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Regional gaps in well-being: socio-economic aspects and policies

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Outline

- Aims and contributions of the paper
- Related literature
- Data and methods
- Findings
- Concluding remarks

Aims

- To shed some light on the geography of well-being in Italian Regions;
- To estimate the efficiency of well-being generation and to individuate some factors that can influence it;
- To draw both possible general policy implications and specific policy implications for particular fields of relevance/regions.

Contributions

The importance of measuring well-being (WB) at the local level has encouraged a number of countries to propose their own-specific WB measures.

Many of the attributes and features that influence subjective and objective WB are, in fact, likely to be locality-specific and hence spatially variable.

Within the same country, for example, people have different access to collective provisions depending on the region where they live. People living in the same region share a common cultural, political and socio-economic environment. The WB of individuals living in the same country might differ by region.

- We compute a composite index of WB.

In the **first step** of the analysis, a composite index of regional WB is computed for Italian Regions.

- We estimate a WB generating function.

In **the second step**, the computed WB composite index is used as the dependent variable of the WB generating function.

To the best of our knowledge, the paper is the first that tries to understand if a region's good position in a WB ranking is obtained with an efficient use of inputs and respecting some control variables constraints.

Related Literature

The paper is related to a burgeoning research:

- A first bunch of papers focuses on WB measurement.

Two strands of research have been attracting growing interest in recent economic literature on WB:

- studies that look at subjective WB (Clark and Oswald, 1994; Di Tella et al., 2001; Frey and Stutzer, 2002; Layard, 2005; Blanchflower and Oswald, 2011, among others);
- studies that, trying to go beyond the usual income-related aspect of WB, focus on aggregate measures of objective WB (Stiglitz et al., 2009; Fleurbaey, 2009 among others).

