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Does decentralization affect local entrepreneurial capacity?

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Abstract

Abstract

In recent decades, decentralization has become a prominent topic in both academic and political discussions, with research increasingly focusing on its implications for economic development. This paper explores a specific facet of this debate by examining how decentralization influences business creation and the survival of new enterprises at the local level. By leveraging a panel dataset covering regions across multiple countries, we assess whether decentralization promotes entrepreneurship and sustains new businesses, particularly through the mediating role of institutional quality. Our findings suggest that while decentralization encourages business creation, it may reduce short-term firm survival rates. Additionally, strong institutional quality seems to amplify decentralization's positive effect on entrepreneurship and mitigate its adverse impact on the survival rate.

Key words: Local Economies, Decentralization, Entrepreneurship

JEL Codes: L26, O43, O52, R11

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1. Introduction

In recent decades, the world has witnessed an increase in the number of countries whose central governments have transferred powers and authority to subnational tiers.[1] This process, known as decentralization, is largely driven by the demands for greater autonomy from territories with distinctive economic, cultural, and social characteristics. Furthermore, this phenomenon is closely related to other contemporary trends such as the integration of global markets and the democratization of many countries worldwide (Marks et al., 2008).

In Europe, the tendency towards decentralization has been particularly pronounced. Previously centralized countries like France and Spain have embarked on the path of devolving powers to regional authorities, while countries with an early start in decentralization, such as Austria and Germany, have continued to deepen this process. Although the global context and national characteristics have undeniably influenced this phenomenon, it has been profoundly shaped by the continent's integration process, where regionalization is cornerstone in the economic agenda and the management of key funds of the European Union's Cohesion Policy, such as the European Regional Development Fund (ERDF).

This phenomenon, so popular in international organizations and often in political debates, has also had a significant impact on the academic world. Building on the work of Tiebout (1956), which established the principle that subnational governments can provide public services more efficiently to meet the heterogeneous needs of the population (and, as we will argue later, of firms), a substantial body of literature has emerged analyzing its potential effects. This has led to major theoretical contributions, such as the Decentralization Theorem (Oates, 1972) and others that will be reviewed throughout this paper.

Nevertheless, the objective of this study is not to directly analyze the effect of decentralization but rather to focus on regional authority. Although these concepts are closely related and complementary, regional authority places special emphasis on the role of the region and its capacity to make decisions and implement policies. In recent years, there have been various methodological contributions aimed at capturing the idea of regional autonomy. For example, Harguindéguy et al. (2021) provide a comprehensive literature review of the variety of indices attempting to measure this phenomenon.

[1] According to Marks et al (2008), approximately 400 political reforms in 42 democratic countries have been implemented since 1950, with an 89% of them increasing regional authority.

However, these studies have primarily concentrated on the fiscal component, often overlooking the multiple dimensions that characterize effective decentralization, including fiscal, political, and administrative aspects.

Recently, Hooghe et al. (2016) and Shair-Rosenfield et al. (2021) made a significant contribution by adapting the Regional Authority Index (RAI) at the regional level, providing a more comprehensive measure of decentralization and local autonomy. Following this, some authors have analyzed the direct impact of regional authority on various outcomes. For instance, Muringani et al. (2019) examined its influence on economic development mediated by institutional quality, while Tselios & Rodriguez-Pose (2020) explored its effects on poverty and social exclusion in Europe. Building on this body of research, we aim to apply this theoretical framework to a previously unexplored set of outcomes related to the regional business demography.

In this study, we focus on the potential link between regional authority and two indicators that capture the main characteristics of firm's environment: the net birth rate and the survival rate. Our main h posits that an elevated level of regional authority could impact business dynamics, characterized by a higher level of entrepreneurship and an environment conducive to long-term economic growth. The main theoretical argument supporting this idea is that regional governments may possess informational advantages regarding the needs of the population and businesses. This advantage would enable them to implement policies and develop legal frameworks that allow for more effective resource allocation, tailored to the specific needs of local entrepreneurs. For instance, they could facilitate initial stage financing, support various phases of business creation, or even promote firm growth in the long run, including fostering internationalization. Furthermore, over the past few decades, the role of institutional quality has been extensively studied as one of the potential determinants or mediators of regional and national economic development. Building on this foundation, we propose the second hypothesis of this study, focusing on the potential heterogeneous effects driven by institutions on business development. Regions with high institutional quality could achieve greater returns from decentralization, while those with poor institutions might utilize increased autonomy and resources in a pervasive manner, thereby negatively affecting entrepreneurial activity and the whole firm's ecosystem. Additionally, deriving from our two main hypotheses, we test the impact between regional authority and the selected set of outcomes in alternative heterogeneous contexts, considering different components of the business demography, and alternative definitions of institutional quality.

To carry out this study, we used a balanced panel dataset containing information on business demographics, institutional framework, and contextual variables for 134 NUTS2 regions across 14 European Union countries for the period from 2014 to 2019.

The main results of our analysis suggest that a higher level of regional authority can stimulate business dynamics, characterized by a net increase in business creation and a negative impact on the three-year survival rate. Additionally, we show that these effects are mediated by institutional quality. Regions with better institutions experience a moderate increase in entrepreneurship and a mitigation of the negative effect on business survival.

This paper makes significant contributions to three distinct literatures. First, it enhances the study of decentralization, specifically regional authority, by highlighting its potential effects on a new set of outcomes. Second, it advances our understanding of the determinants of business demography by considering a broader institutional framework that includes both the quality and autonomy of regional institutions. Third, it enriches the extensive literature on local development by emphasizing the crucial role of regions as principal actors in development.

This study is structured as follows: In the subsequent section, we present the academic literature that has investigated the potential relevance of business demography in economic development and its most significant determinants. Additionally, we review the main studies that have explored the role of decentralization and regional authority in different contexts. Complementing these subsections, we debate the theoretical idea that links these two literatures. Following this, we introduce a section detailing the empirical strategy and data employed in the study. Next, the results section presents the baseline results, a set of estimations considering alternative aspects, and robustness checks. In the final section, we conclude the article with the main findings, limitations, and policy implications.

1. Background

1.1. A review on firm's dynamics

Much of the literature on regional business dynamics has focused on its effects on economic growth. From a Schumpeterian perspective, it is argued that forces generated in markets by the process of creative destruction positively impact development (Aghion & Howitt, 1992). The entry of new competitors plays a crucial role in market processes. These new entities can have three direct effects

on the relationship between the firm's environment and economic growth (Fritsch & Mueller, 2004). First, the arrival of new competitors can induce established companies to operate more efficiently (Baumol et al., 1988). Second, in line with Schumpeter (1942), more competitive newcomers might displace unproductive established firms. Third, the entry of new entities can foster innovation through the creation of new markets resulting from radical innovations (Acs & Audretsch, 1990), leading to a context with a greater variety of offerings where innovation becomes a key element for market survival. An additional mechanism identified is the effect on job creation, a clear precursor to economic growth. In this regard, Fritsch & Mueller (2004) suggest that the positive effects of an increased number of new entries on employment creation could have a delayed impact of up to 5 years, peaking in the eighth year. Moreover, they argue that these effects might be negative in the initial period since productivity efficiency improvements could negatively impact the creation of new jobs in the short term. This last argument suggests that for business creation to have a significant impact on economic development, these new companies must have the capacity to enter the market and survive for a minimum period. Complementing this view, Garcia-Macia et al. (2019) question to what extent creative destruction is the dominant process in economic development, suggesting that it accounts for only one quarter of the observed growth and noting that innovations made by incumbent firms play a larger role as determinants of development.

Given the importance of regional business demographics for economic development both locally and nationally, extensive literature has analyzed the potential determinants of this phenomenon. On one hand, some economists have focused on the impact of demographic factors. In this regard, there is a broad discussion about the potential effects of population density, stemming from economies of agglomeration and the urbanization process (O'Leary et al., 2023). Combes et al. (2012) highlight the effects of economic agglomeration on increasing levels of competition and productivity. McCann & Folta (2008) emphasize the importance of location, suggesting that businesses could benefit from higher levels of activity in congested areas, in addition to facing higher demand which could potentially reduce their failure rates (Ciccone & Hall, 1996). On the other hand, the age of entrepreneurs might be a relevant factor in determining the propensity to engage in entrepreneurship. Bosma et al. (2000) suggest that older entrepreneurs have a lesser impact on business creation, although they indicate that young entrepreneurs have a lower long-term survival rate, noting that age matters not only for the decision to create businesses but also for the probability of long-term success.

Among the economic factors most analyzed as determinants of entrepreneurial capacity, unemployment levels have often yielded inconclusive results, as noted by Audretsch et al. (2007).

The literature identifies unemployment as having dual, opposing effects—it can act as both a push and a pull factor (O'Leary, 2023). On the one hand, unemployment may drive individuals toward entrepreneurship due to a lack of alternative employment opportunities, thereby reducing opportunity costs. Additionally, a high unemployment rate could lead to business failures, which might redistribute resources to alert entrepreneur's keen on capitalizing on market opportunities (Kirzner, 1999). On the other hand, increased unemployment might also depress consumption levels, thereby reducing demand and the profitability of new entrepreneurial ventures (Gajewski & Kutan, 2018). Further mediators in this relationship that additionally impact the business environment include the level of human capital and the prevalence of high-tech sectors (Acs et al., 2007; Audretsch et al., 2015). These studies suggest that the knowledge acquired through higher education significantly impacts entrepreneurial capabilities and the likelihood of business success, while also underscoring the positive returns from innovation. Additionally, some authors have indicated a negative impact of large enterprise sizes on new business creation rates (Armington & Acs, 2002), reflecting a greater business concentration within larger firms, which also influences survival rates (Mata, 1995).

