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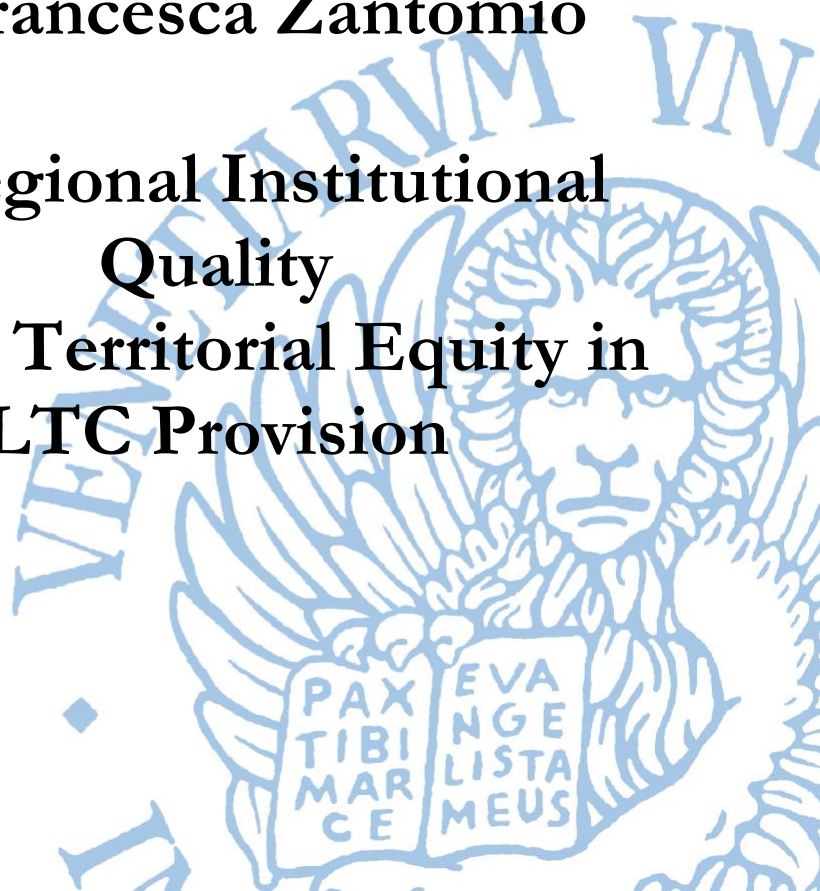
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Abstract: We show how regional governments affect the appropriate – in terms of territorial equity - assignment of a national LTC benefit. We analyse a three-layers setting, where eligibility criteria are defined by the central government (which bears 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. Regional discretion appears to play a major role, with local institutional quality accounting for about one fifth of explained variation in need-adjusted benefit coverage. Lower regional institutional quality results in more opportunistic benefit adjudication decisions, although the relationship is attenuated in highly deprived areas.

Keywords: Territorial equity, regional discretion, multi-level government, institutional quality, long-term care, benefit targeting

JEL Codes: C13, H11, H53, H75, J14

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1. 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; Vergara, 2022) 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 (Kattenberg and Vermeulen, 2018) 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 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 (Zaidi and Burchardt, 2005; Zantomio, 2013).

Western countries are experiencing a high demand for public Long Term Care (LTC) provision, 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 regional commissions, as explained in more detail in the following Section 2. 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 et al., 2013). The presence of regional differences in benefit assignment has already been documented in Italy for national benefits such as AA (Beltrametti, 1996; Beltrametti, 1998; Chiatti et al., 2010), as well as others (e.g. Agovino and Parodi, 2015 on disability pensions). We add to these works by providing quantitative evidence – otherwise scarce - on the regional determinants of such differences.

We present, in Section 3, 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. The empirical relevance of the identified factors is then empirically tested, in Section 4. Combining administrative data on benefit payments and survey data from the Italian "Daily life Study", 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.