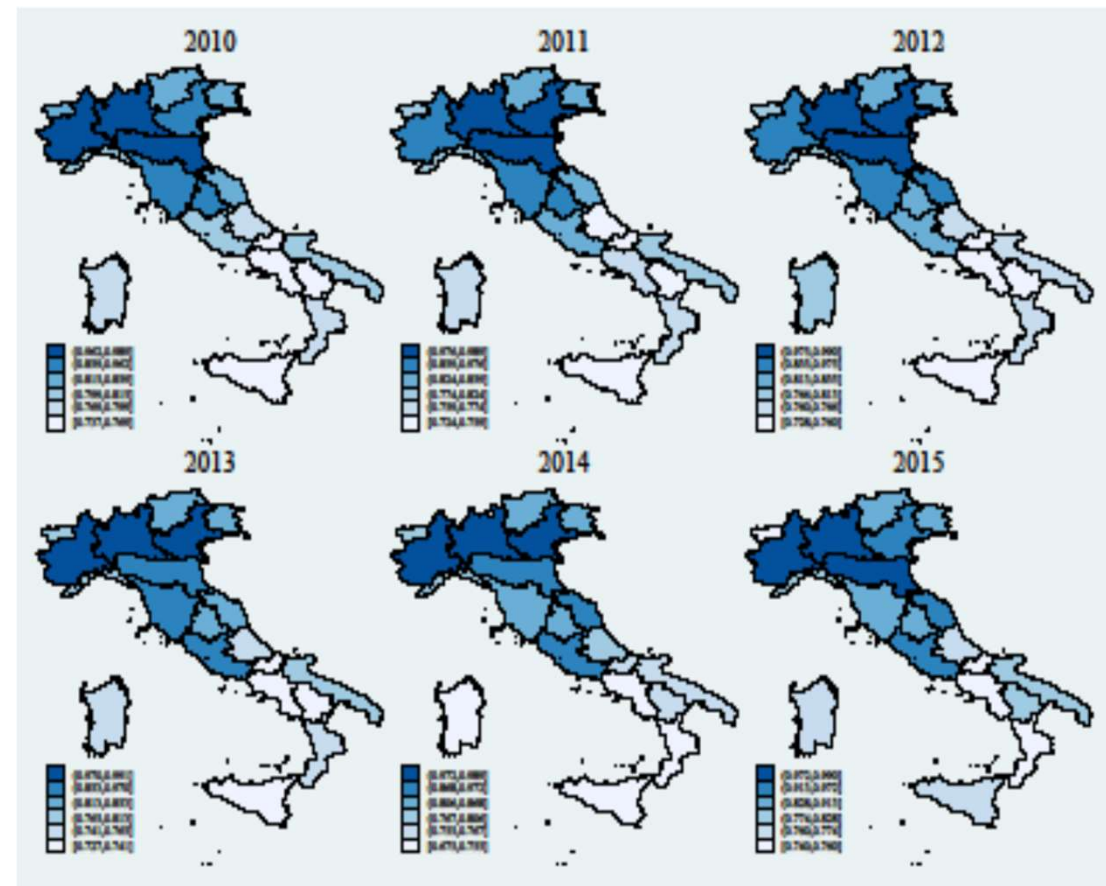
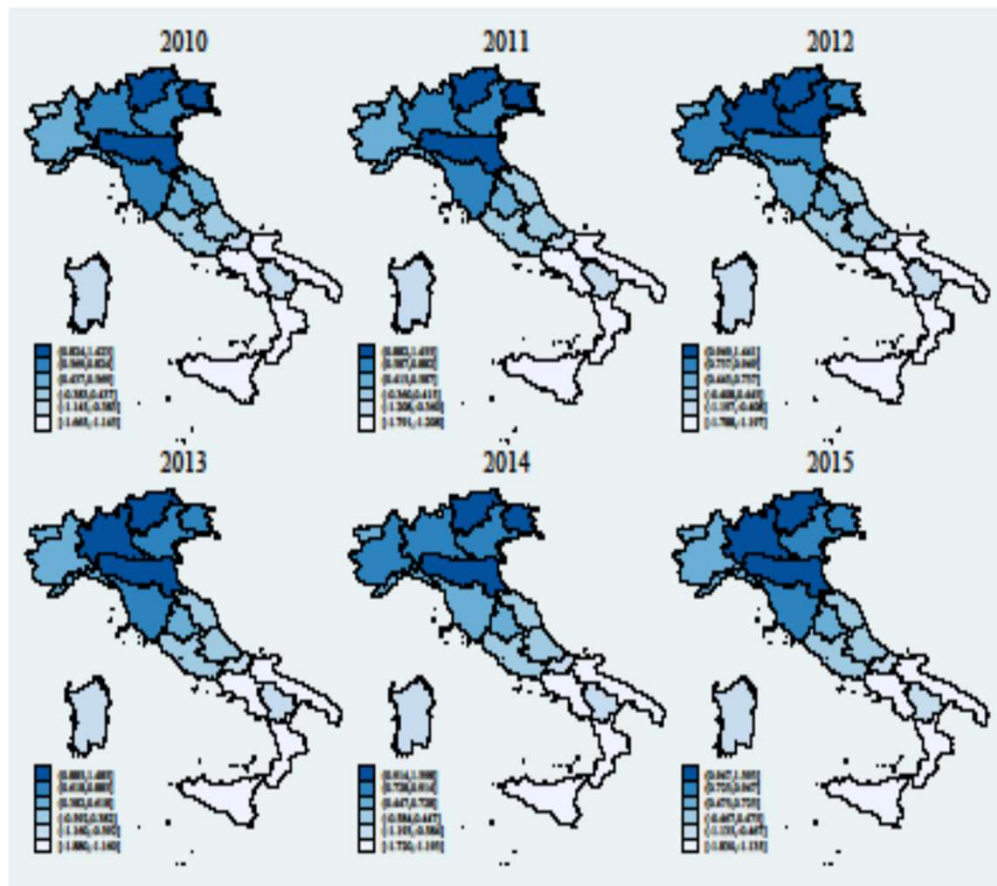
The paper focuses on the strand of the WB literature that proposes to go beyond the usual income-related aspect of WB.

- A second bunch of papers deals with the efficiency measures for the assessment of Decision Making Units performance.

While the concept of efficiency is subject to different interpretations (Aigner et al., 1977; Coelli et al., 2005 among others), there is consensus in considering efficiency to be the degree of proximity of an actual production process to a standard of optimality.

