

DECENTRALISATION AND RESILIENCE: A MULTIDIMENSIONAL APPROACH USING THE REGIONAL AUTHORITY INDEX

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Abstract

This paper examines the relationship between decentralisation and resilience across 162 EU NUTS-2 EU regions in 20 countries. The analysis departs from common practice on both decentralisation and resilience in two main respects. First, decentralisation is measured according to the Regional Authority Index. Second, resilience is measured in terms of multidimensional wellbeing. Our novel multidimensional approach provides incidental evidence that decentralisation positively affects aggregate multidimensional wellbeing limited to a subset of dimensions. Namely, education, innovation, safety, and mobility. However, the empirical analysis fails to detect a statistically significant effect of decentralisation on regional economic resilience.

Keywords: Resilience, Decentralisation, Multidimensional Well-being.

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1 Introduction

Decentralisation of political power from national to regional governments is a global trend (Muringani et al., 2019; Rodríguez-Pose and Gill, 2003). Each national government has implemented reforms to devolve power to regions. An important motivation for these reforms is that subnational governments can provide a better public policy delivery to match the heterogeneous needs and preferences of individuals living in different cities and regions within a country. This, in turn, could foster economic growth at the regional level by giving regions greater control over their economic policy, especially regarding expenditure decisions (Tiebout, 1956). Empirical evidence finds mixed and/or inconclusive results both concerning whether decentralisation is beneficial for economic growth and which forms eventually matter (Treisman, 2002, 2007; Ezcurra & Rodríguez-Pose, 2013a; Kuhlmann & Wayenberg, 2016). Regardless of the specific effect, there is a rather general agreement that the history and process of decentralisation can influence its economic outcomes (Rodríguez-Pose et al., 2009). Furthermore, some regional authorities seem to be more effective than others (Putnam, 1993), and regional authorities may be effective in some areas of policy but not in others (Borghetto & Franchino, 2010). To the best of our knowledge, what is still rather under-explored is the link between decentralisation and resilience. This despite resilience is emerging as a key policy goal across a variety of policies and scales, from the OECD and the European Commission to national government, city authorities and regional and local economic development agencies. In our opinion, this surge of resilience as a key policy objective makes it timely to address its link with the spatial institutional structure in charge of designing and implementing the economic policy. Indeed, the mechanism through which the policy response to the shock is designed and implemented might well depend on the institutional setting. Put differently, higher levels of decentralisation could put local authorities in a better position to implement place-based policies (Barca et al. 2012) and co-operation with other local actors (Arcidiacono and Torrisci, 2022). This, in turn, might affect the effectiveness of policy response (

Mazzola and Pizzuto, 2020; Bongardt and Torres, 2016) especially in the face of the shock which most often requires ad-hoc measures. Hence, theoretically, a more decentralised institutional setting could involve greater flexibility and more resilience. This aspect is potentially relevant as the effects of an economic shock generally vary from region to region.

To summarize, decentralisation and resilience are two distinctive stands in the literature that have been at the epicenter of voluminous scientific research and flourishing policy debates across countries and over time. This paper constitutes an attempt to bridge the stands and examine how decentralisation is connected with resilience, mainly through an empirical investigation.

The attempt is motivated on several grounds. First, a strand of empirical research suggests that regional economic resilience depends on pre-shock characteristics (Huggins, Izushi, Davies, & Shougui, 2010). More specifically, Huggins et al. (2010) highlight the role of factors such as the size of the market, the endowments of natural resources, and human capital. Furthermore, according to Martin (2012)'s seminal paper, regional economies that presented stable growth paths are more likely to show a higher resistance to recessionary shocks or may recover faster. In a later study, Doran and Fingleton (2014) reported cases in which recessionary shocks yield permanent effects that lead economies not to return to the pre-shock path but rather adjust to new levels. Fingleton et al. (2012) found significant differences in the resilience of UK regions to recessionary employment shocks during the period 1971–2010. However, these differences principally refer to the initial resistance to shocks and not so much the recovery stage. On a similar premise, Cellini and Torrasi (2014), with reference to the Italian regions considered in the very long run (1890–2009), show that shocks have permanent effects and such effects rarely differ across regions, arguing that there is limited heterogeneity in the way in which different regions react to and recover from major, common, recessionary shocks.

In short, despite the significant interest generating a substantial body of literature, the empirical evidence on the determinants of regional economic resilience is far from being conclusive (Rizzi, 2020; Sutton et al., 2023). Its link to the institutional setting assigning state's functions across territorial bodies is even less explored. Consequently, the following analysis aims to add to the extant literature on the determinants of regional economic resilience under three main interrelated respects. First, it proposes a resilience measurement framework building upon a multidimensional well-being approach. In our opinion, this represents an important contribution towards a more comprehensive approach to resilience; hence, one potentially able to overcome the issue of which measure between GDP and employment should be used to measure economic resilience (Cellini and Torrasi, 2014; Di Caro et al., 2017, Sutton et al. 2023). Second, as far as its determinants are concerned, it explicitly considers the role of decentralization in shaping economic resilience, at the regional level. As aforementioned, in our opinion, this represents an important aspect that is still underexplored in the extant literature (Arcidiacono and Torrasi, 2022). Indeed, as noted, if public policy is very often crucial for the response to economic shock, it is also true that the spatial distribution of power between different levels of government influences both the design and the implementation of policies to a substantial extent. Nonetheless, to the best of our knowledge, this theme has so far attracted only limited interest in general development project management (Schroeder and Hatton, 2012) or with specific reference to natural disasters (Tselios and Tompkins, 2019). A notable exception in this field is represented by Torrasi (2021) in which the effect of decentralisation on multidimensional wellbeing is explored; however, his analysis adopts a general perspective and neglects the effects of decentralisation in times of crisis. Once more, it is worth stressing how this evidence somewhat neglects the general tenet that decentralisation is a key component of governance and it has consequences for the development processes. Hence, the need to explicitly consider decentralisation as a potential determinant of regional resilience to which this paper aims to contribute.

