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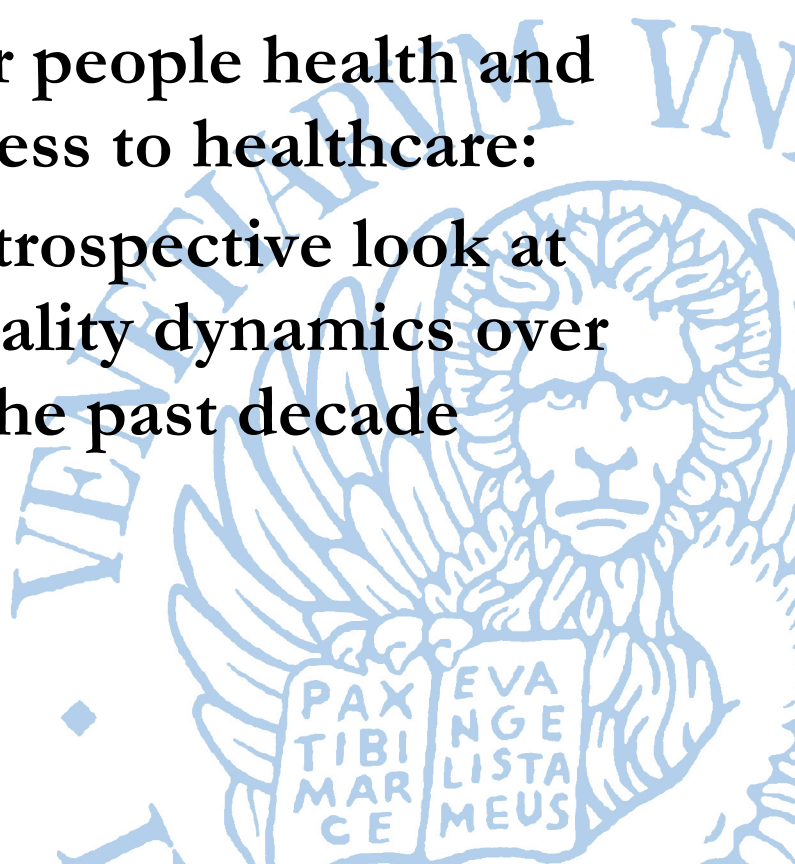
**Department
of Economics**

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**Older people health and
access to healthcare:
A retrospective look at
inequality dynamics over
the past decade**

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Keywords : Health, healthcare, inequity, concentration indexes, Great Recession

JEL Codes: I13, I14, I18

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1. Introduction

The economic downturn of the past decade raises major concerns on individuals' health and access to healthcare, for a number of intertwined reasons. Many past contributions have pointed at worsened economic conditions resulting in worse health outcomes (see Feinstein, 1993 for a review), although other, and recent, works underline rather an inverse association, possibly explained by the availability of more health-enhancing spare time in years of recession (Ruhm, 2000 and 2007), due to unemployment, or reduced working hours. Also, adverse economic conditions might translate in reduced access to healthcare, a building block in the so-called *health-production function*. Reduced access might reflect both the fact that under tightened financial resources, individuals might want to reduce their out-of-pocket healthcare expenditure, and Public Healthcare expenditure cuts entailing a reduction in public service provision. Indeed, international evidence has already related the Great Recession to reduced healthcare utilization and health expenditure in a variety of healthcare institutional contexts, and in particular for more disadvantaged groups (Lusardi et al., 2010; Chen et al., 2014).

In Italy, available evidence from after the crisis has already underlined an increase in self-reported health and mental health problems, stronger for more disadvantaged individuals (Costa et al., 2012; Atella et al., 2015), possibly related to perceived economic insecurity. Atella et al. (2015) also reports preliminary evidence on a sizeable reduction in outpatient care – the component that relies more heavily on private copayments, and was subject to waiting lists extensions due to public budget cuts – as of 2012, stronger for among less educated individuals. In fact, as in other Mediterranean countries (Kondilis et al., 2013; Tavares et al., 2017), EU-prompted austerity measures have hit hard Public Healthcare provision, accelerating the implementation of several cost-containment initiatives (see de Belvis et al., 2012¹, for cost containment measures implementation in Italy). To give a summary figure on the overall effect of such initiatives, a 7% reduction in per-capita public healthcare expenditure in real terms has been registered between 2008 and 2017, even exceeding the corresponding real per capita GDP contraction (6.1%) registered over the same time span. Similar expenditure cuts, in a country where – despite widely acknowledged cost-effectiveness and quality of provision in international comparison (OECD, 2017) – the overall Public Healthcare budget (6.8% of GDP in 2017 (EUROSTAT, 2019) remains below the EU28 average (7.0%), raise grounded concerns, particularly with respect to socioeconomically disadvantaged individuals, more concentrated in the South of the country. Indeed, a concern for socioeconomic inequality and its geographical pattern appears even

¹ As discussed in de Belvis et al., (2012), such initiatives included ‘the introduction of regional prescription charges; the adoption of extensive efficiency mechanisms on goods and health services procurement; the inclusion of more stringent quasimarket contracts with private health care providers; a partial block of personnel turnover and incentives for early retirement; the reclassification of drugs that are charged to the INHS; the introduction of extended forms of co-payment; [...] and the rationalization and reconfiguration of hospitals together with incentives to sell properties.’

more impelling when one considers, on the one hand, the decentralised nature of healthcare provision in the country, and the remarkable heterogeneity in available resources and quality performances observed cross regions. On the other, the wide empirical evidence that since before the crisis has underlined a north-south divide in health service delivery and health outcomes reflecting also the socioeconomic compositional divide between the underlying regional populations (Costa et al., 2004, Carrieri, 2008, Mangano, 2010; Franzini et al., 2010).

Yet, to our knowledge, while previous literature has identified socio-economic inequity challenges in health outcomes (see for example Costa et al., 2003), little is known on how regional gaps and socio-economic inequality dynamics in health and healthcare access have evolved in the country over the very recent years. This study aims at responding to such lack of evidence, measuring the evolution of income-related inequality in older people health outcomes and healthcare access across Italian macro-areas (North, Centre, South and Islands²) over the last decade. Health outcomes consider both physical and mental health. Healthcare access considers both the number of contacts with the family doctor or general practitioner (GP) and the range of specialist doctors consulted. The reason for considering both is the difference in the access mechanism for two widespread types of healthcare. Access to GPs' is available free at the point of use, and possible on a daily³ basis, and as such should be less exposed to crisis-induced variations in households' financial circumstances, at least in terms of first order effect. On the contrary, access to specialist visits can be privately purchased or obtained upon GP referral within the public system, still generally requiring an out-of-pocket copayment.⁴ The copayment amounted up to 36.25 euros, until it was significantly raised in 2011 as part of the austerity measures. Such increase could be modulated at the regional level: while several regions passed a fixed increase, in a few cases the increase was legislated as varying according to patient's family income, or based on the type of healthcare received. The increase amounted to 10 euros per visit in many regions, although it ranged from 0 to 30 euros, with no geographical pattern easily detectible in the increase amount provision. Also, public supply of specialist visits is rationed through waiting lists, which were prolonged due to cost-containment initiatives. For these multiple reasons, access to specialists in particular can be expected to have responded to worsened households' financial circumstances, increasing income-related inequality in access. A description of the Italian National Health Service (NHS), and health expenditure trends in the past decade, is given in the following section.

² North: *Piemonte, Valle d'Aosta, Liguria, Lombardia, Trentino-Alto Adige, Veneto, Friuli - Venezia Giulia, Emilia - Romagna*. Centre: *Toscana, Umbria, Marche, Lazio*. South and Islands: *Abruzzo, Molise, Campania, Puglia, Basilicata, Calabria, Sicilia, Sardegna*.

³ On working days.

⁴ Exemptions from such co-payment have always been provided though for individuals diagnosed with specific health conditions and, among other categories, for children and older individuals (i.e. aged 65 or older) on very low incomes.

The analysis builds on survey microdata drawn from the Survey of Health, Ageing and Retirement in Europe (SHARE, waves 2 to 6), described in section 3, covering the older population (i.e. individuals aged 50 or older) interviewed between 2006 and 2015. Indeed, the fact that the survey does not offer full age coverage hampers the possibility of an analysis representative of the entire age Italian population. However, the choice is motivated by other features making it uniquely suitable - in the Italian panorama- to the measurement of socio-economic inequality in health and healthcare access, namely the repeated collection of information on individuals' health, healthcare access and, at the same time, income⁵. Besides, the focus on older individuals is deemed of particular interest because, while along the crisis pensioners were better able to maintain their income levels with respect to other age groups, they are characterised by deteriorating health and stronger healthcare needs.