The paper uses the stochastic frontier approach in the specification proposed by Battese and Coelli (1995)

The Geography of WB vs the Geography of Efficiency in WB Generation



Data

In order to try to limit arbitrariness in choosing the WB dimensions, we consider the insights that emerge from the project “Equitable and Sustainable Well-Being” (**BES**) carried out by the Italian National Institute of Statistics (ISTAT) in conjunction with the National Council for Economy and Labour (CNEL).

The **BES** database covers **12** dimensions of WB

Health, Education, Employment, Environment, Essential Public Services, Material Living Conditions, Personal Security, Research and Innovation, Social Relations, Landscape and Cultural Heritage, Subjective Well-being and Politics and Institutions.

Six years are considered (2010-2015).

Regional data on

- **Tax autonomy;**
- **Transfers dependence;**
- **Residential assistance and Social health care**

for the considered period are extracted from ISTAT Public Administration data-warehouse.

Methods (1/6)

STEP 1

We compute a composite WB index, for Italian regions, by using the Factorial Analysis (FA).

- This methodology allows to explain the variance of the phenomenon under analysis without requesting the estimation of parameters.
- It can summarize a set of sub-indicators while preserving the maximum possible proportion of the total variation in the original set.
- It allows the study of correlations between large numbers of variables, grouping them around factors, so that they are arranged on factors highly correlated with each other (Dillon and Goldstein 1984).

Methods (2/6)

Having p variables X_1, \dots, X_p measured on a sample of n subjects, the variable x_s can be written as a linear combination of m factors F_1, \dots, F_m where $m < p$:

$$x_s = k_{s1}F_1 + \dots + k_{sm}F_m + w$$

k_s are the factor loads for variable x_s

w is the part of variable x_s not explained by the factors.

FA condenses the information contained in a matrix of correlation or variance/covariance; it aims to identify statistically the latent, not directly observable dimensions of the observed phenomenon

The proposed composite WB index is computed starting from **49** variables that synthesize – through the AMPI method adopted by ISTAT – the original variables grouped into the **12** domains of the BES project.

Methods (3/6)

STEP 2

The computed WB index is used as output of a WB generating function with the aim of measuring the efficiency rank of the 20 Italian regions in terms of overall WB.

The methodology used is a stochastic frontier approach.

The SFA allows regions to be distant from the frontier also for randomness.

The variables that synthetize the 129 variables of the **12** BES dimensions are **63**. We do not consider some of those variables because data do not cover the considered time interval.

The function $G(.)$

$$WB_{it} = G(X) e^{v-u}$$

indicates the link between the WB and the dimensions X composing it.

Methods (4/6)

The rank efficiency (RE) among Regions derives from the ratio between the WB observed and that of the best performing Region (for which $u = 0$)

$$RE = G(X) e^{v-u} / G(X) e^v = e^{-u}$$

A Cobb-Douglas function is used to model the frontier.

The WB generating function in the log-linear form is:

$$WB_{it} = \alpha_0 + \sum_j \alpha_j \ln(X_{jit}) + v_{it} - u_{it}$$

WB is the WB indicator;

X_j represents the *j*-th input, with $j=1, \dots, 12$

α is the parameter to be estimated

u is the inefficiency

v is the random error

Methods (5/6)

The econometric specification of the inefficiency component is:

$$u_{it} = \sum_k \eta_k z_{kit} + e_{it}$$

z -variables are the explicative regressors of the inefficiency component

e_{it} is the erratic component

Efficiency is time-variant, ensuring a change in relative ranking among Regions.

This accommodates the case where an initially inefficient Region becomes more efficient over time.

Methods (6/6)

The frontier and the inefficiency equation are simultaneously estimated with:

- **tax autonomy;**
- **level of transfers;**
- **residential assistance and social health care**

as control variables for the level of inefficiency.

Factor Analysis: Results Summary

Only the most relevant aspects of Factor 1 - that accounts for the 48,4% of the WB variance – are shown.

Factor 1 is strongly influenced by:

- Labour-Occupation (0,979),
- Economic WB 1 (0,934),
- Some Social Relationships dimensions (all of them with a score higher than 0,80)

In details, the WB of Italian Regions (2010 – 2015) is **strongly positively** influenced by:

- Employment rate of the population between 20 and 64 years;
- average disposable income (per capita) of consumer households;
- satisfaction with family relations, with friendship relations and with person to rely on;
- life expectancy (in good health) at birth;
- satisfaction with the environmental situation of the area in which people live.

