Work Package 3

Quantitative Analyses of Learning Outcomes

Deliverable D3.2

Cross-national/cross-regional Quantitative Analysis Report

University of Vienna

Yuri Kazepov, Ruggero Cefalo, Nikoletta Jablonczay, Niklas Pernhaupt

Leibniz Centre for Lifelong Learning

Alexandra Ioannidou, Andreas Martin, Sonja Muders

Autonomous University of Barcelona

Xavier Rambla, Rosario Scandurra

Executive summary

The CLEAR project - *Constructing Learning Outcomes in Europe: A multi-level analysis of (under)achievement in the life course.* - aims to understand the factors that affect the quality of learning outcomes across eight European Union member countries, including Austria, Bulgaria, Finland, Germany, Greece, Italy, Portugal, and Spain. The project focuses on learning outcomes and (under)achievement, and how Spatial Justice, Intersectionality, and Life Course impact them. The project, especially WP3, also considers the importance of Opportunity Structures in understanding the impact of socio-economic factors on young individuals' learning outcomes.

The CLEAR project's Work Package 3 (WP3) focuses on the interconnections between education and labour market outcomes with socio-economic, institutional, and spatial contexts characteristics by deploying a quantitative approach. WP3 advocates rediscovering the factors that shape learning outcomes by assessing socio-economic factors across European regions. WP3 also emphasises the concept of Spatial Justice, viewing space as an influential force shaping social phenomena and guiding the allocation of resources and opportunities.

The *Cross-national/cross-regional Quantitative Analysis Report* (Report) synthesises the theoretical framework of learning outcomes (LOs) and opportunity structures by quantitative methods and their operationalization in national case studies conducted in *National Briefing Papers* (Deliverable D3.1). The preparatory analysis aimed to provide contextualized descriptive analysis on the connection between LOs, labour market and socio-economic conditions at national and regional level. The main objectives of this Report are 1) to conduct explorative analysis on the relationships between LOs, labour market and socio-economic conditions within CLEAR countries and regions; 2) to focus on the changes over the period 2007-2021; and 3) to identify clusters and *statistical profiles* of regions based on the combination of labour market and socio-economic characteristics. Accordingly, the Report evaluates how unequal spatial distribution of opportunities shapes LOs and educational (under)achievement. We do this by looking at the following research questions:

- How do young people's LOs differ across EU regions? What do official statistics reveal about poor LO and (under)achievement distribution in European regions?
- How do LOs change over time in EU regions?
- How do different structures of opportunities (socio-economic contexts) affect LO?
- Can types or profiles of regions be identified with specific configurations of opportunity structures and LOs?

To do this, the Report starts from the CLEAR conceptual frame. It focuses on LOs, opportunity structures at the regional level, and institutional settings as critical lenses through which educational dynamics and disparities can be understood and evaluated, especially in the context of regional comparative analyses. Throughout the Report, LOs

are investigated concerning outcomes from the education system and outcomes on the labour market for young people, in connection with several socio-economic conditions that may hamper or foster youth opportunities in EU regions. The reference to the institutional settings is not the main focus of WP3 – as institutional structures will be analysed in depth in the following packages of the CLEAR project – but rather serves as a background for supporting the interpretation of aggregated indicators on LOs at regional level.

WP3 investigates the connection between LOs and Opportunity Structures – labour market and socio-economic conditions at national and regional level, considering changes between 2007-2021. According to the project's workflow, this does not only allow us to connect the WP3's research questions with the project's overall aim, but allows that the current results of the WP3 will function as a bridgehead for further endeavours in the other WPs. For example, the WP3 outcomes on the current situation of young people in CLEAR countries will help sharpen the research focus for policy and institutional analysis (WP4) and address targeted questions for young people in qualitative interviews (WP5). The following Report utilises the EU's NUTS (Nomenclature of Territorial Units for Statistics) classification to ensure data harmonisation and compatibility across CLEAR partner countries. We focus on the NUTS 0 (national) and NUTS 2 (regional) levels, integrating supplementary data to enrich these primary categories. Considering data availability constraints, the preferred level of analysis selected is NUTS 2, which represents the highest level of territorial disaggregation to conduct an in-depth analysis of learning outcomes considering spatial disparities in the distribution of opportunities.

In the empirical part, the report provides a descriptive analysis of the development of LOs, as education and labour market outcomes, and the connection with regional contextual traits. The analysis looks at CLEAR countries and CLEAR regions, also providing specific insights on the regions selected for locating case studies for the empirical fieldwork. Further, a selection of variables on LOs and contextual conditions is used for a cluster analysis that provides regions' profiles. Here, all EU regions provide a broader comparative view and a systematic landscape of LOs and contexts, within which CLEAR regions are discussed. The cluster analysis identifies 4 main groups of regions by looking at differences in average outcomes; and 4 main groups of regions by looking at changes over time.

Starting from differences in outcomes, we have identified the following groups of regions:

1. *Low skills equilibrium regions* with a skewed distribution of educational attainment, as the shares of low educated are above average, and the highly qualified are below average. Employment opportunities and youth participation in the labour market are markedly low, as displayed by high NEET rates and conversely, low employment rates by all qualification levels.

2. *Strong knowledge economy regions* with very high levels of tertiary education qualifications, that translates into positive labour market outcomes especially for highly educated youth, and below average NEET levels. This group displays favourable contextual conditions, especially in terms of knowledge intensive sectors and regional welfare levels.
3. *Strong labour market integration* with very high levels of upper secondary educated and robust integration for the medium qualified youth characterise the third group. The share of lowly and highly educated is comparatively low, job opportunities are typical for the low qualified, but vary for medium and high qualifications, resulting in deficient NEET levels.
4. *Unequal opportunities and risks regions* with mostly close-to-average values in terms of educational qualifications. The economy provides high employment opportunities for young people, especially tertiary educated ones. However, NEET rates are higher than Groups 2 and 3, signalling that some young people may encounter more difficulties accessing the labour market than others.

Looking at changes over time, we have identified the following groups of regions:

1. *Strongly improving youth integration regions* with a strong trend towards increasing higher education qualifications as the maximum level of education among youth in combination with a pronounced decrease of upper secondary attainment and slow decrease of the lowly educated. These regions effectively provide job opportunities for youth, integration has grown for all levels of qualification, and the share of NEET decreased strongly.
2. *Human capital and knowledge-intensive growth regions* with solid gains in tertiary education qualifications, *vis-à-vis* shrinking shares of medium and low-educated youths. Conditions on the labour market generally improved, except for those who are medium qualified. These regions are attractive territories, with population growth and a strong trend towards knowledge economy.
3. *Low human capital and trapped development regions* with moderate expansion of educational qualifications, but a low pace of growth for higher qualifications. Employment conditions deteriorated for all levels of qualifications and the share of those excluded from the labour market grew. This group shows signs of a *development trap*, i.e., a below average regional welfare growth and scarce signs of innovation in the economy.
4. *Declining and growing unequal regions* with increased educational levels, *vis-à-vis* a substantial shrinkage of low educated youth. However, the economic crisis strongly impacted youth opportunities on the labour market. The regional economy has been growing slowly, despite signs of high knowledge intensive sectors developing. Finally, the regional population has been shrinking, due to population ageing and out-migration flows.

The findings from the cluster analysis highlight that most CLEAR regions from Italy, Greece, Spain, Bulgaria and partially Portugal present signs of a low skills equilibrium, with high shares of low educated, low employment opportunities and high NEET rates. However, some regions from these countries show different traits, with more favourable contextual conditions and learning outcomes for youth, as is the case for some Northern regions of Spain, Italy and Portugal and, for instance, the region of Sofia in Bulgaria. Regions from Germany, Austria and Finland instead had more robust levels of youth labour market integration and more dynamic socio-economic context, with generally above-average levels of educational attainment and employment outcomes. As for changes over time, the findings highlight the presence of path dependency for EU and CLEAR regions, indicating a tendency to continue along their established trajectories that resulted in significant divergence in human capital and youth regional employment outcomes across the EU. The persistence of these patterns underscores the need for targeted interventions and policies to address the underlying causes of the territorial divide and promote more inclusive and balanced employment opportunities for youth across all EU regions. Despite this general pattern, some changing patterns can be observed: some Mediterranean territories in Italy, Spain and Greece couple deteriorating youth labour market opportunities with an increasing upward trend in the supply of human capital. Positive trends in youth integration can be observed in several Eastern EU regions in Bulgaria and other Eastern EU countries after 2007.

Overall, our findings highlight the relevance of contextual factors that underlie the observed patterns of learning outcomes. EU regions strongly differ concerning educational attainment, labour market outcomes and socio-economic conditions. Therefore, comparative analysis should not take homogeneity below national level as granted, but rather investigate how spatial disparities at subnational level affect opportunities of young people. These factors bear significant policy implications, particularly as regions with more favourable economic configurations may have a greater capacity to benefit from national education and labour market policies. On the flip side, this could point to the risk of territorial effects magnifying the combined consequences of disadvantages for low skilled youth in deprived regions (Cefalo & Scandurra, 2023; Fusaro & Scandurra, 2023). Pockets of exclusion within lagging regions pose specific challenges for social policy and European cohesion. It is imperative to prevent the spread of spatial inequalities, as this represents a significant challenge for the European Social Model. Efforts should be directed towards developing targeted policies and interventions that promote equal opportunities and mitigate the negative consequences faced by disadvantaged youth in these regions.

WP3 entailed a comprehensive work of collection and organisation of data, mostly from Eurostat, at aggregated national and regional level. Additional preliminary analysis has been conducted at the micro level using microdata from the EU Labour Force Survey and are briefly presented in the Annex, as the main focus of the Report is the cross-

national, cross-regional and longitudinal variation in LOs and regional contexts. In this Report, we provide descriptive and multivariate analysis findings that, however, do not exhaust the potential of the information collected and open promising avenues for future research within the CLEAR framework. Following steps will, first of all, include the coordination with other WPs in CLEAR, to build meaningful analytical bridges between the data analysis of WP3 and the methodological approaches of following WPs. In particular, associations and variations highlighted by WP3 can be further investigated with more fine-grained institutional, policy and comparative analysis. Moreover, we plan to elaborate and deepen our understandings of the amount of data gathered during the WP3 in future dissemination activities and publications, to develop a territorial and context-sensitive agenda in the analysis of LOs, school-to-work transitions and youth labour market integration. Starting from the exploratory and descriptive approach of this report, we plan to refine our interpretation of complex mechanisms underlying spatial disparities in LOs and their relationship with socio-economic contextual conditions. In doing this, we turn not only to a scientific audience, but we rather aim at producing an impact on policy-making in Europe and within EU countries, contributing to the promotion and improvement of youth opportunities in all European territories, as young people represent the future of our European community.

Table of Contents

List of Tables

List of Figures

1. Introduction

The research project *Constructing Learning Outcomes in Europe: A multi-level analysis of (under)achievement in the life course* (CLEAR) aims to understand the factors that affect the quality of learning outcomes across eight European Union member countries, including Austria, Bulgaria, Finland, Germany, Greece, Italy, Portugal, and Spain. The project focuses on learning outcomes and academic (under-)achievement from the perspectives of Spatial Justice, Intersectionality, and Life Course Research. The project also considers the importance of Opportunity Structures in understanding the impact of socio-economic factors on young individuals' learning outcomes (LOs).

The project recognizes the role of education in creating sustainable societies and examines the mechanisms and factors behind constructing LOs, such as institutional arrangements, socio-economic determinants, discursive influences, but also individual capabilities and skills. The project is structured as a multi-level, mixed-method study, focusing on groups in vulnerable positions to provide fresh comparative insights into educational policies.

Work Package 3 (WP3) focuses interconnections between education and labour market outcomes with socio-economic, institutional, and spatial contexts characteristics by deploying a quantitative approach. WP3 advocates rediscovering the factors that shape LOs by assessing socio-economic factors across European regions. WP3 also emphasises the concept of Spatial Justice, viewing space as an influential force shaping social phenomena and guiding the allocation of resources and opportunities.

WP3 primarily targets individuals aged 15-34 (with some variation of age ranges according to data availability), highlighting the prolonged transitions from school to work in various European regions. The following Report provides a detailed comparative and quantitative assessment of the spatial disparities in LOs and socio-economic factors across European regions (NUTS 2 level). It sheds light on patterns and trajectories within the CLEAR partner countries from 2007-2021 to consider the situation before the 2008 Great Recession as starting point. 2007 was selected as first year in the analysis presented to ensure a higher degree of availability and comparability of selected indicators.

In the Report, we proceed in several steps: *first*, we introduce the application of the theoretical background of the CLEAR research project in WP3; *second*, we illustrate the main research questions addressed by the Report; *third*, we briefly describe the methodology adopted for the descriptive analysis of LOs; *fourth*, we propose a descriptive analysis of LOs, distinguished from outcomes related to education (with a focus on regional aggregates of early school leaving and educational attainment by ISCED level); and to the labour market (with a focus on regional aggregate on youth not in employment, education and training, and employment rates by ISCED level), also exploring the connection with socio-economic conditions (regional GDP) over time; *fifth*, we provide a more in-depth examination of the connections between LOs and contextual conditions

using a multivariate cluster analysis that looks at regions from CLEAR countries and all other EU regions and at changes over time; *sixth*, in the Annex, we offer an exploration of LOs using micro-data at the individual level from the EU Labour Force Survey.

2. Theoretical background

The D3.2 report has three foundational pillars: learning outcomes, opportunity structures, and institutional settings. These constructs serve as critical lenses through which educational dynamics and disparities can be understood and evaluated, especially in the context of regional comparative analyses.

Education has evolved into a complex concept deeply intertwined with the social fabric. Education aims to foster social mobility, reduce disparities and alleviate deprivation, ultimately ensuring equal opportunities. Additionally, education is pivotal in regional development by enhancing economic competitiveness and promoting societal cohesiveness.

Assessing learning outcomes provides a robust framework to evaluate the effectiveness of teaching and learning activities (Phillips et al., 2010. By focusing on outcomes, this approach enables us to highlight the intricate interplay between educational and labour market opportunities which we complement with the spatial relations they are embedded in.

The concept of opportunity structures, grounded in sociological discourses on life chances and opportunities (Dahrendorf, 1979; Merton, 1968), acknowledges the broader socio-political and economic factors that shape an individual's educational and occupational trajectories. Introducing the spatial dimension in the analysis allows us to recognise regional variances. It offers a rich avenue for comparison, illustrating how different societies structure and mediate opportunities for their youth at the subnational (regional) level.

Lastly, the dimension of institutional settings brings the policy and regulatory landscape into focus. While being the immediate environment for learning, educational institutions are embedded in larger policy frameworks that vary significantly across nations and regions. As Walther (2017) and others have posited, these institutional settings play a paramount role in influencing school-to-work transitions, thereby determining the efficacy and outcomes of education systems. It should be noted that the institutional setting is not the main focus of WP3, due to the lack of reliable comparable indicators on institutions and policies below the national level. However, references to characteristics of the institutional setting are based on contextual interpretations by the CLEAR members (D3.1), and established comparative literature on learning outcomes and school to work transitions. References to the institutional setting serve here as a bridge to the following Work Packages of the CLEAR project, where the institutional and policy frameworks take the centre stage, complementing the WP3 analysis.

This report offers a comprehensive view of learning outcomes across CLEAR regions by integrating these three pillars.

2.1 Learning outcomes

The term "learning outcomes" gained currency during the past decades to refer to a specific understanding of learning/teaching as modelled in a process-product approach. As such, LOs focus specifically on intentional activities in teaching/learning and those that can be measured/quantified.

According to Hussey and Smith, learning outcomes are the "observable products of the activities of the educators", that is, "the products of the learning process within the pupil" (Hussey & Smith 2002, p. 223). Learning outcomes are indissociable from their assessment, both conceptually and historically. Essentially, it was behaviourism that emphasised the precise identification and measurement of learning and the need to produce observable and measurable outcomes. Learning outcomes are often tied to a taxonomy or hierarchy of learning levels (Moon, 2002). The approach's simple but persuasive idea is that clearly stated objectives will guide teachers and students and explain how student achievement will be measured (Melton, 1997). Thus, there is a paradigm shift from teaching to learning and input to output orientation. This has increased the requirement to convey knowledge, understanding, skills, and other traits inside qualifications and their components through learning outcomes (Otter, 1995).

In the official EU discourse, learning outcomes are defined as 'statements of what a learner knows, understands and can do on completion of a learning process, which are defined in terms of knowledge, skills and responsibility and autonomy' (Council of the European Union, 2017; Council Recommendation on the European Qualifications Framework on 2008, Annex 2 (f)) or as a "set of knowledge, skills and competences an individual has acquired and can demonstrate after completion of the learning process, either formal, non-formal or informal" (Cedefop, 2017, p. 29). Learning outcomes were introduced to replace input categories with output categories and make qualifications more transparent and comparable through the European Qualifications Framework (EQF). The implementation and assessment of learning outcomes have been criticised from many sides as neoliberal commodification of education, enhancement of Teaching to the Test, and as an approach that neglects the complexity of education and training systems in Europe (Lassnigg, 2012, pp. 309ff, Bohlinger, 2012). For example, as John Dewey argues in the Theory of Education, learning outcomes do not merely depend on the students, instead it is the results of the dynamical relationship between teacher and student. Considering that, learning outcomes are inherently unmeasurable (Dewey, 2022). Therefore, Dewey suggests providing hands-on experiences to students besides the traditional classroom methods. Accordingly, considering student's outcomes as their responsibility is misleading. Reconsidering how learning outcomes are perceived is crucial because they are not merely pedagogical concepts. They are policy instruments within the EU's open method of coordination to make qualifications more transparent, comparable,

and transferable. Moreover, they are managerial tools of performance management to make educational practices more accountable.

The concept of (under)achievement, or more precisely academic (under)achievement, has been a focus of research and policymaking at national and European levels for many years. In general, (under)achievement refers to the ability, or rather the inability of some students to reach certain school attainment levels like upper secondary. When tackling this issue, there are several approaches to be distinguished.

A psychological approach to (under)achievement looks at the difference between actual and predicted attainment of an individual. This branch of research seeks to understand "why persons fail to achieve their potential or fail to meet expectations for performing at a level that they are capable of performing" (Levesque, 2011, p. 3025). Psychologists define underachievement as "a discrepancy between ability or potential (expected performance) and achievement (actual performance) that cannot be explained by learning disability or the documented need for any other category of special education services" (ibid). The psychological approach is, thus, interested in the individual's abilities and skills that match the expected outcomes.