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. 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 Klaaw, 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).

A second strand of literature is concerned with the spatial distribution of benefit and care provision (e.g. Anyadike-Danes and McVicar, 2018; 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). For example, in the US state variation in boards' interpretations of federal eligibility rules has led to different rates of growth in state disability benefit rolls (Parsons, 1991; Gruber and Kubik, 1997). Stapleton et al. (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 in by Colombo et al. (2011) for OECD countries, and by Trydegård and Thorslund (2010) whit reference to the Swedish Elder Cares. 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 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; Baldini et al., 2018) 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 De Luca et al., 2021), to the best of our knowledge the role of institutional quality has never been investigated in the realm of public LTC provision.

2. The Italian LTC Setting and the national AA benefit

As in other western countries, in Italy[1] public LTC provision involves different governments tiers, the Central Government as main funder, but also Regions, Provinces and Municipalities[2]. 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[3]: it is a non-contributory and non-means tested cash benefit known as *Assegno di Accompagnamento* [4](AA) (Gabriele and Tediosi, 2014; European Commission, 2020). 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. AA can be received by eligible individuals who actively apply. Eligibility, uniform across the nation, requires a partial or total 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. Once a claim is made, the benefit assignment decision is taken by a regional medical commission.

It is worth emphasising that even though the national Social Security Institute oversees regional commissions, these might have the incentive to exert their discretion in adjudications for increasing AA awards, in this way limiting the regional fiscal cost of providing residential care. 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 national Observatory on Public Spending has recognized the existence of this phenomenon, pointing out that in some

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[1] Among EU countries, in Italy older people exhibit one of the highest life expectancies (21.3 years against 20.0 for the EU+-28 in 2018; Eurostat, 2020a) but one of the lowest disability-free life expectancies (9.5 against 10.0 years in 2018; Eurostat, 2020b). At the same time, they represent a large share of population, with the 2018 old-age dependency ratio at 35.2%. LTC public expenditure for 65+ was 1.3% of GDP in 2019, most of which, 0.68% of GDP, represented by cash benefits. A minor role is played by the others LTC programmes, essentially in-kind benefits provided locally (Ministero dell'Economia e delle Finanze, 2020).

[2] 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).

[3] Out of which, 9.98 billion euros for older people (ISTAT, 2020a; Ministero dell'Economia e delle Finanze, 2020).
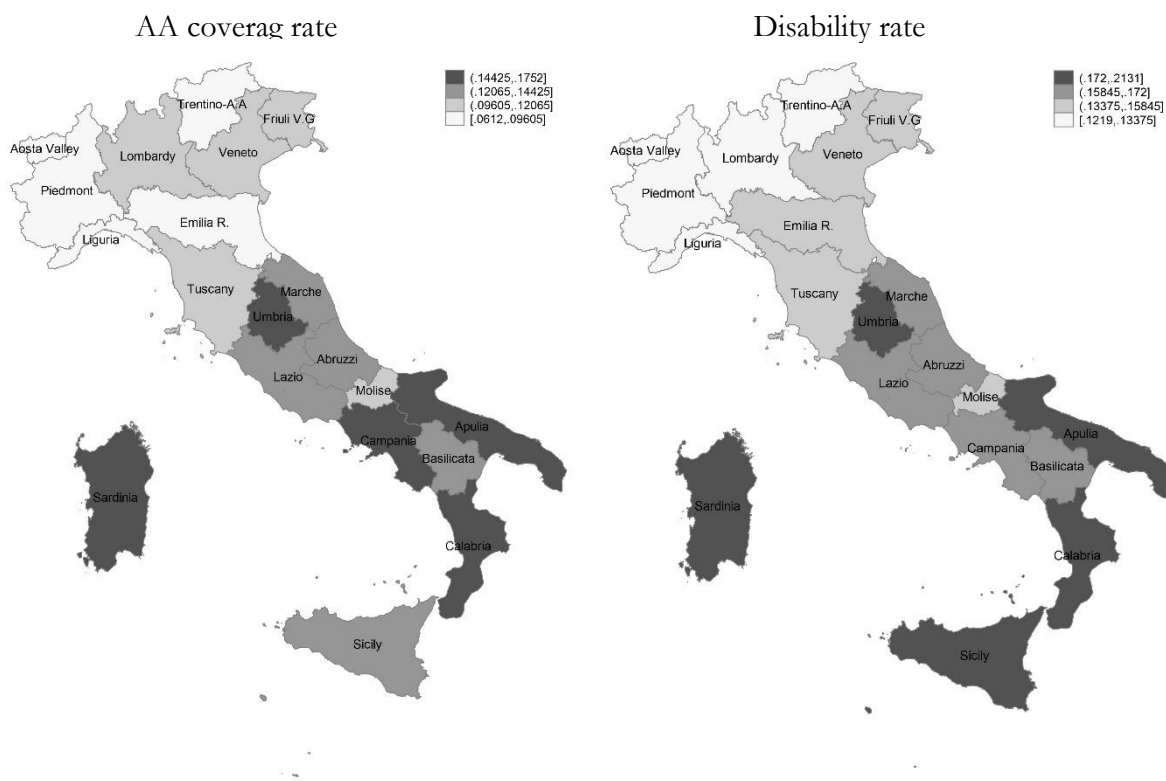
[4] "Indennità di Accompagnamento per invalidità civile"