In details, the WB of Italian Regions (2010-2015) is **negatively** influenced by:

- Some aspects of Quality of Labour (Rate of Incidence of Employees with a Low Pay; Rate of Incidence of Non-regular Employees; Employees on Temporary Contracts);
- some aspects related to “Minimum Condition” of Life (People younger than 60 living in very low labour intensive families; People living in families with severe material deprivation);
- families that signaled difficulties to access at least three essential services.

It emerges that having a job matters, but WB decreases if the job is temporary, non-regular and with a low pay.

Italians seem do not appreciate the labour market “flexibility” even if it creates more employment.

Inequality matters as well: WB is reduced if the rate of inequality increases.

RANKINGS BY WB INDEX RETRIEVED FROM THE FACTOR ANALYSIS

Rank	Region	2010	Region	2011	Region	2012	Region	2013	Region	2014	Region	2015
1	Trentino	1.551	Trentino	1.606	Trentino	1.521	Trentino	1.607	Trentino	1.759	Trentino	1.784
2	Friuli	1.011	Friuli	0.993	Veneto	0.961	Friuli	0.924	Friuli	1.015	Friuli	1.087
3	Emilia-Romagna	0.915	Emilia-Romagna	0.921	Friuli	0.918	Veneto	0.873	Emilia-Romagna	0.981	Lombardia	0.986
4	Lombardia	0.789	Veneto	0.872	Lombardia	0.891	Lombardia	0.830	Veneto	0.950	Emilia-Romagna	0.946
5	Veneto	0.789	Lombardia	0.807	Emilia-Romagna	0.861	Emilia-Romagna	0.824	Lombardia	0.903	Veneto	0.909
6	Toscana	0.661	Valle d'Aosta	0.653	Valle d'Aosta	0.710	Toscana	0.583	Valle d'Aosta	0.714	Valle d'Aosta	0.737
7	Valle d'Aosta	0.553	Toscana	0.587	Piemonte	0.638	Valle d'Aosta	0.561	Piemonte	0.669	Toscana	0.682
8	Piemonte	0.501	Piemonte	0.573	Toscana	0.521	Piemonte	0.529	Toscana	0.658	Piemonte	0.653
9	Umbria	0.478	Umbria	0.567	Umbria	0.438	Umbria	0.488	Umbria	0.510	Umbria	0.573
10	Marche	0.476	Liguria	0.446	Liguria	0.400	Marche	0.367	Marche	0.481	Marche	0.441
11	Liguria	0.469	Marche	0.407	Marche	0.384	Liguria	0.239	Liguria	0.342	Liguria	0.430
12	Lazio	-0.015	Lazio	-0.084	Lazio	-0.068	Lazio	-0.051	Lazio	0.107	Lazio	0.075
13	Abruzzo	-0.320	Abruzzo	-0.146	Abruzzo	-0.128	Abruzzo	-0.129	Abruzzo	-0.153	Abruzzo	-0.169
14	Sardegna	-0.326	Sardegna	-0.295	Sardegna	-0.305	Sardegna	-0.525	Sardegna	-0.472	Sardegna	-0.415
15	Molise	-0.504	Molise	-0.674	Molise	-0.467	Molise	-0.695	Molise	-0.542	Molise	-0.647
16	Basilicata	-0.877	Basilicata	-0.861	Basilicata	-0.954	Basilicata	-0.889	Basilicata	-0.871	Basilicata	-0.793
17	Puglia	-1.153	Puglia	-1.144	Puglia	-1.296	Puglia	-1.277	Puglia	-1.270	Puglia	-1.230
18	Calabria	-1.536	Calabria	-1.668	Calabria	-1.657	Campania	-1.714	Campania	-1.653	Campania	-1.735
19	Campania	-1.641	Campania	-1.709	Campania	-1.720	Calabria	-1.796	Calabria	-1.704	Calabria	-1.782
20	Sicilia	-1.672	Sicilia	-1.781	Sicilia	-1.841	Sicilia	-2.033	Sicilia	-1.818	Sicilia	-1.878