Access to financing and political stability are critical factors influencing the decision to start businesses and their chances of survival. Financial constraints, as Kerr & Nanda (2009) point out, represent a significant barrier to entrepreneurship globally, underscoring the crucial role of venture capital markets. This is particularly true as innovation typically requires considerable capital, which tends to be scarce in the initial stages of a startup. Furthermore, political risk introduces a problem of temporal inconsistency where political actors are not credible, severely hampering the development of financial markets (Roe & Siegel, 2011). Dutta et al. (2013) also suggests that higher levels of instability lead populations to take fewer risks, thus impeding entrepreneurial efforts. These elements highlight the complex interdependencies between financial resources, political environments, and entrepreneurial activity.

In addition, the macroeconomic environment directly impacts business dynamics. Audretsch et al. (2015) suggest that increased public spending can catalyze business activities, facilitated by improvements in infrastructure. However, there is a delicate balance to be maintained, as Kreft & Sobel (2005) argue, excessive state intervention can discourage entrepreneurial initiatives. This indicates that while government action can provide necessary support for business growth, overregulation or too much interference could stifle the entrepreneurial spirit.

1.2. The economic returns of decentralization

Decentralization has emerged as a global phenomenon, attracting significant interest from both policymakers and academics due to its potential to enhance governance and economic outcomes. The concept of decentralization is deeply rooted in the field of Fiscal Federalism. Tiebout (1956) introduced the principle that redistributing powers from central to subnational governments is beneficial because subnational entities possess a better understanding of the diverse preferences of their local populations. This foundational idea aligns with Hayek (1945) emphasis on the importance of information use. Expanding on this, Oates (1972) formulated the Decentralization Theorem, which posits that fiscal decentralization not only provides benefits through informational advantages but also through resource allocation efficiency. This improvement stems from subnational governments' ability to craft policies that closely match the needs of their constituents, given that the provision of goods from central governments is more homogeneous and fail to account for the regional heterogeneity. These theories collectively suggest that decentralization fosters greater government accountability and boosts citizen participation in political decisions, leading to more effective public goods provision (Faguet, 2002). Brennan and Buchanan (1980) further argue that decentralization can help regulate the size of the state through fiscal competition among various national subcomponents. Additionally, Rodríguez-Pose & Ezcurra (2010) contend that decentralization can enhance effectiveness by reallocating underutilized resources.

However, the desirability of decentralization is not without contention. Alesina et al. (2000) suggest that the benefits of decentralization may be limited to large, heterogeneous territories, while smaller, more homogeneous countries might not experience significant advantages. Furthermore, excessive fiscal competition between regions could lead to suboptimal tax levels, diminishing local revenues and causing inefficiencies (Oates, 1999). Prud'homme (1995) highlights potential drawbacks such as diseconomies of scale and increased interregional inequality due to the differing fiscal capacities of wealthy and poorer regions. Decentralized decision-making could also impede coordinated national responses and result in duplicative efforts, reducing overall efficiency (Bolton & Farrell, 1990). Moreover, greater regional authority might expose policymakers to higher corruption risks, influenced by the closeness to local interest groups (Prud'homme, 1995; Treisman, 2002).

Empirical studies on decentralization have predominantly focused on national-level analyses to assess its impact on economic development indicators, with many yielding inconclusive results (Rodríguez-Pose & Ezcurra, 2010; Lago-Peñas et al., 2020). This suggests a high degree of complementarity between the level of regional autonomy and other factors, particularly institutional quality. North

(1990) argues that institutions set the rules of the game and significantly influence economic development. This area has been extensively examined in European regional literature (e.g., Rodríguez-Pose & Di Cataldo, 2015; Rodríguez-Pose & Ganau, 2019; Barbero et al., 2021), highlighting its importance in determining regional outcomes. Some scholars have established a clear link between institutional quality and the business environment. The study by Nistotskaya et al. (2015) explores how corruption affects entrepreneurship, positing that regions with lower perceived levels of corruption experience higher rates of small and medium-sized enterprise (SME) creation. Their research supports the hypothesis that in areas where governments are perceived as more impartial and less corrupt, there is a significantly larger number of SMEs. This correlation is attributed to the impact of perceived governmental impartiality on individuals' decisions to initiate and operate legal businesses. They also note that in more decentralized countries, the distribution of active business stock is more equitable, suggesting that decentralization may enhance fairness in business opportunities across regions

Our approach diverges from the prevailing literature by examining the direct impact of increased regional authority in the regions, rather than focusing on the effects decentralization at the national level. This perspective allows us to capture variations in authority levels among regions within the same country. We utilize the Regional Authority Index (Hooghe et al. (2016); Shair-Rosenfield et al. (2021)), which provides a precise and time-variant measure of the authority exercised by regional governments. Although literature on this specific aspect is limited, recent studies indicate a significant impact on various outcomes. For instance, Muringani et al. (2019) find that regional authority positively influences economic development in regions with adequate institutional quality, a finding supported by Rodríguez- Pose and Mustra (2022). Additionally, Tselios & Rodríguez-Pose (2021) highlight that higher levels of decentralization are associated with poverty reduction at the regional level, regardless of the degree of institutional quality. Some authors have also considered the effect of regional authority at the national level and highlighted the role of institutions as essential mediators of the relationship between decentralization and various outcomes. For example, Rodríguez-Pose & Tselios (2019) show that decentralization (measured by the RAI) can affect the well-being perceptions of European citizens based on who delivers public services and the quality of their delivery, suggesting that the effect largely depends on institutional quality. Tselios (2022) further underscores that these strategies might not only reduce poverty but also income inequalities, while acknowledging the moderating effect of the institutional context.

1.3. The theoretical link between decentralization and firms' demography

Our literature review has identified an unaddressed gap across prevailing scholarly discussions. To date, no study has directly explored the connection between enhanced regional authority (encompassing fiscal, political, and administrative dimensions) and business dynamics. However, existing contributions allow us to establish a common link between these disciplines.

Firstly, the most significant factor may be a region's ability to enact policies that align with the specific needs of its business environment. This issue is particularly relevant in Europe, where, as Iammarino et al. (2019) point out, there is considerable regional variability in economic development levels. This suggests that perhaps centralized policies may not adequately meet the diverse entrepreneurial needs across different regions. Additionally, an increased capacity to tailor fiscal systems could encourage local authorities to foster business creation. For example, Sobel et al. (2013) argue that higher levels of decentralization tend to lead to the formation of more business-friendly tax regimes, thereby promoting a conducive business climate. Building on these insights, our primary hypothesis posits that greater local autonomy could stimulate business dynamics at the local level, characterized by high levels of entrepreneurship and business survival.

However, as most scholars note, the impact of regional power is not merely about the extent of authority but also how effectively it is utilized, highlighting that the quality of governance plays a critical role in the outcomes of decentralization. In this context, a region with high institutional quality might benefit from increased authority, as it is likely to be used responsibly and with aims toward achieving greater efficiency. Conversely, granting power to a region with relatively poor institutional quality could be detrimental, as policymakers might use this autonomy for personal gain, fostering an environment of corruption and inefficiency in public resource allocation. Thus, our second hypothesis derives from the potential heterogeneous effects of increased power, conditioned on the quality of established institutions.

Through this conceptual framework, this work contributes to a deeper understanding of the effects of decentralization, particularly focusing on business dynamics. It also adds to the growing body of literature that considers regional institutional environments in a multidimensional manner, integrating both autonomy and quality as complementary factors.

2. Empirical Strategy

2.1. Specification

To capture the impact of regional authority on business demography, we propose the following specification:

$$\begin{aligned}&\text{Business Demography}_{i,t}\\&= \beta_0 + \beta_1 \text{Regional Authority}_{i,t-1} + \beta_2 \text{Institutional Quality}_{i,t-1}\\&+ \beta_3 \text{Regional Authority}_{i,t-1}\ x\ \text{Institutional Quality}_{i,t-1} + \gamma X_{i,t} + \mu_i + \gamma_t + \varepsilon_{i,t}\end{aligned} \quad (1)$$

where *Business Demography* represents the different outcome variables in region *i* during period *t*, which includes: net firm birth rate, firm survival rate, firm birth rate, firm death rate and churn rate. The variable *Regional Authority* corresponds to the Regional Authority Index in region *i* for period *t-1*. The variable *Institutional Quality* corresponds to different indicators referring to region *i* and period *t-1* capturing the degree of the quality of the regional institutions across different dimensions: overall institutional quality, government effectiveness, corruption, and rule of law. Additionally, since the impact of having regional power with more or less authority could be conditioned by a series of determinants, we propose the introduction of the interaction between the two previous variables to consider potential heterogenous effects. The vector X encompasses a set of control variables at both the regional and national levels. Furthermore, the specification includes regional fixed effects (μ_i) to capture unobservable time-invariant regional heterogeneity, and time fixed effects (γ_t) to account for unobservable factors that are common across regions but vary over time. Lastly, $\varepsilon_{i,t}$ denotes the idiosyncratic error term.

In our case of study, we directly assess the influence of regional authority conditioned on the level of institutional quality. Consequently, the effect of interest is given by the following equation:

$$\frac{\partial \text{Business Demography}}{\partial \text{Regional Authority}} = \beta_1 + \beta_3 x \text{Institutional Quality} \quad (2)$$

Accordingly, in all the estimations we can find the Average Marginal Effect (AME) of the regional authority as well as the marginal effects at different percentiles of the distribution of institutional quality.

