



**UNIVERSITA' DEGLI STUDI DI PADOVA**

**DIPARTIMENTO DI SCIENZE ECONOMICHE ED AZIENDALI  
"M. FANNO"**

**CORSO DI LAUREA IN ECONOMIA**

**PROVA FINALE**

**European cohesion policies and the core-periphery gap: the successful  
implementation in Germany**

**RELATORE:**

**CH.MO PROF. IVAN DE NONI**

**LAUREANDO/A: POPA ALBANA**

**MATRICOLA N. 1216273**

**ANNO ACCADEMICO 2021 – 2022**

Dichiaro di aver preso visione del “Regolamento antiplagio” approvato dal Consiglio del Dipartimento di Scienze Economiche e Aziendali e, consapevole delle conseguenze derivanti da dichiarazioni mendaci, dichiaro che il presente lavoro non è già stato sottoposto, in tutto o in parte, per il conseguimento di un titolo accademico in altre Università italiane o straniere. Dichiaro inoltre che tutte le fonti utilizzate per la realizzazione del presente lavoro, inclusi i materiali digitali, sono state correttamente citate nel corpo del testo e nella sezione ‘Riferimenti bibliografici’.

*I hereby declare that I have read and understood the “Anti-plagiarism rules and regulations” approved by the Council of the Department of Economics and Management and I am aware of the consequences of making false statements. I declare that this piece of work has not been previously submitted – either fully or partially – for fulfilling the requirements of an academic degree, whether in Italy or abroad. Furthermore, I declare that the references used for this work – including the digital materials – have been appropriately cited and acknowledged in the text and in the section ‘References’.*



Firma (signature) .....

<b>Index</b>	
<b>Abstract</b>	<b>4</b>
<b>Introduction</b>	<b>5</b>
<b>Chapter 1: differences between core and periphery regions in the European Union</b>	<b>6</b>
<b>1.1 The European Union: unity in diversity</b>	<b>6</b>
<i>1.1.1 Why quality of government matters</i>	8
<b>1.2 R&amp;D, innovation, and the role of universities</b>	<b>10</b>
<b>1.3 Collaborative networks to reduce the gap between core and periphery</b>	<b>14</b>
<b>Chapter 2: evolution and impacts of European Policies for Cohesion</b>	<b>17</b>
<b>2.1 From the Treaty of Rome to the EU Cohesion Policy:</b>	<b>17</b>
<i>2.1.1 What kind of investment to finance</i>	18
<b>2.2 Impacts of Cohesion Policy in eligible regions</b>	<b>20</b>
<i>2.2.1 Cohesion Policy effects around Europe: the German, British, Italian and Spanish cases</i>	21
<b>2.3 A plan for the future: Cohesion Policy 2021-2027</b>	<b>23</b>
<b>2.4 Smart Specialization Strategy and their implementation</b>	<b>25</b>
<b>Chapter 3: Germany between core and periphery: how it became a leading country in Europe</b>	<b>27</b>
<b>3.1 Germany: a divided country after re-unification</b>	<b>27</b>
<b>3.2 The recovery of Eastern regions</b>	<b>28</b>
<i>3.2.1 Public Administration and organizational transformation in the post-unification East Germany</i>	28
<i>3.2.1 Entrepreneurship and knowledge as initial conditions to face the transformation process</i>	29
<i>3.2.3 Cooperation and networking in the East</i>	29
<b>3.3 Public Investment Subsidies</b>	<b>30</b>
<i>3.3.1. The Joint Task ‘Improving Regional Economic Structures’ (GRW)</i>	30
<i>3.3.2. Innovative Regional Growth Cores Program (IRCG) in East Germany</i>	32
<b>3.3 East and West nowadays: there is still divergence?</b>	<b>33</b>
<i>3.3.1. Productivity disparity</i>	34
<i>3.3.2. Labour market disparity</i>	36
<i>3.3.3. Innovation disparity</i>	37
<b>3.4 Operational Programme (OP) for the ERDF 2014 in Brandenburg and Bayern</b>	<b>38</b>
<b>Conclusions</b>	<b>40</b>
<b>Bibliography</b>	<b>42</b>

## **Abstract**

Date le ampie differenze che sussistono ancora oggi all'interno dell'Unione Europea, lo studio indaga i fattori che separano le regioni periferiche da quelle centrali. Tra le componenti che contraddistinguono e differenziano queste tipologie di regioni si trovano investimenti in attività di ricerca e sviluppo, grado di urbanizzazione, innovazione, presenza di università, qualità dei governi. Viene inoltre individuato il ruolo dei cluster e delle connessioni che si creano in particolare tra aziende che operano vicine o interessate all'idea di lavorare assieme per condividere il sapere. Questo metodo risulta essere particolarmente utile per supportare e accrescere le informazioni possedute dalle aziende che si trovano in contesti dove è difficile emergere e svilupparsi a causa della mancanza di investimenti che rallentano o addirittura limitano la crescita.

La ricerca poi approfondisce il ruolo e lo sviluppo della politica di Coesione Europea il cui scopo principale è favorire la cooperazione e la coesione all'interno dell'Unione per raggiungere maggiore parità sul piano economico, politico e sociale. Vengono anche elencati gli obiettivi futuri prefissati dalla politica di coesione per raggiungere uno sviluppo sostenibile e promuovere la crescita in Europa. Infine, viene presentato il caso della Germania la quale, nonostante le profonde differenze che persistevano tra est e ovest del paese causate dalla separazione dopo la guerra, è riuscita ampiamente a colmare questo divario trasformandosi in un'economia mondiale.

## **Introduction**

Cohesion policies are not new to the European Union, an organization that aims at bringing peace, prosperity, cohesion and ameliorate life of its citizens. They are necessary to create a stronger and more unified union, increase the feeling of belonging to a diverse community. Over the years, cohesion policies allowed the reconstruction of numerous countries not converging towards the growing standards of stronger economies. However, the gap persists and keeps challenging national governments and the Commission to create the most suitable policy for each country.

Member states present various characteristics that differentiate them, however there are some common fields such as quality of government, R&D investments, innovation, the presence of universities which explain the difference between the so-called core and periphery regions.

The aim of the study is to better understand which regions are less advanced and factors that contribute to keeping the gap alive. Moreover, it investigates how cohesion policy first started and how it developed over the years, its consequences, and effects on regions conditions, plus subsequent direction turns to ameliorate their effectiveness. A special focus investigates the importance of networks and cooperation as a mean of knowledge exchange and information spillover.

The study includes a paragraph which briefly explains what Smart Specialization Strategies consist of and how they can help guiding the correct implementation of funds.

Lastly the paper focuses on Germany, a country playing a key role in the EU which went through one of the most severe punishments after World War II, namely the division of the country in two separate and distinct republics. Owing to the great investments, targeted policies and other country specific factors, Germany managed to recover greatly, however differences between East and West persist even if they are not as marked as in the past.

The final part encapsulates conclusions of the entire study and tries to address the leading cause of policy's partial inefficiency.

# **Chapter 1: differences between core and periphery regions in the European Union**

## **1.1 The European Union: unity in diversity**

The European Union is a unique organisation considering the way it was constituted and how it is organised. However, it is not simple to coordinate such a complex organism consisting of numerous countries that share some common aspects, but which are truly dissimilar among each other.

This peculiarity is considered a disadvantage when it comes to implementing new policies or introducing new laws in country members. Consequently, it is possible to identify in the EU two main types of regions: core and peripheral regions. These differentiate according to economic, political, social, technological, innovative factors.

The second type embeds regions characterised by economic downturn, low investment activities, high unemployment rates, high emigration rates (especially of young, well-educated people leaving the country due to a mismatch between their qualifications and job positions); Southern Europe countries such as Italy, Spain, Portugal, and Greece can overall recognise these characteristics as their own. Nevertheless, less performing regions can be found also in Central Europe such as rural areas in Eastern Germany, Poland, Bulgaria, Hungary, Romania and the Baltic States, not to mention Eastern Europe regions affected by a prolonged economic, social, and demographic decline, youth migration, heavy de-industrialization subsequent to the fall of socialist governments. However, declining, and urban decay issues have been faced by rural and antient industrial districts in the UK, France, and Germany too.

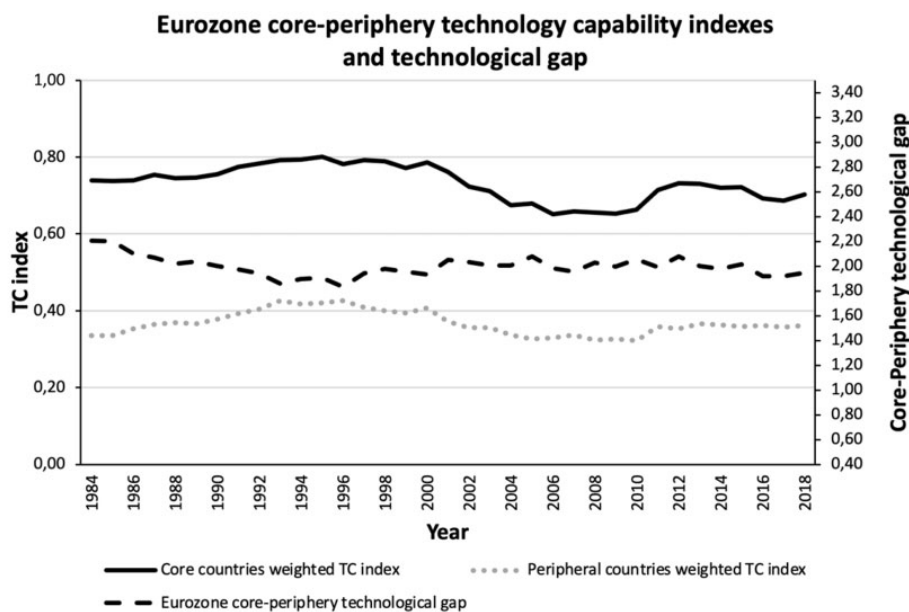
Central and Eastern countries are characterized by a strong path dependency that shapes systems and creates a sort of barrier to innovation; for instance, it is possible to recognise both an overspecialization in mature industries going through a decline phase and organisational thinness affecting institutional aspects like absorption capacity, knowledge infrastructure, lack of cooperation, of trust and networks for innovation activities. Despite the relative high growth rates at the beginning of socialism, in addition to the economic recovery occurred at the end of this period, peripheral regions still lack in innovation technology and processes; moreover, high specialization caused an overspecialization and investments in obsolete technologies.

These weaknesses turn non-core regions into productive structures that are not able to compete in a connected and changing market since the old industrial regions and productive structures could no longer be supported. Non-core regions constitute a vast part of the European Union, therefore they play a crucial role when implementing new policies.

Conversely, core regions are usually portrayed as centres, spaces where progress occurs due to a mix of social, political, and economic factors that allow them to be leaders in innovation and compete in the global market.

This gap among European regions was highlighted by numerous studies that tried to explain the relationship between core and periphery: as M. Ahlborn and M. Wortmann (2018) show in their case study on the core-periphery pattern of European business cycles, it can be identified a core group consisting of Central European countries following a specific business cycle that is not aligned with the one followed by other countries. The study identifies a total of five business cycles demonstrating a high degree of heterogeneity in the EU and the need to synchronise business cycles to reach a more coherent growth in the continent. The core cycle, including Austria, France, Denmark, the Netherlands, Sweden, Germany, Belgium, and Finland, is considered as an anchor for the other countries; while some CEE countries are gradually converging through the core group, others are still divergent making the common monetary policy and exchange rate costly.

Differences among regions can be found in the development process as well: Botta and Tippet (2022) have demonstrated that to boost productive investment and increase labour productivity, expanding technological capability is the most efficient way as it leads to higher potential GDP by simultaneously reducing the NAIRU. This process may require less effort to be implemented by core countries, yet it is not that simple for periphery regions as the figure below shows.



