Social exclusion in the Italian regions: a synthetic approach of measurement

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Paper presented for the Quetelet Seminar 2007
Poverty Dynamics and Vulnerability. Measures and Explanations in Demography and Social Sciences
Université Catholique de Louvain, Belgium
November 27-30, 2007

Session: Young Researchers Workshops

Summary
Social exclusion is a very complex concept, which includes monetary poverty, but doesn't exhaust its manifestations in it. In the present paper, we've tried to propose a synthetic index for the measurement of this phenomenon, which takes into account the three dimensions of discomfort individualized: economic, social and human. The methods are those used by UN to designe HDI, and the application to the Italian regions has allowed us to point out the clear contrast between high exclusion regions (southern), and low exclusion regions (northern and central). The regional ISE values have been compared with the regional GDP per capita values, showing the clear opposition between the two groups of regions. The results achieved have been also compared with those obtained with other applications.

1. Introduction

During the last few years, according to the increasing interest from governments and public opinion towards the topics connected to poverty and inequality, there have been several attempts to define and measure social exclusion, which many scholars consider to be the new face of poverty in the rich contexts (Negri, 1995, pp. 5-22). Actually, the theoretical knot about the distinction between poverty and social exclusion remains still far to get undone: the question is essentially to determine if they have to be considered a single phenomenon or two distinct ones and, in that case, which are the mutual relationships among them. With references to the definition, poverty can be considered as a state of deprivation of resources which affects individuals, while social exclusion is an impoverishment process caused by the accumulation and interaction of social risk factors. Concerning the measurement procedures, poverty is measured as monetary deprivation, while, in order to estimate social exclusion, more dimensions must be considered. Even if social exclusion is a very complex concept, the attempts of synthetic

measurement have been manifold[1] (Castellani, 1999; Cagiano de Azevedo R. *et alii*, 2001; Capacci *et al.*, 2003), above all because the synthetic indexes are immediately comprehensible, they allow to effectively combine together more dimensions, and make the comparison easier among different areas. The aim of this paper, according to the recent trends, is to provide a new attempt of measuring social exclusion in the Italian regions through a three-dimensional synthetic index, built applying the methodologies fixed by the United Nations (UNDP, 2004) in order to calculate the Human Development Index (HDI) and of the Human Poverty Index (HPI). Those indicators have, in fact, an intuitive *appeal*, since they vary from 0 to 1, and they can be easily understood from anyone. Most of the attempt to put together different dimension usually have very strong methodological aspects, which surely lead to better analytical results, but are incomprehensible to those who are not technicians.

2. Poverty and social exclusion: two sides of the same phenomenon?

The theoretical knot about the distinction between poverty and social exclusion remains still far to get undone: the question is essentially to determine if they have to be considered a single phenomenon or two distinct ones, and, in that case, which are the mutual relationships among them (overlap, inclusion, and so on). Many researchers focus the attention on the opportunity of using the two concepts in different contexts: the concept of poverty should be used especially in the underdeveloped countries, while for the developed ones the concept of social exclusion should be more properly used (Negri 1995; Capacci and Castagnaro 2003). Despite the various theoretical and conceptual attempts, the relationship among poverty and social exclusion is still not clearly defined and the two concepts are often combined together to determine the general picture of deprivation of a certain area. The attempts to propose a distinction (which of course cannot be a clear one) among the two phenomena have been numerous, and they almost all reflect, particularly, the differences in terms of adopted definitions and ways of investigate the two processes. Table 1 summarize some of the analytical and conceptual elements that allow to distinguish the concept of poverty from that of social exclusion (Jehoel-Gijsbers 2004).

