Cooperative Movement and Widespread Prosperity across Italian Regions°

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Abstract

We explore the relationship between prosperity and the presence of cooperative enterprises at the regional level in Italy between 2010 and 2019. We summarize prosperity through an index originally proposed by Amartya Sen and we apply it to classify Italian regions. We then perform some panel regressions showing that there is a positive and significant relationship between such an index and the cooperative presence. We detect that, and explain why, the cooperative movement contributes to the prosperity more through its employment than in terms of the added value it generates.

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1. Introduction

The main objective of this paper is exploring the relationship between prosperity and the size of the Italian cooperative movement appropriately summarized. The benchmark is provided by the Italian regions (*NUTS-2*) in the period 2010-19. To the best of our knowledge, this is the first attempt of measuring such a link, whatever the choice of the territorial level.

Cooperative firms are usually considered part of the so-called *third-pillar* (Rajan, 2019) and most of them, like the social cooperatives, are fully entitled to be considered among the most relevant examples of social entrepreneurship. Cooperative firms can also be classified as organizations which generate prosperity. Indeed, they are featured by a democratic governance (one head-one vote), they do not discriminate across workers and/or members and are much rooted within their communities also because they do not delocalize abroad (99.6% of them and 84.7 of groups controlled by them, operate in a single region (Borzaga *et al.* 2019). Their presence is sizeable in many Western economies. For instance, according to Istat datasets, in 2015, including subsidiaries, the Italian cooperative companies account for about 1,215,000 employees (7.4% of total employment in the Italian private sector) and over 32 billion euros (4.4% of the corresponding added value). Besides the cooperative enterprises, the cooperative associations too play a key role, not only in representing the affiliates, but also in orienting them, promoting mergers and workers-buy-out and other related supporting initiatives (Zamagni and Zamagni 2011).

The empirical evidence seems to suggest that co-ops pursue a combination of profits and employment and tend to be more resilient than profit-making firms during downturns by stabilizing employment while sacrificing profits. Profits are mostly plough-back to increase indivisible reserves or increase capital and such a strategy clearly strengthens their financial sustainability (Perotin 2012, Delbono and Reggiani 2013, Kruse 2016, Navarra 2016 and Caselli *et al*. 2021). This apparently

countercyclical behaviour[1], by sustaining labour incomes - whose differences are notoriously the main source of overall personal income inequality at least in OECD countries - ends then with contrasting unemployment and the resulting wage edge within the labour force. In addition, the pay-ratio within cooperative firms, consortia and organizations is usually lower than within other organizational forms and this contributes to shrink income differentials among employees. Moreover, a consolidated literature, at least since Putnam *et al.* (1993), highlights how social capital represents a determinant of economic outcomes that significantly affect the population well-being and the quality of life. The cooperative enterprises may favor the cumulation of *social capital*, for instance by generating employment in disadvantaged areas and intercepting social needs of the most vulnerable within a population[2].

A measure of prosperity should capture an intuitive component of well-being, the one usually needed for a decent life in terms of freedom of choice in the access to resources. We are sympathizers of the *capability approach* (pioneered by Sen 1985 and 1986), where the individual well-being is defined as a function of the set of achievements (f*unctionings*), i.e., what one manages *to do or to be* in various life domains as well as the freedom one has in choosing among such achievements (*capabilities*). According to Sen (1985, p. 69), "the quality of life a person enjoys is not merely a matter of what he or she achieves, but also of what options the person has had the opportunity to choose from". Hence, well-being is a multidimensional phenomenon consisting of several functionings, but what ultimately matters in Sen's approach is the freedom of choosing among the many combinations of such subjective functionings. However, given the hard task to come up with selecting a group of measurable capabilities, especially for sub-national layers of government, we shall follow here the so-called

[1] See Borzaga *et al.* (2021) for the employment dynamics in Italy.

[2] See, e.g., Basterretxea and Storey (2018), and Mazzola *et al.* (2018) who include the number of social cooperatives among the indicators of "territorial capital" in their analysis of the recent performance of Italian provinces, NUTS- III).

equivalent income approach, consisting in measuring well-being (also) in terms of an income metrics (Decancq *et al*. 2015). To this end, we shall borrow and adapt an index, originally proposed by Sen (1976), which incorporates both the real disposable income of households and a measure of inequality of its distribution. We shall label it Index of Widespread Prosperity (*IWP*).

Many countries exhibit notably large economic differences within their boundaries and such heterogeneity is obviously concealed in cross-country analyses. Various studies by (and within) OECD have shown that differences among regions belonging to the same country may be larger than differences between countries. In 2013, for example, regional differences in the employment rate in Italy ranged from 40% in Campania to 73% in the autonomous province of Bolzano. This range is as large as the one observed across all OECD countries (Veneri and Murtin, 2016). Moreover, it is worthwhile noting that when looking at inequality measures (e.g., Gini coefficient), regional inequality in income dimension may be relatively larger than in any other well-being dimension as jobs, housing, education, health, access to services, civic engagement, environment, safety: Pinar (2019, p. 41, Table 3). In other words, income inequality matters not only *per se*, but also once it is embedded into multidimensional indices of economic conditions.

The distribution of cooperative firms around the world too is drastically different across and within countries (see Dow, 2018). Italy, which ranks top in international comparisons as for the economic impact of the cooperative presence, is no exception. Hence, a region-based breakdown of the Italian experience consistently follows.