regions AAs provision is de facto acting as an improper instrument of income support (Centro Studi e Ricerche Itinerari Previdenziali, 2018), as previously emphasized by 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.

As evidenced in Figure 1 (left had side), approximately 12 per cent of older Italian population receives the AA cash-benefit, but 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 TableA.1 in Appendix)[5]. Such variation could in principle reflect underlying regional variation in LTC need/eligibility. Indeed, the right hand panel of Figure 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; Micali, 2009). 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.

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[5] It is worth stressing how the Italian AA is actually very similar to LTC cash programmes existing in other western countries, for example the British Attendance Allowance (for a description of this latter disability benefit see 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), 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.

Figure 1 – The regional distribution of the AA and disability rates
(weighted averages 2013-2018 – individuals aged 65 or older)

AA coverag rate

Disability rate

Source: our elaborations on data from ISTAT (ISTAT 2020a; ISTAT 2020b; ISTAT 2020c).
For detailed data see Tables A.1 and A.2 in the Appendix.

3 . 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 conditional cash transfer, amounting to $\bar{b}$ 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 $b_{ir}(\bar{b}, l_{ir})$. 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 individuals 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 $\bar{d}$.

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

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

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 $\bar{d}$ established by the national legislation (with $\frac{\delta p_{ir}}{\partial d_{ir}} > 0$ and $\frac{\delta p_{ir}}{\delta \bar{d}} < 0$), so that $p_{ir}(d_{ir}, \bar{d})$.

Rearranging the terms, we obtain:

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[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.

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

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 $\bar{d}$;

- 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: $\bar{d}, d_{ir}, l_{ir}, y_{ir}, c_{ir}$; at the regional level, the number of claimants depends on the regional distribution of these same variables in the underlying 65+ population:

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

Once claims are received, regional medical commissions asses them. As the benefit is centrally funded, a Region would have no reason to 'save' through rejecting 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 award 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 though claims, or a programme expansion aimed at containing the regional budget cost of providing alternative public LTC support.

Therefore, the actual regional commission assignment varies across regions, with each Region departing from the intended national eligibility assessment according to a regional behavioural parameter γ_r, with $\gamma_r \geq 1$ capturing the extent to which discretion is opportunistically exerted; γ_r is increasing in the level of regional opportunism i.e. spending national resources in excess of what would be appropriate based on the national assignment rule. In our model, the adjudication

decision made by regional medical commissions can then be described as actually based on $\gamma_r d_{ir}^*$ rather than d_{ir}^*. The commission decides that the individual is eligible for the AA if the regionally-assessed level of disability is greater than the national threshold: i.e. if $\gamma_r d_{ir}^* \geq \bar{d}$.

