

Resilience in lagging regions: Evidence from Italian micro firm-level data

Paolo Di Caro^{a,e}, Federico Fantechi^b, Paolo Lorenzo Ferrara^{c*}, Ugo Fratesi^d

^a *Department of Economics and Law, University of Rome La Sapienza (Italy)*

^b *Department of Economics, Business and Statistics, University of Palermo (Italy)*

^c *Department of Law, University of Catania (Italy)*

^d *Department of Architecture, Built Environment and Construction Engineering, Politecnico di Milano (Italy)*

^e *Italian Ministry of Economy and Finance, Rome (Italy)*

Abstract

Resilience refers to the ability of countries and regions to effectively handle crises, adapt, and swiftly return to stability, a key topic in worldwide economic debates. In the past fifteen-plus years, different shocks – Great Recession; Covid-19 crisis; Ukraine-Russian war; inflation surge – have produced hard consequences on societies and economies with uneven patterns across people and places. To understand the overall impact of the crises and, in particular, the factors behind the different spatial trajectories observed during and after shocks, the decade-old concept of regional economic resilience has regained popularity among researchers and practitioners. The fast-growing resilience literature, however, has primarily used data at regional level and made comparisons across territories with different economic levels. What is missing is the analysis of resilience trajectories in lagging regions, namely, regions that show low-economic levels compared to other areas. Equally remarkable is the study of the presence of firm-, local- and sector-specific patterns when looking at the economic performance within lagging regions. The objective of this work is twofold. First, we provide novel, micro evidence on the resilience of lagging regions in the South of Italy, the so-called Mezzogiorno, during and after the Great Recession. Secondly, we study the performance of firms and local areas in the Italian lagging regions after the Great Recession and make comparisons across and within such regions in order to show which factors can help explaining differences in territorial resilience in less advanced regions. We finally discuss the key results of our work and the main policy implications, also in the light of the recent territorial asymmetries registered during the post-pandemic recovery phase.

JEL Classification: C19, L25, R58

Keywords: economic resilience; lagging regions; micro data; economic shocks, Italy.

* Corresponding author at e-mail address: paolo.ferrara@unict.it

1. Introduction

In the past fifteen-plus years, different shocks, such as Great Recession, Covid-19 crisis, Ukraine-Russian war, inflation surge, have produced hard consequences on societies and economies with uneven patterns across people and places. Economic change traditionally exhibits significant disparities not only between countries but also within regions (Pellegrini, 2002; Fratesi and Perucca, 2018; Fantechi and Fratesi, 2024). In this sense, Italy is a nation where regional economic discrepancies are quite pronounced. For over 150 years, the country has been marked by a significant divide between the wealthier northern regions and the comparatively less affluent southern areas, often referred to as the “Mezzogiorno”¹ (Daniele and Malanima, 2007; Aiello et al., 2014; Canale and Napolitano, 2015; Capello, 2016; Duran and Fratesi, 2020). In particular, no other European country exhibits such enduring regional disparities that garner substantial attention in both academic research and public discourse (Piras, 2005; Di Caro, 2015; Asso, 2021). Indeed, considering both institutional (e.g., Di Vita, 2012; Nifo and Vecchioni, 2014; Castro and Guccio, 2015; Mocetti and Orlando, 2019; Nissi et al., 2019; Arbolino and Boffardi, 2024; Ferrara et al., 2024; Fontana and D’Agostino, 2024; Di Vita et al., 2025) and economic aspects (e.g., Aiello et al., 2014; Capello et al., 2016; Farole et al., 2017; Duran and Fratesi, 2020; Papagni et al., 2021), South of Italy can be certainly considered a lagging region both from an international and national point of view (Rodríguez-Pose and Fratesi, 2007; Ciani and De Blasio, 2015; Rodríguez-Pose and Ketterer, 2020).

However, within this overall lagging context there is a large heterogeneity, both in terms of performance, resilience, and overall territorial endowment (Sibiano and Agasisti, 2013; Cellini and Torrisi, 2014; Biasi et al., 2019; Menon et al., 2023).

To fully grasp the characteristics of these lagging segments of the Italian economy, it is essential to consider smaller territorial organizations, moving from a rigidly regional (NUTS-2) perspective to observe nuances and differences of smaller administrative units like the so-called local productive systems. These systems, defined by the Italian National Statistical Institute (ISTAT), segment the Italian territory into Local Labor Systems (LLS) based on Population Census data. In detail, LLSs are clusters of municipalities where most residents live and work locally, reducing long-distance travel and fostering a localized economic environment.

¹ The Italian institute of statistics (ISTAT) categorizes the Italian regions in three groups: North (Piemonte, Valle d’Aosta, Lombardia, Liguria, Veneto, Emilia-Romagna, Trentino-Alto Adige, Friuli-Venezia Giulia), Centre (Toscana, Umbria, Marche, Lazio), South (Abruzzo, Molise, Campania, Puglia, Basilicata, Calabria, Sicilia, Sardegna). Sicilia and Sardegna are two islands.

To understand the overall impact of the crises that hindered the development and convergence of EU territories over the last decade we implement the concept of regional economic resilience by studying the different spatial trajectories within the lagging regions of Southern Italy.