We concentrate on one component of the (in)equality dimension featuring most definitions of well-being, i.e., the one dealing with the distribution of material resources across members of a community, (real) income ranking top among such resources. In assessing well-being or the standard of living, a focus on income distribution is by now common practice. This is the case with 4 of the 12 recommendations forcefully put forward by Stiglitz *et al.* (2009) in their influential

Report. Even at the sub-national level, some measures of income inequality enter overall evaluations of well-being within communities.

The literature mostly related to our study deals with various measures of well-being across *Italian* areas. Cannari and D'Alessio (2002). They consider 16 Italian areas (mostly coinciding with regions) in the period 1995-2000. Relying on periodical *Surveys of Household Income and Wealth* run by the Bank of Italy, they estimate, *inter alia*, the Gini index of household's disposable incomes which is then used to weight average incomes at the "regional" level (as in in the above Y). Ciani and Torrini (2019) use the same database as Cannari and D'Alessio (2002) to consider the time span between 2000 and 2016. They divide the country only in two macro areas and show that income inequality as measured by the Gini index is persistently greater in Southern Italy compared to the Centre-North area, although the gap seems to shrink in recent years (Ciani and Torrini, 2019, p. 11, Fig. 3a). Income distribution is also considered, for instance, by D'Urso *et al.* (2020), who focus on the measurement of well-being in Italian regions between 2010 and 2016, in Murias *et al.* (2012), who consider Italy and Spain mainly in 2005, and in Bertin *et al.* (2018).

Our main findings can be summarized as follows:

- The is a negative *correlation* between regional disposable real income and the inequality of its distribution.
- Our IWP *declines* almost everywhere between 2010 and 2019 and Southern regions exhibit a *lower* IWP than the ones in the Centre-North of the country.
- The regional IWP is significantly related to the size of the cooperative movement.
- Controlling for some key economic and demographic variables, the size of the cooperative employment has a significantly *positive* effect on the regional IWP.

The rest of the paper is organized as follows. In section 2 we provide a description of how real disposable income and its distribution jointly evolved across Italian regions.

This is instrumental to the central question that we tackle in sections 3 and 4 where we present our analysis and comment the results. Section 5 concludes, hinting at some policy implications of our results.

2. Widespread prosperity in Italian Regions

As we argue in the Introduction, we follow here the income equivalent approach. As for the choice of an appropriate measure of a key-component of well-being, let y_{it} be the average household disposable (real) income of the *i-th* population in year *t* and G_{it} be the value of the Gini index of the corresponding distribution. Let's then define

$$Y_{it} = y_{it} (1 - G_{it})$$

This can be interpreted as an Index of Widespread Prosperity, as it aims at catching an individually desirable attribute (high purchasing power as a proxy for prosperity), weighting negatively the dispersion around the average of such a power among households which belong to the relevant population. Y_{it} has been originally proposed in Sen (1976) in a seminal analysis of real national income: under some regularity conditions on social preferences, it may be (cardinally) interpreted as a social welfare function, in which G_{it} measures the proportional loss in social welfare to be imputed to inequality in the income distribution. Of course, any index hinging on Sen's (1976) one can accommodate other indicators of, say, well-being, and variables other than real income, as well as measures of inequality of such variables different from the Gini one.

To proceed with a preliminary analysis of Y_{it}, we plot 20 regional pairs in the income-Gini space for 2010 and 2019 (Fig. 1A, A mnemonics for Appendix) and we also visualize the regional values of the 2010-19 averages (Fig. 2A). The data about regional income distributions are retrieved from official datasets (Eu-Silc, based too on households' surveys). Since the Eu-Silc data cover up to 2017, we have estimated

incomes and Gini values for 2018 and 2019. As for G_i, we employed the last 5 available values of G_{it} (t = 2013-17) to obtain the two subsequent years via a linear regression. As for the regional average values of household disposable real incomes (y_i), we obtain the 2018 values by means of the yearly rate of change between 2018 and 2017 (source: Istat, *Regional accounts*) and then we replicate the same update by using the values of 2018 to derive the 2019 ones. Moreover, since the datasets provide separate figures for the two autonomous provinces of Bolzano and Trento (which the region Trentino-Alto Adige is divided into), we average their data using population sizes (15+) as weights. We use the Consumers Price Index (Istat, Foi(nt)), evaluated in 2015, to deflate incomes.

[Insert Figures 1A and 2A about here]

While in 2010 the scatter plot does not exhibit any clear pattern, in 2019 a negative association between the regional real income and the corresponding Gini index emerges quite clearly. Fig. 3 shows even more neatly that the correlation between regional real incomes and the Gini values of the corresponding distributions is negative and modestly growing over time (the correlation coefficient increases from 0.59 to 0.67). A negative correlation has been detected also among countries. In 2014, for instance, the correlation coefficient between average disposable income and *within-country* income inequality as measured by the Gini coefficient, is equal to − 0.79 in the European countries (Pinar 2019, p. 43, fn. 25).