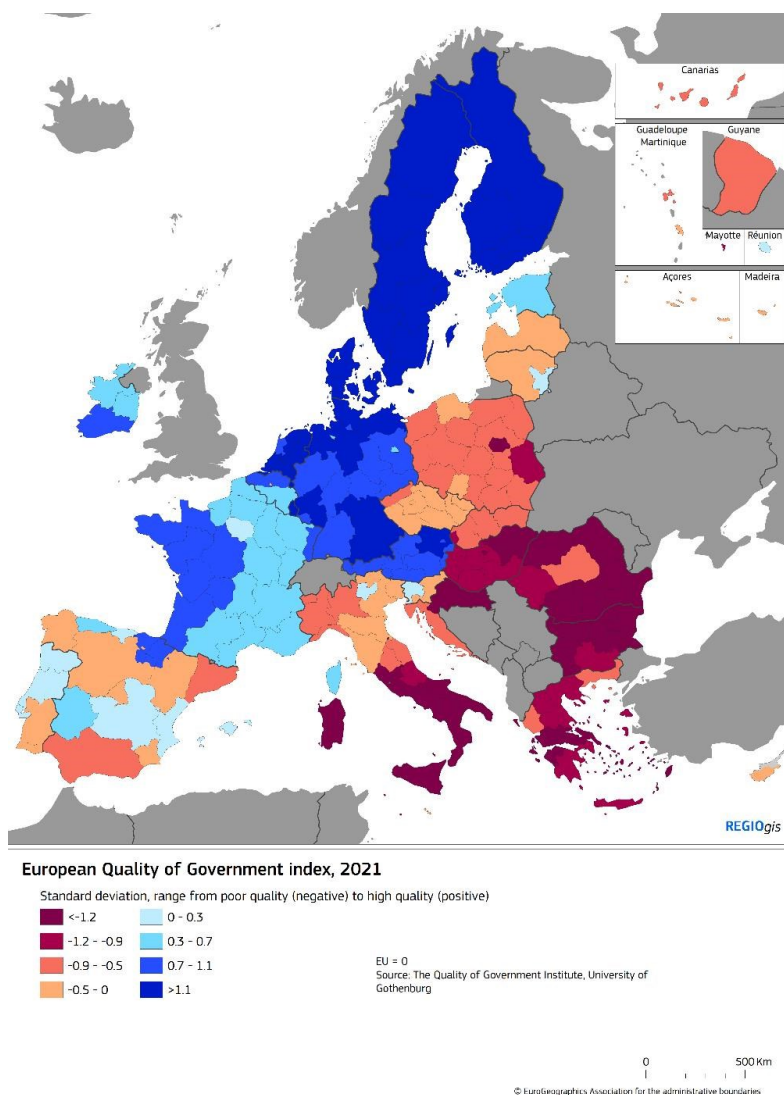
**Figure 1.1** – Technology Capability index for both core and peripheral countries (1984-2018)

As it can be deduced from the graphic representing the Technology Capability index for both core and peripheral countries from 1984 to 2018, core economies have always performed better in terms of technology: Greece has remained at the bottom of the technological ladder, instead Germany positions itself at the top. There were sign of recovery before 1996, however not only the gap never closed, but also widened since then. Such divergence can be explained by the enlargement of the EU towards Eastern nations. Besides, peripheral countries (including Portugal, Ireland, Italy, Greece,

Spain) were the most hit by the 2008 crisis, while core countries increased investments to boost productivity since they could go more into debt contrary to the peripheral ones.

### 1.1.1 Why quality of government matters

As Andrés Rodríguez-Pose and Tobias Ketterer (2019) suggest, difference in development between core and periphery can partially be explained by analysing quality of government. Institutional quality plays a crucial role not only in planning economic growth and development, but also in achieving satisfactory returns from European cohesion policies. Corrupt, inefficient governments represent a barrier to innovation and entrepreneurship since they affect technological progress and investments' efficiency.

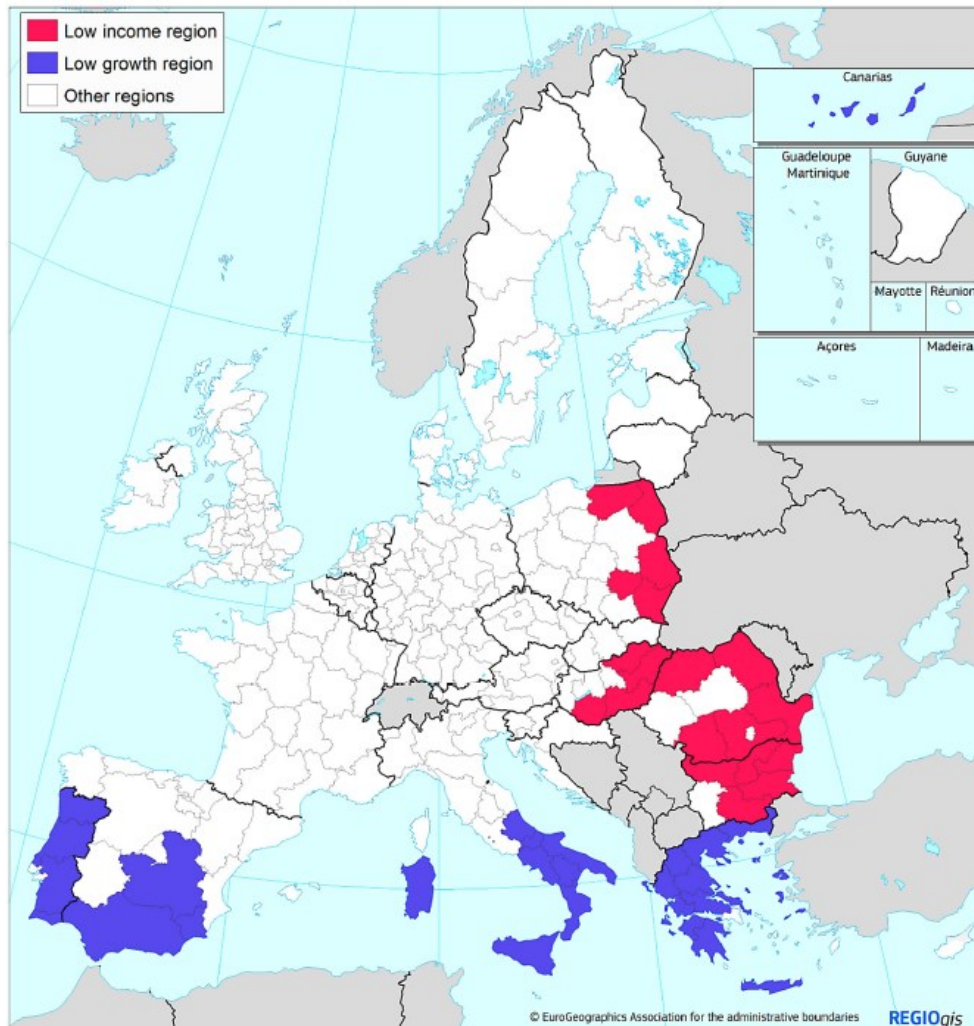


**Figure 1.2** – Quality of government index, 2021 (Source: communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the regions)

Based on the Solow-Swan growth model, the study demonstrated that regions improving institutional quality, for instance Estonia (a world leader in the use of e-government), had a better economic



development compared to regions that did not ameliorate or saw a deterioration in institutional quality, as Latvia that despite sharing a similar historical path with Estonia was not able to improve its quality government thus not performing better efficiency and institutional transparency that prevented general growth. Considering a period from 1999 to 2013, the analysis focused on quality of government in lagging European regions that were divided into low-income regions and low-growth regions.



**Figure 1.3** – Low-income and low-growth regions in Europe (Source: European Commission).

By analysing the two groups separately, the research points out that government quality deeply affects economic performance in Southern Europe countries (low-growth regions) since it acts as a catalyst that deviates from economic growth. In contrast, low-income regions (Bulgaria, Hungary, Poland, Romania) do not show a high correlation between quality of government and economic performance since the latter is more affected by traditional factors as labour force, technology, physical and human capital. Consequently, it is more significant for low-growth regions to improve institutional conditions which act as a barrier to economic development, together with measures aiming at ameliorating government quality which must be integrated to development strategies (e.g., address

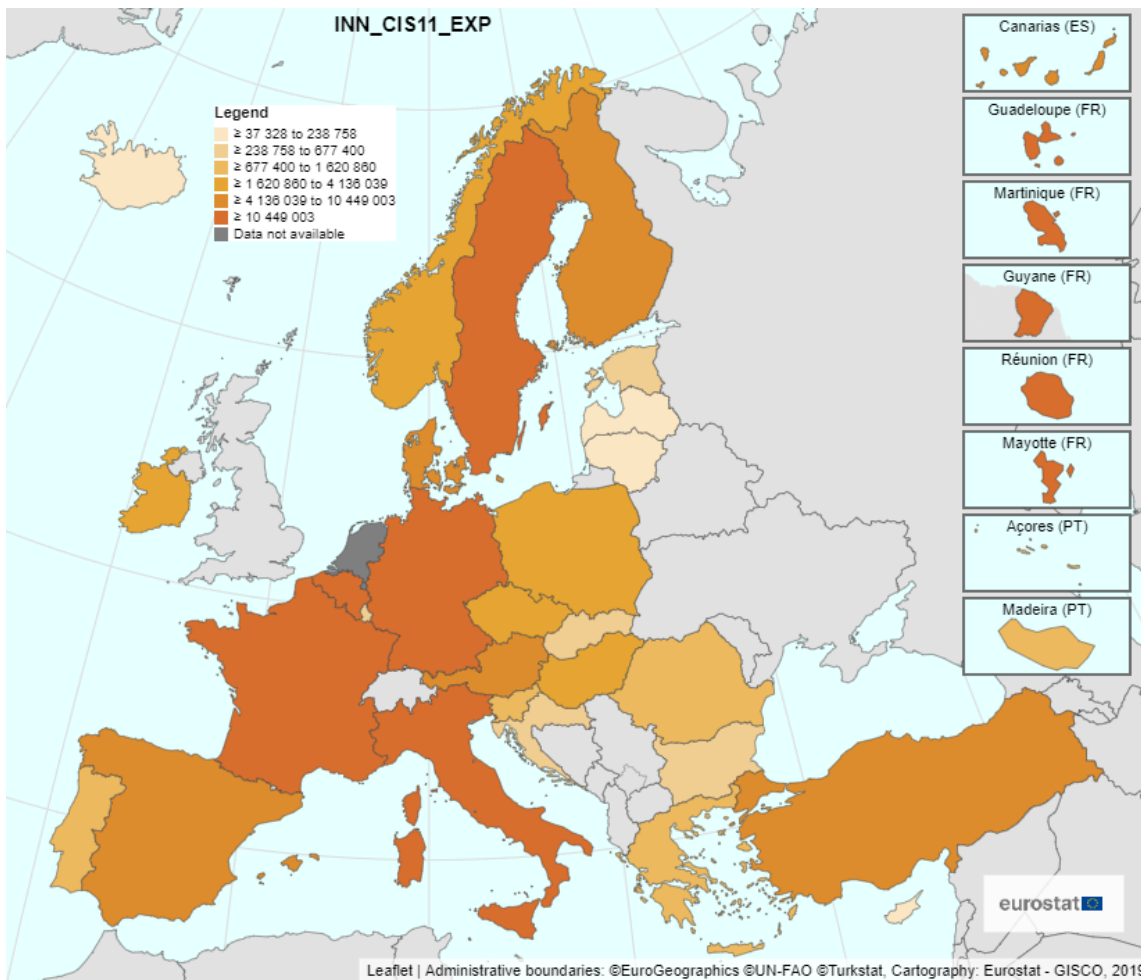
widespread corruption, make government decisions more efficient and transparent). Nevertheless, this does not imply that low-income regions should not consider this field as it is fundamental for economic growth to reduce corruption levels with the aim of converging towards the EU average to reach cohesion.

## **1.2 R&D, innovation, and the role of universities**

As discussed in the above paragraph, quality of government is crucial especially in lagging regions which usually still lack in efficient administration to manage the country. This aspect has a direct consequence on both public and private R&D expenditure. Lack of investments for research and development are negatively responsible for ineffective innovation policies; moreover, countries that show prominent levels of R&D, have higher growth rates when compared to lagging regions that display lower levels.

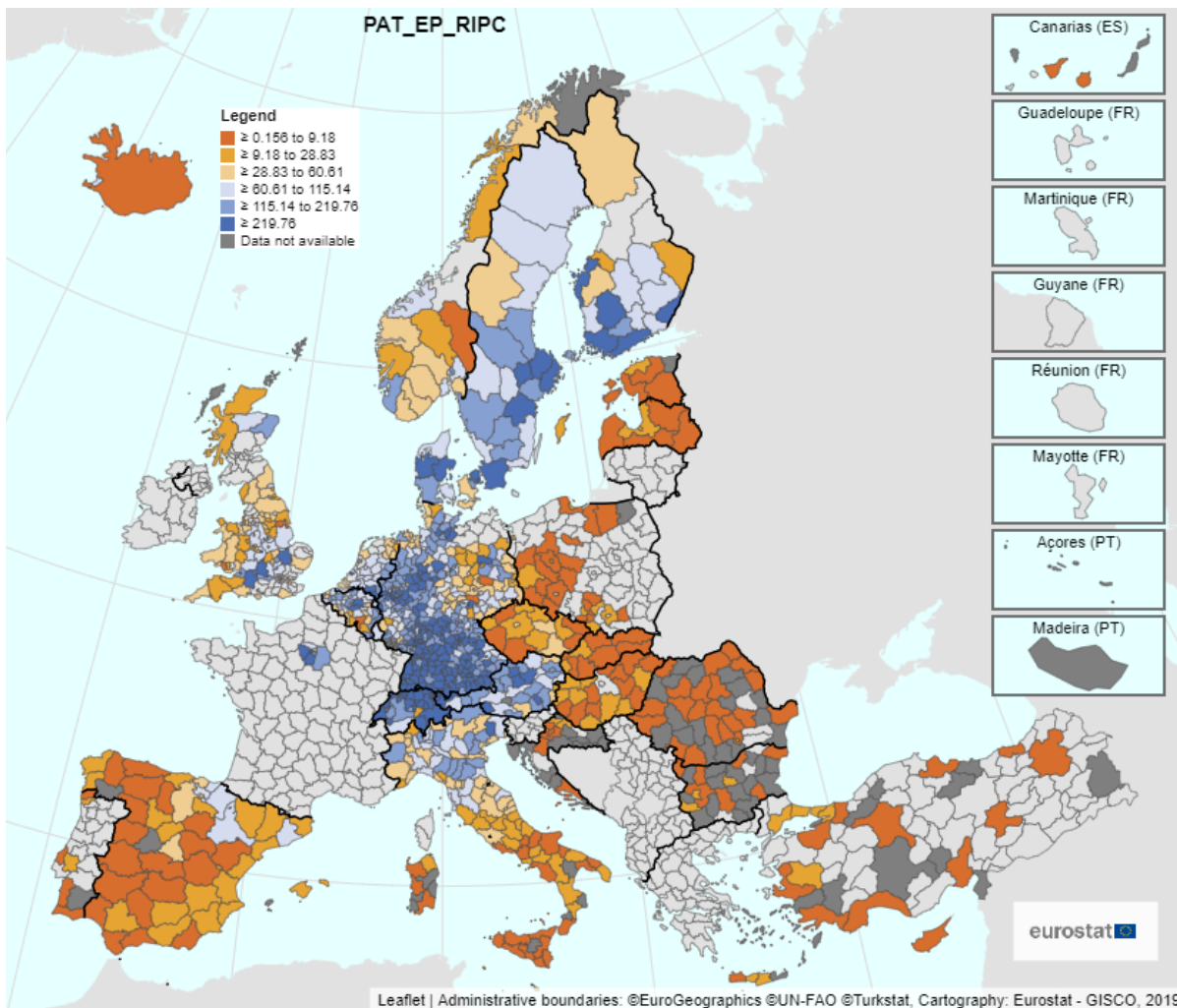
Investments in such areas support technological capacity and potential and increase economic development. At a public level, they allow countries to converge given that they support talent retention: people are not forced to migrate to other countries to find better working conditions and they contribute to improving the general performance of their region; moreover, it helps attracting better skilled workers. At a private level, R&D expenditures increase innovative competences and absorption capacity of firms, by allowing them to compete at an international level.