The empirical analysis first describes the dynamic pattern of average health and healthcare access across macro-regions. Then, to measure income-related inequity in health and healthcare access in a comparable way across regions and over time, we use synthetic concentration indexes, as explained in Section 4. Results, given in Section 5, show that in the North, while health has been improving on average, income-related inequality in health has increased. On the contrary, in the South, while health has not improved on average, the concentration of poor health among lower income individuals has decreased. Sizeable inequity in access to specialist visits emerges throughout the country, and generally increases over the crisis. Overall, the evidence produced suggests that in the South, along the crisis, under worsened income conditions and Public Healthcare budget cuts (heavier in many Southern regions), poorer older individuals might have possibly substituted specialised care with increased family doctors' visits.

2. Policy background and aggregate expenditure patterns

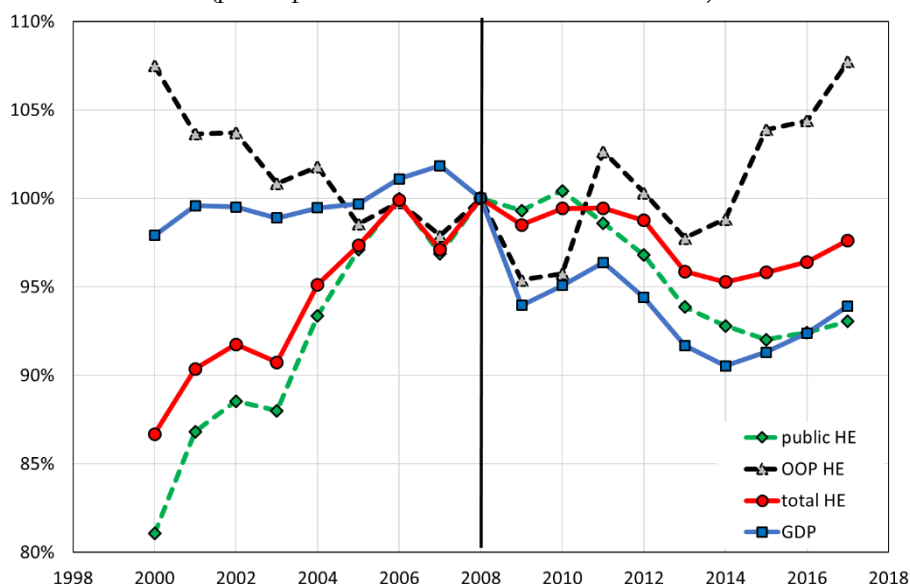
The Italian NHS is a public universal scheme that provides healthcare services to all citizens since 1978. A major reform in 1992 assigned important planning, finance and control functions of healthcare activities to the Regional Governments. Later in 2000 the decentralization process was strengthened (Decree n. 56/2000): health system financing from the National Government to Regional Healthcare Systems (RHSs), previously based on grants reflecting historical expenditure, moved to a criterion based on population health needs. At present, the NHS is organized in three tiers: state, regional and local authorities (Ferré et al. 2014). At the national level, the Ministry of Health sets the fundamental

⁵ Other available ISTAT surveys, that would be representative of the full age distribution, lack either healthcare access variables (that is the case of the Survey of Income and Living Conditions, anyway offering a much more limited set of health variables with respect to SHARE) or information on individuals' income (as would be the case for Multiscopo Surveys, including the one on 'Health Conditions and Healthcare Usage'), which is used here as a key indicator of individuals' financial resources.

principles and goals of the health system and allocates national funds to regions using a weighted capitation formula. Regional governments share planning and financing responsibilities with the central government and are responsible for delivering Public Health and healthcare services through their RHSs. Each RHS is based on Local Health Authorities delivering Public Health, community health services and primary care, and secondary and specialist care.

The economic crises gave rise to a strong reduction in healthcare expenditure, as part of the austerity policy initiatives. Figure 1 shows how the real per capita total expenditure (HE), which was growing steadily before 2008, decreased after 2010, going back, as of 2015, to the level of ten years before. A similar trend, since 2010, is visible for the Public component of HE, which seems to follow the GDP trend with a lag of few years. On the contrary, instead, households' private out of pocket (OOP) expenditure, was decreasing before the crises and shows a sharper increase after 2010.

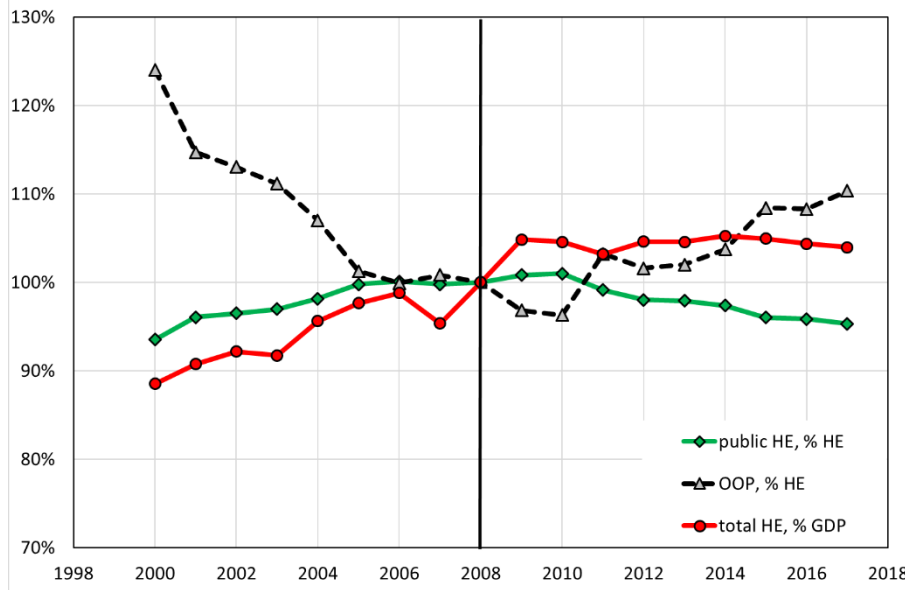
Figure 1: GDP and health expenditure (HE) in Italy since 2000 (per capita real values – index 2008=100)



Source: OECD Health Statistics 2018

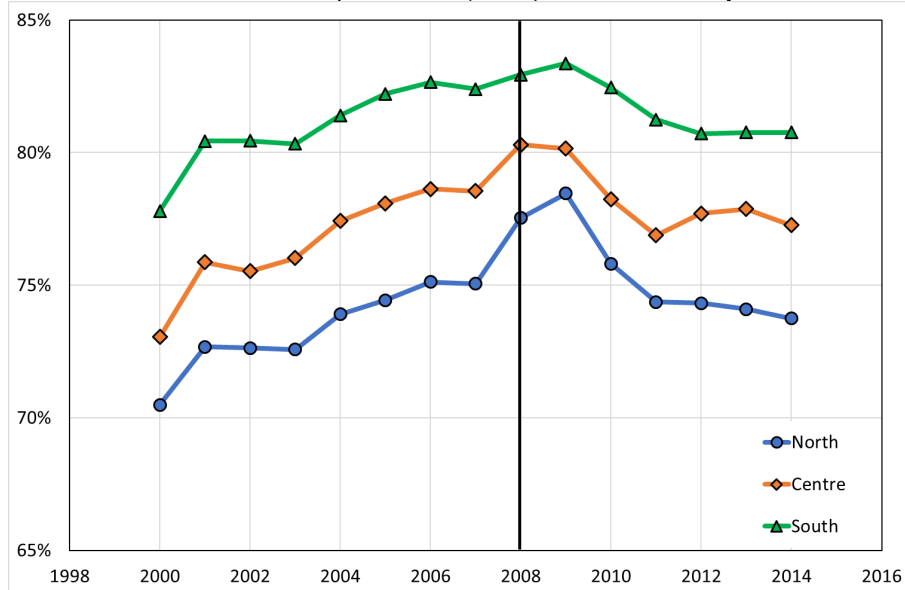
Figure 2 shows aggregate HE as a percentage of GDP, and the Public and OOP shares of total HE. After the economic crisis onset, the HE to GDP ratio stabilizes at the 2009 value: however, the share of Public HE decreases (-5% from 2008 to 2016), while at the same time the share of private OOP expenditure increases (+10% in the same period). The inversion in the OOP/HE trend is striking: the index shows a sharp decrease from 125% to 96% (of the 2008 value) in the period 2000-2010, and a subsequent increase up to 110% (of the 2008 value) in the following 7 years.