DESCRIPTION OF THE VARIABLES SFA STEP 2

Variables	Expected sign	Description
<i>Frontier</i>		
WB		Dependent Variable
Education	+	
Health	+	
Labour	+	
Economics	+/-	
Social relationship	+	
Politics	+	
Security	-	
Satisfaction	+	
Landscape	+	
Environment	+	
Innovation	+	
Quality of services	+	
<i>Efficiency equation</i>		
Transfers dependence degree	+	$ETS/(ETR+ETS+EET)$
Tax autonomy degree	-	$ETR/(ETR+ETS+EET)$
Satisfaction average	-	Average satisfaction Index with post-office, public transportation timetable and health services local offices
Residential social assistance and social health care	-	Number of structures (for 100.000 citizens) where are housed people who are in need for different reasons: elderly alone or with health problems, disabled, minors without protection, young women in difficulty, foreigners or Italian citizens with economic problems and in conditions of social hardship.
ETR = revenue from own taxes (Tribute) or taxes devolved by the State to Regions and substitutive sums		
ETS = revenue from own taxes (Contributions) and current account State allocations		
EET = revenue from capital goods (rents, profits, etc.) and profits of regional companies		

Estimation of SFA: the Role of Tax Autonomy Degree

	Coef.	Std. Err.	z	P-value
Frontier				
Education	1.522	0.165	9.200	0
Health	0.935	0.253	3.700	0
Labour	1.611	0.268	6.010	0
Economics	0.763	0.210	3.640	0
Social relationship	2.440	0.247	9.860	0
Politics	0.657	0.292	2.250	0.024
Security	-0.061	0.140	-0.440	0.662
Satisfaction	-0.183	0.114	-1.600	0.110
Landscape	0.655	0.193	3.400	0
Environment	0.798	0.195	4.100	0
Innovation	-0.001	0.146	-0.010	0.996
Quality of services	1.097	0.308	3.560	0
Intercept	-46.918	1.383	-33.940	0
(In)efficiency equation				
Tax autonomy degree	-0.185	0.131	-1.410	0.160
Satisfaction average	-0.009	0.003	-3.470	0
Residential assistance	-0.016	0.004	-4.130	0
Intercept	0.922	0.198	4.650	0
sigma_u	0.005	0.013	0.370	0.712
sigma_v	0.076	0.005	15.390	0
lambda	0.061	0.014	4.390	0

RANKINGS BY EFFICIENCY SCORES
RETRIEVED FROM the estimation of the Role of Tax Autonomy Degree