In the sociology of education and social stratification approaches, a central theme revolves around the comparative performance of distinct population groups and the disparities in their academic accomplishments. Specifically, within learning outcomes, this involves benchmarking students' achievements in schools vis-à-vis their socioeconomic contexts, as highlighted by the OECD (2010). Boudon (1974) conceptualises this through two main effects. The primary effects focus on the influence of factors such as genetics, financial standing, cultural norms, and psychological aspects on a student's educational performance. In contrast, secondary effects examine the variation in decisions made by children from diverse social backgrounds who possess similar academic competencies, especially during pivotal educational transitions. Further research underscores the differential academic outcomes of groups based on varying criteria, including socio-economic status, religious beliefs, gender, and geographical location (Harris et al., 2021). Other studies have explored the potential relationship between academic success and factors such as ethnicity or culture (Herrera et al., 2020) and even physical health parameters like obesity (Gillies, 2008). It's vital to distinguish between two often conflated terms: 'achievement' and 'attainment'. Educational attainment refers explicitly to quantifiable measures of academic performance (Gillies, 2008). Conversely, academic achievement encompasses a broader spectrum beyond mere schooling metrics. It encapsulates a range of skills and abilities that might not always be evident or measurable through the standardised tests prevalent in the educational system (Hanushek & Woessmann, 2011).

Research on Gifted Education pointed out that underachievers are heterogeneous and that each student "may underachieve for a somewhat unique combination of reasons" (ibid.). In this regard it is difficult to distinguish what exactly leads to the discrepancy

between competence and achievement, since “no reason exists to believe that all gifted students should achieve well academically (Janos & Robinson, 1985) or that ability and achievement should be perfectly correlated (Thorndike, 1963)” (Reis & McCoach, 2000, p. 154). Relying only on testing may be also misleading, as “grades often do not reflect what students know” (Siegle, 2018, p. 287). (Under) achievement can occur accidentally, either earlier or later in the academic or occupational career, that it appears as a combination of various selective factors, and only some students develop a chronic pattern (cf. Levesque, 2011, p. 3027). Instead, as Hanushek and Woessmann argue, educational institutional settings are responsible of student´s outcomes, therefore, they highlight that “the most productive reform involves aligning incentives with achievement through better educational institutions” (Hanushek & Woessmann, 2015, p. 203).

Taking one step further, learning outcomes are prerequisites of school-to-work outcomes, accordingly, the skills and knowledge that students need to acquire to successfully transition from school to work (ILO, 2022). (The required soft skills like teamwork, communication, problem-solving or critical thinking abilities, however, cannot be measured at the quantitative stage of the research.)

Consequently, when students underachieve, they may not acquire the knowledge and skills necessary to be successful in their future careers. This can make it more difficult for them to transition smoothly from school to work, as they may not have the necessary skills and qualifications for many jobs. In addition, underachievement can lead to low self-esteem and a lack of confidence, making it difficult for students to succeed in their careers. This can lead to a cycle of underachievement and unemployment (Fernandes-Alcantara, 2018).

Achievement and underachievement in learning outcomes strongly influence young people’s success. In case of school-to-work transitions, we can consider how young people obtain employment, the quality of the jobs they take, and their overall earnings. Additionally, underachievement can be interpreted as a failure to meet socially expected outcomes resulting in high unemployment rates, low-quality jobs, that will be considered as indicators, for the WP3, of the difficulties young people face as they make the transition from school to work (Quintini et al., 2007).

2.2 Opportunity structures

In general terms, “opportunity structures” refers to the external factors and conditions that shape the opportunities available to individuals, particularly young people. These factors include economic, political, social, technological conditions, cultural values, and norms. Research has shown that opportunity structures can significantly impact young people's opportunities and challenges and can play a crucial role in determining their prospects and outcomes.

The concept of opportunity structures (OS) draws on a rich vein of studies opened by the debate about the notions of *life chance* (Dahrendorf, 1979) and *opportunity* (Merton,

1968). It refers to the visions and patterns of action applicable in response to culturally framed problems. In the analysis of youth transitions, Roberts (1968) introduced the opportunity-structure theory to account for the different paths and trajectories observable, stating that the interaction between structuring agents creates blueprints or career routes within which other groups of young people are required to make successive and reflexive choices (Roberts, 2009). The goal was to account for school-leavers entering different types of jobs and further occupational careers. Contrasting the idea of free occupational choice, the author observes that other groups of school-leavers possess additional ease of access to the various types of employment, concluding that occupational opportunities are structured by several factors, starting from individual educational attainment.

Different backgrounds and institutional traits of education and labour markets influence – although do not determine – the social proximity to different outcomes, and thereby the ease of access to a certain status (e.g., employed, unemployed, inactive) or occupation. Educational opportunities (training, type of training, duration, curricula, section procedures) and employment opportunities are crucially connected to developing skills and working careers. Roberts affirms that: "the momentum and direction of school leavers' careers are derived from how their job opportunities become cumulatively structured and young people are placed in varying degrees of social proximity, with different ease of access to different types of employment" (1968, p. 179). Further on, the author (Roberts, 2009) explained that opportunity structures are formed by the interplay between family origins, education, and labour market processes, stating that place, gender, ethnicity, and other factors can be added to the web of significant factors. This formulation considers it possible for some individuals to break out from main career routes by exercising individual agency. Still, the numbers allocated to specific destinations are limited by the number of relevant positions available, i.e., the structures of opportunities.

Taking a further step towards the influence of structures on individuals life courses, Blau (1994) presents a macro-sociological analysis of the impact of differentiation in population structures on people's life chances, introducing the concept of Structural Contexts of Opportunities which refers to the external factors and conditions that can influence the opportunities available to individuals and organisations. Blau's framework provides a nuanced and comprehensive approach to understanding individuals' opportunities and challenges within their contexts of action. Interestingly, the focus here is not on institutions but on the multidimensional space of social positions among which a population is distributed, seen as a matrix of life chances (Blau, 1994, p. 8). Opportunity structures do not determine in which position a person ends up, but the probability or likelihood that a member of this population occupies certain positions and has particular associates. From a methodological point of view, this analysis uses structural parameters,

i.e., it looks at those population characteristics that refer to the distribution or differentiation of said population in various respects.

Opportunity structures frame the configuration of possibilities and constraints for thought or action, in a given context. They represent 'collective and individual responses to situations confronting us, [meaning that] our responses to these situations are fundamentally framed by the kinds of opportunities for thought or action that we have at our disposal, or by the range of both construals and constructions of the nature of the problem/issue we are confronting, and the range and kinds of responses from which we might select' (Dale & Parreira do Amaral, 2015, p. 30). Opportunity structures are strategically selective, limiting the courses of action likely to see actors realise their intentions. They are also unevenly distributed, as the possible options differ among young people according to their background, resources, and previous course of action.

The tension between structure and agency is a significant focus in the debate and research on opportunity structures. In Blau's (1994) structuralist formulation, structures related to institutions and the population's stable characteristics affect the likelihood of specific courses of action as outcomes. Other scholars stress instead the relationship between structuring factors and agents, capable of successive and reflexive choices (Roberts, 2009), concluding that opportunity structures favour some actions and decisions over others (Parreira do Amaral & Jornitz, 2019), without pre-determining the course of social action. Furthermore, recent research (Dale & Parreira do Amaral, 2015; Benasso et al., 2022) has proposed distinguishing among different types of opportunity structures. Discursive opportunity structures shape public discourses circulating at different levels (from international to national, from mainstream to common sense) and determine what a problem is and how to deal with it.

Institutional opportunity structures organise the implementation patterns and modes of action according to specific structural features at the national level, contextualising and actualising the discursive opportunity structures about local systems. Socio-relational opportunity structures focus on the effects of the intersection between individual biographies and policies (structures) and emphasises the active character of participants, whereby people negotiate the meaning of policies and measures they enter (or reject), framing them as opportunities (or not). Finally, spatial opportunity structures are the main focus of this report, as territorial contexts deeply impact individual trajectories. Local socio-economic conditions and welfare arrangements shape regional skills ecosystems (Dalziel, 2015) and regional opportunity structures (Glauser & Becker, 2016; Cefalo et al., 2020) contributing to significant intra-national variations.

2.3 Institutional settings of learning outcomes

The education system is a crucial aspect of life course regimes in Europe, which embed young adults and offer them distinct opportunity structures (Walther, 2017, p. 283). Therefore, the connection between institutional settings and learning outcomes is

essential to understand differences among national cases, facilitate international comparisons, and offer an interpretative key indicator on education and labour market outcomes.

Numerous studies, including Kazepov (2010), Hadjivassiliou et al. (2016), Pastore (2015), Rix & Twining (2007), and Walther (2006), have explored the contrasts between welfare states and educational systems. School-to-work transition (STW) denotes the transition from education to the professional world. This shift is influenced by personal traits or social background and overarching institutional structures, socio-economic contexts, and cultural values specific to different regions or countries. Pohl and Walther (2007) have developed a multi-dimensional framework called "youth transition regimes" to understand these dynamics. This concept is based on Esping-Andersen's (1990) comparative welfare regime typology. It aims to capture how policies addressing youth unemployment intertwine different regions' broader socio-economic contexts and cultural norms. Additionally, these policies are influenced by the cultural values dominant in the respective regions (Hadjivassiliou, 2016; Pohl & Walther, 2007). In essence, the youth transition regimes framework strives to excavate a shared underlying logic that orchestrates the STW transition processes, which consequently groups nations into five distinct clusters of youth transition regimes (Hadjivassiliou et al., 2016; Pohl & Walther, 2007).

Sweden, Denmark, Finland, and Norway are often called the 'Universalistic' model. This model prioritises equal access to resources and the state's role in providing services and financial assistance. Sweden is mainly known for its harmonious blend of education, vocational training, and labour market practices. This model is rooted in state-led initiatives and collaborative partnerships that have paved the way for more equitable and efficient socio-economic trajectories. Sweden's educational system is inclusive and offers various post-compulsory options. Labour market regulations are strengthened through traineeships and internships. Active Labour Market Policies prioritise personalised methods to activate young individuals early. Although internal disparities exist in regulatory regimes, temporary roles often lead to stable employment. Only Finland is a member of the CLEAR project.

The UK (and Ireland) has a flexible education system that offers vocational options, but some criticise the limited employer involvement. Recent policy reforms aim to increase this, but the impact is uncertain. Active labour market policies prioritise youth employability, but lenient employment protection can lead to precarious work. The liberal regime type is only used as a reference for the comparative analysis and is not a member of the CLEAR project.

European countries have distinct Vocational Education and Training (VET) systems focusing on employment. The Corporatist welfare system is a model used by Austria and Germany, which combines state intervention, familial support, and market dependencies to achieve meritocratic social policies. The family plays a significant role in this model, and

state support comes through active subsidiarity. Countries with regional policies can legislate, but institutional isomorphism limits diversification. Governments with centralised policies regulate and fund benefits at the national level. During the financial crisis, Germany had a strong economy and experienced increased youth labour demand, while France and the Netherlands had reduced and unstable employment for young people. The Corporatist welfare system is a complex combination of state, familial, and market dynamics, resulting in varied economic and social outcomes across different countries.

Countries like Spain, Greece, Italy, and Portugal have a Family-centric/Sub-protective/Mediterranean Welfare System that places significant social responsibilities on families, often exacerbating social inequalities and a segmented labour market chance, particularly for those from low-income families. Poverty rates are also a considerable problem in these countries. Spain's education system faces various challenges, such as a traditional devaluation of low-quality vocational education compared to academic education, very high retention rate and a high rate of early school leaving. The labour market in these countries is highly segmented, with many young people employed temporarily and a low post-education employment rate. Spain has the highest youth unemployment rate, and prolonged economic crises (especially the one between 2008 and 2013) have hindered recent attempts to improve skills among young people (Hadjivassiliou et al., 2016; Kazepov, 2010).

Bulgaria, is a representative of transitional/post-socialist regimes in the CLEAR project. The welfare systems in these transitional countries are diverse and lack fixed characteristics, resulting in significant GDP fluctuations with sharp drops followed by swift recoveries. EU membership aspirations or actual integration into the EU have driven these countries to reform their social policies.

3. Research questions

The scientific debate on learning outcomes and (under)achievement addresses differences in educational outcomes among students from different socioeconomic backgrounds and intersectionality as major challenges. In an international comparison, the differences are significant. Therefore, there is ongoing research on the factors that contribute to these differences and how they can be addressed.

It is becoming more recognized that education plays a vital role in personal development, as well as in the acquisition of skills and competencies that are essential for the labour market. The education system is designed to equip students with the necessary knowledge, skills, and competencies to succeed in the labour market, and there is a close relationship between educational institutions and employers, as noted in Scandurra et al. (2021).

Accordingly, this WP3 project delves on questions which represent the spearhead of the state of the art and investigates the connection between LOs and Opportunity Structures

– labour market and socio-economic conditions at national and regional level, considering changes between 2005-2021. In Building on the overall goals of the CLEAR project, on the previous WP2 and on the theoretical framework presented in the section 1, in this report we investigate how LOs and educational (under)achievement are connected to unequal spatial distribution of opportunities. We do this by looking at the following research questions:

- How do young people's learning outcomes differ across EU regions? What do official statistics reveal about poor LO and (under)achievement distribution in European regions?
- How do learning outcomes change over time in EU regions?
- How do different structures of opportunities (socio-economic contexts) affect learning outcomes?
- Can types or profiles of regions be identified with specific configurations of opportunity structures and learning outcomes?

Investigating these research questions connects WP3 with the project's overall aim and the previous D2.2 report, advancing the current state of research on learning outcomes by providing on the variation of learning outcomes at subnational level and the connection with key socio-economic contextual traits.

4. Methodology

The WP3 quantitative analysis is part of the overall CLEAR project's Mixed-Methods-Research (MMR), because the CLEAR project set to combine elements of both qualitative and quantitative research approaches in a parallel/convergent mixed-method design (Creswell & Plano, 2011; Johnson et al., 2007, p. 123). The overall aim by using quantitative methods is to gain empirical evidence about the distribution of social phenomena in different contexts. The convergence of methodological approaches helps to grasp the diversity of processes, actors, and developments involved. Drawing from the theoretical concepts outlined in the third section and the objectives of WP3 within the frame of CLEAR, the quantitative analysis will focus on young people between the ages of 15-29/34. The age range considered is expanded concerning the target of CLEAR to assess differences in the transition from education to work in Europe and significantly extended duration of transitions in Southern European countries (Pastore et al., 2021).

Given this WP's comparative and territorial extension and its quantitative orientation, we are challenged by several limitations in data availability and how the terms of learning outcomes and achievement are currently used and operationalized.

As for the limitations in data availability, mainly due to the difficulties in aggregation and harmonisation of micro data at individual level, we will use aggregated data at regional and national level. This is coherent with the framework of opportunity structures, as the focus is on population distribution across social positions.

Quantifiable and comparable measures of institutional structures are difficult to retrieve (Pastore et al., 2021), especially at subnational level. In this regard, we will mostly resort to existing classifications. Moreover, national briefs can refer to institutional traits and insights to provide contextualised interpretation of the indicators collected. In-depth institutional analysis will be carried on in further WPs. WP3 identified administrative sources and comparative surveys and assessed the data coverage and quality at national and regional level. Considering data availability constraints, the preferred level of analysis selected is NUTS 2, which represents the highest level of territorial disaggregation to conduct an in-depth analysis of learning outcomes.

WP3 also calls attention to the minimal perception of underachievers because categorising students into achievers, over-achievers, and low achievers are selective and oversimplified. We want to call attention to the fact that achievement applies to a much broader set of abilities and skills, which are not depicted in quantified and measurable learning outcomes but can equally contribute to pursuing a successful life course.

4.1 Dataset

Our Cross-National Report utilises the EU's NUTS (Nomenclature of Territorial Units for Statistics) classification to ensure data harmonisation and compatibility across the 8 CLEAR partner countries. We focus on the NUTS 0 (national) and NUTS 2 (regional) levels, integrating supplementary data to enrich these primary categories.

Our data collection is primarily aimed at young individuals aged between 15 and 34. The dataset spans from 2005 to 2021, encompassing all EU regions and adheres to the NUTS classification for consistency.

This report follows a comprehensive dataset with 51 indicators grouped into six major dimensions: Education, Labour Market, Economic Context, Demographic Context, Material Conditions, and Institutional Setting. These indicators are further nuanced into a robust database that spans 6,989 rows and 409 columns. For this report, relevant indicators on learning outcomes have been selected to be the focus of the analysis, distinguishing between:

- *Educational outcomes indicators* include early leaving from education and training, and educational attainment by levels of qualification.
- *Labour market outcomes indicators* include NEET, employment and youth unemployment rates.
- *Socio-economic contextual indicators*: GDP per capita in PPS; population and economy characteristics.

The primary nature of the data is aggregated, ensuring a focused and unified approach. The data collation process has ensured that learning outcomes and contextual conditions are reflected across the NUTS 0, 1, and 2 levels.

We have incorporated the EU LFS (Labour Force Survey) and the EU SILC (European Union Statistics on Income and Living Conditions) for meticulous data collection mechanisms. Eurostat's contributions resonate with the EU's rigorous data quality and integrity standards.

Lastly, understanding the relevance and application of our data is crucial. The NUTS 2 region, being a core facet of our dataset, serves as the primary analytical unit. NUTS 2 regions, by definition, comprise territories with populations that oscillate between 0.5 and 3 million inhabitants. Our emphasis on these regions mirrors the CLEAR Project's WP2 Core Team's specialised focus on select NUTS 2 areas, further complemented with graphical representations based on a dedicated table (see Table 1).

The presentation of the data is focused on NUTS 2 regions from CLEAR countries, and NUTS 2 regions selected as case studies in WP2. The last section of the report provides a profile of regions based on learning outcomes and contexts, all EU regions are considered. However, the focus of the description is on CLEAR countries and regions.

Table 1. Selected NUTS 2 Regions by WP2 Core Team

Country	NUTS 2	
	Region	Classification
Austria	Vienna	AT13
	Upper Austria	AT31
Bulgaria	North Central	BG32
	South Central	BG42
Finland	Etelä-Suomi	FI1C
	Pohjois- ja Itä-Suomi	FI1D
Germany	Hamburg	DE60
	Saxony-Anhalt	DEE0
Greece	Kentriki Makedonia	EL52
	Dytiki Ellada	EL63
Italy	Liguria	ITC3
	Marche	ITI3
Portugal	Norte	PT11
	Área Metropolitana de Lisboa	PT17
Spain	Catalonia	ES51
	Valencian Community	ES52

Source: WP2 Core Team

The selection of the 16 NUTS 2 regions was done following the guidelines of the WP2 core team and the six dimensions defined by the WP3. The regions were divided into well-performing and bad-performing regions. Selection was also based on data availability such as educational provision density, possibility of reaching out to local experts and practitioners, and young people especially those with multiple disadvantages. The selected regions were also considered from a spatial (urban/rural) and intersectional (concentration of populations in vulnerable positions) point of view. The 8 participating CLEAR countries selected a total of 16 NUTS 2 regions.

