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Regional institutional quality and territorial equity in LTC provision

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ABSTRACT

We show how regional governments affect the appropriate – in terms of territorial equity – assignment of a national LTC benefit. We analyse the case of Italy, featuring a three-layers setting, where eligibility criteria are defined by the central government (which bears the fiscal cost of transfers), but the assignment decision is taken by regional medical commissions, while applications are activated by individual potential beneficiaries. Combining administrative and survey data, and accounting for regional variation in eligibility prevalence, we document large territorial disparities in need-adjusted benefit assignment. We investigate the determinants of such disparities both in terms of individuals' differential propensity to claim, and of regional discretionary behaviour, as shaped by the underlying quality of regional institutions. While several data limitations recommend caution, the empirical results suggest – in line with our conceptual framework – that regional discretion plays a role in LTC provision: in more detail, lower regional institutional quality appears related to more opportunistic benefit adjudication decisions.

Introduction

The relevance of institutions for economic outcomes has been widely recognised in the social sciences (North, 1990; Aoki, 2001; Acemoglou and Dell, 2010; Rodríguez-Pose, 2013; Rodríguez-Pose and Di Cataldo, 2015) and becomes of the utmost importance for public sector activities. In this realm, public officials have the opportunity to exert discretion over the usage of collective resources, as stressed by the evidence on corruption and rent-seeking behaviour appearing in government expenditure decisions (Mauro, 1998; Gupta et al., 2001). Public service provision often involves several levels of government, i.e. the central and local. Local government involvement spans from the implementation of nationally defined programmes, to a full devolution of responsibilities in funding and provision of public services. In similar multi-level settings, local governments might exert discretion to strategically interact either vertically, i.e. in an attempt to shift the cost of local provision towards the center (Arlotti et al., 2021); or horizontally with other local governments, because of competition mechanisms, or in relation to informational spillovers between neighbouring electorates and neighbouring officials (Revelli, 2005).

The involvement of local governments in public provision is generally motivated – on top of promotion of local democracy (Powell and Boyne, 2001) – on the grounds of their informational advantage: on the local distribution of preferences for public services provision, on the diverse local circumstances affecting needs and, last but not least, on the alternative resources available to meet those needs (Fernandez and Forder, 2015). Against the advantages of "tailoring" trough decentralisation though, stands a concern for equity in provision of public services. In federal (i.e. multi-level governance) settings, an important facet of equity in public provision looks at equality of provision for equal need, also referred to as "territorial justice" i.e. geographical horizontal equity in access to services accessible under national eligibility rules, as discussed by Waitzberg et al. (2020). A response to similar concerns is often sought in the introduction of "national minimum standards" of service provision. However, setting a floor to actual service provision offers a basic response towards the wider challenge of achieving an appropriate provision that avoids regional disparities.

In this study we seek to contribute to a growing literature on the appropriateness – here in terms of territorial equity – of public provision, and its determinants, considering the case of public Long-Term Care (LTC) benefits. LTC benefits, in cash or kind, provide support to (typically older) individuals who experience a permanent loss of ability to perform daily activities in relation to their physical or mental health conditions, and for this reason need daily attendance. Timely receipt of public LTC support is thus essential to their welfare (Zantomio, 2013). Western countries are experiencing a high demand for public Long-Term Care (LTC) provision,

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in relation to prevailing old-age dependency ratios (30.5 % on average in the EU according to Eurostat, 2019). The reason for focussing on public LTC provision is, on top of its current quantitative relevance, its distinctive high institutional fragmentation among different government tiers. Regional or local governments are generally involved in assignment, even under nationally defined schemes, because closer to actual beneficiaries, and better able to observe their underlying eligibility conditions. Wide variations in public LTC assignment across regions exists and have been documented in previous works (e.g. Waitzberg et al., 2020 on OECD countries). LTC provision offers a useful setting for investigating the role played by regional governments in affecting the appropriateness – in terms of adherence to nationally defined eligibility criteria and resulting territorial equity – of public provision.

In more detail, we consider an Italian national LTC cash programme, the "Assegno di Accompagnamento" (AA), whose assignment to individual beneficiaries is ultimately decided by commissions subject to regional governments' control. The case of Italy is of wider interest because notably a country characterised by wide economic disparities across regions and striking territorial variation in institutional quality indicators – with gaps between extreme regions that are larger than those measured between extreme European countries (Charron and Lapuente, 2013). We present a simple conceptual framework to clarify the interplay of individuals' benefit claiming behaviour and regional discretionary application of the nationally defined eligibility rules, and how this results in different factors affecting the observed need-adjusted benefit coverage achieved across regions. Combining administrative data on benefit payments and survey data, we use parametric analysis to explain the extent to which the observed variation in need- adjusted benefit coverage can be attributed to demand factors (i.e. individuals' claiming behaviour), or to regional governments exerted discretion, as shaped by the underlying institutional quality of regional governments. The empirical analysis reflects important limitations of the available data, which should be borne in mind. First, we can exploit only aggregate (region-year-gender-age cells) information on LTC beneficiaries, as individual AA benefit receipt is not available. Second, eligibility is captured through survey self-reported information on severe limitations in daily activities, which might suffer from reporting bias. Third, an analysis conducted on aggregate data might fail to fully reflect within-cell unobserved heterogeneity (e.g. in disability perception, the implicit costs of application).

Our contribution connects three strands of the literature. The first is broadly concerned with the determinants and consequences of individuals' benefit take-up (Currie, 2004) and participation (Bound and Burkhauser, 1999), and in more detail with the strand that focuses on the peculiarity of disability programmes (Albuquerque, 2022). When eligibility is disability-related, it cannot be ascertained before a claim is made, and, once a claim is made, an element of subjective judgement by administrators in the assignment decision is inevitable (Chen and van der Klaauw, 2008) in relation to the challenges of objective disability measurement (Hancock et al., 2015). This literature has mostly investigated demand-side determinants of disability benefit claims and stressed how, while benefit receipt is highly responsive to the onset of disability, personal characteristics unrelated to eligibility also appear to affect receipt, hampering the intended benefit targeting and resulting in non-trivial differences in support received. In particular, existing evidence shows how despite the absence of means-testing, actual receipt de facto achieves income/wealth targeting in relation to the socio-economic gradient in disability and claiming behaviour, reducing the scope for income/wealth targeting by means testing (Hancock et al., 2019). We contribute to this literature highlighting how also differences across mediating local institutions matter.

A second strand of literature is concerned with the spatial distribution of benefit and care provision (e.g. Anyadike-Danes and McVicar, 2008; McVicar, 2013). Disability benefits participation rate has been shown to vary a lot across geographical areas, with variation depending not only on differences in disability prevalence, but also on the socio-economic characteristics of the territories. A few works highlight how territorial variability increases with the degree of autonomy recognized to local authorities (McVicar, 2006; Parsons, 1991; Gruber and Kubik, 1997). For example, in the US Stapleton and Kevin (1998) suggest that some states may have been more generous with applicants to disability benefits in a deliberate effort to shift people from state to federally funded benefits. The relationship between local autonomy and territorial variability of LTC services has also been emphasized by Colombo et al. (2011) for OECD countries, by Trydegård and Thorslund (2010) whit reference to the Swedish Elder Cares and by Amilon et al. (2020) for Danish long-term home care services. However, existing works generally lack an explicit consideration of local governments' discretion. A notable exception is offered by Fernandez and Forder (2015) who explain variation in social care expenditure across English Local Authorities accounting for variables that can be maneuvered by local policy makers, but concludes in favour of variation ultimately mapping, to a large extent, factors "compatible with principles of territorial justice". We contribute to this literature by considering the role that local governments' discretion plays in driving assignment.

We connect these two stands of literature with a third one, linking the appropriateness and effectiveness of regional public intervention to the underlying institutional quality. Indeed, several empirical works exists that relate regional institutional quality to inequalities in economic development (e.g. Iammarino et al., 2019), residents' wellbeing (e.g. Ferrara and Nisticò, 2019) as well as public provision (e.g. Wong et al., 2017) and the returns to public investment (e.g. Crescenzi et al., 2016). However, while a few studies exist that have related institutional quality to the appropriateness of public healthcare provision (see Francese et al., 2014; De Luca et al., 2021), to the best of our knowledge the role of institutional quality, which we address in what follows, has never been investigated in the realm of public LTC provision.

The Italian LTC setting and the national AA benefit

As in other western countries, in Italy public LTC provision involves different government tiers, the Central Government as main funder, but also regions, provinces and municipalities.[1] The Central Government finances LTC mainly through two instruments. The first, a National Fund for Non-Self-Sufficiency (573.2 million euros in 2019) is allocated to regions largely based on the number of resident older people; these resources are earmarked for LTC support and are generally used to finance in-kind residential care.

The other instrument, which we study here, is the quantitatively most important with a total expenditure of 14.2 billion euros[2]: it is a non-contributory and non-means tested cash benefit known as *Assegno di Accompagnamento* (AA). In 2018, the monthly benefit, which is not taxable, amounted to 516.35 euros, payable in 12 monthly instalments. In the same year, 2.3 million AAs payments were made, out of which 1.61 million (the 70.1 %) to older people, which represent the target population of interest in our study.[3] AA can be received by eligible individuals who actively apply. For people aged 65+, eligibility, which is uniform across the nation, requires a disability resulting in an ascertained impossibility to walk without the permanent help of a companion, or in the inability to perform daily acts of life, regardless of any age or income condition. There isn't a list of clinical condition automatically entitling to the benefit, however clinical documentation can be produced for assessment.

[1] Sub-national governments provide a variety of monetary, primarily means tested, and some in-kind benefits to disabled older people (Gabriele and Tediosi, 2014; Waitzberg et al., 2020).

