

Poverty Regulation and Poverty Dynamics: A Textual and Econometric Analysis¹

Juan S. Mora-Sanguinetti², Juan A. Lafuente-Luengo³,
Belén Gill-de-Albornoz⁴

April 2026, WP #1041

ABSTRACT

This article aims to identify and quantify regulations designed to combat poverty, and to assess their effectiveness. Using textual analysis techniques, we systematically classify and quantify, for the first time, all measures adopted in Spain among the 175,204 regulations issued by the Central Administration and the Autonomous Regions between 2007 and 2021. At both levels of government, we distinguish between targeted poverty-related regulations, such as those addressing energy poverty or child poverty, and broader poverty-related regulations, including those focused on precariousness, social assistance, or social exclusion. Furthermore, through multivariate regression analysis, we evaluate whether these regulatory frameworks have had a significant impact on regional risk-of-poverty rates. Our findings indicate that the effectiveness of both targeted and general regulatory measures depends on the level of government responsible for their implementation. Specifically, targeted measures are effective in reducing poverty risk when enacted at the regional level, but not when implemented by the central government. In contrast, broader regulatory measures prove to be effective tools for mitigating poverty when adopted at the national level, rather than by regional authorities. This study contributes to enhancing public sector accountability in Spain and provides valuable insights for refining future policymaking to achieve greater social impact.

Keywords: Text Analysis, Regulation, Poverty, Energy Poverty, Child Poverty.

JEL classification: I38, J18, K36.

¹ We thank Andrés Atienza Maeso and Gonzalo Albiol Villanueva for excellent research assistance. We are grateful to Claudine Desrieux for her careful evaluation of the manuscript, and to Jean-Stéphane Mesonnier for his editorial work on the “DT” version of this paper. We also thank participants at the Banque de France research seminar for their valuable comments and suggestions. Views are solely those of the authors.

² Juan S. Mora-Sanguinetti. Banque de France - Eurosystem (Direction Générale des Statistiques, des Études et de l'International. 39 Rue Croix-des-Petits-Champs - 75001 Paris - France) and Banco de España - Eurosistema (Dirección General de Economía y Estadística. C/Alcalá, 48 - 28014 Madrid - Spain). E-mail: Juan.MORASANGUINETTI.external@banque-france.fr and juans.mora@bde.es. Tel.: (+34)913385197.

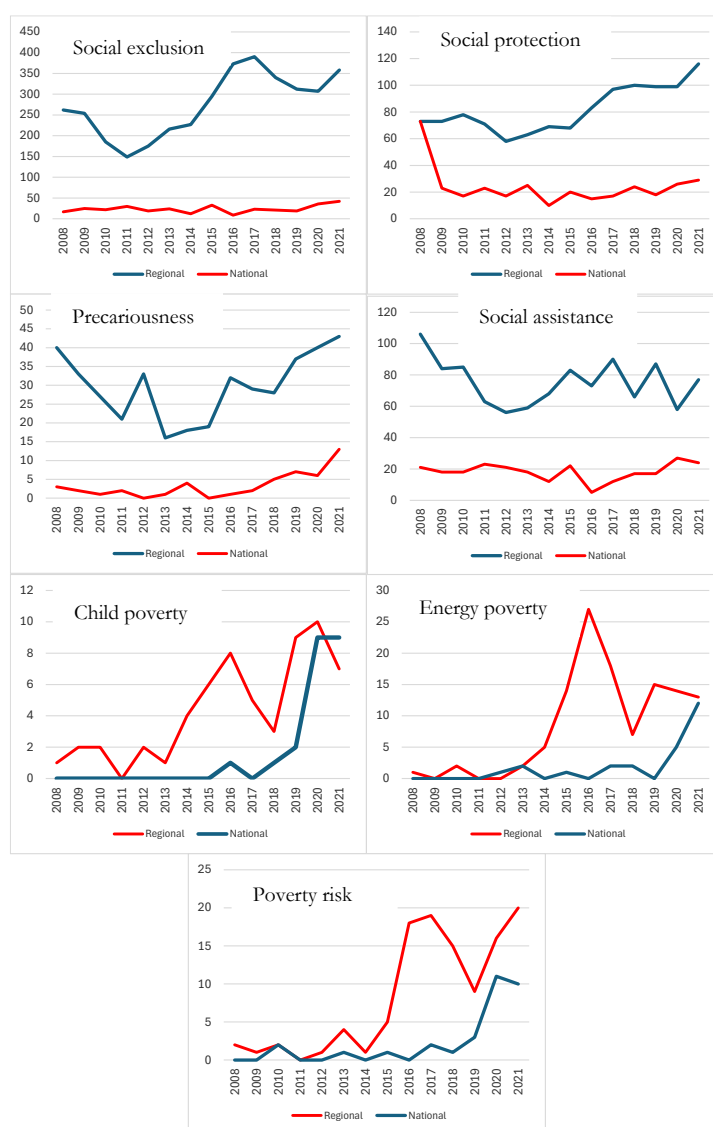
³ Juan A. Lafuente-Luengo. Universitat Jaume I. E-mail: lafuen@uji.es.

⁴ Belén Gill-de-Albornoz. Universitat Jaume I. E-mail: noguer@uji.es.

NON-TECHNICAL SUMMARY

This study makes a novel contribution by constructing a comprehensive and original database of poverty-related regulations in Spain. Using textual analysis techniques, we systematically identify and classify over 175,000 legal texts issued by both the central government and regional administrations between 2007 and 2021. From this universe of norms, we extract and categorize more than 7,800 regulatory texts specifically aimed at addressing poverty, distinguishing between broad measures (e.g., social exclusion, social protection, precariousness) and targeted interventions (e.g., child poverty, energy poverty).

Evolution of national and regional regulations by topic (2008-2021).



Source: Own elaboration based on Aranzadi-LA LEY.

Building on this database, the study examines whether changes in poverty-related regulation intensity are associated with changes in regional at-risk-of-poverty rates. The at-risk-of-poverty rate is the share of people living below a standard poverty threshold. Despite the term “risk”, it does not refer to a forecast of future poverty, but to a current low-income indicator. Because the econometric analysis is estimated in first differences, the results should be interpreted in year-to-year terms. In other words, the study focuses on whether increases in regulation are associated with increases or decreases in the poverty rate over time, rather than on whether regions with more regulation have higher or lower poverty levels.

The results show that this association varies significantly depending on the type of regulation and the level of government responsible for its implementation.

- Targeted regulations seem to be more strongly associated with improvements when implemented at the regional level. Increases in regional measures addressing child poverty and energy poverty are associated with year-to-year declines in the at-risk-of-poverty rate.
- National regulations on social protection are also significantly associated with reductions in the at-risk-of-poverty rate, suggesting that broad regulatory frameworks play an important role when adopted at the national level.
- By contrast, increases in national-level targeted regulations are associated with less favorable changes in poverty outcomes. One possible interpretation is that these measures are often less adapted to local socio-economic conditions and may not fully address the specific needs of vulnerable populations across regions.

These findings highlight the importance of aligning regulatory design with the institutional context. Regional governments are better positioned to tailor targeted interventions to local needs, while broad regulatory frameworks benefit from national coordination and coherence. The study also emphasizes the need for evidence-based policymaking and regulatory impact assessments. Poorly coordinated or overly complex regulations can increase uncertainty and compliance costs, undermining their intended social impact. The insights of this research may be relevant for other countries with decentralized governance systems.

Régulation de la pauvreté et dynamiques de la pauvreté : une analyse textuelle et économétrique

RÉSUMÉ

L'article vise à identifier et à quantifier les réglementations conçues pour lutter contre la pauvreté, ainsi qu'à évaluer leur efficacité. À l'aide de techniques d'analyse textuelle, nous classons et quantifions de manière systématique, pour la première fois, l'ensemble des mesures adoptées en Espagne parmi les 175 204 réglementations émises par l'administration centrale et les régions entre 2007 et 2021. À ces deux niveaux de gouvernement, nous distinguons les réglementations ciblées liées à la pauvreté, telles que celles portant sur la précarité énergétique ou la pauvreté infantile, des réglementations plus générales, incluant celles axées sur la précarité, l'aide sociale ou l'exclusion sociale. En outre, grâce à une analyse de régression multivariée, nous évaluons si ces cadres réglementaires ont eu un impact significatif sur les taux régionaux de risque de pauvreté. Nos résultats indiquent que l'efficacité des mesures réglementaires, qu'elles soient ciblées ou générales, dépend du niveau de gouvernement responsable de leur mise en œuvre. Plus précisément, les mesures ciblées sont efficaces pour réduire le risque de pauvreté lorsqu'elles sont adoptées au niveau régional, mais non lorsqu'elles sont mises en œuvre par le gouvernement central. En revanche, les mesures réglementaires générales s'avèrent être des outils efficaces pour atténuer la pauvreté lorsqu'elles sont adoptées au niveau national, plutôt que par les autorités régionales. Cette étude offre des pistes pour améliorer l'élaboration des politiques futures en vue d'un impact social accru.

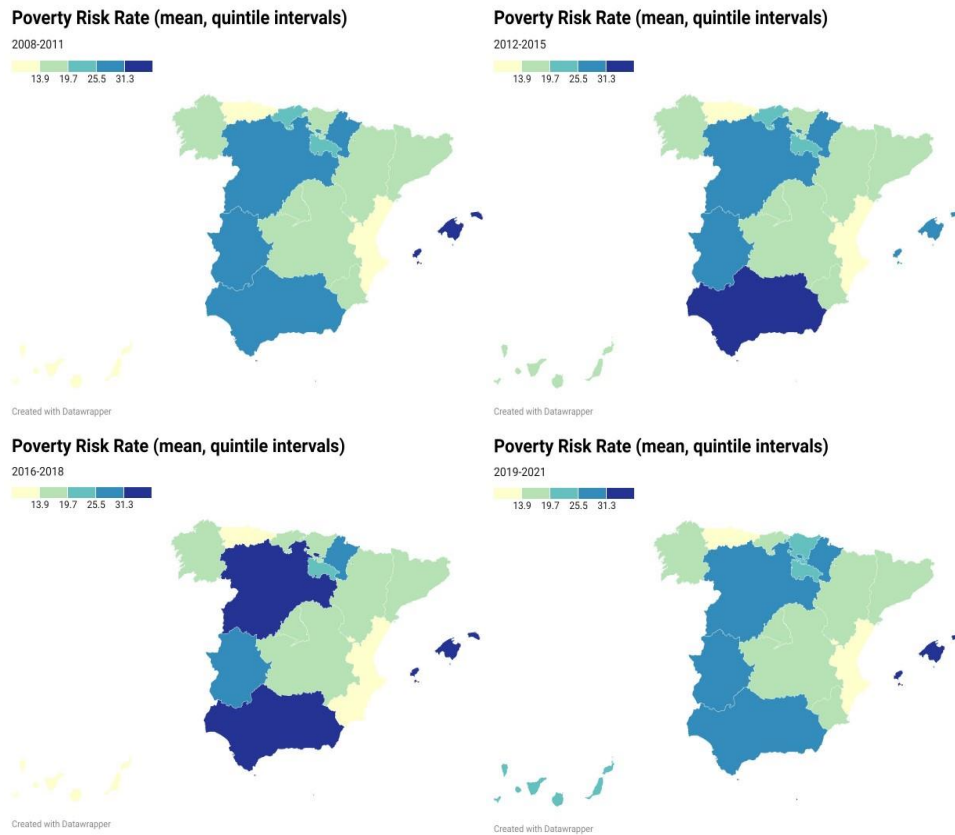
Mots-clés : analyse textuelle, réglementation, pauvreté, précarité énergétique, pauvreté infantile.

Les Documents de travail reflètent les idées personnelles de leurs auteurs et n'expriment pas nécessairement la position de la Banque de France. Ils sont disponibles sur publications.banque-france.fr

1. Introduction

According to Eurostat (2024), in 2023, 94.6 million individuals in the EU were at risk of poverty or social exclusion, representing 21.4% of the population. In Spain, the situation is even more concerning, as the country ranks third in the EU, with over 25% of its population facing this risk. The trajectory leading to this level has varied not only over time but also across regions. As shown in Figure 1, over the past two decades, the risk of poverty in Spain has followed a non-uniform trend at the national level. The persistence of certain regional disparities highlights the need for a more in-depth analysis of the effectiveness of specific regulations aimed at addressing them, an objective that this paper seeks to fulfill.