Enterprises which manage to invest in R&D, keep innovating themselves in an environment that is continuously changing and in search of talents. Innovative systems are more productive and competitive, they produce higher quality products not only to increase their market share, but also to benefit from new opportunities. The wellbeing of a region or state is strongly related to the competitiveness of its firms, consequently, investing in these latter should be considered a priority for governments. However, investments in R&D must be carefully managed considering the limited resources available. Therefore, it is important as well to consider the quality of research and how this could become 'marketable' namely how is it possible to turn innovation into profits (Zygmunt, 2020). At a European level, nowadays data confirms the heterogeneity within the EU on expenditure on R&D activities: Western countries remain the ones that keep investing to a greater extent which allows them to be more competitive, at an international level as well.



**Figure 1.3** – Expenditure on R&D activities (Source: Eurostat; April 2021).

Consequently, other indicators of innovation as patenting rates will be influenced by R&D expenditure. Patenting rate for numerous regions of Croatia, Bulgaria, Czech Republic, Greece, Poland, Romania, Portugal, and Slovakia was almost zero; instead in Spain only the regions of Madrid, Catalonia and the Basque Country have rates above 10. Liguria performed as the region with the highest rate in Italy, while the South achieved inadequate results. Again, Northern regions of Finland, Denmark, Sweden, Austria, and Germany were the top performers in patents application as illustrated by the figure below.



**Figure 1.4** – Patenting application to the EPO in NUTS 3 regions, international patent classification (Source: Eurostat).

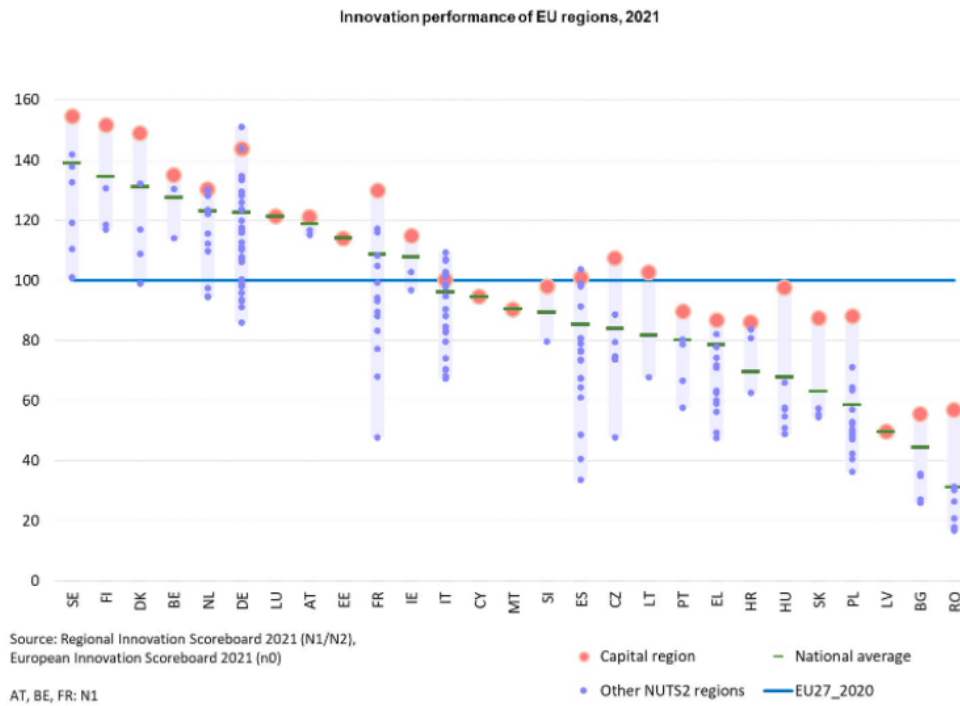
Given the benefits coming from investments in R&D one would wonder why national governments do not invest in such productive field; unfortunately, due to political reasons, politicians or leaders prefer investing in highly visible projects as the construction of a new highway to get more votes during elections. However, such behaviour is to be considered irresponsible because it prevents countries from growing in the long run, investments in infrastructures do not have the same return as the ones in R&D. For this reason, quality of government is essential to drive growth towards the right direction by choosing the opportune projects and enterprises where to invest.

By allocating part of European or national funds to research and innovation, lagging regions can start filling the gap that separates them from the core ones. In this process, universities could help promote new projects and specific traits of a region to sustain its growth. The Technical University of Munich represents a clear example of how university and research contribute to development; in addition to the university campus, TUM is a vast research centre that has won various prizes and recognitions, which is still making collaborations and investing in research making the institute a leading structure in entrepreneurial research in Europe. The fact that such research centre is situated in one of the

richest and most innovative regions in Europe, the Bavarian region is no surprise: it demonstrates that R&D is fundamental for development and competitiveness.

Just as Munich, other cities like Cambridge and Oxford are surrounded by high-tech activities acting 'as engines for innovative ideas, agents of territorialisation and urban transformation' (Charles, 2003; Balducci e Fedeli, 2014). The contribution of universities and R&D centres is recognised by actors working in the surrounding environment along with economists as they allow the territory to grow and sustain economic development. Such atmosphere allows the emergence of new creative spaces that bring together people and ideas: that is why universities play a key role to reduce regional gap with core regions and improve living conditions in peripheral areas.

In lagging regions, universities can make a difference by becoming a reference in the regional ecosystem since, in addition to contributing to territorial development, they evolve into partners in regional networks and bring a cultural change intended as the ability to improve competences and training qualified human resources; they attract students, increase involvement in local life, offer job opportunities, contribute to improving the image of the region, or even better, turn industrial and marginal areas into more liveable spaces as they create new infrastructures and buildings (Lazzeroni, 2019). For instance, universities in Milan first developed in the city centre to then expand towards the periphery and abandoned urban spaces of the industry. In this regard, Lundvall (2018) defined the concept of inclusive university: such structures must guarantee access to all students, with a special attention to the most unprivileged ones by offering them some assistance as scholarships to promote their access to higher education; in this way, universities contribute to reducing imbalances, develop suburban districts, interconnect students with different backgrounds to cooperate together by valorising diversity.



**Figure 1.5** – The regional innovation divide in Europe 2021 (Source: communication from the Commission to the European Parliament)

### 1.3 Collaborative networks to reduce the gap between core and periphery

In the previous paragraph, it was stated that lagging regions can ameliorate their development path and increase their growth by investing as much as possible in R&D; however, if they lack in funds to do so, sharing R&D projects may represent a valid solution to be implemented. Enterprises must exploit and market R&D assets and knowledge effectively, nevertheless some sort of motivation must push them to cooperate and exchange knowledge; this may happen for two reasons: similarity of individual R&D goals or complementary business goals (M. Majuri, 2022).

On the one hand, firms that work on similar R&D objectives can join resources and exchange knowledge to achieve individual goals not only faster, but also at lower costs and by probably getting better results than the ones they would achieve if they worked separately. On the other hand, firms sharing complementary business goals can form core groups in which knowledge transfer is intense. Conversely, if individual goals differ excessively, firms will rely on their expertise or get the required information from alternative institutes (R&D organizations, universities).

Hence, R&D collaborations are essential in the pursuit of innovation, they are attractive owing to spillovers they generate, both explicit and tacit information flow (Hagedoorn, 1993; Mowery, 1998; Belderbos et al., 2012; Antonioli et al., 2017). However, this involuntary knowledge spillover or information leakage may be considered a drawback and discourage formal R&D collaborations (Cassiman and Veugelers, 2002; Frishammar et al., 2015).

As P. Bernal et al. (2022) state: ‘the relationship between incoming knowledge spillovers and R&D collaboration is non-trivial’ and they distinguish among four possible scenarios when collaboration and knowledge spillovers meet:

		<i>Partner incoming spillovers</i>	
		<i>Relevant</i>	<i>Non-relevant</i>
<i>Collaboration</i>	<i>Yes</i>	<i>“Connected”</i>	<i>“Detached”</i>
	<i>No</i>	<i>“Informed”</i>	<i>“Extraneous”</i>

- *Connected*: R&D collaboration brings relevant knowledge coming from spillovers.
- *Detached*: R&D collaboration brings non-relevant knowledge coming from spillovers, distant from core knowledge and technology needed.
- *Informed*: knowledge spillovers arise even if there is not a formal collaboration, it is unintentional, yet beneficial; it can be caused by employees’ mobility, disclosure of innovation-related information via patents, informal interactions.
- *Extraneous*: there is no formal R&D collaboration arising neither resolute information exchange.

Therefore, creating networks to exchange knowledge is not effortless, although lagging regions must cooperate with strategic allies to improve their economic conditions. Yet, given the high diversity of European regions, spillover effects do not occur the same way around the continent. For instance, Italy is mostly composed of small and medium enterprises; consequently, much of the knowledge sharing manifests through informal networks with a general underlying presumption that companies will not take advantage of each other. Of course, the same is not happening in other areas where information is exchanged differently.

According to the Innovation Scoreboard (2021), most cooperative regions are found in Norway, Sweden, the UK, South Germany, North Italy, Ireland, Swede: these reported positive results in other fields as scientific publications, percentage of population aged 25-64 participating in lifelong learning, Innovation performance change 2014-2021, PCT patent applications, design applications, employment in Innovative SMEs.

To get the highest and most productive knowledge sharing, the best practice to adopt is for core regions to cooperate with the lagging ones; however, this may not result profitable for richer areas: the knowledge they would acquire from formal collaborations with firms in peripheral regions has probably been consolidated for years. Hence, they are not likely to voluntarily cooperate with firms in less innovative regions since the benefits that would result are particularly low.

Thus, lack of resources in non-core regions represents a limit to innovative problem-solving concepts: to reduce the gap between core and periphery some measures must be applied. For instance, integrate external expertise in local networks to expand access to external resources, promote long-term growing strategies through foreign direct investment, implement social innovation to support economic recovery (especially in CEE countries) and arrest depopulation, choose committed local agents who facilitate collaboration and knowledge spillovers.

Since these types of policies are difficult to apply by peripheral regions alone, the EU has taken action to enable converge and it is still working to achieve it.



## **Chapter 2: evolution and impacts of European Policies for Cohesion**

### **2.1 From the Treaty of Rome to the EU Cohesion Policy:**

Since its foundation, the European Union has tried to bring peace and economic prosperity to its country members. In 1957, Member States signed the Treaty of Rome whose main goal was to ‘fortify their economies and ensure a harmonic development by reducing differences among regions and backwardness of poorer regions’. However, this represented only the beginning of numerous policies that aimed at bringing cohesion in the EU.

In 1991, the Treaty of Maastricht represented an incremental step towards a more unified EU, especially after the enlargement towards Southern countries which marked disparities even more. The main purposes of the treaty included:

- increase of resources for impoverished regions
- territorial planification at a European level
- relevance of regional policies within common policies.

Social and economic cohesion were recognised as pillars of the European Community and a Cohesion Fund was created. Moreover, the Treaty included the following measures: create an environment able to stimulate entrepreneurial development, improve innovation among firms by valorising their technical competences, improve the institutional system of country members.

With the ambition of achieving the above-mentioned results, the Cohesion Policy (CP) was formulated in 1975, and it still represents one of the key policies of the EU, accounting for one-third of the overall EU budget. Thus, CP constitutes the primary instrument supporting the development of peripheral regions to reduce disparities through the promotion of economic growth, job creation and competitiveness. Today, Cohesion Policy includes three funds: European Social Fund (ESF), European Regional Development Fund (ERDF) and Cohesion Fund.

Greece, Italy, Ireland, Portugal, and Spain received the greatest support to facilitate their integration in the EU market until the 2004 enlargement towards Eastern Europe. Given the significant differences among regions, integration strategies applied were tailored to them: for instance, the EU intervened more directly in the East by monitoring and giving technical assistance, placing emphasis on institutional building.

In Central Eastern Europe, states underwent two stages of reforms: the re-stabilisation of democracies, compliance, and access to EU; these changes were essential since they allowed the regeneration of the private sector after years of communism: new assistance was coming from the EU not only through structural funds, but also through instruments to best implement them.