Opportunistic behaviour can plausibly be expected to happen more likely in regions where institutional quality is lower (Dreher et al., 2009; Alesina and Tabellini, 2007, 2008; Mauro 1998; 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 though 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.

For these reason, 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:

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

4. Empirical analysis

4.1. Sample and variables

The empirical analysis is conducted at the disaggregation level achieved in the available data where AA receipt is recorded. The National Institute of Statistics (ISTAT 2020a) provides[8] 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

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[8] This source is also used to compute N_r, i.e. the 65+ population totals.

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 Table1, where descriptive statistics appear. We obtain them combining different data sources. 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, we use the Global Activity Limitation Indicator (GALI) 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 Oyers et al. 2018; Berger et al. 2015; Bogaert et al., 2018; Bogaert et al., 2020; Cabrero-García et al., 2020). Maniscalco et al., 2020). Also, GALI has a substantial policy use within the EU and its Member States (European Commission, 2015; Eurostat, 2020). [10] 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, Goldman, 2001; Hernandez et al., 2007; Pudney et al., 2006; Zantomio, 2013). To account for potential family support in pursuing a claim, 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 (i.e. self-report scarce economic resources). All the individual variables are aggregated into cell-level (i.e. region-year-age-gender subgroups)

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

[10] 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. In many cases references are made to a single self-reported disability index, as in the analysis of McVicar (2013) and McVicar and Anyadike-Danes (2010). In other cases, self-reported disability indicators, mainly based on difficulties with ADLs and IADLs, have been considered together with other objective disability indicators using a single equation model (Arrighi et al., 2015; Zantomio, 2013). Alternatively, Croda et al. (2013) use a two-step analysis, where a composite index of disability is first calculated on the basis of a large set of observable health indicators. In a more complex approach disability is assumed to be an unobservable latent variable that manifests itself in a series of imperfect but observable indicators of disability, including limitations in ADL and IADL, in mobility, in strength and dexterity (Hancock et al., 2016; Hancock et al., 2019).

variables, as described in the first two columns of Table1 (see need and non-need demand side indicators).

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, 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. We use the normalized scores ranging from zero to 100 (with 100 representing the best institutional quality). The average EQI in Italy is 28.29 with, again, important differences across regions: the highest institutional quality region is Trentino-Alto Adige (EQI equals to 52.96) and the lowest is Calabria (EQI equals to 8.3149). Interestingly, these extreme regions are to the two where AA incidence is respectively lower and higher (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 be more incline to use the AA transfer 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). However, as current local economic development might be affected by the same quality of local institutions, we also use 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 VI Report of NNA (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 recourse to the AA.

We also use the LEA 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 LEA score is based on 35 indicators of healthcare quality delivery. According to the score assigned, Regions are classified as "compliant" (i.e., score ≥ 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.

Finally, 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 use data from the Ca' Foscari University Report on Municipalities (Degni, 2020). More than 10% of Italian municipalities are in financial distress and most of them are concentrated in the Southern regions (Campania, Calabria, Sicily) but there are also striking cases in the North, such as Alessandria in Piedmont.

Table 2 reports the pairwise correlation between all of the regional indicators. It is interesting to observe that the three regional policy indicators display sizeable correlations (of the expected sign) with the EQI indicator.

4.2 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'Donnel 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 Appendix TableA3.

The upper part of Table1 reports descriptive statistics for the raw and the obtained need-adjusted benefit coverage. 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. However, 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 TableA4 in Appendix 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.