Figure 1. Evolution of the risk of poverty in Spain (2008-2021)



Source: Data of at-risk-of-poverty rates, by Autonomous Region, from the National Bureau of Statistics (INE).

A key debate revolves around the determinants of poverty. Variations in at-risk-of-poverty rates may be partly explained by differences in economic growth trends over time (Dollar & Kraay, 2000; Lustig & Riginoli, 2002). However, the positive impact of economic growth may be influenced by other factors, such as inequality (Lustig & Riginoli, 2002). Limited access to essential resources, such as education, healthcare, and adequate housing, also plays a crucial role in shaping poverty dynamics in developed countries.

From a policymaker's perspective, identifying and designing effective measures that directly address poverty while fostering economic progress is of critical importance. In the Eurozone, income redistribution is primarily managed by national and local governments through fiscal policy, including taxation and public spending. However, the impact of regulatory policies on poverty remains difficult to predict, further complicating policy design and implementation.

This article is situated within the broader analysis of the structural and institutional framework of the economy. A range of seminal and widely recognized studies in economic analysis (Coase, 1960, 1992; Williamson, 1985; North, 1981, 1990a, 1999), along with more recent contributions (Hall & Jones, 1999; Henisz, 2000; Rodrik, 2000; Acemoglu, Johnson & Robinson, 2005; Fatás & Mihov, 2013), have demonstrated that institutions play a fundamental role in long-term economic development. Regulation constitutes one of the three core components of this institutional framework.

In developed countries, public administrations implement policies, including those aimed at poverty alleviation, through formal written rules (see Jalilian, Kirkpatrick & Parker, 2007; Mora-Sanguinetti & Soler, 2022; Mora-Sanguinetti, Quintana, Soler & Spruk, 2023). However, there is no definitive answer as to whether regulation has a positive or negative impact on the economy. Its effects

depend on various factors, including its design and complexity (Ogus, 2004; Mora-Sanguinetti & Pérez-Valls, 2021), its content, and the broader institutional environment in which it is implemented.

North (1990a) defined the institutional framework as a set of “rules of the game”. From a positive perspective, these rules can guide firms and citizens in navigating uncertainty. Indeed, the primary function of regulation is to mitigate market failures by reducing transaction costs (Wallis and North 1986; Yang and Borland 1991; Bischoff and Bohnet 2000; Kovac and Spruk 2016). However, North (1990a) also highlighted that regulation can be poorly designed, due to the complexities of the political process. In such cases, flawed regulation may increase, rather than reduce, transaction costs. Even a well-functioning institutional framework may become inadequate overtime due to shifts in the social environment, evolving economic conditions, or the mere passage of time (Helpman 2008). Consequently, regulation can, under certain circumstances, contribute to higher transaction costs (North 1990b; Gratten et al. 2021). These contrasting perspectives form the foundation of the “modern theory of regulation”, which posits that while market failures are a necessary condition for regulation, they are not sufficient to justify its implementation (Laffont and Tirole 1993).

Despite the significant role that regulatory design plays in economic development and the broader study of institutional frameworks, empirical research on the effects of regulation remains limited. This scarcity becomes even more pronounced when analyses require a high level of detail, such as examining specific policy areas or economic sectors. Notable exceptions include advancements made in the case of the U.S. (Dawson and Seater 2013; McLaughlin et al. 2019) as well as recent studies focusing on specific sectors and policy areas in Spain (Mora-Sanguinetti and Soler 2022; Mora-Sanguinetti, Quintana, Soler and Spruk 2023; Mora-Sanguinetti, Hospido and Atienza-Maeso 2023; Mora-Sanguinetti and Atienza-Maeso, 2024).

For the Spanish economy, beyond macroeconomic factors, regional disparities in poverty rates motivate an examination of both regional and national regulatory activity. Accordingly, we study patterns between regulatory intensity and poverty outcomes for regulations enacted during the period 2008-2021.¹

In the period under study, Spanish administrations implemented various nationwide measures, such as aid programs and the Minimum Living Income Law, which was passed at the end of the study period.² Moreover, Spain has taken significant steps to address energy poverty. The National Strategy against Energy Poverty includes measures to ensure that vulnerable households have access to essential energy. This strategy focuses on improving energy efficiency in homes, providing financial support for energy costs, and enhancing regulatory frameworks to protect vulnerable consumers. In addition, both national and regional³ governments have addressed child poverty through qualitative measures, such as promoting changes in parent-child relationships and establishing social responsibility guidelines to discourage the consumption of products made with child labor.⁴ At the national level, the Zero Child Poverty Country Alliance is an initiative aimed at strengthening social policies and partnerships to make child poverty eradication a state priority. However, the government interest in addressing poverty has varied and evolved over time. While issues such as child poverty or energy poverty have only recently become priorities for regulators,⁵ policies aimed at mitigating precarious conditions have been implemented throughout the entire period analyzed.

Although poverty reduction has been a key policy focus for decades, the evidence on the association between regulation and poverty reduction remains inconclusive. Some studies analyzing the effects of regulation on equality and income distribution suggest that its effectiveness in reducing poverty is not as straightforward as expected. In some cases, regulation may have regressive effects, disproportionately affecting low-income households.⁶ More specifically, Thomas (2019) argues that regulations addressing health and safety risks, particularly those targeting minor risks that are costly to mitigate, can reduce discretionary income of poor households, ultimately exposing them to greater overall risk. Similarly, Chambers et al. (2019a) find that a higher regulatory burden at the state level in the U.S. leads to increased poverty. Specifically, a 10% increase in a state’s regulatory burden is associated with a 2.5% rise in its poverty rate. In another study, Chambers et al. (2019b) provide evidence that countries imposing stricter regulations on labor market entry tend to experience higher income inequality. Similarly, Dwumfour (2020) presents empirical findings indicating that lowering regulatory barriers to business creation improves welfare in Sub-Saharan African countries.

Additionally, studies analyzing the effectiveness of specific regulatory programs aimed at addressing poverty yield mixed evidence. Some research highlights the benefits of targeted programs designed to combat child poverty in both developed and developing countries. For example, Barrientos and DeJong (2006) find that cash transfer programs targeting children in South Africa, transition countries, and Latin-American and the Caribbean countries effectively reduce poverty. Similarly, Edmonds and Schady (2012) reach comparable conclusions when analyzing the *Bono de Desarrollo Humano* (BDH) in Ecuador. However, other studies present less conclusive results. Anthony et al. (2011), who examine the effectiveness of publicly funded child poverty programs in the U.S., argue that no direct link has been established between publicly funded child poverty programs and long-term reductions in child poverty rates. These authors claim that programs may successfully achieve specific objectives, such as increasing child nutrition, yet still fall short of mitigating the broader effects of poverty or reducing the risk of future impoverishment.

¹ Although the analysis includes regulations enacted from 2007 onwards, the results are presented starting in 2008 to ensure consistency across all analyses in the study.

² Law 19/2021, of 20 of December. *Ley del Ingreso Mínimo Vital* (Minimum Living Income Law).

³ Spain is administratively divided into regions, legally called “Comunidades Autónomas”. In this article we translate the term as “Autonomous Regions” or simply “Regions”. As explained in Section 2.2., in practice, Spain is decentralized like a federal state.

⁴ Law 3/2019, of 22 of March, *del Estatuto de las Personas Consumidoras en Castilla-La Mancha*.

⁵ An exception is the region of Cataluña, where regulations addressing child poverty are comparatively older.

⁶ Regulation can have regressive effects at the aggregate level through several channels. One key mechanism is its impact on prices, as lower-income households allocate a larger share of their income to heavily regulated goods and services, which tend to experience steeper price increases due to regulatory interventions (Chambers et al., 2019c). Another important channel is its effect on wages, as higher regulatory burdens are often associated with declining wages for the average worker while simultaneously contributing to rising managerial wages (Bailey et al., 2019).

In summary, the prevailing view is that regulatory burdens are generally ineffective in reducing poverty due to the economic frictions they create. However, highly targeted regulations designed to achieve specific objectives may prove effective if their benefits outweigh the costs associated with regulation. Assessing the potential effectiveness of regulatory governance in poverty reduction is a challenging task. Beyond methodological concerns, it is important to recognize that both poverty and regulation are complex, multifaceted constructs. Additionally, various factors within the institutional framework can influence the effectiveness of regulations, further complicating their evaluation (Minoque 2008).

To the best of our knowledge, this study is the first to analyze the association of poverty-related regulatory intensity and poverty risk rates within the Spanish economy. We estimate how regulatory intensity focused on poverty alleviation, at both the central government and regional levels, relates to the evolution of at-risk-of-poverty rates over time. Employing textual analysis techniques, we examine the 175,204 regulations enacted by the Central Administration and the Autonomous Regions between 2007 and 2021, quantifying regulatory intensity across different dimensions of poverty. As a result, for the period 2008-2021, we identify 1,049 regulations targeting poverty at the national level and 6,752 at the regional level. Furthermore, we classify these regulations based on the dimension of poverty they address. Specifically, the regulations are categorized into two categories: broad regulations, which include social exclusion (SE), social protection (SP); social assistance (SA); precariousness (P), and poverty risk (PR); or targeted regulations, which are those focused on child poverty (CP) and energy poverty (EP).

After developing the quantitative proxies of national and regional regulatory activity aimed at alleviating different dimensions of poverty, we apply multivariate regression analysis to examine their association with regional at-risk-of-poverty rates. We provide evidence of heterogeneous poverty-related associations of broad and targeted regulatory measures across levels of government. Specifically, targeted measures display coefficients consistent with a poverty-reducing association when enacted at the regional level but not when implemented by the central government. Conversely, broader regulations are more strongly associated with lower changes in poverty risk when adopted at the national level rather than by regional authorities. Furthermore, in some cases, regulatory intensity at both levels may have regressive effects on poverty risk rates. These findings suggest the importance of aligning the type of regulation with the institutional characteristics and administrative capabilities of the implementing government. This analysis not only contributes to enhancing public sector accountability in Spain but also provides valuable insights for future policymaking aimed at improving poverty reduction strategies. Our results align with previous studies on the relationship between regulation and poverty. Chambers et al. (2019a) found that an increase in federal regulatory burden is associated with a rise in poverty rates, suggesting that excessive regulation can hinder economic growth and employment opportunities. Furthermore, research by Rodgers and Payne (2007) highlights the effectiveness of regional welfare programs in reducing child poverty, in line with our findings that targeted measures are more impactful when implemented at the regional level. Additionally, Kimberlin (2016) showed that government transfers significantly reduce both chronic and transient poverty, reinforcing our conclusion that the efficiency of poverty reduction policies depends on their design and level of implementation. These complementary insights emphasize the role of regulatory design in shaping poverty outcomes and inform the debate on optimal policy approaches for poverty alleviation.

The analysis also points to a promising avenue for future research at the intersection of institutional quality and economic outcomes, namely the development of dedicated indicators of litigation and legal conflict related to poverty-related issues. Such indicators could capture a channel through which regulatory changes translate into judicial activity, as reflected in increases or decreases in litigation. Progress along this line would require access to, and systematic analysis of, complementary judicial datasets. For illustrative contributions to this literature in the Spanish context, see Dejuán and Mora Sanguinetti (2021) and Mora Sanguinetti (2021).

The remainder of the study is structured as follows. Section 2 provides an overview of the legal framework governing poverty regulation in Spain. Section 3 describes the methodology used to construct our regulatory intensity indicators and presents a descriptive analysis of poverty-related regulatory activity in Spain over the period under review. Section 4 introduces the statistical model used to examine the relationship between regulatory activity and its impact on poverty alleviation. Finally, Section 5 summarizes our conclusions, key contributions, and policy recommendations.

2. Institutional and Legal Foundations of Poverty Alleviation in Spain

Although Spain is not legally classified as a federal country, it operates within a highly decentralized system.⁷ Political science offers various indicators to assess the degree of decentralization, such as the Regional Authority Index (RAI) (Hooghe et al., 2008), which suggests that Spain exhibits a level of decentralization comparable to that of Canada or the United States, and higher than that of the United Kingdom (for further discussion, see Mora-Sanguinetti & Spruk, 2023; Mora-Sanguinetti et al., 2024). Beyond international comparisons, an analysis of Spain's regulatory output reveals significant decentralization in legislative activity. Specifically, regional administrations publish nearly four times as many regulations as the central administration. Between 2007 and 2021, the number of newly enacted regulations was 33,687 at the central level, compared to 141,517 at the regional level.