The resilience of a regional economy refers to its capacity to withstand and adapt to economic difficulties, which typically lead to recessions. These challenges often stem from sudden and unforeseen shocks. In this sense, a resilient regional economy can manage these disruptions more effectively than others, maintaining a relatively stable equilibrium despite brief and unpredictable recessionary events (Martin et al., 2016; Di Caro, 2017; Navinés et al., 2023). The fast-growing resilience literature (Di Caro et al., 2025), however, has primarily used data at regional level (Di Caro, 2017) and made comparisons across territories with different economic levels (Di Caro and Fratesi, 2018). What is missing is the identification and analysis of different resilience trajectories within lagging regions, that is, territories that show low-economic levels compared to other areas (Nijkamp et al., 2024). This can be achieved by leveraging geo-referenced firm-level balance-sheet information for the Italian context (ASIA database; Bureau van Dijk, 2020), allowing to study the presence of local- and sector-specific patterns when looking at the economic performance of territories within lagging regions (Pinto et al., 2019).

Considering the aforementioned aspects, to the best of our knowledge, this work is the first to investigate economic resilience in South of Italy considering micro-data at LLSs level observing two different - territorialized - dynamics regarding: i) employment and ii) profitability (the return-on-investments, ROI, index).

The objective of this work is twofold. First, we provide novel, micro evidence on the resilience of lagging regions in the South of Italy, the so-called Mezzogiorno, during and after the Great Recession. In detail, we investigate whether there is a territorial homogeneity of the resilience capacity within this area and check for the presence of “pockets” of territories within these regions showing better capacity for economic resilience. To do so, we apply a micro-based empirical approach to analyse the performance of specific areas (i.e. local labour markets; municipalities) isolated from the dynamics of different industries and firms' characteristics (Fantechi and Fratesi, 2022). This will allow us to show different spatial patterns of resistance and recovery describing significant differences within the same regional area. Second, we study the resilience of territories and local areas in Italian lagging regions through the comparisons across and within different territorial context and characteristics in order to show which factors can help explaining differences in performance and territorial resilience in less advanced regions, investigating whether territories with different endowments of territorial capital, under the geographical, institutional, and infrastructural point of view, perform better and are more resilient (Fantechi and Fratesi, 2024).

Our findings mainly report that enhanced institutional quality significantly boosts employment growth, though this effect is less pronounced in terms of profitability. Infrastructure assets are even more critical; regions that function as connection hubs or are well-integrated into transportation networks exhibit notably positive development outcomes. On the other hand, economic entities in poorly connected areas generally underperform. Furthermore, geographical factors like insularity are highly significant.

From a policy perspective our work entails relevant implications. In this sense, policy-makers should foster institutional quality since high-quality institutions enhance economic resilience by providing stability and support. Furthermore, investing in new infrastructures is crucial for development and reducing operational costs, especially in peripheral areas; however, infrastructure alone cannot solve geographical challenges like insularity, which remains a significant issue.

The rest of the paper develops as follows. In section 2 a literature review on territorial capital and resilience is reported together with a brief historical background on the characterization of Southern Italy as a lagging region. In Section 3 we describe materials and method of our research while the results are provided in Section 4. Finally, Section 5 discusses limitations, avenues for further research, and presents final drawings and policy implications.

2. Literature and background

2.1 Territorial capital and regional economic resilience

Territorial capital, intended as the stock of resources that support the internal growth of a region or a territory along with the institutions needed to effectively manage these resources (OECD, 2001), is strictly linked to the notions of competitiveness and resilience, since the assets and resources of a region can enhance its ability to withstand shocks and bolster its competitiveness over the long term (Bristow, 2010; Simmie and Martin, 2010; Sánchez-Zamora et al., 2014). The diverse ways in which regions demonstrate resilience stem from key influencing elements that shape how severely they are affected by disruptions, and how effectively they react and bounce back (Sutton and Sutton, 2024). In this sense, drawing from previous studies (Camagni, 2009; Fratesi and Perruca, 2018), we hypothesize that regional structural and organisational characteristics influence resilience to external shocks, helping local economies to endure macroeconomic downturns, though not all components of territorial capital may benefit equally.

Nonetheless, the role of territorial capital in explaining resilience and economic growth (i.e., territorial resilience) has so far been poorly investigated (Perrucca, 2014; Fratesi and Perruca,

2018), a part for few exceptions (e.g., Sánchez-Zamora et al., 2014; Giannakis and Bruggemand, 2015; Martin et al., 2016; Sánchez-Zamora and Gallardo-Cobos, 2019).