Figure 3. Correlation between Gini index and regional average incomes, 2010-19

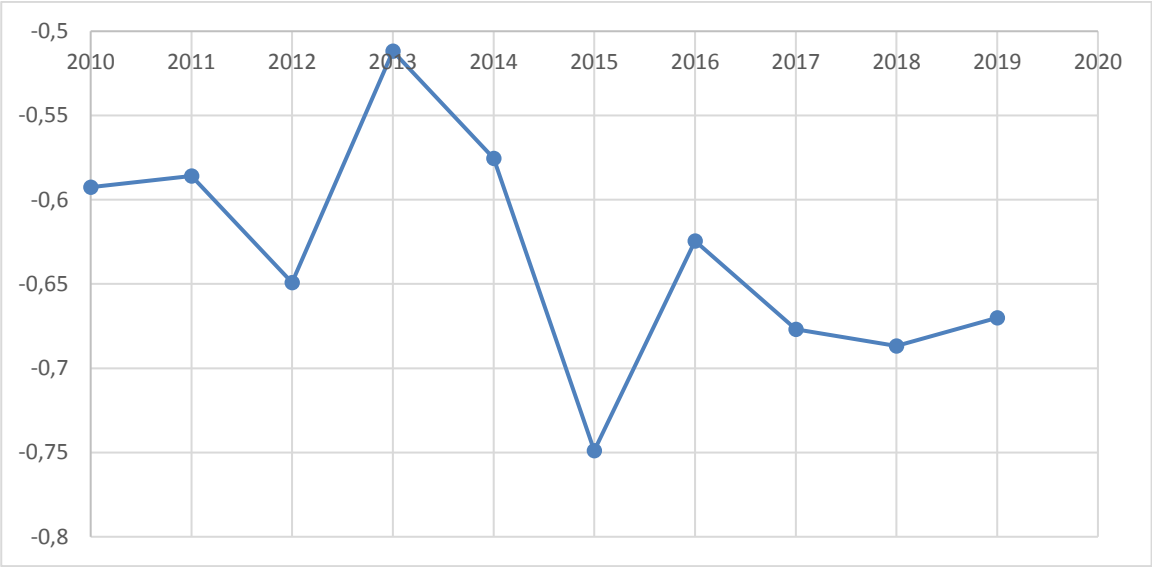


Table 1 summarizes the (numerical) content of Figures 1A and 2A for the extreme years, appending the percentage changes in regional incomes, Gini values, as well as the value of Y, over the entire period. Figure 4A illustrates the regional diversities of both y and Gini. While in 2019 the country as a whole has not recovered yet from pre-financial crisis levels (− 2.74% in real income, after the 2009 recession responsible of a fall of about 5% in Italian GDP) and the Gini index mildly moves up in the period, very different tendencies characterize the regional territories, both for the size of income contraction as well as for the variation in income dispersion.

Table 1. y_{it} and G_{it}; $\Delta\%$ changes in y_{it}, G_{it} and Y_{it}; t = 2010, 2019

	2010		2019		2010/2019		
	y_i	G_i	y_i	G_i	$\Delta\% y_i$	$\Delta\% G_i$	$\Delta\% Y_i$
Italy	32370	0,33	31483	0,343	-2,74	4,00	-4,66
Piedmont	34600	0,32	30966	0,314	-10,50	-1,88	-9,72
Valle d'Aosta	34608	0,282	30716	0,313	-11,25	11,13	-15,13
Liguria	31746	0,3	31263	0,314	-1,52	4,60	-3,46
Lombardy	37067	0,31	36322	0,329	-2,01	6,13	-4,71
Trentino-Alto Adige	38483	0,298	37097	0,310	-3,60	3,89	-5,19
Veneto	34637	0,288	35669	0,307	2,98	6,53	0,26
Friuli-Venezia Giulia	33431	0,285	34310	0,284	2,63	-0,28	2,75
Emilia-Romagna	37427	0,297	35411	0,290	-5,39	-2,29	-4,47
Tuscany	34442	0,304	33957	0,332	-1,41	9,21	-5,37
Umbria	32888	0,287	33536	0,291	1,97	1,25	1,46
Marche	34278	0,289	33128	0,299	-3,36	3,39	-4,69
Lazio	34270	0,345	32331	0,378	-5,66	9,68	-10,47
Abruzzo	26936	0,299	27900	0,315	3,58	5,35	1,21
Molise	27249	0,292	27242	0,321	-0,03	9,86	-4,09
Campania	26327	0,342	24912	0,362	-5,38	5,73	-8,19
Apulia	28306	0,33	27622	0,334	-2,42	1,21	-3,00
Basilicata	26731	0,344	25837	0,358	-3,34	4,19	-5,46
Calabria	25686	0,335	25421	0,382	-1,03	14,15	-8,09
Sicily	22643	0,364	22753	0,371	0,49	1,82	-0,56
Sardinia	29196	0,31	28099	0,346	-3,76	11,48	-8,72

Table 2 collects some summary statistics of the three variables under exam and to be used in the next section. Overall, we have 200 observations for each variable, 20 of them for the cross-country dimension and 10 for the temporal one. Unsurprisingly, the Coefficient of Variation of *Y* exceeds the one of *y*, supporting our choice of the former instead of the latter to capture differences in regional prosperity.