4.2 Data compliance, data security measures and ethical issues

The data collection process for WP3 was designed with the highest standards of data integrity, privacy, and ethical use in mind. The process follows strict compliance guidelines to ensure data accuracy, security, and ethical use. It adheres to privacy legislations such as the General Data Protection Regulation (GDPR) of the EU. This framework maintains data confidentiality through informed consent procedures, rigorous data security measures, de-identification processes, restricted access and responsible data sharing, secure record disposal methods, and ethical considerations.

While aggregated data collection consistently meets ethical standards set by national and European legislation, individual data is never revealed. The research aims to reveal the nuances of existing educational policies, especially the learning outcomes of young people aged 15-34, regional socioeconomic trends and their possible influence on such outcomes. To ensure data integrity, data sourced from Eurostat is anonymous, with no links to specific individuals or entities.

The WP3 team is unwavering in its adherence to the European Commission data provisions articulated in the "European textbook on ethics in research." They believe in upholding fundamental values and respecting ethical standards and strategic guidelines to mitigate potential risks throughout the research process. Given the research's emphasis on young individuals, particularly those in vulnerable positions, the WP3 team is committed to protecting their dignity at all research stages. Data protection, privacy, and Open Science practices are embedded in the core principles of the Consortium. This alignment is evident through national data requirements and institutional data protocols. Data used in quantitative research components is de-identified or anonymized to comply with these principles. The WP3 team respects the Consortium's foundational work and shares its belief in fostering a cohesive and transparent research environment.

4.3 Data sources

The primary sources of data collection are:

- Eurostat LFS (aggregates at NUTS 0, 1 and 2)
- Eurostat SILC (aggregates at NUTS 0, 1 and 2)
- Eurostat National and Regional Accounts (aggregates at NUTS 0, 1 and 2)

The primary sources for data collection are publicly available and accessed through official websites and sources. The data will be complied with the data above usage rules and regulations. Furthermore, WP3 explores Eurostat Microdata in the research provided by Eurostat (see Annex), granted to UNIVIE and other members of the core WP3 team by the Data Science Centre (DSC) of the Sociology Department at the University of Vienna. WP3 will adhere to standards and regulations set by Eurostat for data collection, processing, and dissemination in the EU considering guidelines for data quality, comparability, and reliability, as well as respecting the confidentiality and privacy of the data. The Microdata provided by the Eurostat via the DSC will not be shared within the Consortium except for the aggregate results published in the Comparative Report D3.2. The data above will be used for scientific purposes and will be properly cited respecting the intellectual property rights of the Eurostat.

5. Descriptive analysis

5.1 Institutional and socioeconomic background of CLEAR countries

Considering the different structural positions roles and functions of geographic entities, this paper focuses on regions (Rodríguez-Pose et al., 2019; Scott & Storper, 2003). Considering regional development patterns, the history of regional dynamics and the European integrations there is a huge literature aiming for their classification such as by Rodríguez-Pose et al. (2019), Pagliacci et al. (2020), Pavone et al. (2021), Campos & Macchiarelli (2018), etc.

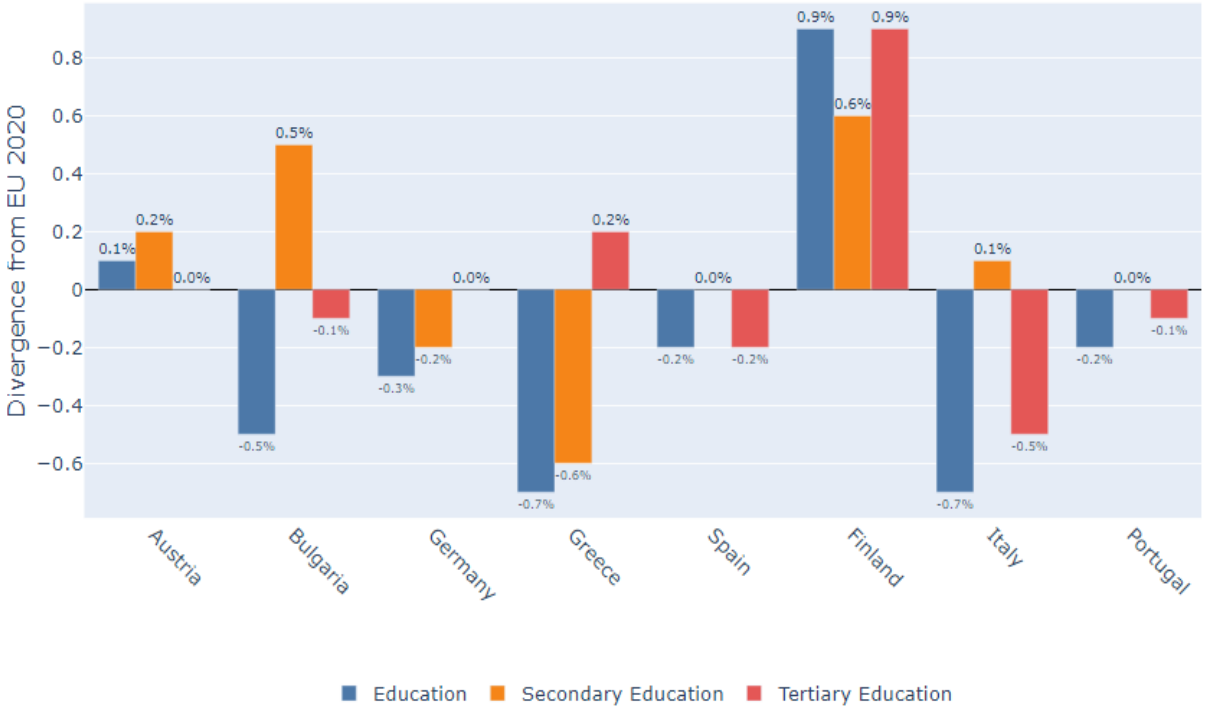
A growing divide exists between large, dynamic urban areas and decaying industrial and remote regions. Since the 1970s, many peripheral regions have experienced a steady decline in employment and competitiveness, while inner areas of large metropolitan regions have gained higher-wage jobs. However, capital metro regions have also been hit hard by crisis, while some rural and intermediate regions have been more resilient. This has resulted in different real incomes and labour force participation rates at multiple levels, including between states and regions, within regions between core and peripheral areas, and between prosperous and less prosperous metropolitan regions (Rodríguez-Pose et al., 2019; Pagliacci et al., 2020).

However, current development policies are struggling to solve these challenges effectively. Strategies based on a combination of physical and human capital and technology have not successfully addressed the growing territorial inequality and its negative economic, social, and political consequences. Therefore, there is an urgent need to understand why territorial divergence occurs and why public interventions targeting economic development seem to be declining effectiveness (Rodríguez-Pose, 2020). Emerging economic, social, and territorial imbalances have become starkly evident, especially in light of the profound impacts of the COVID-19 pandemic. These imbalances spotlight distinct regional variations, including disparities in healthcare infrastructure, education, and diverse economic structures. There's a strong inclination towards

adopting place-based, multi-tiered, and partnership-driven approaches to enhance cohesion (European Union, 2022).

Given this context, we would like to address the pressing concerns of regions lagging, primarily focusing on CLEAR member states, particularly on understanding their historical structural changes. These changes have led to significant skill mismatches and environmental degradation, contributing to the development of the above traps.

Figure 1. General government expenditure by function (COFOG), divergence from the EU27 average



Source: Own calculation, EUROSTAT GOV_10A_EXP

Adequate governmental expenditure on education is a precondition of high-quality education. According to the European Union (EU), in 2021, the average allocation for education as a proportion of GDP was 4.8% for general education, 1.8% for secondary education, and 0.8% for tertiary education. These metrics serve as a standard to compare individual member states' alignment or deviation from the EU's overarching educational paradigm (European Union, 2022; Jacob, 2018; OECD, 2022).

Figure 1 analyses the General government expenditure by function (COFOG, by OECD & UN, 1999). Austria's general and secondary education expenditure exceeds the EU's average. This suggests a pronounced emphasis on foundational pedagogy. However, Germany's investment in secondary education slightly falls below the EU's median (Carey, 2008; Gördel & Huber, 2023). This could imply a different financial allocation strategy or a manifestation of resource efficiency. Spain and Portugal's expenditures are close to the EU mean, indicating their adherence to the continental educational fiscal approach.

Finland's commitment to education significantly exceeds the EU average across all education sectors, with the allocation for tertiary education being more than double the standard EU rate. This pronounced fiscal dedication echoes Finland's globally acknowledged prioritisation of education, underscored by its pioneering pedagogical methodologies and consistently superior educational outcomes (Nadoveza & Gardijan, 2018). Conversely, despite its modestly below-average spending, countries like Germany highlight the importance of fiscal responsibility and a strong educational system.

However, Italy and Greece display fiscal limitations, especially in tertiary education. Italy demonstrates a comparative gap in expenditure, particularly the tertiary educational expenditure, which could raise queries regarding higher education's quality and accessibility within its borders (Agasisti, 2014; Varga et al., 2014).

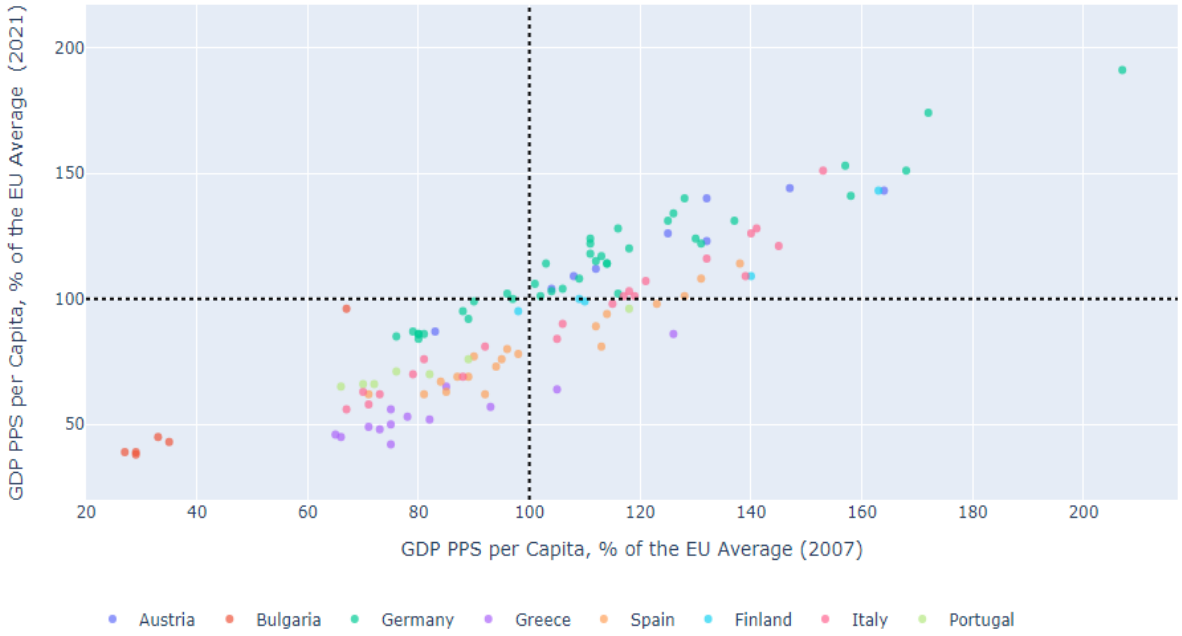
It is widely believed that educational expenditure directly corresponds with enhancements in infrastructural development, teacher training, curriculum refinement, and student welfare initiatives. However, this correlation is not absolute. Augmented financial resources, while capable of amplifying educational quality, need to be contextualised within the framework of fiscal efficiency, cultural valuation of education, and pre-established educational infrastructures to ascertain their tangible impact on educational outcomes (Barrett et al., 2019, Hanushek & Wößmann, 2007).

Intraregional variances further nuance this narrative. Disparities in national educational expenditures could be emblematic of localised socioeconomic dynamics, entrenched fiscal patterns in education, and divergent national educational objectives. It is conceivable that nations with a historically fortified educational foundation may not necessitate comparable financial outlays as counterparts in the throes of educational evolution or reformation. As a general trend in the EU, middle-income and lesser-developed regions, particularly in southern Europe, have grappled with economic stagnation or decline, hinting at potential development traps. In contrast, capital metropolitan areas outpace their regional counterparts in performance metrics. While employment figures are rising, the regional disparities are more pronounced now than before the 2008 economic crisis. To bridge these gaps in regional employment, there is a pressing need for bolstered employment growth and a concerted effort to diminish the sex disparity in the workforce. The continuation of these regional growth disparities can be attributed to growth catalysts being predominantly situated in developed regions and urban centres. European Union, 2022; Jacob, 2018; OECD, 2022). Despite of the high hopes of labour mobility reinforcement in the EU, it seems to fail resucing territorial inequality, especially of high-skilled labour force from Eastern to Western Europe, escalating labour shortages overall the EU (Horvat, 2004; Galgóczi et al., 2016; Reymen et al., 2015)

Our research points out that a pivotal element in driving regional economic progress hinges on elevating the educational standards of regional populations (European Union, 2022).

Upon analysing Figure 2, which depicts the GDP PPS's time evolution from 2007 to 2021, the impact of path dependency theories becomes apparent. According to these theories, an entity's choices depend on past decisions, even though past circumstances may no longer be relevant. In the context of regional development, this means that regions with a history of high investment, infrastructure, and socio-economic advantages tend to maintain their lead, while historically lagging regions face challenges in breaking their trajectory and catching up (Diemer et. al, 2022; Rodríguez-Pose, 2020).

Figure 2. Regional GDP per inhabitant in PPS expressed as percentage of the EU average (set to equal 100) 2021 by 2007[i]



Source: Own calculation, EUROSTAT NAMA_10R_2GDP

As per the data depicted in the figure, it can be inferred that a path-dependency exists among various regions of Europe (European Union, 2022). This is highlighted by the strong correlation between the 2007 GDP per capita (PPS) and its 2021 value (r= 0.90; R^2= 0.81) The supposed process of convergence, which should ideally aid the gradual catching up of underdeveloped regions with their more prosperous counterparts, seems to be losing steam – at least among CLEAR regions. This is of significant concern, as one of the foundational objectives of the European Union is to foster economic cohesion and minimise differences between regions. In particular, a discernible negative trend – from above-EU-average in 2007 to below-EU-average in 2021 – is visible in the regions of:

ITI1 (Piemonte, Italy), ITI2 (Valle d'Aosta/Vallée d'Aoste, Italy), ITI3 (Liguria, Italy), ES23 (Principado de Asturias, Spain), ES53 (Ceuta, Spain), ES24 (Cantabria, Spain), ES51 (Andalucía, Spain), PT17 (Alentejo, Portugal), EL30 (Attica, Greece), EL42 (Central Macedonia, Greece).

Additionally, to analyse the economic growth rates of different regions within the CLEAR countries, we have calculated the elasticities to measure the average annual GDP growth

rate from 2007 to 2021 (Table 2.).[ii] This approach accounts for the effect of compounding, offering a consistent and interpretable measure of economic growth over the specified time frame.

Table 2. Elasticity of Regional Growth in CLEAR Regions

0	0.004300
1	-0.017846
2	-0.005327
3	-0.011478
4	-0.007001
5	-0.004592
6	-0.005744
7	-0.008131
8	-0.007881
9	-0.005809

Source: Own calculation, EUROSTAT NAMA_10R_2GDP

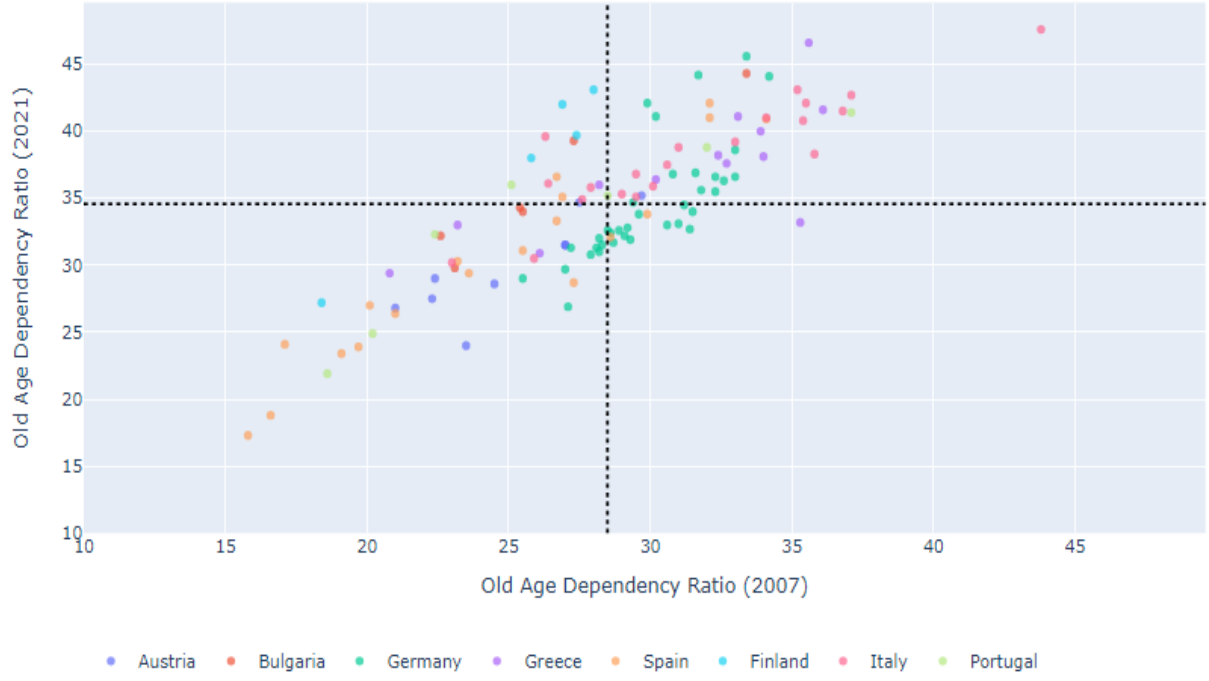
The results of elasticity analysis on the regional GDP growth between 2007 and 2021 have revealed some interesting patterns. The regions in the poorest 10% (Decile 0) in 2007 experienced a modest positive growth rate averaging 0.43% annually. This indicates that the least economically advantaged regions displayed some resilience or potential for recovery.

On the other hand, regions in Decile 1, which are just above the poorest, witnessed a substantial annual decline of approximately 1.7846%. This suggests that they faced pronounced economic adversities. However, the negative growth trend wasn't limited to the lower deciles. Even the most affluent regions in 2007, represented by Decile 9, experienced an average annual reduction of 0.5809%. This unexpected finding implies widespread economic challenges, impacting even the traditionally robust regions.

The overall narrative from these 14 years is one of pervasive economic challenges. Regardless of their economic standing in 2007, most regions experienced contractions in GDP growth. This widespread decline across various economic strata suggests that broader macroeconomic factors such as the economic crisis, COVID-19, and other factors may have been at play, affecting rich and poor regions. The positive growth witnessed in the poorest regions hints at a potential convergence trend or the resilience of these regions in the face of broader economic headwinds.