[2] Out of which, 9.98 billion euros for older people (ISTAT, 2020a).

[3] See Figs. A1 and A2 in the Appendix for the AA distribution in Italy by age group (a) and by gender and age group (b), as of 2018. Table A.1 reports the average age of AA recipients in different regions.

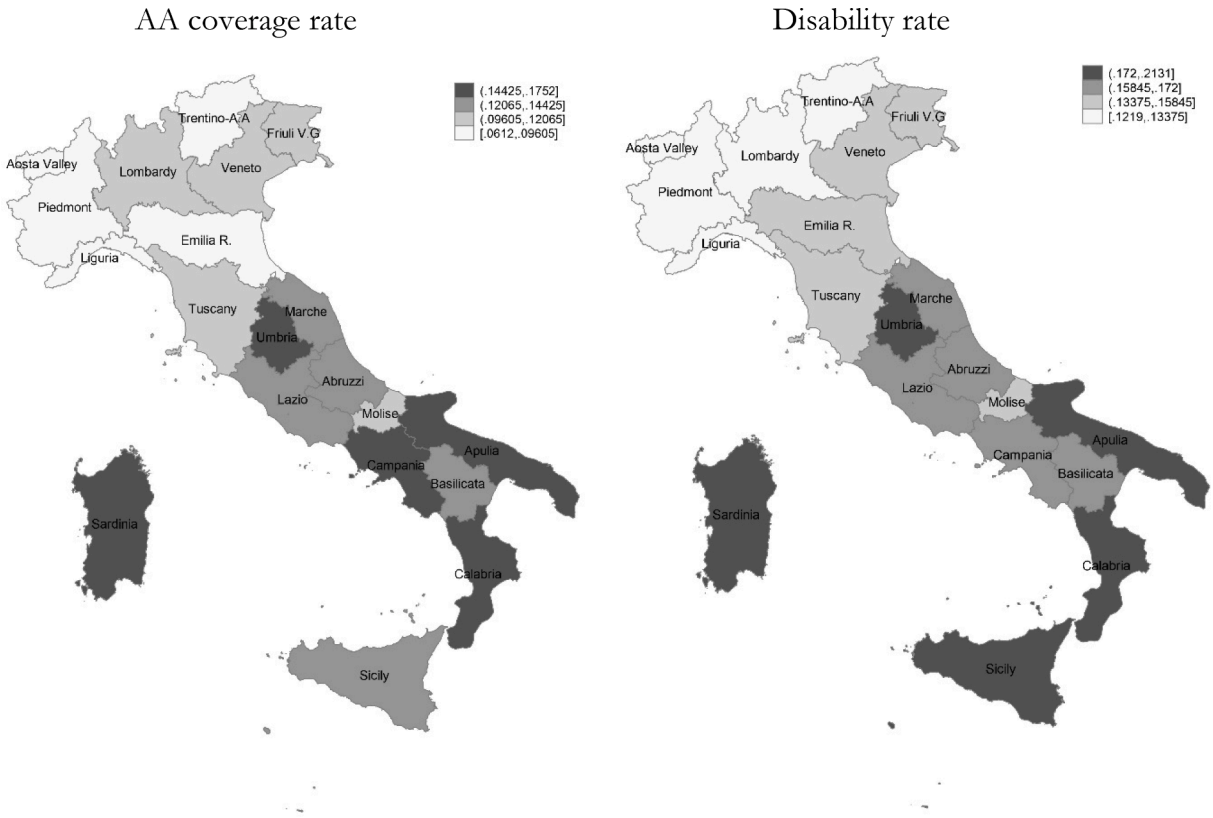

Fig. 1. The regional distribution of the AA and disability rates. (weighted averages 2013–2018 – individuals aged 65 or older). Source: authors' elaborations on data from ISTAT (2020a), ISTAT (2020b), ISTAT (2020c). For detailed data, see Tables A.2 and A.3 in the Appendix.

Once a claim is made, the benefit assignment decision is taken by a local medical commission working under the regional government control. There is a medical commission in each Local Health Authority (LHA). LHAs, headed by general managers appointed at the regional level, manage all the healthcare services delivered within their territory. It is worth emphasising that the Italian health system operates with a high level of decentralisation, with the regions responsible for administrative and organisational powers while the national level exercises rather limited powers.

The LHA medical commission is composed of a specialist in legal medicine (the president), and two medical doctors, one of whom is primarily chosen from specialists in occupational medicine. These are appointed by the Local Health Authority (LHA) governance and selected from the employed or affiliated medical doctors of the LHA. This selection is influenced by regional policies. In facts, Regions define guidelines for the composition and functioning of their Local Health Authority commissions, which are then held responsible for the medical assessment; the central government does not provide specific criteria nor standardized tools to evaluate applications. As a result, there is significant room for subjectivity and discretion at the local level when making decisions regarding eligibility, i.e. whether the claimant needs personal assistance to walk or perform basic daily activities.[4]

The commission also includes a medical doctor appointed by INPS (2016) (National Social Security Institute), although from its local branch,[5] so there might be some indirect national oversight over regional commissions. Still, commission might be suggested by regional governments to exert their discretion in adjudications for increasing AA awards, in this way limiting the regional fiscal cost of providing residential care. In facts, if on the one hand receipt of AA might help the individual to pay for care receivable at home, the alternative course of action (in the absence of an AA cash payment) would most likely be moving the individual to a residential care home, with the individual residence cost being then borne by local public finances.

Indeed, in Italy, many believe that regional disparities in AA participation rates, once disability is controlled for, essentially depend on the different behaviour of regional commissions. The existence of this phenomenon has already been recognised, pointing out that – in addition to the tentative vertical shift in the fiscal cost of LTC, mentioned above – in some Regions AAs provision is de facto acting as an improper instrument of income support (Baldacci and De Santis, 2003). Also Gori (2010) notes that there is a potential for opportunistic behaviour of the regional governments in the provision of AAs, although this is not empirically tested. In what follows, we investigate whether such concerns do find empirical ground.

The Italian AA is actually very similar to LTC cash programmes existing in other western countries, for example the British Attendance Allowance (Corden et al., 2010). Regional variation (with receipt rates varying from values close to zero to values above 20 %) has also been documented in that context by Iparraguirre (2012; 2020), who explains it with the territorial distribution of older people experiencing income deprivation. In France, the people needing help with daily activities receive a cash-for-care allowance disability benefit called APA (Allocation Personnalisée d'Autonomie/Personalized Autonomy Allowance), which presents many similarities with the Italian AA, with the only difference that it is a means tested benefit. Arrighi et al. (2015) analyze the territorial distribution of benefit receipt among County Councils, varying from 1 % to 9 %, and relate it to claiming behavioural factors such as disability and obtainable benefit level.

[4] In 2005, the national acceptance rate was 87.5%, which suggest a relatively low selectivity in the health requirement assessment phase (INPS, 2016). Unfortunately, regional acceptance rate data are not available.

[5] If necessary for specific cases, there might also be "expert member" who can be a specialist in neurological or psychiatric diseases (if the individuals being assessed have mental or intellectual disabilities), a healthcare operator, or a social worker.

As evidenced in Fig. 1 (left-hand side), approximately the 12 per cent of Italian older people receives the AA cash-benefit. However, the proportion of recipients exhibits a large variation across Italian regions: it is lower in the northern regions while higher in the South, ranging from 6.12 % in the Region of Trentino to 17.52 % in Calabria (see also Table A.1 in the Appendix A). Such variation could in principle reflect underlying regional variation in LTC need/eligibility. Indeed, the right-hand panel of Fig. 1, displays the regional variation in the incidence of disability among the population aged 65 or older. The percentage of disabled people is strikingly higher in the southern regions. The Nord-South gradient in health status reflects economic and social dualism between the more economically developed northern regions and the less developed southern ones (Chubb, 1982). The regional distribution of disability mimics to some extent the distribution of AA recipients, proving that need is the predominant determinant of benefit receipt. However, while distributional justice would require a full correspondence in the territorial gradients across the two figures, several departures can be observed. For example, while Lombardy appears in the lowest group, in terms of disability rates, it ranks higher in terms of achieved coverage; at the same time, the opposite holds for Emilia Romagna, another northern region. Such departures suggest that other factors, beyond need, might be biasing the achieved benefit assignment.

Conceptual framework

The interplay of individuals' application decision on the one hand, and regional adjudication decisions on the other, in determining the actual benefit assignment is described using a simple theoretical framework. These theoretical underpinnings explain the choice of the relevant determinants for AA receipt, then empirically tested in Section 4.

We consider a population of individuals, indexed by i, that reside in a region indexed by r. Each individual is characterised by a perceived disability level d_{ir} and pre-benefit income y_{ir}. Any chance of residential mobility across regions is assumed away.[6] Individuals face the opportunity of applying to receive a national cash transfer, amounting to $\overline{b}$ per year, and we assume benefit receipt to be an absorbing state, so that the payment is received until death. If the claim is successful, the present value of benefit payments receivable along the remaining lifespan l_{ir} is $b_{ir}(\overline{b}, l_{ir})$. However, applying involves a cost e_{ir}, reflecting the effort of producing medical evidence, filling the application form, dealing with the bureaucratic procedure over time, etc. The individual utility function $U(y_{ir}, d_{ir}, e_{ir})$ is assumed to be increasing and concave with respect to income, and decreasing and concave with respect to disability and application effort.[7]

Eligibility for the benefit is ex-ante uncertain to the potential claimant and will be assessed by a regional medical commission. The regional medical commission observes the claimant's degree of disability d_{ir}^{*} (which might differ from the individually perceived disability d_{ir}). The nationally defined eligibility rule would assign the benefit if d_{ir}^{*} is at least equal to a threshold of disability $\overline{d}$.