With reference to the definition, poverty can be considered as a state of deprivation of resources which affects individuals, while social exclusion is an impoverishment process caused by the accumulation and interaction of social risk factors. Concerning the estimating procedures, poverty is measured as monetary deprivation, while, in order to estimate social exclusion, more dimensions must be considered. A more precise distinction appears in relation to the survey formalities: poverty must be measured only in terms of monetary deprivation, while social exclusion goes beyond the economic dimension, characterizing itself as a process of social disadvantage, including more dimensions. It is also clear that the concept of social exclusion regards not only the individuals or the families, but also, and above all, the context where they live and they try to get included (Böhnke 2001; Sassen 1999; Castel 1995; Mingione 1991). According to other researchers, even if there are some elements

[1] The use of synthetic indicators finds wide application today, and the literature on the subject shows their use in different fields: for example, in particular, applications to the degree of integration of immigrants, through the creation of human dignity indices (Mezzoprete N. , 1999; Cagiano de Azevedo R., S. Castellani, Di Ciommo L., 2001). Among the latest applications, interesting is the one made by Cagiano de Azevedo et al. (2006) applied to 207 European regions

of distinction, the separation of the two concepts has very little sense, since the definition of poverty is recently widening toward different dimensions. In fact, some new developments in the searches on the phenomenon tend to move the attention from a based static approach on the income, to a dynamic approach that also includes other aspects related to the living standard (Walker and Ashworth 1994; Leibfried *et al.* 1995). Many others go further by saying that the concept of relative deprivation is progressively approaching the definition of social exclusion (Townsend 1979; Gordon and Pantanzis 1997; Halleröd 1995; Whelan and Whelan 1995; Andreß 1999, Böhnke and Delhey 1999a and 1999b).

Even if considered together, the two concepts still show some substantial differences, both on the conceptual plan and on the empirical one: it is sure that, while for the measurement of poverty the estimation of one variable (income or consumptions) could be enough, for the measurement of social exclusion it is necessary to make a further effort to individualize different dimensions of analysis. This is because social exclusion is a concept that can be defined in reference to different aspects: the economic one (for instance, the ability to have essential good and services), the social (the social share, the political and democratic involvement, the social integration, etc.), and the human (all the aspects that regard the human development of a person). So the monetary poverty is certainly a central aspect of social exclusion but not the unique and decisive one.

Table 1. Differences between poverty and social exclusion

	POVERTY	**SOCIAL EXCLUSION**
Analytical approach	Static poverty concerns a specific economic situation, so it describes a static situation	Dynamic social exclusion describes the impoverishment and non-inclusion processes, so it's a dynamic analysis
Considered dimensions	One-dimensional poverty is studied with reference to a unique variable (income or consumption)	Multidimensional social exclusion i studied with reference to various variable, not merely economic, but also social and human ones
Analysis unit	Household or individual poverty describes the situation of a single person or of a family, so it can be interpreted as a lack of individual or household resources	Society social exclusion regards an entire society, so it could be interpreted as a lack of resources of a whole community (for example, infrastructures)
Analysis elements	Resources distribution poverty estimation has as central element the distribution of resources and goods.	Relational aspects social exclusion refers to relational aspects such as social cohesion, integration, norms and values sharing, etc.

3. The proposed index

3.1. Data and considered dimensions

Since social exclusion is a complex phenomenon and it concerns many different aspect of economic and social life, it seems useful to build an index which can summarize at least a few of these dimensions of uneasiness.

The decision of which dimensions take into account was made after a descriptive analysis of all the available data on social exclusion (Istat, 2003) and an observation of the correlation between them, after which it was possible to chose those to use to build

the proposed index. Each one of the three dimensions individualized for the measure of social exclusion points out a specific area of discomfort, and it is measured through an explanatory variable that synthesizes its meaning. The first form of discomfort is the economic one, measured through the rate of unemployment, which is a variable that shows an high degree of correlation with the monetary poverty: there are, in fact, many studies that have shown the bond among unemployment, exclusion and poverty (among the most recent, Negri *et al.*, 2000; Böhnke, 2001; Saith, 2001. See also Cies, 2004, p. 19)[2].

The second form of uneasiness is the social one, measured through the percentage of people that have housing problems[3] and difficulties of purchasing necessary goods[4]. The last one is the human discomfort, individualized as a lack of knowledge, considered an important factor in determining the degree of human development of the individuals[5], measured as percentage of people that have the elementary license as the highest school title. All data come from the official surveys conducted from Istat (2003, 2004).