Figure 2: Shares of health expenditure in Italy since 2000 (2008=100)



Source: OECD Health Statistics 2018

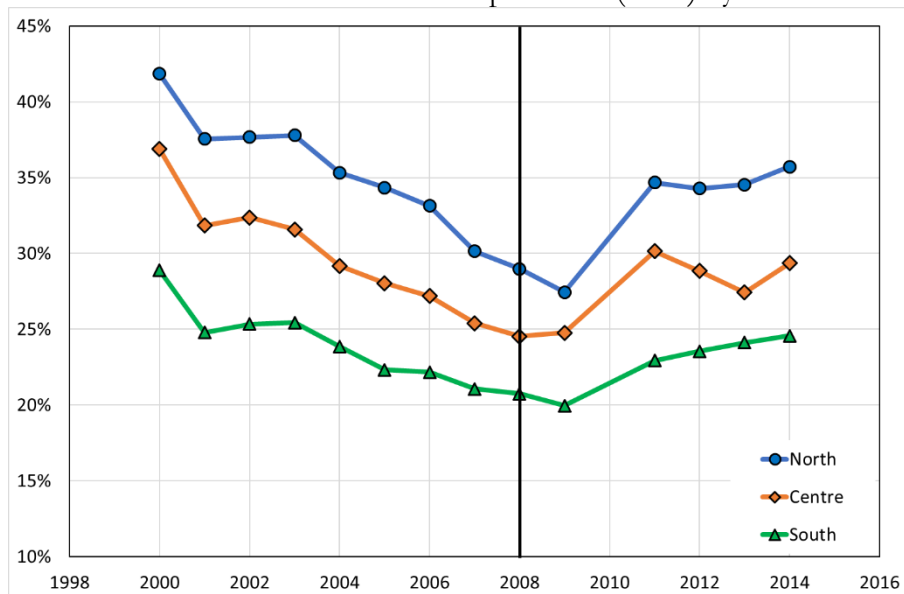
Figure 3: Share of Public Health expenditure (PHE) on total HE by macro-area since 2000



Source: ISTAT, Health for all

When considering the three macro-areas of North, Centre and South (Figure 3), similar trends in the share of Public over total HE arise across them, although the level is persistently different, highest in the South, followed by the Centre and lowest in the North. Figure 4 displays, again by macro-area, the HE compositional ratio of OOP over Public HE, which exhibits a clear North-South decreasing geographical gradient, and a striking increase after 2008 in the North of the county, where individuals might have more likely compensated the public provision contraction with private expenditure.

Figure 4: Share of OOP over Public Health expenditure (PHE) by macroarea since 2000



Source: ISTAT, *Health for all*

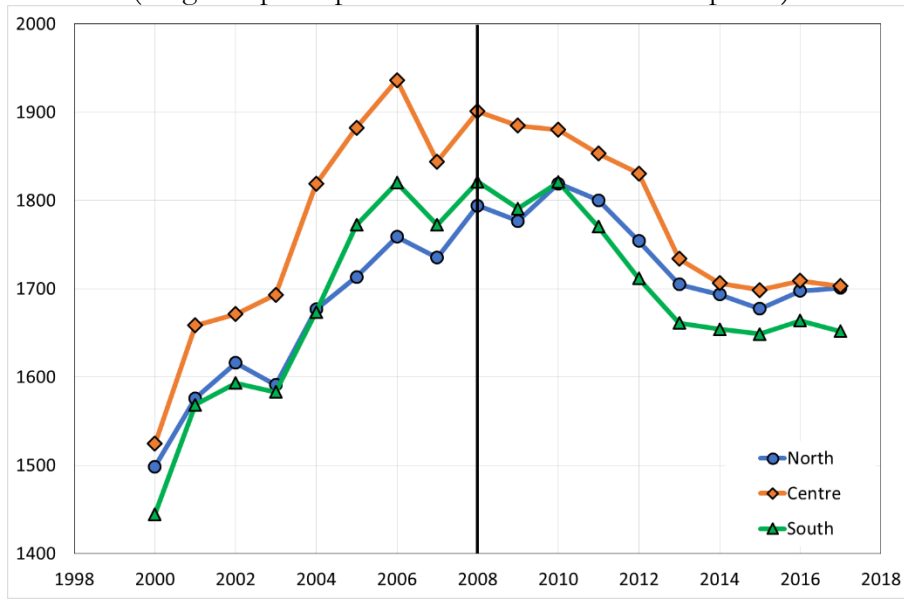
Figure 5 reports the amount of per capita Public HE, weighted by macro-area age structure, to account for variation in age-specific healthcare expenditure needs (given, for example, the higher healthcare needs of the older population)⁶. In real terms (2010 prices), weighted per capita Public HE has decreased throughout all macro-areas since 2010. In particular, the poorest area of the country, i.e. the South, registers a decrease from 1821 € to about 1652 € per capita in the period 2008-2017. It is worth noticing that the South scores lower quantity and quality in health production, as measured by the LEA (Essential Levels of Care) scores used by the Italian Health Ministry to monitor each RHT performance. Furthermore, expenditure reduction in the South reflects that fact that most regions are subject to a strict control by the central government by means of programs for reorganization, redevelopment and upgrading of the Regional Health Service (the so called ‘*Recovery Plans*’⁷), due to their recurrent budget deficit and failure to meet the national standard in healthcare provision.

Overall, these figures clarify how the crisis entailed a non-trivial reduction in health expenditure (see also Table A.1 in the Appendix), mainly due to a reduction in public expenditures, only partially offset by an increase in households’ expenditures. These facts call for an investigation of the possible short run effects, and the distributional pattern of such effects: the Public HE contraction might have affected particularly more fragile population subgroups, less capable of compensating it with an expansion in private OOP expenditure: first and foremost, older people on lower incomes living in the South, where healthcare production is less efficient.

⁶ The weighted population was obtained applying the official age class weights used to allocate national health funds to regions, accounting for how these apply to different healthcare expenditure components (CIPE, 2017).

⁷ The involved regions are Piemonte, Liguria, Abruzzo, Molise, Lazio, Campania, Puglia, Calabria, Sicilia and Sardegna.

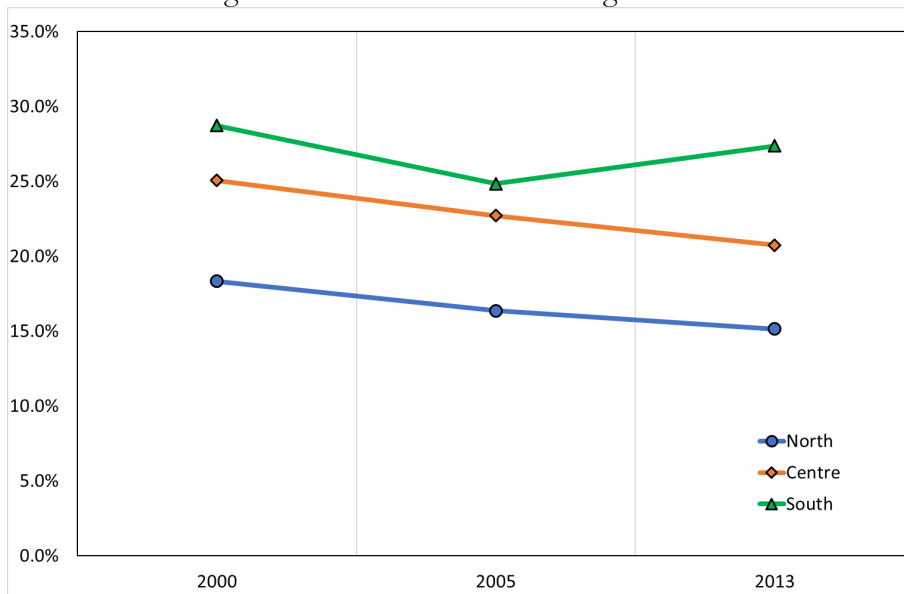
Figure 5: Public Health expenditure per macro-area since 2000
(weighted per capita euros- real values at 2010 prices)



Source: ISTAT, Health for all

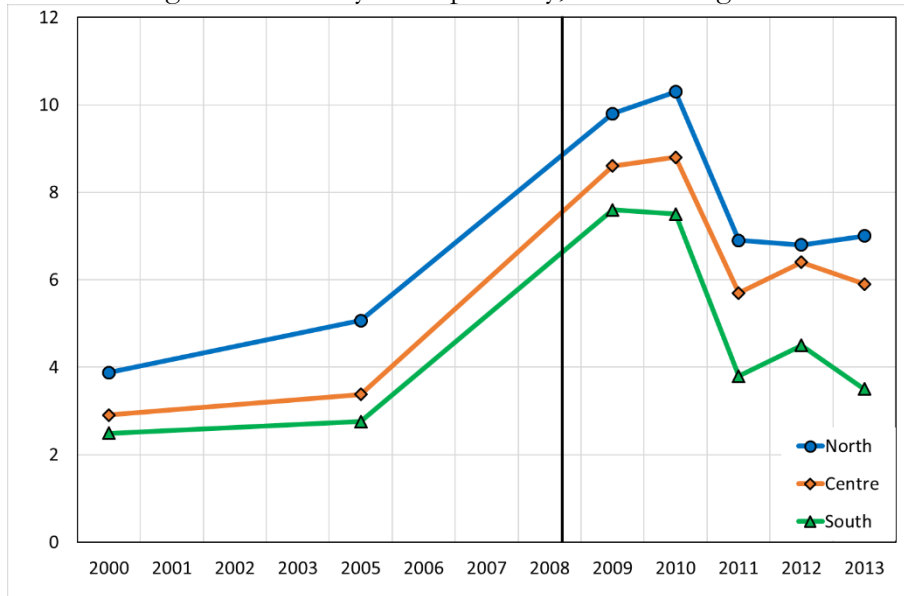
Indeed, ‘Health for all’ data available for the years 2000, 2005 and 2013, on the rate of older people reporting themselves to be in ‘poor health’, would signal an alarming increase of the rate, as of 2013, only in the South of the country. Figures 7a and 7b instead consider how Healthy Life Expectancy at age 65, in the three macroareas, evolved between 2000 and 2013 (latest available year), highlighting again how, while the indicator drops dramatically everywhere since 2010, the South again lags behind the rest of the country.