Nevertheless, there are notable differences between Spain's decentralized model and a strictly federal system. The distribution of powers between the central administration and the regions, including those related to poverty, is defined by the Constitution, the so-called "regional constitutions" (i.e., Statutes of Autonomy), and the jurisprudence of the Constitutional Court. This legal framework can lead to different scenarios: both central and regional administrations may hold competencies in specific areas; some powers may be shared (a distinctive feature of the Spanish model compared to federal systems); and the distribution of powers may

⁷ According to the decentralization indicators published by the European Committee of the Regions, Spain ranks second among the EU-27 in overall decentralization, reflecting the extensive competences and autonomy exercised by its subnational governments. This position places Spain among the most decentralized institutional systems in Europe, despite its formal classification as a non-federal state.

vary across regions, as established in their respective Statutes of Autonomy. In other words, regions do not necessarily have the same measures in place, nor do they hold identical competences across all policy areas.⁸

The central government is responsible for establishing the fundamental conditions to ensure equality, while the regions hold exclusive or shared competencies in managing social services and decentralized economic assistance. Some regions may even extend beyond the common or average regulatory framework found in the rest of Spain (see Suárez Corujo 2006; Monereo Pérez 2009; Consejo Económico y Social 2017; or García Blanco and Salama Salama 2018). Several constitutional provisions are particularly relevant in this context: Article 40.1 promotes a more equitable distribution of income as guiding principle for public authorities; Article 148 outlines the allocation of powers between the central administration and the regions, with Article 148.1.20 specifically recognizing the potential authority of Regions in social assistance matters. Additionally, each region's Statute of Autonomy defines the exercise of its own powers.⁹ The evolving balance of competencies between the central government and the regions is also shaped by rulings of the Constitutional Court.¹⁰

Spain features a third tier of government below the regional level, namely the municipal level (municipalities and provinces). This tier of government, however, does not have the authority to enact legislation with the force of law, which partly constitutes the type of regulation analyzed for both the regional and central governments. Moreover, regulatory output at this level of administration is substantially more limited than at higher levels of government (or, alternatively, less comprehensively captured by the legal database employed in this study). Specifically, taking 2018 as a reference year, only 13.5% of the regulations recorded by Aranzadi originate from this level of government (Mora-Sanguinetti, 2019; Mora-Sanguinetti, 2022). For these reasons, this level of government is excluded from the analysis.

In conclusion, regulatory measures addressing poverty will be extracted and analyzed in both the central and regional tiers. Tables 1 and 2 contain examples of the regulations identified and included in the analysis, distinguishing between those enacted by the central government (Table 1) and those adopted at the regional level (Table 2).

⁸ The latter does not pose a concern, as our approach is not theoretical in nature; rather, we work with the actual regulations in force as adopted by each region.

⁹ For example, exclusive competence over social services is explicitly recognized in Article 49 of the Statute of Autonomy of the Valencian Community and in Article 61 of the Statute of Autonomy of Andalusia.

¹⁰ For example, the Constitutional Court Rulings (STC) 40/2013 of February 14 or (STC) 9/2017 of January 19, 2017.

Table 1. Examples of Poverty-Related Regulations Enacted by the Central Government

Area	Regulation
Social exclusion	<ul style="list-style-type: none"> • Royal Decree 307/2010 of March 15. Adopts the regulatory provisions for a direct grant in favor of the European Anti-Poverty Network. • Law 19/2021 of December 20. Law on the minimum vital income. • Law 3/2012 of July 6. Labor Reform Law of 2012.
Energy poverty	<ul style="list-style-type: none"> • Law 24/2013, of December 26. Law on the Electricity Sector of 2014. • Law 8/2013, of June 26. Law on urban rehabilitation, regeneration, and renewal. • Royal Decree-Law 12/2021, of June 24. Adopts urgent measures in the field of energy taxation and energy generation.
Precariousness	<ul style="list-style-type: none"> • Royal Decree 1058/2021, of November 30. Regulates the direct granting of subsidies to the municipalities of Madrid and Rivas-Vaciamadrid for the implementation of relocation programs for families in situations of extreme social vulnerability in sectors four, five, and six of the Cañada Real Galana. • Royal Decree 1163/2020, of December 22. Regulates the direct granting of a subsidy to the Autonomous Community of the Canary Islands to finance basic social services to be developed by local entities. • Royal Decree-Law 5/2020, of February 25. Adopts certain urgent measures in the field of agriculture and food.
Poverty risk	<ul style="list-style-type: none"> • Royal Decree-Law 13/2020, of April 7. Adopts certain urgent measures regarding agricultural employment. • Royal Decree 897/2017, of October 6. Regulates the concept of vulnerable consumer, the social tariff, and other protective measures for consumers. • Royal Decree-Law 8/2019, of March 8. Urgent measures for social protection and the fight against job insecurity in working hours.
Child poverty	<ul style="list-style-type: none"> • Organic Law 8/2021, of June 4. Organic Law on the comprehensive protection of children and adolescents against violence. • Royal Decree-Law 8/2020, of March 17. Extraordinary urgent measures to address the economic and social impact of COVID-19. • Royal Decree-Law 7/2020, of March 12. Adopts urgent measures in response to the economic impact of COVID-19.
Social assistance	<ul style="list-style-type: none"> • Law 47/2015, of October 21. Law regulating the social protection of workers in the maritime-fishing sector. • Law 1/2021, of March 24. Urgent measures on the protection and assistance of victims of gender-based violence. • Royal Decree 1726/2007, of December, 21e. General Social Security Regulation for the Armed Forces.

Table 2. Examples of poverty-related regulations enacted by regional governments

Area	Regulation
Social exclusion	<ul style="list-style-type: none"> • EXTREMADURA. Law 7/2016, of July 21. Extraordinary measures against social exclusion. • BASQUE COUNTRY. Law 8/2008, of June 25. Amends the Law against Social Exclusion and the Law on the Charter of Social Rights. • GALICIA. Law 10/2013, of November 27. Social Inclusion Law of Galicia.
Energy poverty	<ul style="list-style-type: none"> • MURCIA. Law 6/2015, of March 24. Housing Law of the Region of Murcia 2015. • GALICIA. Law 7/2017, of December 14. Measures on energy efficiency and guarantee of access to electricity. • VALENCIAN COMMUNITY. Law 3/2017, of February 3. Law to mitigate and reduce energy poverty in the Valencian Community.
Precariousness	<ul style="list-style-type: none"> • CATALONIA. Law 19/2020, of December 30. Law on equal treatment and non-discrimination in Catalonia. • BASQUE COUNTRY. Law 13/2008, of December 12. Law on Support for Families in the Basque Country. • LA RIOJA. Law 4/2017, of April 28. Citizenship Income Law of La Rioja.
Poverty risk	<ul style="list-style-type: none"> • VALENCIAN COMMUNITY. Law 19/2017, of December 20. Valencian Inclusion Income Law. • CASTILE - LA MANCHA. Law 3/2019, of March 22. Consumer Statute of Castilla-La Mancha. • ASTURIAS. Law 3/2021, of June 30. Law on the Guarantee of Rights and Vital Benefits of Asturias.
Child poverty	<ul style="list-style-type: none"> • ANDALUSIA. Law 4/2021, of July 27. Childhood and Adolescence Law of Andalusia. • GALICIA. Decreto 99/2012, of March 16. Regulates community social services and their financing. • CATALONIA. Law 14/2010, of May 27. Child Protection Law of Catalonia 2010.
Social assistance	<ul style="list-style-type: none"> • CANARY ISLANDS. Decreto-Law 15/2021, of November 18. Approves the payment of an extraordinary benefit to recipients of Non-Contributory Pensions. • ANDALUSIA. Decreto 534/2012, of December 18. Establishes extraordinary social assistance for recipients of the Social Assistance Fund pensions and beneficiaries of the Minimum Income Guarantee Subsidy. • ARAGON. Order of November 18, 2009. Orders the publication of the Collaboration Agreement between the Ministry of Equality and the Autonomous Community of Aragón for the implementation of actions aimed at guaranteeing women victims of gender-based violence the right to comprehensive social assistance.

3. Measuring Poverty-Related Regulatory Intensity in Spain

3.1. Methodology

A fundamental aspect of evaluating the role of regulation is identifying an appropriate proxy that captures the regulatory measures adopted by a given country or administration to address a specific social issue. Our methodological approach is based on the volume of regulations that include terms related to poverty risk. We quantify the total number of enacted regulations, both overall and within specific policy areas (such as energy poverty) by year. For clarity, this measure is a flow not a stock. This method allows us to assess the degree of “activism” shown by administrations in tackling various public policy challenges. Measuring the volume of adopted regulations is one of the key components of a broader methodology used to evaluate the complexity of a regulatory framework, commonly referred to as “regulatory complexity” (see Mora-Sanguinetti, 2019; De Lucio & Mora-Sanguinetti, 2021 and 2022; Colliard & Georg, 2025).¹¹

In general, quantifying the volume of enacted regulations is useful because a higher regulatory burden, especially when regulations are issued by multiple administrations simultaneously, can create coordination and compliance challenges for economic agents. This complexity may lead to uncertainty about which regulations apply. In this sense, the approach is particularly relevant in decentralized legal systems (see Ellingsen, 1998; Di Vita, 2018). Given Spain’s decentralized governance structure, as described in Section 2 and like that of a federal state, it is especially important to examine the effects of regulatory complexity in this context.

It is important to highlight that the measurement or quantification of regulatory “volume”, whether total or by policy area, is both the simplest and the most widely used approach in the literature. At the international level, see Kirchner (2012) and Dawson and Seater (2013). For Spain, relevant studies include Econlaw Strategic Consulting (2009), Marcos, Santaló and Sánchez-Graells (2010), Mora-Sanguinetti (2019), Mora-Sanguinetti and Soler (2022), Mora-Sanguinetti, Hospido and Atienza-Maeso (2023) and Mora-Sanguinetti and Atienza-Maeso (2024).

Accordingly, we focus on measuring the “activism” of Spanish administrations in enacting regulations within the areas of interest.¹² Specifically, we analyze two dimensions: first, general poverty alleviation measures; and second, targeted interventions in key areas such as child poverty and energy poverty. To identify and classify relevant regulations, we extract and analyze key concepts found within their texts. The topics searched within the normative corpus were social exclusion (*exclusion social*); energy poverty (*pobreza energética*); precariousness (*precariedad*); poverty risk (*riesgo de pobreza*); child poverty (*pobreza infantil*); y social assistance (*asistencia social*).¹³ Additionally, we measure catalog regulations, ensuring that repeated occurrences of the same concept within a regulation do not alter their weight in the database. In other words, a regulation included in the dataset does not receive greater weight merely due to the repeated occurrence of specific keywords.

It is important to clarify which regulations are considered in our analysis and for which we examine the text. Our approach includes all possible regulations enacted by either the central administration or the regional governments, regardless of their normative rank (whether they carry the force of law¹⁴, as in a law, or have lower legal standing, such as decrees).¹⁵ The content of these regulations is accessed through Aranzadi-LA LEY. The rationale for identifying and quantifying all regulations, irrespective of their rank, is to approximate the reality that both citizens and businesses are affected by the entire regulatory framework. Changes in any regulation can contribute to legal instability, and individuals and companies do not necessarily process specialized legal knowledge. Every modification, whether in high- or low-ranking regulations, contributes to the overall “complexity” of the legal framework and its practical application (see Bardhan, 2002, along with references cited above).

Our regulatory corpus covers 2007-2021 because we use 2007 as a pre-sample year to construct first differences (and, when applicable, lag/lead terms) for the subsequent econometric analysis. The regression sample therefore spans 2008-2021, as 2008 is the first year for which year-to-year changes can be computed.

3.2. Data overview

Quantifying poverty-related regulatory activity allows us to gain an overall view of the regulatory landscape in Spain, its evolution over time, and to compare the intensity of regulation across different poverty-related topics at both the central and regional levels. This section presents a descriptive analysis of the regulatory framework.

¹¹ There are two additional approaches to measuring “regulatory complexity.” The first involves quantifying the number of cross-references that regulations make to one another, which helps assess the intricacy of the network formed by these rules. The second approach focuses on indicators of linguistic complexity, evaluating whether the regulations are written in language that is easy or difficult to understand.

¹² Each newly identified regulation increments the corresponding indicator. At this stage, the aim is not to assess regulatory effects, which are examined in the subsequent econometric analysis, but to capture overall regulatory activity within the relevant domains. Consequently, regulations are counted irrespective of their positive or negative implications or their derogatory nature, with derogatory acts treated as new regulations for measurement purposes.