The individual decides to apply if the expected utility from claiming is higher than current utility:

$$p_{ir}U(y_{ir}+b_{ir}, d_{ir}, e_{ir}) + (1-p_{ir})U(y_{ir}, d_{ir}, e_{ir}) \rangle U(y_{ir}, d_{ir}, 0)$$

where $U(y_{ir}+b_{ir}, d_{ir}, e_{ir})$ is the utility if the benefit is assigned, $U(y_{ir}, d_{ir}, e_{ir})$ the level of utility if the claim is rejected and $U(y_{ir}, d_{ir}, 0)$ is current pre-claim utility. The individual perceived probability that the application will be accepted p_{ir} depends on perceived disability d_{ir} and on the threshold $\overline{d}$ established by the national legislation (with $\frac{\partial p_{ir}}{\partial d_{ir}} > 0$ and $\frac{\partial p_{ir}}{\partial \overline{d}} < 0$), so that $p_{ir}(d_{ir}, \overline{d})$.

Rearranging the terms, we obtain:

$$p_{ir}(d_{ir}, \overline{d})[U(y_{ir}+b_{ir}, d_{ir}, e_{ir}) - U(y_{ir}, d_{ir}, e_{ir})] \rangle U(y_{ir}, d_{ir}, 0) - U(y_{ir}, d_{ir}, e_{ir})$$

i.e. an individual applies if the expected utility increase due to benefit receipt is larger than the loss of utility entailed by application effort, if the claim is rejected.

Thus, the claiming probability increases:

the lower is the national threshold level of entitling disability $\overline{d}$;

the higher is the level of individually perceived disability d_{ir};

the higher is the expected benefit: as the annual benefit is equal for all individuals, the benefit depends on the individual's life expectancy (l_{ir});

the lower is pre-benefit income y_{ir}: given the hypothesis of decreasing marginal utility of income, the increase of utility due to the benefit is higher for those on lower incomes;

the lower is the utility loss due the application effort e_{ir}, which depends on personal socio-demographic characteristics, c_{ir}, such as education and the possibility of help by other persons who can facilitate the submission of the application.

Ultimately, the individual claiming decision depends on the following variables: $\overline{d}, d_{ir}, l_{ir}, y_{ir}, c_{ir}$; at the regional level, the number of claimants D_r depends on the regional distribution of these same variables in the underlying 65+ population:

$$D_r = D(\overline{d}, d_r, l_r, y_r, c_r).$$

Once claims are received, regional medical commissions asses them. As the benefit is centrally funded, a region would have no fiscal reason to reject deserving claims. At the same time, the asymmetry of information on d_{ir}^{*} between the central government (unable to observe d_{ir}^{*}) and regions yields some margin of discretion to regional commissions in applying the national rule more or less leniently. In other words, regional governments might be tempted to behave opportunistically and expand coverage, awarding the benefit to claimants not passing the national disability threshold. Regional opportunistic behaviour might be motivated by a variety of different reasons, including the distribution of cash resources to the local electorate; targeted income support to residents manifesting need through claims, or a programme expansion aimed at containing the regional budget cost of providing alternative public LTC support. For these reasons, we model the regional problem-specific objective function as

$$W_r = \alpha_r \ln z_r - \beta_r [\ln z_r - \ln \overline{z}_r]^2$$

where the preference parameter $\alpha_r > 0$ represents the importance a region assigns to expanding *generosity* (i.e. increased coverage z_r) and $\beta_r > 0$ represents the importance the same region assigns to *rule adherence*, which acts as a limit to benefit coverage expansion, also in the light of the possibility of being audited by the National Social Security Institute. The taste for rule adherence is modelled as a loss function for departures from the theoretical coverage which would result from a correct application of national rules $\overline{z}_r$.

Maximizing W_r with respect to z_r yields the optimal benefit coverage:

$$\ln z_r^{*} = \ln \overline{z}_r + \frac{\alpha_r}{2\beta_r}$$

As α_r and β_r are positive parameters, the regional optimal coverage is equal to or larger than $\overline{z}_r$, the theoretical coverage which would result from a correct application of national rules. The term $\gamma_r = \frac{\alpha_r}{2\beta_r}$ can be

[6] The plausibility of the no cross-regional mobility assumption is motivated by the older age of the individuals we consider.

[7] See the Grossman model as presented by Wagstaff (1986) in which the utility is concave with respect to the stock of health, and therefore the utility function results decreasing and concave with respect to disability (as lack of health). About the application effort e_i, we assume increasing marginal disutility.

interpreted as the *degree of leniency* of the region, i.e. a degree of regional moral hazard in assigning national resource to its citizens. In regions featuring no generosity expansion goal ($\alpha_r = 0$), the optimal coverage corresponds to the theoretical value $\bar{z}_r$. In regions featuring instead a generosity expansion goal ($\alpha_r > 0$), the optimal coverage rate is higher than $\bar{z}_r$, although the difference decreases in β_r, the taste for *rule adherence*.

Opportunistic behaviour, as captured by the leniency parameter γ_r can plausibly be expected to happen more likely in regions where institutional quality is lower (Alesina and Tabellini, 2007; Alesina and Tabellini, 2008; Mauro, 1998; Finocchiaro Castro and Guccio, 2020; Arlotti et al., 2021). Institutions broadly reflect the "rules of the game in a society" (North, 1990), encompassing not only formal components (laws, regulations) but also soft and informal components. These have been described as "informal or tacit institutions such as individual habits, group routines and social norms and values" (Amin, 1999) arising through repeated social contacts in local settings, or as 'enduring systems of socially ingrained rules' (Hodgson, 2007). In the context we study, institutional quality can be expected to operate through various channels including, among others, higher exposure to bribery; corruption and influence of clientelistic networks; higher inefficiency in other local service provision; poorer general governance of medical commissions adjudicating claims.

Hence, we characterize γ_r as crucially reflecting (and being proxied by) the underlying quality of local government institutions Q_r:

$$\gamma_r = g(Q_r), g^{'} < 0.$$

To conclude, the proportion of AA beneficiaries z_r in a particular region depends on variables that determine the number of claimants, $D_r = D(\bar{d}, d_r, l_r, y_r, c_r)$, and on the variables that describe the quality of regional governments, which will reflect in the way discretion is exerted:

$$z_r = h(\bar{d}, d_r, l_r, y_r, c_r, Q_r).$$

Empirical analysis

Sample and variables

The empirical analysis focuses on individuals aged 65+, i.e. individuals past their "ability to earn" time of life, as the analysis of disabled individuals under retirement age (potentially entitled also to benefits meant to replace earning) would require to consider other challenges pertaining to labour market effort, which are out of the scope of this work.[8]

The analysis is conducted at the disaggregation level achieved in the available data. The National Institute of Statistics (ISTAT, 2020a) provides yearly recipients counts, disaggregated by gender (females/males), age (65–74 and 75+ age groups) and region (for the twenty Italian regions). As we use data for the five years spanning from 2013 to 2018, this results in 480 observations, each corresponding to a year-region-gender-age specific subgroup or "cell".

The variables required for analysis are overall listed in Table A.5 in the Appendix A, where descriptive statistics appear. We obtain them (at the cell-level defined above) combining different data sources (see Table A.4 in the Appendix A). We retrieve data on need/eligibility-related characteristics, as well as on other demand-side (i.e. individual potential claimants) determinants of benefit coverage from repeated cross-sections of the Italian annual household survey "*Daily Life Study*[9]", available between 2013 and 2018. The survey offers individual level data on demographic, health and socio-economic characteristics, although individual AA benefit receipt is not recorded.

In more detail, as indicator of disabilities and functional limitations we use the Global Activity Limitation Indicator (GALI)[10] which is derived from the survey question '*For at least the past six months, to what extent have you been limited because of a health problem in activities people usually do? Would you say you have been: severely limited/limited but not severely/not limited at all'*. An individual aged 65+ is generally considered as disabled if severely limited in daily activities because of a health problem in the past six months. The validity and the reliability of GALI as indicator of disabilities and functional limitations have been highlighted in several studies (Van Oyen et al., 2018; Berger et al. 2015; Bogaert et al., 2018; Maniscalco et al., 2020).[11]Further need-related survey indicators we exploit include the number of chronic conditions, age and gender.

Previous studies on older people's benefit claiming behaviour have shown that other (non-need related) demographic and socio-economic factors influence the individual's propensity to claim. Among these, family support and economic resources have been highlighted as the most significant (see for example, Hernandez et al., 2007; Pudney et al., 2006; Zantomio, 2013). To account for potential family support, we use household size and partnership; the socioeconomic status is captured though having obtained a higher level of education (upper secondary diploma or above) and self-reported poverty at the family level (i.e. self-report scarce economic resources).