3.2. Methodologies

The methodology used is the one fixed by the United Nations for the HDI and the HPI, that foresees the construction of a partial indicator for every dimension, through a procedure of relative normalization, according to the formula:

$$I_{ij} = Sx_{ij} / R_{ij} \qquad (1)$$

where I is the discomfort indicator, $i=1,\ldots,n$ per n=3 is the kind of discomfort, $j=1, \ldots, k$ per k=20 is the considered region

Sx_{ij} is the difference between the actually recorded value for each region in specific sizes discomfort (x_{ij}) and the minimum value for the same indicator ($\min(x_{ij})$), according to the formula:

$$Sx_{ij} = x_{ij} - \min(x_{ij}) \qquad (2)$$

R_{ij}, however, is none other than the field variation (*range*), which is the difference between the maximum and minimum value of the distribution, calculated using the formula:

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[2] Many other studies in the industrialized countries have recognized the central role of unemployment in the definition and measurement of social exclusion. Among the others: Whelan B.J.e Whelan C.T. (1995); Paugam S. (1995; 1996); Burchardt T. et al. (1999); Jonsson I. (1999); Saith R., (2001); Mastropietro E. (2002).

[3] With regard to housing problems only the physical problems of housing were considered and not those relating to the area where you live, as the first ones seems to be the most important in defining a situation of social exclusion of the family.

[4] Among the analysed variables, those are the two which shoe the highest degree of correlation with the monetary poverty. In particular, the value of the Pearson coefficient of correlation between housing problems and economic poverty has value 0.760318627, while the value for difficulties of purchasing necessary goods was 0.7815069.

[5] Lack of knowledge is one of the three dimensions considered by the United Nations in building measures ISU, IPU1 and IPU2.

$$R_{ij} = \max(x_{ij}) - \min(x_{ij}) \quad (3)$$

The social exclusion index is then calculated as simple arithmetic average of the three partial indicators through the following formula,:

$$IES_j = \sum_{i=1}^{n} I_{ij} / n \quad (4)$$

where n=3, such as the considered dimensions.

4. The results of the application

Since the chosen variables are all negative, increasing values of the index will always correspond to worse situations: consequently, for every dimension, 0 represents the value of least exclusion, and 1 the highest. The following table (2) shows the results of the application: the greatest variability among the regions is noted in connection to the economic uneasiness.

Table 2. Values of ISE and partial indicators for region

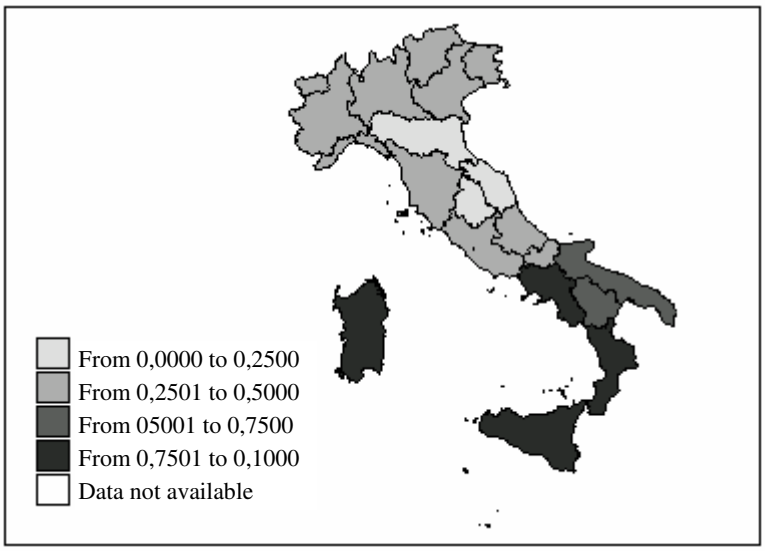
	Regions	**IED**	**ISD**	**IHD**	**ISE**
1	Emilia Romagna	0,0294	0,3113	0,1912	**0,1773**
2	Marche	0,0641	0,3974	0,1824	**0,2146**
3	Umbria	0,1299	0,5828	**0,0000**	**0,2376**
4	Abruzzo	0,1396	0,3709	0,2853	**0,2653**
5	Toscana	0,1075	0,3046	0,4242	**0,2788**
6	Valle d'Aosta	0,0773	**0,0000**	0,8404	**0,3059**
7	Lombardia	0,0552	0,3245	0,6535	**0,3444**
8	Veneto	0,0462	0,4437	0,5551	**0,3483**
9	Friuli V. Giulia	0,0710	0,3444	0,6409	**0,3521**
10	Trentino A. Adige	**0,000**	0,2715	0,8385	**0,3700**
11	Liguria	0,1705	0,3046	0,6665	**0,3805**
12	Lazio	0,2987	0,4636	0,4279	**0,3967**
13	Piemonte	0,1127	0,5099	0,7138	**0,4455**
14	Molise	0,4690	0,7219	0,2159	**0,4689**
15	Puglia	0,7403	0,5099	0,6558	**0,6353**
16	Basilicata	0,6493	**1,0000**	0,4250	**0,6914**
17	Calabria	**1,0000**	0,8874	0,3683	**0,7519**
18	Campania	0,8443	0,6887	0,8259	**0,7863**
19	Sicilia	0,8434	0,9801	0,7079	**0,8438**
20	Sardegna	0,6882	0,9801	**1,0000**	**0,8894**