Rank	Region	2010	Region	2011	Region	2012	Region	2013	Region	2014	Region	2015
1	Lombardia	0.999876	Lombardia	0.999868	Lombardia	0.999873	Lombardia	0.999852	Lombardia	0.999811	Lombardia	0.999824
2	Piemonte	0.999743	Emilia-Rom.	0.999790	Emilia-Rom.	0.999684	Piemonte	0.999665	Piemonte	0.999392	Piemonte	0.999579
3	Emilia-Rom.	0.999722	Piemonte	0.999734	Piemonte	0.999633	Emilia-Rom.	0.999332	Emilia-Rom.	0.996193	Veneto	0.998418
4	Veneto	0.998772	Veneto	0.999630	Veneto	0.999238	Veneto	0.998430	Veneto	0.981371	Emilia-Romagna	0.997756
5	Toscana	0.974743	Toscana	0.978706	Toscana	0.944765	Toscana	0.948807	Toscana	0.925755	Toscana	0.956513
6	Lazio	0.916137	Trentino	0.919308	Trentino	0.891586	Trentino	0.900210	Trentino	0.889845	Marche	0.928083
7	Friuli	0.901781	Friuli	0.913823	Friuli	0.871744	Friuli	0.870641	Marche	0.878472	Trentino	0.904492
8	Trentino	0.894098	Lazio	0.879908	Lazio	0.867138	Lazio	0.862751	Friuli	0.870767	Friuli	0.895794
9	Valle d'Aosta	0.878330	Umbria	0.878873	Umbria	0.857811	Umbria	0.861737	Umbria	0.867720	Lazio	0.887478
10	Umbria	0.858476	Marche	0.849923	Sardegna	0.834086	Marche	0.838900	Lazio	0.851036	Umbria	0.874218
11	Marche	0.840869	Liguria	0.845625	Marche	0.816355	Liguria	0.825587	Abruzzo	0.823646	Liguria	0.841881
12	Liguria	0.837894	Valle d'Aosta	0.838497	Liguria	0.816119	Abruzzo	0.812759	Liguria	0.809359	Abruzzo	0.821452
13	Abruzzo	0.821982	Abruzzo	0.825519	Valle d'Aosta	0.799306	Valle d'Aosta	0.808817	Sardegna	0.795689	Valle d'Aosta	0.803334
14	Sardegna	0.799710	Sardegna	0.809891	Abruzzo	0.792078	Sardegna	0.806046	Valle d'Aosta	0.794253	Puglia	0.800423
15	Molise	0.784942	Puglia	0.802557	Puglia	0.783251	Puglia	0.800384	Puglia	0.793715	Sardegna	0.790196
16	Basilicata	0.781859	Molise	0.778151	Molise	0.769761	Molise	0.772582	Molise	0.789877	Calabria	0.773373
17	Puglia	0.780965	Basilicata	0.766556	Basilicata	0.768157	Basilicata	0.737773	Basilicata	0.745228	Molise	0.747715
18	Campania	0.773305	Campania	0.755626	Campania	0.749415	Calabria	0.732577	Calabria	0.734963	Basilicata	0.735506
19	Calabria	0.771505	Calabria	0.746168	Calabria	0.729929	Campania	0.711125	Campania	0.728001	Campania	0.707656
20	Sicilia	0.688649	Sicilia	0.694648	Sicilia	0.685108	Sicilia	0.667810	Sicilia	0.693955	Sicilia	0.701697

Estimation of SFA: the Role of Dependence from Transfers

	Coef.	Std. Err.	z	p-value
Frontier				
Education	1.562	0.167	9.370	0
Health	0.814	0.259	3.140	0
Labour	1.758	0.269	6.530	0
Economics	0.765	0.208	3.670	0
Social relationship	2.506	0.250	10.040	0
Politics	0.640	0.287	2.230	0.026
Security	-0.047	0.141	-0.330	0.738
Satisfaction	-0.229	0.115	-1.990	0.046
Landscape	0.547	0.208	2.630	0
Environment	1.006	0.207	4.860	0
Innovation	0.034	0.145	0.240	0.814
Quality of services	1.003	0.290	3.460	0
Intercept	-47.482	1.392	-34.110	0
(ln)efficiency equation				
Transfers dependence degree	0.452	0.154	2.940	0
Tax autonomy degree	-0.037	0.138	-0.270	0.788
Satisfaction average	-0.012	0.003	-4.230	0
Residential assistance	-0.017	0.005	-3.710	0
Intercept	0.941	0.202	4.670	0
sigma_u	0.042	0.029	1.420	0.157
sigma_v	0.063	0.017	3.790	0
lambda	0.658	0.046	14.440	0