The old-age dependency ratio is a pivotal demographic and socio-economic metric, illuminating the proportion of individuals aged 65 and over about every 100 working-age individuals, delineated as ages 20 to 64. Employed as a discerning tool, it elucidates the equilibrium between senior citizens and the economically active population. The dynamics of this ratio are intricately influenced by mortality and fertility rates, as well as migratory patterns. Notably, a prolonged trend of rising life expectancy observed in OECD countries underscores a burgeoning elderly populace, concomitantly amplifying the cohort of pension recipients (OECD, 2023).

Figure 3. Regional Old Age Dependency Ratio about the EU average 2021 by 2007[iii]



Source: Own calculation, EUROSTAT DEMO_R_PJANIND2

In a retrospective analysis of the past two decades, the European Union's old-age dependency ratio exhibits a pronounced ascent and a path dependency among CLEAR regions (r=0.83, R^2= 0.70). Records from 2001 highlight a 25.9% ratio, translating to a demographic structure wherein nearly four economically active adults corresponded to each aged 65 or beyond. Contrastingly, data from January 1, 2020, reveal a ratio escalation to 34.8%, signifying just below three working-age individuals for every senior member. Elevated ratios have been distinctly identified in regions spanning eastern Germany, Greece, Spain, France, Italy, Portugal, and Finland. Predominantly, these regions possess rural, orographic, or insular characteristics, potentially insinuating a demographic shift driven by younger inhabitants seeking academic or vocational prospects elsewhere (European Union, 2022).

When evaluating individual regions by name, improvements (i.e., decreases) in old age dependency ratios were observed in:

FI1D (North and East Finland), FI1C (South Finland), FI19 (Helsinki-Uusimaa, Finland), FI20 (Southwestern Finland), ITG2 (Provincia Autonoma di Bolzano/Bozen, Italy), BG32 (North-West, Bulgaria), ES21 (Galicia, Spain), ES13 (Murcia, Spain), ITF4 (Puglia, Italy), ITF6 (Calabria, Italy), ITG1 (Piemonte, Italy), PT17 (Alentejo, Portugal), AT21 (Burgenland, Austria), EL52 (South Aegean, Greece)

Conversely, regions where the old age dependency ratio worsened (i.e., increased) included:

DE12 (Berlin, Germany), DE13 (Brandenburg - Nordost, Germany), DE25 (Niederbayern, Germany), DE27 (Oberpfalz, Germany), DE72 (Düsseldorf, Germany), DE94 (Detmold,

Germany), DEB2 (Mittelfranken, Germany), DEA4 (Arnsberg, Germany), DE50 (Hamburg, Germany), DEA1 (Düsseldorf District, Germany), DEA5 (Münster, Germany), DEB3 (Unterfranken, Germany), ES24 (Cantabria, Spain), ES42 (Castilla y León, Spain), EL41 (North Greece)

These trends necessitate policymakers and governments prioritising strategies and policies catering to an ageing population, ranging from healthcare provision to pension schemes. Attracting younger populations to these regions through economic incentives, job creation, or educational opportunities could counteract some challenges posed by increasing old-age dependency ratios.

5.2 Learning outcomes

5.2.1 Educational attainment

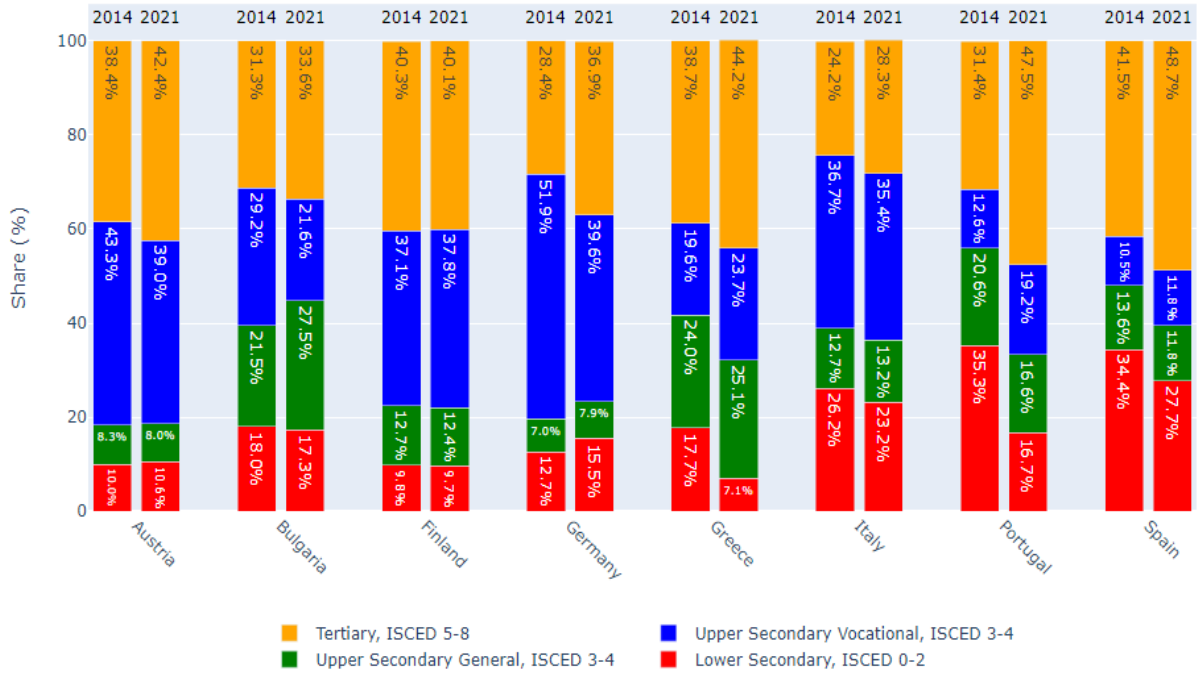
In this section, we provide an overview of the development of young adults (aged 25-34) educational attainment levels within CLEAR consortium countries between 2014 and 2022.[iv] Geographically, the description is based on an analysis of national and regional level developments. Insights into CLEAR consortium countries are contextualised by relating them to the rest of the EU27 member states.

On a national level, among CLEAR consortium countries, the share of young adults with lower education (at maximum lower secondary education) varies substantially. In 2022, Greece (7.4%), Finland (9.3%), and Austria (10.3%), on the lower end, faced Spain (26.5%), Italy (22.0%), Portugal (16.7%), and Germany (16.6%), on the higher end. Spain marked the highest share in the EU, while Slovenia marked the lowest share at 4.8%. Regarding vocational qualifications as the highest educational attainment, Spain is at the bottom of EU countries with 11.1% in 2022, while Austria, Germany, Finland, and Italy are among the highest national shares. Lastly, Italy has the second lowest share of young adults with tertiary education at 29.2% and Spain one of the higher shares at 50.5%. However, the CLEAR consortium countries are not among the highest tier of countries with high levels of young adults with a tertiary education. Seven countries ranked higher than Spain, with Ireland exhibiting the highest share at 62.3%. If we take each CLEAR consortium country's most pronounced educational attainment groups, we can state that:

- Austria is characterised by high levels of vocational and tertiary education.
- Bulgaria is somewhat balanced with a slight tendency towards general secondary and tertiary education.
- Finland and Germany are similar to Austria regarding the distribution of educational attainment.
- Greece is characterised by a high level of tertiary educational attainment, with low levels of lower educational attainment. Since 2014, Greece has managed to cut down lower educational attainment by more than half, while expanding vocational and tertiary attainment (see figure 4).

- Italy is characterised by high levels of vocational attainment and comparatively high levels of lower educational attainment. Consequently, it has one of the lowest tertiary education attainment rates among CLEAR countries.
- Portugal and Spain are marked by a high level of polarization between lower and higher educational attainment – a polarization that is even more pronounced in Spain than in Portugal. However, both have somewhat reduced this polarity by expanding tertiary attainment and decreasing the share of young adults with lower educational attainment – Portugal more than Spain (see Figure 4).

Figure 4. Educational Attainment by ISCED levels (2014 vs. 2021)[v]



Source: Own calculation, EUROSTAT EDAT_LFSE_04

Looking at sex differences nationally, we can state that the female share of young adults with tertiary education is higher than the male share in *every* EU country. However, there are nuances to this pattern. Among the CLEAR countries, Austria and Germany have a less pronounced gender gap in tertiary education (8.9 and 4.6 percentage points, respectively, in 2022) than Portugal (15.0 percentage points in 2022). Considering the EU, Germany has the lowest difference and Slovenia has the highest difference at 23.8 percentage points in 2022. The pattern is reversed regarding vocational training as the highest level of educational attainment. The male population is outnumbering the female population in 2022, except Ireland (1.1 percentage points towards female young adults). Among the CLEAR countries, the sex disparity was most pronounced in Italy (13.7 percentage points towards male young adults) and Bulgaria (15.5 percentage points towards male young adults) in 2022. The national shares of lower educational attainment tend towards a higher share of male young adults. The discrepancy was the highest in Spain in 2022, with the share of young male adults being 10.4 percentage points higher than that of young

female adults. In Bulgaria, the discrepancy was reversed; the highest discrepancy was directed towards young female adults (1.3 percentage points).

Overall, the brief analysis of gender differences in educational attainment shows that young women are more likely to attain a tertiary education level. However, an analysis of microdata is needed to explore whether there are distinctions within tertiary educational attainment – i.e., whether there is an internal stratification from Bachelor to PhD degrees. Aggregate data hint at a mismatch which shows that, while young women are much more likely to get a better education than men, women in general are still vastly underrepresented in research positions. Data from EUROSTAT highlights that all 27 EU countries had less than 50% female researchers in all sectors – Latvia exhibiting the highest share at 49.8% in 2021 and the Czech Republic the lowest share at 27.1% (based on EUROSTAT, 2023, own calculations). Among the CLEAR countries, Austria and Germany had the lowest share in 2021 at 31.3% and 29.4%, while Bulgaria had the highest at 48.3% (ibid.). In section 4.3.2, we will further explore whether there is a general (mis)match between (higher) educational attainment and labour market opportunities, particularly for disproportionately educated young women.

An analysis proved elusive on a regional level as some of the CLEAR consortium countries had regions with missing data for lower and secondary educational attainment levels. The tertiary level was the only level of educational attainment that allowed for an intranational analysis. The biggest within-country variation across regions could be observed in Bulgaria in 2021. Calculating coefficients of variations with regional means and standard deviations[vi], we find that Bulgaria's cross-regional variation was at 30.3% in 2021. These findings are corroborated in other studies referring to these considerable regional differences in the access to quality education in Bulgaria (Stoilova, 2010; Jeleva, 2021). The pattern of rising Bulgarian regional inequalities is accelerating in the past sixteen years influenced by the economic policies in Bulgaria, including the distribution of European funds and the regional fiscal politics (Nenov, 2023). In 2014, a representative survey (Mitev & Kovacheva, 2014) found that more than two thirds of Bulgarian youth desire to complete tertiary education, with the place of residence, regional distribution and social stratification being perceived as main differentiating factors.

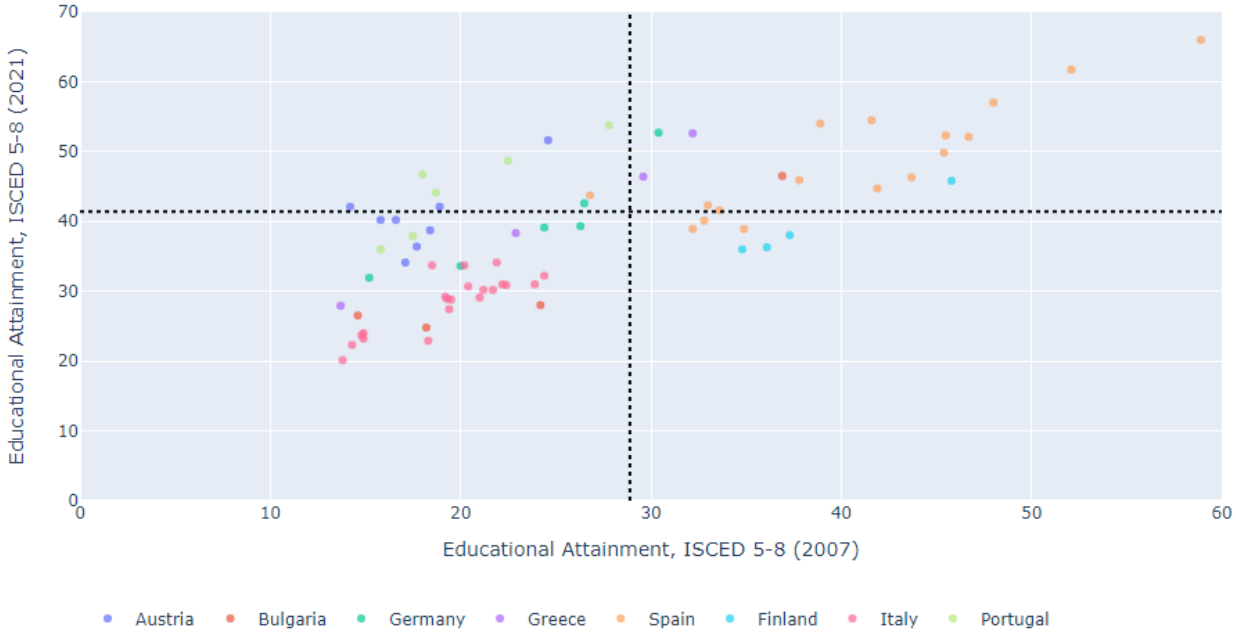
The lowest intranational variations across CLEAR regions are in Finland and Austria, which were observed at 11.8% and 12.3%, respectively, in 2021. Nevertheless, we want to provide a graph of the available regions to map their development between 2007 and 2021. Figures 5 and 6 show the development of lower and higher educational attainment, respectively. Regarding lower educational attainment, we see a somewhat linear path dependency ($r= 0.59$; $R^2= 0.35$) for most available regions. However, this path-dependent pattern is broken by Portuguese regions, which noticeably reduced the share of young adults with lower educational attainment. The same holds for the South Aegean region, Central Macedonia, and Western Greece. Regarding higher educational attainment, we can also attest some path dependency, but to a higher degree ($r= 0.76$; $R^2= 0.58$).

Portuguese regions broke the pattern by improving their share of highly educated young adults from below-EU-average to above-EU-average. The same holds for Vienna, Carinthia, Salzburg, the Balearic Islands, and Stuttgart. On the other hand, Extremadura, Murcia, the Canary Islands, and all Finnish regions except the metropolitan region of Helsinki-Uusimaa (and Åland whose share was not available) fall into the category of regions, whose tertiary educational attainment rates for young adults were comparatively high in 2007 but were below the EU average in 2021.

Figure 5. Educational Attainment, 25-34 years, ISCED 0-2 2021 by 2007[vii]

Source: Own calculation, EUROSTAT EDAT_LFSE_04

Figure 6. Educational Attainment, 25-34 years, ISCED 5-8 2021 by 2007[viii]



Source: Own calculation, EUROSTAT EDAT_LFSE_04

Regarding educational attainment, our findings indicate that women outnumber men in tertiary education, while men outnumber women in vocational education. Italy and Bulgaria have the most significant gender disparity. Spain has the highest percentage of young men with lower levels of educational attainment. However, across all EU countries, young women are still underrepresented in research positions, pointing to a gender dichotomy and a mismatch between qualifications, resulting in more women taking jobs that they overqualified for. E.g. Austria and Germany have the lowest number of female researchers, while Bulgaria has the highest (Johann et al., 2022).

We faced challenges conducting regional analysis at the NUTS 2 level due to missing data from some CLEAR consortium countries for lower and secondary educational attainment. However, based on our results, Bulgaria showed the highest cross-regional variation at 30.3% in 2021 regarding tertiary education, while the Finnish and Austrian regions had the lowest variation at 11.8% and 12.3%, respectively. We have provided a graph to illustrate the development of educational attainment from 2007 to 2021. Most regions showed a linear path dependency in lower and higher educational attainment, with Portugal breaking the pattern by reducing the share of young adults with lower educational attainment.

5.2.2 Early leavers from education and training (ELET)

Learning outcomes and opportunity structures for young adults can be reflected in territorially varying educational attainment levels and the share of young adults who drop out of school early. The EU Commission's indicator of the share of early leavers from education or training (ELET) tries to quantify early drop-out from education and training and to approximate insufficient qualification levels as well as underachievement within the EU population (cf. Kuusipalo and Alastalo, 2020; Struffolino and Borgna, 2021). We look at young early leavers from education or training ages 15-29 for analytical purposes.

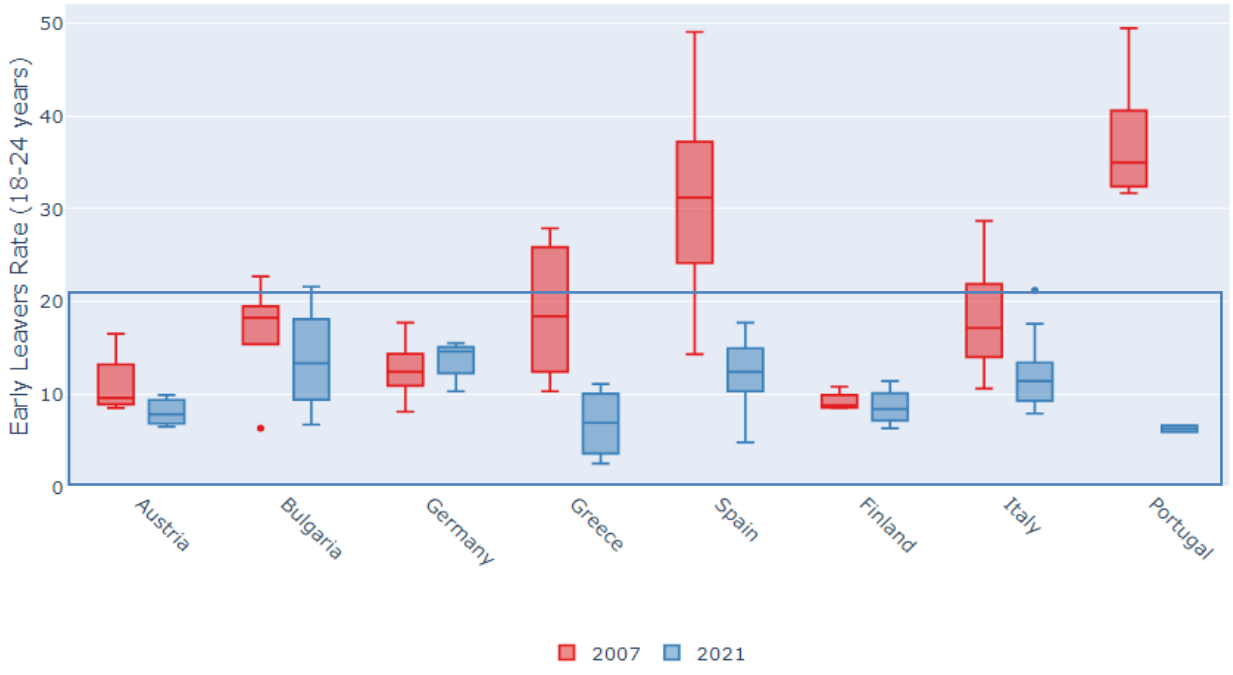
On a national level, particularly among CLEAR countries, shares of ELET converged from 2007 to 2021 (see figure 7). In many cases, such as Austria, Germany, Greece, Italy, and Spain, regional shares of ELET within the respective countries also became more homogeneous (see ibid.).[ix] These developments can be interpreted as success of the European Commission's goal to reach a share of ELET under 10% until 2020, which was set in the *Europe 2020 Strategy* of 2010 (European Commission, 2010). Investment in education tends to be countercyclical. During periods of recession, the cost of studying decreases, especially for those who are low qualified or have no formal education. This trend is observed in every country, particularly in Southern European countries where the number of people with low qualifications is higher than in other parts of the EU. For instance, in Spain, we observed a significant decrease in early leavers from education and training (ELET) immediately after the recession (Dellas & Sakellaris, 2003).

