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Development and cohesion in Spanish regions. An analysis before and after the Great Recession

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Abstract. Regional cohesion has been one of the European Union's objectives since its origins. Its strategies and implementations have been modified over time, adjusting to the incorporation of new members and to different economic cycles. To gain more knowledge about the impact of cohesion policies, we use the Lisbon Regional Index, a synthetic indicator that brings together the global objectives of the Lisbon Strategy, that includes simple indicators of employment, training and research, development and innovation expenditures of the regions. The evolution of this Index over time gives the possibility of dynamic analysis and enables comparing the values of synthetic index for all the years of the considered period. Thereby, the development and cohesion on the Spanish regions can be evaluated, and it is verified how cohesion has improved in Spain in the expansive period (2000-2007) and how the Great Crisis has caused a regression of cohesion, affecting to a greater extent the regions "in transition" and "less developed", reaching levels prior to 2000. The next period (2014-2019) shows important signs of positive trend recovery.

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1. INTRODUCTION

The central regional objectives in the European Union (EU) are designed in relation to different socio-economic concepts (growth, development, convergence and cohesion), terms with different meanings and complex scopes both conceptually and in terms of measurement. Economic growth is the main reference indicator, measured through the Gross Domestic Product (GDP), total or per capita. GDP is often misused as synonym of development that, in addition to the quantitative component implies qualitative changes in the well-being people (Pires, Fernandes de Matos and Carvalho, 2015). Related to previous concepts is the convergence, as a measure of inequality reduction, but without doubt in order to be able to assess the degree of cohesion, it is necessary to take into account social and environmental indicators, which complement the purely economic aspects (Pérez, Marcos and Santero, 2020, Smékalová, Janíček, Škarka and Kozák, 2015).

At present, deep economic and social disparities persist in the EU that undermine its unity (Coppola, Destefanis, Marinuzzi and Tortorella, 2018). These disparities widened considerably in the context of the global economic crisis, which caused dramatic breaks in the development of the real economy (GDP per capita and other level indicators) between the most advanced and emerging countries (Liviu-Stelian, Spataru and Oana, 2014). Within the EU, Spain has been, and still is a "cohesion country". Its general objective, in terms of budgetary balance, has always been to maintain the most beneficial position for its less developed regions.

The consideration of Spain as a "cohesion country" and the greater role played by European cohesion policy since 2000, has led to an interest in identifying how Spanish regions have been affected this century, taking into account their relative position with respect to new member states. During the period 2000-2006, the funding that Spain received from the cohesion policy, in absolute terms, was almost double that of the next recipient country, receiving more than a quarter of all aid, and more than 60% of the Cohesion Fund. In this period, there was a turning point in the tendency to give greater prominence to economic and social cohesion (Mancha y Gallo, 2013, Coppola et al., 2018). The main causes were the accession of ten new Member States in May 2004 and the redefinition of the needs and characteristics of the regions, as well as the changes and economic cycles experienced in the last decade. In the financial period 2007-2013, Spain was, after Poland, the second largest beneficiary of the cohesion policy, with more than €35 billion in total, and in the last financial period 2014-2020, Spain has been allocated from Cohesion Policy funding around € 28.6 billion.

There is no debate on the fact that the structural funds received by Spain had an important macroeconomic effect on the country (Sosvilla-Rivero and Herce, 2004). Nevertheless, the situation changed with the onset of the global financial crisis and since then disparities between regions are growing reversing the convergence trends seen since 2000 (Kölling, 2015). Spain may be an interesting case study for the cohesion policies, since there are regions within the country whose delays in development and cohesion are worrying due to their stagnation over time. This is the case of Extremadura, which is currently classified as a less developed region, and the transition regions of Andalusia, Castile-La Mancha and Galicia.

The literature about intra-country level is scarce, with exceptions such as Italy (Coppola et al., 2018), the United Kingdom (Di Cataldo and Monastiriotis, 2020), Portugal (Pires et al., 2015) or the Czech Republic and Poland (Smékalová et al., 2015). These papers show that the receipt of European funds has a positive impact, reducing the economic and social inequalities between member countries and their regions

(Pires et al., 2015), which highlights the importance of maintaining and increasing these funds for the support of the underdeveloped regions.

For Spain, Álvarez-Martínez (2014) reviews a rather small set of literature that has focused on the response of Spanish regions to European Structural Funds. For example, Andalusia has been the object of study of the impact of cohesion funds during the period 2000-2020, with a static and dynamic general equilibrium model, to analyse the effects of European Funds in terms of growth, development and convergence (Cardenete and Delgado, 2012; Cardenete and Delgado, 2013; Cardenete, Delgado and Lima, 2014). These papers show the relevant contribution of the European Structural Funds and their potential repercussion on the regional development. Ramajo and Márquez (2018) reviewed works that have estimated the contribution of the European cohesion policy to the growth of Extremadura production and employment during the periods 2000-2020 and they highlighted the importance of the European territorial cohesion policy for regions that, like Extremadura, are affected by important structural weaknesses that make their prosperity and competitiveness very difficult.

Holgado, Salinas y Rodríguez (2015) propose the construction of a synthetic indicator, using the P2 distance indicator as the aggregation method, to measure the progress in the objective of economic and social cohesion of the regions of Spain and Portugal, in the framework of the Community Regional Policy (CRP). The authors affirmed that there was a high degree of heterogeneity among the Spanish regions according to the degree of cohesion established by the synthetic indicators for the year 2012, placing Basque Country, Navarre and Madrid in the first positions, and Extremadura, Ceuta and Melilla in the last ones.

Our paper focuses on the evolution of growth, convergence, development and cohesion on a regional scale within Spain, like a case study, and to provide evidence for the literature focused on the internal regional analysis of the cohesion countries. Our main objective is to analyse the Spanish regional development and cohesion and its evolution during 2000-2019. To achieve this objective, we use GDP per capita and the Regional Lisbon Index (RLI) as key variables. The RLI is a synthetic multidimensional indicator previously used by other researchers (Dijkstra, 2010, Pérez et al., 2020, Ríos, Pascual and Iraizoz, 2015), which collects information on the labour market, the level of education and expenditure on research and development, aspects which go beyond the purely economic sphere measured by GDP.

