependent communities. *J. Sustain. Tour.* **2021**. [CrossRef]
16. Green, D.; Minchin, L. Living on Climate-Changed Country: Indigenous Health, Well-Being and Climate Change in Remote Australian Communities. *EcoHealth* **2014**, *11*, 263–272. [CrossRef]

17. Li, C.; Yan, J.; Xu, Z. How Does New-Type Urbanization Affect the Subjective Well-Being of Urban and Rural Residents? Evidence from 28 Provinces of China. *Sustainability* **2021**, *13*, 13098. [CrossRef]
18. Costanza, R.; Daly, L.; Fioramonti, L.; Giovannini, E.; Kubasek, I.; Mortensen, L.F.; Pickett, K.E.; Ragnarsdottir, K.V.; De Vogli, R.; Wilkinson, R. Modelling and measuring sustainable wellbeing in connection with the UN Sustainable Development Goals. *Ecol. Econ.* **2016**, *130*, 350–355. [CrossRef]
19. Scott, K. Happiness on your doorstep: Disputing the boundaries of wellbeing and localism. *Geogr. J.* **2015**, *181*, 129–137. [CrossRef]
20. da Rosa Pires, A. Smart Specialisation and Innovation in Rural Areas. In *JRC Research Reports*; JRC90000; Joint Research Centre: Ispra, Italy, 2014.
21. Tebala, D.; Marino, D. To Assess Collective Well-Being with a Synthetic and Autocorrelate Index Tourism of Italian Provinces. In *Economy, Business and Uncertainty: New Ideas for a Euro-Mediterranean Industrial Policy*; Gil-Lafuente, J., Marino, D., Morabito, F., Eds.; AEDEM 2017. Studies in Systems, Decision and Control; Springer: Cham, Switzerland, 2019; Volume 180.
22. Marshall, A.; Murphy, D.F. Rural Innovation Ecosystems and Leading Wellbeing. *J. Corp. Citizsh.* **2017**, *68*, 7–14.
23. Available online: https://agridata.ec.europa.eu/extensions/DashboardIndicators/JobsGrowth.html (accessed on 10 September 2022).
24. Available online: https://flore.unifi.it/retrieve/handle/2158/328151/7940/ASTRIS_6_Gli_Indicatori_Statistici_-_concetti%2C_metodi_e_applicazioni.pdf (accessed on 10 September 2022).
25. Available online: https://www.istat.it/en/files/2014/03/RANKER-manuale.pdf (accessed on 10 September 2022).
26. Senetra, A.; Szarek-Iwaniuk, P. The implementation of the Wroclaw taxonomic method for the identification and evaluation of problem areas in the Warmia and Mazury Region in Poland—A case study. *Socio-Econ. Plan. Sci.* **2018**, *67*, 43–57. [CrossRef]
27. Martin, R. Rebalancing the Spatial Economy: The challenge for regional theory, Territory, Politics. *Governance* **2015**, *3*, 235–272.
28. Margarian, A. A constructive critique of the endogenous development approach in the European support of rural areas. *Growth Chang.* **2013**, *44*, 1–29. [CrossRef]
29. Woods, M. *Rural Geography. Processes, Responses and Experiences, Rural Restructuring*; SAGE: London, UK, 2005.
30. Woods, M. Redefining the "rural Question": The new "Politcs of the Rural" and Social Policy. *Soc. Policy Adm.* **2006**, *40*, 579–595. [CrossRef]
31. Goodwin, M. Three: Rural governance, devolution and policy delivery. In *New Labour's Countryside*; Policy Press: Bristol, UK, 2008.
32. Pemberton, S.; Goodwin, M. Rethinking the changing structures of rural local government—State power, rural politics and local political strategies? *J. Rural. Stud.* **2010**, *26*, 272–283. [CrossRef]
33. Anania, G.; Tenuta, A. Ruralità, urbanità e ricchezza nelle Italie contemporanee. *Agriregionieuropa* **2006**, *7*, 17–21.
34. Wu, J.; Weber, B.A.; Partridge, M.D. Rural-urban interdependence: A framework integrating regional, urban and environmental economic insights. *Am. J. Agric. Econ.* **2016**, *99*, 464–480. [CrossRef]
35. Pagliacci, F. Misurare le relazioni urbano-rurali: La prospettiva geografica a supporto della politica di sviluppo rurale, Agriregionieuropa anno 13 n°50. 2017.
36. Van Wijnbergen, S. The dutch disease': A disease after all? *Econ. J.* **1984**, *94*, 41–55. [CrossRef]
37. Reisinezhad, A. The Dutch Disease Revisited: Theory and Evidence. 2020. Available online: https://halshs.archives-ouvertes.fr/halshs-03012647/ (accessed on 10 September 2022).
38. Garcia-Cicco, J.; Kawamura, E. Dealing with the Dutch disease: Fiscal rules and macro-prudential policies. *J. Int. Money Finance* **2015**, *55*, 205–239. [CrossRef]
39. Bresser-Pereira, L.C. Neutralizing the Dutch disease. *J. Post Keynes. Econ.* **2020**, *43*, 298–316. [CrossRef]
40. Matsen, E.; Torvik, R. Optimal Dutch disease. *J. Dev. Econ.* **2005**, *78*, 494–515. [CrossRef]