Figure 6: Poor health Rate among the 65+



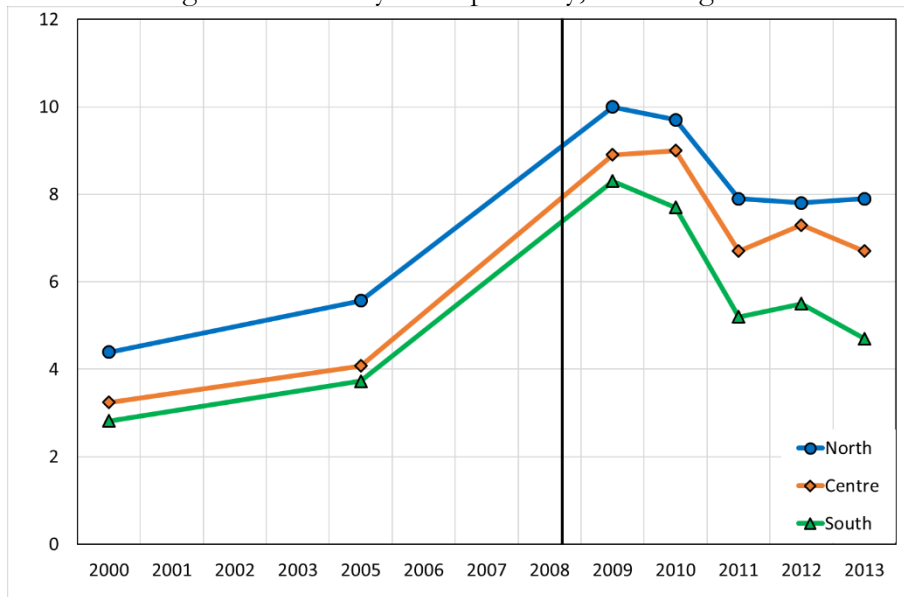
Source: ISTAT, Health for all

Figure 7a: Healthy life expectancy, women at age 65



Source: ISTAT, Health for all

Figure 7b: Healthy life expectancy, men at age 65



Source: ISTAT, Health for all

3. Data for multivariate analysis

Our analysis builds on survey microdata drawn from the Survey of Health, Ageing and Retirement in Europe, a panel study covering a nationally-representative samples of individuals aged 50 or over, and their partners, in Europe (Börsch-Supan et al., 2013). As a multidisciplinary survey, SHARE covers various topic domains including, among others, demographic and family characteristics, financial

means, a rich battery of physical and mental health indicators, health-related behaviours and healthcare access.

We use data from waves 2 to 6 of the Italian sample, with individuals correspondingly interviewed in 2006/7 (2,911 individuals in wave 2), reflecting pre-crisis circumstances; and at three later points in time, reflecting the post-crisis onset scenario: 2011 (3,521 individuals interviewed wave 4), 2013 (4,643 individuals interviewed in wave 5) and 2015 (5,201 individuals interviewed in wave 6). Wave 3 has been excluded because dedicated to collecting past life-history information, as such lacking comparable information on health and healthcare usage. As the available sample size does not guarantee regional representativeness, we use macro-areas to assess geographical variation in outcomes.

The thorough nature of the SHARE health questionnaire, within the individual interview, allows capturing a variety of possible health domains and health problems, as appropriate to reflect the multidimensionality of health. We use a battery of physical health indicators: first, self-assessed poor health, which is regarded as a valuable health measurement indicator as shown to predict mortality, even after controlling for physiological indicators (Idler and Benyamini 1997; van Doorslaer and Gerdtham 2003). We transform the 5 categories indicator in a binary variable to avoid imposing a linearity assumption over categories. However, self-assessed health is also known to suffer from reporting heterogeneity, possibly entailing downward bias in inequality estimates to the extent that disadvantaged individuals systematically understate their health (Butler et al., 1987, Sutton et al., 1999; Sen, 2002). For this reason, we include also medical indicators, i.e. reports of specific conditions being diagnosed (up to 12) or presence of a long-standing illness, regarded as more objective. Again though, these might be biased by lower chance of diagnosis, for an existing condition, among lower socio-economic subgroups and for this reason we consider also a functionality indicator (i.e. whether the individual experiences limitations in performing ‘normal’ activities of daily living because of health), less prone to measurement bias. These indicators are then combined into a synthetic Cronbach alpha index of poor physical health (i.e. the index increases as physical health gets worse), with an obtained scale reliability coefficient of 0.6489.

Besides physical health, we consider mental health, measured using the so-called *euro-d* depression 12 points scale (Prince et al., 1999), again increasing as mental health gets worse. Further potentially available health indicators (symptoms, grip strength, cognitive abilities) could not be considered either because of lack of cross-wave comparability or because of sizeable proportions of missing values. It is important to stress that all the physical and mental health indicators, in what follows, are standardised by age and gender, so that appropriate comparisons over time and macro-areas can be traced, after the underlying age and gender population structure has been accounted for.

Indicators of healthcare access include the number of visits or contacts with a doctor over the past 12 months and, in waves 2 (as of 2006/7) and 4 (as of 2011) only, the number of contacts with the family doctor, and the number of specialists consulted, again in the past 12 months. The number of specialists consulted reflects the range of specialists seen, selected from a list covering 14 types⁸. Again, it is worth stressing that in what follows, all the healthcare access variables have been standardised by healthcare need (as described by age, gender and physical and mental health indicators). In this way, the observed variation over time and space will reflect variation in access once differential care needs have been accounted for, rather than variation due to different population demographic composition, or underlying differential health (as would be the case if healthcare access over time had decreased in a particular area because of improved population health in that area).

The following analysis exploits further variables used as control variables, (i.e. for the correct measurement of correlations between health and healthcare indicators), as explained in the following Methodology section. They include demographic characteristics (besides age and gender, household composition and number of children), socioeconomic characteristics (whether working, whether homeowner, education, equivalent household income) and health-related behaviour (captured by an indicator for lack of physical activity). Descriptive statistics for all variables are provided in Appendix Tables A2 and A3.

4. Methodology

To assess and compare the evolution of income-related inequity in health and healthcare outcomes across macro-regions, we use synthetic indexes, as often done in previous studies (see for example Wagstaff et al., 1989 and Van Doorslaer et al., 2004). In more detail, the Concentration Index (Kakwani 1977, 1980) is adopted to measure socioeconomic inequality in (age- and gender- standardized) physical and mental health outcomes. In this context, the Concentration Index reflects the concentration of a particular health indicator, along the distribution of equivalent household income, chosen (as most often done in the related literature) as an indicator of socioeconomic status.

In more detail, the CI reflects (twice) the size of the area between the concentration curve, drawn plotting the cumulative share of an health variable (on the vertical axis) against the cumulative share of population ranked by increasing equivalent income (on the horizontal axis), and the 45 degrees line (representing a situation where everybody enjoys the same health). The CI can takes positive values in case the health indicator exhibits a ‘pro-rich’ concentration, up to a value of 1 (in case only the income

⁸ Types include: specialist for heart disease, pulmonary, gastroenterology, diabetes or endocrine diseases; dermatologist; neurologist; ophthalmologist; ear, nose and throat specialist; rheumatologist or physiatrist; orthopaedist; surgeon; psychiatrist; gynaecologist; urologist; oncologist; geriatrician; or other specialist.

richest individual exhibits a positive value of the health indicator). Or, it takes negative values in case the health indicator exhibits a ‘pro-poor’ concentration, up to a value of -1 (in case only the income poorest individual exhibits a positive value of the health indicator). In terms of computation, denoting with h the age-and-gender-standardised health indicator of interest, and indexing individuals by i , the CI can be conveniently calculated as

$$CI = \frac{2}{\bar{h}} Cov(h_i R_i)$$

where \bar{h} denotes the mean of h and R the fractional rank of equivalent household income.