Resilience is a fast-growing multifaceted concept that has its roots in other disciplines like environmental sciences, engineering, sociology and has gained prominence in economic discussions following the 2008 Great Recession (e.g., Bristow, 2010; Dawley et al., 2010; Di Caro, 2015; Martin and Sunley, 2015; Di Caro and Fratesi, 2018; Faggian et al., 2018; Bristow and Healy, 2018; Kitsos et al., 2019; Pontarollo and Serpieri, 2020; Navinés et al., 2023; Sutton et al., 2023; Brunnermeier, 2024). Traditionally, the resilience of a regional economy can be defined as its capacity to handle economic challenges, typically leading to recessions, more effectively than other regions, when faced with shocks (Martin et al., 2016; Navinés et al., 2023). Incorporating resilience theory into regional science and public policy is a quite new academic endeavor, and there are extensive debates about the effectiveness of the resilience framework in explaining regional economic adaptability (Hassink, 2010; Martin and Sulley, 2015; Brown and Greenbaum, 2017). However, the definition suggests that a resilient regional economy can mitigate the adverse effects of shocks and recover more quickly than less resilient counterparts, also capitalizing on the renewing opportunities that may arise from crises (Dawley et al., 2010).

2.2 The lagging area of Southern Italy

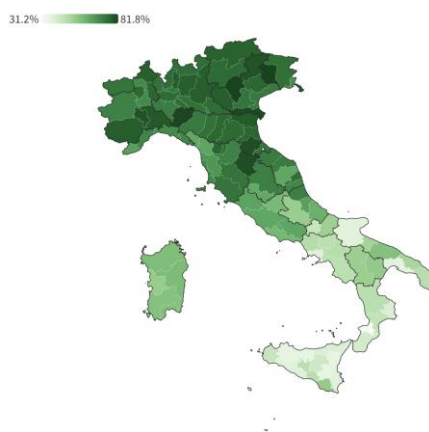
Italy as a whole exhibit significant territorial disparities in socioeconomic, institutional, and geographical aspects. In this sense, the diverse landscapes across the country create a unique opportunity to explore the underlying connections between regional inequalities and local spatial heterogeneity (Salvati et al., 2017a). Considering the South of Italy, since the unification of the 1861, the socio-economic gap between the Centre-North and the Southern regions has constituted a relevant issue that still persists nowadays without any apparent solution (i.e., *questione meridionale*).

According to the study of Daniele and Malanima (2007), the North-South divide can be divided into four phases. While for the twenty years following Italy's unification the economic gap between the North and South was minimal, likely not exceeding 5 percentage points, by 1891, the difference in per capita GDP between the South and the rest of the country reached 7 percentage points. The first phase, from 1891 to the eve of World War I, saw the South's growth rate at 1.1% per year, compared to 1.8% for the Centre-North, widening the gap as the South's per capita GDP fell from 93% to 80% of the national average. The second phase, from 1920 to 1940, during the fascist era, saw the gap increasing significantly from 26 to 44 percentage points, with the North growing at nearly 2% annually, while the South grew at about 0.5% per year. The third phase, from

1951 to 1973, marked the peak of the North-South divide post-World War II. In 1951, the South's per capita income was about 47% of the Centre-North's. However, a recovery began in the late 1950s, with the South growing at 5.8% annually compared to the North's 4.3%, reducing the gap significantly by 1973. The final phase, post-1973 (first oil shock), reported a slowdown in Italian growth, with the South more affected than the Centre-North and the gap widened again, reaching 44 percentage points by 1995, similar to 1940 levels, with a partial but not sufficient recovery observed only since the early 2000s.

Among the main consequences of socio-economic disparities are those related to the labour market (Figure 1), accordingly shaping wages and productivity (Martini and Giannini, 2020). In particular, such economic differences have driven migration from the South to the North since the 1950s. This pattern saw a minor decrease between the mid-1970s and the 1990s, but picked up again with more vigour at the start of the new millennium, mainly attracting highly skilled and educated people, taking away human capital, and negatively affecting the growth of local economies (Piras, 2005; Biagi et al., 2011; Etzo, 2011; Dotti et al., 2013; Ciriaci, 2014; Fratesi and Percoco, 2014; Ferrara et al., 2023).

Figure 1 – Italian youth employment rate in 2021



Source: own elaboration from ISTAT data

Considering these peculiarities of the Italian economy, the idea of this paper is that beyond the view of a homogeneously lagging area it is possible to find heterogeneity in economic resilience and investigate their main drivers.

3. Empirical design

3.1 Data and sources

Italian Local Labour Systems (LLSs) consist of groups of adjacent municipalities that exhibit a significant degree of independence regarding daily commuting patterns. These clusters are characterized by a high proportion of residents who live and work within the same area, minimizing the need for long-distance travel (i.e., “travel-to-works” area). This self-sufficiency in daily commutes fosters a localized economic environment where most economic activities and employment opportunities are concentrated within the same geographical area (Pellegrini, 2002; Giusti and Grassini, 2007; Mameli et al., 2008; Salvati et al., 2011; Basile et al., 2012; Ciani and De Blasio, 2015; Salvati et al., 2017b; Faggian et al., 2018).