Table 2. Summary statistics, Italian regional data, 2010-19

Variable	Obs	Mean	Std. Dev.	Min.	Max.
y	200	29911	4241	21628	38483
Gini	200	0.316	0.028	0.262	0.396
Y	200	20533	3409	13635	27015

The Southern regions (including islands) continue to experience *more uneven* distributions around a *lower* real income than the Centre-North ones. The country as a whole performs quite poorly and, given the relative stability of the national Gini value, the driving factor seems to lay in the conspicuous fall in Italian GDP and real revenues observed after the financial crisis. Only a few regional territories experience (tiny) positive variations in Y_i, the greatest of those being Umbria.

Fig. 4A(a) visualizes the decrease in the average regional *Y* between 2010 and 2013, followed by a modest recoupment. Such a pattern is accompanied by an increase over time in the standard deviation of Y. Figure 4A(b) illustrates the spatial distribution of Y underscoring the Italian regional heterogeneity.

[Insert Figure 4A about here]

In Fig. 5A, we plot, for each region, the difference between its Y_i and the unweighted average value of all Y_i, in the two extreme years of our time frame. The territorial dualism (Centre-North vs South) is confirmed once again (there is a vast literature on the Italian dualism which we can hardly account for here: see, among others, Bank of Italy, 2017).

Moreover, it is worth underscoring a generalized increase in the size of differentials wrt to the average (whatever their sign) in the period.

[Insert Figure 5A about here]

3. Prosperity and co-ops: an empirical analysis

For the arguments provided in section 1, we conjecture the presence of a positive relation between the chosen index of regional widespread prosperity (*Y*) and the size of the cooperative movement in terms of employees or the added value obtained by cooperative organizations.

We obtain novel data on the regional cooperative presence by elaborating the balance sheets from the *Bureau van Dijk-Aida* dataset, whereas we retrieve all the other data from Istat (*Labor Force Survey*, in Italian). As for the interpretation of figures about the cooperative employment, it is worth stressing that we collect data about employees of cooperative firms and cooperative groups which are registered in the various regions. Of course, some of them, especially the largest ones, employ labour force also outside the regional boundaries. This means that we shall emphasize the economic consequences of decisions taken in the corporate headquarters located in the relevant region, being obviously aware that they yield economic effects also elsewhere. However, the territorial gap between the company's location and the location of its employees is very small: in 2015, 99.6% of Italian cooperatives (and almost 85% of groups controlled by cooperatives) operate only in the region where they are registered (Borzaga *et al.* 2019, p. 10). Hence, we shall summarize the regional cooperative magnitude with the following variables, where *pop[n, m]* will indicates the population share in the (closed) interval between *n* and *m*.

Cooperative employment (CEM): cooperative employees out of *pop[15, 64*].

Cooperative Added Value (CAV): cooperative added value out of regional GDP.

To complete the construction of the dataset to be used, in addition to the one collected in Table 2, the choice of the other relevant variables reflects a broadly consolidated empirical literature (for instance, Murias *et al.* 2012, Bertin *et al.* 2018, Pinar 2018). Indeed, various indicators capturing demographic factors (as the elderly dependence rate, life expectancy, mortality rates), the share of population with at least secondary

or third education, the participation in the labour market ((un)employment rate, activity rates) and real GDP have been variously included into multidimensional indexes of well-being. Notice, however, that the measures of households' income distribution (averages and/or indices of dispersion) are included among the indicators of well-being, whereas in our analysis such measures are embedded into an index (Y_{it}) that needs to be analysed wrt other indicators, the cooperative presence being the candidate mostly under scrutiny. Here we select the following variables:

Activity Rate (AR): active *pop[15, 64]* out of *pop[15 ,64*].

Education (EDU): *pop[25, 64]* with at least secondary education out of *pop[15, 64*].

Elderly Rate (ER): population 65+ out of *pop[15, 64*].

Italian Gross Domestic Product yearly rate of growth (GDP).

Table 3 reports some descriptive statistics. As it is by now well established (e.g., OECD 2021), the values of CEM exceed those of CAV. The broad range of variation of CEM as well as CAV reflects the presence of regions like Emilia-Romagna where the cooperative movement is deeply rooted, whereas it plays a marginal role in other territories. The range of AR is largely mirroring the North-South dualism. As for GDP, of course, only 10 observations are available.

Table 3. Summary statistics, Italian regional data 2010-19

Variable	Obs	Mean	Std. Dev.	Min.	Max.
CEM	200	2.48	1.54	0.64	8.93
CAV	200	1.56	1.14	0.46	5.88
AR	200	64.32	7.99	46.30	74.61
EDU	200	29.83	3.21	22.59	36.55
ER	200	34.24	4.63	23.45	46.39
GDP	10	0.18	1.88	-4.33	2.54

Our first step is to analyze and test the presence of a relation between Y and CAV and between Y and CEM by means of an independence test. We begin by dividing the Italian regions into two groups according to their *CAV* (summarized by the mean over the period) wrt to the median. By means of the same criterion we classify regions wrt the median *Y*. The resulting Table 4 (where $\bar{Y}$ and σ_Y are the mean and the standard deviation of *Y*, respectively, in the relevant groups between 2010 and 2019) shows that 8 low *CAV* regions out of 10 display also a low value of *Y* and 8 high *CAV* regions out of 10 feature also a high value of *Y* (Table 4).