The relevance of this research can be assessed through its contributions. Firstly, it expands the empirical literature on the evaluation of regional cohesion at the internal level of a cohesion country. Secondly, most of the empirical works implement tools of multivariate analysis for the evaluation of Lisbon or Europe 2020 strategies considering static perspective; however, in this paper, the normalization of variables is based on the constant reference point for the whole period of the analysis, which gives the possibility of dynamic analysis and enables comparing the values of synthetic index for each year during the considered period. As a result, this dynamic analysis can also be a potential input data for future econometric research (Balcerzak, 2015, p.191). Thirdly, it extends the analysed period of previous researches (Marcos and Pérez, 2015), including the first two multi-annual programmes of the 21st century, i.e. 2000-2006 and 2007-2013, which permit a comparison between expansive and recessive economic cycles, and the recovery from it, allowing an assessment of regional cohesion from the Lisbon Strategy to the recovery from the Great Recession (2000-2019). Furthermore, we use the current classification of regions defined in the 2020 Strategy, which provides a temporary picture of the regions over the entire period analysed and a comparison of all the Spanish regions with the rest of the EU members. Finally, the evaluation of cohesion through the RLI, a multi-dimensional indicator that brings together the objectives of this European policy, shows the results (output), without taking into account the evolution of the amount of funds (input). It is therefore not an impact assessment of cohesion policy. There exists difficulty in isolating the impact of European funds from other European and national funding sources, and even in the amount that countries are obliged to contribute alongside those of the structural funds (Bachtler and Wren, 2006). Thus, our work focuses on

identifying how the relative position of the Spanish regions has evolved on an annual basis by comparing their internal cohesion.

The work is structured as follows. Firstly, we review cohesion policy and research hypotheses are introduced. The following section details the methodology used for the construction of the RLI and the current regional classification. Section 4 presents the results of the evolution of the indicator that allows the hypotheses to be tested and ends with the discussion and conclusions.

2. EUROPEAN COHESION POLICY IN THE 21ST CENTURY

In the European Union, cohesion processes between regions are especially important, since they represent a basic precondition for achieving sustainable development (Melnikas, 2012). These cohesion processes can be analysed globally, internationally, nationally, regionally or locally (Wiener and Diez, 2009; Melnikas, 2012).

In this section, we show the change produced in this policy with the arrival of the 21st century, so that it can serve to frame the descriptive analysis of cohesion between Spanish regions during this period. In 1997, the European Commission presented Agenda 2000, which reflected the political decision to extend to the countries in the East. Since the beginning of the 2000s, there has been a radical change in the economic policy objectives of the EU as a whole, weakening the promotion of the cohesion objective (Dunford and Perrons, 2012). The change in priorities, which was practically implemented through the alignment of the Lisbon Strategy, involved an economic philosophy that sought the economic growth of all EU regions, rather than just the most disadvantaged according to GDP measurements. During the period 2000-2006, the economic and social cohesion effort was maintained, with a budgetary ceiling of 0.46% of EU GDP.

For the period 2007-2013, the newest aspect of the new regional policy concentrated on contributing to the improvement of Europe's competitiveness and the fulfilment of the Lisbon and Gothenburg commitments, by re-classifying the target regions. One of the main changes in this multi-annual programming was the concentration of resources for the most disadvantaged areas, bringing together almost 80% of the funds for the Convergence and Competitiveness Objective (Mancha and Gallo, 2013).

The enlargement of countries, together with the start of a change of economic cycle in the whole area, brought about further changes in cohesion policy. In the halfway of the Lisbon strategy, it was clear that the achievement of its objectives is impossible and the failure of Lisbon strategy implementation should be mainly treated as a consequence of European Union enlargement and the structural diversity between "New and Old Europe" (Balcerzak, 2015, p. 191). On 20th May 2010, the European Parliament noted that the long-term nature of this strategy, which aims to create the general conditions for stable growth and job creation in Europe and the transition to a sustainable economy, shows its agreement with the priorities set (Commission's Fifth Report). In order to achieve this objective, the European Council adopted the Europe 2020 strategy, extending and updating the objectives of the Lisbon Strategy, while being aware of the deep economic crisis in which they found themselves, and the added difficulties in managing and implementing this policy, mainly due to public and private financial restrictions (Colino, 2013, Mancha and Gallo, 2013).

The 2014-2020 programming introduced changes aimed at strengthening the efficiency of the policy, increasing the performance of recipient countries and regions and reducing administrative costs. The new cohesion policy was reoriented away from the traditional objective of promoting balanced socio-economic development and focused on a regional growth perspective, with the issue of competitiveness considered a prerequisite for regional convergence. The three pillars of the new policy consisted of "smart, sustainable and inclusive growth" and, as argued by Agh (2011), the first two pillars of the Europe 2020 agenda were reduced to the objective of economic competitiveness, while the third pillar (inclusive growth) representing

solidarity between Member States, which was difficult to maintain in line with the first two, was transferred to the social sphere of countries.

The Great Recession in Spain was more serious than in other Member States. The macroeconomic indicators point to 2013 as a turning point in the economy as it emerged from the crisis, with unemployment rates starting to fall from their peak of 26% in that year, and employment rates rising from their low of 56%. The last years analysed (2014-2019), should show an improvement in their figures compared to the common crisis period (2007-2013). It is therefore of particular interest to know how the cohesion of the Spanish regions evolved in comparison to the rest of the EU.

Considering these premises, we construct the first research hypothesis: Cohesion in Spain worsened more during the period of the Great Recession (2007-2013) than the gains achieved with the expansion period since the Lisbon Strategy. In other words, the loss of internal cohesion between the Spanish regions was more intense than the gain in cohesion achieved during the first period. The same effect can be seen in the EU average. Spain and the EU were improving on the starting position of the year 2000 in terms of growth and convergence.