Administrative and survey data are then complemented by regional indicators meant to capture whether and how regions exploit their discretion in awarding benefits to claimants. The lower the quality of regional government institutions, the more lenient the regional government is expected to be in adjudication decisions on received applications. To investigate the role of institutional quality of regional governments, we use the European Quality of Government Index (EQI), developed by the Quality of Government Institute at the University of Gothenburg (Charron et al., 2014; Charron et al., 2015). The EQI has been often used as a measure of local institutional quality (see e.g. De Luca et al., 2021; Golden and Picci, 2005; Baldini et al., 2018). The EQI is a multidimensional indicator that measures the level of corruption and protection of the rule of law, effectiveness and accountability of government, at both national and regional levels. Data comes from a large survey on EU citizens, which are asked to report on the quality, the impartiality, and the level of corruption of three public services in their region: education, healthcare and law enforcement. Ultimately, the EQI measures the within-country variability in the Italian citizens' perceptions of trust, local governance, quality of public service, bribing and corruption, based on their experiences and opinions. As EQI is only available for 2013 and 2017, out of the years span we consider, but is substantially stable over time, we use the regional average computed between 2013 and 2017. The average EQI in Italy is 28.29 (100 representing the best institutional quality) with, again, important differences across regions: the highest institutional quality region is Trentino-Alto Adige (EQI: 52.96) and the lowest is Calabria (EQI: 8.31). Interestingly, these extreme regions are to the two where AA incidence is

[8] It is worth stressing that for individuals aged below 65, the AA eligibility assessment is different and takes into account the residual working capacity. Besides, the AA incidence is very tiny for adults aged 15–64 (only the 1.2% receives the payment).

[9] Part of the Multipurpose Survey system carried out by the ISTAT (2020c).

[10] Information relating to the degree of difficulty in performing specific ADL and IADL, while commonly used in the literature, is not available in the dataset used in the paper (ISTAT, 2020c). This information would be available in alternative surveys (such as the Italian components of the Survey of Health, Retirement and Ageing in Europe or the European Health Survey), which are however conducted only in specific years (biannual the first, and only in 2015 and 2019, the second) and for this reason cannot be employed here.

[11] A major difficulty in the analysis of the take-up concerns the identification of the people who are entitled to the benefit, that is, in the specific case, the identification of disabled older people. As pointed out by Hancock et al. (2019), "disability is a difficult concept" and there have been many ways of addressing the problem of identifying disabled people.

Table 1
Regional EQI and Policy Indicators, Pairwise Correlation.

	EQI	Dependents in retirement homes	LEA score	Municipalities in financial distress
EQI	1			
Dependents in retirement homes	0.9485	1		
LEA score	0.5969	0.5767	1	
Municipalities in financial distress	−0.8846	−0.8767	−0.6519	1

Source: authors' elaborations.

respectively the lowest and highest (see Section 2).

The effect of Institutional Quality on the appropriateness of benefit adjudication decisions might vary with the level of local economic development. The relationship between territorial economic inequality and generosity in local government's behaviour has been previously highlighted (see e.g. Arlotti et al., 2021). Indeed, other things equal, a significant proportion of citizens in poor economic conditions in the region may influence the need for welfare benefits and therefore may lead local governments to influence LHAs commissions adjudications so that the AA transfer is used as a replacement for income support. This is particularly relevant in Italy where in the period we study (the introduction of a national minimum income occurred in 2019) tackling poverty was mainly a local government responsibility, resulting in poverty relief programmes being fragmented and heavily underfunded. For this reason, we include an indicator for the percentage of families living in relative poverty in the region (from ISTAT, 2021a) and, in an alternative specification, regional per-capita yearly GDP. However, as current local economic development might be affected by the same quality of local institutions, we also employ, in a different specification, an indicator of past economic development (proxied by an historical indicator of urbanization as of 1860, the time of Italy unification, provided by Tabellini, 2010).

Institutional quality might shape the appropriateness of AA provision though several policy channels. We have the chance to test a few: we use the percentage of dependent elderly in residential care institutions, a regional healthcare service's quality score (in terms of 'Essential Level of care', LEA) and the presence of municipalities in financial distress within the region.

Differences in the percentage of dependent elderly in residential LTC at regional level (taken from ISTAT, 2021b) may be regarded as an indicator of the resources committed to elderly care by each regional Government. In Italy, the regional government is responsible for the financing of local nursing homes for elderly people (while municipal government is responsible for their provision and management). According to the Report of NNA-Network Non Autosufficienza (2017) there is a clear relationship between nursing homes and national cash benefits: the more regions are active in providing local nursing homes for dependent elderly and the lower is the AA usage.

We also use the LEA quality score computed every year (Ministry of Health, 2020) to assess the region's performance in delivering the 'essential levels of care' to their citizens which guarantee equal health care coverage throughout the country (Piacenza and Turati, 2014; Signorelli et al., 2020).

The lack of organizational resources and managerial skills and the vulnerability to local interest groups are potential drivers of local government financial distress (Kihmi, 2008). With reference to the Italian municipalities, incorrect financial managerial practices seem to be largely responsible for misallocation of public resources that may evolves into critical situation of financial distress. The percentage of municipalities in financial distress within the region can be regarded as an indicator of an institutional, political and cultural setting favouring the discretionary management of the AA national eligibility rules. We

Table 2
Need-adjusted AA coverage and Quality of Local Institutions.

	OLS results				
	(1)	(2)	(3)	(4)	(5)
In a partnership	−0.219***	−0.233***	−0.200***	−0.222***	−0.219***
	(0.0410)	(0.0418)	(0.0441)	(0.0414)	(0.0425)
Household size	0.235**	0.299***	0.192*	0.240**	0.242**
	(0.107)	(0.111)	(0.115)	(0.107)	(0.117)
Higher education	0.0811***	0.0898***	0.0951***	0.0888***	0.0965***
	(0.0255)	(0.0260)	(0.0288)	(0.0261)	(0.0275)
Poor	0.0843*	0.0704	0.0935*	0.0718	0.0823
	(0.0466)	(0.0475)	(0.0497)	(0.0479)	(0.0507)
Life expectancy	2.383***	2.305***	2.779***	2.423***	2.511***
	(0.364)	(0.369)	(0.448)	(0.360)	(0.374)
Female	−0.138**	−0.118*	−0.195**	−0.141**	−0.152**
	(0.0652)	(0.0665)	(0.0799)	(0.0652)	(0.0672)
Older Age group (75+)	0.504***	0.477***	0.713***	0.529***	0.577***
	(0.177)	(0.178)	(0.213)	(0.174)	(0.181)
EQI	−0.436***	−0.399***	−0.395***	−0.430***	−0.433***
	(0.0408)	(0.0431)	(0.0540)	(0.0422)	(0.0436)
Time FE	ν	ν	ν	ν	ν
Macro-region FE	ν	ν	ν	ν	ν
Time#macro-region FE	–	–	–	–	ν
Regional Poverty Incidence	–	ν	–	–	–
Reg. Hist. Economic Development	–	–	ν	–	–
Regional GDP per capita	–	–	–	ν	ν
Observations	480	480	384	480	480
R-squared	0.927	0.928	0.932	0.928	0.929
Robust standard errors in parentheses					
*** p < 0.01, ** p < 0.05, * p < 0.1					

Source: authors' elaborations on data from ISTAT (2020a), ISTAT (2020b), ISTAT (2020c).

Table 3
Need-adjusted AA coverage –Policy Mechanisms.

	OLS results				
	(6)	(7)	(8)	(9)	(10)
In a partnership	−0.198***	−0.202***	−0.194***	−0.187***	−0.176***
	(0.0404)	(0.0403)	(0.0440)	(0.0405)	(0.0412)
Household size	0.295***	0.345***	0.208*	0.276**	0.293**
	(0.108)	(0.109)	(0.112)	(0.107)	(0.119)
Higher education	0.0636***	0.0682***	0.0770***	0.0783***	0.0784***
	(0.0238)	(0.0241)	(0.0285)	(0.0239)	(0.0249)
Poor	0.130***	0.105**	0.109**	0.0884*	0.111**
	(0.0461)	(0.0467)	(0.0498)	(0.0473)	(0.0499)
Life expenctancy	3.026***	3.108***	2.865***	3.419***	3.705***
	(0.385)	(0.385)	(0.452)	(0.383)	(0.404)
Female	−0.241***	−0.245***	−0.214***	−0.293***	−0.336***
	(0.0678)	(0.0674)	(0.0793)	(0.0676)	(0.0708)
Older Age group (75+)	0.821***	0.871***	0.748***	1.024***	1.168***
	(0.186)	(0.187)	(0.217)	(0.185)	(0.195)
Dependents_in_retirement_homes	−0.229***	−0.232***	−0.295***	−0.250***	−0.258***
	(0.0254)	(0.0250)	(0.0348)	(0.0255)	(0.0275)
LEA_score	−0.229***	−0.211***	−0.246***	−0.254***	−0.316***
	(0.0716)	(0.0703)	(0.0778)	(0.0689)	(0.0761)
Municipality_financial_distress	0.451***	0.329***	0.0531	0.329***	0.300***
	(0.0713)	(0.0793)	(0.157)	(0.0814)	(0.0864)
Time FE	ν	ν	ν	ν	ν
Macro-region FE	ν	ν	ν	ν	ν
Time#macro-region FE	–	–	–	–	ν
Regional Poverty Incidence	–	ν	–	–	–
Regional Hist. Economic Development	–	–	ν	–	–
Regional GDP per capita	–	–	–	ν	ν
Observations	480	480	384	480	480
R-squared	0.935	0.937	0.938	0.937	0.940
Robust standard errors in parentheses					
*** p < 0.01, ** p < 0.05, * p < 0.1					

Source: authors' elaborations on data from ISTAT (2020a), ISTAT (2020b), ISTAT (2020c).

use data from the Ca' Foscari University Report on Municipalities (Degni, 2020). More than 10 % of Italian municipalities are in financial distress, including striking cases in the North, such as Alessandria in Piedmont.

Table 1 reports the pairwise correlation between all regional indicators. It is interesting to observe that the three regional policy indicators display sizeable correlations (of the expected sign) with the EQI indicator.