To perform the econometric analysis, we use NUTS-3 level micro data from three different sources: Census data; register for active firm and companies (ASIA database); AIDA database created by Bureau Van Dijk, which offers financial statement data for companies situated within Italy (Bureau van Dijk, 2020). Our sample is composed of Italian Southern regions as classified by ISTAT.²

3.2 Territorialized firms' performance

We propose a method of measuring resilience, different from the ones already and traditionally proposed in the literature from pioneering works (Fingleton et al., 2012; Martin, 2012; Doran and Fingleton, 2015; Martin and Sunley, 2015; Martin et al., 2016) which, instead of relying on aggregate measures and indices (e.g., Di Pietro et al., 2021; Duran and Fratesi, 2023), allow us to look at small territories within administrative regions. This approach, based on aggregating micro-economic data on firms, based on their base of operations, allows to observe relevant differences in resilience capacity which are often diluted in larger (regional) measures. Following Fantechi and Fratesi (2022; 2024) this approach works similarly to a shift-share analysis by decomposing the economic dynamics of places in different components to understand their economic resilience (Giannakis and Bruggeman, 2015).

Instead of taking a top-down perspective and separation of the regional component from national, macroeconomic and industry dynamics, we use a bottom-up approach on firm-level microeconomic data via a 2-steps matching approach (Fantechi and Fratesi, 2022; 2024) to isolate territorial dynamics from industry dynamics and firm-level dynamics. While this methodology is

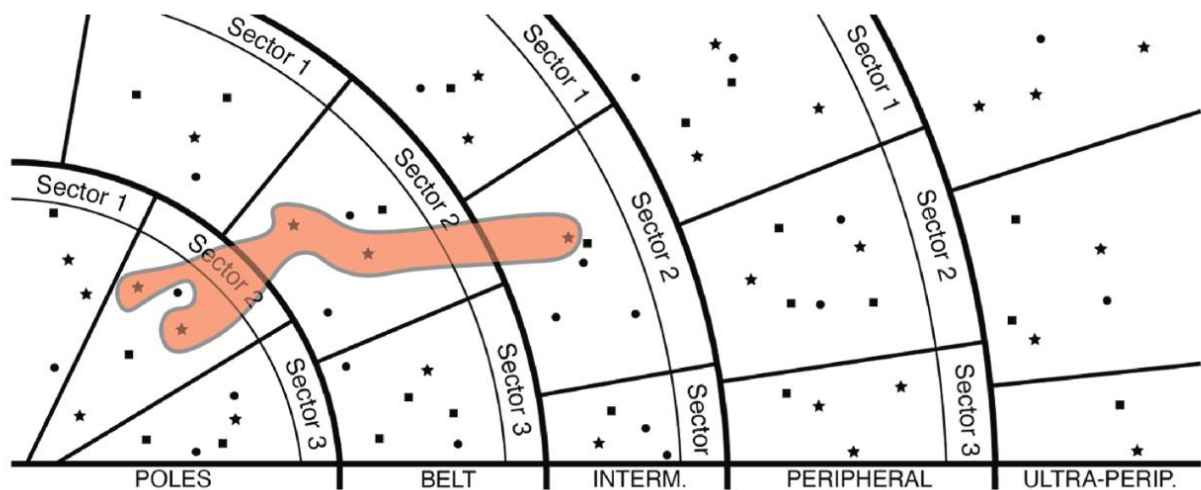
² We do not consider Sardinia in the analysis due to lack of data.

not intended to be a substitute of absolute measures of resilience, it can provide detailed and unique comparative information at a very small territorial level.

The economic resilience of a territory can be decomposed in three main components: i) industry specific dynamics; ii) firm-level dynamics; iii) territorial dynamics.

Leveraging yearly firm-level balance sheet information (AIDA, Bureau van Dijk, 2020) we implement a 2-steps matching design to isolate the component for which territorial dynamics are responsible. The performance of a specific firm is - on average - dependent on the different dynamics of its main industrial sector, where the characteristics of some sectors can make them a lot more resilient to exogenous events and crisis regardless of the firm dimension or financial status. Moreover, specific firm characteristics (i.e., age, dimension, reliance on physical assets, financial stability) can also strongly influence their capacity for resilience. When controlling for both these components, the residual difference between firms operating in different territories is understood to be due to territorial characteristics dynamics.

Figure 2 – Graphical representation of the 2-steps approach



Source: Fantechi and Fratesi (2024)

As exemplified in Figure 2, the 2-steps matching design presented and discussed in Fantechi and Fratesi (2022) compares the average performance of firms operating in different territories after controlling for the first two dynamics. The design includes first an exact matching on the main industrial sector of firms, ensuring that firms operating in the sector “X” will only be compared to firms in the same sector.³ Within firms operating in the same industrial sector a propensity score

³ As in Fantechi and Fratesi (2023), the sectors included in the analysis are: manufacturing, construction, retail, information and communication, finance, real estate, scientific and technical profession. Certain sectors were not

matching on relevant firms' characteristics is run to account for individual dynamics and only compare firms in a territory with similar firms operating in other territories. This is run for each territory within the area, producing average treatment effect (ATTs) which are differential measures indicating whether firms operating in a specific territory are statistically significant more - or less - resilient compared to similar firms, operating in the same industrial sector, located elsewhere.

Resilience of firms is measured in dynamics terms by the growth of two relevant and robust firm-level indicators, number of employees and profitability (ROI index is used in place of GDP), which are both widely used in the economic resilience literature (e.g., Martin, 2012; Courvisanos et al., 2016; Crescenzi et al., 2016; Cuadrado-Roura and Maroto, 2016; Sensier et al., 2016; Arbolino et al., 2018; Terzo, 2021; Fantechi and Fratesi, 2023). Our analysis, then, involves two time periods over which growth is measured. An initial period, including the years 2010-2012 and a final period 2017-2019. Firm-level growth is measured as the relative growth between the averages of the initial and final period for the two indicators. Averages of a three-year period are used to improve data reliability and availability.