There is a debate between the new approach to regional policy and the use of the funds, which are focused on growth and employment, and the competitiveness objective, since it seems difficult to combine both goals with instruments designed for cohesion. At the same time, it should be borne in mind that the co-financing of the funds penalises the poorest regions, especially in situations of recessionary economic cycles, such as the period of the global financial crisis, which coincided with the 2007-2013 programme (Coppola et al., 2018, Mancha and Gallo, 2013).

The differential impacts of the economic crisis at a regional level, do not affect Spanish regions equally. The 2020 Strategy defined a classification of regions according to Gross Domestic Product (GDP) per capita with respect to the average GDP of the EU-27. More developed regions were considered if their GDP per capita exceeded 90% of the average GDP, transition regions if their GDP was between 75% and 90% of the average GDP, and less developed regions if their GDP per capita was less than 75% of the average GDP (Unión Europea, 2011). In the case of Spain, only Extremadura was considered as a less developed region. Among the Spanish regions in transition were Andalusia and Castile-La Mancha, which were classified under the Convergence objective in the previous strategy, as well as the Canary Islands and Murcia, which were classified under the transitional arrangement by statistical effect and growth respectively. The remaining of autonomous communities were included in the most developed regions. The competitiveness regions were finding it easier to deal with the great recession, while some of the Convergence regions, especially the southern less developed regions, were facing serious problems (Faíña, Lopez-Rodriguez, Montes-Sola and Pol).

The economic and financial context of the different Spanish regions was disparate, so it would be expected that their behaviour, depending on the objectives set by the European strategy, would not be the same. For this reason, the second hypothesis tests: The Spanish regions classified as "more developed" show worse performance of their internal cohesion during the period of the Financial Crisis compared to the rest of the regions classified as in transition or less developed. Without doubt, the more developed regions achieve the objectives better, but at the cost of presenting less regional cohesion. Finally, the third hypothesis prove: During the Financial Crisis, the Spanish regions classified as "more developed", those with a higher GDP per capita (Madrid, Basque Country and Navarre) did not show a better evolution in terms of convergence and cohesion than the rest of the regions. However, there is no doubt that in spite of this, these three regions together should maintain significant levels of convergence and internal cohesion.

Most of the Spanish regions were included in the classification of "more developed" regions, although there are great differences between them, especially in economic aspects. For example, an analysis of regional convergence in Spain, from the point of view of GDP per capita, shows that the three richest

regions (Madrid, the Basque Country and Navarre) maintained a very significant growth profile until 2007. These regions achieved a notable level of convergence, showing a negative variation during the crisis, but maintaining a higher level of convergence than the other developed regions. Likewise, these regions maintained better performance in the labour market during the crisis, linked to their productive structure, with a lower weight of construction and a greater presence of industry. Therefore, it can be expected that they will also show a more positive evolution in the cohesion policy and in the fulfilment of the Lisbon objectives.

3. DATA AND METHODOLOGICAL APPROACH

In order to assess the implementation of the Lisbon Strategy and its subsequent modifications, the European Commission uses different simple structural indicators. However, these structural indicators are used as a basis for the calculation of the Regional Lisbon Index, which allows cohesion to be quantified in a multidimensional way. The use of synthetic multidimensional indicators is traditional in the literature (Saisana and Tarantola, 2002). Specifically, this RLI approach has been sponsored by the EU, among the different methodological approaches that can be used for the design and construction of synthetic indicators (Zhou, Ang and Zhou, 2010). This index makes it possible to analyse the distance of each region from the Lisbon objectives, as well as the distances between the different regions in achieving these objectives at a country level (Marcos and Pérez, 2015, Pérez et al., 2020).

In this work, we use the RLI calculated from 2000 to 2015, following the method proposed by Dijkstra (2010), for all 265 regions of the EU, using the indicators that make up the Lisbon Objectives drawn up with statistical information from the Eurostat database. For Spain, Ceuta and Melilla were not considered due to statistical problems.

The indicators that make up the Lisbon objectives are classified into three areas. The structural indicators related to the objectives, and its variables, are: employment rate (men aged 15-54, women aged 15-54 and the joint male and female 55-64 age group), education and training (the percentage of early school leavers aged 18-24, the percentage of secondary education attainment in the 20-24 age group; and participation in lifelong learning in the 25-64 age group), and R&D expenditure by business and by government as a percentage of GDP.

The construction of the RLI (additive version) followed the phases according to Ríos et al. (2015, p. 350). The advantages of using this indicator, as opposed to other alternative methodologie, lie in: "i) taking into account the Lisbon objectives in a way that is easily understandable, ii) ensuring that the same value receives the same score in each year of the analysis, iii) avoiding counting the same thing several times and iv) combining the individual indicators so that each change always receives the same weight in each indicator" (Marcos and Pérez, 2015, p. 176).

The variables used to respond to the research objective and their interpretation are presented in Table 1.

Traditionally, the coefficient of variation of GDP and the RLI have been used to measure convergence and cohesion (Pérez et al., 2020), but the interpretation of their result is not straightforward, especially graphically. It was therefore decided to transform the variable by subtracting the value of the coefficient of variation from the unit. The advantage of making the calculation in this way is that the reading is direct, i.e. a higher value represents greater convergence between the regions.

Based on the previous variables, a descriptive-graphic analysis was carried out throughout the period analysed, according to their classification in the 2020 Strategy.

Table 1

Variables, indicators and interpretation

Variables	Indicators	Interpretation
GDPpc in Purchasing Power Parity (PPP)	Economic growth	A higher value is associated with economic growth
1-CV(GDPpc PPP)	Convergence	A higher value is associated with greater convergence between regions
RLI	Development	A higher value is associated with a higher level of development
1-CV(RLI)	Cohesion	A higher value indicates more internal cohesion between regions

Source: The Authors

To interpret these graphs, the year 2000 is taken as a reference point, which subdivide the space into four quadrants (Figure 1), characterising each of them according to the fulfilment of the objectives and cohesion.