As in most empirical studies, one of the main threats to the credibility of our estimation is potential endogeneity, which could bias the estimate of the effect of interest. Below, we detail the different

ways in which this could be a problem and how we attempt to address it. Firstly, our relationship of interest could be affected by the omission of relevant variables. Consequently, we introduce a comprehensive set of control variables identified in prior literature as key determinants of business demography. Additionally, we include regional fixed effects and time fixed effects, allowing us to control unobservable characteristics. While we believe that our set of controls and fixed effects accounts for most of the drivers of entrepreneurship and provide a strong basis for confidence in estimated parameters, there may still be some relevant omitted variable potentially affecting our estimation. However, most of the determinants of regional authority are likely to be time-invariant, reducing the risk of having an omitted variable that simultaneously affects the business demography. Additionally, given the short period under analysis, we do not expect to find relevant macroeconomic changes that could affect significantly our estimation. Secondly, we could face a problem of reverse causality if regions with higher business dynamism demand greater autonomy. However, we consider this case to be of limited relevance in our study. While it is reasonable that more dynamic regions might demand more power, the level of regional authority (or the degree of a country's decentralization) is likely determined by national political factors or historical causes rather than by the economic dynamics of a particular region at a given time. Furthermore, if the evolution of the business environment had an effect on the degree of local autonomy, this would likely be reflected in the long run rather than in the short term. Nevertheless, given that we conduct the estimation considering one lag of the main explanatory variables[2], we are partially getting rid of potential contemporaneous effects. Lastly, our variable of interest aims to capture a concept that is inherently difficult to define and, consequently, challenging to measure, potentially leading to a measurement error problem[3].[3] However, this would imply an attenuation bias, meaning that the effect of the regional authority would be a lower bound of its true value, underestimating the variable's impact on business dynamics.

[2] The introduction of one lag in both variables is driven by two reasons: on the one hand, we believe that the effect of the institutional setting (autonomy and quality) does not affect immediately the business landscape. On the other hand, we try to avoid contemporaneous effects between the dependent and the explanatory variables.
[3] The measurement error concern arises from the intrinsic problem of measuring the concept of decentralization. However, the authors of the RAI have performed an exhaustive validation that underscores the validity of the index and its suitability for empirical studies trying to capture the regional autonomy.

2.2. Data

To conduct this study, we utilized various publicly accessible databases. Our final dataset comprises a total of 134 NUTS2 regions from 14 European Union countries over the period 2011-2019. While the primary focus of our analysis is the period 2014-2019 we also performed an alternative estimation including the period 2011-2013 to assess potential heterogeneous effects of the regional authority during different phases of the business cycle.

2.2.1. Business Demography Variables

The business demography data used in this article was obtained from the Eurostat Database, specifically from the Business Demography Statistics. This annual publication provides information for most European regions from 2008 to 2021. One of the main limitations of this statistical source is the absence of data for some countries (e.g., Germany, Greece, or Belgium) and data breaks in certain time series (e.g., Netherlands, or Czechia) due to the non-mandatory nature of these statistics. Nevertheless, we managed to compile a sample of 14 countries, which we consider representative of the European continent, including observations from Western, Central, and Eastern Europe, as well as Mediterranean and Nordic countries.

As mentioned earlier, we focus on the analysis of two indicators that capture the business dynamics of the regions. First, we employ the net birth rate as a measure of entrepreneurial capacity. In this sense, we consider that a larger number of net births is suggestive of a high entrepreneurial capacity in the region. Complementing this variable, we also provide the birth rate, the death rate and the churn rate, since we think that could be interesting to see how the relationships are between these indicators. For instance, it could be the case the net birth rate is driven by a large birth rate (which is closely related to the entrepreneurial concept), a low death rate (which could be related to stability and to the survival rate) or other complementarities. Furthermore, the churn rate has been previously considered as a measure of the "creative destruction". Second, we utilize the three years survival rate as a measure of the mid-run survival rate, which allows us to observe the health of the business environment. As seen in the literature review, although a good entrepreneurial system is important to replace unproductive firms and foster innovation, the success of firms in the long term is essential to contribute to economic growth.[4] In *table 1* we provide a detailed description of the variables employed.

[4] Ideally, considering the survival rate at 5 or more years would be interesting to capture long-term dynamics. However, we can just employ it at 3 periods due to data limitations.

Table 1. Description of the dependent variables

Variable	Description	Source
Net Birth Rate	Difference between birth rate in t and death rate in t	Eurostat
Survival Rate	Number of births in t-3 having survived until time t over the number of firms born in t-3	Eurostat
Birth Rate	Number of births in t over the number of firms active in t	Eurostat
Death Rate	Number of deaths in t over the number of firms active in t	Eurostat
Churn Rate	Sum of birth rate in t and death rate in t	Eurostat

2.2.2. Regional Authority Index

To conduct this study, we used the Regional Authority Index developed by Hooghe et al. (2016) and Shair-Rosenfield et al. (2021) as a measure of the level of regional authority. This index is published annually and covers the period from 1950 to 2018 for 96 countries. The variable is quantified on a scale from 0 to 30, where a higher score indicates greater authority. The indicator encompasses two main elements of regional authority: self rule and shared rule.

The first component, self-rule, represents the authority exercised by regional governments over the population within their respective regions. It accounts for 18 out of the total 30 points of the index and is evaluated through five dimensions: institutional depth, policy scope, fiscal autonomy, borrowing autonomy, and representation. The second component, shared rule, evaluates the authority exercised by regional governments or their representatives at the national level. It contributes 12 points to the total index and is assessed in five dimensions: lawmaking, executive control, fiscal control, borrowing control, and constitutional reform.

One of the main challenges in using this index is the varying levels of subnational government across countries (also known as multilevel governance). For instance, Spain's territorial organization is based on two main tiers:[5] Comunidades Autónomas (tier 1) and Provincias (tier 2), with the former exercising greater authority. Conversely, in Portugal, tier 1 (Comissões de Cooperação e Desenvolvimento Regional) holds a lower level of authority compared to tier 2 (Comunidades

[5] The regional organization is structured into five tiers, encompassing comunidades autónomas, provincias, comarcas, urban areas, and municipalities. However, for the purposes of this project, only the first two tiers are relevant.

Intermunicipais). To address this complexity, we follow the methodology of Muringani et al. (2019), assigning the tier with the highest level of regional authority to the NUTS2 regions. Therefore, while in Spain the highest tier in terms of authority coincides with the NUTS2 level used in this study, in other cases such as Portugal or Czechia, we integrate the level of the most authoritative tier to the NUTS2 level.

Additionally, in the case of Spain, we had to aggregate certain competencies from lower tiers to the most authoritative level for two reasons. First, regions such as the Basque Country have a special autonomous condition derived from the "Régimen Foral". This status grants a series of competencies related to fiscal autonomy at the provincial level. Consequently, the region initially appeared as one with the least authority. After aggregating these competencies to the highest tier, the Basque region had the same authority level as Navarra. Secondly, we had to adjust for regions comprising more than one province. The reason is that the index accounts for the representation of territories in the national parliament, specifically the Senate in Spain. Thus, single-province regions were counted with this representation, while multi-province regions were not, as their representation was accounted for in a lower tier.

2.2.3. Regional Institutional Quality

To construct the variable for the regional quality of government, we rely on two different databases. First, we use the European Quality of Government Index (EQI), a regional survey that collects the experiences and perceptions of European citizens regarding the public sector, evaluating three dimensions: corruption, impartiality, and the quality of public services. This publication is released periodically every four years and covers 198 European regions with a total of 78,000[6] respondents (Charron et al., 2015;2019;2022).

However, the use of the EQI as an indicator of local government quality presents some limitations. First, the survey is based on the perceptions of the population regarding three items, with each region having only 200-400 respondents.[7] Second, for the period under analysis, we do not have a sufficient time series to cover all the years. Finally, the index does not consider national factors which may be

[6] The survey sample size depends on the publication wave. While the EQI initially covered around 34.000 respondents, recent waves have notably increased the number of participants. The values mentioned in the text correspond to the 2017 survey.

[7] In any case, the authors have checked the consistency and the validity of the indicator as a reliable measure of the quality of the institutions at the regional level (Annoni & Charron, 2019).

having an impact on regional institutional quality, such as the legal framework, the political system, and others.

To mitigate these limitations, we employ a procedure widely used in the economic literature regarding regional institutional quality (Charron et al. (2010); Rodriguez-Pose & Garcilano (2015); Rodriguez-Pose & Di Cataldo (2015)). Assuming that the variation within countries is limited over short periods, we integrate the EQI with the World Governance Indicators (WGI) published by the World Bank (Kaufman et al., 2010). These indicators assess the quality of government across six dimensions (Government Effectiveness, Corruption, Regulatory Quality, Rule of Law, Voice and Accountability, and Political Stability). To make both indicators comparable, the last two dimensions are excluded. To construct the *IQ* variable, we use the following equation:

$$IQ_{i,c,t} = WGI_{c,t} + (EQI_i - \overline{EQI_C} \quad (3)$$

where $IQ_{i,c,t}$ represents the institutional quality of region *i* in country *c* on period *t.* The $WGI_{c,t}$ corresponds to the national indicator on country *c* in period *t.* EQI_i refers to the value of the region obtained in the regional survey[8] and $\overline{EQI_C}$ represents the population-weighted average value of the regional survey in country *c*. This procedure allows us to obtain an institutional quality indicator that accounts for national time variation and regional variability, as well as provides us the possibility to extend the time series over the period under analysis. As we can observe, all regions within a country share the WGI value, but those with a regional quality above the national average will have a higher IQ compared to those below the national average.