Source: own elaborations on data Istat 2004 and 2003

In order to calculate the index of Economic Discomfort (IED), the U.N methodology has been applied to the rate of total unemployment, finding the highest value in Calabria and the least in Trentino Alto Adige. All the southern regions show values up to 0,65, while the greatest part of the northern regions show extremely lower values. To estimate the Social Discomfort Index (ISD), the normalization procedure has been applied to the average of housing uneasiness and difficulty of purchasing necessary goods in every region, showing a maximum value in Basilicata and a minimum in Valle d'Aosta. Finally, to calculate the Index of Human Discomfort (IHD),

the normalized value of the percentage of people with inferior middle school license as maximum title has been considered, showing the highest value in Sardegna and the lowest in Puglia. About this last dimensional index the differences among northern and southern regions appear to be less clean: particularly, among the regions of the North, Valle d'Aosta, Trentino Alto Adige, Piemonte and Liguria introduce values of human uneasiness greater than 0,6. At the opposite, among the regions with low IHD (< 0,4), the position of Calabria has to be underlined. About the level of social exclusion, the Italian regions that shows the lowest value of ISE is Emilia Romagna (0,1773), while Sardegna shows the highest (0,8894). All the southern regions have elevated values (among 0,6 and 0,8), while central and northern regions have the lowest (among 0,2 and 0,4). Figure 1 shows the italian regions per value of ISE, putting into evidence the strong differences between the two areas of the country.

Figure 1. Italian regions per value of ISE



Source: own elaborations on data Istat 2004 and 2003

5. An attempt of weighting the dimensions

According to the proposals of the United Nations for the calculation of Human Poverty Index 1 (UNDP, 2004, p. 287), a parameter α=3 has been used in order to try to attribute a weight to the dimensions of ISE. If we call ISE is the Index of Social Exclusion, IED is the Index of Economic Discomfort, ISD is the Index of Social Discomfort and the IHD is the Index of Human Discomfort, the formula of the synthetic index (that we will call ISE' to distinguish it from the preceding one) gains, therefore, the following form:

$$ISE' = \left[1/3\left(IED^3 + ISD^3 + IHD^3\right)\right]^{1/3} \qquad (5)$$

The value α=3 allows to attribute a remarkable, but not preponderant, weight to the variable with the greatest value, in order to take into account the dimension where there is the greatest deprivation. Table 3 shows the results of ISE' application: it is possible to remark that, using this corrected index, although the best and the worst position are unchanged, there are some moves in the ranking of the other regions,

caused by higher values in some dimensions.

Beyond the comparisons among the regions, the attribution of this weight gains sense according to an important consideration: the three individualized dimensions operate with different strength to determine the situation of social exclusion of the regions, and it is almost impossible to clearly establish what form of uneasiness is mostly handicapping in comparison to the others. For such reason, the attribution of the weight can set greater importance on that dimension that introduces the most elevated value in comparison to the others, because this dimension is the one where the worst performance is recorded, so it presumably is the one to be held in greater consideration. For instance, if Trentino Alto Adige introduces an IED equal to 0 but an IHD equal to 0,8385, then it appears clear that the area of the human discomfort in this region is more extended than the economic one.