Table 4. Italian regions wrt to *Y* and *CAV* and wrt to *Y* and *CEM*, 2010-2019

	Low *CAV*	High *CAV*	Low *CEM*	High *CEM*
Low *Y*	Abruzzo Basilicata Calabria Campania Lazio Molise Apulia Sicily $\bar{Y}$=17188 σ_Y=1789	Liguria Sardinia $\bar{Y}$ = 19506 σ_Y = 1263	Abruzzo Basilicata Calabria Campania Molise Apulia Sardinia Sicily $\bar{Y}$=16939 σ_Y=1456	Lazio Liguria $\bar{Y}$ = 20500 σ_Y = 269
High *Y*	Lombardy Valle d'Aosta $\bar{Y}$ = 23183 σ_Y = 1022	Emilia-Romagna Friuli-Venezia Giulia Marche Piedmont Tuscany Trentino Umbria Veneto $\bar{Y}$ = 23472 σ_Y = 1215	Marche Valle d'Aosta $\bar{Y}$ = 22539 σ_Y = 378	Emilia-Romagna Friuli-Venezia Giulia Lombardy Piedmont Tuscany Trentino Alto Adige Umbria Veneto $\bar{Y}$=23633 σ_Y = 1216

Very similar conclusions emerge with a taxonomy based on median *CEM*: 8 regions out of 10 share low values of *CEM* as well *Y* and 8 regions out of 10 share high values of both. Only four regions are located differently wrt to the classification based on median *CAV*.

In either case, we can firmly reject the hypothesis of independence between regional widespread prosperity and either CAV or CEM. This descriptive result is confirmed by the statistics test $\chi^2_{\nu=1} = 7.20$, with associated probability $p(\chi^2) = 0.0073$, as well as by Fisher's exact test, with probability $p = 0.011$, which looks appropriate with fairly small samples as ours.

We now resort to a panel analysis allowing us to catch both the spatial and the temporal dimension of our data. Given the nature of our balanced panel, to test the aforementioned conjecture, we run the following linear fixed effects panel regression:

$$Y_{i\,t} = \alpha + Y_{i,t-1}\,\beta + X_{it}'\,\delta + Z_t'\,\lambda + \gamma_i + \varepsilon_{it} \qquad (1)$$

where X_{it} is the vector of variables at time t described in Table 3, Z_t is the vector of time-dependent, region-invariant variables, γ_i are regional fixed effects and ε_{it} is the residual component. The dependent variable $Y_{it} = y_{it}\,(1 - G_{it})$ is central to our research and has been illustrated in previous sections (its summary statistics is in Table 2).

The presence of $Y_{i,t-1}$ captures the alleged dynamics of *Y*, considering regional differentials. There are sturdy theoretical arguments supporting the inclusion of lagged values of Y. Clearly, we believe that current values of Y are notably affected by past values of Y. Hence, excluding lagged values would lead to a remarkable bias by omitted variable. Moreover, including them allows an acceptable solution to the autocorrelation problem featuring the dynamics of Y. Furthermore, including $Y_{i,t-1}$, which explains most of the variability of Y, helps us assessing the relevance of other variables. Some region-specific characteristics, such as the ones belonging to one of three geographic subsets (North, Centre and South), are included in the regional fixed effects γ_i . As for Z_t, we consider the Italian *real GDP yearly growth rate (GDP)*, whose

statistics is also summarized in Table 3. To ease the interpretation of the variables *X* and *Z*, all the above series are multiplied by hundred.

5. Results

Our goal is evaluating the importance of our two summaries of the cooperative movement (CAV and CEM) on Y. We postpone the estimate of equation (1) and we first explore their relationship with the two components of Y (y and G). Subsequently, we study some linear models with panel data and fixed effects for both y and G where, in addition to the lagged values of the dependent variable, we consider separately and then jointly both CAV and CEM. The results are summarized in Table 5A and show that the cooperative presence matters relatively to y. Specifically, CEM plays a significant and stronger role than CAV: indeed, when considering both of them, only CEM is significant. As for G, the relationship is not significant (estimates available upon request).

The equation (1) is firstly estimated in a simplified version in which CAV and CEM appear on their own. As one can see from Table 6A, in addition to the lagged value of Y, the cooperative presence is positively and significantly affecting Y and, once again, CEM matters more than CAV. When both variables are considered, CAV stops being significant (last column, Table 6A).

Moving to the extended version of (1), in Table 7 we report the OLS estimates of our linear fixed effects panel model (1), distinguishing the entire group of regions from the relative (widely overlapping) subsets of the 10 ones featured by a high *CAV* and a high *CEM*. The Hausman test for random effects vs fixed effects, reported in the last row of Table 7, indicates a strong preference for the fixed effects model to be used below. Notice that, while including lagged values of *Y* allows to tackle the presence of autocorrelation, this leads to a strong heteroscedasticity requiring us to resort to robust standard errors that we calculate by means of the Arellano HAC estimator.

In the analysis of our 20 regions, the joint Welch's F test (reported in the last but one row of Table 7) rejects the presence of a unique intercept, highlighting a significant regional fixed effects γ_i. Looking at the two subsets of regions featured by similar levels of *CAV* or *CEM*, the Welch's F test does not suggest any longer to reject the hypothesis of a common intercept and this looks consistent with dealing now with less heterogeneous groups of regions.