Table 4
AA specific Institutional Quality Index and potential AA cost savings.
(Year 2018, Regions in descending order of BAQI)

	BAQI*	EQI*	Total actual expenditure *Million €*	Potential savings *Million €*	Potential savings %
Trentino A.A.	1.000	1.000	75.9	0.0	0.0 %
Aosta Valley	0.931	0.966	16.0	−1.0	−6.1 %
Friuli V.G.	0.918	0.965	194.7	−14.2	−7.3 %
Veneto	0.917	0.939	687.1	−50.9	−7.4 %
Piedmont	0.907	0.852	602.9	−52.7	−8.7 %
Lombardy	0.902	0.917	1376.6	−122.5	−8.9 %
Emilia R.	0.891	0.937	594.2	−70.3	−11.8 %
Liguria	0.835	0.832	259.7	−49.1	−18.9 %
Marche	0.803	0.843	309.0	−50.5	−16.3 %
Tuscany	0.757	0.890	570.0	−152.8	−26.8 %
Umbria	0.691	0.834	239.3	−68.0	−28.4 %
Sardinia	0.668	0.794	350.4	−125.8	−35.9 %
Abruzzi	0.650	0.715	239.4	−93.1	−38.9 %
Molise	0.644	0.766	57.0	−24.4	−42.8 %
Basilicata	0.615	0.723	98.3	−45.7	−46.5 %
Apulia	0.575	0.720	828.8	−326.7	−39.4 %
Lazio	0.574	0.734	1083.0	−467.1	−43.1 %
Sicily	0.541	0.723	910.3	−455.1	−50.0 %
Calabria	0.468	0.575	452.6	−251.0	−55.4 %
Campania	0.422	0.534	1035.3	−618.6	−59.8 %
Italy	0.735	0.813	9980.5	−3039.3	−30.5 %

Note: * Indexes normalized to their respective maximum value.

The outcome variable: Needs-adjusted benefit coverage

Our analysis seeks to investigate the presence of territorial inequity in achieved AA coverage, and the extent to which this can be attributed to regional discretion, on top of an individual's differential propensity to activate a claim. To this end, the outcome variable is defined as the needs-adjusted AA coverage rate, i.e. once regional differences in the distribution of eligibility/need individual characteristics which could give rise to "fair" variation in receipt are accounted for. The method used for need-adjustment is indirect standardization, as common when seeking to measure potential inequities in healthcare delivery (O'Donnell et al., 2008). Need-standardized AA coverage is defined as actual coverage minus need-expected coverage, the latter corresponding to the predicted coverage under actual need (i.e. disability) characteristics but average non-needs characteristics (i.e. as if under average income, average education etc.).

In practice, need expected coverage is obtained through a predictive regression model of AA receipt within each year-region-age-gender specific cell. In the predictive regression, need-related covariates include age, gender, functional limitations and health indicators such as the number of chronic conditions. Further non-need-related covariates are included as controls, in order to properly estimate partial correlations with the need-related variables. These include variables capturing family composition, education, economic resources, life expectancy (which increases, other things equal, the incentive to claim) and the quality of regional institutions. For more detail, the full list used is available in the Appendix A, Table A.6.

It is interesting to observe how the variance of the need-adjusted AA coverage is remarkably lower than for the raw AA coverage rate, signalling that part of the variation observable across regions reflects variation in underlying need (see, Table A.5 in Appendix A). However,

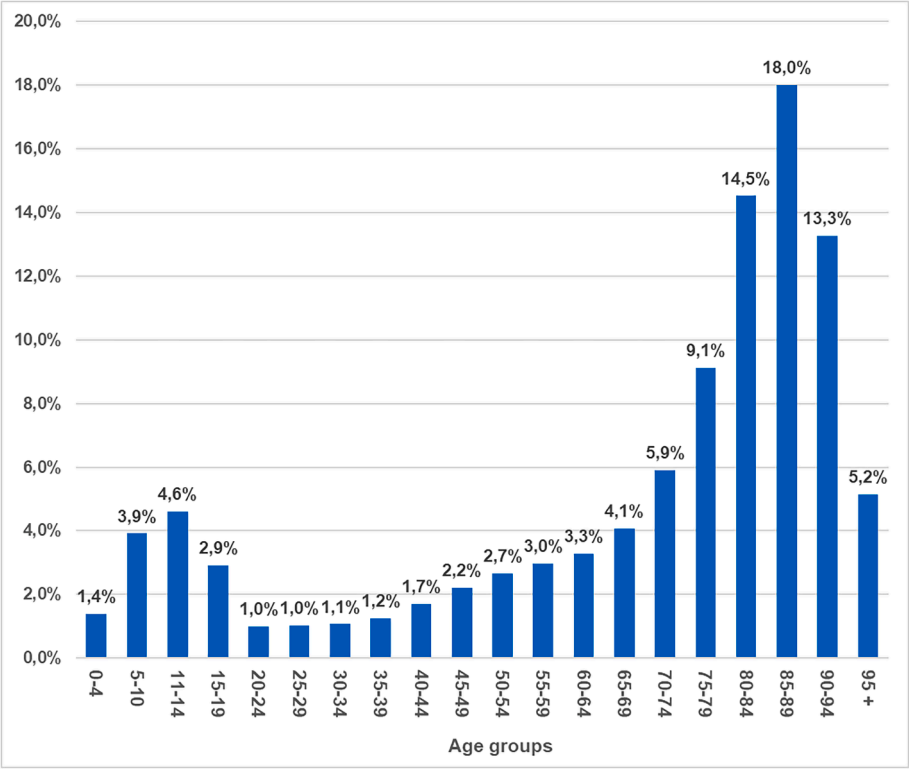

Fig. A1. AA beneficiaries by age group, as of 2018.

territorial variation remains once these are accounted for, with AA receipt rates spanning from a minimum of 2 % (registered in Trentino Alto -Adige) to a ten times larger maximum if 20 % (registered in Calabria). (See Table A.7 in the Appendix A for a full list of need-adjusted coverage rates across Italian regions). Such heterogeneity reveals the potential presence of territorial inequity – i.e. differential coverage for equally deserving individuals – which could stem from an individual's differential propensity to claim and/or discretionary regional behaviour, a point we address in the next Section.

Empirical specification

We estimate the linear regression model:

$$\ln z^{n}_{rtga} = \theta + \sum_{i=1}^{I} \vartheta_i \ln X_{i,rtga} + \sum_{j=1}^{J} \mu_j \ln Q_{j,rt} + \delta^{area}_{m} + \delta^{year}_{t} + \delta^{gender}_{g} + \delta^{age}_{a} + \varepsilon_{rtga}$$

where the dependent variable ln z^{n}_{rtga} is the natural logarithm of the need-adjusted benefit coverage rate in region r (belonging to the macro-region m) and year t, for individuals of gender g and in age group a. Needs-adjusted benefit coverage is modelled as depending on the distribution of a set of exogenous variables describing regional population characteristics affecting claiming behaviour (e.g. income, education, household size etc.) overall denoted as X, varying by region-year-gender-age subgroup; and on regional indicators, denoted by Q which vary across regions (and possibly over time). Finally, parameters δ denotes fixed effect for area (macro-regions), years, gender and age groups, included to capture, as much as possible, unobserved heterogeneity. All continuous explanatory variables are measured in logs.

Ideally, one would want to set the area fixed effects at the regional level to minimize the chance for remaining regional compositional differences and other confounders to bias the estimated coefficient of primary interest i.e. μ_j. However, this is not possible as the regional institutional quality indicator Q we mainly use (the EQI) does not –de facto – vary over time (indeed we use the 2013–2017 average). Paired with the specific structure of our database (observations corresponding to year-region-gender-age specific subgroups), this prevents us to use simultaneously Q, which varies by region, and regional fixed effect. For this reason, we set the area fixed effect at the slightly less disaggregated level of macro-regions, i.e. aggregates of neighbouring regions characterised, also due to historical reasons,[12] by well-known homogenous environments and economic performance (and for this reason defined as such by the National Statistical Office). These are: North-West (Piedmont, Lombardy, Aosta Valley and Liguria), North-East (Veneto, Trentino-Alto Adige, Friuli-Venezia-Giulia, Emilia Romagna), Center (Lazio, Tuscany, Umbria, Marche), South (Campania, Apulia, Basilicata, Abruzzi, Molise, Calabria), and Islands (Sicily and Sardinia).

Economic differences across macro-regions, which have an impact on economic performance, demographic patterns and social indicators, have historical roots and persist in present-day Italy.[13] The North-South gradient, known as the '*questione meridionale*',[14] has been a prominent feature of Italy since the country's political unification in 1861, and increased sharply with the economic modernization of the country. In particular, North-West regions, the '*industrial triangle*', carry a strong industrial heritage; these regions played a significant role in Italy's industrialization, which occurred from the end of the WWII to the beginning of the 1970s. The North-East regions experienced industrialization at a later stage, characterised by the spread of small and medium-

[12] Indeed, the 5 macro-regions broadly- yet not exactly - reflect the pre-national unification governments; in a sensitivity exercise, we use these alternative historical aggregates (Austro-Hungarian Empire, Savoia, Dukedoms, Papal State and Two Sicilies Kingdom) and obtain substantially unaltered results (available upon request from the Authors).

[13] See Appendix Section B for evidence in support of within macro-regions homogeneity of the involved regions.

[14] The term *questione meridionale* is used to describe the persisting social, economic, and financial problem of the disparity between the wealthier Centre-North and the economically disadvantaged Southern Italy (among others, see Felice, 2007).