To this end, we consider the Regional Authority Index (RAI) (Hooghe et al., 2016; Shair-Rosenfield, et al. (2020)) as a quantitative measure of decentralisation across 162 NUTS 2 regions in 20 EU Countries. We deem this methodological choice appropriate in light of the different nuances of decentralisation that can play a role in response to the shock. Hence, measures based on sub-national shares of either expenditure or revenue are not able to encapsulate the underlying processes (White, 2011).

Our multidimensional approach to resilience jointly with the consideration of RAIs provides evidence that, generally speaking, decentralisation positively affects aggregate multidimensional wellbeing; at a more granular level, however, the positive effects are limited to a subset of dimensions, only. Namely, education, innovation, safety, and mobility. More to the point of the current analysis, quite interestingly, the empirical analysis fails to detect a statistically significant effect of decentralisation on regional economic

resilience. Hence, a decentralised government does not seem to be more effective in addressing economic downturn. The preliminary policy implications of the current study, therefore, are in favour of a more centralised policy approach to resilience in times of crisis.

The remainder of the paper is structured as follows. Section 2 recalls the concept of regional resilience with specific reference to the role of public policy. Section 3 describes both the methodology and the data. Section 4 shows the main results. Section 5 concludes.

2 Decentralisation and regional resilience

The Great Recession (GR) after the financial and economic crisis of 2007-2008 provided stimulus for an extensive body of literature. One strand of this research focuses on whether or not the GR has accentuated pre-existing trends towards decentralization, and, more generally, eventually the extent to which it has led to more substantive changes to intergovernmental fiscal, economic, and political relations (Eccleston and Krever, 2017; Lago et al., 2020; de Mello and Jalles, 2020). The trend toward decentralisation of power from national to regional governments are driven by a combination of demands from the bottom and top-down transfers of authority (Rodríguez-Pose & Gill, 2003; Manor, 2007; Fitjar, 2010; Hooghe et al., 2016). More specifically, top-down regional policies for supporting lagging regions are replaced with bottom-up regional development strategies involving regional governments and coalitions of regional actors. An intense debate is still ongoing on whether decentralisation is beneficial or not in terms of economic outputs, as well as which forms of decentralisation may make a greater difference in economic outcomes (Treisman, 2002; Rodríguez-Pose & Ezcurra, 2009, 2010; Hooghe et al., 2016). Indeed, despite a significant body of criticism (Prud'Homme, 1995; Tselios et al., 2012), since Oates (1972)'s seminal contribution, decentralization via its processes and different aspects (Treisman, 2002) has been extensively invoked as a key component of good governance and development.

Within a decentralised context, regional governments have a significant responsibility in social and economic policy. Theoretically, decentralisation could make regional authorities both more cost-efficient and closer to their constituencies. More specifically, it has been argued that decentralisation contributes toward more efficient and effective governance, macroeconomic stability, and adequate growth (Miller and Russek, 1997; Amagoh and Amin, 2012). Therefore, on the positive side, an expectation exists that decentralisation promotes economic development by means of policies better reflecting territorial preferences, improved knowledge of territorial economic potential, increased public sector efficiency and service delivery, and more effective regulation (Ashcroft et al., 2005). Further, the increased democratic accountability arising from a government closer to citizens, could imply efficiency gains in policy formulation and innovation. Despite the potential benefits, however, decentralisation entails potentially costs including higher administrative costs due to the presence of subnational levels of government, reduced coordination with the rest of the country (and/or increased transaction costs), and loss of economies of scale.

The actual balance between benefits and costs is rather case-specific and depends on a variety of factors. Within this framework, one aspect which attracted specific interest concerns the link between the governments and the overall level of wellbeing. International evidence shows that efficiency, trust, and the degree of democracy play a substantial role (Helliwell et al., 2006). Undeniably, the quality of government (Weber, 1922; Rodríguez-Pose and Tselios, 2019) is a fundamental driver for socio-economic objectives, including economic development and equality (Kyriacou, 2020). Several studies focus on the extent to which decentralisation may affect the quality of governance. Empirical studies have established a link between these components of quality of government and regional economic development. For example, Del Monte and Papagni (2001) found a significant and direct negative effect of corruption on the growth rate. Rodríguez-Pose and Di Cataldo (2015) found that corruption affects innovative performance. It takes away the incentives for innovation and economic activities (Rodríguez-Pose & Storper, 2006). Government effectiveness has also been found to affect innovativeness (Rodríguez-Pose & Di Cataldo, 2015) and regional economic development (Ketterer & Rodríguez-Pose, 2018). Some studies on the quality of government have touched on the issue of decentralisation. It has been argued that fiscal decentralization could improve government efficiency by improving the information available to voters because of the proximity to public decisions (Salmon, 1987; Breton, 1996); it might increase efficiency when local expenditures are closely dependent on revenue to avoid the perverse effect of vertical transfers creating incentives for local officials to ignore competitive pressures for better management (Oates, 1999; Zhuravksaya, 2000).