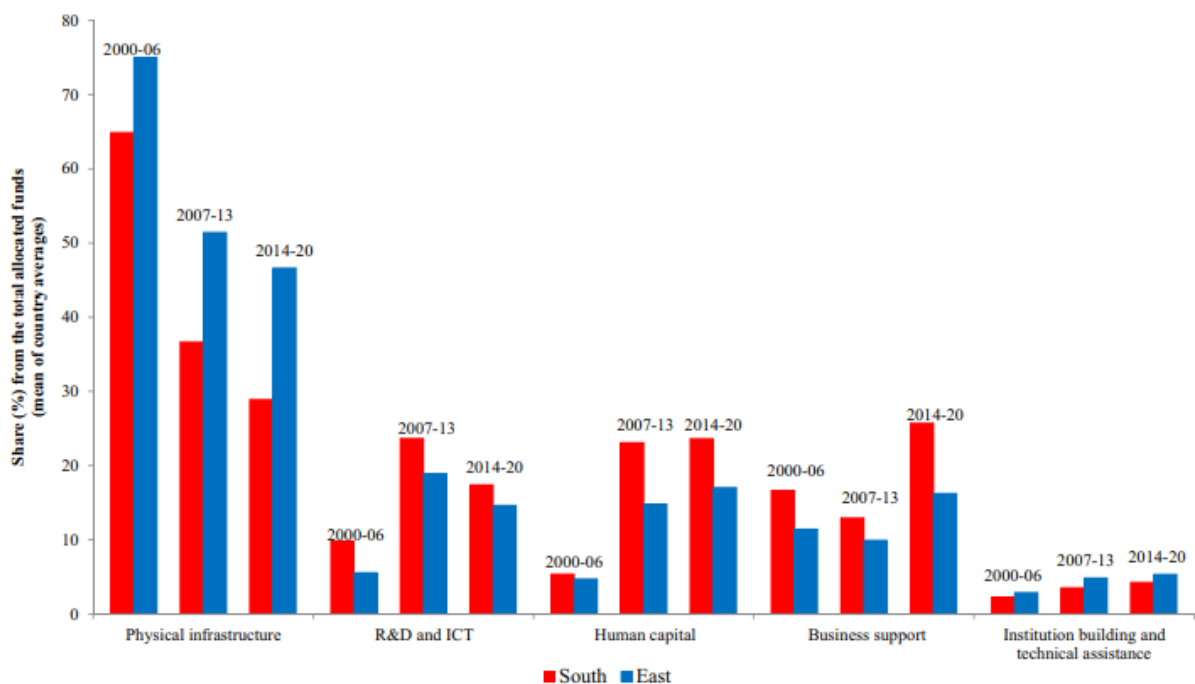
Receiving funds from the EU is not trivial: governments of each country must follow a specific procedure to obtain them. First, they must submit a development plan which identifies spending

priorities and the amount of funds invested in each area; some expenditure categories have mandatory requirements set by the European Commission. Every year, the total amount of money bound for a country is fixed, governments can only choose how to distribute it. National plans are then approved by the Commission.

Governments must provide a plan coherent with the needs of the country by allocating funds in the following categories: R&D, physical infrastructures, information-communication technology, business support, human capital and institution building (Medve-Balint, 2018); the lower the performance of a category, the higher the fund share intended for it.

### 2.1.1 What kind of investment to finance

An aspect that is worth underlying is that in both investment cycles (2007-2013, 2014-2020), East and South Europe spent more on physical infrastructure; at the same time, R&D and information-communication have gained more importance in funds allocation during the first cycles but have lost interest in the second one; instead, investments in human capital projects and funds for businesses have increased.



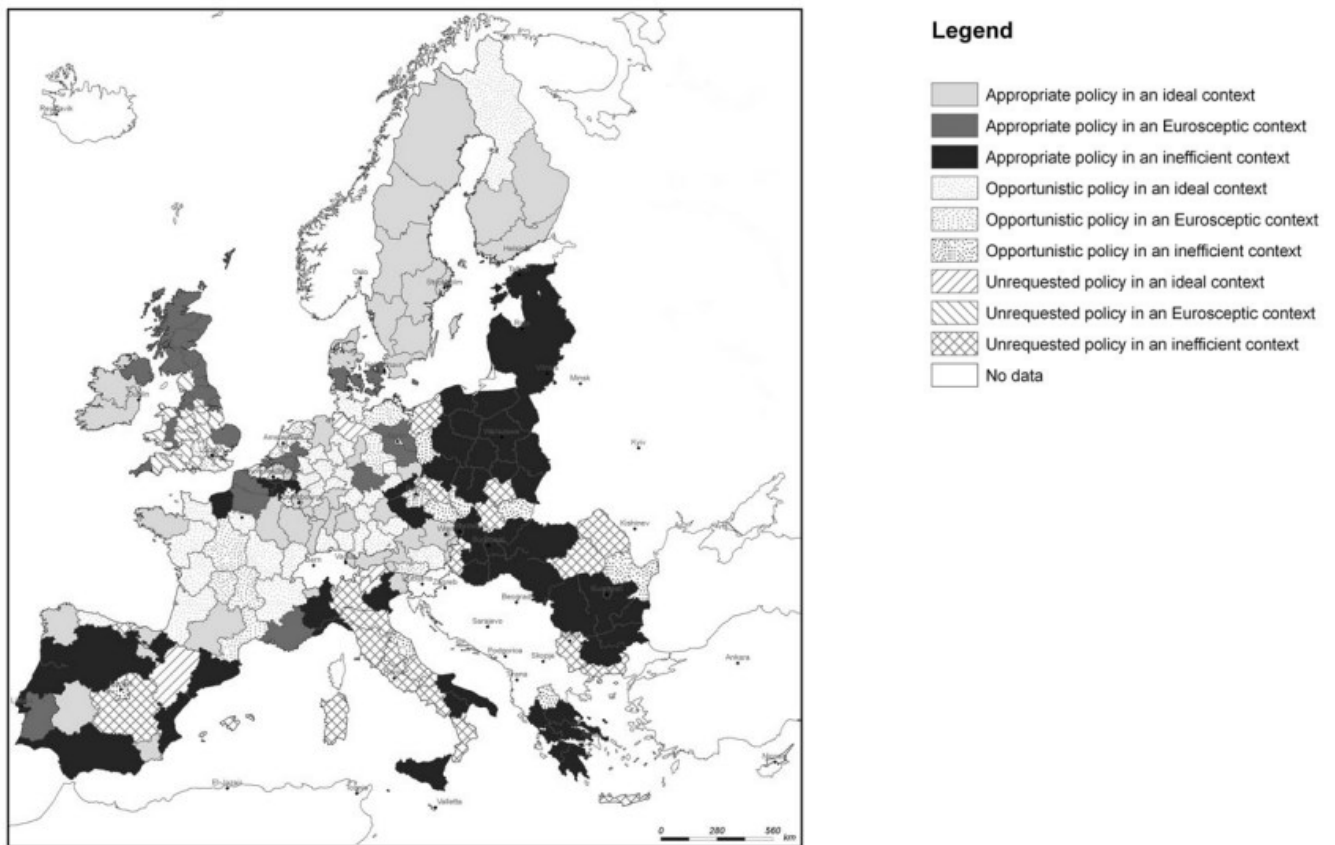
**Figure 2.1** Share (%) of the main spending categories from the total EU funds in the Southern and Eastern EU member states.

As it can be observed from the graph, funds allocation in Southern states has decreased over the years until reaching its minimum levels in the 2014-2020 cycle during which only Greece and Portugal were eligible as members of the Southern region.

Investments in physical infrastructure are not the most profitable ones and do not guarantee high returns in the future: research has shown that countries with better position prefer investing in R&D projects since they ensure high returns in the long run. Precisely, the endogenous growth theory suggests that technology and knowledge are characterized by increasing returns (Romer 1986; Lucas 1988): consequently, improving the level of human capital and R&D enhances economic growth in the long run.

There is not a unique explanation of why peripheral countries invest more in infrastructures, but a reasonable motive could be that they are the most expensive investments thus representing immediate political gains due to their visibility. However, they do not contribute to long term development.

Nevertheless, the solution to increase performance of peripheral countries does not rely only on spending the highest amount of funds possible for each of them, but rather increase the absorption capacity of funds (Hughes et al. 2004a): that is why governments and institutions quality play a key role when implementing strategies since they can increase efficiency of returns of interventions in regional development. Indeed, institutional weakness is often associated with failure of intervention. In addition to quality of government, local context strongly influences the impact of EU policy in areas where it was implemented. Not all European regions have the same absorption capacity of funds, some of them can take advantage of their geographic location to cooperate with other firms or they implement funds more efficiently; moreover, sectorial structures of the local economy vary across regions. In any case, there is a need for a territorialized cohesion policy since a more targeted implementation increases effectiveness of spent funds. This kind of approach is called *place-based* and relies on the fact that geographic context, local knowledge, and socioeconomic characteristics are essential when deciding how to implement funds (Avdikos and Chardas, 2015). Core regions already have the skills to properly use European funds, while peripheral regions lack.



**Figure 2.2** Policy implementation settings for the interventions in infrastructures

For instance, the map shows policy implementation settings for the interventions in infrastructures: again, Southern and Eastern countries performed worse than core countries because the context in which policies were implemented is not efficient or, unrequested policies were applied in an inefficient context.

## 2.2 Impacts of Cohesion Policy in eligible regions

As it was mentioned in the previous paragraph, research revealed that CP had not the same impact among regions due to differences in openness, institutional quality, corruption, and other factors.

By comparing the economic outcomes (employment and economic growth) for each country of the NUTS 3 (includes small regions with population between 150,000 and 800,000 people) that received or not funds from CP, it is noticeable that results across regions vary considerably. Additionally, the place-based approach that the EU tried to implement will need to be rebalanced according to characteristics of regions. Estimates of the analysis come from the study conducted by R. Crescenzi and M. Giua in 2018.

Numerous studies that investigated the impact of CP (including Becker et al 2010 and 2013; Pellegrini et al 2013) estimated that, in general, the implementation of CP led to a positive economic growth, employment, innovation and transport infrastructure. Nevertheless, there are significant

dissimilarities among Member States: for instance, Germany and the UK resulted as the major winners of the policy.

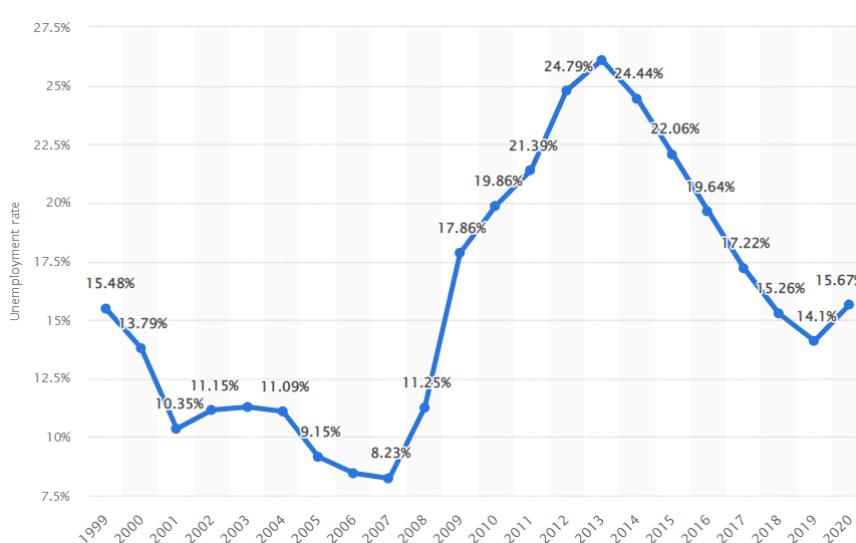
### 2.2.1 Cohesion Policy effects around Europe: the German, British, Italian and Spanish cases

When the 2008 crisis' impacts unfolded, the Commission allowed funding re-allocation to sustain most affected areas of the Union and compensate for the reduction of national expenditure, especially given the high debt rates of some counties as Italy and Greece.

Germany benefited the most from EU CP due to the strong alignment between its specific needs and the EU general policy framework; furthermore, its macroeconomic conditions and high institutional quality allowed the country to design coherent and tailored strategies to better implement funds. Crescenzi and Giua's study (2018) demonstrates that employment levels in treated regions increased during the recovery period after the crisis as opposed to non-beneficiary regions.

The UK as well was one of the countries that profited considerably from CP: beneficiary regions showed better performance in term of employment levels not only in the short, but also in the medium run. Just like Germany, British institutions allowed the policy achievement in peripheral regions; 250,000 jobs were created, programs to attract employees with definite skills required by firms were introduced, and financial resources were devoted to support small businesses.

The situation was not as favourable in Italy and Spain. Concerning the Spanish case, funds were mostly invested in transport infrastructure (Crescenzi and Rodríguez-Pose, 2012; Crescenzi et al., 2016a) instead of other projects as youth unemployment and inequality; consequences of this choice were that CP did not reflect the expected results. The only positive impact was a higher growth in the Recovery period while unemployment rate remained high.



**Figure 2.3** Unemployment rate in Spain from 1999 to 2020 (Source: Statista)

Italy's performance was not satisfactory either. Beneficiary regions only saw a decrease in unemployment in the short run, the impact disappeared after the crisis and Italy's dispersion degree of expenditure by policy area was the highest. Barone et al. (2016) studied the effects of CP in Abruzzo and demonstrated that policies did not maintain in long run the GDP growth path achieved after the CP implementation. As the graph shows, the 2008 GDP level in Italy is only forecast to be reached in 2026.