Although this approach is the most common in previous studies analyzing European regional institutions, it relies on a strong assumption which implies that the variation in regional institutional quality levels evolves similarly to national-level indicators. While it is true that regional variation is more stable, we consider this to be a methodological limitation that could introduce a slight degree of measurement error in the concept of regional institutional quality.

[8] We use the average of 2013, 2017, and 2021 waves to compute the EQI value. We have also tried different approaches (assigning each year the nearest time value, extending the survey value for all periods until the next wave, and using linear interpolation), and the results were consistent.

2.2.4. Control variables

As mentioned earlier, we use a comprehensive number of variables that have been identified in previous literature as potential determinants of business demography. On one hand, we control for a series of regional-level indicators: population density (as a proxy for the degree of regional urbanization and potential economic agglomeration effects), median age of the population (younger population could be a determinant of the region's entrepreneurial capacity), percentage of the population with higher education, human resources dedicated to the scientific and technological sector (these two aiming to capture the effect of human capital and the efforts in R&D), average firm size (as a measure of the degree of market concentration), GDP per capita in PPP, and the unemployment rate (the latter two lagged by one period since we consider they could be partially determined by the business dynamics and as proxies of the regional economic context). On the other hand, we control for a series of national-level factors that could influence the entrepreneurial dynamics of the regions: public expenditure of the country (as a proxy for the level of state intervention in the economy), stability (aiming to capture the degree of political stability), long-term interest rates, and venture capital intensity per capita (the latter two as proxies for the ease of obtaining financing).

2.3. Descriptive Statistics

Table 2 shows the main characteristics of the variables analyzed in this study for the period 2014-2019. We observed 134 regions continuously over 6 years, providing us with 804 observations and enabling us to work with a balanced panel. The average net birth rate for the period was 2,5%,[9] with minimum value of -2.4% and a maximum of 15%. The survival rate displays an average of 58,5%, with a minimum of 15.7% and a maximum of 79%. Overall, these statistics suggest a noticeable degree of variation across regions in Europe. In addition, we include the following figures that depict the detailed distribution of the average annual dependent variables across the countries in our sample, offering further insight into this variability, as well as two choropleth maps to show the geographical distribution of the main explanatory variables across the regional sample.

[9] Notice that the original values are between 0 and 1. We transform the variables in percentages to get an easier interpretation.

Table 2. Descriptive statistics for all the variables during the period 2014-2019

Variables	Mean	Std. Deviation	Minimum	Maximum
Dependent Variables				
Net Birth Rate	0.024	0.021	-0.024	0.150
Survival Rate	0.585	0.084	0.157	0.790
Birth Rate	0.099	0.028	0.051	0.294
Death Rate	0.075	0.025	0.032	0.224
Churn Rate	0.174	0.048	0.090	0.518
Main Explanatory Variables				
Regional Authority	13.770	6.844	2	25.5
Self Rule	10.524	3.607	2	17
Shared Rule	3.209	3.923	0	10.5
Institutional Quality	0	1	-2.434	2.670
Government Effectiveness	0	1	-2.837	2.631
Corruption	0	1	-2.760	2.464
Rule of Law	0	1	-2.918	2.608
Controls				
Density	261.790	562.713	6.30	4808.90
Firm's Size	4.265	1.318	2.309	13.545
Median Age	43.322	2.596	36.400	50.800
SciTech Workers	29.317	7.646	12.700	52.200
Education	28.074	9.744	11.400	55.900
GDP per capita	26021	9469	7400	64600
Unemployment	9.795	5.803	1.300	36.200
Political Stability	0.549	0.362	-0.106	1.282
Venture Capital	356.155	492.640	0.027	2164.944
Public Expenditure	47.035	6.714	33.200	58.500
Interest Rate	1.568	1.162	-0.180	4.810

Note: All variables include 804 observations. The variables GDP per capita, Venture Capital and Density are
introduced in logs when performing the estimations.

Figure 1. Average Net Birth Rate across and within countries over the 2014-2019 period

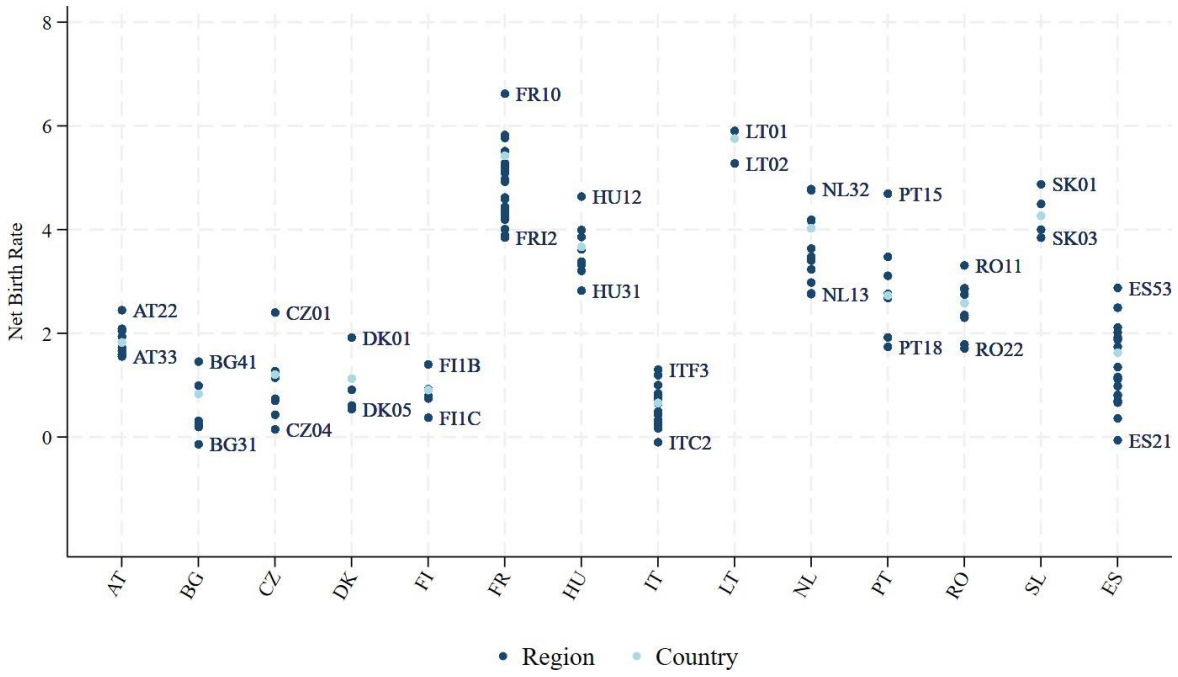
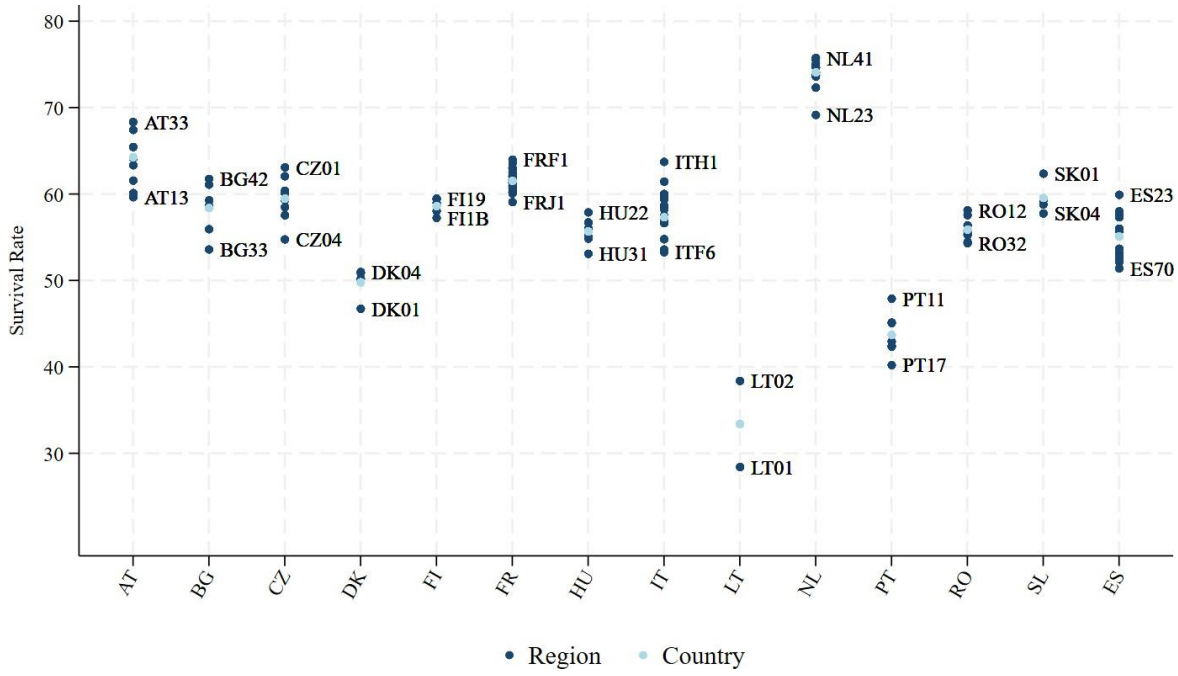
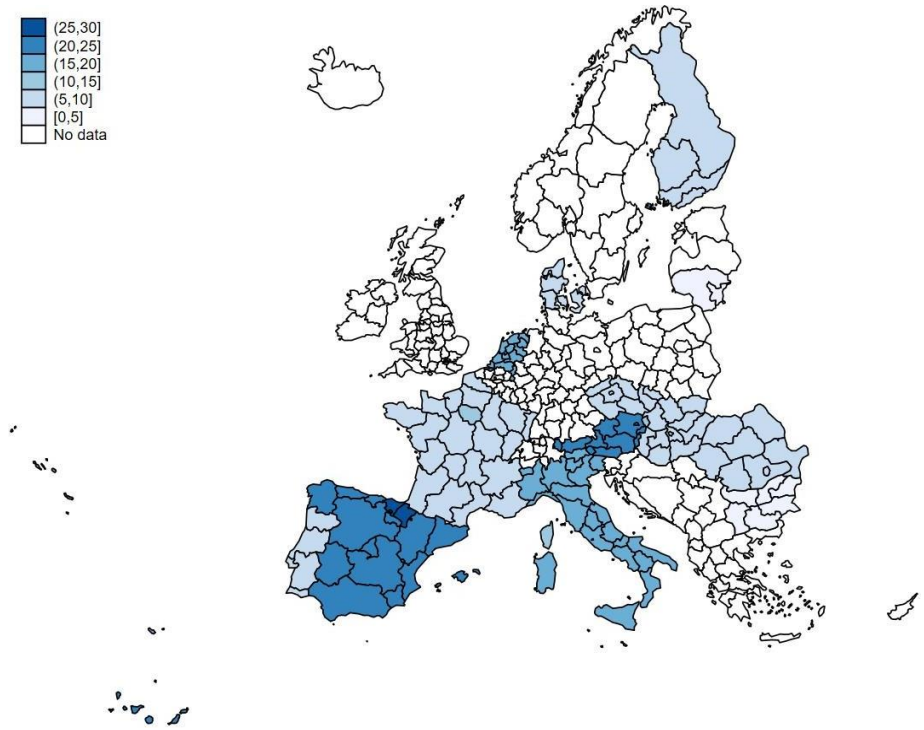