By contrast, the multi-level structure of government may involve duplication and a waste of resources (Treisman, 2002). Inter-jurisdictional competition may reduce tax pressure and the ability to collect sufficient taxes to provide basic public goods (Oates, 1999). Local governments may compete for capital reducing the capacity to enforce regulations and collect taxes (Cai and Treisman, 2004). Governments in regions that are uncompetitive for some structural reasons may give up on business-friendly policies (Cai and Treisman, 2005).

Hence, the overall effect of decentralisation on the quality of government and public policy depends on the interaction between competing positive and negative drivers. We further argue that this process, as aforementioned, assumes particular importance in times of crisis. Indeed, the extent and the efficiency of the response to the crisis might substantially affect the resilience of places. In a socio-economic context, it is important that we define resilience in a dynamic and normative way that recognizes the importance of coping with adverse conditions and maintaining functionality (Bristow et al., 2020). Indeed, resilience is a process that involves several elements: risk (the vulnerability of a region's firm and workers to different types of shocks); the shock (the origin, nature, and incidence of disturbance); resistance (the initial impact of the shock on a region's economy); adaptability (how a region's firms, workers and institutions adjust, adapt and reorientate to the shocks, including public interventions); and recoverability (the extent and the nature of recovery of the region's economy from shocks). Nonetheless, as mentioned, this conjecture has been rather neglected in the extant literature both theoretically and empirically. In what follows, the link between decentralisation and resilience will be tentatively subject to empirical scrutiny to inform also the future theoretical reasoning according to an evidence-based approach. It is worth noticing how the current analysis, while dealing with the effect of the economic shock arising from the GR, is potentially able to offer insights into the more recent pandemic crisis.

To the best of our knowledge, the empirical investigation of the relationship between decentralization and resilience constitutes a novelty and it could make an interesting contribution to the existing literature. Except for Arcidiacono and Torrisi (2022), the discourse, so far, seems to be limited to the infrastructure field (Helmrich et al., 2021) or, rather, addresses the inverse causality between resilience and decentralisation (Cadaval-Sampedro, et al., 2023). While currently decentralisation and resilience represent two rather distinctive stands in literature, we deem they deserve a closer treatment to explore whether and eventually to what extent a decentralised setting is more able to cope with an economic shock. Furthermore, we consider this an important issue, especially in consideration of the relative weight that resilience is gaining in the public policy discourse. Indeed, since resilience is emerging as a key policy goal, we deem it is timely to address its link with the spatial distribution of power.

In the following section, we describe the framework of our empirical analysis to test the relationships between resilience and decentralization controlling the quality of governance.

3 Data and empirical implementation

In describing the methodological choices of our empirical analysis on the effects of decentralisation on resilience according to a multidimensional (wellbeing) approach we consider the two main pillars (i.e. decentralisation and wellbeing), separately.

Decentralisation. As White (2011) suggests, it is difficult to measure the level of autonomy and capacity of a local government and, therefore, it is hard to make comparisons about different political, administrative, and fiscal status because real-world decentralization rarely exists in pure forms. Moreover, the actual extent of decentralisation is barely captured by fiscal measures based on expenditure and/or revenue. Indeed, both expenditure and revenue fiscal indicators fail to deeply capture the decision-making authority of subnational governments at the same time as not differentiating between the decision-making stage and the implementation one (Schakel, 2008).

As for expenditure, since it is not easy to check whether the expenditure comes from conditional or unconditional grants, expenditures and revenues show significant limitations in exploring the extent of decentralisation of the decision-making process. To this end, important aspects include whether the central government exerts tight control over the expenditure and/or whether a specific legislation is in place to regulate subnational expenditure (Akai and Sakata 2002; Breuss and Eller 2004; Ebel and Yilmaz 2002; Panizza 1999).

Similarly, some issues arise for revenue-based fiscal indicators. Indeed, they fail to signal whether

authorities' taxation power includes (or rather implies) the subsequent expenditure autonomy (Ebel and Yilmaz 2002; Marlow 1988; MartinezVazquez and McNab 1997; Panizza 1999). Put differently, revenue-based indicators could be misleading if while the revenue might be collected freely, it may have to be spent on policies laid down by the central government (Schakel, 2008). In short, the link between the authority to collect revenues and the authority to decide and implement policies is rather weak and case-specific. It depends on the underlying institutional setting that can be very articulated and complex (Pike et al., 2016). In other words, fiscal measures fail to discern between genuine political decentralisation or differences in political economy to a substantial extent. As Oates (1999, p.199-200) cogently notes:

[E]ven if there exists an identical allocation of functions among levels of government across two countries, their centralization ratios will generally differ if they do not have the same relative expenditure patterns on these functions. A country, for example, with an unusually large portion of its resources devoted to national defence will have, other things being equal, a relatively high degree of fiscal centralization. . . . centralization ratios may differ because certain services provided publicly in one economy are provided in the private sector in another.