**Figure 2.4** Italy: Gross domestic product (GDP) in current prices from 1987 to 2027 (in billion U.S. dollars); (data source: Statista)

In 2022, the European Commission reunited to discuss what was achieved by the CP up to now. Cohesion in the EU has improved, yet there are some gaps left also considering the strong impact that Covid-19 had in the continent. The high growth of less developed regions contributed to increase convergence; however, these improvements might be lost in the long run if they do not promote education, R&D, innovation, and quality of government. Conversely, Southern regions showed stagnation: they are facing a development trap further accentuated by the 2008 crisis; reforms in the public sectors and innovation development are needed to achieve a long-term growth.

Employment is rising, though regional disparities subsist: employment rates in peripheral areas are still lower than in more developed regions and a gender gap reduction is required as well to improve the situation.

Nevertheless, there is also very positive data deriving from the implementation of CP:

- the number of people at risk of poverty and social exclusion decreased by 17 million between 2012 and 2019;
- health inequalities are diminishing;
- economic modelling shows that in 2023 GDP per capita will be 2.6 % higher in less advanced regions, due to the support received from the cohesion policy in the period 2014-2020.

### **2.3 A plan for the future: Cohesion Policy 2021-2027**

According to what the European Commission has reported, the new program for CP 2021-2027 will be more flexible than ever before to achieve objectives and face unexpected challenges. Moreover, all countries must take part to the green and digital transition.

Overall, the Regional Funding will be more tailored: even if it will continue to be based largely on GDP per capita, new criteria as youth unemployment, climate change, and migrant integration have been added.

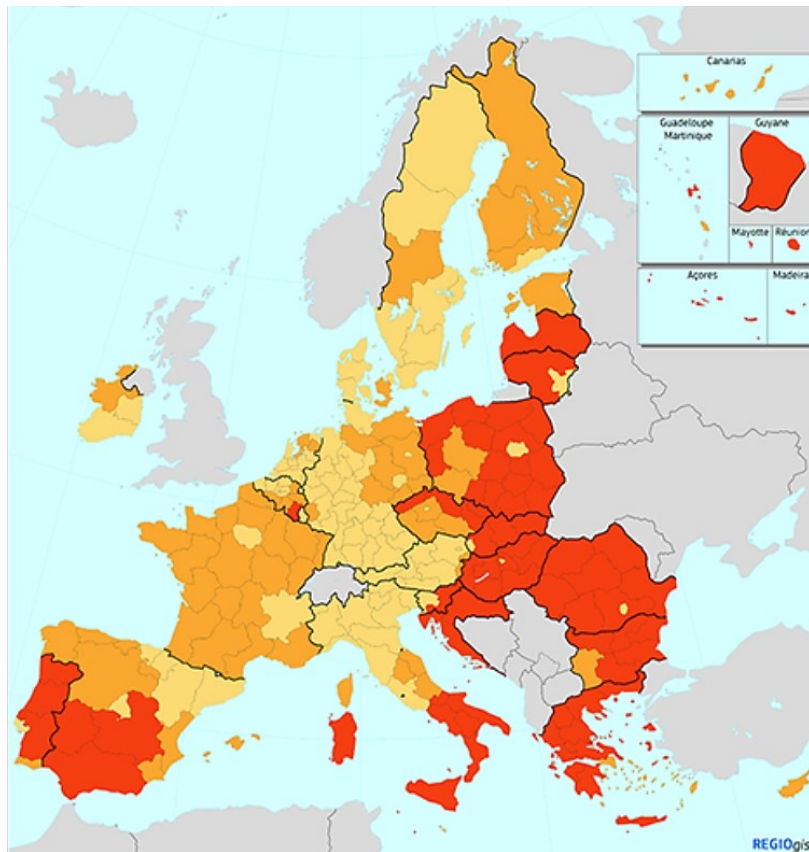
There are 5 main objectives driving investment:

1. a smarter Europe achieved through innovation, digitalisation, economic transformation, and SMEs support
2. a greener, carbon-free Europe implementing the Paris Agreement and investing in clean energy to fight climate change
3. a better-connected Europe with strategic transport and digital network
4. a more social Europe supporting social inclusion and delivering equal access to healthcare
5. a Europe closer to citizens based on locally led strategies and sustainable urban development.

To straightforwardly access support, 80 new measurements have been introduced including: shorter, fewer, and clearer rules, less bureaucracy for businesses, streamlined implementation. In general, the framework will be more flexible and result driven.

The total resources intended for the next CP cycle amount to 392 billion euros and fall under these goals: investment for jobs and growth, European Territorial Cooperation, technical assistance, and Commission managed instruments.

Regarding the first objective, the picture below still marks the difference between core and peripheral regions: Eastern and Southern areas are the ones that will absorb more funds to invest into jobs and growth goals. The red zones will require a more profound intervention and development to accomplish cohesion.



Legend:

- Less developed regions (GDP/head less than 75% of the EU-27 average)
- Transition regions (GDP/head between 75% and 100% of the EU-27 average)
- More developed regions (GDP/head above 100% of the EU-27 average)

**Figure 2.5** Investment for jobs and growth goal (ERDF and ESF) eligibility, 2021-2027 (Source: <https://cohesiondata.ec.europa.eu>)

In the view of 2050, the EU needs to develop the following tools to achieve cohesion:

- increase efficiency of place-based policies including smart specialization and support towards enterprises, workers and communities most affected by climate change;
- evaluate further improvements to implement Cohesion Policy more efficiently;
- reinforce the role of CP to implement funds in the green, digital and demographical transition; the policy must sustain private and public actors by guarantying them enough financial support for investments through tax revenues, user charges, fees and other sources of income in the longer term;
- increase investments on people throughout their lives by implementing funds in education and training of people, their competences, creativity, and their potential to create, innovate;
- strengthen complementarity among other European policies to promote synergies.



## **2.4 Smart Specialization Strategy and their implementation**

Smart Specialization Strategies were integrated for the first time in the CP plan 2014-2020. Their purpose is to determine R&D and innovation activities required to achieve objectives regarding structural change and support 'transformative' activities in domains in which regions already have a competitive advantage. The process includes innovation capacities and actions taken from an existing structure to which extra-regional capacities are added to obtain a structural change.

These strategies were introduced because the industrial European structure is characterised by traditional sectors using average or low technology levels and not implementing sufficiently R&D research to improve their performance (Estensoro and Larrea, 2016). This happens due to the inability of companies to convey R&D progress into productivity or gains; these limitations can be found at a sectoral level and at a regional level (McCann & Ortega-Argilés, 2014a).

Smart specialization is a whole process including development of a vision, identification of strengths and weaknesses of the territory, definition of strategic priorities and use of proper policies to maximise progress and knowledge improvement within regions. This should lead to a structural change like the modernisation of a traditional sector as the transformation of the footwear industry in North Portugal where flexible automation was introduced. In this situation, the final objective was to integrate engineering knowledge of the University of Porto and skills, tools, software utilized by companies specialized in the shoe production to increase quality and flexibility production.

According to D. Foray (2018) to identify transformative activities a policy is needed to prompt structural change and support activities' growth. The policy must address specific issues and needs considering both the sector and the technology used by the industry. Thus, each activity corresponds to a particular policy.

Smart Specialization Strategies are built on the following arguments:

- broad conception of innovation
- importance of general-purpose technologies that can be recombined to create novel solutions
- complementarity between subsidized innovation projects, R&D and training of specialized workers needed in the project
- possibility of connecting innovation and objectives within of transformation activity.

When building a transformative activity, it is important to integrate actions aimed at implementing high-tech innovation to the potential users of the technology. For instance, a transformative activity including scientific innovation projects must include actions that facilitate the adoption of the new high-tech facilities by the traditional sector; actions consist in training employees, properly managing the implementation and adoption of high tech.

However, smart specialization strategies have a double objective: not only do they address innovation complementarities between high-tech and traditional sectors, but also encourage early innovative firms by furnishing them the equipment and capabilities necessary to compete in the market.

The policy aims at pulling economic agents from the traditional sector into the innovative one through programs and actions that involve training, management, and new technologies adoption.

An aspect worth mentioning is that these strategies should focus on priority domains: if an activity is too extensive, projects will result as dispersed, connections and synergies are unlikely to occur; instead, projects will be more connected if they focus on a narrow priority area, and they will contribute to larger spillover effects.

Smart specialization strategies are not simple to implement because they are considered an experimental policy, objectives and activities are not guaranteed to be fulfilled; consequently, it is advantageous for firms to discover and choose in detail priority areas for R&D and innovation also because time spend in investigating which area to explore is precious in the following stages of process/product design and production. Additionally, there is no complete information on how the transformative actions are going to unfold: only through R&D investments, projects, and actions coordination the project will be shaped and revealed.

Once transformative activities are defined, they are required to be flexible since new combinations can arise anytime and the firm must be ready to integrate them.

An example of priority in Smart Specialization Strategy is represented by the Finnish region of Lapland where the strategy contributed to developing its leading position in exploiting and commercializing natural resources of the Arctic and by promoting at the same time a sustainable development and job creation (European Commission, 2017). On this occasion, stakeholders of the region cooperated to define a macro-domain referred to the natural resources and find transversal business opportunities across sectors. They were interested in developing international and local partnerships to create strategic connections.

The result of Smart Specialization Strategies implementation was an advancement in regional practices, the development of collaboration network with actors within and outside of the region, the creation of an inclusive environment that promotes intersectoral cooperation (Ghinoi et al, 2020).

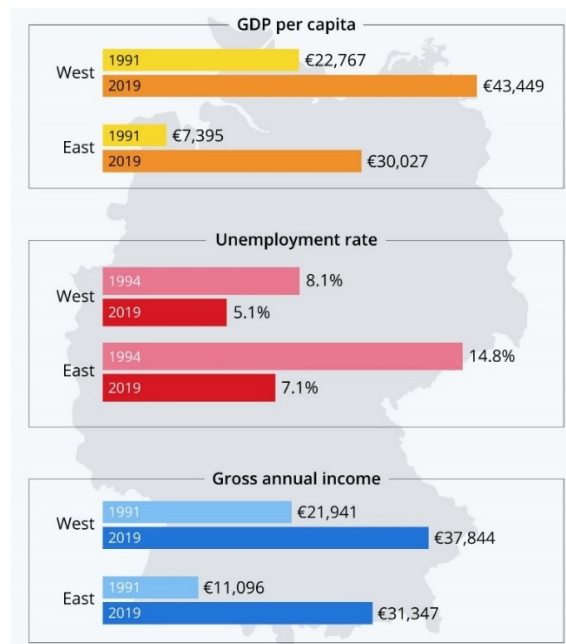
## **Chapter 3: Germany between core and periphery: how it became a leading country in Europe**

### **3.1 Germany: a divided country after re-unification**

Nowadays, Germany can be considered a leading country not only in Europe but also worldwide. With a 3,570.62 billion euros GDP, it is a powerful economy that plays a key role in the EU. However, Germany did not used to be that influential in the past due to its historical path and its consequences that are somehow still perceived.

It is common knowledge that after the Second World War, Germany was divided into two separate states: the German Federal Republic (GFR) and the German Democratic Republic (GDR). The first one was controlled by Western countries and was characterized by a strong feeling of belonging to Europe, while the East was controlled by the Soviet Union who imposed a communist regime. While the GFR was a successful capitalist economy, GDR was a socialist economy with low productivity and income levels.

After the Berlin wall fall (1989), Germany was a unified country with still numerous aspects that were not converging. The public debt increased enormously: from 41.5% of GDP in 1991 to 61.5% in 1997. The Eastern catchup process started soon however it was not uncomplicated: firms were privatized, Western laws and institutions were introduced, Eastern companies had to compete with the long-established Western ones, a new currency was introduced. This reconstruction led the East towards a deep and enduring crisis still felt today. Unemployment rates increased enormously (from 7.8 million people employed in 1989 to 5.8 million in 1993), a massive migration from East to West occurred, production value fell drastically. The figure below reports some data comparing East and West in the years 1991 and 2019.



**Figure 3.1** – 30 Years united, East Germany still trail the West, selected economic indicators for East and West German in 1991 and 2019 (Source: Federal Ministry for Economic Affairs and Energy; Statista)

New businesses were installed in the East, but they could not compensate employment losses; Western firms invested in some industries after reunification (i.e., chemistry, automobiles), but it was not enough. Government intervention and new policies were needed to economically unify the country.

### 3.2 The recovery of Eastern regions

Over time, East Germany has improved considerably its conditions to converge towards the Western levels and regarding some indicators, it managed to recover while others are still lower; for instance, risk of poverty is higher in the East even if it decreased significantly through the years. Eastern Germans did not feel part of a unique country even after the reunification and differences in salaries, economic productivity, quality of life were deeply felt by them. However, the East grew, and this allowed a partial recovery and convergence with the West (H. A. Welsh, 2019). This was possible due to the intervention of institutions that brought some sort of equilibrium back in the country.

#### 3.2.1 Public Administration and organizational transformation in the post-unification East Germany

The first of various policies applied in the East was the transformation of Public Administration. According to Wollmann (2021) there were three major changes:

- An 'institution transfer' according to which constitutional, legal and institutional order of West Germany were extended to the East (October 1990); this event was highly impacting in the catchup process since, conversely to other CEE countries, no rule had to be created from scratch.
- A 'personnel transfer': numerous West German officials and experts moved to the East to organise and transform the new Land, administrative help was provided; thus, a new political class was built.
- A 'financial transfer' of public budgets and security funds to support transformation.