¹³ The normative texts are written in Spanish, so keywords were searched in Spanish.

¹⁴ For example, Law 3/2017 of Valencia (of February 3, 2017), which aims to alleviate and reduce energy poverty.

¹⁵ For example, Decree 99/2012 of Galicia (of March 16, 2012), which regulates community social services and their financing.

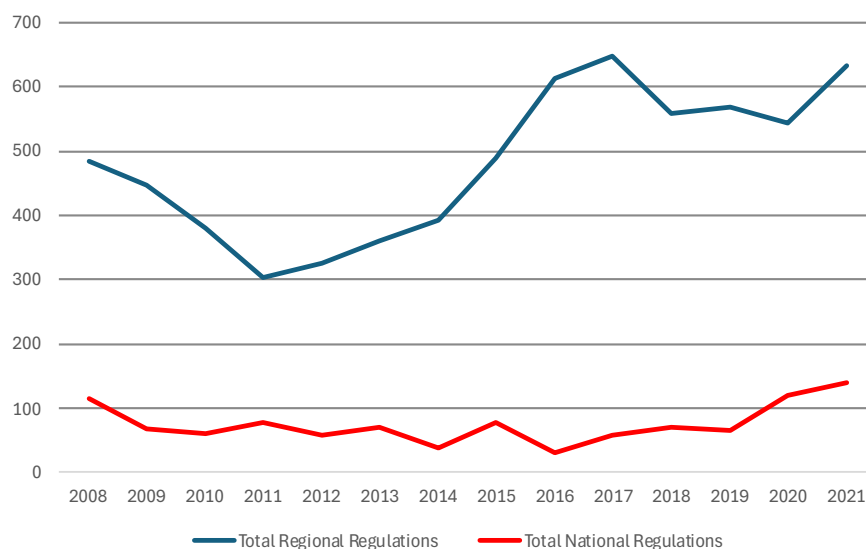
Table 3 provides descriptive statistics on the number of regulatory measures identified at both the national and regional levels over the 14-year period analyzed (2008-2021). Additionally, Figures 2 and 3 illustrate the evolution of regulatory intensity at the central and regional levels, with Figure 2 showing aggregate trends and Figure 3 offering a breakdown by topic.

On average, 75 national regulations were issued per year, with a minimum of 31 in 2016 and a maximum of 139 in 2021. As shown in Figure 1, regional regulation has consistently been more extensive than national regulation throughout the entire period analyzed, with an average of 482 regulations per year, a minimum of 304 in 2011, and a maximum of 648 in 2017. In fact, regional measures account for over 86% of the sample, with 6,752 poverty-related regulations out of the 7,801 identified. Moreover, we observe a general upward trend in regional regulatory activity, while national regulatory intensity has remained relatively stable.¹⁶

Table 3. Descriptive statistics on the number of national and regional regulations, overall and by topic (2008-2021).

Topic	N (years)	Mean	Median	Std. Dev.	Min	Max
All national regulations	14	75	70	30	31	139
<i>SE: Social exclusion</i>	14	24	23	9	9	42
<i>SP: Social protection</i>	14	24	22	15	10	73
<i>SA: Social assistance</i>	14	18	18	6	5	27
<i>P: Precariousness</i>	14	3	2	4	0	13
<i>CP: Child poverty</i>	14	2	0	3	0	9
<i>EP: Energy poverty</i>	14	2	1	3	0	12
<i>PR: Poverty risk</i>	14	2	1	4	0	11
All regional regulations	14	482	488	116	304	648
<i>SE: Social exclusion</i>	14	275	279	77	149	390
<i>SP: Social protection</i>	14	82	76	17	58	116
<i>SA: Social assistance</i>	14	75	75	15	56	106
<i>P: Precariousness</i>	14	30	31	9	16	43
<i>CP: Child poverty</i>	14	4	4	3	0	10
<i>EP: Energy poverty</i>	14	8	6	8	0	27
<i>PR: Poverty risk</i>	14	8	5	8	0	20

Figure 2. Evolution of national and regional regulations (2008-2021).



When regulatory intensity is classified by topic, we see that there are more regulations at the regional level in all the topics, but that differences are lower in the more specific topics like child poverty and energy poverty related measures. As shown in Figure 2, regulatory efforts on these specific topics emerged first at the regional level, around 2013-2014, while national regulatory efforts followed later, experiencing an increase from 2016-2017 onwards.

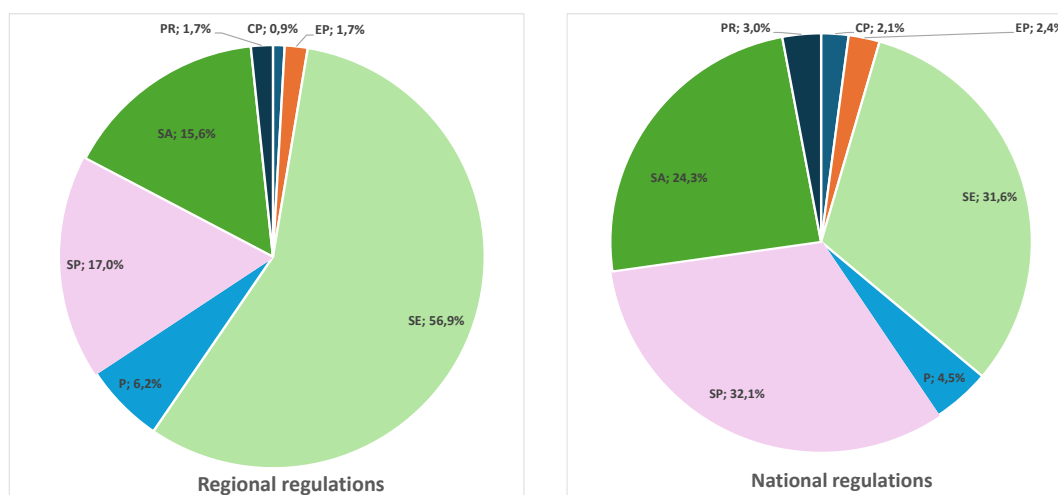
¹⁶ A more detailed analysis reveals a negative correlation between regional and national regulatory intensity for most of the period analyzed. The Pearson correlation coefficient between the two series for the period 2009-2020 is -0.31. This suggests that, in general, when the central administration reduces its regulatory intensity, the regional administrations tend to increase theirs.

Figure 3. Evolution of national and regional regulations by topic (2008-2021).



Figure 4 illustrates the distribution of regulatory measures identified at both the national and regional levels by topic. Notably, there is greater variation in regulatory measures at the central government level. At the regional level, nearly 57% of regulations fall under the general category of social exclusion, followed by social assistance (17%), social protection (15,6%), and precariousness-related regulations (6,5%). In contrast, while the most frequent topics at the national level remain the same, none surpasses 33% of the total. Social protection accounts for 32,1% of national regulations, followed by social exclusion (31,6%), social assistance (24,3%), and precariousness (4,5%). Finally, although regulations specifically addressing child poverty, energy poverty, and poverty risk constitute a minority at both levels of government, they represent a larger proportion of national regulations compared to regional ones.

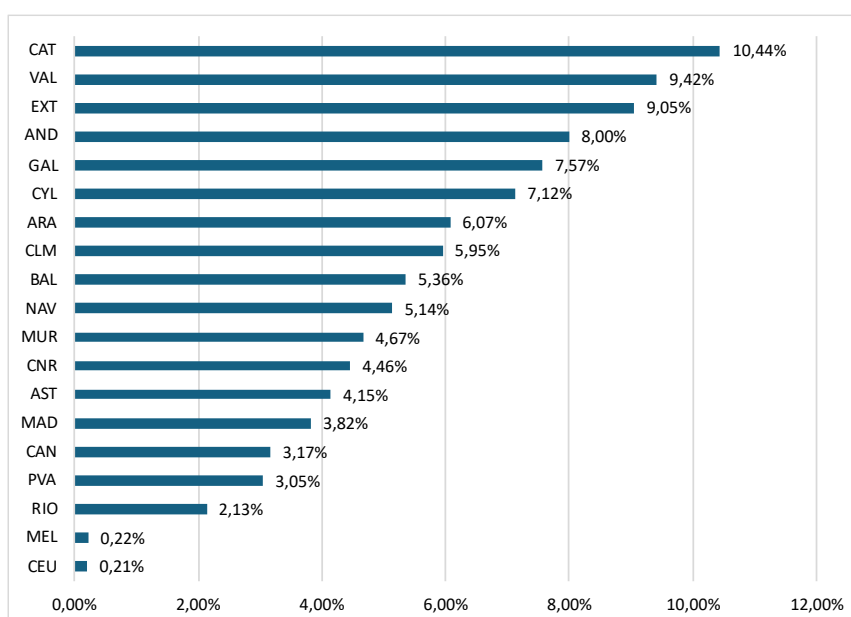
Figure 4. Distribution of regional and national regulatory measures by topic.



Regulation categories: SE: Social exclusion; SP: Social protection; SA: Social assistance; P: Precariousness; CP: Child poverty; EP: Energy poverty; PR: Poverty risk.

Examining the regulatory intensity across different regions provides valuable insights. This analysis includes the 17 Spanish Autonomous Regions, and the two autonomous cities, Ceuta (CEU) and Melilla (MEL). Figure 5 presents a ranked percentage distribution of regional regulations by region. Regulatory efforts vary significantly across regions. Overall, the most active region in poverty-related regulations during the analyzed period is Cataluña (CAT), accounting for 10,44% of the identified regulatory measures, followed by Valencia (9,42%) and Extremadura (EXT) (9,05%). In contrast, Ceuta (CEU) and Melilla (MEL) are the least active, with each contributing less than 0,3% of the measures, alongside with La Rioja (RIO) (2,3%) and Pais Vasco (PVA) (3,05%).

Figure 5. Ranked percentage distribution of regulations by region.



Region acronyms: ARA: Aragón; AND: Andalucía; AST: Asturias; BAL: Baleares; CAN: Cantabria; CAT: Cataluña; CEU: Ceuta; CNR: Canarias; CLM: Castilla la Mancha; CYL: Castilla León; EXT: Extremadura; GAL: Galicia; MAD: Madrid; MEL: Melilla; MUR: Murcia; NAV: Navarra; PVA: País Vasco; RIO: La Rioja; VAL: Valencia.

Table 4 presents the regional rankings across different regulatory topics. Some regions, such as Cataluña (CAT), consistently rank among the top positions in most categories. Conversely, other regions perform strongly in general regulatory topics but rank lower in more specific areas, and vice versa. For example, Galicia (GAL) ranks first in the general categories of social assistance and precariousness but falls to 11th, 13th and 14th place in child poverty, poverty risk and energy poverty measures respectively. In contrast, some regions excel in more specialized regulatory measures while ranking lower in general topics. This is the case of La Rioja (RIO), which, despite ranking among the lowest in overall regulatory activity, holds the 4th position in child poverty regulations. Similarly, Canarias (CNR) ranks 3rd in poverty risk measures but falls to 11th and 16th place in social exclusion and social protection, respectively.

Table 4. Regional rankings of regulatory intensity by topic.