In Greece, for example, the rate in rural areas is slightly higher than in urban areas. Existing policies facilitate transitions within education and training systems or provide

alternative education and training pathways. They also help early school leavers re-enter the education system through second-chance education and career guidance. Proof of the effectiveness of Greece's policies is also that in 2021, 95.7% of 20 to 24-year-olds obtained at least upper secondary diplomas, making Greece the top performer in this area. Also, all students follow the same curriculum until age 16, and there is second-chance education for those who leave education and training early (they also have the same curriculum). Despite Greece's geography, only 3.5% of primary and 6% of secondary schools are classified as 'difficult to accesses by the Ministry of Education (see Roussakis, 2017).

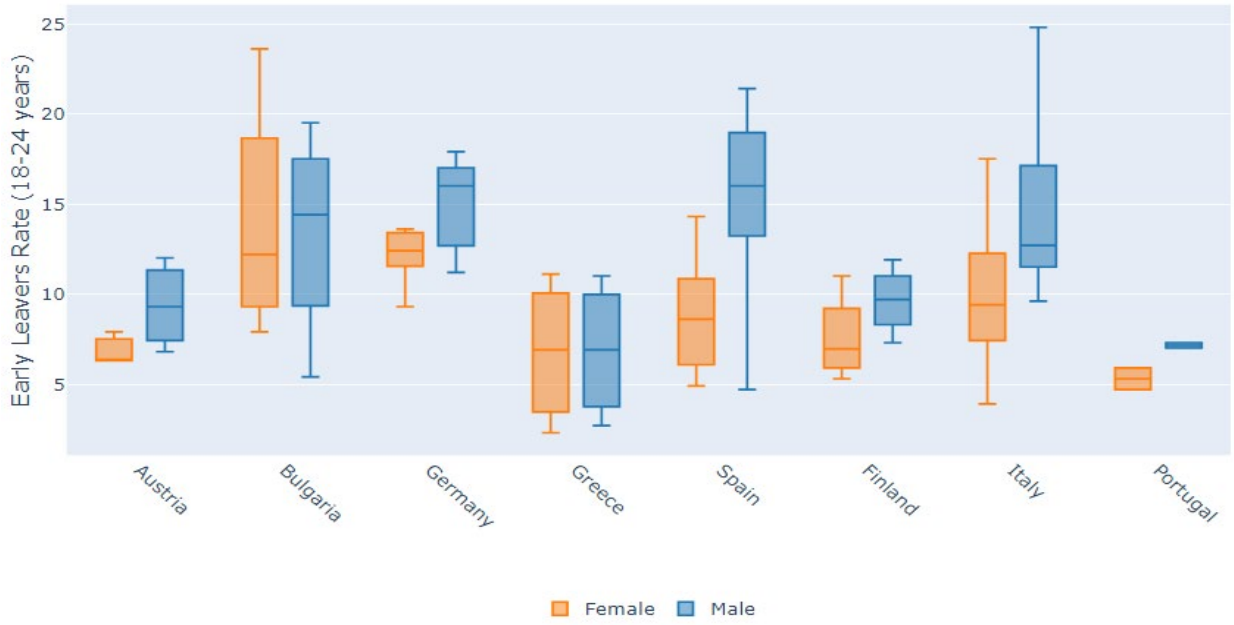
However, looking back at the analysis of educational attainment levels above, we can also argue that the ELET goal in the Europe 2020 Strategy was more accomplished than the desired share of young adults with tertiary education equal to or higher than 40% (see ibid.). Tertiary educational attainment levels also have not experienced a convergence at neither the national nor the regional level. Despite successfully reducing ELET numbers nationally, some regional and gender differences remain. Looking at figure 8, we see that the 2021 male share of ELET is mostly higher than the female shares among CLEAR countries and that regional differences were larger than those for the aggregated ELET shares in figure 7 (Portugal being the exception). In Spain, the sex difference was the most pronounced. Overall, the homogenization of national ELET shares arguably highlights remaining regional and perhaps local disparities and social inequality as the next frontiers to be overcome when it comes to improving the educational situation of young adults in the European Union.

Figure 7. Regional Comparison of Early Leavers, 18-24 years old, 2007 vs. 2021



Source: Own calculation, EUROSTAT EDAT_LFSE_16 (PT has many missing cases).

Figure 8. Regional Variation of Early Leavers by Sex, 2021



Source: Own calculation, EUROSTAT EDAT_LFSE_16 (PT has many missing cases).

In figure 9, we go more into detail when assessing how the share of ELET has developed regionally. We plotted the 2007 ELET shares of CLEAR regions against the 2021 shares. The dotted lines show the respective average EU27 regional share of ELET. Thus, one can see a two-by-two matrix of CLEAR regions which shows regions that

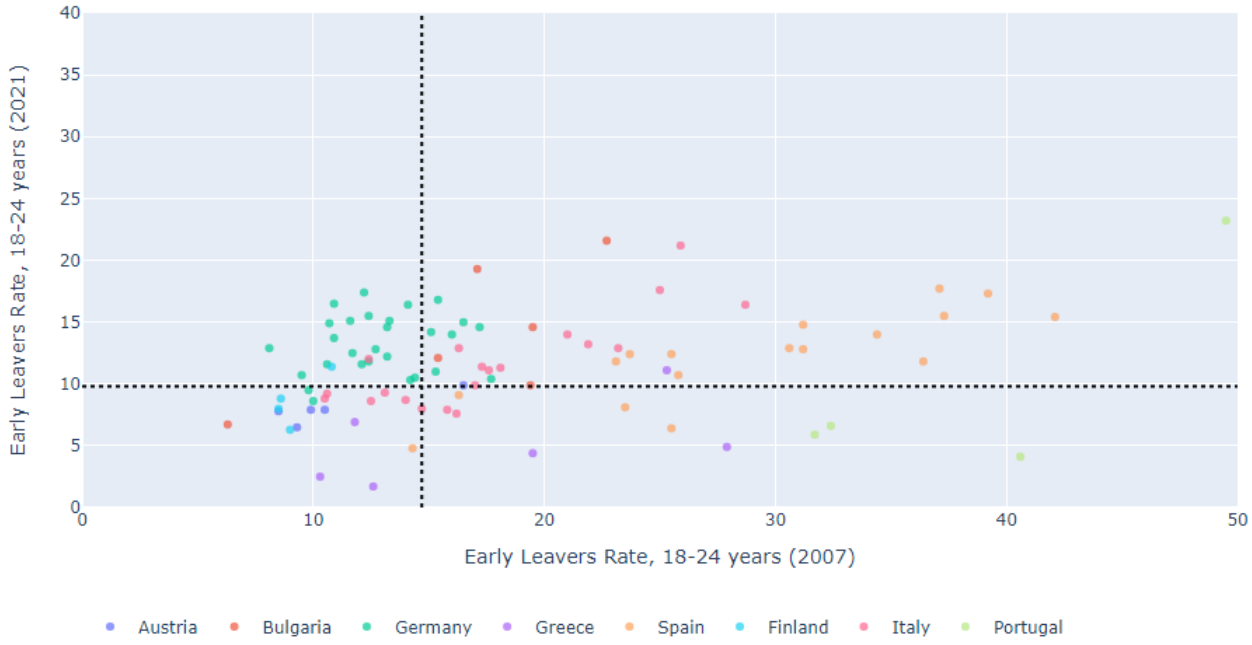
1. Were above-average and remained above-average (upper right quadrant) ~ dropouts were high and remained high
2. Were above-average, but dropped below-average (lower right quadrant) ~ dropouts were high, but improved in comparison to other regions
3. Were below-average and remained below-average (lower left quadrant) ~ dropouts were low and remained low
4. Were below-average, but increased to above-average (upper left quadrant) ~ dropouts were low, but worsened in comparison to other regions

In the top right corner, we find many Bulgarian, Italian, and Spanish regions whose shares of ELET remained comparatively high. However, the biggest outlier can be found on the Azores, which drastically improved from nearly 50% to 23.2%. While it marks a vast improvement, it still leaves the Azores as the worst performing CLEAR region. In the top left corner, we find a similarly territorialized pattern. Many German regions and Umbria had low shares of ELET in 2007 which declined towards 2021 compared to other CLEAR regions. The regional pattern is less clear on the bottom of the figure. Here, we find many different national regions which were high-performing and remained on that level. Regarding quantity, Finland and Austria stand out as most regions fall into this category. The Basque community represents the Spanish outlier in this high-performing group, the same holds for Southwestern Bulgaria (including the capital city of Sofia). Only a few regions have comparatively improved their share of ELET, among which Northern

Portugal stands out with a decrease of its share by 89.9% (from 40.6% down to 4.1%). While the radical improvement of early leaving in Portuguese regions can be partially attributed to the implementation of compulsory education until 18 years (in 2009), and the diversification of vocational education and training supply both in secondary education (in 2005) as well as higher education (2014), (Mauritti et al., 2019; Simões et al., 2020), the drastic decline of early leavers in Northern Portugal is also a statistical anomaly as there was a noticeable break in the time series between 2010 (30.5%) and 2011 (22.6%) as well as 2020 (10.5%) and 2021 (4.1%).

Overall, we can see that even though the situation worsened in some regions, it worsened slightly compared to the EU27 average. Regional improvement in CLEAR regions was bigger than regional decline. In general, taking the coefficient of determination as an indication of path dependency between 2007 and 2021, we can tentatively argue that there has been relatively low path dependency (r= 0.31; R^2= 0.10).

Figure 9. Regional Distribution of Early Leavers, 18-24 years 2021 by 2007[x]



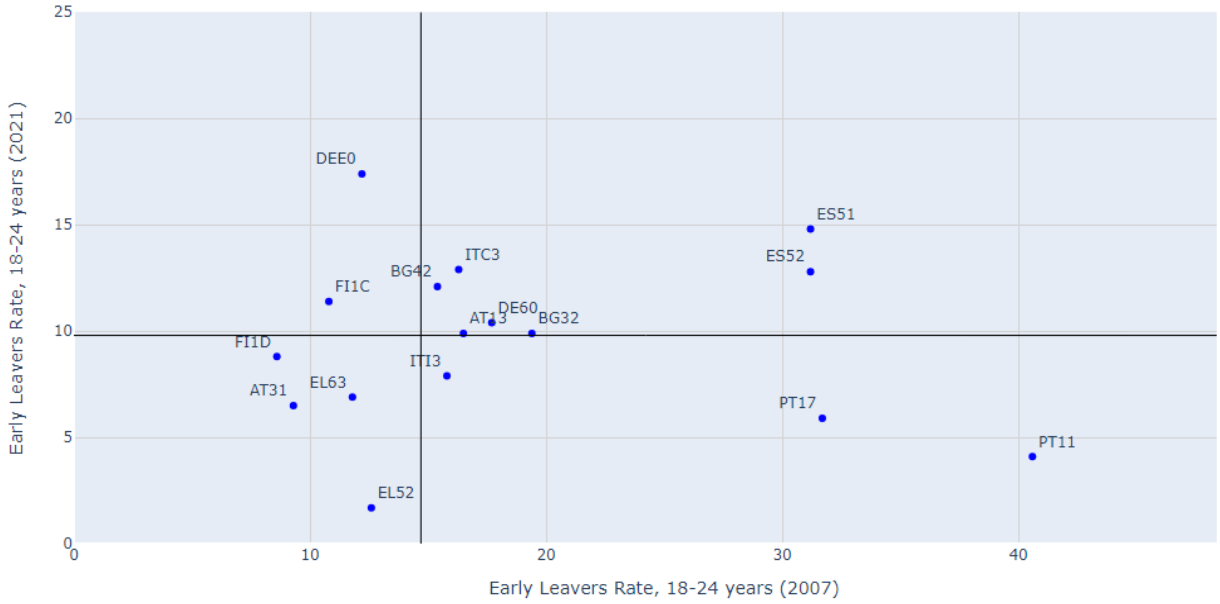
Source: Own calculation, EUROSTAT EDAT_LFSE_16

Figure 10 shows the same figure with our selection of CLEAR case study regions. While some countries will focus on regions in the same quadrant, others will compare regions in different quadrants. Finland will compare worsened Southern Finland with constantly high-performing Northern and Eastern Finland. Austria will compare constantly high-performing Upper Austria with constantly, comparatively badly performing Vienna. Italy will contrast improved Veneto with constantly badly performing Liguria. Lastly, Germany will compare constantly badly performing Hamburg with worsened Saxony-Anhalt.

Our analysis of Early School Leavers (ELET) between 2007 and 2021 reveals a complex picture of education trends in CLEAR countries. Nationally, there is a noticeable

convergence in ELET rates. Greece stands out in this regard, with a remarkable 95.7% of its young population (20-24-year-olds) achieving at least an upper secondary diploma, showcasing effective policy-making. However, this achievement is contrasted by persistent regional and gender disparities.

Figure 10. Early Leavers Rate, 18-24 years (2021) by Early Leavers Rate, 18-24 years (2007), Selected NUTS 2 Regions



Source: Own calculation, EUROSTAT EDAT_LFSE_16

Further comparison of ELET rates in CLEAR regions between 2007 and 2021 provides a deeper understanding. Although the overall trend indicates a slight decrease, regions can diverge and redefine educational outcomes, breaking free from their historical trends. However, this elasticity is not evenly distributed across educational dimensions. For instance, advanced education levels (ISCED 5-8) exhibit higher elasticity, indicating that regions are more adaptable and capable of reshaping outcomes at these levels. In contrast, basic education levels (ISCED 0-2) show lower elasticity, indicating stronger path dependency in regions with higher human capital.

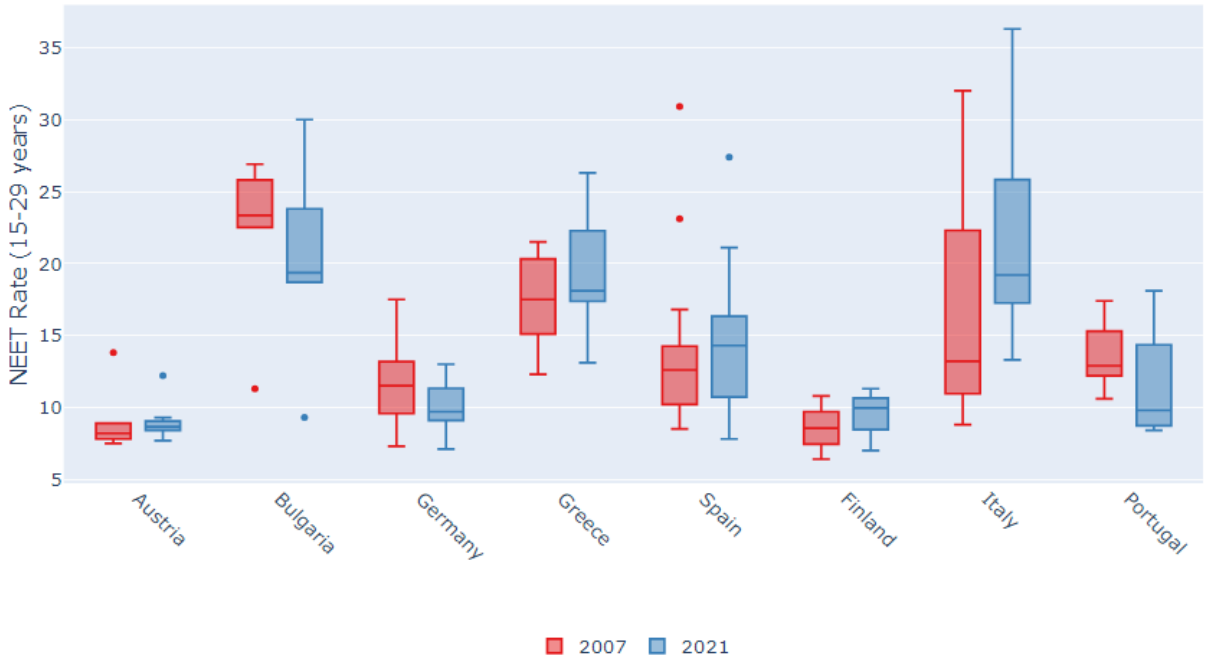
5.3 Labour market outcomes

5.3.1 Not in employment, education or training (NEET)

While some young adults might find employment after leaving school early, early leavers are still at a higher risk of not finding employment (for Italy, see Struffolino & Borgna, 2021; for Scandinavia, see Bäckman et al., 2015). The so-called *NEET rate* attempts to quantify those young adults who are neither in education, employment or training (for the development of the concept, see Eurofound, 2012, pp. 19-27). We use it to approximate early joblessness that can affect potential life course opportunities and trajectories. For analytical purposes, we will refer to young adults, aged 15 to 29, who are neither in education, employment, or training.

Figure 11 shows the regional within-country variation of the NEET rates in CLEAR countries for 2007 and 2021. In general, one can see that the countries more affected by the financial crisis 2008 (Greece, Spain, and Italy) still had noticeably higher NEET rates in 2021. Finland's NEET rate is also higher, but still at comparatively low level. On the other hand, Bulgaria and Portugal managed to reduce their respective NEET rates from 2007 to 2021. From a comparative perspective, the differences in national NEET rates are markedly more heterogeneous than the ELET rates. This might indicate that national labour markets were more volatile for young adults than national educational systems. For example, Caroleo et al. (2020) show that heterogeneous macro-level factors, such as the prevalence of long-term unemployment, are associated with the risk of gaining NEET status. Rambla & Scandurra (2021) exploring regional NEET rate between 2003 and 2015 report that in Universalistic and Employment-Centred regimes, there is a process of convergence as the more vulnerable regions catch up, while in Liberal, Sub- Protective and Post- Socialist regimes catch-up effects are weak and not significant, and top performing regions deviate from the rest.