Another important step was the privatization of companies: by 1994, more than 3,000 firms were privatized, 310 were transferred to local authorities and others were liquidated. Consequences were high unemployment and de-industrialization, plus numerous assets of the GRD were sold to West Germany or foreign investors.

### ***3.2.1 Entrepreneurship and knowledge as initial conditions to face the transformation process***

Initial conditions of a territory are essential when it is going through a transformation process as the one occurred in East Germany from a socialist to a capitalist economy. In their study, M. Fritsch and M. Wyrwich (2020) analysed annual employment change and annual GDP growth of 55 East German regions and confirmed that initial conditions play a key role for regional development when addressing a transitional phase.

After unification, the educational sector of Easter Germany was reorganized: there was a massive reduction in personal, financial resources and others budget cuts. Consequently, R&D employment decreased, technological paradigms were abandoned, and part of the knowledge stock was depreciated. However, given the satisfactory self-entrepreneurship and knowledge-based levels, the East was able to absorb changes: formal education suggests higher levels of human capital, increase in productivity and prosperity which allowed for a quicker recovery after the transformation process.

### ***3.2.3 Cooperation and networking in the East***

After Germany's reunification, innovation went through deep changes and production networks collapsed. While in the West actors were building partnerships with actors sharing the same technology, in the East networks were totally reconstructed due to the structural changes that had occurred and the changes in innovation cooperation (Cantner, Giebler, Günther, Kristalova, Meder; 2018).

Cooperation was focused on specific technological fields, and it was higher in the East since it was more necessary after the restructuring process; moreover, the industrial base was fragile, composed of SMEs against the large companies of the West.

Additionally, privates might have co-patented especially during the first years of transition to secure intellectual property rights during uncertain times; various firms in the East were young therefore sharing knowledge and cooperating was the only solution to reduce innovation risk.

### **3.3 Public Investment Subsidies**

#### ***3.3.1. The Joint Task ‘Improving Regional Economic Structures’ (GRW)***

Over time, the German government intervened to financially sustain firms; the Joint Task ‘Improving Regional Economic Structures’ (GRW) set up in 1969 represents the most significant regional policy scheme whose aim is the creation of good-quality jobs and their long-term preservation, the reduction of locational disadvantages, addressing regional structural change, creation of equivalent living conditions. By implementing more than 46.47 billion Euros from 1991 to 2015 primarily spent on East Germany, the policy mainly chose private firms to support setting up, extension diversification and restructuring projects (Deutscher Bundestag 2007). Only eligible firms could access the funds and financed projects must generate employment in the implemented regions by safeguarding existing jobs or creating new ones (M. Brachert, E. Dettmann, M. Titze; 2017).



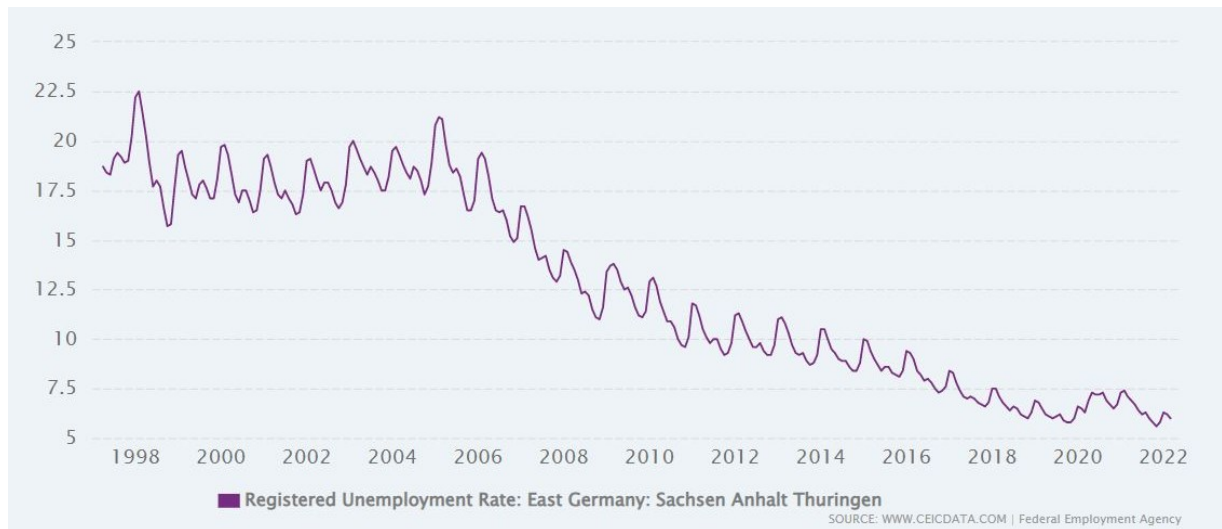
GRW - Map of Incentive Regions 2007 - 2013



**Figure 3.2** – The Joint Task ‘Improvement of Regional Economic Structure’ (GRW) – Map of Incentive Regions 2007–2013 (Source: [www.gtai.de](http://www.gtai.de))

Only specific firms are subsidized by the GRW funding: in the Saxony-Anhalt (2007-2013), according to Dettmann et al. (2017) these are usually larger, instead non- subsidized firms are on average smaller, characterized by low percentage of younger employees. GRW subsidies last on average two years and show a positive impact on the firms’ outcomes: an increase in employment levels persisting and increasing overtime (rise from 11.1 to 17.1 employees in two years), an increment in investments which doubled in assisted firms during the project but did not persist over time (insignificant after five years from the start of the project), plus an increase in labour demand. However, this type of funding missed a major goal namely develop competitiveness of firms, convergence productivity and labour quality were not completely achieved. Moreover, exception

made for employment levels, the other factors and productivity declined in the long run. Unemployment rate reduction in the Saxony-Anhalt region is presented in the map below.



**Figure 3.3** – Germany’s registered unemployment rate: East Germany, Saxony- Anhalt from April 1997 to March 2022 (Source: **Errore. Riferimento a collegamento ipertestuale non valido.**)

### 3.3.2. Innovative Regional Growth Cores Program (IRCG) in East Germany

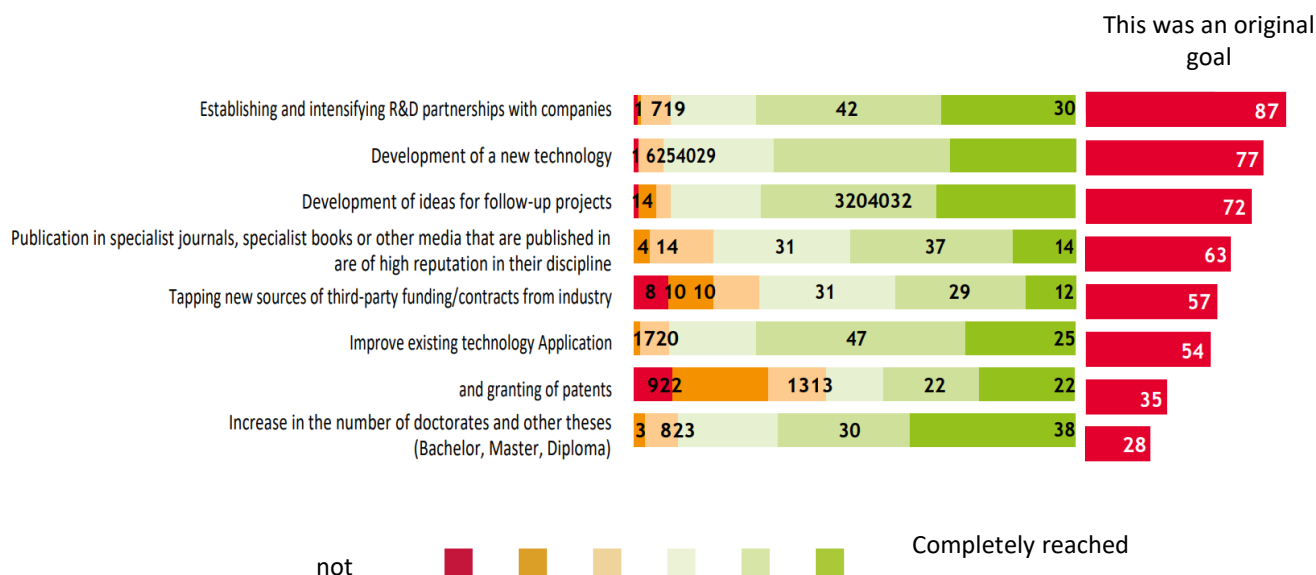
IRCG program was created to promote collaboration between Eastern German firms and institutions. By providing support to innovation efforts, the aim was to enhance formation and growth of clusters (Falck et al., 2019). As explained in chapter one, firms benefit from agglomerations due to spillovers they generate.

Policies were to improve conditions of the innovation process to overcome structural weakness; the approach adopted was to sustain unique competences of a region regarding technologies, applications, a method of processing materials that are rooted in businesses, tradition, research institutes.

Selected programs, according to the BMBF (Federal Ministry of Education and Research) support quality collaborations between institutes and firms who already share a platform technology or can formulate a strategy to develop innovative and successful products (Falck et al., 2019). As claimed by the Institution for Innovation and Technology, the aim of policies is to support enterprises to maintain leading positions in the market by settling alliances with partners and working together on joint innovation projects thematically attached to the region, but which can implement new technologies and develop starting from these.

As displayed in the graphic below, several firms were asked to which extent they achieved project objectives, and this was the result.





**Figure 3.4 – Goals achievement by subsidies firms (Source: iit)**

Overall, the growth core was achieved with 48% of firms stating that they fulfilled objectives almost totally and 10% of firms fully achieved them. Individual objectives were completed as well with up to 90% achieved very well.

Directly treated firms show an increase between 17-20% in R&D expenditure during programme implementation; instead, regarding the total spending, no great changes were noticed. However, in the period after the funding private R&D spending decrease significantly indicating that the policy did not have a long-run effect (Falck et al., 2019). Other consequences resulting from IRCG programs are:

- Positive growth in R&D personnel recorded by companies and further increase expectation
- General enhancement of competence levels
- Intensified involvement of companies in R&D cooperation at regional, national, and international level intensified
- Partners within the same alliance continued developments after the funding
- Value chains resulted less fragmented, completer and more efficient compared to the beginning of the funding
- Enhancement of cooperation abilities and orientation towards collaboration
- Team-building effect, finding of suitable partners, gain in trust.

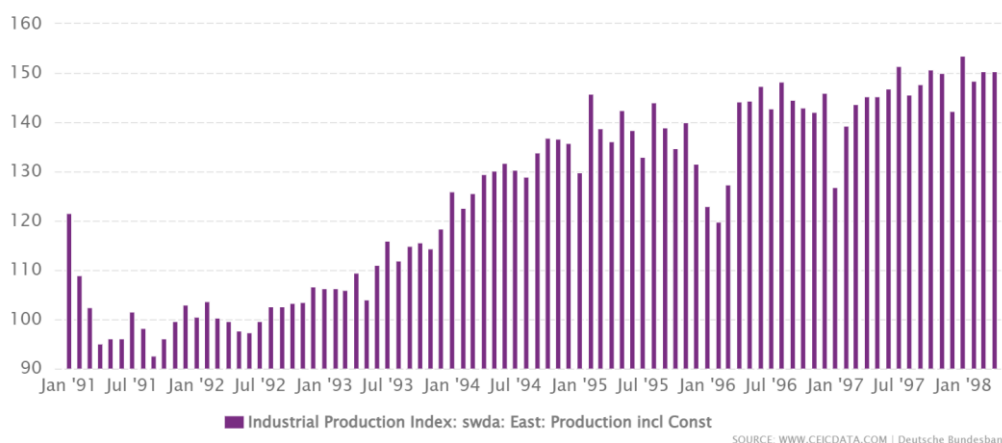
### 3.3 East and West nowadays: there is still divergence?

Despite the significant improvement achieved by East Germany throughout the years following reunification, the progress made, and the infrastructures built, professors Heimpold and Hölischer (2015) state that the Eastern economic reconstruction is still incomplete and the recovery process has slowed down since the 2000s. Today disparities emerge not only between East and West, but also

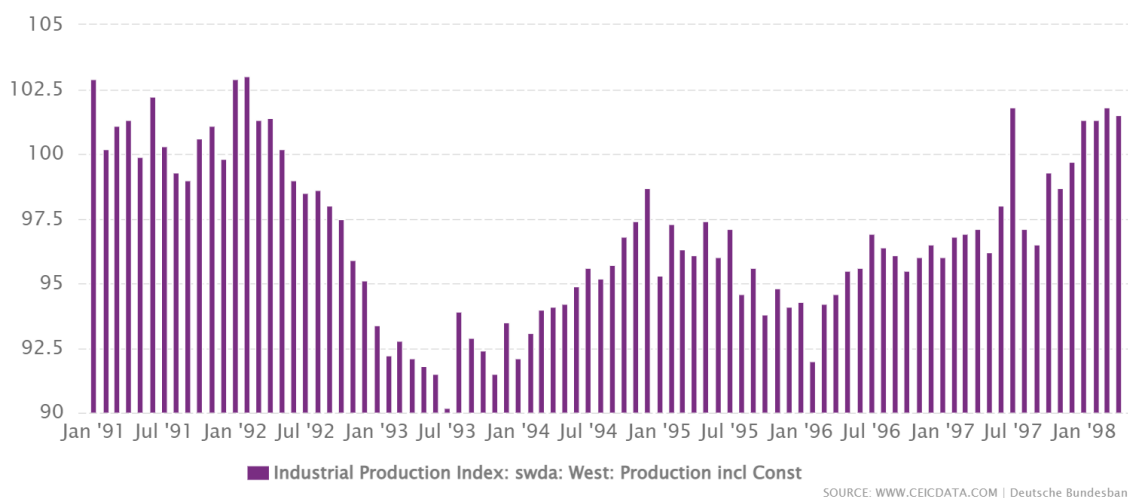
between North and South; differences can be divided into three primary areas concerning productivity, labour market and innovation. However, divergences within the country are not marked as in the past thus, despite the persisting differences, Germany today is not considered as two separate entities as in the past.