Figure 2. Average Survival Rate across and within countries over the 2014-2019 period



Map 1. Average Regional Authority across regions over the 2014-2019 period



Map 2. Average Institutional Quality across regions over the 2014-2019 period

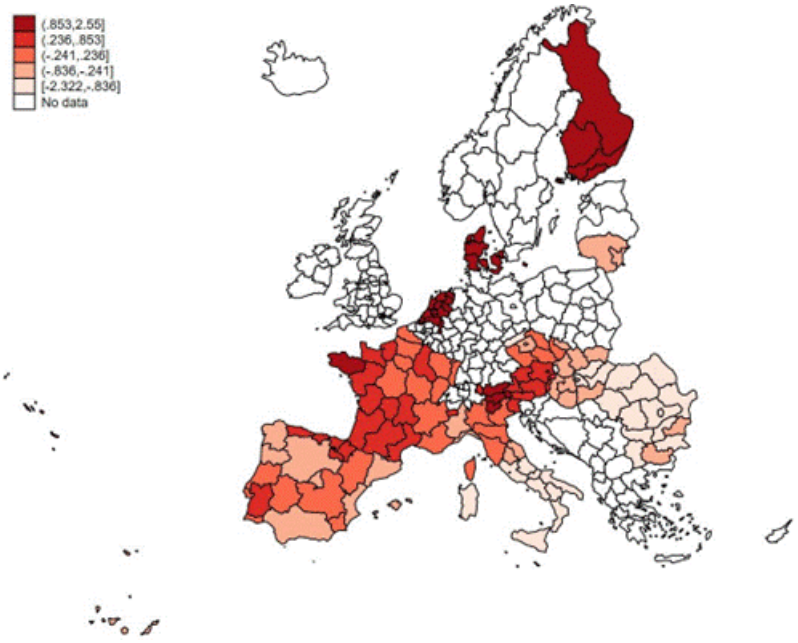


Figure 1 illustrates the distribution of the average net firms' birth rate across countries (light blue) and regions (dark blue) for the period 2014-2019. On a national level, the variable shows significant variability. At the lower end, countries such as Bulgaria, Czechia, Denmark, Finland, and Italy have an average annual rate of around 1%. Conversely, Lithuania leads in business creation, followed by France, Slovakia, and the Netherlands, with rates ranging between 4-6%. In contrast, the variability at the regional level is even greater. Most regions, except for Vidin in Bulgaria (BG31), Valle d'Aosta in Italy (ITC2), and the Basque Country in Spain (ES21), exhibit positive net rates. Notably, the region with the highest rate is Île de France (FR10), exceeding 6%. A closer examination reveals that capital regions typically have the highest business creation rates nationally. Specifically, in 10 out of the 14 countries analyzed, the capital region ranks first in terms of net enterprise formation. Furthermore, the remaining four capital regions also rank among the highest in the distribution, reinforcing the trend that capital regions are central to business creation dynamics.

Figure 2 presents the same type of graph, this time analyzing the distribution of the firm survival rate. As before, we observe significant variation among countries. The Netherlands leads the list with an average value of approximately 70%, implying that 7 out of 10 firms established three years ago in the country survive to the present period. Conversely, Lithuania is at the opposite end, with 70% of firms established three years ago failing to survive past three years. At the regional level, we again observe considerable variability, although not as much dispersion as before. In this case, the pattern previously noted for capital regions does not hold.

Map 1 shows the distribution of the average regional authority across European regions for the period 2014-2019. We can observe a wider variation between countries than within countries, although there are differences across regions within the same countries (for instance, the Basque Country and Navarra in Spain, the Azores and Madeira in Portugal, among others). The low values of autonomy are specially concentrated in the eastern regions of Europe, partially driven by the legacy of the Soviet Union controlling regions under a centralized authority.

Map 2 displays the distribution of the average institutional quality across European regions for the period 2014-2019. In this case, we observe wider differences across regions within the same countries. Classical characteristics of the geographical distribution of this variable can be noticed in the picture. For instance, we can identify the clear north-south divide in Italy, the concentration of poor institutions in Eastern European regions, and the prevalence of good institutions in the northern regions of the continent.

3. Results

In this section, we present the findings of our estimation on the impact of regional authority on various business demography indicators. First, we provide the baseline results, offering evidence to support our main hypotheses. In subsequent sections, we explore the heterogeneity of the effect in greater detail, considering different components of business demography, the economic cycle, various institutional dimensions, and the effect of self-rule.

3.1. Baseline Results

The estimation results for the impact of Regional Authority on business demography indicators are summarized in *Table 3*. We focus on two key outcomes: net birth rate and survival rate. The first three columns of the table correspond to the first one, while the last three pertain to the second. In all specifications, we consider the effect of the regional authority alongside the variable institutional quality and the interaction between both, always incorporating time fixed effects.

We begin by analyzing the first outcome. Column (1) represents the most basic version of the specification, excluding controls and region fixed effects. In column (2) we additionally introduce region fixed effects.[10] Finally, column (3) shows the most demanding estimation, in which we estimate the model employing Two-Way-Fixed-Effects (TWFE) and a comprehensive set of control variables at both regional and national levels. To interpret the impact of the coefficients, the second part of the table shows the AME and the marginal effects at different percentiles of institutional quality. We observe that the AME is significant and positive, with a value of 0.019. Considering different percentiles of institutional quality, we observe that the effect of regional authority on entrepreneurship increases as the institutional context improves. For example, the effect in a region located in the 75th percentile of institutional quality, such as Burgenland in Austria, is approximately 32% larger than in a region in the 25th percentile, such as Dél-Alföld in Hungary. Notably, the effect in regions with the highest institutional quality (90th percentile) is double that in regions with the worst institutions (10th percentile).

Regarding the second outcome, the AME suggests a negative and significant impact of 0.031 of the Regional Authority on the survival rate. On the other hand, we observe that institutional quality has

[10] Given that the institutional quality variable is standardized and has a mean of 0, the coefficient β_1 can be interpreted as the partial effect at the mean.

a fundamental effect as a mediator of this relationship. In regions with the poorest institutional framework (10^{th} percentile), the negative effect of regional authority is significant and 4.16 times the effect in regions with the best institutional environment (90^{th} percentile). Additionally, we observe that the effect is only significant for regions that are below the median of the distribution.

In conclusion, the results suggest a positive impact of regional authority on the entrepreneurial capacity of the region, with a notable mediating effect of institutions. Additionally, the effects on the survival rate are inconclusive. Although we find a net negative effect, this seems to be relevant only for regions with a low level of institutional quality. Furthermore, we must consider the magnitude of the effect. At first glance, one might think that changes in regional authority, often involving significant legal amendments, constitutional revisions, and political and territorial restructuring, would lead to only a modest increment of 1.9 percentage points in the net births rate and a decrease of 3.1 percentage points in the survival rate. However, these are equivalent to 1 and 1/3 of standard deviation respectively, which underscores the relevance of the effect that enhanced authority levels can have on the business demography.