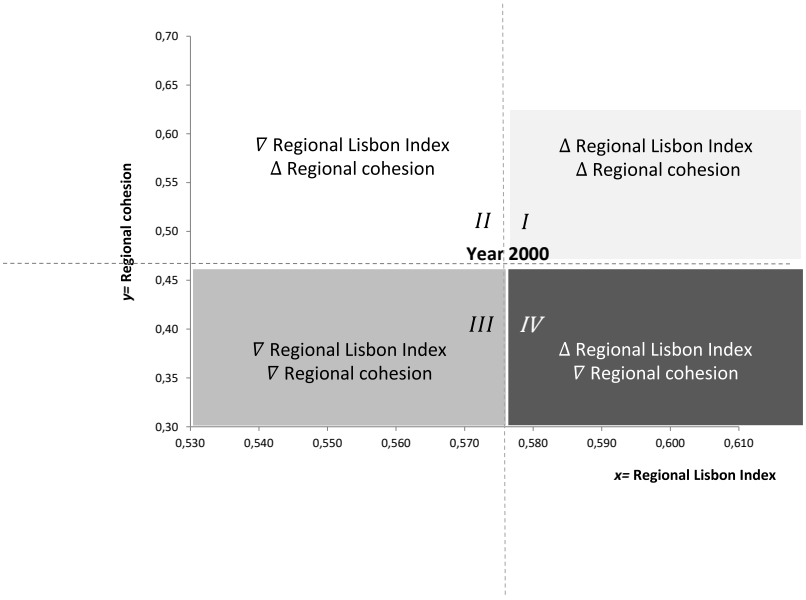


Figure 1. Fulfilment of the Lisbon objectives and regional inequality

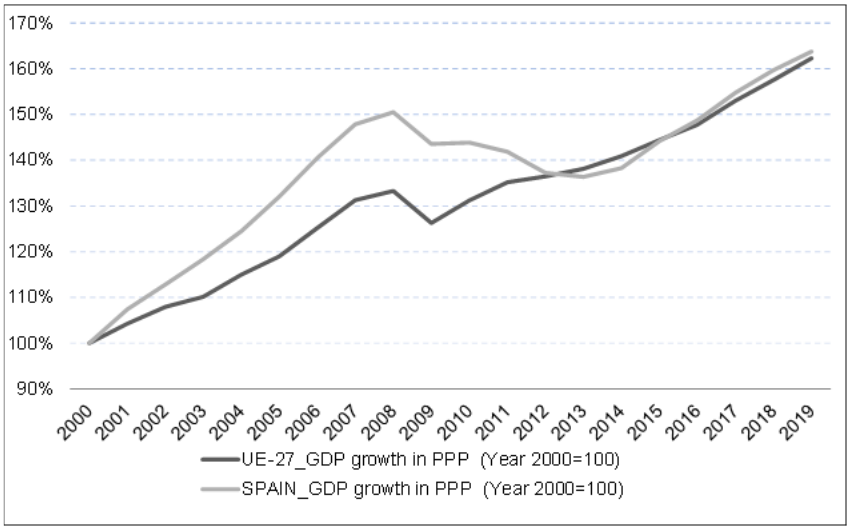
Source: The authors

The optimal trajectory is that which allows the group of regions to place in quadrant I, with an increase in development and internal cohesion. Quadrant III reverses both indicators, with the situation being worse for a region. However, quadrants II and IV have strengths and weaknesses that deserve to be taken into account for an economic and political discussion. In the quadrant II, the regions are further away from achieving the development objectives set by the RLI but with greater internal cohesion between regions. In the quadrant IV, development levels improve but there is less cohesion between regions. The definition of policies taking into account these divergences requires a more complete analysis that goes beyond the objective of this research, but which we feel is of interest for future studies.

4. EMPIRICAL RESULTS AND DISCUSSION

4.1. Contextual analysis of Spain and the European Union

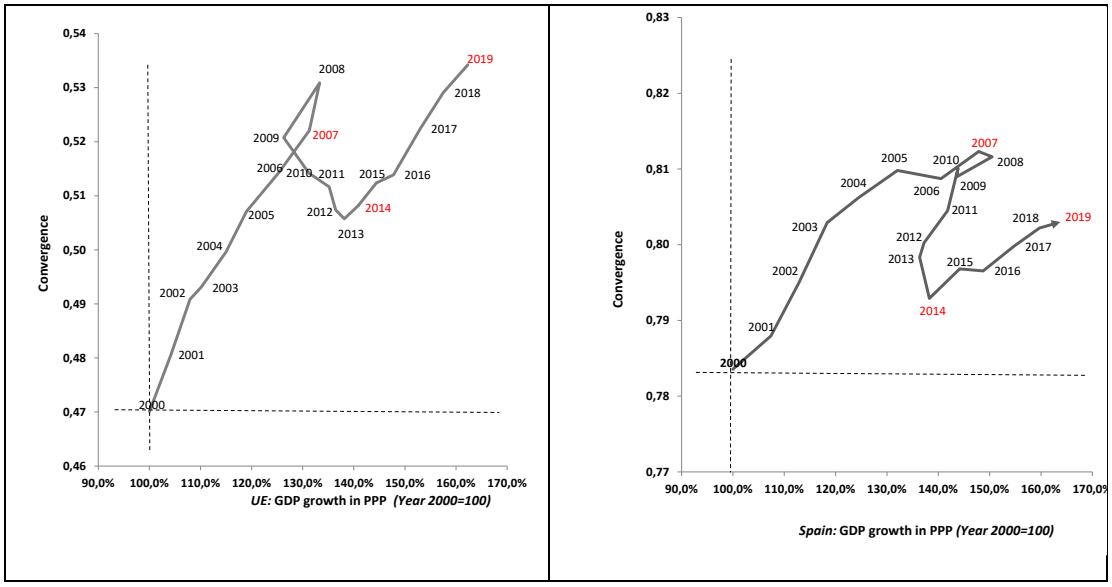
Spain's economic growth during the period analysed followed a similar pattern to that of the EU-27, measured through GDP per capita expressed in Purchasing Power Parity (GDPpc in PPP) with some notable differences. Until 2011, the growth for Spain was higher than for the EU-27 and subsequently, the Spanish growth is similar to the UE-27 (Graph 1). Although recovery for the EU-27 countries was observed from 2009 onwards, it was not until 2013 that Spain began to emerge from the recession. Spain grew much faster and more rapidly in the periods of expansion prior to the Great Recession, but during the crisis, Spain experienced a lower growth rate for a longer period than in Europe. From 2015, Spain and UE-27 has been growing at similar rates.