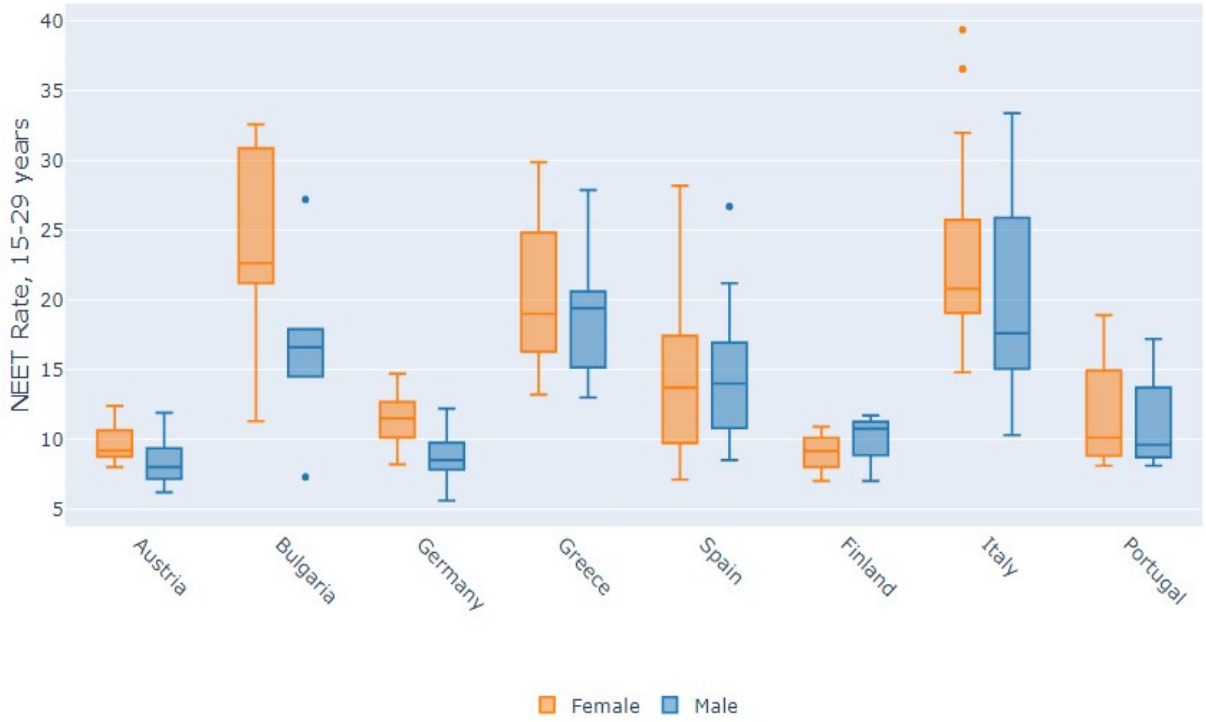
Figure 11. NEET Rate, 15-29 years, NUTS 2 Regions



Source: Own calculation, EUROSTAT EDAT_LFSE_38

Regarding gender differences (figure 12), Bulgaria stands out. Here, young women had a NEET status at a much higher rate than young men in 2021. This contrasts the higher female share of tertiary educated young adults in Bulgaria. Although it was not significant, the difference is also found in Germany. In terms of within-country regional disparities, Austrian, German, Finnish, and Portuguese regions were relatively homogeneous. In contrast, Bulgarian regions had much more regional heterogeneity regarding female NEET rates. Greece and Spain had a similar pattern. In Italy, the inverse was the case – male NEET rates had a much higher regional disparity than female NEET rates.

Figure 12. NEET Rate, 15-19 years by Sex (2021), NUTS 2 Regions

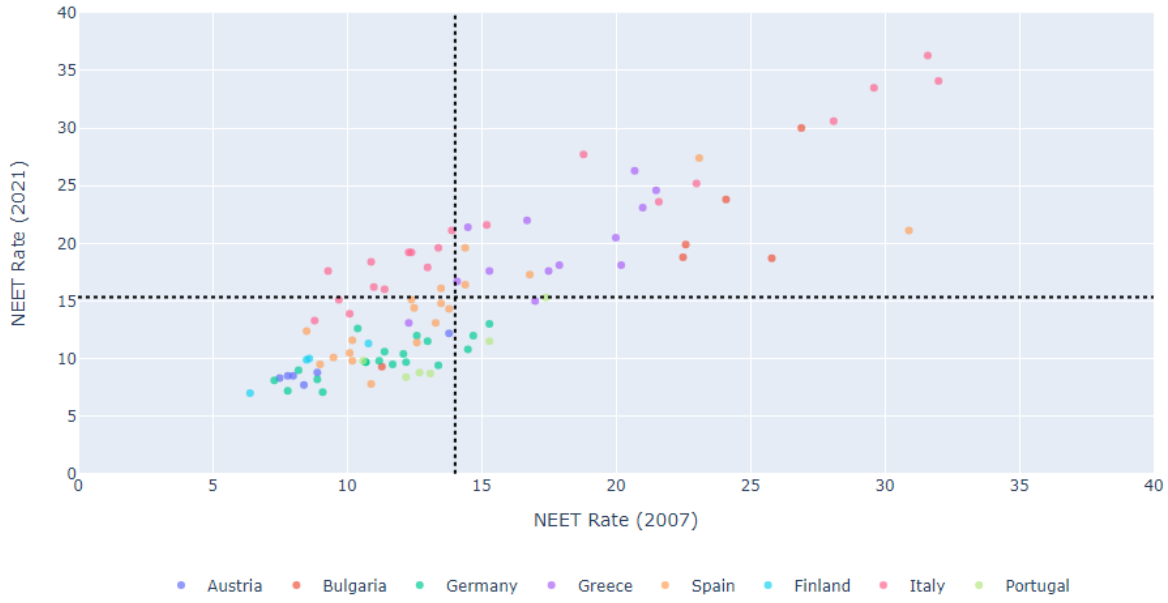


Source: Own calculation, EUROSTAT EDAT_LFSE_38

Zooming in on the regional level, we look at the association of regional NEET rates within CLEAR countries for 2007 and 2021 (see figure 13). As for the previous scatterplot for early leavers, we depict a comparative two-by-two matrix to assess change over time without neglecting nominal NEET rates. The linear relationship between the two values indicates a path dependency in which the level of the regional NEET rates in 2007 predicts their level in 2021. If we take R^2 as an indicator for widespread regional path dependency in this case, we find that, of all analysed indicators, the NEET rate had the strongest path dependency among CLEAR regions ($r= 0.84$, $R^2= 0.71$) As such, two types of regions prevail – regions whose NEET rate was high and remained high as well as regions for which the inverse is the case. Among the former, we find Southern European regions from Italy, Greece, and Spain and Bulgarian regions. Austrian, Finnish, German, and Portuguese regions are among the latter. Nevertheless, some regions improved and worsened relative to the EU27 average. Among the regions with improvement (bottom right corner), we find Arnsberg, Berlin, Saxony-Anhalt, Algarve, and Epirus. On the other hand, the upper left corner shows that many Italian regions' NEET rates have worsened. Interestingly, they are mostly located in the Northern parts of Italy. According to Rambla and Scandurra (2021), the development of NEET rates between 2003 and 2015 in Italy shows that the Italian North had a worse development of NEET rates than the Italian South. The study also found a divide in higher education access between regions, influenced by path dependency, especially in extreme regions of the GDP distribution. However, the study also highlights some form of 'levelling up' as Northern regions caught up to the high NEET rates in the South. Additionally, Cefalo et al. (2020) shows that from 2005 to 2018, the

Italian North has slightly caught up to the Italian South regarding integrating young adults into the labour market (Cefalo et al., 2020, fig. 2, p. 9).

Figure 13. NEET Rate, 15-29 years, NUTS 2 Regions (2007 – 2021)[xi]



Source: Own calculation, EUROSTAT EDAT_LFSE_22

Figure 14 plots CLEAR regions' NEET rates against their economic output (GDP PPS per capita).

Figure 14. NEET Rate, 15-29 years by GDP PPS (2021)[xii]

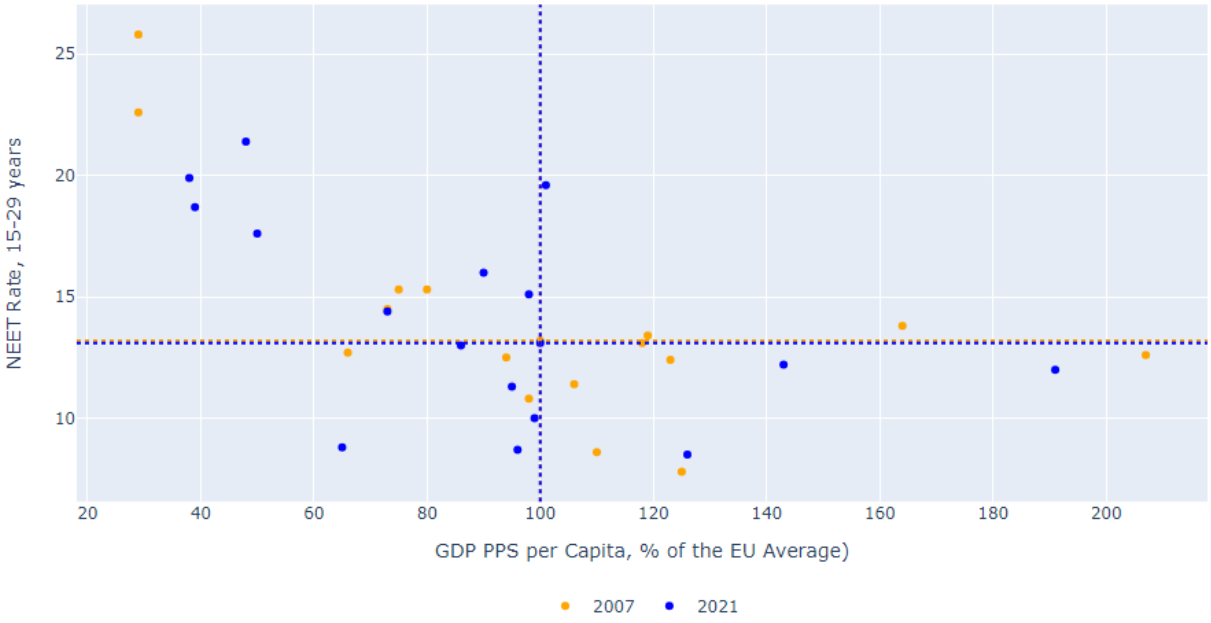
Source: Own calculation, EUROSTAT EDAT_LFSE_38 and NAMA_10R_2 GDP

One can see a negative curvilinear relationship in which, particularly, the regions with the lowest economic output have the highest NEET rates and the regions with the highest

economic outputs have the lowest NEET rates. The latter are mostly Austrian, Finnish, and German regions. The former are predominantly Bulgarian, Greek, Italian, Spanish, and two Portuguese regions. However, there are exceptions in the shape of wealthy mostly Italian regions with comparatively high NEET rates and German, Portuguese, and Spanish regions with low NEET rates despite lacking the macroeconomic wealth other NEET regions have. The pattern for North Eastern Italian regions could be tentatively related to a potential levelling effect of the financial crisis regarding NEET rates, but not GDP. Returning to the figure depicting the development of NEET rates, one can see that these regions have transitioned from below-average NEET rates in 2007 to above average NEET rates in 2021. The regions with low NEET rates and low economic output include Burgenland, South Eastern Bulgaria, Brandenburg, Mecklenburg-Vorpommern, Lüneburg, Dresden, and Thuringia, Galicia, Cantabria, La Rioja, Aragon, and Castile-Leon as well as all Portuguese mainland regions.

In figure 15, we compare the same association for 2007 and 2021 with our sample of CLEAR case study regions.

Figure 15. NEET Rate 15-29 by GDP PPS (2007- 2021)[xiii]



Source: Own calculation, EUROSTAT EDAT_LFSE_38 and NAMA_10R_2GDP

The reference lines indicate the average EU27 value of the respective indicator. There are some case study regions with noticeable developments. The two Bulgarian case study regions have remained on the same level of comparatively low economic output and high NEET presence. The same holds for Central Macedonia and Western Greece. Still, the two Bulgarian case study regions have at least improved on both indicators, albeit at that lagging level, while two Greek regions' situation has worsened at that same level. Conversely, Upper Austria and Hamburg have remained high performing with relatively high economic output and low NEET rates. North & East Finland and Northern Portugal

have retained a relatively low GDP and NEET rate. Liguria has remained with a relatively high GDP, but also a relatively high NEET rate. However, both of its indicators have worsened to some extent. The metropolitan area of Lisbon and South Finland have retained a low one. Vienna has retained a high GDP but improved its NEET rate to below-EU-average, the Valencian community has retained a low GDP while also worsening its NEET rate above-EU-average, Saxony-Anhalt has retained a low GDP. Still, it has lowered its NEET rate below-EU-average. At the same time, Catalonia and Marche have transitioned from top-performing regions with comparatively high GDPs and low NEET rates to worse-performing regions with a low GDP and a high NEET rate.

Examining the evolution of NEETs in CLEAR countries from 2007 to 2021 reveals notable shifts. Bulgaria and Portugal stand out for their substantial progress in curtailing NEET rates. A salient factor that emerged is the correlation between enduring unemployment and the propensity for young adults to gravitate towards NEET status.

In the specific context of 2021, young Bulgarian women manifested a higher inclination towards NEET status compared to their male peers. This disparity is not purely statistical. It mirrors broader cultural and societal norms, particularly spotlighting the entrenched expectations around women's roles within the family. Furthermore, it's noteworthy that this trend is especially pronounced among women from vulnerable or marginalized groups, encompassing ethnic minorities and individuals with disabilities.

The connection between economic vigour and NEET rates is evident from a regional perspective. High economic output regions like Upper Austria and Hamburg consistently register lower NEET rates. In stark contrast, economically challenged regions such as Central Macedonia and Western Greece are burdened with more pronounced NEET figures. Yet, it's essential to acknowledge that there are exceptions, highlighting the interplay of factors that contribute to NEET dynamics.

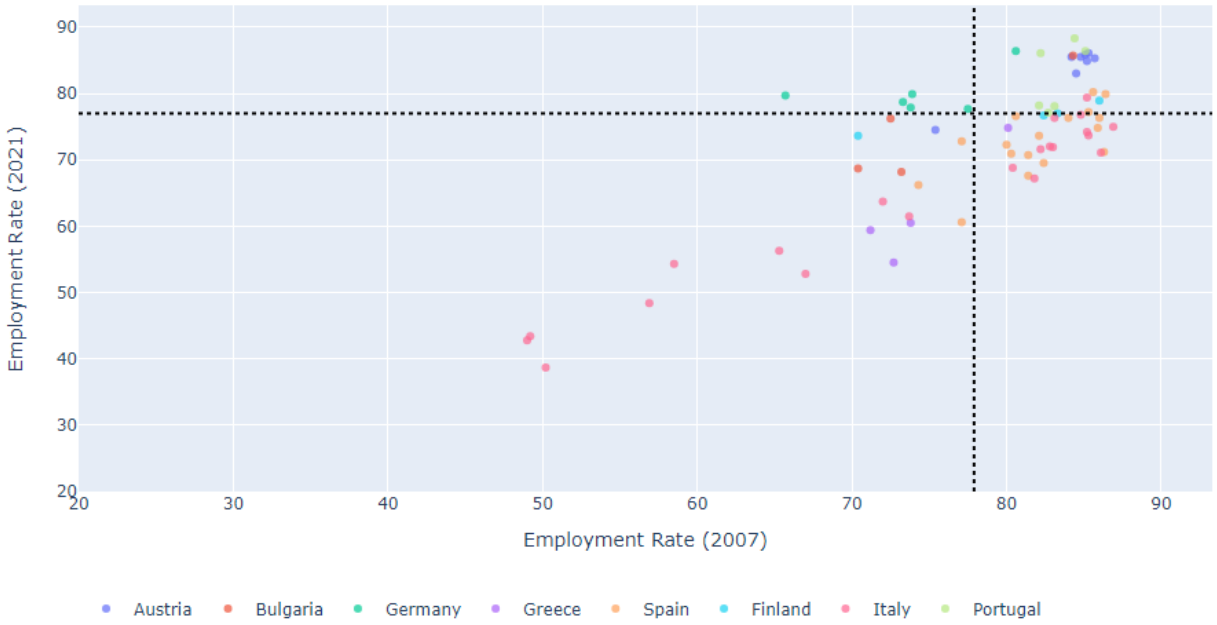
5.3.2 Employment

In addition to the NEET rate, employment rates for young adults focus more explicitly on the labour market side of school-to-work transitions. Different regional labour markets offer different opportunities for young adults after leaving school or training. In some regions, high educational attainment may not guarantee a seamless transition into the labour market. This holds particularly true for Southern European regions as we shall show below. Moreover, low educational attainment may not mean an automatic lack of access to the labour market. Regional economic and institutional development trajectories (cf. Iammarino et al., 2017, 2019; Rodríguez-Pose & Ketterer, 2019) intersect with life course opportunities.

The following analysis discusses the development and regional variation of CLEAR consortium countries' young adult employment rates (ages 20-34). First, we present employment rates by educational attainment. Then, we correlate the employment rates with NEET rates to explore regional young adult labour market profiles in more detail.

Figure 16 shows the development of the overall employment rate for young adults in CLEAR regions.

Figure 16. Employment Rate, 20-34 years old, ISCED Total, NUTS 2 Regions (2007-2021)[xiv]



Source: Own calculation, EUROSTAT EDAT_LFSE_33

We can see a clear linear association between rates in 2007 and 2021. As for the NEET rates in the previous chapter, the linear relationship (r= 0.81, R^2= 0.66) hints at a potential path dependency in which regions with low employment rates remained at a low level and high employment rates remained at a high level. The exceptions to this pattern can be found in some German regions (Berlin, Düsseldorf, Cologne, Arnsberg, and Darmstadt) whose employment rates were relatively low but have become relatively high as well as some Spanish and Italian regions whose rates were high but have declined towards 2021; the latter regions have been strongly hit by the 2008 Great Recession and struggled to recovery and bounce back to the pre-crisis levels (Cefalo et al., 2020). The pattern is mostly driven by those young adults who had/have tertiary education for which the linear development closely resembles the one for the total employment rate (see figure 17; r= 0.84, R^2= 0.71). On the other hand, the pattern for employment rates among lowly educated young adults is far more obscure (see figure 18). Here, it appears as if there was little path dependency between 2007 and 2021The one clear national exception appears to be Portugal whose regions' employment rates for lowly educated young adults have remained comparatively high (the metropolitan area of Lisbon to a lesser extent than the others) (see figure 17; r= 0.55, R^2= 0.31).