RANKINGS BY EFFICIENCY SCORES

RETRIEVED FROM the estimation of the Role of Dependence from Transfers

Rank	Region	2010	Region	2011	Region	2012	Region	2013	Region	2014	Region	2015
1	Emilia-Romagna	0.979886	Veneto	0.986838	Veneto	0.983792	Veneto	0.981517	Veneto	0.977041	Veneto	0.979938
2	Veneto	0.979442	Emilia-Romagna	0.985439	Lombardia	0.975568	Lombardia	0.975033	Lombardia	0.967242	Lombardia	0.974669
3	Lombardia	0.974710	Piemonte	0.973415	Emilia-Romagna	0.974734	Piemonte	0.966357	Emilia-Romagna	0.956491	Piemonte	0.974486
4	Piemonte	0.969682	Lombardia	0.972994	Piemonte	0.956845	Emilia-Romagna	0.963463	Piemonte	0.945431	Emilia-Romagna	0.974454
5	Toscana	0.948062	Toscana	0.956075	Toscana	0.916468	Toscana	0.930090	Toscana	0.906337	Toscana	0.936228
6	Trentino	0.882529	Friuli	0.916075	Friuli	0.869492	Trentino	0.880925	Trentino	0.878766	Lazio	0.930942
7	Friuli	0.881325	Trentino	0.910725	Umbria	0.868779	Umbria	0.864521	Umbria	0.878356	Trentino	0.920158
8	Umbria	0.879777	Umbria	0.897913	Trentino	0.863257	Friuli	0.859956	Marche	0.863119	Friuli	0.902498
9	Valle d'Aosta	0.871451	Lazio	0.849773	Lazio	0.817651	Lazio	0.839533	Lazio	0.857982	Umbria	0.890761
10	Lazio	0.866984	Valle d'Aosta	0.821272	Marche	0.808986	Marche	0.818895	Friuli	0.856938	Marche	0.871705
11	Marche	0.823357	Marche	0.819956	Sardegna	0.801837	Valle d'Aosta	0.773302	Valle d'Aosta	0.775602	Liguria	0.806189
12	Puglia	0.791031	Puglia	0.801129	Valle d'Aosta	0.765460	Puglia	0.760421	Molise	0.774400	Puglia	0.782029
13	Liguria	0.780994	Liguria	0.798139	Molise	0.764647	Liguria	0.753233	Abruzzo	0.756259	Valle d'Aosta	0.771599
14	Molise	0.772484	Sardegna	0.765574	Puglia	0.748494	Molise	0.752772	Puglia	0.755735	Molise	0.762412
15	Calabria	0.768483	Molise	0.758073	Liguria	0.746194	Sardegna	0.748140	Sardegna	0.747044	Sardegna	0.759103
16	Abruzzo	0.761986	Abruzzo	0.74510	Abruzzo	0.727951	Abruzzo	0.745581	Liguria	0.746073	Abruzzo	0.731117
17	Sardegna	0.760794	Calabria	0.735821	Campania	0.718800	Calabria	0.713785	Basilicata	0.722099	Basilicata	0.730223
18	Campania	0.749234	Campania	0.726321	Basilicata	0.706350	Basilicata	0.692827	Sicilia	0.704051	Calabria	0.716827
19	Basilicata	0.730333	Basilicata	0.723226	Calabria	0.691388	Campania	0.692043	Calabria	0.699367	Sicilia	0.704621
20	Sicilia	0.726581	Sicilia	0.702280	Sicilia	0.683204	Sicilia	0.664151	Campania	0.667277	Campania	0.689357

Concluding Remarks (1/3)

Our results show that:

- The most important aspects of Italian Regional Over-all WB (between 2010 and 2015) are:
 - two objective factors
 - the employment rate of the population between 20 and 64 years,
 - the average per capita disposable income;
 - some subjective factors related to social relationships of people
 - satisfaction with family relations, with friendship relations and with person to rely on.
- Labour quality matters.

The WB decreases if the job is temporary, non-regular and with a low pay.

Although flexibility increases employment, Italians still prefer a stable and regular job.

Concluding Remarks (2/3)

- Our findings – at regional level – show that the historical Italian economic dualism is accompanied by disparities in dimensions that affect the overall WB.

They do not show any evidence on the generalised stereotype that the WB in Southern Regions is strongly influenced by a better environment or the extra leisure time people have to practice social relations.

Inequality matters and, in the considered period, inequality in WB has increased:

- In the four bigger Northern Regions, the level of WB is increased.
- The last four position of the rank are Southern Regions; these regions have also registered a reduction of WB over the considered period.

Concluding Remarks (3/3)

Fiscal decentralization seems to play an important role.

It has led to a high level of efficiency in determining WB for “Northern” Italian Regions.

The **frontier** Regions over the period considered are the four biggest Northern Regions (Lombardia, Piemonte, Emilia-Romagna and Veneto).

Southern Regions are always at the bottom of the rank.

As a consequence, a picture characterized by a well-defined North and South divide also emerges in terms of efficiency in determining WB.

The level of tax autonomy might have reinforced geographical disparities.

This might be due to a number of factors among which:

- the fiscal redistributive capacity of Central Government;
- a lower level of quality of local government.

The study highlights the need to carefully analyse the quality of local and national policies, in particular that policies that have an impact on:

- labour market
- social capital.

Thank you very much for your attention.

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