The attribution of a weight allows, therefore, to take in consideration this difference, that would be instead annulled using the simple arithmetic average. The use of a parameter represents a step forward in comparison to the arithmetic average, according to the unequal strength of the three individualized dimensions to determine the social exclusion in the different regions.

Table 3. Italian regions for ISE'

Rank	*Regions*	ISE'
1	Emilia Romagna	0,2314
2	Marche	0,2845
3	Abruzzo	0,2949
4	Toscana	0,3280
5	Umbria	0,4056
6	Lazio	0,4086
7	Veneto	0,4417
8	Friuli V. Giulia	0,4664
9	Lombardia	0,4710
10	Liguria	0,4788
11	Molise	0,5464
12	Piemonte	0,5495
13	V. d'Aosta	0,5829
14	Trentino A. Adige	0,5879
15	Puglia	0,6491
16	Basilicata	0,7664
17	Campania	0,7923
18	Calabria	0,8354
19	Sicilia	0,8582
20	Sardegna	0,9109

Source: own elaborations on data Istat 2004 and 2003

6. The relationship between social exclusion and other variables

At this point, it could be interesting to appraise the grade of correlation among the values of social exclusion found and the value of other important variables. First of all in table 4 we compare the ranking of the regions for Index of Social Exclusion and the ranking for per capita GDP. It can be noticed as there is no correspondence among the position for the two indicators: in fact the Trentino Alto Adige, that shows the highest GDP per capita value among the Italian region, goes down to the 10^{th} place in the classification for social exclusion.

However, there is a certain degree of negative correlation between the value of ISE and that of GDP, which is shown by the data in table 4 and figure 2. Figure 2 shows a clear separation into two groups of regions: the northern and the central (circled in green), that place themselves on low levels of social exclusion (lower than 0,50) and high levels of GDP, and the southern regions (red circled) which manifest, instead, level of ISE higher than 0,60 and levels of per capita GDP lower than 15.000 euros a year (except for Sardinia, whose value of GDP per capita is slightly superior). Of course, if there is a negative correlation between the ISE values and the per capita GDP values, there would be a similar positive correlation between the ISE values and the relative poverty, since this indicator is directly dependent from the level of income.

Table 4. Ranking and correlation between ISE and GDP per capita and monetary poverty