Hence, once acknowledging the limitations of fiscal measures of decentralisation, this analysis uses the RAI. The RAI tracks the decentralisation of political regional authority on an annual basis from 1950 to 2018. More in detail, Shair-Rosenfield, et al.(2020) and Hooghe, et al.(2016) measure each indicator on a scale ranging from 0-2 to 0-4 and add them to produce a self-rule and a shared-rule score for each regional tier. The former ranges from 0-18 and the latter from 0-12, the sum of which gives an overall authority score ranging from 0 to 30. RAI measures the authority of regional governments across ten dimensions: policy scope, institutional depth, fiscal autonomy, borrowing autonomy, law-making, executive control, representation, fiscal control, borrowing control, and constitutional reform. Table 1 summarizes all dimensions.

SELF RULE	DEFINITIONS	SCORE
<i>Institutional depth</i>	The extent to which a regional government is autonomous rather than deconcentrated.	0-3
<i>Policy scope</i>	The range of policies for which a regional government is responsible	0-4
<i>Fiscal autonomy</i>	The extent to which a regional government can independently tax its population	0-4
<i>Representation</i>	The extent to which a regional government is endowed with an independent legislature and executive	0-4
<i>Borrow autonomy</i>	The extent to which a regional government can borrow	0-3
SHARED RULE		
<i>Law making</i>	The extent to which regional representatives co-determine national legislation.	0-2
<i>Executive control</i>	The extent to which a regional government co-determines national policy in intergovernmental meetings	0-2
<i>Fiscal control</i>	The extent to which regional representatives co-determine the distribution of national tax revenues.	0-2
<i>Borrow control</i>	The extent to which a regional government co-determines subnational and national borrowing constraints, which is the maximum value of borrow multilateral and borrow bilateral.	0-2
<i>Constitutional reform</i>	The extent to which regional representatives co-determine constitutional change	0-4

Table 1: Dimension of RAI. Adapted from Shair-Rosenfield, et al.(2020) and Hooghe, et al.(2016)

The RAI framework allows to provide a quantitative measure of decentralisation. This measurement

framework allows us to better detect asymmetric decentralisation, eventually. Actually, asymmetric decentralisation of political authority is common in OECD countries. Such a political asymmetric decentralisation mostly takes place at the regional (state/province) level. A degree of asymmetry that is motivated on political grounds might lead to clear benefits to regions, although this may create competition among them. More specifically, asymmetric decentralisation refers to situations where some regions have been given political self-rule that deviates from the norm or typical assignments (Allain-Duprè, 2020). Usually, political asymmetry is conducted to alleviate tensions between regions and to weaken secessionist incentives (Rode et al., 2018). For example, Basque Country in Spain, Alpine regions and some islands in Italy, Scotland in the UK, Corsica in France, Aceh in Indonesia, Hong Kong in China, Åland Islands in Finland and Quebec in Canada show asymmetry for political reasons. Furthermore, political and administrative asymmetric decentralisation can be distinguished into two types of policy, that is “de jure” and “de facto” arrangements (Martinez-Vazquez, 2003; Bird and Ebel, 2006). “De jure” asymmetric decentralisation is based on the special legal status of a certain region, including in the constitution and ordinary law. Whereas “de facto” arrangements are distinctive of relations in most federal political systems and based on all conditions affecting the relevant autonomy, power, and influence. In such “de facto” circumstances, there are many administrative reasons to treat subnational governments asymmetrically. Therefore, the administrative asymmetry aims to promote government policies explicitly addressing different aptitudes of subnational governments. Examples include additional revenue bases, special grants, and rights to extended services provision. Within this context, each policy can adopt either a top-down or a bottom-up¹ approach (Bird, 2003). It is worth noticing that asymmetric arrangements at the regional level represent an important share of all asymmetric arrangements nationally (Hooghe et al., 2016). Different countries’ experiences suggest that asymmetric arrangements within the decentralization architecture are more frequent (MacGarry 2001; Coakley 2003; Conversi 2007). In addition to the summarised political reasons, asymmetric decentralization can be preferred on strictly economic grounds. For example, because the citizens have different preferences at the local level, or because some local governments are in a better position concerning their cost structure, i.e. they can provide the public good at lower costs than the central government (Fiorillo et al., 2021). For the sake of the current analysis, we consider the overall RAI score at the NUTS 2 regional level. Hence, this choice allows us to capture both generalised (symmetric) forms of decentralisation and asymmetric forms of it. Table 2 reports summary statistics for the panel of NUTS 2 regions considered in this analysis. A list of both countries and regions is reported in the supplementary material available for this paper.

Variable	Mean	Std. dev.	Min	Max	Observations
overall	13.67654	8.309	0	27	810
between		8.300	0	27	162
within		0.700	6.48	24.48	5

Table 2: Descriptive statistics for RAI. Source: authors’ elaboration.

Table 2 shows a very limited variation over time in such a short time frame. Rather, the main source of variation is along the between dimension. This is in line with the institutional aspects involved in the dimensions of RAIs which, undeniably, manifest a quite substantial degree of stability and inertia to change.