Based on these results, we propose the following theoretical mechanism. First, we must consider what we believe is one of the most relevant findings of business literature: it is not only important to have entrepreneurship to foster economic growth, but it is also necessary that enterprises endure over time to contribute to development. In this context, we find that generally, greater regional authority is associated with higher levels of entrepreneurship and a low survival rate, which suggests that the level of competition might be causing excessive business replacement. In this scenario, the role of institutions is crucial. It seems that in contexts with high institutional quality, increased regional authority can enhance entrepreneurship levels, mitigating the effects of excessive creative destruction. Conversely, regions with low institutional quality may promote the inception of companies but fail to counteract the negative effects of competition, leading to a process of destructive creation. This has serious implications for the long run, as Garcia-Macia et al. (2019) suggest, since most economic growth is driven by innovations in already established companies. Therefore, institutional quality might not only moderate the effect between authority and business dynamics but also be a necessary condition to transform entrepreneurial activity into long-term growth

Table 3. Baseline Results

VARIABLES	Net Birth Rate	Net Birth Rate	Net Birth Rate	Survival Rate	Survival Rate	Survival Rate
Regional Authority	-0.001***	0.019**	0.020**	0.002*	-0.015**	-0.030***
	(0.000)	(0.008)	(0.009)	(0.001)	(0.006)	(0.009)
Institutional Quality	-0.001	-0.065***	-0.072***	-0.040***	-0.219***	-0.185***
	(0.004)	(0.012)	(0.014)	(0.012)	(0.063)	(0.061)
Regional Authority x Institutional Quality	0.000	0.005***	0.004***	0.005***	0.017***	0.014**
	(0.000)	(0.001)	(0.001)	(0.001)	(0.005)	(0.005)
Constant	0.031***	-0.255**	-0.086	0.534***	0.727***	-1.654
	(0.004)	(0.117)	(0.611)	(0.017)	(0.085)	(1.698)
Marginal effects at different percentiles of Institutional Quality						
AME			0.019**			-0.031***
			(0.009)			(0.009)
10%			0.013			-0.050***
			(0.009)			(0.008)
25%			0.0174**			-0.039***
			(0.009)			(0.008)
50%			0.020**			-0.029***
			(0.009)			(0.009)
75%			0.023***			-0.020*
			(0.009)			(0.011)
90%			0.026***			-0.012
			(0.009)			(0.013)
Time Fixed Effects	x	x	x	x	x	x
Region Fixed Effects		x	x		x	x
Controls			x			x
Observations	804	804	804	804	804	804
R-squared	0.109	0.145	0.250	0.235	0.338	0.421

Note: Cluster robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The main explanatory variables are lagged one time period. The R-squared presented correspond to the Within R-quared in the colums (2)-(3) and (5)-(6)

3.2. Impact of decentralization on different components of the business demography

To explore the previously obtained results in greater depth, we conducted various estimations considering the different components that constitute the net birth rate. First, we analyzed whether the effect on net business creation is attributable to impacts on the creation of businesses and/or business closures. Consequently, the results for these variables are displayed in the first two columns of Table 4. Additionally, we investigated the effect of regional authority on the business churning rate, the results of which are presented in the third column. In this instance, all three estimations were implemented using the TWFE method, while incorporating a set of observable controls.

The first column of Table 4 shows that the impact of regional authority on the birth rate is positive and significant. The AME has an impact of 0.021, which is consistent with the results obtained in the previous estimation with the net births rate. In this case, we observe that the mediating effect of institutional quality on the relationship of interest is lower than previously obtained, although the impact on the birth rate is 31% larger at the 90th percentile than the 10th percentile. The second column suggests that the AME is insignificant, although at the 10th percentile, we find a positive and marginally significant effect. Finally, we find that the churn rate has a positive and significant effect, with results appearing to be primarily driven by the birth rate. No significant differences are found between the different percentiles of institutional quality. As previously mentioned, the churn rate was constructed using the sum of the birth rate and the death rate. It is possible that in regions with higher institutional quality, the churn rate is largely influenced by the birth rate with a null effect from business deaths, whereas in regions with poor institutional quality, part of the effect could be derived from business deaths.

In line with the previous interpretation, the disaggregated results suggest that the effect on the net business birth rate stems from a direct impact on the birth rate, indicating the region's capacity to promote entrepreneurship. Additionally, good institutions increase the magnitude of this effect. On the other hand, the results appear to be nonsignificant for business deaths, except in regions with the lowest institutional quality. This finding aligns with the mechanism we proposed in the previous section. It could be that the higher mortality in regions of low institutional quality is driven by increased competition, while the effect in regions with better institutional quality is nonsignificant. The churn rate indicates that, generally, the dynamism is similar across all regions, although it seems partly driven by higher mortality in environments with low institutional quality and by a higher birth rate in regions with high institutional quality, consistent with the theoretical mechanism we previously proposed.

Table 4. Results exploring the different components of business demography

VARIABLES	Births Rate	Death Rate	Churn Rate
Regional Authority	0.021**	0.001	0.022***
	(0.008)	(0.002)	(0.008)
Institutional Quality	-0.065***	0.007	-0.057***
	(0.011)	(0.008)	(0.014)
Regional Authority x Institutional Quality	0.002**	-0.002***	-0.000
	(0.001)	(0.000)	(0.001)
Constant	-0.647	-0.561	-1.209*
	(0.495)	(0.435)	(0.704)
Marginal effects at different percentiles of Institutional Quality			
AME	0.021***	0.0001	0.022***
	(0.008)	(0.002)	(0.008)
10%	0.0183**	0.004*	0.023***
	(0.008)	(0.002)	(0.008)
25%	0.0198**	0.002	0.022***
	(0.008)	(0.002)	(0.008)
50%	0.021***	0.000	0.022***
	(0.008)	(0.002)	(0.008)
75%	0.022***	- 0.000	0.022***
	(0.008)	(0.002)	(0.008)
90%	0.024***	-0.002	0.021***
	(0.008)	0.003	(0.008)
Time Fixed Effects	x	x	x
Region Fixed Effects	x	x	x
Controls	x	x	x
Observations	804	804	804
R-squared (Within)	0.428	0.385	0.501

Note: Cluster robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The main explanatory variables are lagged one time period

3.3. Institutional Quality Dimensions

Initially in this work, we have analyzed the potential heterogeneous effects of regional authority considering different levels of institutional quality. However, the concept of institutional quality is multidimensional and encompasses various elements that can influence economic outcomes. Therefore, we perform a different set of estimations including three distinct aspects of institutional quality: government effectiveness, corruption, and rule of law.

Government effectiveness is critical as it reflects the quality of public services, the capacity of the government to formulate and implement sound policies, and the credibility of the government's commitment to such policies. High government effectiveness can enhance the business environment by ensuring efficient infrastructure, reliable public services, and predictable policy environments, which are crucial for business operations and planning. Effective governance facilitates resource allocation and reduces administrative burdens, which can foster a stable environment conducive to business growth and innovation. Therefore, we expect Government Effectiveness to positively influence the relationship between regional authority and the outcomes. Corruption, on the other hand, can severely undermine firms' activities by increasing transaction costs, creating uncertainty, and discouraging investment. High levels of corruption distort market mechanisms, lead to resource misallocation, and create an uneven playing field, potentially deterring both domestic and foreign investment. Lower levels of corruption are associated with higher levels of trust in public institutions, which can facilitate smoother business transactions and reduce the costs associated with regulatory compliance and bribery. Reducing corruption can enhance economic efficiency and promote a more favorable business climate by ensuring fair competition and predictable regulatory practices. Consequently, we expect that the effect of the regional authority is greater in regions with clean institutions. The rule of law is essential for ensuring that legal frameworks are fair, impartially enforced, and stable. A strong rule of law environment provides businesses with the security that contracts will be honored, property rights will be protected, and disputes will be resolved fairly. This legal certainty is fundamental for long-term investment and business growth, as it reduces the risks associated with arbitrary decision-making and legal uncertainties. A robust rule of law could enhance investor confidence, encourage entrepreneurship, and support sustained economic development by safeguarding the legal rights of businesses and individuals. However, it could also be related to excessive regulations that might hinder business creation and affect the capacity of firms to adapt to economic cycle fluctuations. For instance, it may be linked to higher levels of product market

regulation, directly affecting the net business creation rate and the three-year survival rate (OECD, 2017). Hence, we expect to find a moderate effect of this dimension compared to the other two.

Table 5 presents the results of the estimation using the different dimensions of institutional quality, represented in three columns each divided into two sub-columns, which show the results for the net birth rate and the survival rate. In column (1), we find the results using the dimension of Government Effectiveness. The AME has a significant impact, similar to the obtained with overall institutional quality for business creation. Regarding the second outcome, institutions have a lower conditioning effect than previously obtained. The impact on the survival rate is not significant, although the effect is negative and significant for regions in the first quartile. Column (2) displays results using the corruption dimension. The AME is slightly larger, with a moderating effect of corruption on net entrepreneurship that is superior to the one obtained with the effectiveness pillar. In this case, the AME shows a negative and significant effect on the survival rate. The institutions have a considerable moderating effect, where the impact on a region in the first quartile is approximately twice that in the third quartile. Finally, the third column presents the outcomes using the Rule of Law component, which show the most differentiated results compared to previous estimations. The AME is notably lower for the entrepreneurship rate compared to previous estimations, while it is significantly higher for the survival rate. Additionally, we do not find a mediating effect of the institutions.

These findings highlight the varying moderating effects of different dimensions of institutional quality on the relationship between regional authority and business demography. We find that the positive effect of institutions as mediators of the relationship between regional authority and business demography is driven by the effect of Government Effectiveness and Corruption. Rule of Law stands out with its distinctive effect, particularly reducing the positive impact on net firm creation and significantly increasing the negative impact on firm survival. However, these results are not completely against the previous literature. For instance, Rodríguez-Gulias et al. (2018), find a contrary effect of Rule of Law in business creation at national level compared to the other set of dimensions.