Graph 1. GDP growth in PPP. Spain and all European regions. 2000-2019

Source: Authors' results.

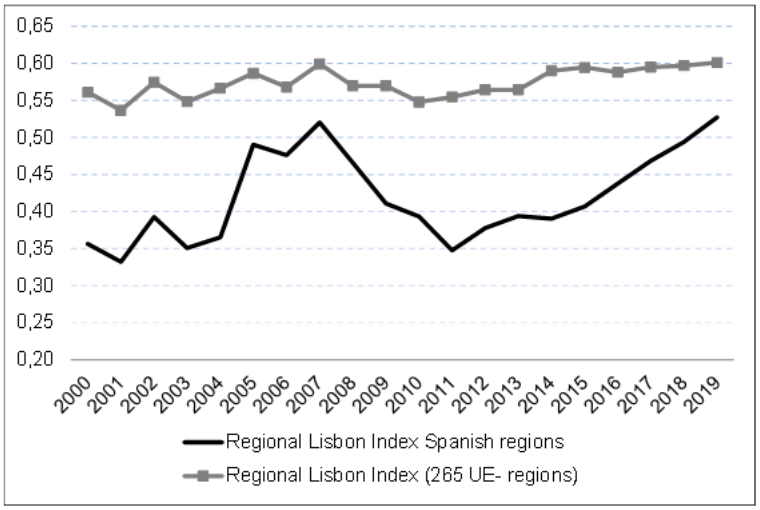
These changes hide internal differences that are relevant when designing regional policies. Spain has lower internal income inequality than the EU-27 average, but the evolution of its internal convergence was worse than that of the EU-27 regions, since 2008 saw a turning point in which it lost part of the convergence achieved (increase in internal inequality) (Graph 2). It is interesting to identify how the group of 27 behaved differently to Spain during the crisis. While in the EU, in the years of the crisis there was a decline, in economic growth and regional convergence, during the recovery the EU-27 reach values higher than 2008. Spain enjoyed intense growth until 2007, but the crisis was deeper with a recession until practically 2016. This was accompanied by a very sharp increase in income inequalities (loss of convergence), a situation that continued until 2014. Unfortunately, much of the pre-crisis reduction in income inequality was lost as it returned to levels similar to those of 2003. Without doubt, the crisis represented an intense process of income inequality between Spanish regions in maintaining the country's overall average income level, like an others members state (for further details by countries, see Pérez et al., 2020), but it is far from the European average.



Graph 2. Growth and convergence in GDP. Spain and all European regions. 2000-2019

Source: Authors' results.

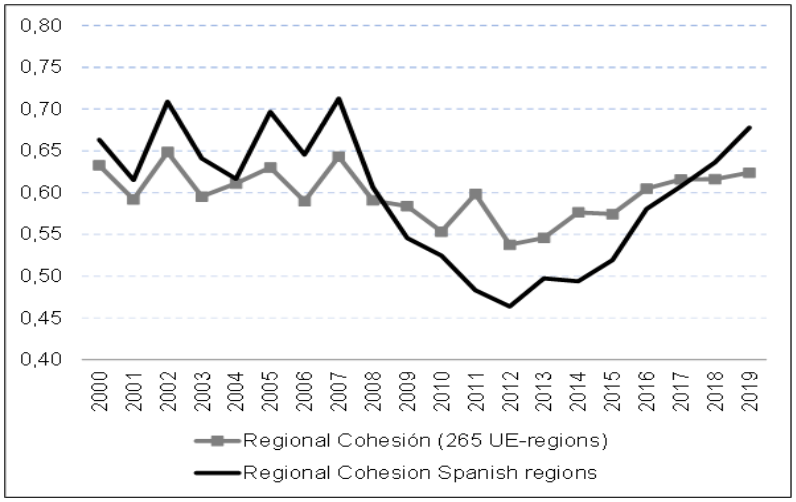
Graph 3 shows the evolution of the development index (RLI) for both groups of regions, Spain and UE-27. The evolution of fulfilment of the Lisbon objectives is irregular in the Spanish regions, with a significant drop from 2007 to 2011, when it began to grow, reaching, in 2019, the values at the beginning of the crisis. The average value of the RLI for the EU-27 has remained practically constant throughout the period analysed.



Graph 3. Fulfilment of the Lisbon objectives. Spain and all European regions. 2000-2019

Source: Authors' results.

At an aggregate level, a measurement of the degree of cohesion between the regions considered is presented in Graph 4. In the case of the Spanish regions the effect was more intense and negative during the crisis (2007-2012), and quite positive in the subsequent recovery (reduction in inequality), being reduced to almost half during the most intense period of the crisis. This suggests that the Spanish regions were evolving unevenly and with notable internal differences.

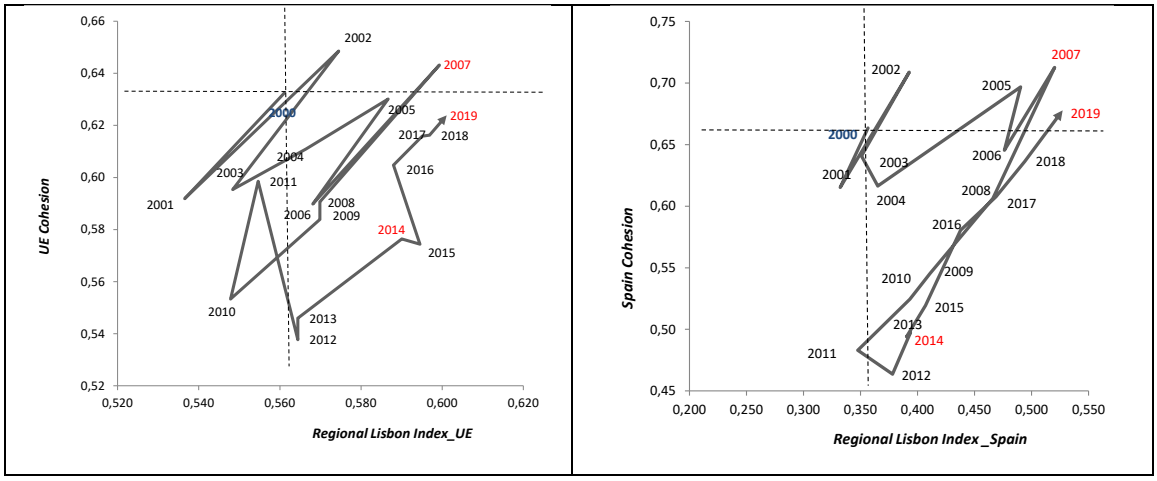


Graph 4. Regional cohesion. Spain and all European regions. 2000-2019

Source: Authors' results.