Table 1 – Descriptive statistics
(weighted averages 2013-2018 – weights: 79,250,557*)*

Variable	Description	Obs	Mean	Std. Dev.	Min	Max
AA_incidence_rate	AA beneficiaries/individuals aged 65+	480	0.1170	0.0952	0.0166	0.3527
AA incidence rate, 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						
Married	Share of older people (65+) living with a partner	480	0.6110	0.2156	0.2479	0.8976
Average hsize	Average number of family members	480	2.0407	0.2731	1.3684	2.8873
Poor	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	.24988	2.3513	3.1471
REGIONAL INDICATORS						
Quality of government index	Quality of regional Government EQI (average 2013-2017)	480	28.2939	11.6412	8.3149	52.9688
Dependents in retirement homes	Dependents in retirement homes (per 100.000 older individuals)	480	1679.3977	1028.3352	195.1008	4353.4385
Municipalities in financial distress	Percentage of municipalities in financial distress	480	0.1152	0.1351	0.0000	0.5481
LEA score	Quality of Healthcare delivery regional score	480	187.0975	26.1114	106.0000	222.0000
Economic Development	Urbanization as of 1860 (Tabellini 2010)	384	11.11065	5.7036	2.2935	24.2013
Regional poverty rate	Regional poverty rate	480	0.1087	0.0787	0.0352	0.353

Source: our elaborations on data from ISTAT (ISTAT 2020a; ISTAT 2020b; ISTAT 2020c).

Table 2 – 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: our elaborations

4.3 Empirical specification

We estimate the pooled regression model:

$$\ln z_{rtsa}^n = \theta + \sum_{i=1}^{I} \vartheta_i \ln X_{i,rtsa} + \sum_{j=1}^{J} \mu_j \ln Q_{j,rt} + \sum_{t=1}^{T} \delta_t Y_t + \varepsilon_{rtsa}$$

where the dependent variable $\ln z_{rtsa}^n$ is the natural logarithm of the need-adjusted benefit coverage rate in Region r and year t, for individuals of gender s 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 might vary also over time (although most variability comes from territories, rather than time). Finally, Y_t denotes year specific dummies. All continuous explanatory variables are measured in logs.

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

5.   Results

Table 3 reports the obtained estimates from different OLS regression specifications. The first column refers to the baseline specification, where the role of regional discretion is captured though the EQI institutional quality indicator. In a second column, as a sensitivity test, we use 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. See Casamonti and Liaci (2021) for a comparison of IQI and EQI on Italian regions, suggesting that the quality of institutions perceived by citizens generally corresponds to the IQI. The third and fourth column reports result obtained when controlling for indicators of regional economic conditions, i.e. current regional poverty and historical economic development respectively.

The four 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, appears to increase the chance of receipt, in relation to the lower application cost experienced by more educated individuals. 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 and a related reduction in the financial need for paying formal care. 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 application effort. 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. Overall, evidence on demand-side factors is in line with previous studies on disability benefit receipt patterns.

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. This result emerges under both institutional quality indexes, and is not altered when controlling for local

economic conditions. Regional institutional quality absorbs about one fifth of the total explained variance in needs-adjusted coverage and as such appears to play a prominent role in affecting the appropriateness – in the sense of territorial equity - of LTC provision.

In Table 4, we test whether the systematic relationship between AA coverage and institutional quality varies according to local economic conditions. We generate an indicator of poor economic conditions based on whether the yearly regional poverty index falls in the top quartile and interact the obtained "High poverty" indicator with EQI. It is worth stressing that while the "Poor" indicator varies also by demographic cell (capturing potential claimants' economic conditions as drivers of claiming), this second "High poverty" indicator varies only by Region and year, and reflects the overall regional population economic conditions. Still, the two indicators are positively correlated, and for this reason we also estimate an alternative specification where we omit the first. Results confirm that (in average and more developed regions) lower institutional quality results in more opportunistic benefit awards; however, when looking the very deprived regions, the relationship with institutional quality is significantly attenuated. Such evidence suggests that even in regions with higher quality of institutions, local governments might somehow respond to citizens' economic circumstances.