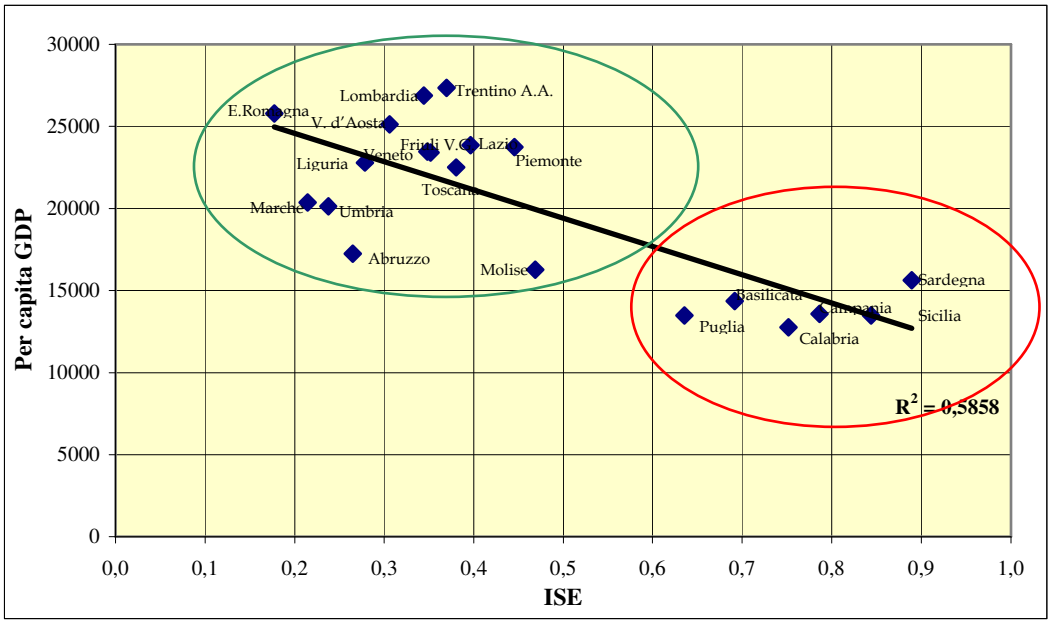
	ISE		**GDP per capita**		**Monetary poverty**	
	Ranking	*Value*	*Ranking*	*Value (euro)*	*Ranking*	*Value (%)*
Emilia Romagna	**1**	0,1773	3	25792,8	3	4,5
Marche	2	0,2146	11	20359,1	5	4,9
Umbria	3	0,2376	12	20138,8	7	6,4
Abruzzo	4	0,2653	13	17249,0	14	18,0
Toscana	5	0,2788	9	22798,8	6	5,9
V. d'Aosta	6	0,3059	4	25127,1	9	7,1
Lombardia	7	0,3444	2	26889,5	1	3,7
Veneto	8	0,3483	7	23460,2	2	3,9
Friuli V. Giulia	9	0,3521	8	23399,4	11	9,8
Trentino A. Adige	10	0,3700	1	27328,2	12	9,9
Liguria	11	0,3805	10	22504,4	4	4,8
Lazio	12	0,3967	5	23855,2	10	7,8
Piemonte	13	0,4455	6	23743,8	8	7,0
Molise	14	0,4689	14	16275,2	18	26,2
Puglia	15	0,6353	18	13460,3	16	21,4
Basilicata	16	0,6914	16	14337,7	19	26,9
Calabria	17	0,7519	20	12757,9	20	29,8
Campania	18	0,7863	17	13555,2	17	23,5
Sicilia	19	0,8438	19	13487,8	15	21,3
Sardegna	**20**	0,8894	15	15606,8	13	17,1
Average	**-**	0,4592	-	20106,4	-	13,0
Dev stand	**-**	0,2234	-	5023,2	-	9,0
Variation coefficient	**-**	48,64	-	24,98	-	68,99
Correlation coefficient with ISE	**-**	**1**	**-**	**-0,765**	**-**	**0,761**

Sources: own elaborations on data Istat 2003 and 2004 and Istituto Tagliacarne, 2004

Again through the table 4 we evaluate the existing correlation between the regional ISE and the incidence of relative poverty: the correlation among the two series of values is high enough (0,7608), as also shown by figure 3. As already revealed in figure 1, we can appreciate the same two groups of regions, put in evidence with the same coloured circles (green for the northern and central and red for the southern). The values of R^2 obtained (0,59 for the GDP and 0,58 for the monetary poverty) show the existence of a certain causal relationship between the variables, although not extremely high.