Table 5. Results using different dimensions of Institutional Quality

Government Effectiveness			Corruption		Rule of Law	
VARIABLES	Net Birth Rate	Survival Rate	Net Birth Rate	Survival Rate	Net Birth Rate	Survival Rate
Regional Authority	0.019**	-0.016	0.020**	0.030***	0.016*	-0.045***
	(0.009)	(0.011)	(0.009)	(0.009)	(0.008)	(0.008)
Institutional Quality Dimension	-0.041***	-0.185***	-0.071***	-0.180***	-0.007	0.022
	(0.011)	(0.043)	(0.013)	(0.059)	(0.010)	(0.046)
Regional Authority x Institutional Quality Dimension	0.002***	0.015***	0.004***	0.014***	0.001	-0.001
	(0.001)	(0.005)	(0.001)	(0.005)	(0.001)	(0.003)
Constant	-0.18	-1.910	-0.072	-1.615	0.127	-1.169
	(0.635)	(1.636)	(0.610)	(1.692)	(0.660)	(1.775)
Marginal Effects at different percentiles of the Institutional Quality Dimension						
AME	0.019**	-0.016	0.020**	-0.030**	0.016*	-0.045***
	(0.009)	(0.011)	(0.009)	(0.009)	(0.008)	(0.008)
10%	0.016*	-0.040***	0.014	-0.049***	0.015*	-0.044***
	(0.009)	(0.007)	(0.009)	(0.009)	(0.009)	(0.008)
25%	0.018**	-0.025***	0.018**	-0.038***	0.015*	-0.045***
	(0.009)	(0.009)	(0.009)	(0.008)	(0.009)	(0.008)
50%	0.020**	-0.013	0.020**	-0.029***	0.016*	-0.045***
	(0.009)	(0.012)	(0.009)	(0.009)	(0.008)	(0.008)
75%	0.021**	-0.010	0.023**	-0.020*	0.017**	-0.045***
	(0.009)	(0.014)	(0.009)	(0.012)	(0.009)	(0.009)
90%	0.022**	-0.003	0.025**	-0.013	0.017**	-0.046***
	(0.009)	(0.017)	(0.009)	(0.014)	(0.009)	(0.010)
Time Fixed Effects	x	x	X	x	x	x
Region Fixed Effects	x	x	X	x	x	x
Controls	x	x	X	x	x	x
Observations	804	804	804	804	804	804
R-Squared (Within)	0.233	0.456	0.252	0.190	0.349	0.423

Note: Cluster robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The main explanatory variables are lagged one time period.

Some mechanisms may explain the distinctive effect of the Rule of Law dimension. Stringent legal frameworks and rigorous enforcement can impose higher compliance costs on new and smaller firms, reducing profitability and increasing failure rates. Robust legal enforcement may disproportionately affect nascent businesses struggling to meet extensive regulatory requirements, leading to penalties and operational disruptions. Lengthy legal processes and delays in dispute resolution can divert resources from core activities, hampering growth and sustainability. Strict legal environments may limit business flexibility, stifling innovation, and responsiveness to market changes, thus diminishing long-term viability. In summary, while the Rule of Law is crucial for overall market stability and investor confidence, it can introduce significant challenges for the survival of new firms. Policymakers should aim to balance the benefits of a strong Rule of Law with the need to support new businesses through streamlined regulatory processes and supportive legal frameworks.

3.4. Robustness Checks

So far, we have carried out all estimations assuming linear panel data models. However, since the dependent variables analyzed (except for the net birth) are rates bounded between [0, 1], this approach could pose some problems. Linear models may yield unrealistic predictions outside the range of the outcome variable when analyzing fractional data, such as business birth, death, and survival rates. They also fail to address the heteroscedasticity inherent in proportion data, leading to biased and inefficient estimates. As Papke and Wooldridge (2008) suggest, the use of fractional response models accounts for these issues by ensuring that predicted values remain within the [0, 1] interval and handling the error variance structure effectively. Additionally, we incorporate the Mundlak-Chamberlain device to control unobserved regional heterogeneity. By adopting this more robust framework, we aim to capture potential non-linear relationships that may be affecting our results and provide more reliable and efficient estimates.

The results of this series of alternative estimations are available in the appendix.[11] As shown in *Table A2*, the obtained results are consistent with previous estimations, suggesting that the findings of our main specification are robust to methods that account for the specific characteristics of the data used. One of the core assumptions of linear models is that the standard errors exhibit homoscedasticity. Although we have applied cluster-robust standard errors at the regional level to control potential

[11] Notice that the results of these additional estimations do not include the net birth rate, since this one is no contained between the range 0 and 1.

heteroscedasticity and panel autocorrelation, this does not guarantee that the assumption of homoscedasticity holds true. Consequently, the presence of heteroscedasticity would result in inefficient estimators and unreliable standard errors. Furthermore, the parameters under heteroskedastic errors would be inconsistent. Therefore, based on the work of Santos Silva & Tenreyro (2006) and Correia et al. (2019), we conducted our main estimation using Poisson pseudo-maximum likelihood (PPML). This method allows us to perform estimations on variables that range between 0 and 1 and is robust to heteroscedasticity as it does not require the assumption of constant error variance. Additionally, we implemented this estimation with cluster-robust standard errors at the regional level and introduced regional and temporal fixed effects.

The results from *Table A3* in the appendix suggest that our estimation is quite robust. Indeed, the coefficient[12] on the birth rate is nearly significant at the 5% level, with a significant interaction with institutional quality.

Conclusion

The aim of this study has been to analyze the potential relationship between a greater level of regional authority and the creation and survival rate of firms, providing a comprehensive picture of its impact on regional business dynamics. This paper has contributed not only to the literature investigating the effects of different degrees of decentralization on various economic outcomes but also to a growing line of research that highlights the role of the institutional framework in conditioning these effects.

Our findings suggest that an elevated level of regional authority can positively influence the entrepreneurial capacity of regions. Additionally, the analysis reveals that a higher degree of autonomy may negatively impact the survival rate of firms. Within this context, the role of institutions is crucial, as they enhance the positive effects of regional authority on entrepreneurship while mitigating the adverse effects on firm survival. We theorize that the quality of the institutional framework may serve as a moderating factor, influencing the rate of business replacement within regions. Enhanced institutional quality, in the presence of greater regional authority, could alleviate the competitive pressures that arise from increased entrepreneurial activity, thereby fostering long-term business prosperity and contributing to sustained economic growth.

[12] Notice that the magnitude of these coefficients cannot be directly compared to those obtained with linear models.

As in most empirical studies, this work presents some limitations. First, the lack of comprehensive data on the main characteristics of business demography at the regional level in Europe poses a significant challenge. While initiatives from Eurostat and the OECD exist, it is difficult to construct a consistent database for a series of countries beyond the period of 2014-2019. Second, this previous limitation is particularly relevant in the analysis of institutional factors (both the level of authority and quality), where short-term temporal variability is limited, potentially affecting the reliability of the estimations. Finally, we cannot rule out the possibility of endogeneity. While we firmly believe that our estimation approach is rigorous and has been designed to minimize the risk of endogeneity, we cannot entirely dismiss its presence. Therefore, this issue will be addressed in future research.

Several policy implications emerge from this study. Firstly, improving institutional quality is crucial before or alongside decentralization to ensure regional authority effectively promotes entrepreneurship and firm survival. Strengthening government effectiveness, reducing corruption, and fostering a reliable rule of law are fundamental to creating a stable business environment. Secondly, high-quality institutions at the regional level should enable tailored local policies supporting business financing, growth, and expansion, which enhance entrepreneurial activity. Lastly, while a strong rule of law is essential, balancing rigorous legal frameworks with business-friendly regulations can prevent new and small firms from being disproportionately burdened by compliance. Streamlined regulatory processes and supportive legal structures can foster a dynamic business environment, positioning regions for sustained growth and development.