Table 5 reports results obtained when instead of using an overall 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, as explained in Section 4.1. We consider each policy indicator in turn (spec 7-8-9) and all of them (spec.10), again controlling for local economic conditions (spec. 11 and 12). Results are informative on the extent to which regional discretion might be exerted to affect the national benefit assignment mechanism.

The first two policy indicators we consider are positively correlated with the quality of local government (see Table 2). First, AA delivery is negatively associated with the regional proportion of elderly residing in residential care homes, suggesting that a high recourse to AA might reflect an underlying limited regional ability to take charge of disabled elderly through local care services provision. It is worth stressing that the number of Italian elderly 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 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 again the negative correlation with EQI in Table 2): we find that in regions with a higher proportion of municipalities in financial distress, regional AA adjudication decisions appear more opportunistic.

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We acknowledge that this particular policy indicator might reflect the quality of municipal governments, as opposed to the regional one; for this reason, in the last column of Table5 we interact the municipalities financial distress indicator with a dummy variable equal to 1 for regions in top quartile of EQI. The interaction term will capture the top-quality regional government response to a context of municipalities financial distress. It is interesting to observe that the regional opportunistic behaviour relatable to higher financial distress is entirely absent – actually even reverted - in very high institutional quality regions.

Overall, the sign of coefficients on the three policy variables is robust across different specification (although some lose significance when we include all the policy variables). 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 the role of institutional quality is being broadly captured though these policy dimensions[11].

Finally, using specification 10 (including all the policy variables), we compute an AA-specific benefit assignment quality index (BAQI), meant to capture the extent to which each regional assignment rule departs from the least opportunistic one observed in our sample (which is in Trentino Alto-Adige). The BAQI is defined as the ration between a predicted "least opportunistic" benefit coverage and the actual coverage observed in the region. [12]

Table 6 reports the value of the BAQI index per region in year 2018, as well as the EQI and IQI regional values. All indexes are normalized with respect to the respective maximum value. The BAQI is very close to EQI, both in values and in ranking regions, while IQI deviates a little from the other two[13]. In the renaming three columns of Table 6, we provide evidence on the financial impact of opportunistic behaviour on the national budget, measured as the difference between actual regional expenditure (fourth column) and the expenditure that would results is the least-opportunistic behaviour (as observed in Trentino Alto Adige) applied in that region (fifth column). Compared to actual expenditure, expenditure differences (last column) are considerable. For some Regions' potential savings are quite high, up to 500 million euros in year 2018 in Campania. At the

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[11] Results available upon request from the Authors.

[12] The predicted "least opportunistic" benefit coverage is measured as the fitted coverage that would result if the least opportunistic behaviour applied in each region, given the regional distribution of individual characteristics determining claiming behaviour.

[13] The Spearman's rank correlation coefficient is quite high between BAQI and EQI (0.947) and lower between AAIQI and EQI (0.845), the latter very close to the rank correlation coefficient between EQI and IQI (0.843). These values confirm the relevance of institutional variables used (Dependents in retirement homes, LEA score, Municipalities in financial distress) in our specification 10 of Table 5.

national level potential savings amount to 3.4 billion euros, almost 20% of the overall AA expenditure in 2018.

Table 3: Needs-adjusted AA coverage

OLS results

	1	2	3	4
In a partnership	-0.265***	-0.388***	-0.319***	-0.268***
	(0.0366)	(0.0487)	(0.0368)	(0.0398)
Household size	0.368***	0.850***	0.391***	0.376***
	(0.108)	(0.131)	(0.102)	(0.118)
Higher_education	0.0528**	0.104***	0.101***	0.0460
	(0.0242)	(0.0367)	(0.0243)	(0.0284)
Poor	0.181***	0.311***	0.113**	0.172***
	(0.0470)	(0.0603)	(0.0482)	(0.0501)
Life expenctancy	1.393***	1.305***	1.370***	1.385***
	(0.0337)	(0.0402)	(0.0331)	(0.0364)
EQI	-0.446***		-0.335***	-0.461***
	(0.0159)		(0.0244)	(0.0189)
IQI		-0.290***		
		(0.0165)		
Time dummies	YES	YES	YES	YES
Regional Poverty Incidence	-	-	YES	-
Hist. Economic Development	-	-	-	YES
Constant	YES	YES	YES	YES
Observations	480	480	480	384
R-squared	0.912	0.861	0.920	0.911