The Horizontal Inequity index (Wagstaff and van Doorslaer 2000) is adopted instead to measure income-related inequity in access to healthcare services. This corresponds to a CI computed on needs-standardised healthcare access indicators, reflecting the difference between actual and needs-expected access. In this way, while differential healthcare need is regarded as a legitimate source of variation in access, the resulting HI reflects the extent to which each access variable is concentrated, along the income distribution, among the income-rich or among the income-poor, with such inequity being entirely attributable to the role of non-need-related individual characteristics. In more detail, needs standardization is implemented regressing each healthcare access indicator v , on a set of need-related explanatory variables x (age, gender, health), indexed by $j = 1 \dots J$. The regression also controls for a set of non-need-related explanatory variables z , indexed by $k = 1 \dots K$ (household composition, socioeconomic indicators) to avoid obtaining biased estimates on the need-related coefficients. Denoting with F the functional form adopted for modelling the healthcare access indicator, the regression can be written as:

$$v_i = F(\alpha + \sum_j \beta_j x_{ji} + \sum_k \gamma_k z_{ki}) + \varepsilon_i$$

In our context, given the count-data nature of the healthcare access indicators, taking only non-negative integer values, we adopt a Negative Binomial nonlinear specification, with allows for overdispersion in v , i.e. the conditional mean being lower than conditional variance, as actually observed in the data. Each needs standardised access variable is then calculated as

$$\hat{v}_i^{ns} = v_i - F(\hat{\alpha} + \sum_j \hat{\beta}_j x_{ji} + \sum_k \hat{\gamma}_k \bar{z}_k) + \frac{1}{n} \sum_{i=1}^n F(\hat{\alpha} + \sum_j \hat{\beta}_j x_{ji} + \sum_k \hat{\gamma}_k \bar{z}_k)$$

where n indicates the sample number, and \bar{z} the mean for each non-need-related variable.

5. Results

5.1 Health dynamics

The top panel of Table 1 reports the average physical health level (as summarised by the poor physical health index, increasing as health gets worse) registered over time, in each macro-area, and the corresponding CI. As clearly visible in Figure 8, a marked difference in average health dynamics is detectible between older people in the North, where a steady pattern of health improvement emerges (graphically, corresponding to a reduction in the poor physical health index) and in the South, where average health in 2015 has not improved with respect to about one decade before (2006/7), rather displaying a worsened picture of poorer average health in 2011 and 2013. Regions in the Centre occupy a somehow intermediate position, with older people average physical health anyway slightly improved at the end of the decade, with respect to its pre-crisis level. A qualitatively similar difference in average health trends across macro-areas emerges when looking at the poor mental health indicator (Figure 9, and bottom panel of Table 1): a tiny improvement in older people mental health is visible in 2015 for the North and the Centre, while a sizeable worsening emerges in the South, where the poor mental health indicator amounts to more than one fifth of its 20067/value.

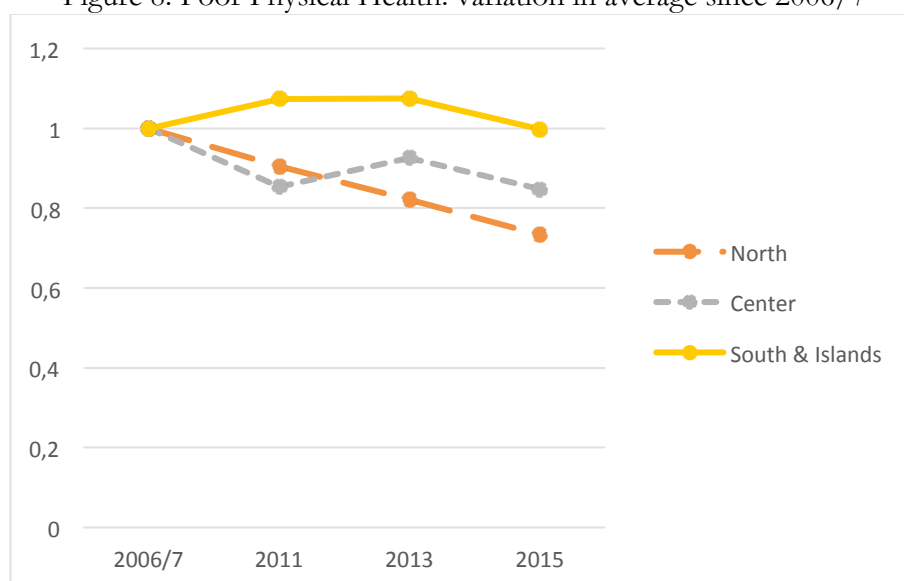
Table 1: Health indicators: Average and Concentration Index

<i>year</i>	<i>2006/7</i>	<i>2011</i>	<i>2013</i>	<i>2015</i>
POOR PHYSICAL HEALTH INDEX - Mean [std. dev.]				
Italy	0.740 [0.592]	0.701 [0.594]	0.686 [0,595]	0.625 [0.575]
North	0.704 [0.561]	0.637 [0.548]	0.578 [0.551]	0.516 [0.530]
Centre	0.803 [0.640]	0.686 [0.595]	0.744 [0.591]	0.681 [0.568]
South & Islands	0.751 [0.601]	0.806 [0.641]	0.808 [0.630]	0.749 [0.612]
Socio-Economic Distribution - Concentration Index [std. err.]				
Italy	-0.014 [0.008]	-0.053 [0.007]	-0.048 [0.007]	-0.050 [0.007]
North	-0.002 [0.013]	-0.044 [0.012]	-0.047 [0.011]	-0.039 [0.012]
Centre	-0.014 [0.015]	-0.085 [0.015]	-0.050 [0.012]	-0.040 [0.012]
South & Islands	-0.027 [0.013]	0.001 [0.011]	0.000 [0.010]	0.012 [0.010]
POOR MENTAL HEALTH (EURO-D) - Mean [std. dev.]				
Italy	2.832 [2.596]	2.756 [2.500]	3.016 [2.586]	2.852 [2.608]
North	2.815 [2.580]	2.561 [2.383]	2.633 [2.398]	2.533 [2.463]
Centre	2.949 [2.540]	2.927 [2.534]	3.109 [2.412]	2.777 [2.443]
South & Islands	2.774 [2.641]	2.932 [2.626]	3.529 [2.857]	3.381 [2.830]
Socio-Economic Distribution - Concentration Index [std. err.]				
Italy	-0.051 [0.009]	-0.057 [0.009]	-0.050 [0.007]	-0.090 [0.007]
North	-0.036 [0.015]	-0.068 [0.014]	-0.044 [0.012]	-0.083 [0.012]
Centre	-0.073 [0.017]	-0.085 [0.016]	-0.041 [0.013]	-0.057 [0.014]
South & Islands	-0.067 [0.017]	-0.002 [0.014]	-0.011 [0.011]	-0.049 [0.012]

Source: SHARE, waves 2-6.

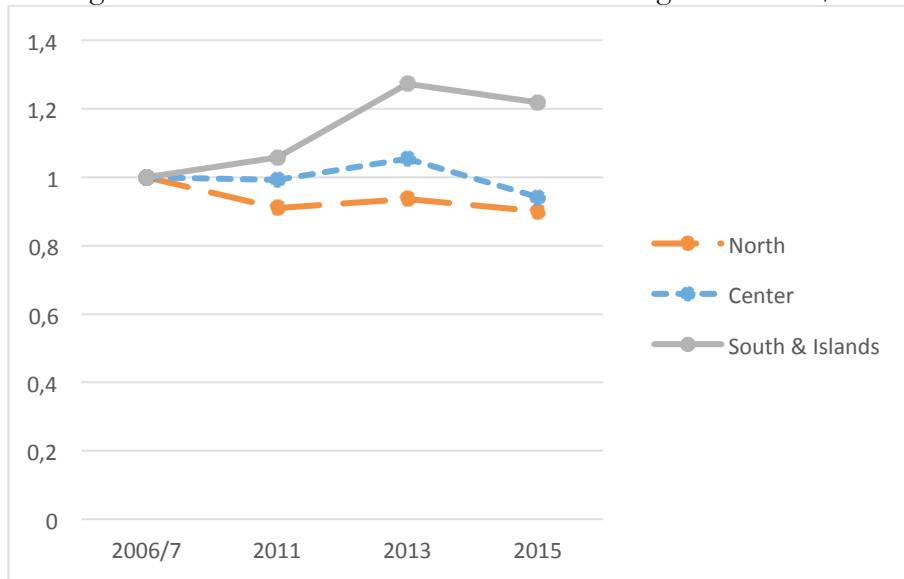
Notes: population weights have been applied; health indicators are standardized by age and gender.