Table 7. Linear fixed effects panel model, Italian regions, 2010-19

	Dependent variable: *Y*					
	all regions		10 regions high CAV		10 regions high CEM	
AR	96	(65)	11	(130)	-71	(121)
CEM	381**	(161)	904**	(289)	755**	(297)
EDU	-23	(58)	111	(100)	36	(91)
ER	-32	(64)	2	(109)	135	(122)
CAV	387	(361)	186	(256)	64	(224)
GDP	138***	(20)	123***	(29)	102***	(20)
Y(-1)	0.62***	(0.06)	0.68***	(0.07)	0.66***	(0.06)
R^2	0.98		0.96		0.95	
F statistic common intercept	$F_{\nu=19,58.8}$=1.76	p=0.05	$F_{\nu=9,32.4}$=1.39	p=0.23	$F_{\nu=9,32.4}$=1.79	p=0.11
Hausman test	$\chi^2_{\nu=7}$=54.05	p=0.00	$\chi^2_{\nu=7}$=25.69	p=0.00	$\chi^2_{\nu=7}$=39.80	p=0.00

Robust standard errors in brackets. *** p < 0.01; ** p < 0.05; * p < 0.10

The significant differences across Italian regions, often documented by other researches, emerge also in our analysis. This is also true regarding the relevance of

their geographic position and the ordinary vs special type of their statutes, as jointly specified by *Y(-1)* and γ_i.

GDP and *Y(-1)* are the most relevant explanatory variables, which positively and significantly affect *Y*. A unitary increase in *GDP* yields an average increase of 100 euros in *Y*, which instead rises by 62 euros if *Y* goes up by 100 euros the year before. As we expect, *Y(-1)*, which greatly varies across territories, captures a relevant portion of the differentials measured by the regional fixed effects γ_i .

In addition to *GDP* and *Y(-1)*, the most important variable is *CEM*: an increasing cooperative employment is positively and significantly associated to increases in *Y*: a unitary increase in *CEM* raises *Y* by about 380 euros.

As for the other variables, no significant association is therefore detected: conditionally on the effects of *GDP, Y(-1)* and *CEM*, neither the education ratio, nor the elderly rate seem to affect the regional prosperity. The same irrelevance is detected in the relationship between prosperity and the added value obtained within the cooperative boundaries. Indeed, it is worth noting that while *CEM* and *CAV* are highly correlated, the latter, as opposed to the former, is not significant. This is not surprising because it is well known that a vast portion of cooperatives operate in labor-intensive sectors featured by a relatively low added value per worker. According to Istat datasets, in 2015, for instance, the average added value per worker was 45,605 euros in the overall Italian companies (excluding the financial sector), whereas in the cooperative subset of them it was 24,851 euros (Borzaga *et. al.* 2019, p. 11).

If we estimate the equation (1) by restricting the sample to the 10 regions with high *CAV* (listed in Table 4), we obtain the results reported in columns 4-5 of Table 7. The previous findings stemming from the panel regression within the complete sample are strengthened. We notice that the impact of cooperative employment on prosperity more than doubles compared to the nation-wide one: for the top 10 regions in terms of *CAV*, a unitary increase in *CEM* increases *Y* by more than 900 euros. This finding is

consistent with the tests performed relatively to Table 4 and indicates that the regions with the highest cooperative presence exhibit the highest levels of prosperity.

The same conclusions are reached if, instead on regions excelling in terms of *CAV*, we would focus on those excelling in terms of *CEM*. The cooperative presence is confirmed to be again positively and significantly associated to the regional prosperity.

Finally, the power of the cooperative employment emerges also within an alternative specification of equation (1) according to which the dependent variable Y_{it} is replaced by the difference Y_{it} - Y_{i2010}:

$$Y_{i\,t} - Y_{i2010} = \alpha + X_{it}^{'}\,\delta + Z_{t}^{'}\,\lambda + \gamma_i + \varepsilon_{it} \qquad (2)$$

In equation (2), *X* and *Z* are the same as in equation (1). Replicating the fixed effects panel regression as above, in addition to the presence of relevant fixed effects, we still detect a significant relationship only with *GDP* and *CEM*.

6. Concluding remarks

Let us summarize the track followed in this paper. We first analyze the regional patterns of our Index of Widespread Prosperity and show that Italian regions display wide differences in some economic spaces, including the distribution of prosperity across households. This amounts to confirming the conclusion reached by a vast literature using indices of well-being. Within an income-based approach to well-being, we initially detect that income inequality rises in almost all Italian regions, especially in the South, and the presence of a negative (and increasing over time) correlation between income levels and the Gini values. Lastly, the regional widespread prosperity declines almost everywhere, especially in the South.

We then focus on the contribution of the Italian cooperative movement to a key dimension of regional well-being as the one captured by *Y*. Within such a relatively

narrow frame and in a limited time span, notwithstanding the simplicity of our model, our new findings look encouraging and arguably worth further investigation. Indeed, we detect a significant relationship between the size of the cooperative employment and our index of widespread prosperity. Such a relationship is not mitigated by standard economic and socio-demographic control variables entering our panel regression models. Regional communities hosting a large presence of the cooperative movement seem capable of thriving better than those lacking such a presence.

We then cautiously claim that the Italian cooperative movement can be considered one of the relevant factors of regional prosperity, also potentially capable of reducing regional divides, at least in terms of employment and income disparities within communities. Incidentally, however, we cannot be silent about cooperative firms qualified as *spurious*, i.e., fake. Indeed, the cooperative associations claim that some sectors (e.g., logistics) attract cooperatives created to underpay workers, circumvent rules and prone to frequent bankruptcies in order to avoid periodical controls by authorities and circumvent fiscal compliance. Such cooperatives, of course, not only stain the image of the entire cooperative movement, but should be treated as unfair players in the market competition.