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: our elaborations on data from ISTAT (ISTAT 2020a; ISTAT 2020b; ISTAT 2020c).

Table 4: Need-adjusted AA coverage - Quality of Local institutions and Economic Conditions

OLS results

	5	6
In a partnership	-0.323***	-0.335***
	(0.0347)	(0.0336)
Household size	0.485***	0.500***
	(0.0982)	(0.0969)
Higher_education	0.0698***	0.0534**
	(0.0246)	(0.0238)
Poor	0.107**	
	(0.0446)	
Life Expectancy	1.378***	1.389***
	(0.0324)	(0.0324)
EQI	-0.489***	-0.517***
	(0.0272)	(0.0266)
High Poverty Incidence	-0.646***	-0.714***
	(0.113)	(0.113)
EQI*High Poverty Incidence	0.255***	0.280***
	(0.0364)	(0.0361)
Time dummies	YES	YES
Constant	YES	YES
Observations	480	480
R-squared	0.921	0.920

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: our elaborations on data from ISTAT (ISTAT 2020a; ISTAT 2020b; ISTAT 2020c).

Table 5: Need-adjusted AA coverage –Policy Mechanisms

OLS results

	7	8	9	10	11	12	13
Married	-0.171***	-0.264***	-0.358***	-0.228***	-0.265***	-0.227***	-0.245***
	(0.0365)	(0.0432)	(0.0372)	(0.0345)	(0.0350)	(0.0369)	(0.0333)
Household size	0.105	0.521***	0.639***	0.201**	0.206**	0.132	0.272***
	(0.104)	(0.125)	(0.110)	(0.0977)	(0.0958)	(0.103)	(0.0963)
Higher_education	0.0225	0.0790***	0.127***	0.0592***	0.0898***	0.0700***	0.0510**
	(0.0239)	(0.0294)	(0.0272)	(0.0217)	(0.0214)	(0.0247)	(0.0213)
Poors	0.211***	0.442***	0.327***	0.188***	0.115**	0.174***	0.160***
	(0.0455)	(0.0539)	(0.0512)	(0.0440)	(0.0459)	(0.0463)	(0.0424)
Life expectancy	1.423***	1.340***	1.317***	1.401***	1.389***	1.391***	1.400***
	(0.0346)	(0.0365)	(0.0321)	(0.0310)	(0.0312)	(0.0331)	(0.0295)
Dependents_in_retirement_homes	-0.278***			-0.183***	-0.172***	-0.225***	-0.175***
	(0.00969)			(0.0147)	(0.0147)	(0.0225)	(0.0162)
LEA_score		-1.219***		-0.248***	-0.168**	-0.322***	-0.180**
		(0.0800)		(0.0804)	(0.0709)	(0.0885)	(0.0864)
Municipalities in financial distress			1.453***	0.454***	0.203**	0.166	0.505***
			(0.0785)	(0.0867)	(0.0839)	(0.176)	(0.0857)
Top EQI quartile							-0.00370
							(0.0224)
Top EQI quartile* Municipalities in financial distress							-3.560***
							(0.724)
Hist. Economic Development	-	-	-	-	-	YES	-
Regional Poverty Incidence	-	-	-	-	YES	-	-
Time dummies	YES	YES	YES	YES	YES	YES	YES
Constant	YES	YES	YES	YES	YES	YES	YES
Observations	480	480	480	480	480	384	480
R-squared	0.914	0.877	0.889	0.926	0.932	0.928	0.931

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: our elaborations on data from ISTAT (ISTAT 2020a; ISTAT 2020b; ISTAT 2020c).