Figure 8: Poor Physical Health: variation in average since 2006/7



Source: SHARE, waves 2-6. Note: base value as of 2006/7.

Figure 9: Poor Mental Health: variation in average since 2006/7.



Source: SHARE, waves 2-6. Note: base value as of 2006/7.

Measuring the CIs, reflecting income-related inequity, over time, contributes to get a fuller picture. CIs variation over time reveals that the average physical health improvement registered in the North, and to a lower extent, in the Centre, has been accompanied by an increase, in the years of the crisis, of income-related inequity, i.e. bad health has become more heavily concentrated among the income poor in these areas. Actually, while the pre-crisis CIs were not statistically significant, suggesting no income related inequity in health; they do become significant and remain so, while increased in size, in all of the following years.

An entirely different story emerges in the South of the country, where poor physical health was significantly concentrated among the income poorer in 2006/7, but the CI loses significance in all of the following observational time points. Such evidence suggests that the average health increase for older people in the North (and Centre) might have arisen from health improving for those on higher incomes, while the average health decrease in the South, paired with a reduction in socioeconomic health concentration, might reflect a generalised deterioration in older people health, possibly stronger in the upper part of the income distribution.

As to mental health, a significant pro-poor concentration is present throughout the country since 2006/7, with sharper inequity in the Centre and South, with respect to the North. After a decade, the pro-poor concentration is still a common trait across regions, but a sharper inequity increase emerges in the North: as of 2015, the negative CI in the North, which amounted to half of the CI in the South as of 2006/7, scores more one and half the corresponding CI in the South after a decade. So again in the North, as observed for physical health, the worrying increase in inequity deserves attention, although on average mental health has not performed worse than in other areas (and in fact is on

average better , actually scoring the lowest average in 2015, both with respect to the past, and with respect to other areas).

5.2 Healthcare access.

Table 2 reports the average number of visits/contacts with a doctor in the past year, and the corresponding HI, registered over time, in each macro-area. This indicator reflects a heterogeneous set of healthcare services, including both GP visits free of charge and accessible on a daily basis, and visits requiring instead a copayment, and publicly accessible only through a waiting list. The indicator also suffers from a comparability issue, as the 2015 version includes also healthcare services provided by qualified nurses.⁹

Still, it is interesting to observe how before the crisis the average number of visits displayed a geographical gradient of higher visit/contacts in the South of the country (12.3 visits per year, as opposed to 7.5 in the North). After a decade though, while in the North and Centre the average number of visits/contacts has remained about constant (after a decrease in the years of the crisis i.e. 2011 and 2013), it is strikingly reduced by one third of its pre-crisis value in the South. As to socioeconomic inequality, again a picture of increased inequality in the North, where doctor's visits were not unequally concentrated along the income distribution, but become significantly pro-rich, since 2013 onwards. In the South (and Centre) instead, while before the crisis doctor's visits were significantly concentrated among the income richer, significance is lost in the following years pointing at reduced socio-economic inequality in access to this heterogeneous bunch of healthcare services.

Table 2: Number of visits/contacts with medical doctor (or nurse): Average and HI

	2006/7		2011		2013		2015	
	<i>Mean</i>	<i>[std. dev.]</i>	<i>Mean</i>	<i>[std. dev.]</i>	<i>Mean</i>	<i>[std. dev.]</i>	<i>Mean</i>	<i>[std. dev.]</i>
Italy	9.444	[12.105]	9.186	[12.532]	8.123	[10.957]	8.283	[11.757]
North	7.511	[9.480]	6.974	[9.127]	6.665	[9.625]	7.933	[11.956]
Centre	9.325	[12.949]	8.545	[11.388]	8.744	[9.339]	9.183	[10.457]
South & Islands	12.35	[14.251]	12.838	[16.184]	9.902	[13.204]	8.235	[12.202]
	<i>HI</i>	<i>[std. err.]</i>	<i>HI</i>	<i>[std. err.]</i>	<i>HI</i>	<i>[std. err.]</i>	<i>HI</i>	<i>[std. err.]</i>
Italy	-0.009	[0.004]	-0.038	[0.006]	-0.006	[0.004]	0.019	[0.002]
North	0.010	[0.006]	-0.001	[0.005]	0.008	[0.003]	0.014	[0.004]
Centre	0.036	[0.008]	0.005	[0.007]	0.012	[0.007]	-0.007	[0.004]
South & Islands	0.027	[0.005]	-0.002	[0.009]	-0.003	[0.007]	0.001	[0.006]

Source: SHARE, waves 2-6. Note: Needs Standardised.

⁹ In wave 6, the question wording has been change from “*During the last twelve months, about how many times in total have you seen or talked to a medical doctor about your health?*” to “*Now please think about the last 12 months. About how many times in total have you seen or talked to a medical doctor or qualified/registered nurse about your health?*”, thus posing a comparability issue, as the later version (as of 2015) includes also healthcare services provided by qualified nurses.

It is arguably more interesting to consider separately access to primary (family doctors) care, free at the point of use and accessible on a daily basis, and to secondary care (specialists visits), accessible through waiting lists and generally requiring a copayment (increased in 2011) even under the national health system, where not entirely privately purchased. Unfortunately these variables are available only in 2006/7 and 2011, but not in later years. Results are reported in Table 3, and Figures 10 and 11.

Table 3: GP visits and Range of specialists consulted in last 12 months: Average and HI

	2006/7	2011	2006/7	2011
RANGE OF SPECIALISTS CONSULTED				
	<i>Mean [std. dev.]</i>	<i>Mean [std. dev.]</i>	<i>HI [std. err.]</i>	<i>HI [std. err.]</i>
Italy	0.948 [1.312]	0.925 [1.303]	0.063 [0.006]	0.091 [0.004]
North	0.956 [1.274]	0.992 [1.371]	0.053 [0.008]	0.072 [0.009]
Centre	1.014 [1.482]	0.894 [1.212]	0.081 [0.009]	0.039 [0.007]
South & Islands	0.890 [1.249]	0.846 [1.253]	0.037 [0.011]	0.093 [0.010]
NUMBER OF CONTACTS WITH GP				
	<i>Mean [std. dev.]</i>	<i>Mean [std. dev.]</i>	<i>HI [std. err.]</i>	<i>HI [std. err.]</i>
Italy	7.193 [9.924]	7.167 [10.650]	-0.031 [0.005]	-0.062 [0.005]
North	5.341 [7.310]	5.069 [7.065]	-0.011 [0.008]	-0.039 [0.005]
Centre	6.745 [10.027]	6.361 [9.109]	0.037 [0.010]	-0.028 [0.006]
South & Islands	10.195 [12.233]	10.751 [14.356]	0.016 [0.006]	0.003 [0.007]

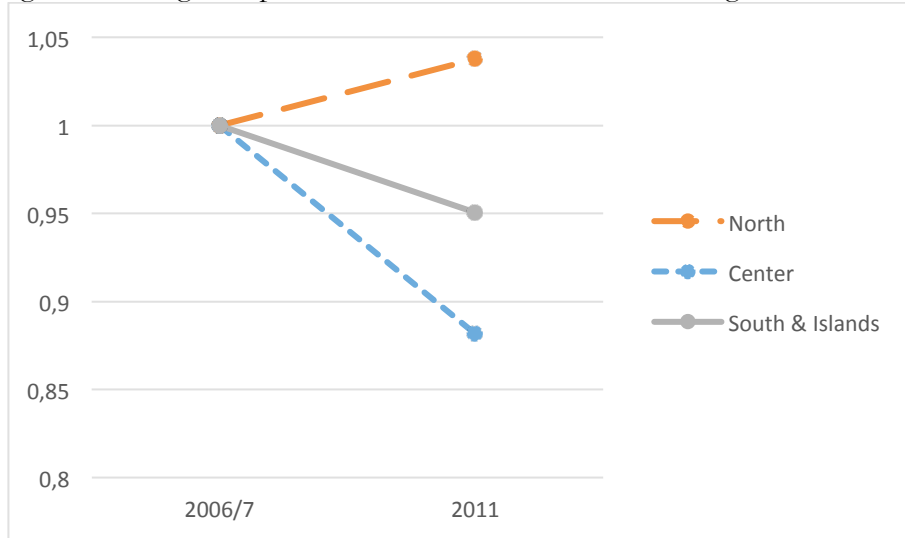
SHARE, waves 2-6. Note: Needs Standardised.

Figure 10: GP visits/contacts: variation in average since 2006/7.



Source: SHARE, waves 2-6. Note: base value as of 2006/7.