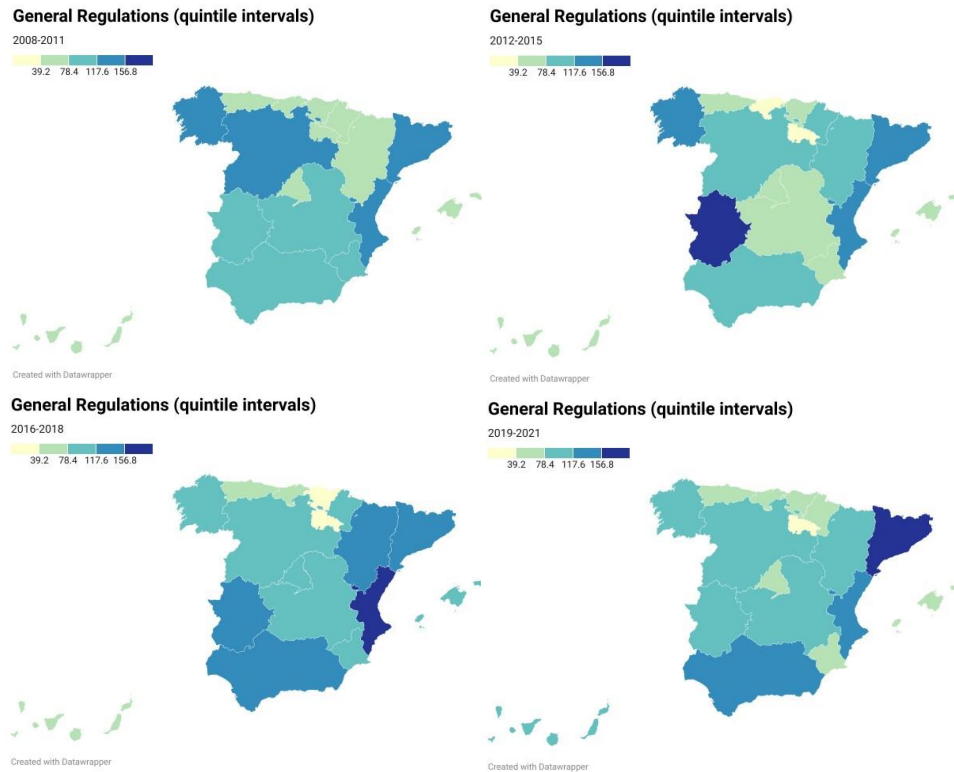
Region	All	SE	SP	SA	P	CP	EP	PR	Avg. Rank
CAT	1	2	5	3	2	1	1	2	2
VAL	2	1	7	4	6	7	2	3	4
EXT	3	3	1	5	8	3	3	1	3
AND	4	4	3	7	6	2	6	6	5
GAL	5	6	15	1	1	11	14	13	9
CYL	6	5	10	2	12	4	11	10	8
ARA	7	6	6	11	9	11	3	16	9
CLM	8	8	10	6	11	9	10	3	8
BAL	9	14	4	8	3	7	5	10	7
NAV	10	10	2	10	13	16	7	13	10
MUR	11	9	9	12	14	16	8	7	11
CNR	12	11	16	9	5	4	15	3	9
AST	13	12	13	14	4	9	15	9	11
MAD	14	13	12	15	10	11	8	8	11
CAN	15	16	8	15	14	11	11	16	13
PVA	16	15	13	13	17	11	11	15	14
RIO	17	17	17	17	14	4	15	10	13
MEL	18	19	18	18	18	16	15	18	17
CEU	19	18	19	18	19	16	15	18	18

Region acronyms: ARA: Aragón; AND: Andalucía; AST: Asturias; BAL: Baleares; CAN: Cantabria; CAT: Cataluña; CEU: Ceuta; CNR: Canarias; CLM: Castilla la Mancha; CYL: Castilla León; EXT: Extremadura; GAL: Galicia; MAD: Madrid; MEL: Melilla; MUR: Murcia; NAV: Navarra; PVA: País Vasco; RIO: La Rioja; VAL: Valencia. Regulation categories: SE: Social exclusion; SP: Social protection; SA: Social assistance; P: Precariousness; CP: Child poverty; EP: Energy poverty; PR: Poverty risk.

Finally, Figure 6 graphically illustrates the evolution of regulatory intensity across different regions over the period analyzed. It distinguishes between general topics (social exclusion, social protection, and social assistance) and more specific areas, including child poverty, energy poverty, energy risk and precariousness.¹⁷ The data reveal that, although regulatory intensity has increased over time, regulations on general topics have been more prevalent since the early years of the period analyzed. Three regions lead the ranking in overall regulatory intensity: Cataluña (CAT), Extremadura (EXT) and Valencia (VAL). The evolution of the regulatory intensity in specific topics follows a clearer pattern, as at the beginning of the period almost no regulations existed in any region, except for Galicia (GAL), Asturias (AST), Cataluña (CAT), and Valencia (VAL). Over time, these regions, along with Andalucía (AND), Canarias (CNR) and Baleares (BAL) have emerged as leaders in the enactment of specific regulations.

¹⁷ Appendix 1 provides a detailed breakdown of all topics.

Figure 6. Evolution of regional regulatory intensity: General and specific topics (2008-2021).



The descriptive analysis presented in this section documents substantial variation over time, across regions, and across policy areas in the volume of poverty-related regulation. In our empirical approach, the annual flow of regulations is interpreted as a proxy for regulatory intensity or policy activism in each domain. This measure does not capture the quality, enforcement, or budgetary scale of individual policies, but rather the extent to which governments actively intervene through formal rules.

From a conceptual perspective, higher regulatory intensity may be associated with poverty dynamics through different channels. On the one hand, an increase in regulatory activity may raise compliance costs, distort incentives, or introduce coordination frictions, potentially affecting employment, investment, and income, and thereby contributing to higher poverty risk. On the other hand, regulations designed to provide social protection, transfers, or targeted support may be associated with lower poverty risk, particularly when they address specific vulnerabilities.

The association between regulatory intensity and poverty is therefore an empirical question, and it may vary depending on both the level of government and the scope of the regulatory intervention. This motivates the econometric analysis that follows, which examines how changes in regulatory intensity across broad and targeted areas, and across national and regional levels, relate to changes in regional at-risk-of-poverty rates.

4. On the association between poverty-related regulatory intensity and at-risk-of-poverty rates

We examine the relationship between the intensity of poverty-related regulation and at-risk-of-poverty rates. Poverty related regulation is classified by broad topics (SE: social exclusion, SP: social protection, SA: social assistance, P: precariousness, and PR: poverty risk) and targeted topics (CP: child poverty, and EP: energy poverty), as well as by administrative level (RN: national regulations, and RR: regional regulations).

4.1. Empirical models

Our approach builds on previous research analyzing regional poverty rates in China (Meng et al., 2005; Chambers et al., 2008) and the U.S. (Chambers et al., 2019a). These studies draw on the economic development literature to formulate a linear regression model, which can be readily adapted to a panel data framework, as shown in Equation (1).

$$p_{i,t} = \alpha_i + \beta_1 \mu_t + \beta_2 \gamma_{i,t} + \beta_3 \text{Gini}_{i,t} + \varepsilon_{i,t} \quad (1)$$

where $p_{i,t}$ represents the poverty rate; α_i is a cross-sectional fixed effect that captures idiosyncratic differences in the mean poverty rate for a region that are not explained by other regressors; μ_t denotes an exogenous time trend (i.e., $\mu_t = t$); $\gamma_{i,t}$ is the natural logarithm of mean income, whose coefficient is also known as the growth elasticity of poverty; $\text{Gini}_{i,t}$ represents the natural logarithm of the Gini coefficient; and $\varepsilon_{i,t}$ is an error term with a mean of zero.

Following prior studies (e.g., Adams 2004; Ram 2007), taking first differences in Equation (1) eliminates both the cross-sectional fixed effects (α_i) and the exogenous trend (μ_t), resulting in a simplified regression model in changes, as specified in Equation (2).¹⁸

$$\Delta p_{i,t} = \beta_1 + \beta_2 \Delta \gamma_{i,t} + \beta_3 \Delta \text{Gini}_{i,t} + \omega_{i,t} \quad (2)$$

where Δ represents the first difference of the corresponding variable.

Our objective is to analyze the association of regulatory intensity, both at the regional and national levels, across broad and targeted poverty-related topics, with regional at-risk-of-poverty rates. We follow Chambers et al. (2019a), who incorporate regional regulatory intensity into Equations (1) and (2) to estimate the relationship between regulatory burdens and poverty across U.S. states. In a similar way, we include our Spanish national and regional broad and targeted regulatory intensity proxies. Thus, our empirical models are specified in Equations (3) to (5).

$$\Delta p_{i,t} = \beta_1 + \beta_2 \Delta \gamma_{i,t} + \sum_j \beta_j \Delta RR_{i,t}^j + \sum_j \beta_j \Delta RN_t^j + \omega_{i,t} \quad (3)$$

$$\Delta p_{i,t} = \beta_1 + \beta_2 \Delta \gamma_{i,t} + \sum_k \beta_k \Delta RR_{i,t}^k + \sum_k \beta_k \Delta RN_t^k + \omega_{i,t} \quad (4)$$

$$\Delta p_{i,t} = \beta_1 + \beta_2 \Delta \gamma_{i,t} + \sum_j \beta_j \Delta RR_{i,t}^j + \sum_j \beta_j \Delta RN_t^j + \sum_k \beta_k \Delta RR_{i,t}^k + \sum_k \beta_k \Delta RN_t^k + \omega_{i,t} \quad (5)$$

where $p_{i,t}$ is the regional at-risk-of-poverty rate, defined as the share of individuals with equivalized disposable income below 60% of the national median;¹⁹ RR^j and RN^j are respectively the regional and national regulatory intensity measures for each broad topic j , with $j \equiv$ SE (Social Exclusion), SP (Social Protection), SA (Social Assistance), P (Precariousness) and PR (Poverty Risk); RR^k and RN^k denote respectively the regional and national regulatory intensity measures for each targeted topic k , with $k \equiv$ CP (Child poverty) and EP (Energy Poverty); Δ represents the first difference of the corresponding variable; and the subscripts i and t refer to region and year, respectively.²⁰ Our dataset includes information on the 17 Spanish regions plus the two autonomous cities during the 14-year period from 2008 to 2021.

To better interpret our empirical findings, we also estimate the model using the aggregated broad and targeted regulatory intensity measures, resulting in Equation (6).

$$\Delta p_{i,t} = \beta_1 + \beta_2 \Delta \gamma_{i,t} + \beta_3 \Delta RR_Broad_{i,t} + \beta_4 \Delta RR_Target_{i,t} + \beta_5 \Delta RN_Broad_t + \beta_6 \Delta RN_Target_t + \omega_{i,t} \quad (6)$$

where the broad indices, ΔRR_Broad and ΔRN_Broad , are constructed as the sum of the regulatory intensity measures for the broad topics (SE, SP, SA, P, and PR), at the regional and national level, respectively; and the targeted indices, ΔRR_Target and ΔRN_Target , are defined as the sum of the regulatory intensity measures for the targeted topics (CP, and EP), at the regional and national level, respectively.

4.2. Descriptive statistics

Table 5 reports the descriptive statistics of the variables used in the empirical analysis. The unit of observation is region per year. The estimation sample contains an unbalanced panel of Spanish NUTS2 regions (17 Autonomous Communities, plus the two autonomous cities when available) over 2008–2021, yielding 247 usable observations after accounting for missing values in the research variables. As all variables are expressed in first differences, most medians are close to zero, indicating that year-to-year changes in poverty, income, and regulatory intensity are typically moderate. The regional poverty rate shows an average change close to zero with a standard deviation of 3.5 percentage points, suggesting non-negligible variability across regions and years.

¹⁸ Differencing removes time-invariant omitted variables, mitigating omitted variable bias and improving causal inference (Wooldridge 2010).

¹⁹ The at-risk of poverty rate series is pulled from the Spanish National Bureau of Statistics (INE).

²⁰ We cannot include the Gini coefficient in our empirical models because this variable is only available for Spanish regions from 2015 onwards.

Changes in average income are also centered around zero, with relatively low dispersion, reflecting gradual adjustments in regional income levels over time.

Regarding regulatory intensity, most measures exhibit low median changes and means close to zero, which is consistent with a regulatory process driven by discrete legislative episodes rather than continuous adjustments. At the same time, several variables, particularly those related to national regulation and the aggregated indices, display substantial dispersion, indicating the presence of pronounced regulatory bursts in specific years. Overall, the variables show sufficient within-sample variation to support meaningful empirical estimation and to justify the distinction between broad and targeted measures across levels of government.

Table 5. Descriptive statistics of the research variables.