Figure 19 examines the relationship between the NEET rate among 15-29-year-olds and the employment rate for lowly educated young adults (aged 20-34). We can see that many Southern regions in CLEAR offer relatively good employment prospects for the lowly educated despite comparatively high NEET rates. However, intranational divergence between regions is very high in Spain and Italy as one can infer from the vast space

between their regions in the upper left quadrant and those in the lower right quadrant. For Austrian, German, and some Spanish young adults, the risk of gaining NEET status is low while the employment prospects for lowly educated young adults is also quite high. This pattern is most pronounced for Northern and Central Portugal, the metropolitan area of Lisbon, and Alentejo. In Finnish regions, the NEET rates are low, but the employment prospects for the lowly educated are just as low. Spain and Italy generally exhibit the most divergent regional profile (see figure 19; r= -0.59, R^2= 0.35).

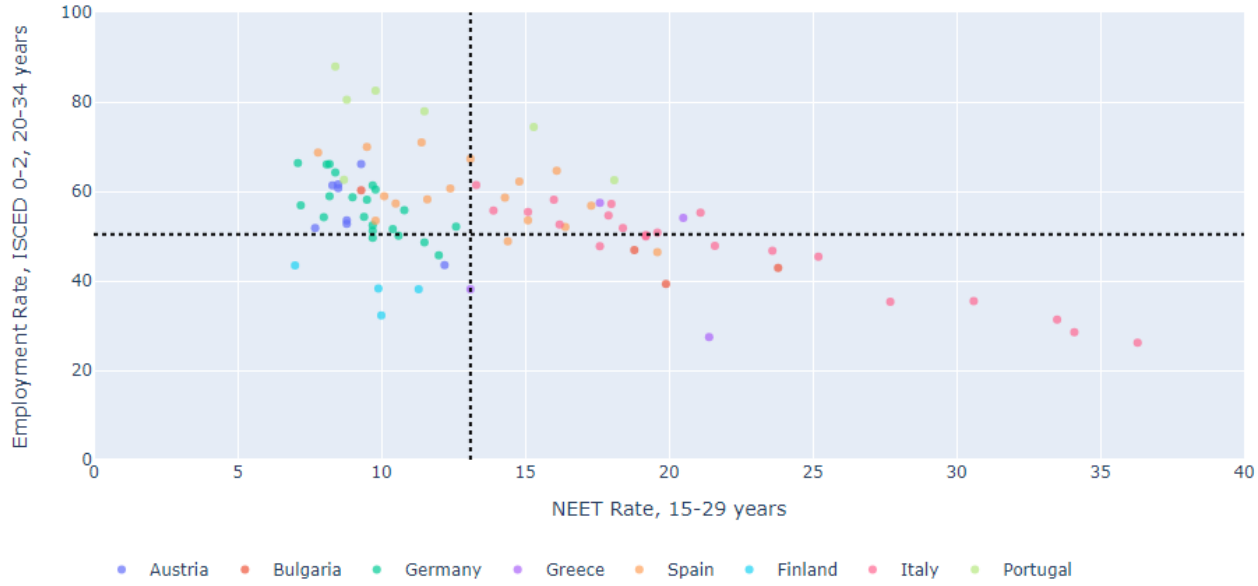
Figure 17. Employment Rate, 15-34 years old, ISCED 5-8, NUTS Regions (2007-2021)[xv]

Source: Own calculation, EUROSTAT EDAT_LFSE_33

Figure 18. Employment Rate, 15-34 years old, ISCED 0-2, NUTS Regions (2007-2021)[xvi]

Source: Own calculation, EUROSTAT EDAT_LFSE_33

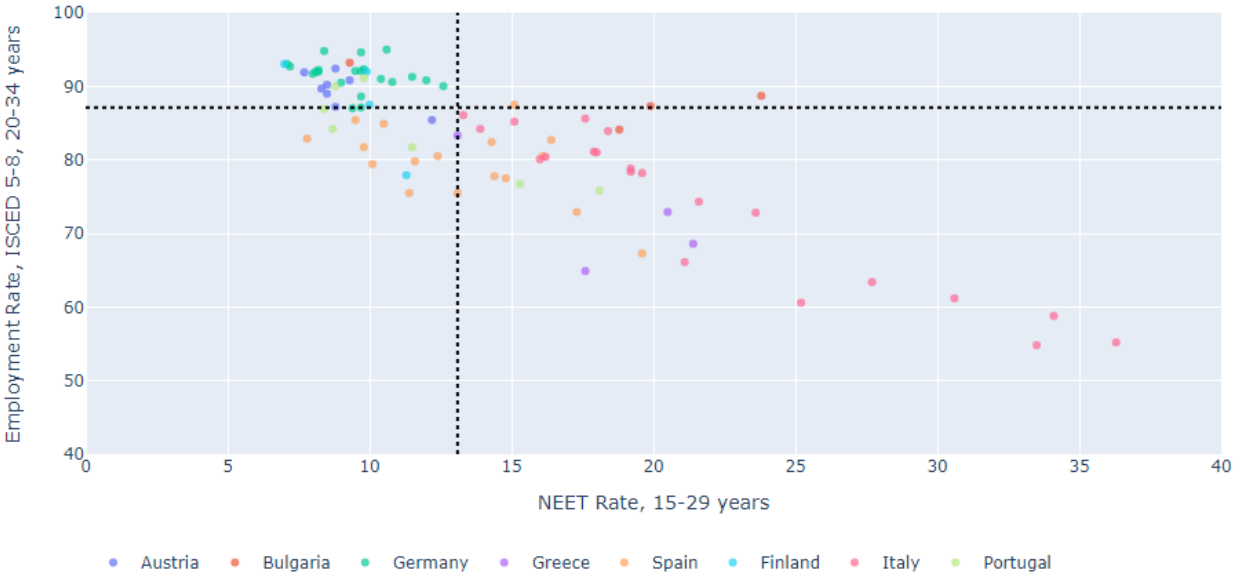
Figure 19. Employment Rate, ISCED 0-2, 20-34 years by NEET Rate, 15-29 years (2021)[xvii]



Source: Own calculation, EUROSTAT EDAT_LFSE_38 and EDAT_LFSE_33

Figure 20 shows a linear relationship between regional employment rates for highly educated young adults and NEET rates (see figure 20; r=-0.85, R2= 0.72). The lower the NEET rates, the higher the employment rates for highly educated young adults are in CLEAR regions. The exceptions to this pattern can be found in a few Spanish and Portuguese regions, Vienna, and Northeast Finland where the NEET rates are low. Still, the employment rates for tertiary educated young adults fall below the CLEAR average. However, this has to be qualified because La Rioja, the region with the lowest employment rate in this quadrant, still offers a high employment rate of 75% for young adults with a tertiary degree.

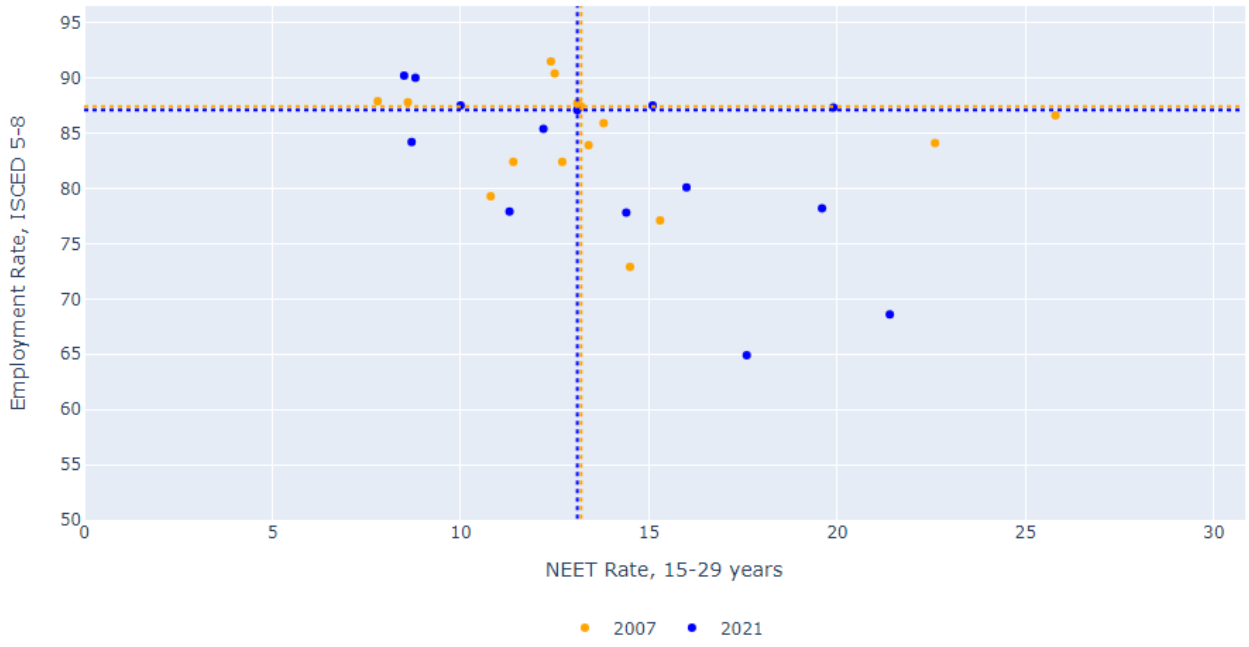
Figure 20. Employment Rate, ISCED 5-8, 20-34 years by NEET Rate, 15-29 years (2021)[xviii]



Source: Own calculation, EUROSTAT EDAT_LFSE_38 and EDAT_LFSE_33

Figure 21 below shows that the CLEAR case study regions represent all four regional types with high employment and low NEET rates, high employment and high NEET rates, low employment and high NEET rates, and low employment and low NEET rates. In Austria, Upper Austria has consistently performed well by keeping a low NEET and a high young adult employment rate. In contrast, Vienna's employment rate has remained relatively low, but its NEET rate has transitioned from relatively high to relatively low. In Bulgaria, both indicators have improved for its Southern Central region. In Finland, both case study regions have remained similar to 2007. However, South Finland has remained on a well-performing level. In contrast, North and East Finland has remained on a well-performing level regarding NEETs but a relatively worse performing level regarding young adults' employment chances. In Greece, both regions generally perform worse on both indicators, a pattern that has worsened until 2021. Liguria has a similar trajectory in Italy to the two Greek case study regions. In Portugal, the metropolitan area of Lisbon has shifted from a top performing level down to a level at which its NEET rate has remained low, but its young adult employment rate has declined. The same holds for the other Portuguese case study region – Northern Portugal. In Spain, Catalonia has worsened from a region which was high performing on both indicators to a region that is still high-performing when it comes to young adults' employment prospects, but whose youth is more likely to attain NEET status. For the community of Valencia, the starting point in 2007 was similar to Catalonia, but both indicators have dropped below the EU27 average.

Figure 21. Employment Rate, ISCED 5-8, 20-34 years by NEET Rate, 15-29 years (2007 vs. 2021)[xix]



Source: Own calculation, EUROSTAT EDAT_LFSE_38 and EDAT_LFSE_33

As foreshadowed in the educational attainment section, we will conclude this section by taking a closer look at the relationship between sex, tertiary educational attainment, and employment after completing tertiary education.

Figure 22 takes the 2021 sex gap – measured as the percentage point difference between biological women and men – of the share of tertiary educational attainment among young adults and employment rates for young adults with tertiary education and looks at their association. This time, we set the reference lines at 0 for both the x and y axis to indicate the threshold for a positive or a negative sex gap. We can see that most regions are located in the lower right quadrant, which means that most CLEAR regions exhibit a higher female share of tertiary education, but a lower female employment rate for young adults with tertiary education. This highlights a significant sex-stratified mismatch between learning outcomes and labour market outcomes. Despite this clear pattern, there are some exceptions – particularly among regions which exhibit a positive sex gap for both indicators. Among them, we find Northern Central as well as North Eastern Bulgaria; South as well as North and Eastern Finland; Schleswig-Holstein; Attica as well as Central Greece; Piemonte as well as Molise; Northern Portugal, Algarve, as well as Alentejo; the Principality of Asturias, Basque Community, Navarre, La Rioja, Castile-La Mancha, Extremadura, as well as the Canary Islands.

Figure 22. Gender Percentage Point Differences (Female minus Male) of Employment Rates, 20-34 years by Educational Attainment, ISCED 5-8, 2021 (Reference Lines at 0=No Gender Gap)[xx]

Source: Own calculation, EUROSTAT EDAT_LFSE_38 and EDAT_LFSE_04

A clear trend can be observed after analysing the employment rates among young adults (ages 20-34) in CLEAR countries. The growth of employment rates from 2007 to 2021 shows a linear association, implying that regions performing well in 2007 continued to maintain or improve their trajectory, and vice versa. However, some anomalies highlight the complexities of regional dynamics.

When focusing on employment rates among less-educated young adults, Portugal stands out as an outlier; its regions consistently offer relatively high employment rates for this

demographic, which contradicts the general trend. Studying the relationship between the NEET rate and employment prospects for less-educated young adults reveals a captivating picture. Despite the elevated NEET rates, Southern CLEAR regions still provide commendable employment opportunities for this segment. On the other hand, Austria, Germany, and some Spanish regions are examples of areas with minimal NEET vulnerabilities and optimistic employment prospects. Spain and Italy, however, stand out for their stark regional contrasts.

The CLEAR regions show a consistent relationship between employment rates for highly educated young adults and NEET rates. However, some regions, such as parts of Spain, Portugal, Vienna, and Northern and Eastern Finland, challenge this norm. It is important to note that women often struggle to find employment despite having a dominant presence in tertiary education. This gender-based inequality underscores a significant disconnect between educational achievements and labour market assimilation. However, some regions have defied this trend, offering a more equitable landscape with less gendered dichotomy.

6. Multivariate Cluster Analysis

Comparative research on learning outcomes and school-to-work transitions mainly focused on country differences, examining institutional design variation in shaping youth labour market outcomes. The field has been dominated by methodological nationalism assuming nation states as homogeneous objects of comparison. This has led to an underestimation of the impact of territorial variations in youth transitions among sub-national territories, notwithstanding potential impact on life chances. The core of WP3 is the investigation of learning outcomes, considered as both education and labour market outcomes, in interaction with regional socio-economic and demographic characteristics. To shed light on regional contexts of opportunity for learning outcomes in the EU, in this section we aim at identifying clusters as 'statistical profiles' of regions and their changes over the last decades.

Is it possible to identify differences among groups of regions? To what extent these patterns change over time? The findings provide novel insight into the characteristics and patterns of a geography of youth opportunities, looking at a contextual variation of learning outcomes.

6.1 Methods

Empirically, we focus on systematically comparing aggregated patterns (Raffe, 2008), at the regional level (Scandurra et al., 2021). We use regions as units to explore within-class heterogeneity of learning outcomes by means of cluster analysis. Our operationalisation is based on the distinction between learning outcomes as educational outcomes (education attainment), labour market outcomes (employment market outcomes) and contextual factors (socio-economic characteristics). We selected a core number of variables relying on literature on learning outcomes, school to work transitions and

territorial development (Müller, 2005; O' Reilly et al., 2015; Raffe, 2008; De Coninck and Solano, 2023; Scandurra et al., 2021). Therefore, in our analysis we include indicators on youth educational attainment by ISCED level, and on youth employment rates by ISCED level, to explore cross-regional combinations of educational and employment outcomes. As for contextual regional traits, our aim is to account for basic structural indicators related to the general state of the economy, regional specialisation and population trends. We use regional GDP and population size as general traits of the regional context, and we complement with an indicator of regional specialisation and knowledge economy. Specifically, we use the share of scientists and engineers on the active population, as a proxy of the occupational stock of persons employed in science and technology occupations[xxi].

For classification purposes, we restrict our view to regional outcomes of transitions and socio-economic contextual traits. The scarce availability of comparable information on subnational institutional settings is unfortunately well recognized and hampers the possibility of large-N comparative analysis: measures of institutional differentiation at regional level are not systematic in terms of cases and time range, or they run risks of compensation effects and excessive generalisation (Ciccia & Javornik, 2019). The variables were extracted from the comprehensive dataset and the selected dataset collected and used for the previous WP3 tasks. Coherently with the territorial approach put forward within WP3, we use NUTS 2 as the preferred level of aggregation to describe the geography of learning outcomes in the EU. To improve comparability and the scope of investigation, for this analysis we include all European regions and we do not restrict only to CLEAR countries and regions.

In our analysis, we consider variation over space and time classifying regions according to a) average levels and b) rates of change across the period considered. The time span of our data (2007–2019) covers a period of post-recession and economic growth in Europe. In this part of the report, we limit to 2007 and 2019 to ensure comparability and enhance interpretation of the data, as the impact of the pandemic is still difficult to be fully appreciated with the regional data available for 2020-2021, and could jeopardize a solid interpretation of the longitudinal analysis results in terms of profile of regions. Our set of variables includes:

- *Educational outcomes indicators*: educational attainment of youth 25–34, distinguishing among qualifications at ISCED 0–2 (low educated with no more than a lower secondary qualification); ISCED 3–4 (medium educated with upper secondary qualification); ISCED 5–8 (highly educated with tertiary qualification).
- *Labour market outcomes indicators*: employment rate of youth 20–34 by educational qualifications (ISCED 0–2, 3–4, 5–8); NEET rate (share of young people aged 15–29 that are neither in employment, nor in education or training) as a measure of labour market exclusion.

- *Socio-economic contextual indicators*: GDP per capita in PPS; Scientists and engineers on the active population; population aged 20–64.

In what follows, we apply multidimensional clustering of EU regions concerning learning outcomes and contextual socioeconomic characteristics. We cluster EU regions according to specific criteria, giving priority to a) change over time and b) levels of the selected indicators of outcomes and regional contextual traits. We perform k-medians clustering with random seed-establishing groups by assigning one-by-one observations to the established partitions. Cluster analyses are performed on the rate of change of the above indicators and on their moving average calculated at interval of three years. All indicators were previously min-max normalised. We apply nearest 1- and 2-year replacement of missing values on each variable. The third segment discusses common patterns of variation over time and space through cross-tabulation.

K-medians is a non-hierarchical grouping technique: data are divided into *k* partitions, or clusters, where each partition represents a cluster. The division process follows an algorithm that assigns each element to the group with the closest (median) centre so that objects within the same group are as similar as possible (high intra-class similarity). In contrast, objects from different groups are as dissimilar as possible (low inter-class similarity). The cluster analysis with the k-means method will thus produce *k* different clusters with the greatest possible distinction. *K* represents the number of groups specified by the analyst; the decision on *k* is often ad hoc and depends on prior knowledge, assumptions and practical experience (Kassambara, 2017; Steinley, 2006; Salas-Velasco, 2023).