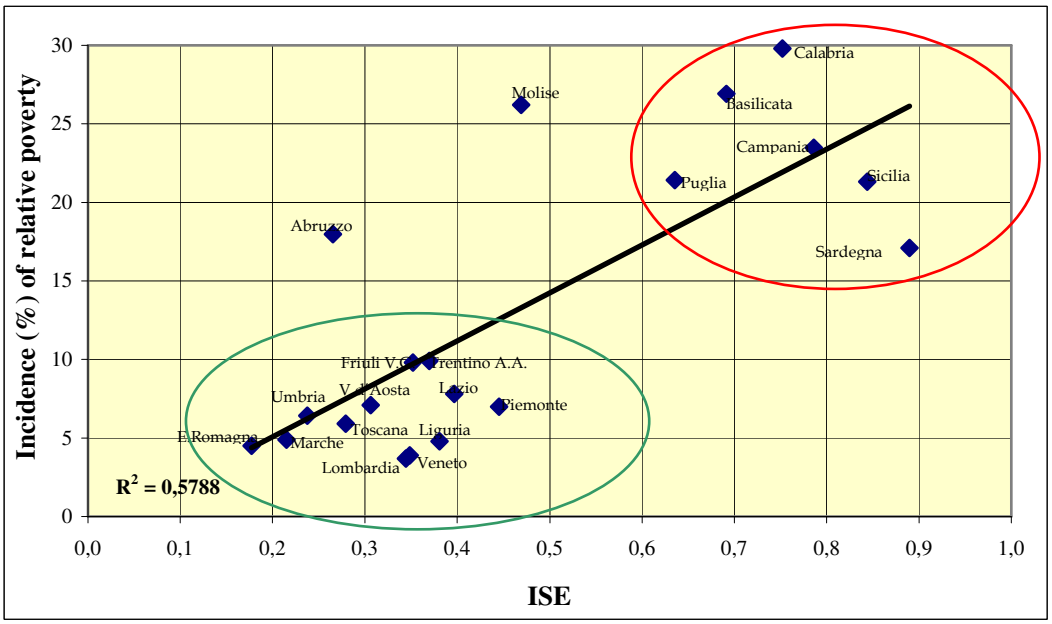
It's clear therefore that the level of social exclusion that manifests inside the regions is correlated to the GDP (in a negative way) and to the incidence of poverty (in a positive way). From the application of the built index of social exclusion and the reflections about the correlation of social exclusion with other variables it seems evident that there is still a strong disparity between the northern regions and the southern ones.

Figure 2. Italian regions by ISE and per capita GDP (euros)



Sources: own elaborations on data Istat 2003 and 2004 and Istituto Tagliacarne 2004

Figure 3. Italian regions by ISE and incidence of relative poverty



Sources: own elaborations on data Istat 2003 and 2004

7. The comparison with other applications

The classification of the regions obtained through our application has been compared with those got by other researchers who used similar methodologies, particularly Capacci and Castagnaro (2003) and Castellani (1999). The differences that emerge among the three applications must mainly be brought back to the choice of the dimensions used to calculate the different synthetic indexes: this choice always introduces a certain degree of arbitrariness.

Table 5. Italian regions by different ISE

Regions	ISE Capacci - Castagnaro	ISE Castellani	Own ISE
Piemonte	0,312	0,310	0,446
V. d'Aosta	0,248	0,206	0,306
Lombardia	0,195	0,240	0,344
Trentino A. Adige	**0,087**	**0,028**	0,370
Veneto	0,260	0,173	0,348
Friuli V. Giulia	0,430	0,239	0,352
Liguria	0,430	0,471	0,381
Emilia Romagna	0,280	0,174	**0,177**
Toscana	0,464	0,351	0,279
Umbria	0,369	0,287	0,238
Marche	0,493	0,268	0,215
Lazio	0,407	0,546	0,397
Abruzzo	0,467	0,409	0,265
Molise	0,614	0,440	0,469
Campania	0,765	**0,760**	0,786
Puglia	0,628	0,571	0,635
Basilicata	0,763	0,547	0,691
Calabria	**0,920**	0,648	0,752
Sicilia	0,849	0,657	0,844
Sardegna	0,644	0,500	**0,889**

Sources: Capacci e Castagnaro, 2003; Castellani, 1999; own elaborations.

Table 6. High exclusion and low exclusion regions by different Social Exclusion Indexes

	ISE Capacci - Castagnaro	ISE Castellani	Own ISE
High social exclusion regions ISE>0,50	- Campania - Puglia - Basilicata - Calabria - Sicilia - Sardegna - *Molise*	- Campania - Puglia - Basilicata - Calabria - Sicilia - Sardegna - *Lazio*	- Campania - Puglia - Basilicata - Calabria - Sicilia - Sardegna
Low social exclusion regions ISE<0,50	- Piemonte - Valle d'A. - Lombardia - Trentino - Veneto - Friuli V.G. - Liguria - E. Romagna - Toscana - Umbria - Marche - Abruzzo - *Lazio*	- Piemonte - Valle d'A. - Lombardia - Trentino - Veneto - Friuli V. G. - Liguria - E. Romagna - Toscana - Umbria - Marche - Abruzzo - *Molise*	- Piemonte - Valle d'A. - Lombardia - Trentino - Veneto - Friuli V. G. - Liguria - E. Romagna - Toscana - Umbria - Marche - Abruzzo - *Lazio* - *Molise*

Sources: own elaboration on Capacci e Castagnaro, 2003; Castellani, 1999; own elaborations.