Wellbeing. The measurement of multidimensional wellbeing has gained momentum in recent times with several initiatives implemented also on statistical grounds (for a discussion see, among others, Arcidiacono and Torrisi (2022)). In the current analysis, we consider a set of 10 indicators based on EUROSTAT regional statistics for which we have collected data for 162 EU NUTS-2 regions in 20 countries. Namely, housing, income, employment, education, engagement, health, and mobility. We would like to stress that, admittedly, the actual indicators are far from being comprehensive of all aspects of wellbeing. Rather, both the number and the nature of indicators to be considered for the measurement of wellbeing are unavoidably debatable and somehow incomplete as noted, with specific reference to the regional case, by

¹bottom-up approach to decentralisation entails local jurisdictions actively organising local services and asking higher-level governments to be supportive of these efforts. A top-down process of decentralisation comprises policies where the central government devolves or delegates some of its responsibilities downwards (Shah and Thompson, 2004).

Greco et al. (2018). Having acknowledged the complexity of the issue at hand, we deem they can give a good sense of multidimensional well-being at the regional level. Table 3 reports the indicators along with the variables' descriptions.

Dimensions of Wellbeing	Eurostat Indicator
<i>HOUSING</i>	Number of establishments, bedrooms and bed-places
<i>INCOME</i>	Income of households
<i>EMPLOYMENT</i>	Employment (%)
<i>INNOVATION</i>	Human Resources in Science and Technology
<i>EDUCATION</i>	Population with tertiary education aged 25-34 (%)
<i>ENGAGEMENT</i>	Economically active population (age 15-74)
<i>HEALTH</i>	Hospital beds
<i>DEMOGRAPHY</i>	Fertility rates
<i>SAFETY</i>	Victims in road accidents
<i>MOBILITY</i>	Stock of vehicles (All vehicles, except trailers and motorcycles)

Table 3: Wellbeing's indicators. Source: Regional Statistics, Eurostat. All data are at the NUTS 2 level

Building upon Martin (2012) and Lagravinese (2015), the betas for the resilience index, the recovery index and reorientation/renewal indices for each wellbeing's dimension will be computed. In formula, for each phase, the measure of regional resilience is:

$$\beta^r = \left| \frac{\frac{\Delta y_{t,Tr}^j}{\Delta y_{Tr}^j}}{\frac{\Delta y_{t,TC}^j}{\Delta y_{TC}^j}} - 1 \right| \quad (1)$$

Where $\Delta y_{t,Tr[C]}^j$ represents the variation in the j -th dimension of wellbeing observed in region r [Country- C] during the period from t to T and $y_{t,Tr[C]}^j$ represents its value at time t . Hence, the higher the index, the higher the reaction of each region with respect to the country to which it belongs is. That is to say, as in mainstream resilience measurement, the variation observed in the country as a whole is used as a reference measure for the variation registered at the regional level. However, differently from the mainstream approach, here the measures of wellbeing include the 11 dimensions reported in Table 2. Hence, each index of resilience aims to capture the regional reaction to the shock for each dimension of wellbeing. In addition to the main variables of the analysis (decentralisation and resilience indices), based on theoretical consideration and extant literature presented above, our empirical exercise considers an index aiming to capture the quality of government. Indeed, for a given level of autonomy, differences in government's ability (rather quality²) could result in different responses to the crisis and, in turn, in different resilience to the shock. To this end, the analysis uses the European Quality Index (EQI). The EQI is released by the Quality of Government Institute at the University of Gothenburg (Charron et al., 2014), and, as mentioned, in this analysis mediates the link between decentralisation and wellbeing. The EQI dataset was for the first time published in 2010 and it is currently available for only three years: 2013, 2017, 2021. The index³ builds upon the answers of European citizens about their perception and experiences with public sector corruption along with the extent to which they believe various public sector services are impartially allocated and of good quality.

More specifically, it reflects the tenets stemming from the theory of quality of government as transparency, competition, efficiency, corruption (Fazekas et al. 2021), and impartiality (Rothstein & Teorell,

²It is worth noticing that the European Commission defines the quality of government as: 'the absence of corruption, a workable approach to competition and procurement policy, an effective legal environment, and an independent and efficient judicial system', as well as 'strong institutional and administrative capacity, reducing the administrative burden and improving the quality of legislation' (European Commission, 2014, p. 161).

³Methodologically, since the correlation between the three years is equal to 95 % the arithmetic mean of these data is computed.

2008). Closely looking at these dimensions it is worth noticing how the principle of transparency requires that any information addressed to the public or to the data subject be concise, easily accessible, and easy to understand. Transparency also guarantees an increasing level of legitimacy in the decision-making process. Generally, more transparency in European public procurement is deemed desirable (Bauhr et al., 2020). The principle of administrative efficiency is based on the provision of public services at the minimum cost. The incidence of corruption has taken a central problem in many circumstances. The common definition of corruption is the "misuse of public power for private or political gain". Measures of corruption and poor governance are correlated with per capita income and with the United Nations Human Development Index (HDI). Richer countries, on average, have less reported corruption and better-functioning governments (Kaufman, 2003). Finally, the recent growth in research on "good governance" and the quality of government shows that impartiality is the most important feature of government institutions. As discussed by Dahl (1989), impartiality is the norm on the output side that is most compatible with the normative principle of treating everyone with equal concern and respect. In summary, the dimensions of government quality are considered relevant for growth and economic development (Teorel, 2009; Easterly and Levine 2003; Rodrik, Subramanian, and Trebbi 2004).