Figure 11: Range of specialists consulted: variation in average since 2006/7.



Source: SHARE, waves 2-6. Note: base value as of 2006/7.

In the South, even accounting for healthcare needs, older people use the family doctors twice as much as in the North (about 10 times per year versus 5). Over time, the average number of contacts with the family doctors has increased (by about 5%) between 2006/7 and 2011: instead, income-related inequality in older people access to family doctors, pro-rich before the crisis, has decreased, with the HI losing significance in 2011. At the same time, the range of specialist doctors consulted by older people, lower than in the North or Centre since before the crisis, has decreased by about 5% on average, in 2011, with a sharp increase in income-related inequality in access to this type of care: the HI index, significant and pro-rich (as found in previous works for Italy: see e.g. Van Doorslaer, E, Koolman X, Jones 2004, Tavares and Zantomio, 2017) since 2006/7, is almost three times larger in 2011. Such evidence is overall suggestive that over the crisis, under worsened income conditions limiting the scope for private expenditure and Public Healthcare budget cuts, poorer older individuals in the South might have substituted specialised care with increased family doctors' visits. This raises the concern of a plausible deterioration in the quality and appropriateness of care received, which rather depends on the complementarity between these two inputs in health production.

In the North (and Centre) instead, the increase in average access in specialised care has been accompanied by a reduction in the average number in GP visits. Both types of healthcare have become more unequally concentrated along the income distribution: but in this case, the free GP visits display a significant pro-poor concentration in 2011 both in North and Centre, suggesting that lower income individuals might actually have increased their use of free family doctor's consultations. Pro-poor concentration in GP access has also emerged for Italy, among other countries, in previous studies e.g. Van Doorslaer and Masseria (2004), Tavares and Zantomio (2017).

Instead, the increased HI on specialists' visits requiring out-of-pocket expenditure if not full private payment, in the North, suggest that the average increase in secondary care usage might have arisen only

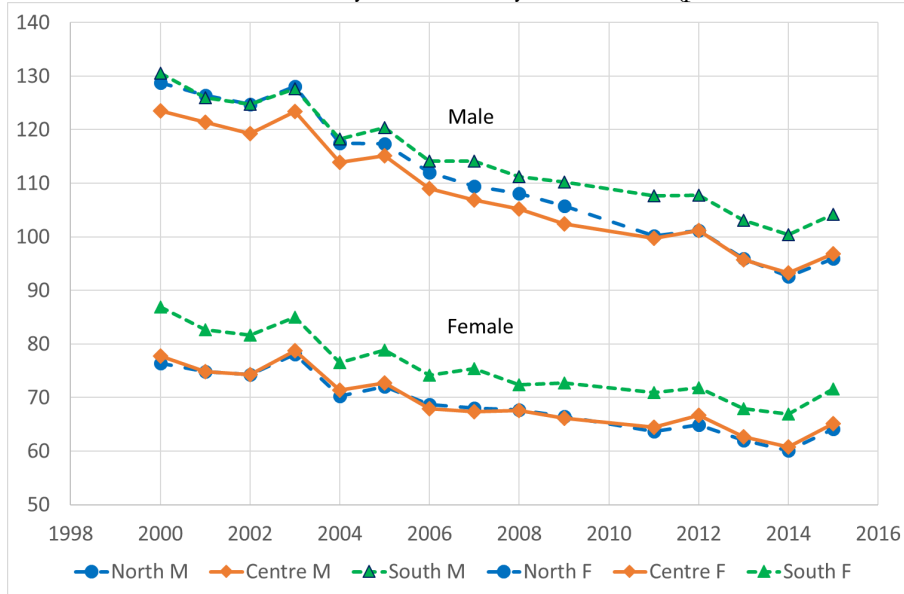
from those in upper part of the income distribution. The role of income in decreasing the probability of GP contacts and increasing the probability of specialist consultation in Italy as already emerged in Atella et al. (2004). Lack of comparable information for 2013 and 2015 unfortunately hampers an assessment of later developments.

6. Policy Discussion and Conclusions

Achieving horizontal equity in public healthcare provision would imply that individuals with comparable healthcare needs, because of underlying health conditions, receive the same healthcare, irrespective of socio-economic characteristics such as income, education or households' assets. Looking at individuals aged 50 or older, throughout Italy, the horizontal equity principle seems far from being met, particularly as far as specialised care is concerned, a picture that has generally worsened along the Great Recession.

In none of the country macro-areas has the past decade brought entirely good news. Despite the average health improvement registered in the North of the country, income-related inequality in both health and healthcare access, as measured by GP contacts and specialists visits, has systematically increased in these regions. Plausibly, this reflects the concentration of private OOP expenditure, undertaken to compensate public healthcare cuts, among the income rich. Policy recommendations for an increased access inclusion of the more socio-economic fragile population subgroups, fostering equity, are due in these regions. When looking at the South, the fact that income related inequality has decreased in the area does not represent good news either, when paired with the evidence that average health has deteriorated. Indeed, the reduction in socio-economic inequality might simply reflect worsened health and healthcare access conditions for all. Moreover, the gap in average physical and mental health, with respect to the North (and to a lower extent, with the Centre) has widened in 2015, with respect to pre-crisis values.

Figure 12: Standardized mortality rates in Italy since 2000 (per 10.000 inhabitants)



Source: ISTAT, *Health for all*

Particular policy attention in the South should be devoted to mental health, which registers a gloomy pattern of average deterioration, paired with a significant pro-poor concentration as of 2015, which is not surprising if one considers how mental (w.r.t. physical) health risk might be more exposed to economic downturns (Belloni et al., 2016). A major cause for concern arises then from the apparent ‘substitution’ of reduced specialists’ visits with increased GP contacts, as high quality healthcare provision should rather be based on complementarity between these two forms of healthcare. Accepting a second best perspective, GPs availability might have somehow played a residual protective role for lower income individuals in the South, although possibly putting GPs under additional performance pressure. Hopefully still, population health is on a long term improvement pattern. For instance, the standardized mortality rates in Italy since 2000 is declining¹⁰ in all macro-areas, both for males and females (Figure 12). But a slowdown in the diminishing trend is visible for males in the South, departing from what previously appeared as a common trend across macro-areas.

This study presents several limitations: first, the analysis covers only the older population in Italy and as such lacks overall representativeness for the Italian population, for which we cannot rule out the possibility of different inequality dynamics from those described here. Also, while inequality is intrinsically a multifaceted concept, and as such hard to measure with a single indicator, we’ve centered the analysis around synthetic concentration indexes, to foster comparability over time and between macro-areas. In more detail, the evidence produced offers a comparison of income-related inequity within each macro-area, and how this has evolved in the past decade, rather than an assessment of

¹⁰ Except for a possible upturn in 2016, yet to be confirmed by future evidence.

inequality between the three macro-areas considered. Finally, we should acknowledge that the choice of the particular health and healthcare indicators used, while reflecting the need to use variables collected consistently over time, is indeed partial, and so might the related obtained results be. In other words, we cannot exclude that a different selection of health (among, for example the 166 appearing in the official 'National Outcomes Program' assessment list) or healthcare indicators (e.g. drugs consumption; hospital visits) could have shown a different picture.

Only longer-term evidence will reveal if the adverse economic conditions, and related contraction in healthcare access and health production witnessed in the last decade, will bear a long lasting impact on older people's health. For the time being, trends in Public HE and OOP expenditure clearly indicate that in the past decade the NHS has taken a route of departure from the universalistic principles underlying its original policy design, in particular exposing the South of the country – arguably affected by widespread inefficiencies in provision – to the risk of an increased health gap.

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Appendix – Additional Tables.