In the Capacci and Castagnaro's application five indicators are considered: unemployment, lack of education, incidence of the food expenses on the general ones, bad perception of the health's state, families that declare housing problems. In the

Castellani's application, instead, the author takes into account the unemployment, the personal dissatisfaction, the social isolation, the incidence of the necessary family expenses and the diffusion of the crime. The table 5 compares the results of the three applications. The situation of some regions meaningfully changes: for instance Calabria, last in the Capacci and Castagnaro application, goes 3 positions up using the proposed ISE because of the low value of IHD.

Although the regions modify their position in the classification, it doesn't change the equilibrium among them. If we divide the regions (as it is showed in table 6) in those that have a value of ISE lower than 0,5 (that we can define low social exclusion regions) and those that have a value higher than 0,5 (high social exclusion regions), we will notice no differences among the three applications. All the southern regions remain classified in the high social exclusion group, whatever the applied indicator might be, showing a clear opposition with the regions of the centre and the north of the country. There are only two regions that change their position: Molise and Lazio show values around 0,50 (which we use as separating value among the two groups of regions) in all the three application.

8. Brief concluding remarks

The measurement of poverty in Italy is characterized by a series of problems related to used methodologies (since it is measured only in economic terms), but also and above all related to the high differentiation existing between regions, which makes it difficult to compare them using a single threshold, not weighted on the base of the real purchasing power of the different areas of the country. These difficulties are also enhanced by the issues arising from the need to integrate the economic outlook with other dimensions of analysis that can measure the new face of poverty in contemporary nations, the so called social exclusion.

There have been many attempts to build multidimensional indices of poverty that despite the refined methodology and informative capabilities possessed, have a very little intuitive *appeal*, resulting, therefore, unlikely to be put to the public and, above all, outside of the internal debates of the scientific communities involved in the phenomenon (typically those of statisticians and economists).

In this contribution it has tried to provide a first attempt, not methodologically sophisticated but certainly intuitive and informative, to measure social exclusion, summarizing the condition of each region on three dimensions identified in a single value, which can be easily understood and interpreted, as it ranges from 0 to 1 and does not have a unit of measurement itself. The degree of social exclusion regions will be much greater as the value tend to the maximum 1 and the less likely as the minimum 0.

The methodology underlying the proposed regional Index of Social Exclusion were taken largely from those experienced by the United Nations for the construction of synthetic indicators used in order to assess the situation of the various world countries in terms of development. Clearly, in this application, the *proxy* variables identified and used for each size of privation have been chosen to take into account the peculiarities of the Italian situation. Specifically, the dimensions included in the indicator are three: economic (measured by the rate of unemployment), social (measured through two types of social-housing difficulties and difficulties in purchasing necessary goods and services) and human (measured through the lack of knowledge).

The proposed index, although it has all the limitations of the synthetic family of indicators, offers, however, the advantage to show in an immediate way the territorial disparities of social exclusion in Italy. The adopted method, in fact, showing the best situation, the worst and all the intermediate ones, make the comparisons between the regions more clear. Therefore, social exclusion is not measured in terms of *presence/absence*, but in terms of degree of manifestation of the phenomenon, following the theoretical formulation of the *fuzzy* methods, according to which it is possible to overpass the dichotomist vision which have insufficient informative valence to study such a complex phenomena. The following applications will regard the esteem of social exclusion in the Italian provinces through the use of the proposed index.

From the proposal it has been possible to confirm the well-known divergence between the southern regions (which all have high levels of social exclusion) and the northern and central regions (which have, by contrast, low levels). The breakdown of the regions obtained reflects, however, that for per capita GDP, showing how at higher levels of GDP correspond lower values of social exclusion in the Italian regions and, therefore, as the economic variables have a significant weight in determining the degree of social inclusion or exclusion that takes place in a certain area. Further efforts should be made to develop indicators and measures to improve the knowledge of the phenomenon of social exclusion in Italy.

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