Moreover, our findings suggest also a positive relationship between the size of the regional cooperative movement and the resilience of regional economic system with respect to sever shocks like the 2008 financial crisis. Hence, it will be worth detecting whether such a resilience endures also during and after the severe 2020 pandemics-driven recession. Indeed, since both the ability to absorb (resistance) and to bounce-back (recovery) are desirable features of territorial systems, a large cooperative presence might provide a comparative advantage to promote prosperity and protect it during and/or after downturns. This is left to future research.

Overall, the cooperative one seems a socially meritorious organizational form to be promoted and strengthened throughout national and regional policies. Of course, policies need to be place-based, to properly consider the differences across territories

and sectors. Recent empirical evidence (e.g., OECD 2021) confirms some weaknesses of cooperative enterprises like the difficult access to the credit market, especially for smaller co-ops, and a productivity gap wrt to profit-making competitors. Tailored-made policies designed to mitigate such handicaps might uplift communities' local welfare. The Italian National Recovery and Resilience Plan originated by the NextgenerationEU may provide the appropriate frame to nurture such policies.

Appendix

Figure 1A. Gini index and average income, Italian regions

2010 2019

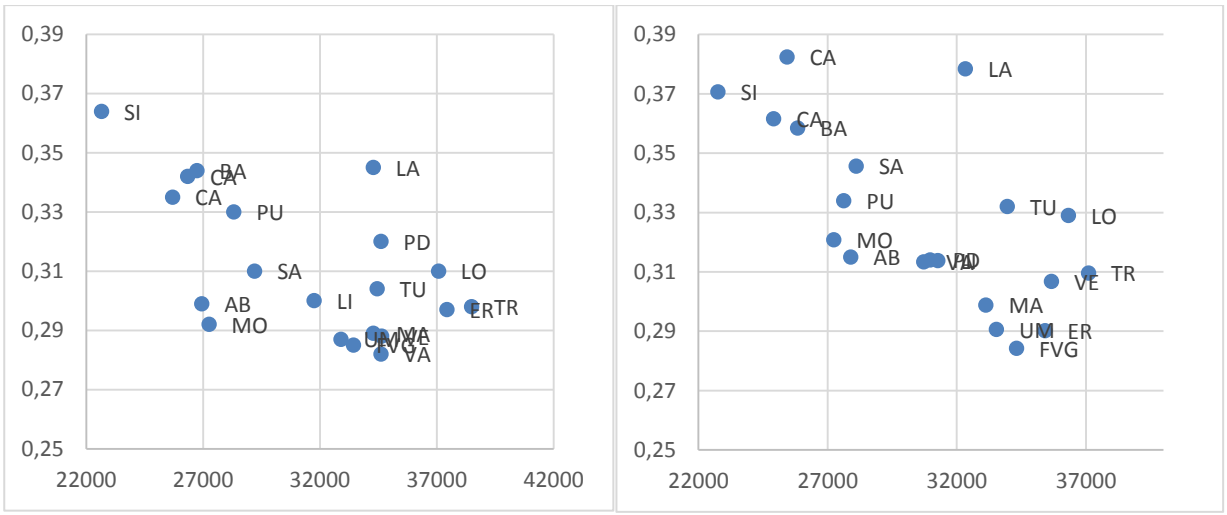
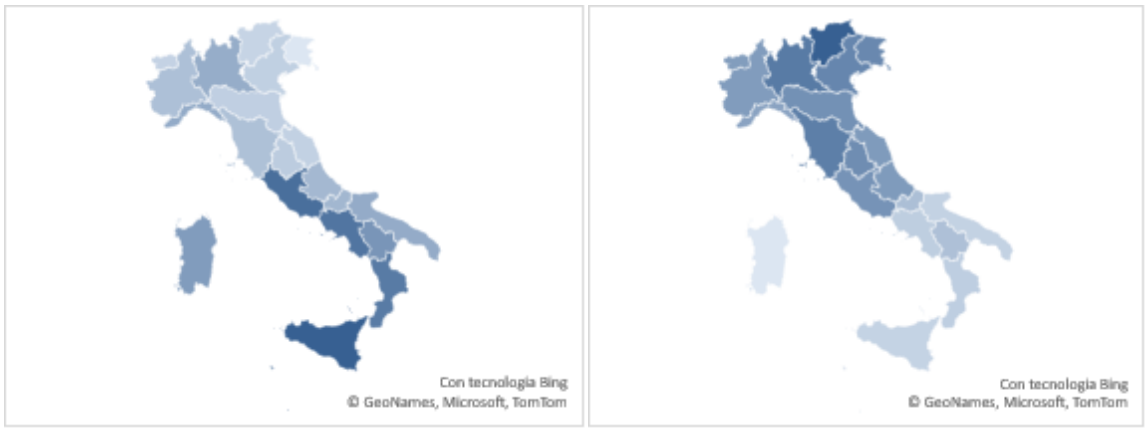
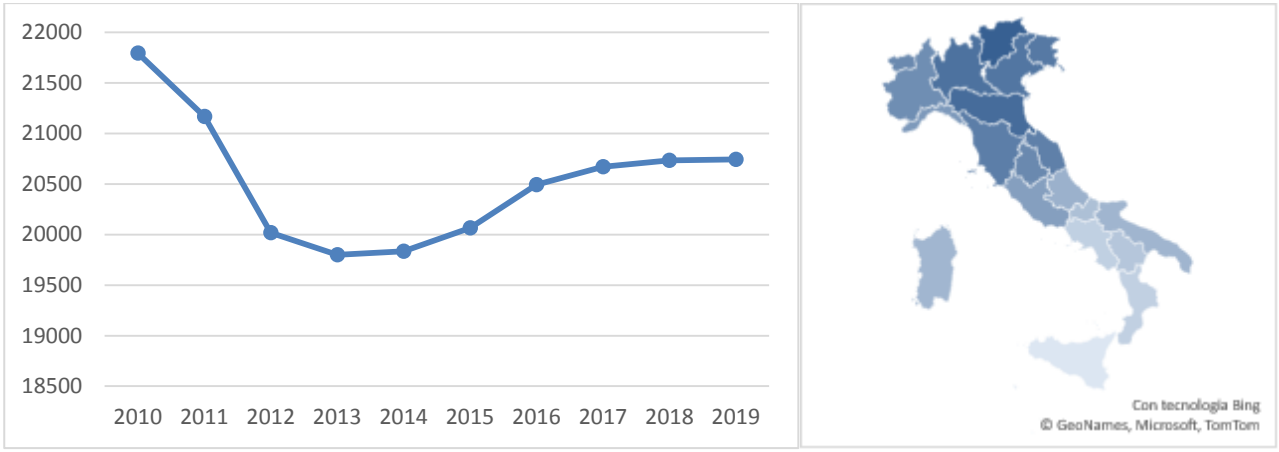