Taking into account both concepts, we have graphed them for the period 2000-2019: the development indicator (measured through the RLI) and the cohesion indicator (as opposed to internal inequalities).

Graph 5 shows, for both the EU-27 and Spain, that the pre-crisis period was positive, both because of increased compliance with the Lisbon objectives, with a higher RLI, and higher levels of internal cohesion. However, the economic crisis had very negative effects on both aspects. On the one hand, there was a setback in the fulfilment of the Lisbon objectives, reaching levels below those of 2000, although from 2011 there was a slight recovery in the RLI and both Spain and the EU-27 reached pre-crisis values in 2019. Regional cohesion in Spain also declined during the crisis until 2012, when the trend changed. Even so, in 2019 the level of cohesion was worse than it was in 2007.



Graph 5. Fulfilment of the Lisbon objectives and regional cohesion in Spain. 2000-2019.

Source: Authors' results.

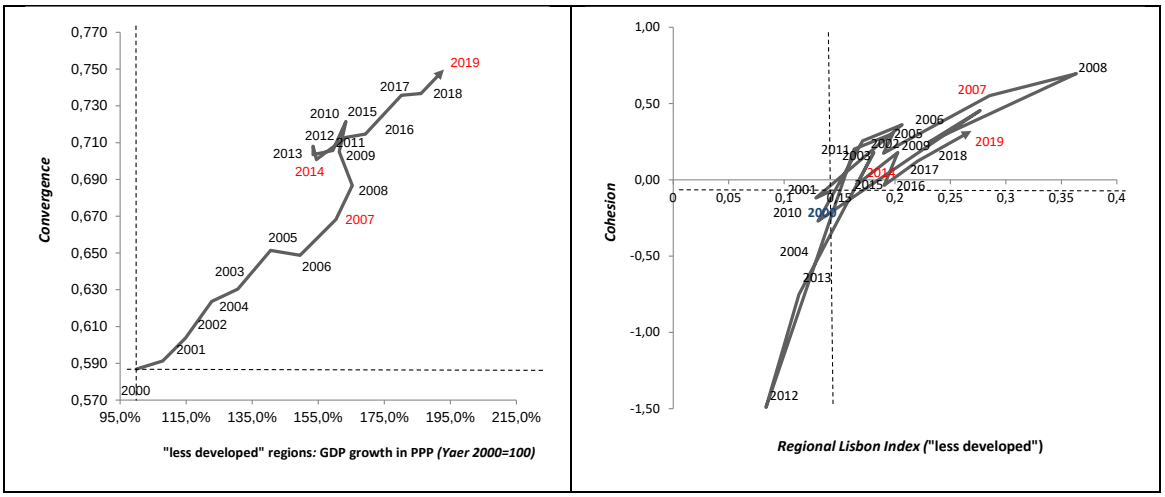
These results confirm our first hypothesis: the loss of cohesion in the Spanish regions was more intense than the European ones, and reversing this effect was slower for Spain than the EU-27 average, although the recovery is proceeding in a similar path.

4.2. Analysis of regional cohesion in Spain

As stated in the introduction, the performance of the regions did not evolve in the same way and it is therefore necessary to consider whether cohesion followed the same trend depending on the classification of each region (less developed, transition and more developed regions). As Graph 4 shows, internal cohesion in Spain remained more or less constant at a global level until 2007, but worsened significantly throughout the crisis period. It is necessary to find out whether this evolution was common to all Spanish regions or, on the contrary, there were important differences, especially in the transition and less developed regions. In addition, since the group of more developed regions is numerous and uneven, it is interesting to detect whether there is inequality between them and compared to the national average. The evolution of the three types of regions is presented in detail below.

- *Less developed Spanish regions*

Extremadura was the Spanish region with the lowest GDP per capita all over the period and remain in the group of less developed region (GDPpc less than 75% of the EU average). Two different sub-periods can be identified. The first one from 2000 to 2010, in which the Extremadura's economy grew faster, achieving higher levels of convergence with the rest of Spanish regions (Graph 6). The second, when the crisis began to hit the Spanish economy harder. The Great Recession stopped the growth and convergence of Extremadura in GDPpc and at the same time deepened the differences. The evolution of Extremadura's GDP after 2014 was positive, with some convergence with Spain.



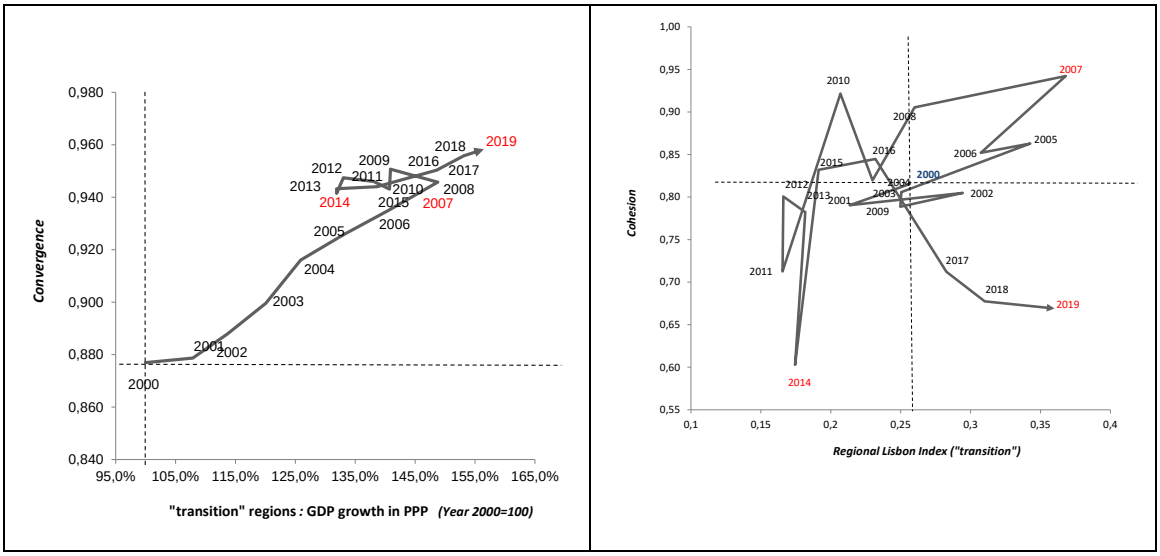
Graph 6. Growth, convergence, fulfilment of Lisbon objectives and regional cohesion. Spanish less developed regions. 2000-2019