Table A1: Health expenditure (HE) in Italy since 2000
(weighted per capita euros- real values at 2010 prices)

Year	North	Centre	South	Italy
2000	1499	1524	1445	1484
2001	1576	1659	1569	1589
2002	1616	1671	1593	1618
2003	1591	1693	1583	1607
2004	1677	1819	1674	1702
2005	1713	1882	1772	1765
2006	1759	1936	1820	1814
2007	1735	1844	1772	1768
2008	1794	1901	1821	1823
2009	1777	1885	1791	1802
2010	1819	1880	1821	1830
2011	1800	1853	1770	1800
2012	1754	1831	1712	1754
2013	1705	1734	1661	1695
2014	1694	1706	1654	1682
2015	1677	1699	1649	1671
2016	1697	1709	1664	1687
2017	1701	1703	1652	1684

Source: ISTAT, Health for all

Table A2: Descriptive Statistics - Mean [standard deviation]

AGE					MALE			
	W2	W4	W5	W6	W2	W4	W5	W6
Italy	67.036 [10.453]	67.093 [10.832]	67.225 [11.056]	67.236 [11.197]	0.451 [0.498]	0.453 [0.497]	0.453 [0.498]	0.456 [0.498]
North	66.431 [10.077]	66.622 [10.768]	66.310 [11.065]	66.691 [11.110]	0.453 [0.498]	0.457 [0.498]	0.454 [0.498]	0.451 [0.498]
Centre	68.399 [10.830]	68.165 [10.477]	68.185 [10.907]	69.073 [11.303]	0.448 [0.498]	0.456 [0.498]	0.454 [0.498]	0.458 [0.498]
South & Islands	67.054 [10.671]	67.116 [11.124]	67.340 [10.985]	66.873 [11.147]	0.45 [0.498]	0.445 [0.497]	0.452 [0.498]	0.462 [0.499]
WHETER INACTIVE (PHYSICAL EXERCISE)					SINGLE PERSON HOUSEHOLD			
	W2	W4	W5	W6	W2	W4	W5	W6
Italy	0.207 [0.406]	0.210 [0.407]	0.216 [0.411]	0.250 [0.433]	0.200 [0.400]	0.213 [0.410]	0.241 [0.428]	0.260 [0.439]
North	0.174 [0.379]	0.144 [0.351]	0.157 [0.364]	0.185 [0.388]	0.216 [0.411]	0.229 [0.420]	0.260 [0.441]	0.325 [0.469]
Centre	0.207 [0.405]	0.252 [0.435]	0.226 [0.418]	0.260 [0.439]	0.166 [0.373]	0.196 [0.397]	0. [0.]	0.213 [0.419]
South & Islands	0.258 [0.458]	0.280 [0.449]	0.294 [0.456]	0.338 [0.473]	0.198 [0.399]	0.201 [0.401]	0.219 [0.414]	0.196 [0.397]
NUMBER OF CHILDREN					WHETER RECEIVES LABOUR INCOME			
	W2	W4	W5	W6	W2	W4	W5	W6
Italy	2.036 [1.377]	1.953 [1.315]	1.868 [1.290]	1.791 [1.233]	0.148 [0.356]	0.265 [0.442]	0.259 [0.438]	0.261 [0.439]
North	1.757 [1.214]	1.723 [1.185]	1.593 [1.199]	1.507 [1.145]	0.152 [0.360]	0.293 [0.455]	0.323 [0.468]	0.332 [0.471]
Centre	1.925 [1.186]	1.764 [1.012]	1.801 [0.982]	1.748 [0.936]	0.125 [0.331]	0.250 [0.433]	0.199 [0.399]	0.222 [0.415]
South & Islands	2.520 [1.574]	2.408 [1.531]	2.307 [1.457]	2.231 [1.386]	0.158 [0.364]	0.235 [0.424]	0.204 [0.403]	0.183 [0.387]
WHETER HOME OWNER					YEARS OF EDUCATION			
	W2	W4	W5	W6	W2	W4	W5	W6
Italy	0.799 [0.401]	0.811 [0.392]	0.824 [0.381]	0.826 [0.379]	7.797 [4.395]	8.242 [4.349]	8.706 [4.544]	8.942 [4.581]
North	0.802 [0.398]	0.811 [0.392]	0.829 [0.377]	0.837 [0.369]	8.584 [4.270]	8.707 [4.119]	9.267 [4.330]	9.501 [4.441]
Centre	0.813 [0.390]	0.848 [0.359]	0.836 [0.371]	0.838 [0.368]	7.624 [4.577]	8.189 [4.500]	8.730 [4.788]	8.724 [4.630]
South & Islands	0.785 [0.411]	0.788 [0.409]	0.810 [0.392]	0.804 [0.397]	6.730 [4.215]	7.599 [4.498]	7.875 [4.567]	8.272 [4.653]
EQUIVALENT HOUSEHOLD INCOME					Sample Numbers			
	W2	W4	W5	W6	W2	W4	W5	W6
Italy	13,695 [15,167]	17,253 [26,796]	14,326 [24,770]	13,003 [10,969]	2,930	3,530	4,668	5,223
North	15,981 [17,743]	21,056 [34,561]	17,460 [33,562]	15,325 [11,555]	1,191	1,398	1,904	2,053
Centre	13,787 [13,231]	17,224 [14,693]	13,403 [13,020]	13,721 [9,936]	703	848	1,152	1,279
South & Islands	10,256 [10,969]	11,727 [16,862]	10,356 [10,711]	9,204 [9,604]	1,036	1,284	1,612	1,891
HAS A LONG STANDING ILLNESS					HEALTH-LIMITATIONS IN ACTIVITIES.			
	W2	W4	W5	W6	W2	W4	W5	W6
Italy	0.428 [0.495]	0.419 [0.493]	0.430 [0.495]	0.378 [0.485]	0.446 [0.497]	0.416 [0.493]	0.428 [0.495]	0.403 [0.491]
North	0.409 [0.492]	0.373 [0.484]	0.347 [0.476]	0.293 [0.455]	0.425 [0.495]	0.351 [0.477]	0.345 [0.476]	0.323 [0.468]
Centre	0.453 [0.498]	0.401 [0.490]	0.470 [0.499]	0.419 [0.494]	0.458 [0.499]	0.421 [0.494]	0.483 [0.500]	0.447 [0.497]
South & Islands	0.439 [0.497]	0.497 [0.500]	0.526 [0.499]	0.476 [0.500]	0.468 [0.499]	0.508 [0.500]	0.514 [0.500]	0.490 [0.500]
NUMBER OF CHRONIC CONDITIONS					SELF-PERCEIVED HEALTH - LESS THAN GOOD HEALTH			
	W2	W4	W5	W6	W2	W4	W5	W6
Italy	1.617 [1.480]	1.553 [1.490]	1.447 [1.466]	1.293 [1.379]	0.467 [0.499]	0.417 [0.493]	0.438 [0.496]	0.428 [0.495]
North	1.520 [1.380]	1.420 [1.345]	1.228 [1.343]	1.081 [1.246]	0.460 [0.499]	0.404 [0.491]	0.390 [0.488]	0.367 [0.482]
Centre	1.813 [1.657]	1.514 [1.483]	1.545 [1.442]	1.384 [1.379]	0.489 [0.500]	0.408 [0.492]	0.480 [0.500]	0.475 [0.500]
South & Islands	1.635 [1.492]	1.776 [1.662]	1.708 [1.598]	1.544 [1.509]	0.463 [0.499]	0.443 [0.497]	0.482 [0.500]	0.487 [0.500]
INDEX					POOR MENTAL HEALTH (EURO-D)			
	W2	W4	W5	W6	W2	W4	W5	W6
Italy	0.740 [0.592]	0.701 [0.594]	0.686 [0.595]	0.625 [0.575]	2.832 [2.596]	2.756 [2.500]	3.016 [2.586]	2.852 [2.608]
North	0.704 [0.561]	0.637 [0.548]	0.578 [0.551]	0.516 [0.530]	2.815 [2.580]	2.561 [2.383]	2.633 [2.398]	2.533 [2.463]
Centre	0.803 [0.640]	0.686 [0.595]	0.744 [0.591]	0.681 [0.568]	2.949 [2.540]	2.927 [2.534]	3.109 [2.412]	2.777 [2.443]
South & Islands	0.751 [0.601]	0.806 [0.641]	0.808 [0.630]	0.749 [0.612]	2.774 [2.641]	2.932 [2.626]	3.529 [2.857]	3.381 [2.830]

Source: SHARE, waves 2-6.

Table A3: Descriptive Statistics on healthcare access variables - Mean [standard deviation]

	W2		W4					
RANGE OF SPECIALISTS CONSULTED								
Italy	0.948	[1.312]	0.925	[1.303]				
North	0.956	[1.274]	0.992	[1.371]				
Centre	1.014	[1.482]	0.894	[1.212]				
South & Islands	0.890	[1.249]	0.846	[1.253]				
NUMBER OF CONTACTS WITH GP								
Italy	7.193	[9.924]	7.167	[10.650]				
North	5.341	[7.310]	5.069	[7.065]				
Centre	6.745	[10.027]	6.361	[9.109]				
South & Islands	10.195	[12.233]	10.751	[14.356]				
NUMBER OF TIMES SAW OR TALKED TO MEDICAL DOCTOR IN LAST 12 MONTHS								
	W2		W4		W5		W6	
Italy	9.444	[12.105]	9.186	[12.532]	8.123	[10.957]	8.283	[11.757]
North	7.511	[9.480]	6.974	[9.127]	6.665	[9.625]	7.933	[11.956]
Centre	9.325	[12.949]	8.545	[11.388]	8.744	[9.339]	9.183	[10.457]
South	12.357	[14.251]	12.838	[16.184]	9.902	[13.204]	8.235	[12.202]

Source: SHARE, waves 2-6.