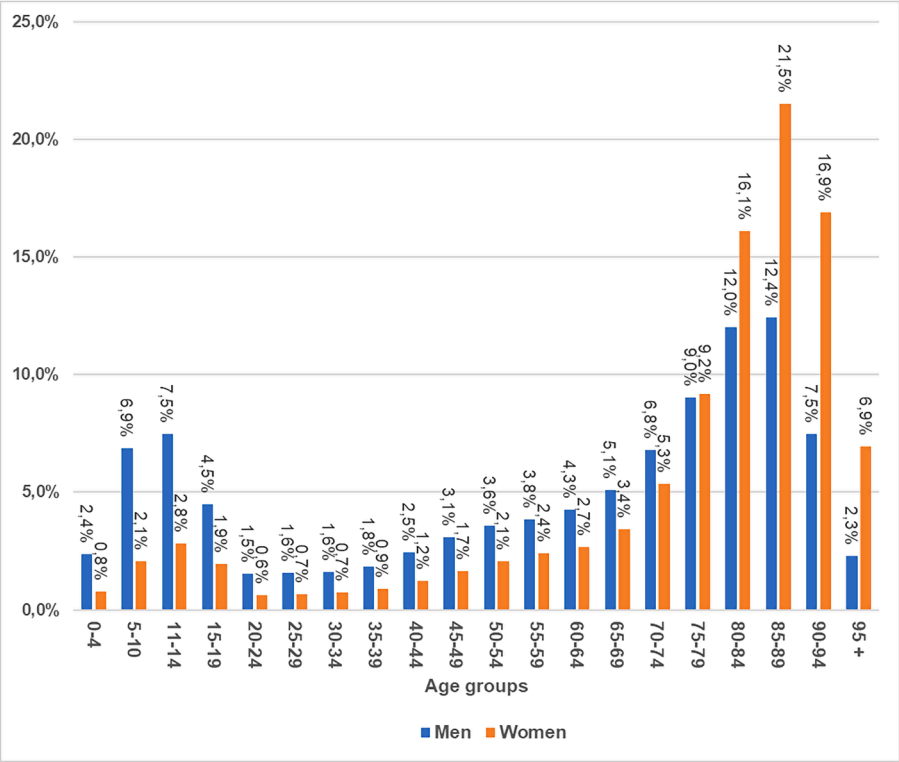

Fig. A2. AA beneficiaries by gender and age group, as of 2018.

Table A1
Average age of AA recipients in different regions.

Regions	Weighted average age
Abruzzi	84,32
Aosta Valley	84,53
Apulia	83,05
Basilicata	84,30
Calabria	83,06
Campania	82,45
Emilia R.	85,32
Friuli V.G.	85,02
Lazio	83,10
Liguria	85,02
Lombardy	84,53
Marche	85,27
Molise	84,42
Piedmont	84,65
Sardinia	83,12
Sicily	83,04
Trentino A.A.	84,48
Tuscany	84,96
Umbria	84,69
Veneto	84,78
Italy	83,92

Source: authors' elaborations with data ISTAT (2020a), ISTAT (2020b).

sized enterprises with a notable orientation towards exporting goods. The contribution of exports to the economic development of the area was decisive and is still today a distinguishing feature of the North-East regions. After the Second World War, the northern regions became an advanced industrial society diverging from the predominantly agrarian South and Islands. In this respect, economic history literature evidenced that after the economic boom (1951–1971) a process occurred of convergence within Italian macro-regions and at the same time of divergence between them, the latter particularly remarkable in terms of North-South divide (Felice, 2018; Federico et al., 2019).

In a sensitivity exercise, we include also area-year interactions to capture the role of area- and time-specific shocks, on top of the time invariant historical differences across areas. To the extent that regional compositional differences and potential confounders act uniformly within each macro-region (which seems plausible, given their economic and historical similarity, and is supported by evidence provided in Appendix B), the inclusion of area and area-year specific fixed effects contribute to the credibility of the size and significance of the main estimated coefficient of interest.

The model is estimated by robust OLS. In a first set of specifications, we focus on the role of regional institutional quality, while controlling for regional economic development. In a second set of analyses, we replace the institutional quality indicator with specific policy dimensions though which institutional quality might be revealed, i.e. the provision of LTC in residential care institution, the LEA healthcare quality score and the frequency of municipal financial distress.

Results

Table 2 reports the obtained estimates from different regression specifications. The first column refers to the baseline specification, where the role of regional discretion is captured though the EQI institutional quality indicator. The second, third and fourth columns reports result obtained when controlling for indicators of regional economic conditions, i.e. current regional poverty, historical economic development and regional per capital GDP respectively. A final specification augments the fifth by adding macro-region/year fixed effects.

The five specifications deliver substantially similar results. In terms of demand-side factors, non-need related individual characteristics potentially effecting claiming behavior do appear to play a role in the actual benefit assignment. Consistently with predictions from the conceptual framework described in Section 3, education, other things equal,

Table A2
The AA incidence rate by region, sex and age group.
(Percentage values – Weighted averages for the period 2013–2018)

Regions	Females			Males			Totale		
	65–74	75+	Total	65–74	75+	Total	65–74	75+	Total
Abruzzi	3.69	25.49	15.92	3.59	15.15	9.16	3.64	21.36	12.97
Aosta Valley	2.59	19.57	11.97	1.96	10.46	5.75	2.28	16.08	9.26
Apulia	5.02	30.22	18.08	4.50	18.13	10.60	4.77	25.36	14.81
Basilicata	3.52	23.45	14.87	3.27	14.68	8.97	3.40	19.88	12.28
Calabria	6.01	33.96	21.18	5.51	21.40	12.94	5.77	28.84	17.52
Campania	5.41	31.36	18.52	5.11	19.54	11.19	5.27	26.77	15.35
Emilia R.	2.36	18.88	11.66	2.14	10.31	6.12	2.26	15.49	9.27
Friuli V.G.	2.60	21.02	12.67	2.45	11.17	6.37	2.53	17.31	10.00
Lazio	4.65	26.77	16.35	4.31	16.07	9.71	4.49	22.57	13.51
Liguria	2.57	18.86	11.95	2.42	10.10	6.21	2.50	15.52	9.55
Lombardy	2.56	20.30	12.16	2.41	11.01	6.29	2.49	16.75	9.66
Marche	3.02	26.15	16.31	2.78	14.83	8.77	2.91	21.66	13.05
Molise	3.55	22.13	14.41	3.57	13.62	8.51	3.56	18.79	11.85
Piedmont	2.37	18.01	11.05	2.16	9.58	5.67	2.27	14.72	8.74
Sardinia	5.27	31.04	18.55	4.69	17.84	10.44	4.99	25.79	15.00
Sicily	4.77	27.90	16.88	4.45	17.39	10.35	4.62	23.68	14.04
Trentino A.A.	1.84	12.80	7.76	1.82	6.65	3.98	1.83	10.43	6.12
Tuscany	2.60	20.31	12.43	2.29	10.84	6.39	2.46	16.58	9.84
Umbria	4.29	32.85	20.53	3.64	19.28	11.28	3.98	27.50	16.55
Veneto	2.55	21.36	12.73	2.45	11.56	6.52	2.50	17.61	10.07
Italy	3.55	23.69	14.45	3.28	13.68	8.07	3.42	19.77	11.70

Source: authors' elaborations with data ISTAT (2020a), ISTAT (2020b).

Table A3
The non-self-sufficient incidence rates by region, sex and age group.
(Percentage values – Weighted averages for the period 2013–2018)

Regions	Females			Males			Totals		
	65–74	75+	Total	65–74	75+	Total	65–74	75+	Total
Abruzzi	9.61	27.67	19.74	6.74	16.79	11.58	8.24	23.32	16.18
Aosta Valley	8.16	19.49	14.42	6.70	16.92	11.26	7.45	18.50	13.04
Apulia	11.04	27.57	19.61	10.26	21.25	15.19	10.67	25.03	17.68
Basilicata	8.62	23.75	17.24	8.70	20.31	14.50	8.66	22.35	16.04
Calabria	11.98	27.33	20.31	9.93	19.22	14.28	10.99	24.02	17.63
Campania	9.85	26.27	18.14	9.63	18.74	13.47	9.75	23.35	16.12
Emilia R.	6.44	26.37	17.65	6.84	19.51	13.01	6.63	23.65	15.65
Friuli V.G.	8.37	24.02	16.93	6.62	11.53	8.83	7.54	19.32	13.50
Lazio	9.38	26.48	18.42	10.29	19.56	14.54	9.80	23.76	16.77
Liguria	6.85	19.46	14.11	6.16	14.76	10.41	6.53	17.67	12.56
Lombardy	6.37	20.56	14.04	6.15	13.97	9.68	6.26	18.04	12.19
Marche	11.03	26.19	19.74	6.41	17.25	11.79	8.85	22.64	16.31
Molise	8.27	21.76	16.15	5.39	15.91	10.56	6.88	19.46	13.73
Piedmont	8.58	20.35	15.11	6.73	15.29	10.77	7.71	18.37	13.25
Sardinia	13.94	33.29	23.91	12.41	21.49	16.39	13.21	28.60	20.62
Sicily	11.25	28.65	20.36	10.27	25.15	17.06	10.80	27.24	18.93
Trentino A.A.	5.85	21.31	14.20	9.85	12.26	10.93	7.76	17.82	12.79
Tuscany	7.41	22.51	15.80	5.86	16.32	10.88	6.69	20.07	13.68
Umbria	12.11	36.11	25.77	6.17	25.09	15.41	9.30	31.77	21.31
Veneto	7.76	23.90	16.49	4.93	17.02	10.34	6.42	21.27	13.85
Italy	8.74	24.61	17.33	7.80	17.87	12.44	8.30	21.97	15.22

Source: authors' elaborations with data ISTAT (2020b), ISTAT (2020c).

appears to increase the chance of receipt, in relation to the lower application cost experienced by more educated individuals.[15] Lack of economic resources also appears – as widely documented in previous works- as a driver of benefit receipt, with claims plausibly triggered by financial need. The presence of a spouse instead is associated with a reduced receipt, suggesting a role for partners as informal caregivers,[16] which is in line with the literature highlighting partners' reported feeling of fulfilment related to caring (Baji et al., 2019, Brower et al., 2005). The larger and significant coefficient on household size reveals that the presence of other family members is systematically related to higher benefit receipt, plausibly because their support lowers the

[15] In Italy there is a lively debate on the opportunity to means-test Attendance Allowance so that is it received by lower SES individuals. However, such a reform has not appeared in the agenda of the recent governments, mostly in relation to the universalistic view prevailing in the Italian NHS.