Variables	N	Mean	Median	Std	P5	P25	P75	P95
Δp	247	0.114	0.000	3.509	-5.000	-1.900	1.900	5.800
$\Delta \ln y$	247	0.010	0.009	0.044	-0.062	-0.017	0.039	0.081
ΔRR^{SE}	247	0.389	0.000	7.976	-11.000	-3.000	4.000	13.000
ΔRR^{SP}	247	0.174	0.000	3.085	-4.000	-2.000	2.000	5.000
ΔRR^{SA}	247	-0.117	0.000	2.699	-4.000	-2.000	1.000	5.000
ΔRR^P	247	0.012	0.000	1.991	-2.000	-1.000	1.000	3.000
ΔRR^{PR}	247	0.073	0.000	0.925	-1.000	0.000	0.000	2.000
ΔRR^{CP}	247	0.024	0.000	0.662	-1.000	0.000	0.000	1.000
ΔRR^{EP}	247	0.049	0.000	0.987	-1.000	0.000	0.000	2.000
ΔRN^{SE}	247	1.923	5.000	12.193	-24.000	-3.000	8.000	21.000
ΔRN^{SP}	247	-3.385	2.000	15.311	-50.000	-6.000	7.000	10.000
ΔRN^{SA}	247	0.231	0.000	7.109	-17.000	-3.000	5.000	10.000
ΔRN^P	247	0.769	1.000	2.641	-4.000	-1.000	2.000	7.000
ΔRN^{PR}	247	0.769	0.000	2.459	-2.000	-1.000	2.000	8.000
ΔRN^{CP}	247	0.692	0.000	1.901	-1.000	0.000	1.000	7.000
ΔRN^{EP}	247	0.923	0.000	2.469	-2.000	0.000	1.000	7.000
ΔRR_Broad	247	0.530	0.000	11.316	-18.000	-6.000	7.000	18.000
ΔRR_Target	247	0.073	0.000	1.180	-2.000	0.000	0.000	2.000
ΔRN_Broad	247	0.308	12.000	28.277	-46.000	-21.000	18.000	42.000
ΔRN_Target	247	1.615	1.000	3.614	-2.000	0.000	1.000	12.000

Note: The regulatory database is available from 2007; 2007 is used as a pre-sample year to compute first differences, so the estimation period is 2008-2021.

4.3. Regression results

The regression analysis results are presented in Table 6. This analysis allows us to get some insights into the relationship between poverty-related regulation at both regional and national levels and regional poverty dynamics. The overall explanatory power of the models is comparable to, and even exceeds, that of previous related research. The R^2 between 0.13 and 0.20 is higher than that reported by Chambers et al. (2019a) ($R^2 \approx 0.11$, see Chambers et al.: table 4 pp. 140), suggesting that additional factors not captured in the model may also shape poverty dynamics across Spanish regions. Nevertheless, all models report highly significant F-statistics, indicating that the included variables are jointly associated with the observed variations in poverty rates.

Across all specifications, the coefficient on average income ($\Delta \ln y$) is negative and highly significant, indicating a robust negative association between income growth and poverty rates. This finding is in line with the extensive empirical literature documenting an inverse relationship between economic growth and poverty.

At the regional level, the results indicate that targeted regulatory measures are more closely associated with reductions in poverty risk rates. The coefficient of child poverty regulatory intensity at the regional level (ΔRR^{CP}) is negative and statistically significant in both models (4) and (5), increases in regional regulations specifically targeting child poverty are associated with decreases in poverty risk rates. Similarly, the coefficient for energy poverty regulatory intensity (ΔRR^{EP}) is negative in both models, though it is only statistically significant in model (5). This pattern is consistent with a negative association between regulatory intensity targeting energy poverty and poverty risk rates. Conversely, broad poverty-related regulations at the regional level display a different pattern. The only statistically significant coefficient in model (2) at the regional level is the one of ΔRR^{SP} , which is positive. Thus, increases in the regional regulatory intensity related to social protection are unexpectedly associated with higher poverty risk rates. When broad and targeted regulatory measures are aggregated (model (6)), the results remain consistent: broad regulatory intensity (ΔRR_Broad) exhibits a positive and statistically significant coefficient while targeted regulatory intensity (ΔRR_Target) shows a negative and statistically significant coefficient. These results point to systematic differences in the correlations observed for targeted versus broad regulatory measures at the regional level. Only targeted measures show the sign consistent with a poverty-reducing association.

At the national level, the results suggest that broad regulatory measures are associated with poverty risk rates through a more complex pattern. Model (2), which includes only broad regulatory intensity measures, indicates that precariousness regulatory intensity (ΔRN^P) and poverty risk regulatory intensity (ΔRN^{PR}) are positively and significantly related to poverty risk rates, implying that increases in national-level regulations addressing precariousness and poverty risk are associated with higher poverty risk rates.

Conversely, social protection regulatory intensity (ΔRN^{SP}) exhibits a negative and statistically significant coefficient, suggesting that greater national regulatory efforts in social protection are related to lower poverty risk rates. The remaining broad regulatory measures do not show statistically significant effects. When only targeted regulatory measures are considered (model (3)), the results indicate that only one national-level variable, child poverty regulatory intensity (ΔRN^{CP}) is statistically significant. However, it is positively related to poverty risk rates, a pattern that is not consistent with a poverty-reducing association and may instead reflect reactive regulatory responses, *i.e.*, increases in regulatory activity implemented in periods or regions experiencing worsening social conditions. In model (4), which includes both broad and targeted regulatory measures, the negative and statistically significant coefficient for social protection regulatory intensity (ΔRN^{SP}) remains, consistent with a poverty-reducing association. However, none of the other broad or targeted measures exhibit statistically significant effects, suggesting no clear association with poverty risk rates. Finally, when broad and targeted measures are aggregated (model (6)), the results differ sharply from those at the regional level. The coefficient for broad regulatory intensity (ΔRN_{Broad}) is negative and statistically significant, confirming that general poverty-related regulations at the national level relate to lower poverty risk rates. However, the coefficient for targeted regulatory intensity (ΔRN_{Target}) is positive and statistically significant. Notably, this pattern is the opposite of that observed at the regional level, where targeted measures exhibit the sign consistent with a poverty-reducing association, while broad measures do not.

These findings suggest the importance of distinguishing between different types of regulatory interventions when analyzing their association with poverty outcomes. While some regulations, particularly those related to social protection and energy poverty, exhibit correlations consistent with lower poverty risk rates, others do not show the expected patterns. The heterogeneous correlations observed across regulatory areas suggest the relevance of a well-structured, evidence-based regulatory framework adapted to the specific challenges faced by each region.

Table 6. Regression results: Estimation of models (3) to (6).

Variables	Model (3)	Model (4)	Model (5)	Model (6)
Constant	-0.076 (-0.77)	0.345** (2.61)	-0.023 (-0.27)	0.226 (1.53)
$\Delta \ln \gamma$	-33.374*** (-5.65)	-27.794*** (-4.99)	-33.078*** (-5.57)	-28.818*** (-6.10)
ΔRR^{SE}	0.000 (0.02)		0.009 (0.37)	
ΔRR^{SP}	0.101** (2.38)		0.099* (2.08)	
ΔRR^{SA}	0.025 (0.32)		0.034 (0.40)	
ΔRR^P	-0.010 (-0.16)		-0.012 (-0.20)	
ΔRR^{PR}	0.243 (1.28)		0.273 (1.35)	
ΔRR^{CP}		-0.542** (-2.21)	-0.513* (-1.88)	
ΔRR^{EP}		-0.203 (-1.50)	-0.312** (-2.25)	
ΔRN^{SE}	-0.021 (-0.47)		0.006 (0.08)	
ΔRN^{SP}	-0.050*** (-3.20)		-0.044*** (-3.24)	
ΔRN^{SA}	0.029 (0.48)		-0.011 (-0.13)	
ΔRN^P	0.170* (2.01)		0.180 (1.26)	
ΔRN^{PR}	0.302*** (4.09)		0.271 (1.50)	
ΔRN^{CP}		0.235*** (2.97)	0.131 (0.65)	
ΔRN^{EP}		-0.094 (-1.06)	-0.141 (-0.61)	
ΔRR_{Broad}				0.026* (1.90)
ΔRR_{Target}				-0.349** (-2.38)
ΔRN_{Broad}				-0.020** (-2.25)
ΔRN_{Target}				0.124** (2.68)
Observations	247	247	247	
Goodness of fit (R^2)	0.18	0.13	0.20	0.14
F-statistic	36.00***	8.07***	148.67***	20.89***

Notes: *t*-statistics are shown between brackets; *, ** and *** indicate statistical significance at 10%, 5% and 1%, respectively.

4.4. Robustness checks

Table 7 reports several robustness checks based on the aggregated specification in model (6). This model provides a more parsimonious benchmark that summarizes regulatory intensity across levels of government and regulatory scope. Implementing the same tests in the fully disaggregated specifications would substantially increase the number of regressors relative to the available sample size, potentially leading to overparameterization and non-reliable point estimates.

First, column (2) adds the regional unemployment rate in first differences.²¹ The coefficient on unemployment rate ($\Delta Unemployment_rate$) is not statistically significant, and the estimated effects of regulatory intensity remain largely unchanged. Regional targeted regulation continues to display a negative coefficient, and national targeted regulation remains positive. Most coefficients remain statistically significant, although only at higher significance levels. Nevertheless, their signs and magnitudes are broadly consistent with the baseline results, suggesting that our main findings are not driven by short-term labour market fluctuations.

Second, column (3) reports a specification including contemporaneous, lagged, and lead changes in regulatory intensity. This test is designed to assess the possibility of reverse causality. If regulatory activity were purely reactive to worsening social conditions, future regulatory changes would be expected to predict current changes in poverty. However, the lead coefficients are generally not statistically significant, and the overall sign pattern across regulatory categories remains consistent with the baseline model. This

²¹ The sample size is reduced in this specification due to missing data for some region-year combinations.

absence of systematic lead effects weakens a simple reverse-causality interpretation and is more consistent with the structured asymmetry observed in the main results.

As an additional check addressing the reverse-causality concern, we also estimate a set of reverse regressions in which changes in regulatory intensity are used as dependent variables, and current and lagged changes in the regional at-risk-of-poverty rate are included as explanatory variables, together with income growth. Specifically, we estimate separate regressions for each of the four aggregated regulatory indicators, where the change in the regulatory index is regressed on the contemporaneous change in poverty, its first lag, and the change in income. If regulatory activity were systematically driven by prior changes in poverty, the coefficients on the poverty variables would be expected to be statistically significant and economically meaningful. Across these specifications (non-tabulated), neither the contemporaneous nor the lagged changes in poverty display consistent statistical significance. This pattern indicates that changes in poverty rates do not systematically predict subsequent changes in regulatory intensity. Taken together with the absence of significant lead effects in the main dynamic specification, these results provide additional evidence against a simple reverse-causality interpretation of the baseline findings.

Third, column (4) of Table 7 introduces political controls. Specifically, we include an indicator for a progressive national government (*GN_Left*), an indicator for a progressive regional government (*GR_Left*), and a variable capturing political alignment between the two levels of government (*NG_RG_Match*), which takes the value one when both the national and the regional governments share the same broad ideological orientation. None of these variables are statistically significant, and their inclusion does not materially affect the magnitude, sign, or significance of the regulatory intensity coefficients. The core results, positive coefficients for broad regional regulation and national targeted regulation, and negative coefficients for regional targeted regulation and national broad regulation remain essentially unchanged.

Overall, these robustness checks indicate that the main results are not driven by the timing of regulatory effects, simple reverse-causality patterns, or the omission of key labour market and political cycle controls.

Table 7. Robustness checks: Aggregated regulatory intensity models.

Variables	Model (6)	+ Unemployment_rate	+ Lag + Lead	+ political controls
Constant	0.226 (1.53)	0.226 (1.45)	0.002 (0.01)	0.193 (0.72)
$\Delta \ln \gamma$	-28.818*** (-6.10)	-27.500*** (-5.93)	-31.622*** (-5.07)	-29.066*** (-6.12)
ΔRR_{Broad}	0.026* (1.90)	0.027* (1.85)	0.038* (1.81)	0.026* (1.85)
ΔRR_{Target}	-0.349** (-2.38)	-0.309* (-1.95)	-0.276 (-1.27)	-0.345** (-2.41)
ΔRN_{Broad}	-0.020** (-2.25)	-0.015 (-1.59)	0.017 (0.93)	-0.020* (-2.00)
ΔRN_{Target}	0.124** (2.68)	0.105* (1.81)	0.151** (2.17)	0.116** (1.83)
$\Delta Unemployment_rate$		0.038 (0.57)		
<i>NG_Left</i>				0.025 (0.05)
<i>RG_Left</i>				0.298 (1.30)
<i>NG_RG_Match</i>				-0.146 (-0.35)
Observations	247	234	209	247
Lag and Lead Regulatory intensity variables	-	-	Yes	-
Goodness of fit (R ²)	0.18	0.13	0.17	0.15
F-statistic	36.00***	19.98***	241.28***	17.06***

Notes: *t*-statistics are shown between brackets; *, ** and *** indicate statistical significance at 10%, 5% and 1%, respectively.