Figure 2A. Gini index (a) and average income (b), Italian regions, average 2010-19 (increases according to the color's intensity)



(a) (b)

Figure 4A. Average *Y*, 2010-19, time series and regional values (increases according to the color's intensity)



(a) (b)

Figure 5A. Differences between Y_i and average *Y*, 2010 and 2019

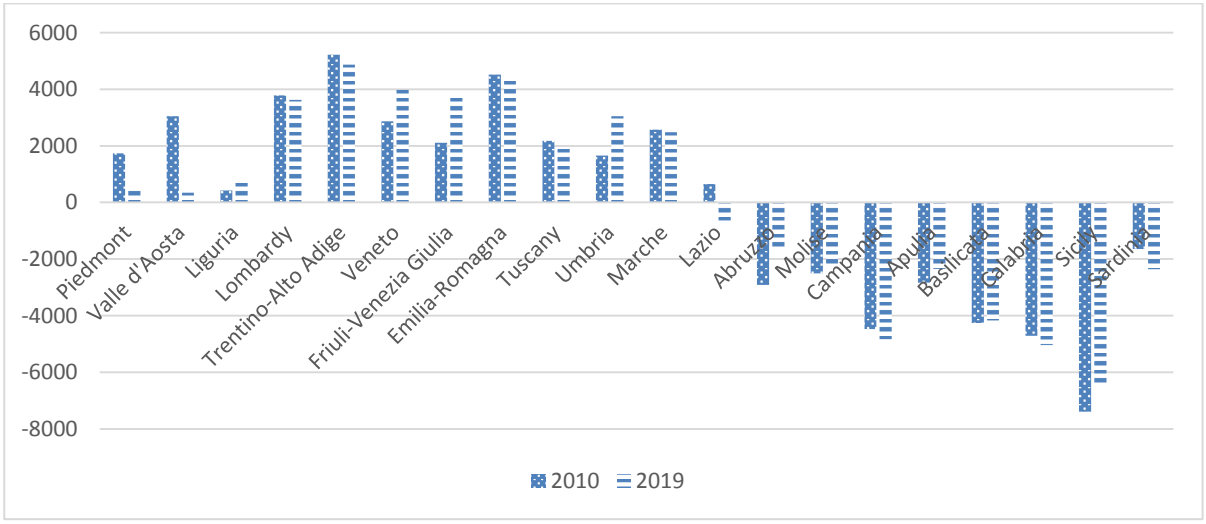


Table 5A. Linear fixed effects panel model, Italian regions, 2010-19, y

	Dependent variable: real per capita income, *y*					
	only CEM		only CAV		both CEM and CAV	
CEM	1766***	(394)	-		1573***	(374)
CAV	-		1918*	(1033)	950	(792)
y(-1)	0.57***	(0.05)	0.57***	(0.05)	0.57***	(0.05)
R^2	0.96		0.96		0.96	

Robust standard errors in brackets. *** p < 0.01; ** p < 0.05; * p < 0.10

Table 6A. Linear fixed effects panel model, Italian regions, 2010-19, Y

	Dependent variable: *Y*					
	only CEM		only CAV		both CEM and CAV	
CEM	1090***	(327)	-		939***	(318)
CAV	-		1318*	(694)	741	(597)
Y(-1)	0.51***	(0.05)	0.51***	(0.05)	0.52***	(0.05)
R^2	0.97		0.97		0.97	

Robust standard errors in brackets. *** p < 0.01; ** p < 0.05; * p < 0.10

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