### 3.3.1. Productivity disparity

After reunification, policies, and funds to rebuild the East were implemented allowing a relatively rapid growth, even faster than the Western development. However, according to the Halle Institute for Economic Research (2019) there was an ‘alarming slowdown of the catching-up process’; more recent research reveals that 2017 productivity in East Germany (including the capital Berlin) is 82% of the Western one proving the present mismatch in productivity.



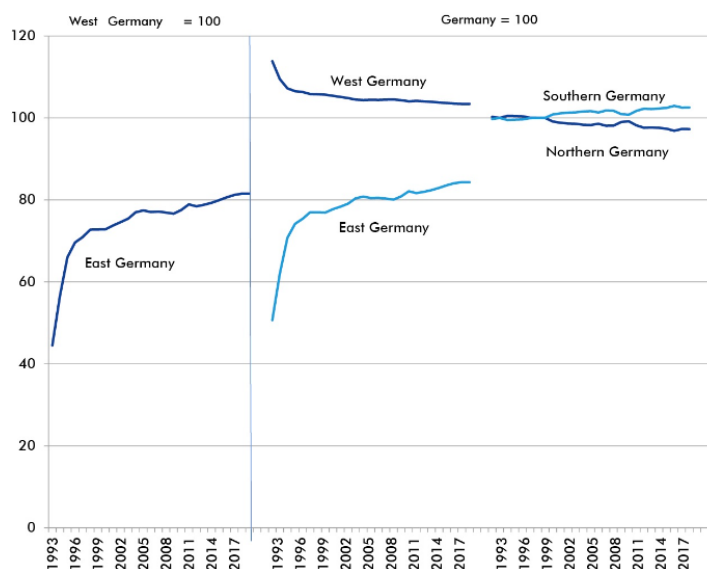
**Figure 3.5** – East Germany Industrial Production Index: swda: East: Production incl Const from Jan 1991 to Apr 1998 (Source: **Errore. Riferimento a collegamento ipertestuale non valido.**)



**Figure 3.6** – West Germany Industrial Production Index: swda: West: Production incl Const from Jan 1991 to Apr 1998 (Source: **Errore. Riferimento a collegamento ipertestuale non valido.**)

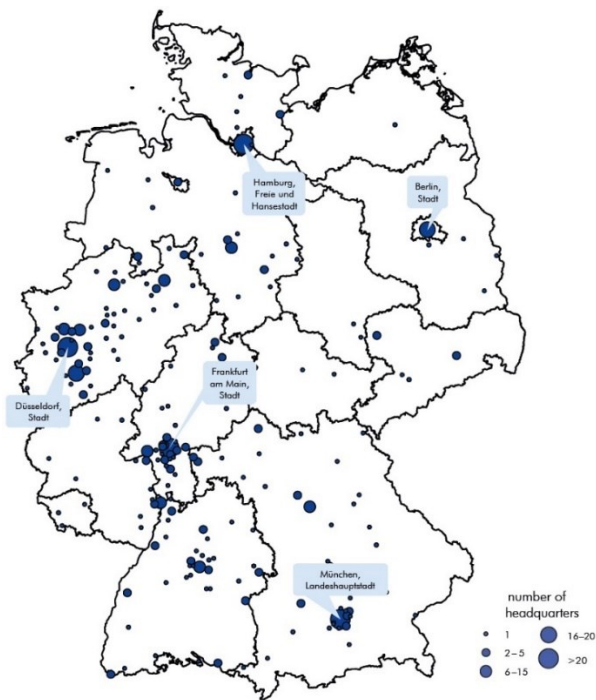
As the graphs above show, considering industrial production, the East reported higher levels compared to the well-settled Western economy because there was a highly intensive investment activity from the German government and companies in the West to promote development in the East side. Nevertheless, when comparing the GDP in current prices per employee in figure 3.6, despite the improvements attained in the East to converge towards the Western levels, the discrepancy between the two parties persists. The only exception is represented by Berlin which shows a GDP per inhabitant in line with EU-28 average against the lower levels achieved by the other regions. There is a gap between the North and the South as well, nonetheless it is less visible compared to the East-West gap.

Anyhow, an aspect worth underlying is that productivity in rural regions is similar between Eastern and Western regions conversely to productivity in urban areas which shows greater heterogeneity due to differences in cities' dimensions: after reunification investors preferred investing outside cities where most of the manufacturing activity was held rather than inside.



**Figure 3.6** – Productivity differences in Germany between East and West comparing GDP in current prices per employee (Source: Halle Institute for Economic Research)

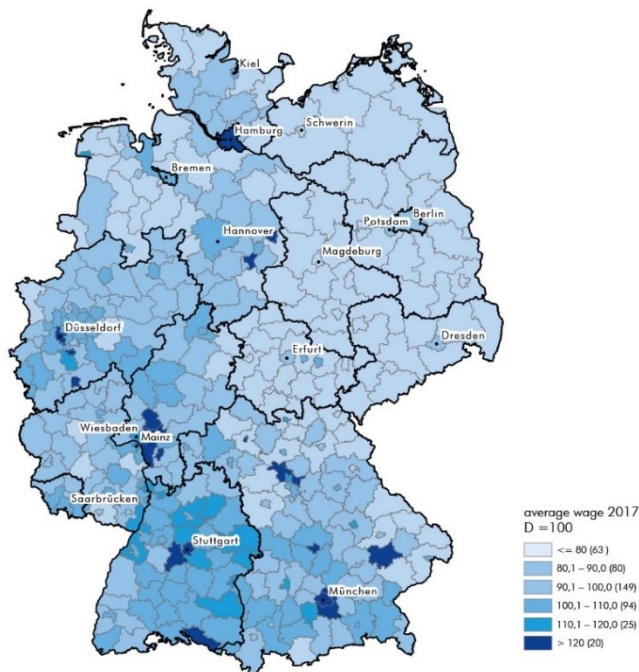
Differences in productivity rely on firms' dimensions too: both the East and the West rely largely on SMEs; however, the West presents a higher number of larger companies and headquarters which are dimensionally bigger than the few established in the East (Heimpold, Hölscher, Land, 2015). Moreover, numerous Eastern companies operate as corporate subsidiaries of Western or foreign corporation thus contributing to their performance rather than of their own region.



**Figure 3.7** – Headquarters of the top 500 companies in Germany 2016 ranked by DIE WELT (Source: Halle Institute for Economic Research)

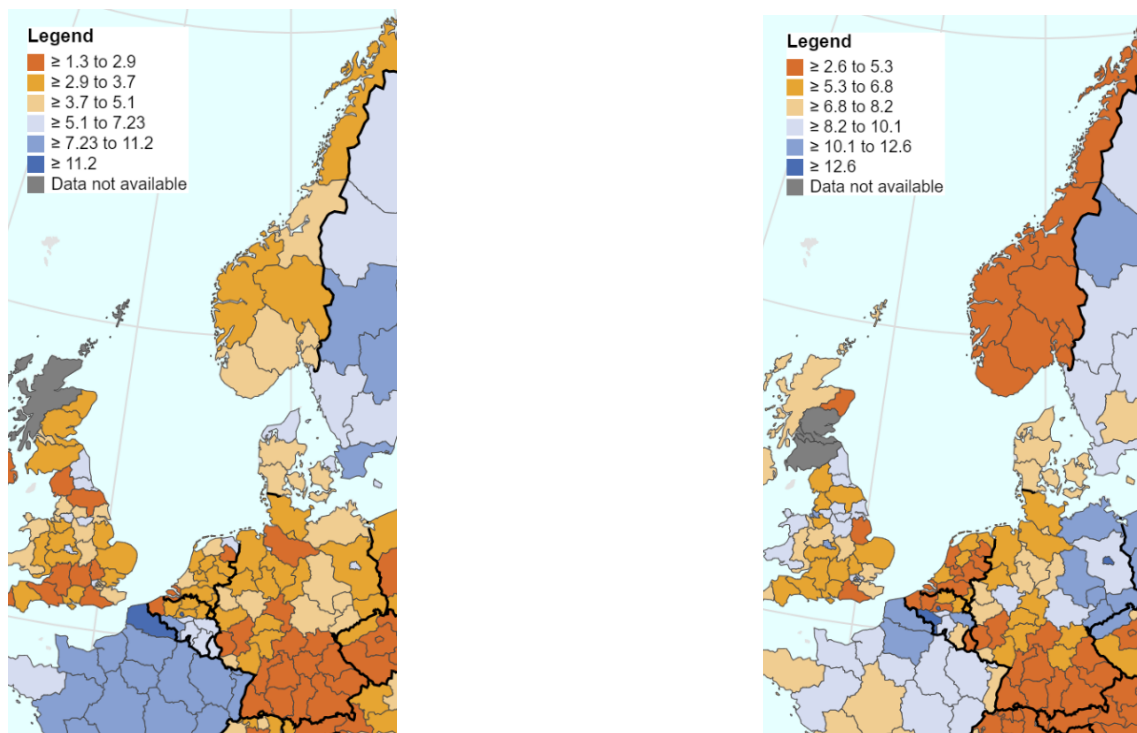
### 3.3.2. Labour market disparity

Consequences in productivity disparity are wage gaps between Eastern and Western regions: according to the Halle Institute for Economic Research (2019) average wage in the East is just 81% of the national average (exception made for Berlin with a 97.4% of the national average).



**Figure 3.8** – Median of monthly gross wages of full-time employees liable to the social insurance system (31.12.2017); Germany = 100 (Source: Halle Institute for Economic Research)

Another interesting data to analyse is the unemployment rate: the pictures below illustrate respectively unemployment rates in 2019 (left) and 2010 (right). Over time, unemployment has shrunk all over the country due to policies, funds and projects that ameliorated general conditions and contributed to cooperation across regions. However, it can still be observed a divergence between Western and Eastern regions which continues to reveal higher unemployment rates.

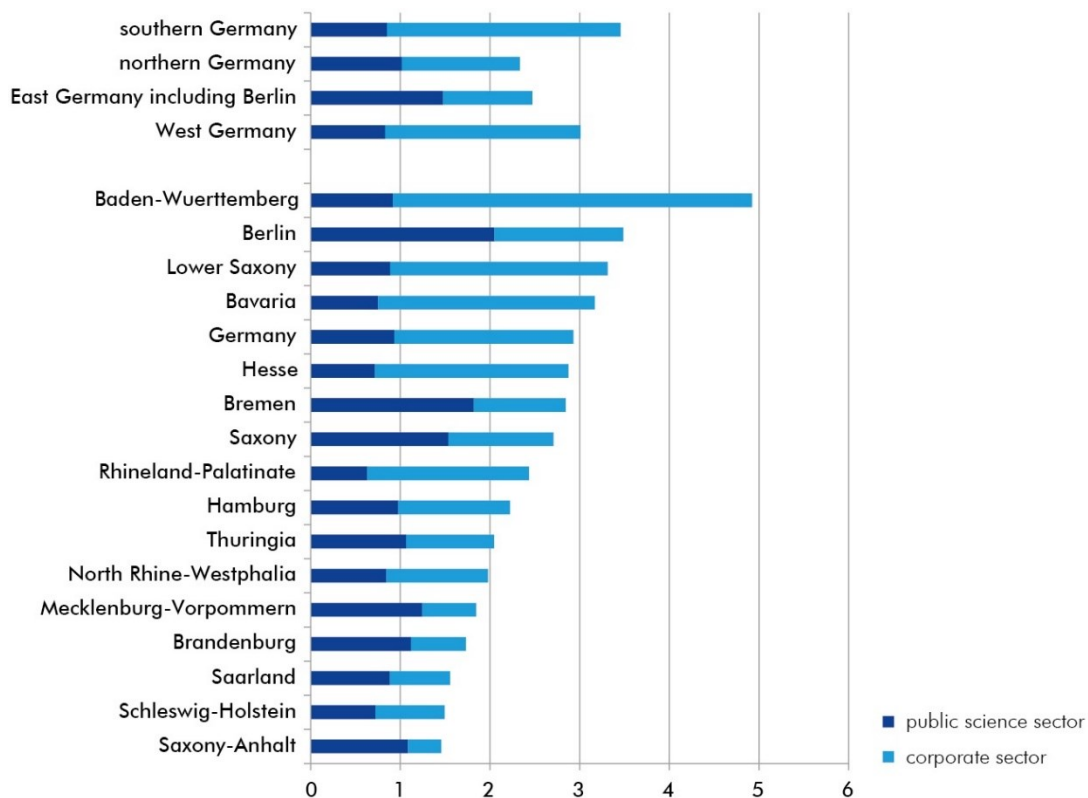


**Figure 3.9** – Unemployment rate by NUTS 2 regions (Source: Eurostat)

### 3.3.3. Innovation disparity

Overall, Germany is an innovative country extensively investing every year in R&D (25,954 patents registered in 2020; source: Statista). Surprisingly, statistics report comforting data about the East since, according to the European Commission, in 2019 Berlin and Dresden were considered leader innovation regions. Totally, Germany reported twelve innovation leader regions and twenty-two strong innovation regions.