Source: Authors' results.

This economic growth was accompanied by a loss of development and cohesion level, placing it in a worse position than in 2008. The last years showed a recovery in both indexes, managing to outpoint to the levels reached in 2000 after 15 years. The divergence of Extremadura after 2008 does not mean that cohesion policy has not made a positive contribution to its evolution, that it played a role as a social buffer from the effects of the deep crisis that the region went through (Madeira, Vale and Mora-Aliseda, 2021).

- *Spanish regions in transition*

In Spain, the "transition" regions had a similar performance in terms of GDP per capita to the Spanish average. These regions have experienced continued growth, except in the crisis period (Graph 7).



Graph 7. Growth, convergence, fulfilment of Lisbon objectives and regional cohesion. Spanish transitions regions. 2000-2019

Source: Authors' results.

However, they also, overall, performed worse than the less developed regions, since they lost the level of compliance with the objectives (development) and cohesion achieved in 2007 but not achieved in the last years. During the crisis they experienced a regression, both in development and cohesion levels, although the latest figures show a slight positive trend in terms of development.

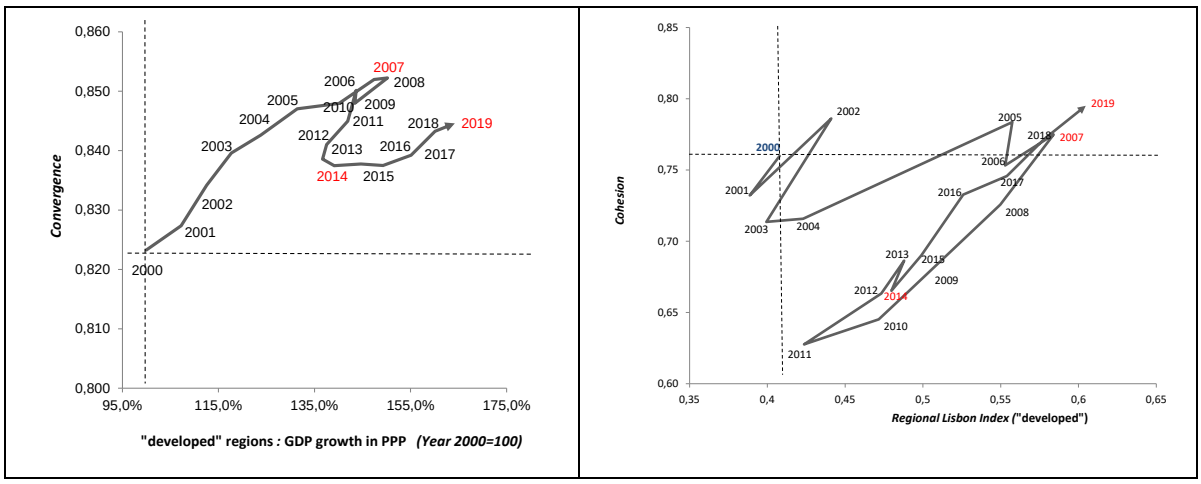
Thus, it is possible to highlight that in moments of positive growth and development, the income inequalities (convergence) for this group of regions are reduced more consistently than the reductions achieved in structural inequality (cohesion). Moreover, in this last aspect, the improvements in the way out of the crisis have been generated with losses of internal cohesion, that is, with increases in this structural inequality.

- *More developed Spanish regions*

In Spain, the "more developed" regions performed better than the rest of the grouping of regions, until 2007, maintaining the levels of compliance with the Lisbon objectives that they had in 2000 (Graph 8). During the crisis, there was a regression in both the development and cohesion levels and the latest figures show a positive trend.

Like the previous groupings, these regions had GDPpc PPP, growth and convergence with a positive evolution until 2007. However, during the crisis it seems that the growth process stagnated until 2014, when it returned to a positive path, although this recovery was not accompanied by convergence between the regions.

This set of results allows us to accept the second hypothesis put forward in the research: Spanish regions classified as "more developed" showed a worse evolution of their cohesion, during the Financial Crisis, than the regions in transition and the less developed ones. These regions seem to have given up an improvement in internal cohesion in exchange for maintaining a higher level of development.