3.3 Territorial Patterns and Drivers for Resilience

Testing our hypothesis on the role of territorial capital and institutional capacity for territorial resilience, different drivers of resilience are individuated and incorporated into the 2-step matching design. In order to individuate place-specific patterns, territories in the areas (local labour markets - LLSs) are classified over different taxonomies and compared among them.

3.3.1 First and second order geography

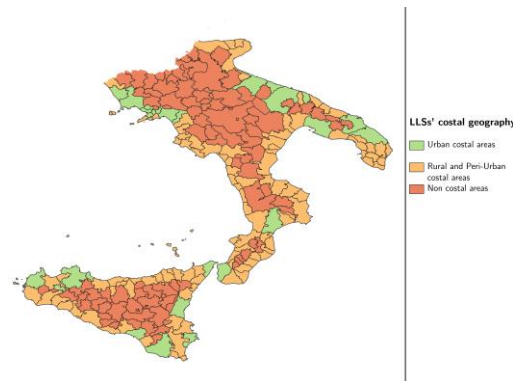
As first step of the identification and classification of the territorial endowment of the Southern Italy, we use the traditional distinction between first and second order geography.

In detail, first-order geography comprehends the primary physical and environmental attributes, such as landforms and climate zones (i.e., coastal area vs mountain area), resulting as an essential basis for comprehending the spatial distribution of the natural endowments. On the other hand, second-order geography considers the interactions between human economic activities and the physical environment, such as the distinction among urban, peripheral, and rural areas.

Figure 3 reports a merge of first and second order geography in the Southern Italy classifying LLSs in Urban coastal areas (green), Rural and Peri-Urban coastal areas (yellow), and Non-coastal areas (red).

included in the analysis either because they are characterized by strong public sector involvement, such as public administration and defence, or due to the limited availability of firm-level data, as is the case with agriculture, mining, and energy sectors.

Figure 3 – First and second order geography in Southern Italy



Source: own elaboration

Following previous literature on the positive role of proximity to urban centres and coastal areas on economic growth and resilience (e.g., Capello et al., 2015; Srivastava and Shaw, 2016; Sánchez-Zamora et al., 2014; Cheng et al., 2024),⁴ we hypothesize that:

Hypothesis 1: SLLs in urban and coastal areas tend to exhibit greater economic resilience (employment and profitability).

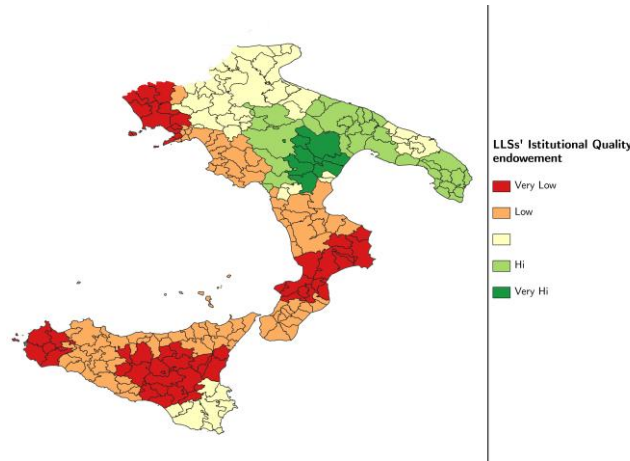
3.3.2 Institutional quality

To thoroughly evaluate the quality of the institutional context, we make use of the Institutional Quality Index (IQI), developed by Nifo and Vecchioni (2014). This comprehensive composite index is designed to facilitate a detailed assessment of institutional quality across the various provinces of Italy, allowing for a nuanced and precise evaluation of the institutional environment at the local (NUTS-3) level. The IQI is meticulously structured around five fundamental pillars, or sub-indices, each of which captures distinct aspects and dimensions of institutional quality. These pillars include voice and accountability, government effectiveness, regulatory quality, rule of law, and corruption. The index is measured on a scale ranging from 0 to 1, where a score of 1 signifies the highest possible level of institutional quality and 0 the lowest.

⁴ From a different perspective, analysing local communities in Romania, Pavel et al. (2020) find that rural areas proved more resilient than urban ones during the crisis. However, communities near major cities suffered the most but later showed exceptional growth, becoming top performers. In contrast, isolated rural areas experienced minimal impact but had the slowest recovery, reflecting a divide in post-crisis development patterns across regions.

Figure 4 illustrates the grades of the Institutional Quality Index (IQI), adapted at the LLSs level, across the southern provinces of Italy, for the year 2009, highlighting a notable degree of heterogeneity, and providing an overview of how institutional quality differs inside the “Mezzogiorno” macro-region. In detail, LLSs’ institutional quality endowment is classified in Very Low (red), Low (orange), Medium (yellow), Hi (light green), Very Hi (dark green).