Using the above data ⁴, the baseline model is as follows:

$$\beta_i^r = \alpha_0 + \alpha_1 \times RAI_r + Z + \epsilon_i \quad (2)$$

Where, after Martin (2012)'s notation, β_i^r is the dependent variable, i.e. the resilience measure of dimension in region r based on variations in the i -th dimension of wellbeing, RAI , as mentioned, is the measure of regional authority index for the region at the NUTS 2 level, Z is a matrix containing the set of additional control variables including the aforementioned EQI⁵ aiming to capture the institutional aspects and its components (quality, impartiality, and corruption), separately. Furthermore, in order to control for other unobserved regional characteristics the matrix Z includes also the resident population at the NUTS 2 level. Before proceeding with the estimation of eq. (1), in a preliminary step, we estimate also the overall relationship between the multidimensional measures of well-being obtained by aggregation of the (standardised) 10 dimensions reported in Table 2 (w) and the decentralisation measure for the period 2004-2008 (RAI). In formula:

$$W_i = \alpha_0 + \alpha_1 RAI_i + \alpha_2 D + \alpha_3 D \times RAI_i + \alpha_4 POP_i \epsilon_i \quad (3)$$

Hence, this model includes the decentralization measure (RAI) from 2004 to 2008, a dummy for the year (2008) of the financial crisis (D), the interaction between the two ($D \times RAI$) and the population at the NUTS 2 level.

The first regression method used for this preliminary exercise is the Pooled Ordinary Least Squares (POLS) with Driscoll-Kraay standard errors in order to control for the cross-section nature of the dataset. A second estimation exercise has been performed using a Random Effects (RE) model. While this aspect will shortly be further discussed, it is worth noticing here that since the RAI considers legal institutional arrangements, it shows a very limited variation over time in such a short time frame. As a result, the main source of variation in the panel dataset at hand is along the cross-section (between) dimension, rather than along the time-series dimension (within). Therefore, the RE estimators are deemed more appropriate both in the current and in the following estimations. The Results are reported in Table 4.

The results reported in Table 4 show that decentralisation exerts a positive effect on multidimensional wellbeing. As for the preliminary specific consideration of the shock, however, the results are not robust. Indeed, according to the POLS estimation, it seems that the financial crisis exerted a negative and statistically significant impact on multidimensional wellbeing. Yet, according to the RE estimation, although still negative, the estimated impact is no longer statistically significant. It is worth anticipating here that in the next stage of the analysis, we consider each sector individually and, generally speaking, it does not confirm this evidence. The interaction term between 'crisis' (D) and RAI does not show a statistically significant coefficient according to both specifications. Hence, this preliminary analysis somehow confirms the positive role of decentralisation on regional multidimensional wellbeing. Nonetheless,

⁴please note that due to data availability, in the following estimates, the actual sample size varies across specifications

⁵The European Quality of Government Index (EQI) is the result of novel survey data regional (e.g. sub-national) level governance within the EU (University of Gothenburg, 2004)

VARIABLES	(1)	(2)
	POLS	RE
	w	w
D	-0.307** (0.0788)	-0.217 (0.130)
RAI	0.118*** (0.00387)	0.108*** (0.00901)
DxRAI	0.00378 (0.00533)	-0.00452 (0.00874)
Pop	2.777*** (0.0144)	2.784*** (0.0451)
Constant	-6.341*** (0.0374)	-6.195*** (0.0718)
Observations	620	620
R-squared	0.7943	0.7939
Number of groups	127	127

Driscroll-Kraay standard errors in parentheses.

R-squared refers to overall R-squared for specification (2), RE.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: Decentralisation and Wellbeing

it fails to detect a decentralisation-specific effect in times of crisis. This result is line with extant literature (e.g. Bahl and Martinez-Vazquez, 2006).

As mentioned, once considering the overall relationship between decentralisation and wellbeing, in order to investigate the presence of sector-specific effects, we augment our preliminary analysis with a regression exercise considering each sector individually. Consequently, a set of 11 regressions is estimated based on the following eq.(4)

$$w_{ij,t} = \alpha_0 + \alpha_1 RAI_i + \alpha_2 D + \alpha_3 D \times RAI_i + \alpha_5 Z + \epsilon_{ij} \quad (4)$$

Where w_{ij} refers to the j -th dimension of wellbeing belonging to the wellbeing's indicators described in Table 3. RAI is the usual measure of decentralisation. D is, again, a dummy variable for the 2008 crisis, which assumes value of 1 for 2008s year and 0 otherwise. $D \times RAI_i$ is the usual interaction term between decentralisation specific to one sector and the economic crisis, aims to capture the interaction effect between decentralisation and the crisis-specific effect on each measure of wellbeing. Z is the usual matrix of control variable; consistently with the previous regression exercise, a POLS with Driscoll-Kraay standard errors is used. Results of the models based on the specification reported in eq.(4) are shown in Table 5.

Focusing on our variables of interest, Table 5 shows that decentralisation is not directly statistically significant for income, employment, health, engagement, demography, and housing. Rather, it is statistically significant for education, innovation, safety, and mobility (with a positive sign). Moreover, in the occasion of the shock (as captured by its interaction terms with the dummy for the financial crisis) decentralisation seems to have a positive and statistically significant impact on employment and engagement. A negative effect of decentralisation in times of crisis is detected in the health sector. In all the remaining cases decentralisation does not show a statistically significant interaction with the shock in determining regional wellbeing. Turning the attention to the effects of the crisis, it emerges that, as already mentioned, at this more granular level a negative and statistically significant effect of the crisis is detected for employment, education (10%), innovation, and demography. A positive effect is detected for the health sector.