Table 6: AA specific Institutional Quality Index and potential AA cost savings

(Year 2018, Regions in descending order of AA-specific IQI)

	BAQI*	EQI*	IQI*	Total actual expenditure *Million €*	"Least opportunistic" total expenditure *Million €*	Potential savings *Million €*
Trentino-Alto Adige	**1.000**	**1.000**	0.912	119.1	119.1	0.0
Valle d'Aosta	0.948	0.966	0.750	15.9	15.0	-0.8
Friuli-Venezia Giulia	0.938	0.965	0.980	212.5	199.3	-13.2
Veneto	0.937	0.939	**1.000**	715.0	670.2	-44.8
Piemonte	0.931	0.852	0.752	656.6	611.5	-45.2
Lombardia	0.928	0.917	0.875	1368.4	1270.0	-98.3
Emilia-Romagna	0.921	0.937	0.880	740.9	682.5	-58.4
Liguria	0.877	0.832	0.638	360.6	316.3	-44.3
Marche	0.854	0.843	0.924	302.9	258.6	-44.3
Toscana	0.817	0.890	0.824	697.1	569.4	-127.7
Umbria	0.767	0.834	0.742	258.1	198.0	-60.1
Sardegna	0.740	0.794	0.357	365.8	270.5	-95.3
Molise	0.736	0.766	0.353	78.4	57.6	-20.7
Abruzzo	0.733	0.715	0.627	278.2	203.9	-74.3
Basilicata	0.717	0.723	0.492	133.1	95.4	-37.7
Puglia	0.684	0.720	0.459	794.8	543.4	-251.4
Lazio	0.673	0.734	0.593	1150.6	774.3	-376.3
Sicilia	0.654	0.723	0.164	1011.8	661.7	-350.1
Calabria	0.610	0.575	0.097	493.9	301.1	-192.8
Campania	0.547	0.534	0.261	1132.2	619.3	-512.8
Italy	0.804	0.815	0.662	16620.5	13240.0	-3380.5

Note: * Indexes normalized to their respective maximum value

6. 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 provide 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 government 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 are robustly 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 about one fifth of the overall explained variation. Various OLS specifications suggest that regional discretion does matter for national LTC delivery and that regions featuring a lower institutional quality implement more lenient screenings on received claims.

Our work is subject to some limitations. First, we lack individual level data on AA receipt, and for this reason the analysis is conducted on population demographic subgroups, which reflects in a limited sample size. 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 affecting both regional institutional quality and need-adjusted benefit coverage; in this respect our results cannot be interpreted as causal. 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 stress the critical role that central governments are called to play, in federal settings, in promoting accountability of local governments (Vadlamannati and Cooray, 2006; Bardhan, 2002), for example fostering higher transparency on the appropriateness of regional benefit adjudication practices.

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Appendix 1

Table A.1 – 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: our elaborations with data ISTAT (ISTAT 2020a; ISTAT 2020b).

Table A.2 – The non-self-sufficient incidence rates 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	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: our elaborations with data ISTAT (ISTAT 2020c; ISTAT 2020b).

Table A3 Full list of variables employed in the needs standardization

NEED RELATED, to be standardised:
Average_age
GALI
chronich conditions
Average_age*female
GALI_female
chronic conditions *female
female
NON-NEED RELATED as further controls :
In a partnership
Household size
Higher_education
Poor
Life expectancy
EQI

Table A.4 – Need-adjusted AA incidence by region

(Percentage values - Weighted averages for the period 2013-2018)

	mean	Min, across gender-age subgroups	Max, 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: our elaborations with data ISTAT (ISTAT 2020c; ISTAT 2020b).