Figure 4 – Institutional Quality Index (IQI) levels in Southern Italy



Source: own elaboration from Nifo and Vecchione (2014) data and following updates

Following previous literature on the beneficial effect of institutional quality and governance capacities on economic performances (e.g., Aiello et al., 2014; Sánchez-Zamora et al., 2014; Caserta et al., 2025), as well as their positive relation with economic resilience (Ezcurra and Rios, 2019; Terzo, 2021), the following hypothesis is drawn:

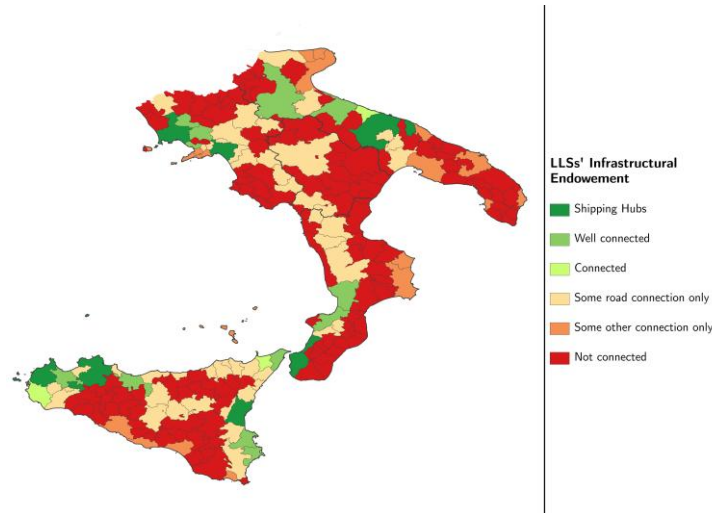
Hypothesis 2: SLLs in areas with higher levels of IQI tend to exhibit greater economic resilience (employment and profitability).

3.3.3 Infrastructural endowment

As a third step of our territorial capital classification, we categorise the Southern Italy according to their infrastructures. Infrastructural endowment of a territory plays a crucial role in its social and economic development and is vital for sustainable economic progress and social well-being. In detail, well-developed infrastructures (i.e., transport networks, communication systems, and public services) facilitate efficient movement of goods and people, reduces costs, and enhances productivity, attracting businesses and investments that lead to job creation and economic growth. Moreover, social inclusion is also fostered by connecting remote areas to urban centres and promoting equitable development.

Figure 5 reports infrastructural endowment in Southern area classifying the LLSs in Shipping hubs (dark green), Well connected (green), Connected (light green), Some road connection only (yellow), Some other connection only (orange), Not connected (red).

Figure 5 – Infrastructural endowment in Southern Italy



Source: own elaboration from Fantechi et al. (2025) data

Following the strand of literature on the beneficial effect of infrastructures on economic performances, competitiveness, and social welfare (e.g., Aiello et al., 2014; Sánchez-Zamora et al., 2014; Cavalieri et al., 2019; Fantechi et al., 2025), we expect that:

Hypothesis 3: SLLs in areas with higher endowments of infrastructures and connections tend to exhibit greater economic resilience (employment and profitability).

4. Results

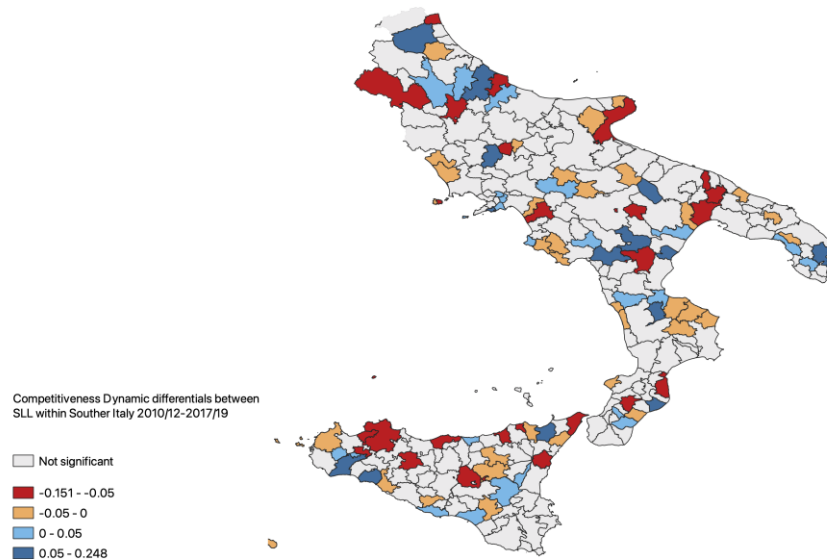
4.1 First step: Resilience of lagging regions in the South of Italy

As a first step of our analysis, following previous literature reporting heterogeneity of resilience distribution among Mezzogiorno' regions (see Duran and Fratesi, 2023), we investigate whether resilience capacity within this lagging area exhibit territorial homogeneity, or alternatively, reflect the presence of specific “pockets” demonstrating comparatively higher levels of economic resilience.

To do this, we employ the two indicators already presented, namely employment in Figure 6 and profitability (ROI index) in Figure 7.