Therefore, the empirical evidence seems to support the reasoning that a decentralised government at the regional level can be more effective in promoting citizens' wellbeing in selected fields, only. On occasions, it emerges that a decentralised setting allows local economies to cope better with the effects

VARIABLES	(1) INCOME	(2) EMPLOYMENT	(3) HEALTH	(4) EDUCATION	(5) ENGAGEMENT	(6) INNOVATION	(7) DEMOGRAPHY	(8) HOUSING	(9) SAFETY	(10) MOBILITY
D	0.00649 (0.00747)	-0.0759*** (0.00572)	0.0340*** (0.00425)	-0.108* (0.0452)	-0.0580*** (0.00537)	-0.0283* (0.0115)	-0.0594** (0.0208)	-0.0244 (0.0119)	-0.00246 (0.0201)	0.00991 (0.0769)
RAI	0.00153 (0.00146)	0.00736 (0.00394)	-0.00279 (0.00165)	0.0250*** (0.00425)	-0.000671 (0.000667)	0.0120*** (0.00143)	-0.00750 (0.00670)	-0.000184 (0.00135)	0.0198*** (0.00297)	0.0116** (0.00276)
DxRAI	-0.00158 (0.000759)	0.00157*** (0.000321)	-0.00419*** (0.000459)	0.00157 (0.00330)	0.00150*** (0.000261)	-0.00113 (0.000916)	-0.00269 (0.00213)	0.00169 (0.000813)	0.000456 (0.00176)	-0.000327 (0.00555)
POP	0.478*** (0.0420)	0.534*** (0.0331)	0.463*** (0.00807)	0.0716 (0.0363)	0.582*** (0.0117)	0.563*** (0.0132)	-0.0425 (0.0908)	0.153 (0.0992)	-0.141** (0.0331)	0.0446** (0.0112)
Constant	-0.889*** (0.0812)	-1.024*** (0.0293)	-0.788*** (0.0187)	-0.319* (0.127)	-1.020*** (0.0336)	-1.149*** (0.00953)	0.399 (0.234)	-0.266 (0.186)	-0.00512 (0.0656)	-0.241*** (0.0433)
Observations	690	690	655	690	690	690	690	690	680	665
Number of groups	141	141	134	141	141	141	141	141	139	136

Driscoll-Kraay standard errors in parentheses
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE 4 : Decentralisation and RAI a Multidimensional approach

of an economic downturn in terms of employment and engagement; hence mainly in the labour market domain. We might conjecture this deals with the capacity of local authorities to tailor labour-oriented measures and re-orienting stimulus more effectively at the local level (Neil, 2016). A stronger sense of community related to higher authority and identity at the local level could, in principle, represent an additional mechanism through which the policy response is shown to be more effective in this field.

Exploring to what extent this depends on a particular effort of the public policy in times of crisis or, more generally, exploring more deeply the causes for such a piece of evidence involving each and all the sectors herewith considered, goes beyond the scope of the current analysis. However, we deem this empirical evidence could well act as a stimulus for further sector-specific research in this field.

In the next step of analysis, we focus on specific dimensions of reaction to the economic crisis using the following model

$$\beta_i^r = \alpha_0 + \alpha_1 RAI_r + Z + \epsilon_{ir} \quad (5)$$

Where β_i^r is the measure of variation of the dimension of wellbeing (i) computed at regional level (r) described in eq. (5), RAI_r is the measure of decentralisation, EQI represents the aforementioned institutional quality index, and Z is the usual set of control variables aiming to further capture the quality of government and the population at the regional level. The multidimensional analysis spans the sample from 2004 to 2017. The whole sample has been divided into three sub-samples in order to describe the resilience, recovery and reorientation/renewal phases. Accordingly, we denote β_{RES}^r , and β_{REC}^r β_{REO}^r referring for t=2004, 2009, and 2013 and T = 2008, 2012, and 2017, respectively. Then, the betas computed for each phase have been jointly considered according to a panel data approach. More precisely, we estimate a RE model with Driscoll-Kraay standard errors. As mentioned, the rationale for using a RE panel approach is based mainly on the structure of the dataset. Indeed, the substantial share of variance in RAI - our main variable of interest - lies in the between dimension (about 7.92) and only a very small fraction is observed within (0.7281). In these cases, RE estimates are preferable, especially when the characteristics of regions are a feature of interest in their own right, and not just a nuisance to be adjusted for. In this respect, an advantage of the random effect model is that the total residual variance can be properly partitioned into two components: the between-regions σ_u and the within-region variance σ_e (Clarke et al., 2011). In the case at hand, indeed, the two components equal 2.062 and 1.341, respectively. Moreover, the adoption of Driscoll-Kraay standard errors allows us to control for very general forms of heteroskedasticity and clustering - therefore including, but not limited to country-level clustering - of errors. Hence the estimated model is the one reported in eq. 6.

$$\beta_i^r = \alpha_0 + \alpha_1 RAI_r + Z + u_r + \epsilon_{ir} \quad (6)$$

where u_r is the region specific random effect. Results are reported in Table 6.