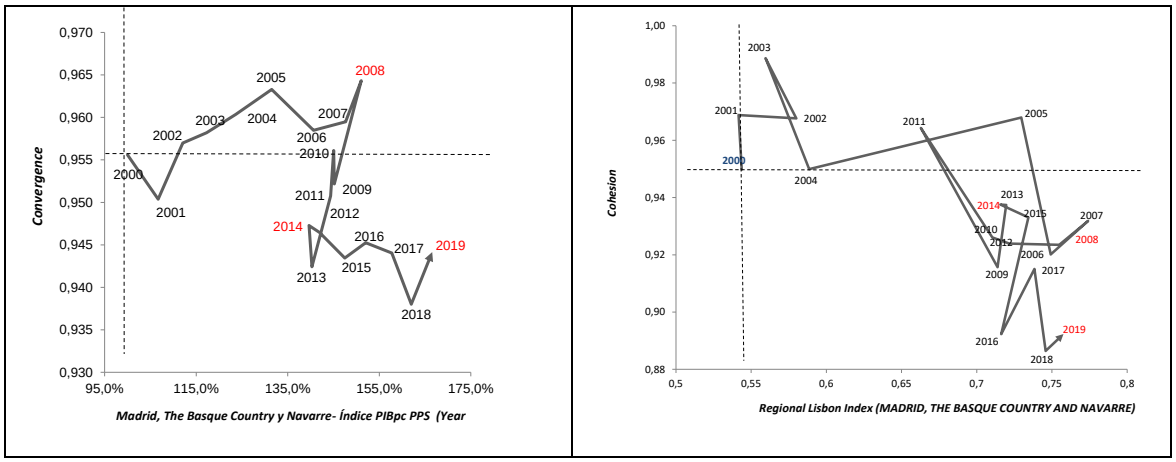


Graph 8. Growth, convergence, fulfilment of Lisbon objectives and regional cohesion. Spanish developed regions. 2000-2019

Source: Authors' results.

This result can be qualified by studying only the behaviour of some of the most important regions within this group. Specifically, the intense effort materialized in growth and development does not have the expected reflection over internal convergence or cohesion, because the successes are based on different economic structures, which in turn generate significant inequalities between them. Furthermore, we could say that the cohesion path of the whole is compromised by the significant dispersion between the leading regions, which are few, but with important weight in the whole.

The regions ranked highest are those located mainly in the northeast of Spain (Basque Country and Chartered Community of Navarre), as well as its capital (Community of Madrid), with the highest GDP per capita. Their evolution in terms of development and cohesion highlights the fact that during the crisis the level of development was maintained and the levels of cohesion, although they were reduced, this happened to a lesser extent. Thus, we can accept hypothesis 3, which indicated that within the regions classified as "more developed", those with higher GDP per capita (Madrid, The Basque Country and Navarre) did not perform better during the Financial Crisis in terms of convergence and cohesion.



Graph 9. Growth, convergence, fulfilment of Lisbon objectives and regional cohesion. Madrid, the Basque Country and Navarre. 2000-2019

Source: Authors' results.

4.3. Expansion vs crisis: aggregate effects

By way of a summary, below, we present how Spain's situation changed in comparison to the European Union, in terms of economic growth, convergence, development and cohesion (Table 2), differentiating the expansion period (2000-2007) from the crisis period (2007-2014) and the recovery (2015-2019). Taking into account the different indicators used, and comparing the initial and final value of the period, light gray indicates that the situation improved and dark gray that it became worse.

Thus, it can be seen that Spain, like the EU, had a better position in terms of economic growth, if we compare the overall period analysed and if we differentiate by expansion and recovery periods. During the Great Recession, Spain shows a negative balance in growth, convergence, development and cohesion. These results were maintained throughout the period, with the exception of growth, which was common to the rest of the EU. It is worth noting that in terms of cohesion, over the entire period, Spain has recovered and improved its level compared to 2000, while the EU-27 has not.

Table 2

Comparison of results for the European Union and Spain

	Expansion Period		**Great Recession**		**Post-crisis period**		**Global**	
	2000 to 2007		2007 to 2014		2015 to 2019		2000 to 2019	
	EU	Spain	EU	Spain	EU	Spain	EU	Spain
Growth								
Convergence								
Development								
Cohesion								

Source: Authors' results.

In relation to the internal situation of the Spanish regions, Table 3 shows the different balances by period for the regional groupings. Both in the expansion period and the recovery post-crisis, all regions exhibited a positive evolution in growth, convergence, development and cohesion. During the crisis, only the less developed and in transitions regions had a positive balance in convergence terms.

Table 3

Summary of results for Spanish regions: Less Developed (LD), In Transition and More Developed (MD)

	Great Recession			**Global**		
	2007 to 2014			2000 to 2019		
	LD	In Transition	MD	LD	In Transition	MD
Growth						
Convergence						
Development						
Cohesion						

Source: Authors' results.

With regard to the overall balance for the period under review, the regions in transition were not able to recover their level of internal cohesion, and the less development region (Extremadura) did not recover their levels of development. For all these reasons, it seems necessary to continue maintaining regional cohesion policies in order to recover and even improve on the situation prior to the Great Recession.

5. CONCLUSION

To evaluate cohesion policy in the Spanish regions during this century, we used the Lisbon Regional Indicator and the classification of regions in relation to the 2020 Strategy. The RLI does not include economic indicators related to GDP or income, however, the structural indicators linked to the Lisbon

objectives, which are those represented in the RLI, are influenced by the general economic situation. Thus, all these aspects are expected to be related to the economic growth of the country and the European Union.

The main objective of this paper is to assess how Spanish regions changed in terms of cohesion, before and after the Great Recession. As we have seen, Spain, like most European countries, experienced a decline in cohesion during the period of economic recession. However, significant differences in internal cohesion can be found in different groups of regions, with setbacks in cohesion reaching levels worse than at the beginning of the Lisbon Strategy. The progress achieved during the expansion period has not only been lost, but has left them worse than in 2000.

The distance between the Spanish regions was not homogeneous during the period. The "most competitive" regions, and within these, the group with The Basque Country, Navarre and Madrid, remained in a better position than the rest and close to the EU average, but the Financial Crisis affected them negatively.

The evolution was not positive in the "transition" regions nor in Extremadura, which not only increased their differences with the other regions, but also moved away from the starting point, although the recovery period positions them in a positive trend.

This descriptive analysis suggests we should delve deeper in several ways. Firstly, the RLI only takes into account part of the current objectives of the 2020 Strategy, and therefore the multidimensional indicator would have to be extended to include those aspects that it does not currently include, relating to energy and inequality (as Holgado, Salinas and Rodríguez, 2015). Furthermore, the regional differences within Spain are significant and it is necessary to look for factors that could enhance the positive effects of European policy; therefore it would be necessary to enter the advanced econometric models that would allow us to consider causality.

The results of this analysis show the importance of maintaining European cohesion policies, especially during periods of economic crisis, in order to avoid a collapse in the most vulnerable regions.

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