In detail, considering changes in employment level, according to our expectations, Figure 6 presents a wide heterogeneity of resilience in SLLs, going from less resilient areas (in red) to more resilient areas (in dark blu). However, no specific patterns, possibly explaining different resilience levels, are identified, requiring further analysis in Section 4.2.

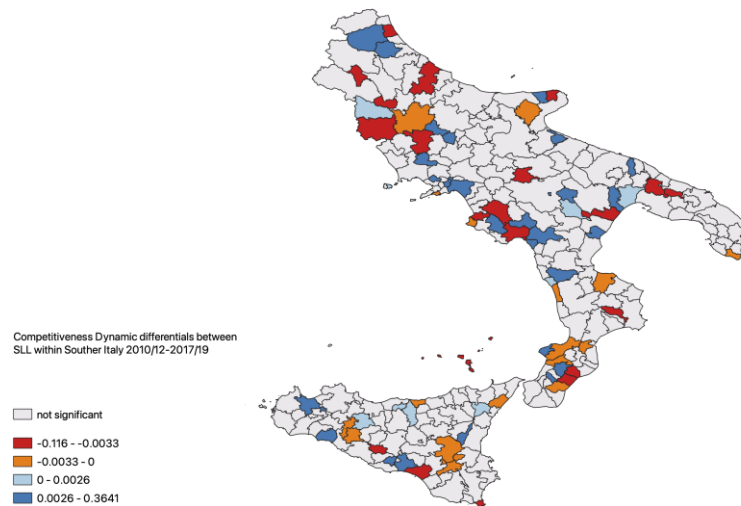
Figure 6 – Competitiveness dynamic differentials among SLLs - employment



Source: own elaboration

In Figure 7, despite the number of not statistically significant units is larger than using employment, heterogeneity of resilience levels is confirmed also for the profitability index, and further analysis considering territorial capital endowment appears necessary.

Figure 7 – Competitiveness dynamic differentials among SLLs - profitability (ROI)



Source: own elaboration

4.2 Second step: Resilience of the South of Italy in relation to territorial capital

4.2.1 First and second order geography

The first dimension of territorial capital investigated is how geographical characteristics influence economic resilience and are able to justify heterogeneity in response to shocks across homogenous lagging areas.

As reported in Table 1, employment and profitability are distinguished in, respectively, odd and even columns.

In detail, considering employment, “Urban areas” and “Urban costal area” result more resilient than “Non-costal areas”, with a negative effect also due to being located in rural areas. This result holds true when considering only the isle of Sicily in relation to the mainland.

Different considerations can be drawn for the profitability index, since resilience seems not to be related to an urban environment but to the fact of being located in coastal areas. In this sense, profitability columns in Table 1 reports negative statistically significant coefficient for “Urban areas” and positive statistically significant coefficient for “Urban costal areas”. As a robustness check, this result is corroborated by the negative statistically significant coefficient when “Urban Costal Areas” and “Only costal” are directly compared. This result holds true even considering only Sicily against the mainland.

Table 1 – First and second order geography impact on resilience

	EMPL	PROFIT	EMPL	PROFIT	EMPL	PROFIT	EMPL	PROFIT	EMPL	PROFIT	EMPL	PROFIT	EMPL	PROFIT
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Urban Areas	0.0039**	-0.0024**												
	(0.0019)	(0.0011)												
Sicilian Urban areas vs mainland	0.0037*	-0.0048***												
			(0.0027)	(0.0017)										
Sicilian Non-Urban areas vs mainland					-0.0025*	-0.0020*								
					(0.0018)	(0.0013)								
Urban Costal areas							0.0044***	0.0018**						
							(0.0018)	(0.0009)						
Urban Costal Areas vs only costal									0.0034*	-0.0036**				
									(0.0027)	(0.0018)				
Non-Costal Rural areas											-0.0024*	0.0010		
											(0.0015)	(0.0010)		
Non-Costal Urban areas													0.0002	0.0004
													(0.0026)	(0.0016)

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

4.2.2 Institutional quality

As a second dimension of territorial capital, the IQI index presented in Section 3.3.2 is considered. As expected, Table 2 reports more resilience in areas characterized by higher institutional quality in comparison with lower institutional quality ones. Results, with different specifications, generally hold true for both indicators, employment in odd columns and profitability in even columns.

Table 2 – Institutional quality impact on resilience

	EMPL	PROFIT	EMPL	PROFIT	EMPL	PROFIT	EMPL	PROFIT	EMPL	PROFIT
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Very Hi	0.0035*	0.0016								
	(0.0022)	(0.0014)								
Hi			0.0019*	0.0006						
			(0.0014)	(0.0009)						
Medium					-0.0010	-0.0035***				
					(0.0016)	(0.0011)				
Low							0.0000	-0.0003		
							(0.0014)	(0.0009)		
Very Low									-0.0018*	-0.0005
									(0.0015)	(0.0009)

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

4.2.3 Infrastructural endowment

The third territorial capital dimension investigated considers infrastructural endowment. In accordance with the hypothesis drawn, Table 3 shows more resilience in “Well connected” or endowed with a “Shipping hub”. On the other hand, lower level of resilience is reported in LLSs with “Some Road connection only” or “Not connected”. The findings are broadly consistent for both indicators, employment in the odd-numbered columns and profitability in the even-numbered ones.