5. Conclusions and policy recommendations

This study provides a comprehensive assessment of the regulatory landscape related to poverty in Spain, combining large-scale textual analysis with panel econometric evidence. By systematically identifying and classifying more than a decade of poverty-related regulations at both the national and regional levels, the paper develops a novel indicator of regulatory intensity and examines its association with regional at-risk-of-poverty rates. The empirical results point to a heterogeneous relationship between regulatory activity and poverty outcomes, which varies both with the scope of the regulation, broad *versus* targeted, and by the level of government responsible for its implementation, regional *versus* national.

A consistent pattern emerges across specifications. Targeted measures and broad-based frameworks are associated with poverty outcomes in different ways depending on the institutional level at which they are enacted. At the regional level, targeted regulations, particularly those addressing child and energy poverty, display the sign consistent with a poverty-reducing association. At the national level, by contrast, broad regulatory frameworks, especially those related to social protection, exhibit coefficients with the expected negative sign. In the remaining combinations, the estimated coefficients tend to show the opposite sign, suggesting patterns

more consistent with reactive policymaking or institutional misalignment than with poverty-reducing associations. Taken together, these results highlight the importance of considering the interaction between policy design and governance structure when interpreting the relationship between regulation and poverty dynamics.

These findings are particularly relevant in a highly decentralized institutional context such as Spain's, where responsibilities for social and economic policy are shared across levels of government. The evidence suggests that the observed association between regulation and poverty outcomes may depend not only on the substantive content of policies, but also on whether the type of intervention is aligned with the administrative level best equipped to design and implement it. Targeted measures appear more consistent with poverty-reducing associations when implemented closer to local conditions and administrative structures, while broad frameworks may gain effectiveness from national coordination, fiscal capacity, and policy coherence.

At the same time, the analysis points to the potential risks associated with an extensive and highly decentralized regulatory environment. Regional governments account for a substantial share of total regulatory output, both in aggregate terms and within specific policy domains. While such decentralization may foster policy experimentation and bring decision-making closer to citizens, it may also generate fragmentation or inconsistencies across territories. Evidence from related policy areas suggests that uncoordinated multi-level regulation can dilute intended policy effects and create inefficiencies, pointing to the importance of coordination mechanisms and coherent institutional design.

From a policy perspective, the results support a cautious and evidence-based approach to regulatory design. More regulation is not necessarily associated with better outcomes, and the effectiveness of regulatory interventions appears to depend on both their scope and their institutional location. Strengthening coordination across levels of government, promoting systematic ex-ante and ex-post regulatory impact assessments, and ensuring coherence between fiscal and regulatory policies may help reduce fragmentation and improve policy performance. In decentralized settings, particular attention should be paid to the allocation of responsibilities between levels of government, especially when designing targeted versus broad-based interventions.

More generally, the study contributes to the literature by highlighting the role of institutional context in shaping the observed relationship between regulation and poverty outcomes. The distribution of competences across levels of government appears to be an important factor in understanding how regulatory intensity correlates with social indicators.

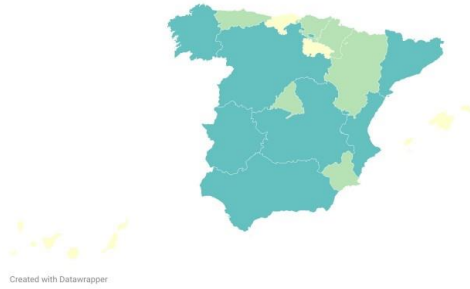
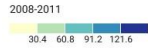
This analysis conducted is subject to several limitations that should be considered when interpreting the results. First, the regulatory intensity indicators capture the volume and thematic orientation of enacted regulations, but they do not directly reflect differences in regulatory quality, enforcement, or effective implementation. In practice, regulations may vary substantially in scope, budgetary support, administrative capacity, and actual reach among target populations. These dimensions are not fully captured by text-based measures of regulatory activity, and the indicators should therefore be interpreted as proxies for regulatory effort rather than precise measures of policy effectiveness.

Second, the empirical analysis does not establish strict causal effects. While the first-difference specification helps control for time-invariant heterogeneity, the estimates may still reflect reverse causality or omitted time-varying factors. Some positive coefficients may be consistent with reactive policymaking; whereby regulatory activity increases in response to worsening social conditions. However, the results show a structured asymmetry, negative coefficients in aligned cases and positive ones in misaligned cases, rather than a uniform reverse-causality pattern. This is more consistent with institutional differences in policy design and implementation than with purely reactive regulation.

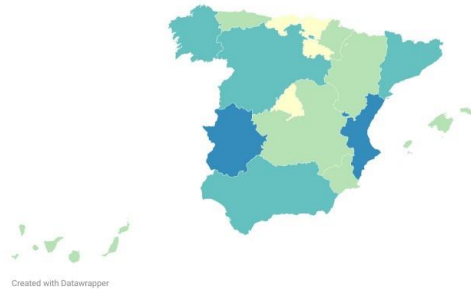
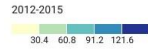
Finally, future research could build on this work by incorporating additional dimensions of regulatory quality and by exploring complementary outcomes, such as litigation or legal conflict related to poverty-related measures, which may provide further insights into the real effects of regulatory change.

Appendix 1. Evolution of regulatory measures by topic. 2008-2021.

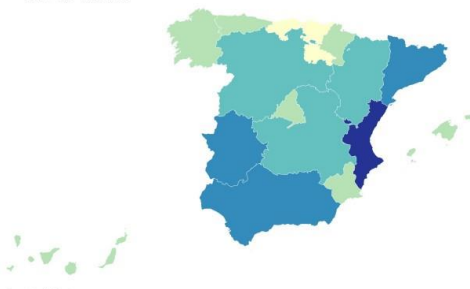
Social Exclusion Regulations (quintile intervals)



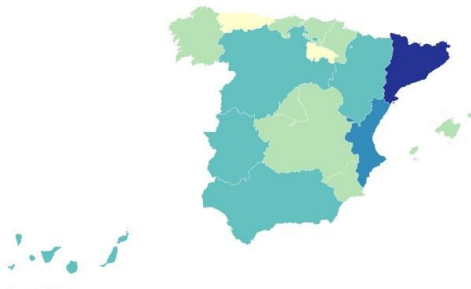
Social Exclusion Regulations (quintile intervals)



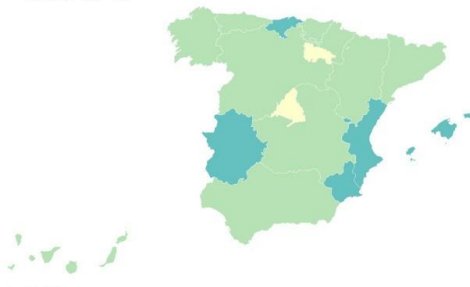
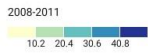
Social Exclusion Regulations (quintile intervals)



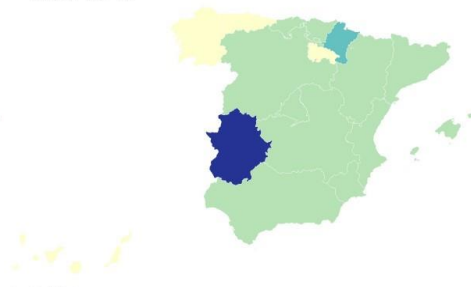
Social Exclusion Regulations (quintile intervals)



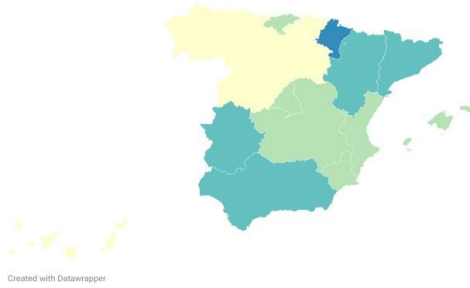
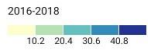
Social Protection Regulations (quintile intervals)



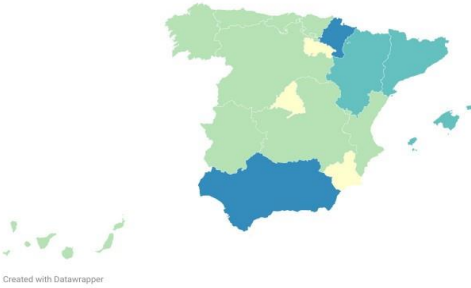
Social Protection Regulations (quintile intervals)



Social Protection Regulations (quintile intervals)

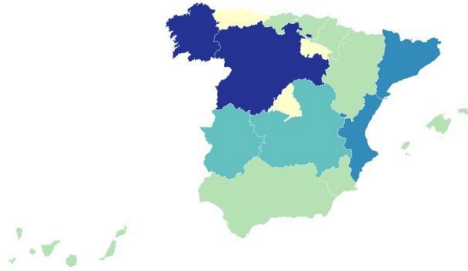
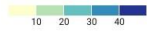


Social Protection Regulations (quintile intervals)



Social Assistance Regulations (quintile intervals)

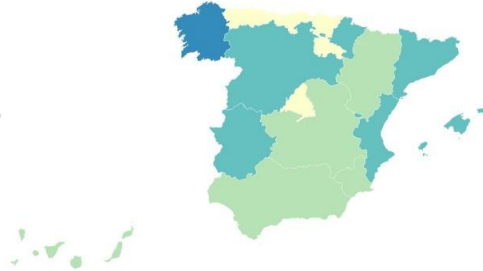
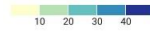
2008-2011



Created with Datawrapper

Social Assistance Regulations (quintile intervals)

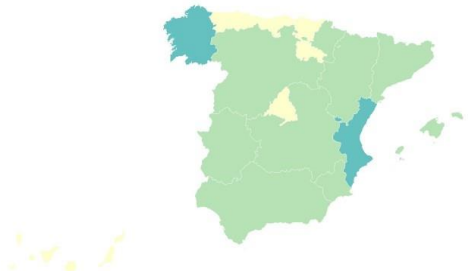
2012-2015



Created with Datawrapper

Social Assistance Regulations (quintile intervals)

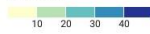
2016-2018



Created with Datawrapper

Social Assistance Regulations (quintile intervals)

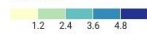
2019-2021



Created with Datawrapper

Child Poverty Regulations (quintile intervals)

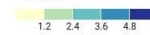
2008-2011



Created with Datawrapper

Child Poverty Regulations (quintile intervals)

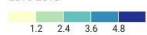
2012-2015



Created with Datawrapper

Child Poverty Regulations (quintile intervals)

2016-2018



Created with Datawrapper

Child Poverty Regulations (quintile intervals)

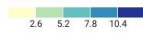
2019-2021



Created with Datawrapper

Energetic Poverty Regulations (quintile intervals)

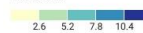
2008-2011



Created with Datawrapper

Energetic Poverty Regulations (quintile intervals)

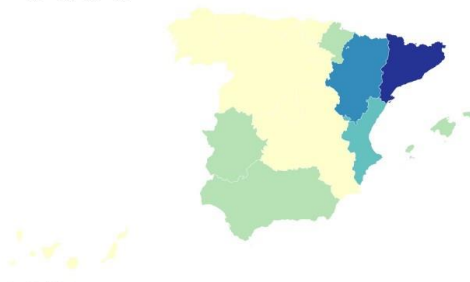
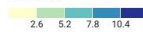
2012-2015



Created with Datawrapper

Energetic Poverty Regulations (quintile intervals)

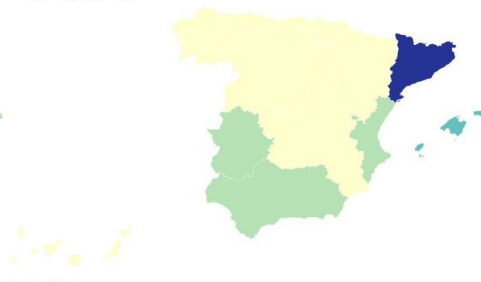
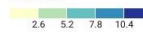
2016-2018



Created with Datawrapper

Energetic Poverty Regulations (quintile intervals)

2019-2021



Created with Datawrapper

Poverty Risk Regulations (quintile intervals)

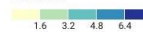
2008-2011



Created with Datawrapper

Poverty Risk Regulations (quintile intervals)

2012-2015



Created with Datawrapper

Poverty Risk Regulations (quintile intervals)

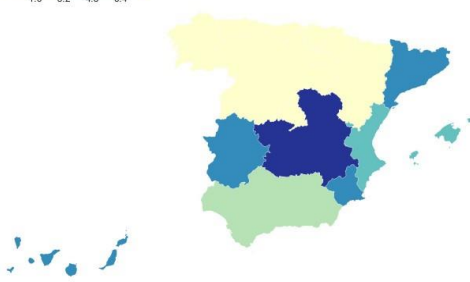
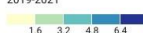
2016-2018