[16] Actually, the benefit is not conceived as a Carer Allowance (i.e. a financial reward for carers). It is meant to support individuals needing care. The presence of a partner in the household might imply the availability of informal care provided by the partner, which might in turn lower the need to pay for formal help.

Table A4
Data sources.

Variable	Description	Sources
AA coverage	AA beneficiaries/individuals aged 65+	ISTAT (2020), Statistiche della previdenza e dell'assistenza sociale. I trattamenti pensionistici. I.Stat, Dataset
AA coverage, needs-adjusted		
NEEDS-RELATED INDICATORS		ISTAT (2020), Multipurpose Survey, "Aspects of Daily Life".All the individual variables are aggregated into cell-level variables (i.e. region-year-age-gender subgroups) .
Non-self-sufficient elderly (GALI)	Share of older people (65+) with severe limitations ADLs(GALI)	
Number of chronic conditions	Average number of chronic conditions	
Female	Share of older people (65+) of female gender	
Average age	Average age	
NON-NEED –RELATED DEMAND SIDE INDICATORS		
In a partnership	Share of older people (65+) living with a partner	
Household size	Average number of family members	
Poors	Share of older people (65+) reporting living in poverty	
Higher education	Share of older people (65+) with higher education	
Life expectancy	Average life expectancy	
REGIONAL INDICATORS		
Quality of government index	Quality of regional Government EQI (average 2013–2017)	Charron at al. (2013, 2014, 2015), Data comes from a large survey on EU citizens which are asked to report on the quality, the impartiality, and the level of corruption of three public services in their region: education, healthcare and law enforcement. We use the normalized scores ranging from zero to 100 (with 100 representing the best institutional quality).
Institutional Quality Index	Institutional Quality Index IQI	Nifo and Vecchione (2015), IQI is a composite indicator that assesses Institutional Quality in Italy; it is based on five groups of elementary indexes (evaluating corruption, governance, regulation, law enforcement and social participation) and measures institutional quality at the provincial and regional levels for the period 2004–2019.
Dependents in retirement homes	Dependents in retirement homes (per 100.000 older individuals)	ISTAT (2021), *Ospiti dei presidi residenziali socio-assistenziali e socio-sanitari: Anziani per età e tipo di disagio*, I.Stat, https://dati.istat.it/index.aspx?queryid=22185.
Municipalities in financial distress	Percentage of municipalities in financial distress	Degni (2020), number of municipalities that either activated a financial distress procedure, or a Long-Term Restructuring Programme by region.https://mizar.unive.it/gsi/studi/public/elen_info.php
LEA score	Quality of Healthcare delivery regional score	Ministry of Health (2020), the LEA score is based on 35 indicators of healthcare quality delivery. According to the score assigned, Regions are classified as "compliant" (i.e., score $\geq$160 or between 140 and 160, with no critical values in any of the indicators) or "non-compliant" (i.e., score <140 or between 140 and 160 with at least one critical value in one of the indicators). We use the continuous version of the score, which can potentially reach a maximum value of 225.
Historical Economic Development	Urbanization as of 1860	Tabellini (2010), the variable is defined as the fraction of regional population that lived in cities with more than 30,000 individuals around 1860.
Regional poverty incidence	Regional poverty incidence	ISTAT (2021), Households' Relative poverty incidence, I.Stat, https://dati.istat.it/Index.aspx?QueryId=17973
Regional per capita GDP	Regional per capita GDP	ISTAT (2020), *Conti e aggregati economici territoriali – Valori pro capite*, I.Stat. https://esploradati.istat.it/databrowser/#/it/dw/categories/IT1,DATAWAREHOUSE,1.0/UP_ACC_TERRIT/IT1,93_500_DF_DCCN_TNA_6,1.0
Regional unemployment rate	Regional unemployment rate, age 15–64	ISTAT (2020), *Tasso di disoccupazione – Dati regionali – età*, I.Stat. https://esploradati.istat.it/databrowser/#/it/dw/categories/IT1,Z0500LAB,1.0/LAB_OFFER/LAB_OFF_UNEMPLOY/DCCV_TAXDISOCCU1/IT1,151_914_DF_DCCV_TAXDISOCCU1_5,1.0

application effort, while they might be less likely than partners to provide informal care within the household.[17] Finally, life expectancy is associated with increased benefit awards: this might reflect a higher incentive to claim, as the present value of the AA benefit, if awarded, is increasing in the remaining lifespan duration of the potential claimant. In other words, a higher life expectancy could reflect, ceteris paribus, a higher perceived length of future need, which might prompt claiming. Overall, evidence on demand-side factors is in line with previous studies on disability benefit receipt patterns (including higher receipt among men than women and for older individuals).

A novel element is instead the systematic and significant relationship we detect between the quality of local governments and opportunistic (more lenient) benefit adjudication practices. In more detail, the negative coefficient on the EQI index indicates that in regions with lower institutional quality, discretion is more likely exploited to expand benefit provision more than the population need distribution would recommend based on the national eligibility rule.[18] The result is not altered when controlling for local economic conditions or including, on top of year and macro-region fixed effects, also year-and-macro-region-specific fixed effects.

Table 3 reports results obtained when instead of using an overall

[17] Besides the specific partner's fulfilment in relation to caring (Brouwer et al., 2005), partners are typically in a closer age range to that of the AA potential recipients (65+ in our analysis), and therefore are likely not engaged in labour market activity, which this might not apply to other family members (e.g. adult children).

[18] This result is confirmed also when using, as a sensitivity test, an alternative indicator of institutional quality, the Institutional Quality Index (IQI) proposed by Nifo and Vecchione (2015), which adopts the framework used by the World Bank Worldwide Governance Indicators (Kaufmann et al., 2011), in combining a set of more objective (with respect to citizens' perception captured in the EQI) indicators on voice and accountability, government effectiveness, regulatory quality, rule of law and corruption. A comparison of IQI and EQI on Italian regions, suggests that the quality of institutions perceived by citizens generally corresponds to the IQI (Casamonti and Liaci, 2021). Results for the specification (using the IQI) are available upon request from the Authors.

Table A5
Descriptive statistics.
(weighted averages 2013–2018 – weights: 79,250,557)

Variable	Description	Obs	Mean	Std. Dev.	Min	Max
AA coverage	AA beneficiaries/individuals aged 65+	480	0.1170	0.0952	0.0166	0.3527
AA coverage, needs-adjusted		480	0.0858	0.0387	0.0231	0.2060
NEEDS-RELATED INDICATORS						
Non-self-sufficient elderly (GALI)	Share of older people (65+) with severe limitations ADLs (GALI)	480	0.1522	0.0842	0.0084	0.4083
Number of chronic conditions	Average number of chronic conditions	480	0.7210	0.2523	0	1.3576
Female	Share of older people (65+) of female gender	480	0.5697	0.4956	0.0000	1.0000
Average age	Average age	480	75.636	6.3184	68.899	83.072
NON-NEED–RELATED DEMAND SIDE INDICATORS						
In a partnership	Share of older people (65+) living with a partner	480	0.6110	0.2156	0.2479	0.8976
Household size	Average number of family members	480	2.0407	0.2731	1.3684	2.8873
Poors	Share of older people (65+) reporting living in poverty	480	0.4044	0.0944	0.1347	0.7156
Higher education	Share of older people (65+) with higher education	480	0.2334	0.1041	0.0082	0.5449
Life expectancy	Average life expectancy	480	2.7891	0.24988	2.3513	3.1471
REGIONAL INDICATORS						
Quality of government index	Quality of regional Government EQI (average 2013–2017)	480	28.1849	12.8084	8.3149	52.9688
Dependents in retirement homes	Dependents in retirement homes (per 100.000 older individuals)	480	1626.267	1072.402	195.1008	4353.4385
Municipalities in financial distress	Percentage of municipalities in financial distress	480	0.1200	0.1431	0.0000	0.5481
LEA score	Quality of Healthcare delivery regional score	480	183.2854	25.3823	106.0000	222.0000
Historical Economic Development	Urbanization as of 1860	384	10.1414	5.8871	2.2935	24.2013
Regional poverty incidence	Regional poverty incidence	480	0.1228	0.0802	0.0352	0.3530
Regional per capita GDP	Regional per capita GDP	480	26660.26	7285.48	15844.48	40926.93
Regional unemployment rate	Regional unemployment rate, age 15–64	480	12.3907	5.6362	3.48	26.51

Table A6
Full list of variables employed in the Need-adjusted AA standardization.

NEED RELATED, to be standardised:
Female
Average_age
GALI
Number of chronich conditions
Average_age × female
GALI × female
Number of chronic conditions × female
NON-NEED RELATED as further controls:
In a partnership
Household size
Higher_education
Poors
Life expectancy
EQI

measure of institutional quality, we include indicators of regional policies which reflect the underlying institutional quality, but are more closely related to the context of LTC delivery, i.e. the percentage of dependent elderly in residential care institutions, the regional healthcare service's quality score (LEA) and the percentage of municipalities in financial distress within the region. We consider these three policy indicators (spec. 6), again controlling for local economic conditions (spec. 7, 8, 9) and including also time/macro-region specific fixed effects (spec. 10). Results are again informative on the extent to which regional discretion might be exerted to affect the national benefit assignment mechanism.