Table 3 – Infrastructural endowment impact on resilience

	EMPL	PROFIT	EMPL	PROFIT	EMPL	PROFIT	EMPL	PROFIT	EMPL	PROFIT	EMPL	PROFIT
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Shipping Hubs	0.0083***	0.0023**										
	(0.0025)	(0.0012)										
Well connected			0.0097***	0.0027*								
			(0.0035)	(0.0021)								
Connected					0.0020	0.0022						
					(0.0035)	(0.0022)						
Some Road connection only							0.0011	-0.0024**				
							(0.0021)	(0.0014)				
Some other connection only									0.0005	-0.0013		
									(0.0022)	(0.0014)		
Not connected											-0.0019*	-0.0004
											(0.0013)	(0.0008)

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

In conclusion, Table 4 considers the role of insularity, which can be considered as a form of peripherality, comparing Sicily and the mainland. As can be seen, both indicators (employment in odd-columns, profitability in even-columns) show that in the case of an island even the presence of shipping hubs and good road connections are not sufficient to reach the same levels of resilience in comparison to the mainland.

Table 4 – Infrastructural endowment impact on resilience (insularity) comparison within classes LLSs in Sicily VS mainland

	EMPL	PROFIT	EMPL	PROFIT	EMPL	PROFIT	EMPL	PROFIT	EMPL	PROFIT	EMPL	PROFIT
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Shipping Hubs	-0.0063***	-0.0042***										
	(0.0024)	(0.0013)										
Well connected			0.0046	-0.0112***								
			(0.0037)	(0.0022)								
Connected					0.0051	0.0276***						
					(0.0060)	(0.0056)						
Some Road connection only							0.0017	-0.0067***				
							(0.0026)	(0.0020)				
Some other connection only									-0.0008	-0.0085***		
									(0.0049)	(0.0035)		
Not connected											-0.0046*	-0.0028*
											(0.0029)	(0.0020)

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

5. Discussion and conclusions

In this study, by employing a novel comprehensive methodology that facilitates a detailed mapping of performance variations among territories within administrative regions, we have been able to substantiate the hypothesis that, even within a generally homogenous group of underperforming regions, there exist notable and significant differences in the ability of these territories to enable and support the performance of economic actors. These disparities result in a heterogeneous distribution of resilience capacities across Southern Italy. Consequently, this uneven endowment of resilience not only influences the varying capacities of these areas to recover from economic shocks but also outlines distinct potential development trajectories for the future, indicating that tailored policies are necessary, as opposed to a one-size-fits-all approach.

In line with earlier studies (see Fratesi and Perruca, 2018) this analysis reveals a positive relationship between territorial capital and economic performances. In detail, categorizing territories according to their endowments, we have demonstrated the significant influence of territorial factors on regional dynamics. Specifically, urban and coastal areas generally result as more resilient. Furthermore, higher levels of institutional quality positively impact employment growth, although this does not translate as strongly to profitability. Infrastructural endowments play an even more crucial role; SLLs that serve as connection hubs or are well-integrated into transportation networks show markedly positive impacts on development. Conversely, economic actors in poorly connected areas tend to underperform. Additionally, geographical factors, such as insularity, can be highly relevant. In fact, these areas not only face exacerbated connectivity challenges but also experience comparative disadvantages even when they are well-connected.

To recognize the diverse factors influencing resilience across regions can greatly assist policy-makers by offering a more detailed comprehension of the challenges each area faces, a relevant topic to investigate especially with the scope of fostering economy in lagging regions.

From a policy perspective, our findings entail significant implications. Firstly, the quality, transparency, and integrity of institutions are crucial factors that can shape how economic actors respond to economic shocks since high-quality institutions can provide stability and support, enhancing the resilience of economic systems.

Secondly, consolidate and invest on new infrastructures remains a vital component for development and resilience considering that improved and expanded infrastructures can reduce operational costs for businesses and other economic actors.

Finally, infrastructure alone does not address geographical issues such as insularity, which is a form of peripherality. For instance, a major infrastructure like the “Messina Bridge” (Ponte sullo Stretto di Messina), which aims to connect the island of Sicily to the mainland, might not fully resolve the problem since our research indicates that even well-connected hubs and areas suffer from the disadvantages of insularity when compared to mainland regions. Therefore, while such a large-scale infrastructure project might partially reduce Sicily’s peripheral status relative to the mainland, it is unlikely to eliminate it entirely. In this sense, in addition to this public investment, which can be categorized within the group of “major works”, a more effective strategy also involves strengthening internal infrastructure and enhancing shipping hubs. This approach could provide a more substantial advantage by improving connectivity and reducing the isolation of peripheral areas.

A promising avenue for future research might involve broadening the scope of the dimensions of territorial capital investigated in this study, revisiting and potentially refining some

of the dimensions that have been employed. Additionally, there is a significant opportunity to develop a more comprehensive focus on the role of insularity. By doing so, researchers could gain deeper insights into how insularity impacts regional development and resilience, and how it interacts with other territorial factors.

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