The results reported in Table 6 show that, generally speaking, the degree of decentralisation, as measured by RAIs, is not statistically significant for multidimensional resilience. Indeed, except for the negative sign of demography, the RAI variable does not show a statistically significant relationship with none of the resilience measures along the considered dimensions. Rather, the overall quality of government (EQI) seems to play a marginal statistically significant role in resilience in the education, engagement, and mobility sectors. Overall, the results show general evidence that the resilience across the dimensions considered in the present study depends on factors other than decentralisation. Undeniably, this evidence raises interesting questions and poses important challenges for researchers. To begin with, further research could address each sector separately to explore more deeply what other factors are relevant for sector-specific resilience. However, we deem this overall result of the absence of a strong link between decentralisation and multidimensional resilience provides, already, interesting insights for the debate on state rescaling ongoing, for example, in the Italian case involving the implementation of an asymmetric autonomy (or, in Italian, 'autonomia differenziata') contemplated in the art. 116 of the Italian Constitution and currently subject to further implementation with bill no. C.1665 ⁶.

⁶https://temi.camera.it/leg19/temi/19_t18,egioni_e_finanza_regionale.html. Last retrieved on 02/02/2024

VARIABLES	(1) β_INCOME	(2) $\beta_EMPLOYMENT$	(3) β_HEALTH	(4) $\beta_EDUCATION$	(5) $\beta_ENGAGEMENT$	(6) $\beta_INNOVATION$	(7) $\beta_DEMOGRAPHY$	(8) $\beta_HOUSING$
RAI	-0.00125 (0.0153)	-0.0197 (0.110)	-0.0506 (0.0659)	-0.0216 (0.0196)	-0.0925 (0.115)	0.0128 (0.00834)	-0.0345* (0.00877)	0.0110 (0.00986)
EQI	0.588 (1.138)	-2.069 (6.463)	-20.43 (27.48)	-6.030*** (0.409)	-13.97** (2.348)	0.111 (0.409)	1.684 (6.841)	-0.257 (0.322)
quality	-0.484 (0.223)	0.347 (3.789)	2.025 (4.178)	1.938* (0.481)	7.579 (4.652)	0.315 (0.469)	-0.993 (2.209)	-0.0710 (0.165)
impartialityp	-0.291 (0.229)	0.805 (0.320)	7.198 (11.04)	0.172 (0.275)	0.891 (1.715)	0.258 (0.162)	-1.031 (0.970)	0.620 (0.424)
corruptionp	-0.0151 (0.521)	0.616 (3.875)	10.32 (12.09)	3.601*** (0.146)	4.997 (2.658)	-0.802 (0.346)	-0.0196 (3.970)	-0.102 (0.556)
pop	0.0299 (0.0287)	-0.469* (0.131)	-0.231 (0.211)	-0.306 (0.155)	-0.222 (0.415)	-0.0857 (0.0396)	-0.106 (0.0389)	-0.0307 (0.0867)
Constant	0.546 (0.210)	3.937 (1.595)	5.613 (2.265)	2.939* (0.889)	4.634* (1.259)	0.750** (0.158)	1.833** (0.243)	1.397* (0.388)
Observations	436	436	436	436	436	436	436	436
Number of groups	150	150	150	150	150	150	150	150

Driscoll-Kraay standard errors

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE 5: Decentralisation and Resilience, Random Effects estimates. Source: authors' elaboration

4 Concluding Remarks

This paper supports the tenet that successful outcomes of decentralisation depend on the implementation of public policy considering the trade-off between spatial heterogeneity and efficiency. Our empirical results show that these aspects might vary across different wellbeing dimensions. At the same time as confirming the evidence reported in recent literature on the effect of decentralisation on multidimensional wellbeing (Aricidiacono and Torrisi, 2022; Torrisi, 2021), undoubtedly, it calls for a more detailed analysis to explore the reasons why only in a subset of dimensions of wellbeing decentralisation does show a positive effect. As for the link between decentralisation and multidimensional resilience, in principle, (asymmetric) decentralisation could foster tailored governance frameworks and place-based regional policies. Since the effects of exogenous shocks (such as economic, natural disasters, and climate change) generally affect regions differently, the ability to respond with place-specific policies could represent a crucial factor in shaping local resilience. However, our multidimensional approach to resilience shows a rather weak effect (if any) of decentralisation on resilience. Hence, overall, the analysis provides an empirical underpinning for the argument that optimal institutional framework, including but not limited to decentralisation, is also sector-specific. Put differently, while we acknowledge the tenet that all governments potentially obtain benefits from decentralisation (such as responsiveness to local needs, administrative efficiency, innovativeness, transparency, accountability, and cost efficiency) the process of state rescaling should weigh the former with the risks and potential costs related to decentralisation. The proper balance should consider the uneven unfolding of both costs and benefits across sectors of wellbeing – especially, as it merges from the current analysis, in times of crisis. Indeed, the mixed empirical evidence achieved in this study might well depend on the complex balance between heterogeneity, efficiency, and equity aspects across wellbeing dimensions such as education, health, labour market, and social services. Undoubtedly, our empirical results call for a more detailed analysis to explore why such heterogeneity in the effects of decentralisation is observed. Moreover, it is worth addressing in future research what are the main drivers of multidimensional resilience.

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