First, AA delivery is negatively associated with the regional proportion of elderly residing in residential care homes,[19] suggesting that a high incidence of AA might reflect an underlying limited regional ability to provide for disabled older people through local care services provision. It is worth stressing that the number of Italian older people in institutional care is still relatively low by international standards and shows a high interregional variability. Second, a higher (LEA) score on regional performance in healthcare delivery appears to be systematically related, other things equal, to lower AA receipt, suggestive of

Table A7
Need-adjusted AA incidence by region.
(Percentage values – Weighted averages for the period 2013–2018)

Region	Mean	Max, across gender-age subgroups	Min, across gender-age subgroups
Abruzzi	0.087	0.044	0.139
Aosta Valley	0.084	0.043	0.179
Apulia	0.128	0.061	0.206
Basilicata	0.127	0.060	0.191
Calabria	0.061	0.033	0.100
Campania	0.070	0.042	0.106
Emilia R.	0.106	0.052	0.175
Friuli V.G.	0.065	0.033	0.100
Lazio	0.070	0.039	0.108
Liguria	0.079	0.046	0.109
Lombardy	0.087	0.037	0.145
Marche	0.063	0.034	0.091
Molise	0.114	0.054	0.180
Piedmont	0.114	0.051	0.172
Sardinia	0.107	0.045	0.164
Sicily	0.068	0.035	0.106
Trentino A. A.	0.050	0.023	0.089
Tuscany	0.098	0.054	0.163
Umbria	0.066	0.032	0.107
Veneto	0.071	0.041	0.098
Total	0.085881	0.02314	0.206007

Source: authors' elaborations with data ISTAT (2020b), ISTAT (2020c).

[19] Individuals residing in care homes lose their AA entitlement.

stricter adherence to implementing the national eligibility rule. Third, we consider the presence of municipalities in financial distress within the region, which reveals an underlying lower quality of municipal governments (see the negative correlation with EQI in Table 1): we find that in regions with a higher proportion of municipalities in financial distress, regional AA adjudication decisions appear more opportunistic. Overall, the sign of coefficients on the three policy variables is robust across different specification. When including the EQI index on top of the three policy variables, results obtained on are confirmed, while the EQI coefficient loses significance, suggesting that -at least descriptively- the role of institutional quality is being broadly captured through these policy dimensions.[20]

Finally, in order to capture the extent to which each regional assignment rule departs from the least opportunistic one (observed in our sample, Trentino Alto-Adige) we compute an AA-specific benefit assignment quality index (BAQI). The BAQI is computed by using the coefficients of the three policy variables (Dependents in retirement homes, LEA score, Municipalities in financial distress) estimated in specification 6 (Table 3), normalized in order to obtain an index which orders regions from the least to the most opportunistic one.[21] Table 4 reports the value of the BAQI per region in year 2018. The BAQI is very close to EQI, both in values and in ranking regions.[22]

In the remaining four columns of Table 4, we provide evidence on the financial impact of opportunistic behaviour on the national budget, measured as the difference between actual regional expenditure (third column) and the expenditure that would results if the least-opportunistic behaviour (as observed in Trentino-A.A.) applied to all regions. Compared to actual expenditure, potential savings (fourth column) are considerable. For some regions, potential savings are quite high, up to 600 million euros in year 2018 in Campania (59.8 % of the actual AA expenditure in the region). At the national level potential savings amount to 3 billion euros, almost 30 % of the overall AA expenditure in 2018.

Conclusions

Horizontal equity in public service provision is respected to the extent that equally deserving individuals receive the same treatment. In the context of LTC provision, which is expected to absorb increasing portions of public resources over the coming decades, important provision decisions are taken at the regional level, even in relation to national programs. For this reason, questions concerning the territorial declination of horizontal equity in provision– whether equally deserving individuals subject to different regional governments receive the same public LTC support – deserve urgent attention.

In this work, we seek to provide suggestive yet novel evidence on the role that regional discretion plays in affecting the appropriateness in provision– in terms of territorial equity – of a cash LTC benefit, the Italian Attendance Allowance, which is similar to those available in several developed countries. While existing studies have so far mostly focused on the role played by demand-side factors, we complement the existing evidence considering the role played by regional governments controlling the adjudication process. Regional governments have the chance to exert some discretion in assessing claims, despite national rules defining eligibility and national funding. The underlying regional government institutional quality is a key driver of the extent to which the available margins of discretion translate in opportunistic adjudication decision. We expect higher quality regional governments to behave more adherently to national rules, and lower quality regional governments to exert discretion opportunistically, implementing more lenient adjudication decisions, as not held fiscally responsible for the amount of benefit awarded.

These predictions appear confirmed by the empirical results we obtain. On top of individual demand-side factors, regional institutional quality plays an important role in the achieved need-adjusted benefit coverage, accounting for local economic development. Various specifications suggest that regional discretion might matter for national LTC delivery and that regions featuring a lower institutional quality might be implementing more lenient screenings on received claims.

Our work is subject to important data limitations which should be borne in mind. First, we lack individual level data on AA receipt, and for this reason the analysis is conducted on population demographic subgroups (cells), which might fail to fully reflect within-cell unobserved heterogeneity. Second, we acknowledge that when territorial analyses are carried out, it is common to hypothesize the existence of spillovers across neighboring regions. This is the case of spatial analysis like those of Iparraguirre (2012) and Agovino and Parodi (2015). Here we have a priori excluded the existence of spatial interrelations among regions in determining the AAs provision. We believe that any spatial interrelation is mostly due to the presence of homogeneity in the socio-economic characteristics of the contiguous territories; as underlined by other authors, as long as relevant social and economic determinants are considered, including the spatial modelling does not alter the results. Third, it is important to stress how our results on the negative relationship between institutional quality and screening leniency might be subject to omitted variable bias, as we cannot exclude the presence of unobserved confounders – beyond those captured though fixed effects – affecting both regional institutional quality and need-adjusted benefit coverage; in this respect our results cannot be interpreted as causal and we acknowledge that the potential bias might affect also the magnitude and statistical significance of the main coefficients of interest (reflecting the role of regional institutional quality). Finally, a further mechanism though which institutional quality might affect need-adjusted benefit coverage is through its effect on individuals claiming behavior: for examples, citizens' perception on procedural fairness and screening leniency might affect their propensity to claim, both in the sense of possibly discouraging deserving claims, and in the sense of encouraging undeserving requests. Investigating this point would have required observing claims, on top of receipt, and as such remains an important point to be investigated in future work.

Our work feeds into a growing literature on the relevance of institutional quality for economic outcomes and individuals' wellbeing. We are the first to study it in relation to LTC provision and show regions do exert their discretion in adjudication decisions, a fact which might be detrimental to territorial equity in LTC provision, besides impacting public finances. Our results call attention on the critical role that central governments are called to play, in federal settings, in promoting accountability of local governments (Vadlamannati and Cooray, 2016; Bardhan, 2002), for example fostering higher transparency on the appropriateness of regional benefit adjudication practices.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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[20] Results available upon request from the Authors.

[21] The BAQI index is based on the contribution of the three policy variables (Q_j) to the fitted value of the benefit coverage and is measured in each region using the estimated coefficients of specification 6: $BAQI_{rt} = 1/\exp\left(\sum_{j=1}^{3} \widehat{\mu}_j \ln Q_{j,rt}\right)$.

[22] The Pearson correlation coefficient high between BAQI and EQI is 0.9512 and the Spearman rank correlation coefficient is almost 1 (0.9997), confirming the relevance of institutional variables used in our specification 6 of Table 3.

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Appendix A. Section A

Figs. A1 and A2 and Tables A1 – A7.

Appendix B. Section B

The homogeneity of regions within macro-regions is supported by the following evidence. The first table describes the GDP per capita variation between 2013 al 2018. The average is remarkably different across macro-regions; however, the within-macro-regions inequality indices are much lower than for the country as a whole, suggesting that macro-regions are grouping homogeneous regions.

GDP per capita, 2013–2018.

Macro-region	Mean	Coefficient of variation	Gini coefficient
North-West	33373.30	0.1105224	0.05948
North-East	33716.36	0.1235964	0.06684
Center	28013.65	0.1163718	0.06486
South	19305.54	0.1421105	0.07789
Islands	18479.36	0.0819397	0.04183
Italy	26660.26	0.2732710	0.15591

As a term of comparison, if we were to group the North-West with the South, the coefficient of variation would be 0.3056, signalling lack of homogeneity within this fictitious macro-region. The same if we were to group North-East and Islands: the resulting coefficient would be 0.2819.

The same pattern of lower within inequality can be observed when considering the incidence of poverty or the employment rate.

Incidence of poverty, 2013–2018.

Macro-region	Mean	Coefficient of variation	Gini coefficient
North-West	6.24	0.2786186	0.15037
North-East	5.61	0.3362112	0.17845
Center	8.07	0.3218881	0.17615
South	20.85	0.2888788	0.15719
Islands	20.38	0.2488745	0.13423
Italy	12.28	0.6535316	0.35459

Unmployment rate, age 15–64 (%), 2013–2018.

Macro-region	Mean	Coefficient of variation	Gini coefficient
North-West	8.87	0.1828998	0.10159
North-East	6.79	0.2594688	0.14675
Center	10.29	0.1652982	0.09324
South	17.47	0.2703386	0.15320
Islands	19.61	0.1448942	0.08090
Italy	12.39	0.4548736	0.25158

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