Created with Datawrapper

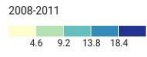
Poverty Risk Regulations (quintile intervals)

2019-2021



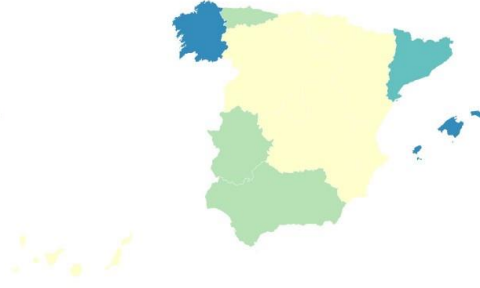
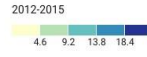
Created with Datawrapper

Precariousness Regulations (quintile intervals)



Created with Datawrapper

Precariousness Regulations (quintile intervals)



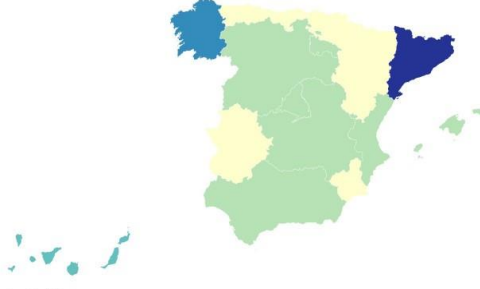
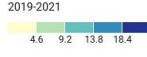
Created with Datawrapper

Precariousness Regulations (quintile intervals)



Created with Datawrapper

Precariousness Regulations (quintile intervals)



Created with Datawrapper

References

- Acemoglu, D., S. Johnson, and J. A. Robinson (2005). "Institutions as a fundamental cause of long-run growth." In P. Aghion and S. N. Durlauf (eds.), *Handbook of Economic Growth*, Vol. 1, 385–472. Amsterdam: Elsevier.
- Adams, R.H. (2004). "Economic Growth, inequality and poverty: Estimating the growth elasticity of poverty." *World Development* 32(12), 1989-2014.
- Anthony, E.K., B. King, and M.J. Austin (2011). "Reducing child poverty by promoting child well-being: Identifying best practices in a time of great need." *Children and Youth Services Review* 33, 1999-2009.
- Bailey, J.B., D.W., Thomas, and J.R. Anderson (2019). "Regressive effects of regulation on wages." *Public Choice* 180, 91-103.
- Bardhan, P. (2002). "Decentralization of governance and development." *Journal of Economic Perspectives*, 16(4), 185-205.
- Barrientos, A., and J. DeJong (2006). "Reducing child poverty with cash transfers: A sure thing?" *Development Policy Review*, 24(5), 537-552.
- Bischoff, I., and A. Bohnet (2000). "Social transaction costs and economic growth." *Jahrbücher für Nationalökonomie und Statistik*, 220(4), 419-437.
- Chambers, D., Y. Wu, and H. Yao (2008). The impact of past growth on poverty in Chinese provinces. *Journal of Asian Economics*, 19(4), 348-357.
- Chambers, D., P. A. McLaughlin, and L. Stanley (2019a). "Regulation and poverty: An empirical examination of the relationship between the incidence of federal regulation and the occurrence of poverty across the US states." *Public Choice*, 180, 131-144.
- Chambers, D., P. A. McLaughlin, and L. Stanley (2019b). "Barriers to prosperity: The harmful impact of entry regulations on income inequality." *Public Choice*, 180, 165-190.
- Chambers, D., C. A. Collins, and A. Krause (2019c). "How do federal regulations affect consumer prices? An analysis of the regressive effects of regulation." *Public Choice*, 180, 57-90.
- Coase, R. H. (1960). "The problem of social cost." *Journal of Law and Economics*, 3, 1-44.
- Coase, R. H. (1992). "The institutional structure of production." *American Economic Review*, 82(4), 713-719.
- Colliard, J.-E., and C.-P. Georg (2025). "Measuring regulatory complexity." HEC Paris Research Paper No. FIN-2020-1358.
- Consejo Económico y Social de España (2017). *Políticas públicas para combatir la pobreza en España*. Informe 01/2017. Madrid.
- Dawson, J. W., and J. J. Seater (2013). "Federal regulation and aggregate economic growth." *Journal of Economic Growth*, 18, 137-177.
- De Lucio, J., and J. S. Mora-Sanguinetti (2021). "New dimensions of regulatory complexity and their economic cost: An analysis using text mining." Working Paper, Bank of Spain, No. 2107.
- De Lucio, J., and J. S. Mora-Sanguinetti (2022). "Drafting 'better regulation': The economic cost of regulatory complexity." *Journal of Policy Modeling*, 44(1), 163-183.
- Dejuán, D., and J. S. Mora-Sanguinetti (2021). "Which legal procedure affects business investment most, and which companies are most sensitive? Evidence from microdata." *Economic Modelling*, 94, 201-220.
- Di Vita, G. (2018). "Institutional quality and the growth rates of the Italian regions: The costs of regulatory complexity." *Papers in Regional Science*, 97(4), 1057-1081.
- Dollar, D., and A. Kraay (2000). "Growth is good for the poor." World Bank Working Paper. WPS2587.
- Dwumfour, R. A. (2020). "Poverty in Sub-Saharan Africa: The role of business regulations, policies and institutions." *Social Indicators Research*, 149, 861-890.
- Edmonds, E. V., and N. Schady (2012). "Poverty alleviation and child labor." *American Economic Journal: Economic Policy*, 4(4), 100-124.

- Econlaw Strategic Consulting (2009). *Evolución de la actividad regulatoria en España 1978-2008: Descentralización y comunidades autónomas*. Madrid.
- Ellingsen, T. (1998). "Externalities vs. internalities: A model of political integration." *Journal of Public Economics*, 68(2), 251-268.
- European Union (2024). *The future of European competitiveness: A competitiveness strategy for Europe*. Brussels.
- Eurostat (2024). "People at risk of poverty or social exclusion in 2023." *Eurostat News*, June 12.
- Fatás, A., and I. Mihov (2013). "Policy volatility, institutions, and economic growth." *Review of Economics and Statistics*, 95(2), 362-376.
- García Blanco, M. L., and I. Salama (2018). "La pobreza energética en España: Su delimitación competencial." *ICADE. Revista de la Facultad de Derecho*, 102.
- Gratton, G., L. Guiso, C. Michelacci, and M. Morelli (2021). "From Weber to Kafka: Political instability and the overproduction of laws." *American Economic Review*, 111(9), 2964-3003.
- Hall, R. E., and C. I. Jones (1999). "Why do some countries produce so much more output per worker than others?" *Quarterly Journal of Economics*, 114(1), 83-116.
- Helpman, E. (ed.) (2008). *Institutions and economic performance*. Harvard University Press.
- Henisz, W. J. (2000). "The institutional environment for economic growth." *Economics & Politics*, 12(1), 1-31.
- Hooghe, L., A. H. Schakel, and G. Marks (2008). "Country and regional scores." *Regional & Federal Studies*, 18(2), 259-274.
- Jalilian, H., C. Kirkpatrick, and D. Parker (2007). "The impact of regulation on economic growth in developing countries: A cross-country analysis." *World Development*, 35(1), 87-103.
- Kimberlin, S. (2016). "The influence of government benefits and taxes on rates of chronic and transient poverty in the United States." *Social Service Review*, 90, 185-234.
- Kirchner, S. (2012). "Federal legislative activism in Australia: A new approach to testing Wagner's law." *Public Choice*, 153(3-4), 375-392.
- Kovac, M., and R. Spruk (2016). "Using the variation in transaction costs to explain the propensity to patent: Some firm-level evidence." *SSRN Working Paper*.
- Laffont, J.-J., and J. Tirole (1993). *A theory of incentives in procurement and regulation*. MIT Press.
- Lustig, N. A., and O. J. Rigolini (2002). "Poverty reduction and economic growth: A two-way causality." *Inter-American Development Bank Working Paper*.
- Marcos, F., J. Santaló, and A. Sánchez-Graells (2010). "Measuring regulatory intensity by the Spanish regions (1978-2009)." *IE Business School Working Paper*, WP10-07.
- Meng, X., R. Gregory, and Y. Wang (2005). "Poverty, inequality, and growth in urban China, 1986-2000." *Journal of Comparative Economics*, 33(4), 710-729.
- McLaughlin, P. A., O. Sherouse, D. Francis, J. Nelson, T. Powers, W. Stover, and J. Broughel (2019). *StateReg data*, QuantGov. Mercatus Center.
- Minogue, M. (2008). "What connects regulatory governance to poverty?" *Quarterly Review of Economics and Finance*, 48, 189-201.
- Monereo Pérez, J. L. (2009). "Competencias autonómicas en asistencia social y servicios sociales." *Temas Laborales*, 100, 295-328.
- Mora-Sanguinetti, J. S. (2019). "La 'complejidad' de la regulación española: ¿Cómo medirla? ¿Qué impacto económico tiene?" *Revista ICE*, 907, 147-162.
- Mora-Sanguinetti, J. S. (2021). "Justicia y economía: La eficiencia del sistema judicial en España y sus impactos económicos." *Papeles de Economía Española*, 168, 66-77.

- Mora-Sanguinetti, J. S. (2022). "Las cuatrocientas mil normas de la democracia española: Cuantificación e impacto de la complejidad normativa." *Revista de las Cortes Generales*, 114, 233-255.
- Mora-Sanguinetti, J. S., and A. Atienza-Maeso (2024). "How effective is equality regulation in reducing gender gaps in the labor market?" *Journal of Policy Modeling*, 46(5), 823-846.
- Mora-Sanguinetti, J. S., L. Hospido, and A. Atienza-Maeso (2023). "The numbers of equality regulation." Working Paper, Bank of Spain, No. 2320.
- Mora-Sanguinetti, J. S., and R. Pérez-Valls (2021). "How does regulatory complexity affect business demography? Evidence from Spain." *European Journal of Law and Economics*, 51, 203-242.
- Mora-Sanguinetti, J. S., C. Peñasco, and R. Spruk (2025). "The impact of green regulation on firm innovation." *Review of Industrial Economics*, 188(4), 39-87.
- Mora-Sanguinetti, J. S., J. Quintana, I. Soler, and R. Spruk (2024). "The heterogeneous effects of a higher volume of regulation." *Journal of Regulatory Economics*, 65, 137-153.
- Mora-Sanguinetti, J. S., and I. Soler (2022). "La regulación sectorial en España: Resultados cuantitativos." Working Paper, Bank of Spain, No. 2202.
- Mora-Sanguinetti, J. S., and R. Spruk (2023). "Economic effects of recent experiences of federalism." *Journal of Regional Science*, 63(1), 30-63.
- North, D. C. (1981). *Structure and change in economic history*. Norton.
- North, D. C. (1990a). *Institutions, institutional change and economic performance*. Cambridge University Press.
- North, D. C. (1990b). "A transaction cost theory of politics." *Journal of Theoretical Politics*, 2(4), 355-367.
- North, D. C. (1999). *Understanding the process of economic change*. Institute of Economic Affairs.
- Ogus, A. I. (2004). *Regulation: Legal form and economic theory*. Cheltenham: Edward Elgar.
- Ram, R. (2007). "Roles of income and equality in poverty reduction: recent cross-country evidence." *Journal of International Development*, 19(7), 919-926.
- Rodgers, H., and L. Payne (2007). "Child poverty in the American states." *Policy Studies Journal*, 35, 1-21.
- Rodrik, D. (2000). "Institutions for high-quality growth: what they are and how to acquire them." *Studies in Comparative International Development*, 35(3), 3-31.
- Suárez Corujo, B. (2006). *La protección social en el Estado de las autonomías*. Iustel.
- Thomas, D. W. (2019). "Regressive effects of regulation." *Public Choice*, 180, 1-10.
- Wallis, J. J., and D. North (1986). "Measuring the transaction sector in the American economy, 1870-1970." In S. L. Engerman and R. E. Gallman (eds.), *Long-term factors in American economic growth*, 95-162. University of Chicago Press.
- Williamson, O. E. (1985). *The economic institutions of capitalism*. Free Press.
- Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data* (2nd ed.). MIT Press.
- Yang, X., and J. Borland (1991). "A microeconomic mechanism for economic growth." *Journal of Political Economy*, 99(3), 460-482.