As the graph below reports, not only Western regions, but also some Eastern regions like Berlin, have spent above average on R&D and, generally, the East reported great results owing to the precious support of public policies that invested enormously in the East to speed the recovery process. Nevertheless, public science sector investments in the East are higher suggesting that firms do not fulfil the requirements to intensively invest in R&D as occurs in the West.



**Figure 3.10** – Share of internal R&D expenditures 2016 in GDP by federal states and region in % (Source: Halle Institute for Economic Research)

Yet, in 2017 data reconfirmed the supremacy of Western regions with Brunswick, Stuttgart and Karlsruhe placed respectively at the first, second and fourth positions in R&D expenditure in the ranking of European regions investing the most in R&D (source: Statista). Consequently, Western, and especially Southern regions show upper levels of patenting activity.

### 3.4 Operational Programme (OP) for the ERDF 2014 in Brandenburg and Bayern

ERDF (European Regional Development Fund) is a program designed to strengthen economic, social, and territorial cohesion in EU regions by adjusting imbalances among regions. For the 2014-2020 cycle, all regions had their tailored development program established and applied. The Brandenburg region’s program aims at promoting economic growth through R&D investments and development, low-carbon technologies integration and competitive economic structures. The program features four priorities: strengthen applied research, development and innovation, the competitiveness of SMEs, reduce CO<sub>2</sub> emissions, and lastly integrate development of rural and urban areas. Regional disparities can be especially found in the surroundings of Berlin where demographic change is further worsening the competitive situation suffered by rural regions far away from the capital; the measures undertaken seek to improve surrounding areas, infrastructures, and educational facilities in schools, ameliorate and stabilise economy in cities and their neighbouring areas.

Conversely, the OP applied in the region of Baden-Württemberg in the same period has different priorities owing to the better economic conditions of one of the most innovative and economically strong European regions. Respectively, the program does not include any reference to cohesion between rural and urban areas, but rather aims at accomplishing two goals: sustaining the innovative potential and competitiveness of the region by boosting applied science, supporting cooperation among enterprises, research centres and universities, support high-tech start-ups, foster innovation in SMEs. The second goal is to reduce CO<sub>2</sub> emissions through an energy efficiency network covering the whole region, plus strategies and projects to raise awareness.

## Conclusions

The core-periphery gap persists in the Europe and various factors contribute to it. As mentioned, Central-Eastern and Southern countries vary considerably compared to Western countries which are more economically stable and innovation driven. This divergence depends on various characteristics: first, it was illustrated that quality of government matters since most prosperous countries are associated with higher institutions quality that chooses more profitable areas of intervention such as R&D, innovation and education rather than infrastructures, a field usually preferred by governments of lagging countries.

Moreover, by accentuating the role of universities thus the importance of research, the effects will be positive since it contributes to the creation of centres of knowledge exchange and spillover of information from which firms and enterprises surrounding the university can benefit from. Not only proximity to universities, but also to other firms can stimulate knowledge sharing which is essential and advantageous for firms in lagging regions lacking the capability of intensively spending in R&D. However, it might be complicated for firms in lagging regions to cooperate and exchange knowledge, consequently firms in core regions should connect with them.

This type of cooperation does not generate naturally since it would not be an equal exchange of knowledge, thus the European Union created numerous policies throughout the years to promote cooperation.

From the Treaties of Rome and Maastricht to the more recent policies, the cohesion and convergence process became more and more tailored to regions' needs. Categories financed changed overtime: human capital, R&D, ICT, business support gained greater attention, while investments in physical infrastructures diminished.

Effects of policies implemented vary considerably among countries which do not present the same absorption capacity resulting in different development among countries. Germany and the UK emerge as the countries which benefited the most from cohesion policy also considering the high quality of institutions that properly allocated funds. Conversely, policies had short-term improvements in Italy and Spain where policy's effects did not last.

Concerning the next cohesion policy, the EU decided to invest even more on a sustainable development by implementing the Paris Agreement which aims at fighting climate change and by creating a more innovative Europe through digitalisation, and economic transformation. CP develops not only at an economic level, but also considers social and political issues affecting county members.

A powerful instrument used by the EU are Smart Specialization Strategies, which were already introduced in the 2014-2020 cycle, however there is space for improvement. By focusing on specific characteristics that define most developed business sectors of Member States, the Strategy allows



further development in those sectors and sustains growth by introducing technologies and innovation to ameliorate production.

Germany represents a great example of how correct policies and the wise use of funds sustained the recovery of more vulnerable Eastern regions. Consequently, other countries could get inspiration from the German policies and the way they were implemented to later adapt them to their own needs, since, as past policies have revealed, a general approach is not appropriate. Countries need tailored policies to better invest and get the highest return rate from funds.

For the future policies, adopting a bottom-up approach might reveal useful and successful: to build cohesion within the EU not only economic factors, but also the social and political dimension matter. Citizens know the region in which they live better than anybody else therefore listening to their suggestions for improvement should not be underestimated. Moreover, they recognise what is necessary to improve and later, efficient government institutions must apply what requested to satisfy people and consequently prevent human capital escaping.

All things considered, CP is complex yet detailed, and in general it achieved a positive result despite the specific effects that followed in country members. Thus, the EU is not to blame, but it is rather institutions quality that affects policy's effectiveness. For further improvement, member states should be asked for more accountability, transparency, and less corruption to obtain the desired results. There must be communication and cooperation among countries to sustain each other since the improvement of the single, implies the improvement of the whole Union.

## Bibliography

- Ahlborn, M. & Wortmann, M., 2018. The core-periphery pattern of European business cycles: A fuzzy clustering approach. *Journal of Macroeconomics*, Volume 55, pp. 12-27.
- Begg, I., 2018. Innovative Directions for EU Cohesion Policy after 2020. *CEifo Forum*, 19(1), pp. 3-9.
- Berkowitz, P., Monfort, P. & Pieńkowski, J., 2020. Unpacking the growth impacts of European Union Cohesion Policy: transmission channels from Cohesion Policy into economic growth. *Regional Studies*, 54(1), pp. 60-71.
- Bernal, P., Carree, M. & Lokshin, B., 2022. Knowledge spillovers, R&D partnerships and innovation performance. *Technovation*, Volume 115.
- Botta, A. & Tippet, B., 2022. Secular stagnation and core-periphery uneven development in post-crisis eurozone. *Competition & Change*, Volume 26, pp. 3-28.
- Bourdin, S., 2019. Does the Cohesion Policy Have the Same Influence on Growth Everywhere? A Geographically Weighted Regression Approach in Central and Eastern Europe. *Economic Geography*, 95(3), pp. 256-287.
- Brachet, M., Dettmann, E. & Titze, M., 2018. Public Investment Subsidies and Firm Performance – Evidence from Germany. *Jahrbücher für Nationalökonomie und Statistik*, 238(2), pp. 103-124.
- Cantner, U. e. a., 2018. Innovation cooperation in East and West Germany: a study on the regional and technological impact. *International Journal of Computational Economics and Econometrics*, 8(3-4), pp. 242-279.
- Capello, R. & Perucca, G., 2018. Understanding citizen perception of European Union Cohesion Policy: the role of the local context. *Regional Studies*, 52(11), pp. 1451-1463.
- Crescenzi, R. & Giua, M., 2020. One or many Cohesion Policies of the European Union? On the differential economic impacts of Cohesion Policy across member states. *Regional Studies*, 54(1), pp. 10-20.
- Department, S. R., 2002. *Relocation between the Federal Republic of Germany and the German Democratic Republic from 1949 to 1990*. [Online] Available at: <https://www.statista.com/statistics/1054017/relocation-between-east-and-west-germany-1949-1990/> [Consultato il giorno may 2022].
- Destatis Statistisches Bundesamt, s.d. *Brunswick, Stuttgart and Brabant wallon are the top 3 EU regions*. [Online] Available at: [https://www.destatis.de/Europa/EN/Topic/Science-technology-digital-society/RDexpenditure\\_table.html?nn=218508](https://www.destatis.de/Europa/EN/Topic/Science-technology-digital-society/RDexpenditure_table.html?nn=218508) [Consultato il giorno 2022].
- Dijkstra, L., 2021. *Eighth report on economic, social and territorial cohesion*. [Online] Available at: [https://ec.europa.eu/regional\\_policy/sources/docoffic/official/reports/cohesion8/8cr.pdf](https://ec.europa.eu/regional_policy/sources/docoffic/official/reports/cohesion8/8cr.pdf)
- European Commission and Directorate-General for In, 2021. *Regional innovation scoreboard 2021*, s.l.: Publications Office.

European Commissioner Elisa Ferreira and Cabinet, 2022. *Cohesion Policy 2021-2027*. [Online] Available at: [https://ec.europa.eu/regional\\_policy/en/2021\\_2027/#5](https://ec.europa.eu/regional_policy/en/2021_2027/#5) [Consultato il giorno 2022].

European Commission, 2017. *COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN*, Brussels: s.n.

Eusterschulte, B., s.d. *OP Baden-Württemberg ERDF 2014-2020*. [Online] Available at: [https://ec.europa.eu/regional\\_policy/en/atlas/programmes/2014-2020/germany/2014de16rfop001](https://ec.europa.eu/regional_policy/en/atlas/programmes/2014-2020/germany/2014de16rfop001)

Falck, O., Koenen, J. & Lohse, T., 2019. Evaluating a place-based innovation policy: Evidence from the innovative Regional Growth Cores Program in East Germany. *Regional Science and Urban Economics*, Volume 79, pp. 103-480.

Federal Ministry of Education and Research, s.d. *Innovative Regional Growth Cores – The programme*. [Online]

Available at: <https://www.innovation-strukturwandel.de/strukturwandel/en/entrepreneurial-regions/individual-programmes/innovative-regional-growth-cores/innovative-regional-growth-cores.html>

[Consultato il giorno may 2022].

Foray, D., 2018. Smart specialisation strategies and industrial modernisation in European regions— theory and practice. *Cambridge Journal of Economics*, 42(6), pp. 1505-1520.

Fritsch, M. & Wyrwich, M., 2020. Initial conditions and regional performance in the aftermath of disruptive shocks: The case of East Germany after socialism. *Friedrich Schiller University Jena*.

Ghini, S. e. a., 2021. Smart Specialisation strategies on the periphery: a data-triangulation approach to governance issues and practices. *Regional Studies*, 55(3), pp. 402-413.

Hellmut, W., 2021. Transformation of Public Administration in East Germany Following Unification. In: *Public Administration in Germany*. s.l.:Palgrave Macmillan, Cham, pp. 253-269.

Kroll, T., s.d. *OP Sachsen-Anhalt ERDF 2014-2020*. [Online] Available at: [https://ec.europa.eu/regional\\_policy/en/atlas/programmes/2014-2020/germany/2014de16rfop013](https://ec.europa.eu/regional_policy/en/atlas/programmes/2014-2020/germany/2014de16rfop013)

[Consultato il giorno may 2022].

Lazzeroni, M., 2019. Università e innovazione nelle aree periferiche: dinamiche di sviluppo, inclusione sociale e progetti di rigenerazione urbana. *Nuove geografie dell'innovazione e dell'informazione. Dinamiche, trasformazioni, rappresentazioni*, Volume 59, pp. 25-34.

Leick, B. & Land, T., 2018. Re-thinking non-core regions: planning strategies and practices beyond growth. *European Planning Studies*, Volume 26, pp. 213-228.

Liscai, A., 2017-2018. *Le disuguaglianze regionali all'interno dell'Unione europea: analisi comparata di PIL, occupazione e competitività*, s.l.: s.n.

Lodolo, D., 2019. *30 years after the Berlin Wall Fall: are regional economic inequalities still based on the West-East divide in Germany?*, s.l.: s.n.

Lopes, J., Ferreira, J. & Farinha, L., 2019. Innovation strategies for smart specialisation (RIS3): Past, present and future research. *Growth and Change*, 50(1), pp. 38-68.

- Majuri, M., 2022. Inter-firm knowledge transfer in R&D project networks: A multiple case study. *Technovation*, Volume 115.
- Medve-Bálint , G., 2018. The Cohesion Policy on the EU's Eastern and Southern Periphery: Misallocated Funds?. *Studies in Comparative International Development*, 01 06. Volume 53.
- Rodriguez-Pose , A. & Ketterer , T., 2020. Institutional change and the development of lagging regions in Europe. *Regional Studies*, 02 07. Volume 54.
- Santoro, G., Bresciani, S. & Papa, A., 2020. Collaborative modes with Cultural and Creative Industries and innovation performance: The moderating role of heterogeneous sources of knowledge and absorptive capacity. *Technovation*, Volume 92-93.
- Silva, P., Moreno, S. & Teles, F., 2021. Explanatory models of regional innovation performance in Europe: policy implications for regions. *Innovation: The European Journal of Social Science Research*, 02 10. Volume 34.
- Welsh , H. A., 2019. Inner Unity and Regional Diversity in Unified Germany. *German Politics and Society*, 37(3), pp. 4-17.
- Wojciech, D. e. a., 2018. Regional Development in Central-Eastern European Countries at the Beginning of the 21st Century: Path Dependence and Effects of EU Cohesion Policy. *Quaestiones Geographicae*, 37(2), pp. 77-92.