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Appendix

Figure A1. Average birth rate across and within countries during 2014-2019

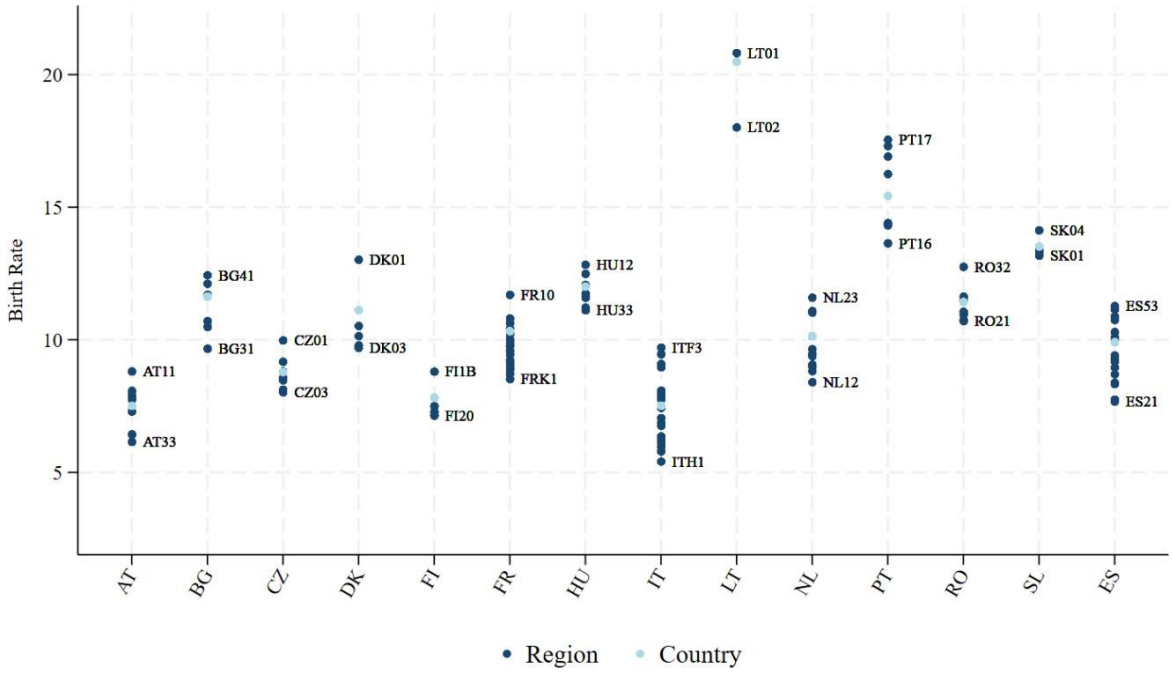

Figure A2. Average death rate across and within countries during 2014-2019

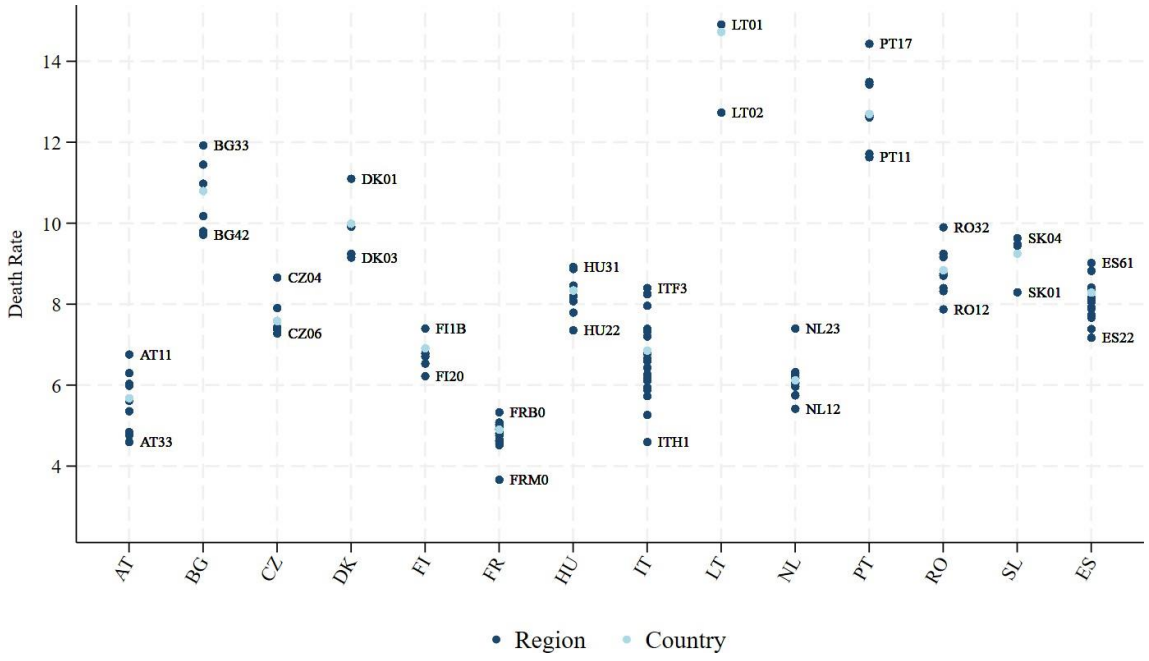

Figure A3. Average churn rate across and within countries during 2014-2019

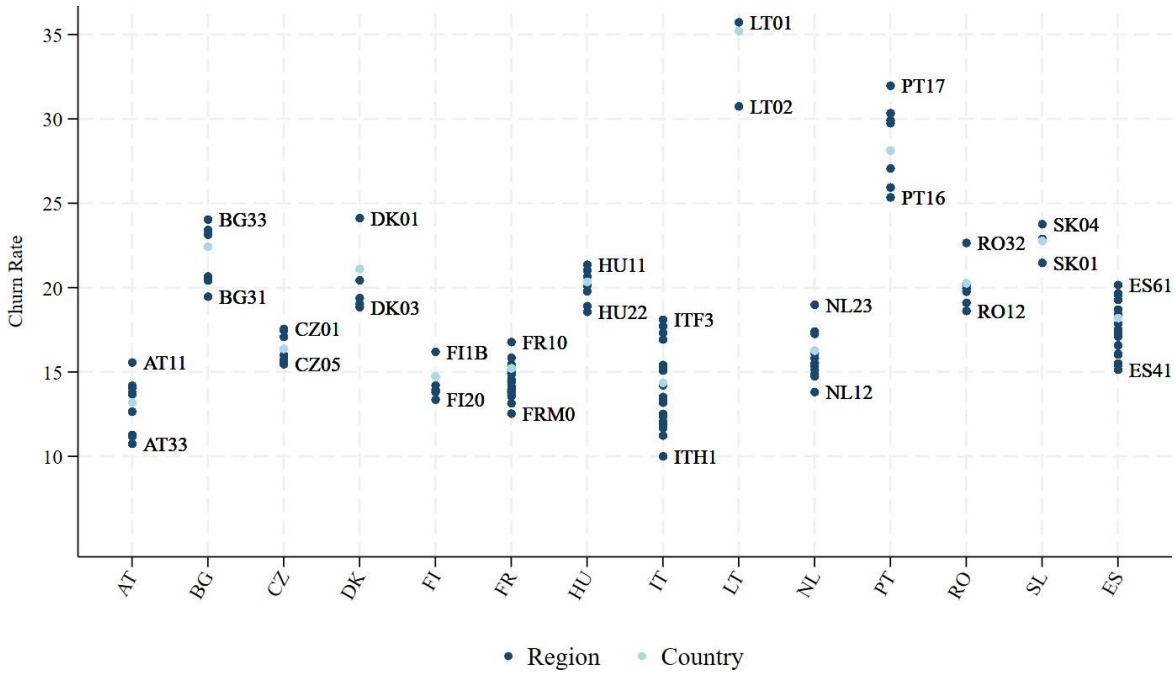

Table A1. Control variables description

Variable	Description	Source
Regional variables		
Density	Population per square kilometer	Eurostat
GDP	Gross Domestic product per capita meassured in PPP	Eurostat
Unemployment	Share of unemployed population	Eurostat
Education	Share of population with at least tertiary educaiton	Eurostat
Scitech workers	Share of skilled workers devoted to science and technology sectors	Eurostsat
Age	Median age of the regional population	Eurostat
Firm size	Number of employees over the active population of firms	Eurostat
Country variables		
Expenditure	Share of public expenditure in the whole economy	Eurostat
Interest Rate	Long term interest rate following European convergence criterion	Eurostat
Venture	Share of venture capitals per inhabitant	OECD
Stability	Political stability dimension of the World Governance Indicators	World Bank

Note: All the regional variables are at NUTS2 level

Table A2. Estimation results for fractional using a fractional response model

VARIABLES	Birth Rate	Death Rate	Churn Rate	Survival Rate
Regional Authority	0.0809**	0.0188	0.0686***	-0.118***
	(0.0357)	(0.0132)	(0.0264)	(0.0192)
Institutional Quality	-0.418***	-0.162***	-0.392***	-0.252*
	(0.0634)	(0.0530)	(0.0551)	(0.130)
Regional Authority x Institutional Quality	0.00379	2.29e-05	0.00296	0.00690*
	(0.00232)	(0.00279)	(0.00267)	(0.00356)
Constant	0.903	-2.760***	-0.221	4.082***
	(1.002)	(0.995)	(1.183)	(1.353)
Time Fixed Effects	x	x	x	x
Mundlak Device	x	x	x	x
Controls	x	x	x	x
Observations	804	804	804	804

Note: Cluster robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The main explanatory variables are lagged one period

Table A3. Estimation results for Pseudo Poisson Maximum Likelihood

VARIABLES	Birth Rate	Death Rate	Churn Rate	Survival Rate
Regional Authority	0.104*	0.053**	0.083***	-0.105***
	(0.054)	(0.024)	(0.032)	(0.018)
Institutional Quality	-0.895***	0.228**	-0.408***	-0.604***
	(0.158)	(0.106)	-0.085	(0.193)
Regional Authority x Institutional Quality	0.027**	-0.052***	-0.007	0.044***
	(0.014)	(0.008)	(0.008)	(-0.016)
Constant	-4.212	-11.76**	-6.119**	-4.733
	(4.193)	(4.914)	(2.944)	(3.115)
Time Fixed Effect	x	x	x	x
Region Fixed Effects	x	x	x	x
Controls	x	x	x	x
Observations	804	804	804	804

Note: Cluster robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The main explanatory variables are lagged one period

Table A4. Regional units used from the Regional Authority Index

Country	Region	NUTS level
Austria	Länder	2
Bulgary	Oblasti	2
Czechia	Kraje	3
Denmark	Regioner	2
Finland	Maakunnat	3
Netherlands	Provincies	2
Hungary	Megyék	3
Italy	Regioni	2
Lithuania	Regionų	2
Portugal	Comunidades Intermunicipais	3
Romania	Judete	3
Slovakia	Samosprávné kraje	2
Spain	Comunidades Autónomas	2

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