The choice of 4 clusters allows us to single out significant aggregations of regions in terms of relevant analytical dimensions and a combination of time- and level- variation. This approach allows us to combine the two 4-clusters classifications, providing an interpretation that considers both developments over time and across regions. Additional clusters would lead to an excessive number of aggregations, hampering the possibility of interpretation connected to our analytical frame. Our choice of 4 clusters is backed by several robustness test; we used a combination of four different methodologies, whose results are detailed in the Annex. The goal was to ensure that our chosen clustering solution was well-supported by the data and meaningful.

The first method calculates the Calinski pseudo-F statistic, one of the standard cluster-stopping rules. We sought to identify an inflection point in the chart of this statistic, which would suggest an ideal number of clusters. In addition to the Calinski method, we used a visualisation technique, plotting the centroids about the first two discriminant functions. These functions collectively explained more than 55% of the total variance in the data. This visualisation provided insights into the distribution of data points within clusters. To assess the homogeneity of data points within each cluster, we computed the within-group sum of squares. This measure helps us assess how closely related data points are within the same cluster, which is crucial for cluster quality assessment. The fourth method

involved a model-based cluster analysis, which uses the Bayesian Information Criteria (BIC), using several classification methods. The highest BIC is reported for the 4-cluster solution. All four methodologies consistently converged on a four-cluster solution in both of our analyses. We conducted this analysis using the 'mclust' package in R. The choice of four clusters allowed us to identify significant aggregations of regions based on both the development over time and across regions. Our reference framework is based on widely used indicators of STWT outcomes in national and regional analysis alongside broader contextual indicators that served as proxies for the key socio-economic characteristics of the regions.

6.2 Profiles of EU regions

Table 3 and Figure 23 shows the results of the cluster analysis based on the moving average of learning outcomes and contextual indicators between 2007 and 2019. Four groups have been identified.

1. *Low skills equilibrium.* The first group displays a skewed distribution of educational attainment, as the shares of low educated are above average, and the highly qualified are below average. Employment opportunities and youth participation in the labour market are markedly low, as displayed by high NEET rates and, conversely, low employment rates by all qualification levels. Low levels of regional GDP and below average knowledge-intensive sectors complete this low-skill equilibrium group, mainly composed of regions from Southern and Southern/Eastern Europe. Interestingly, the main economic regions of these countries are not part of the first group. CLEAR participating countries are overrepresented under this group, where Italy and Greece are included almost entirely, as the Southern part of Spain and Portugal.
2. *Strong knowledge economy.* The second group shows very high levels of tertiary education qualifications, which translates into positive labour market outcomes, especially for highly educated youth and below-average NEET levels. This group displays favourable contextual conditions, especially regarding knowledge-intensive sectors and regional welfare levels; these regions are attractive and highly populated. This group is geographically variegated, although it includes a few regions from Central Europe. Dynamic regions, capital and metropolitan areas tend to cluster in this group (for instance, Madrid, Paris, but also Bratislava, Bucharest, Lombardy). Within the CLEAR consortium, the unique territories in this group are Athens, Lisbon, Stuttgart, Tampere (the unique regions of Finland with complete data) and Sophia areas, Lombardy and the North part of Spain.
3. *Strong labour market integration*. Very high levels of upper secondary education and strong integration for the medium-qualified youth characterise the third group. The share of lowly and highly educated is comparatively low; job opportunities are insufficient for the low qualified but very for medium and high qualifications, resulting in very low NEET levels. The economic conditions are slightly less

favourable than those of Group 2, with the share of scientists and engineers being above average and the GDP levels being on average. The geographic core of this group, characterised by strong youth integration performance, is in Central Europe (Austria and Germany), with additional regions from Northern and Eastern Europe. Within the CLEAR participating countries, Germany and Austria fall under this group, showing a strong and consistent youth labour market opportunity within the last decades across almost all their regions.

4. *Unequal opportunities and risks*. The fourth group is slightly residual, being the less numerous and more geographically concentrated: it mostly describes the traits of UK regions (apart from London), with a few other regions, for instance Portugal and Romania. The group displays mostly close-to-average values in terms of educational qualifications. The economy provides high employment opportunities for young people, and especially for tertiary education. However, NEET rates are higher than those in Groups 2 and 3, signalling that some young people may encounter difficulties in accessing the labour market more than others. The regional welfare is very high, although the development of knowledge-intensive sectors is below average. The Central and North part of Portugal reports unequal opportunities and risk structure for youth; this is the unique territories falling under this category of the CLEAR participating constituencies.

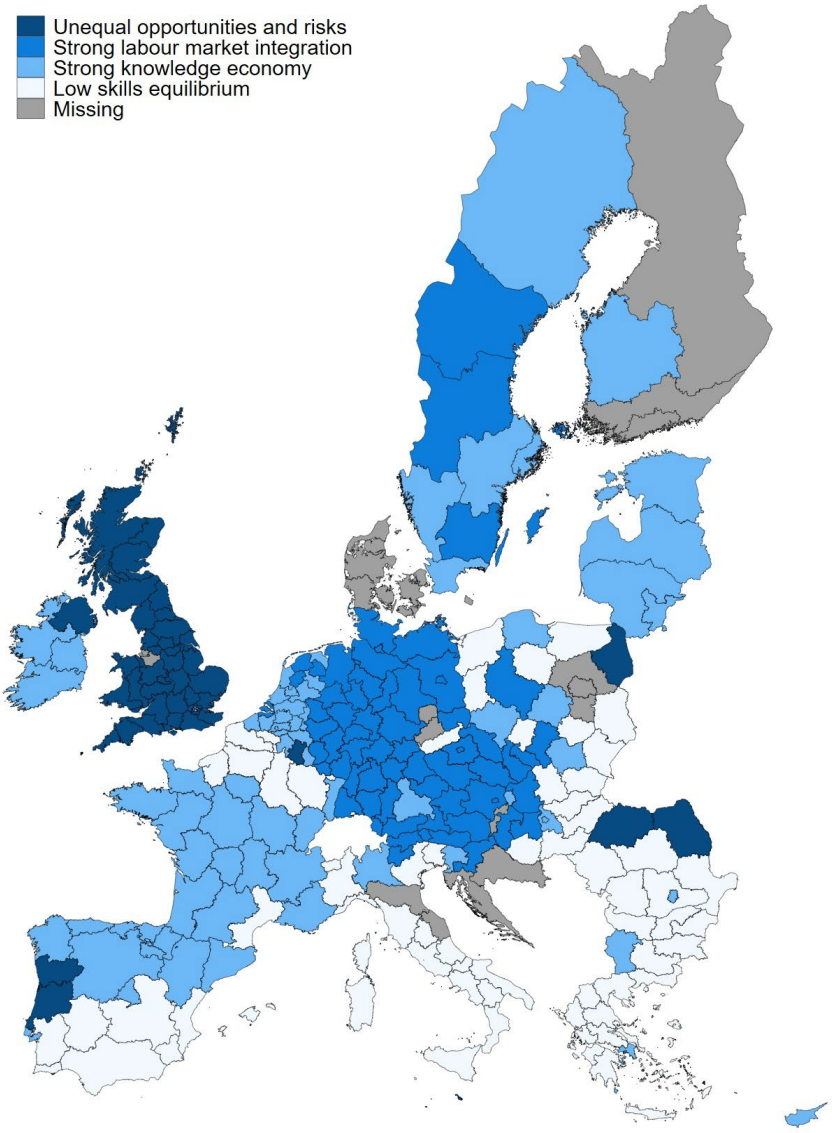
Table 3. Indicators Moving Average by Clusters, 2007–2019

Groups	ED. ISCED 0–2	ED. ISCED 3–4	ED. ISCED 5–8	EMP. ISCED 0–2	EMP. ISCED 3–4	EMP. ISCED 5–8	NEET	SCIEN & ENG	GDP	POPUL
1. Low skills equilibrium	0.239	0.480	0.283	0.514	0.685	0.759	-0.214	9.762	0.029	1.035
2. Strong knowledge economy	0.150	0.409	0.441	0.602	0.788	0.869	-0.119	10.268	0.060	1.415
3. Strong labour market integration	0.122	0.600	0.279	0.552	0.848	0.886	-0.095	10.256	0.049	0.993
4. Unequal opportunities and risks	0.188	0.424	0.388	0.633	0.810	0.888	-0.127	9.624	0.069	1.037
Total	0.175	0.481	0.345	0.569	0.777	0.844	-0.142	10.012	0.049	1.135

Notes: Authors' elaboration on EUROSTAT data

Table 3 and Figure 24 show the results of the cluster analysis based on the relative rate of change of STWT outcomes and contextual indicators between 2007 and 2019. The table provides normalised means/medians of the indicators by cluster, allowing us to identify the most distinctive characteristics of a cluster in terms of distinction from the other clusters and the overall averages.

Figure 23. Groups of regions according to their Moving Average 2007–2019.



Source: Own elaboration on EUROSTAT online database

Against this background, we have identified four groups of regions:

1. *Strongly improving youth integration.* The first group shows a strong trend towards increasing higher education qualifications as the maximum level of education among youth in combination with a pronounced decrease of upper secondary attainment and a slow decrease of the lowly educated. These regions are effective in providing job opportunities for youth, being, in particular, the only group with growing employment rates for medium-qualified youth and reducing the share of young people outside the education and labour market systems. Regarding outcomes from the labour market, integration has grown for all levels of qualification, and the share of NEET decreased strongly. Regional welfare has been growing at a sustained pace, although with below-average growth in knowledge-intensive sectors, and the population has been declining, owed in some regions to ageing and active population out-migration flows (mainly in Eastern regions). These

regions are primarily located in Central and Eastern Europe. Accessing the European Union (2004/2007) had a positive impact on the overall economic and youth integration performance of the Eastern regions. Within the CLEAR countries, Germany falls almost entirely within this group.

2. *Human capital and knowledge-intensive growth.* The second group shows substantial gains in tertiary education qualifications *vis-à-vis* shrinking shares of medium and low-educated youths. Conditions in the labour market generally improved, except for those who are medium qualified. These regions are attractive territories, with population growth and a strong trend towards a knowledge economy, although the growth of regional welfare was below average in the period considered. Regions of the second group are mostly located in the UK and Austria but also include regions from Portugal, Sweden, and Eastern Europe. Within CLEAR countries, Austria and Portugal fall entirely within this group.
3. *Low human capital and trapped development*. The third group displays a moderate expansion of educational qualifications but a low pace of growth for higher qualifications. Employment conditions deteriorated for all levels of qualifications, and the share of those excluded from the labour market grew. This group shows signs of a *development trap*, i.e., a below-average regional welfare growth and scarce signs of improved productivity and innovation in the economy, coupled with a slight population loss. These regions are mostly in Spain, France and the South of Italy. Irrespective of their levels of youth integration, they show signs of stagnation, as human capital grows slowly and the local economy is not dynamic, lacking the necessary infrastructural conditions for innovation. CLEAR countries are overrepresented under this group, with the Central and North part of Italy, Catalonia, Balearic Islands and Valencia, the North part of Finland and the North-East part of Bulgaria.
4. *Declining and growing unequal.* The fourth group comprises regions that managed to increase educational levels *vis-à-vis* a substantial shrinkage of low-educated youth. However, the economic crisis strongly impacted youth opportunities in the labour market. As a sign of the diffused difficulties facing youth in the transition from school to work after 2007, we observe pronounced NEET increases and employment rates decreases, vastly above average for all educational levels. The regional economy has been growing slowly, although there are signs of development of high knowledge-intensive sectors. Finally, the regional population has been shrinking due to population ageing and out-migration flows mainly in the Greek and Eastern regions. This group comprises regions located mostly in Southern Europe but also collects trajectories of regions sparse in Central, Northern and Eastern Europe. Almost the entire of Spain, South of Italy and Finland and South part of Bulgaria belong to this group.

In Table 4 we perform a simple cross-tabulation of the clusters based on the moving average and the relative rate of change, offering valuable insights into the dynamics of

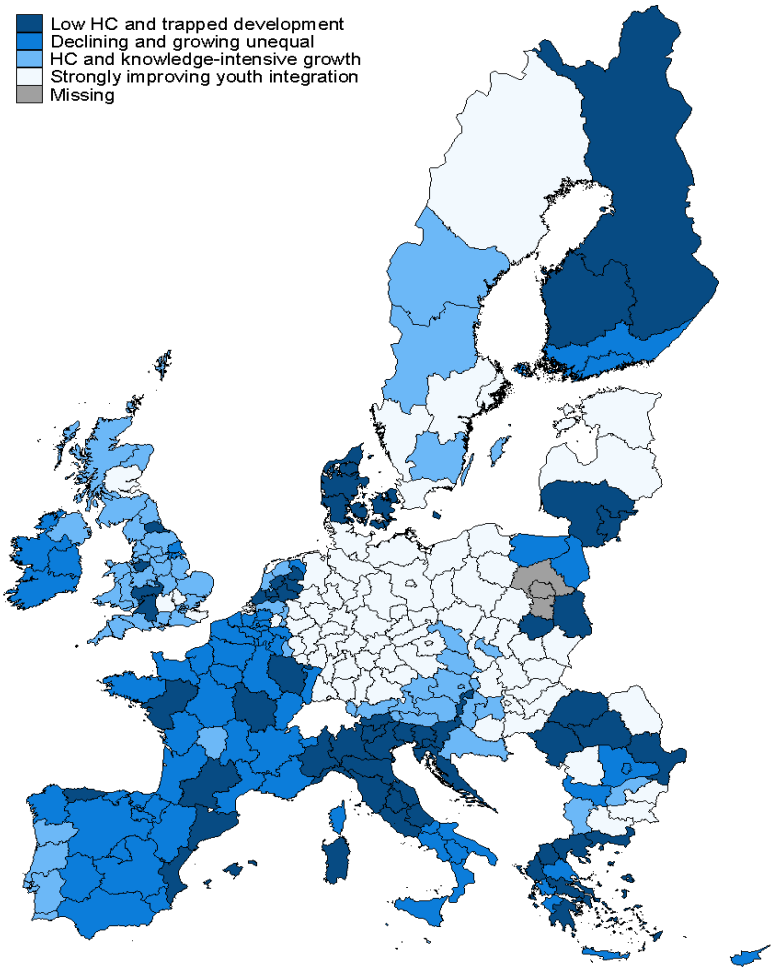
regional patterns. The table shows that out of the 73 regions with strong levels of youth labour market integration (group 3 MA), only 6 shifted to a deteriorating pattern in the last 13 years. This suggests that the majority of the strong integration regions did not experience drastic changes in their employment patterns. In contrast, most low skills equilibrium territories (group 1 MA) maintained their low skills path of (under)development. However, it is worth noting that 19 out of the 79 regions included in this category have shifted their relative position over the period towards improving trends in youth integration, indicating a higher degree of change within this group. This is the case of several Eastern European territories which have benefited from the EU access, new market openings, and the out-migration of young people, which could have slightly eased the competition for jobs. Interestingly, the table indicates a more diverse pattern for vital knowledge economy regions (group 2 MA). These regions, which typically rely on knowledge-intensive sectors, have generally witnessed a worsening of their development pattern regarding employment outcomes. This suggests that even regions focusing on knowledge-based industries and services have not been immune to challenges in the labour market and were strongly hit by the Great Recession and its aftermath. A significant share of these regions shows a worrying risk of being trapped in a trajectory of stagnating development (Diemer et al., 2022) and struggling youth labour market integration.

Table 4. Indicators Rate of Change by clusters, 2007–2019

Groups	ED. ISCED 0–2	ED. ISCED 3–4	ED. ISCED 5–8	EMP. ISCED 0–2	EMP. ISCED 3–4	EMP. ISCED 5–8	NEET	SCIEN. & ENG.	GDP	POPUL
1. Strongly improving youth integration	-0.066	-0.146	0.521	0.187	0.023	0.075	-0.253	0.657	0.032	-0.002
2. HC & knowledge-intensive growth	-0.243	-0.073	0.543	0.052	-0.013	0.029	-0.136	1.505	0.014	0.001
3. Low HC and development trapped	-0.206	0.020	0.149	-0.138	-0.042	-0.066	0.052	0.374	0.017	-0.001
4. Declining and growing unequal	-0.307	-0.068	0.466	-0.186	-0.051	-0.067	0.252	0.750	0.015	-0.002
Total	-0.195	-0.072	0.425	-0.006	-0.017	-0.002	-0.038	0.803	0.021	-0.001

Notes: Own elaboration on EUROSTAT data

Figure 24. Groups of regions according to their Rate of Change 2007–2019.



Source: Own elaboration on EUROSTAT online database

Table 5. Cross Tabulation clusters of regions based on Rate of Change (RC) and Moving Average (MA) (2007–2019)

		MA			
		1. Low skills equilibrium	2. Strong knowledge economy	3. Strong labour market integration	4. Unequal opportunities and risks
RC	1. Strongly improving youth integration	16	17	41	5
	2. HC & knowledge-intensive growth	3	11	16	32
	3. Low HC and development trapped	24	33	1	3
	4. Declining and growing unequal	26	15	5	4

Notes: Own elaboration on EUROSTAT data

7. Conclusion

This report provides CLEAR's WP3 comparative analysis by exploring and describing the relationships between LOs, labour market and socio-economic conditions within CLEAR countries and regions. It also considers the changes over the period 2007-2021. Throughout the Report, LOs are investigated with respect to outcomes from the education system and outcomes on the labour market for young people, in connection with several socio-economic conditions that may hamper of foster youth opportunities in EU regions. The reference to the institutional settings is not the main focus of this report and of WP3 – as institutional structures will be analysed in depth in the following packages of the CLEAR project – but it serves as a background for supporting the interpretation of aggregated indicators on LOs at regional level feeding all other WP outputs with relevant contextual data. Finally, the report identifies clusters and *statistical profiles* of regions based on the combination of LOs (related to education and labour market) and socio-economic characteristics.

Based on the result of the descriptive analysis of CLEAR regions, between 2007 and 2021, the landscape of educational outcomes underwent significant changes. While in Austria and Germany, higher levels of upper-secondary education persist, Southern European countries showed a significant difference in their educational trends. These differences indicate inherent challenges that need strategic interventions. On the other hand, Eastern regions struggled with a growing number of female early leavers from the educational system.

NEET rates (Not in Education, Employment, or Training) reveal further complexities. Countries like Bulgaria, Italy, and Greece showed gender discrepancies in their NEET rates. These discrepancies, influenced partly by societal expectations regarding work-life balance, did not diminish even among individuals with tertiary education. The relationship between GDP and NEET rates also emerged as complex, suggesting that economic prosperity does not automatically lead to reduced NEET rates.

In summary, from 2007 to 2021, they highlighted the interplay of socio-economic, educational, and cultural factors shaping Europe's educational landscape. The challenges, though diverse, provide valuable insights for policymakers to create a more cohesive and educationally prosperous Europe. The aftermath of the 2020 pandemic introduced new dynamics in learning outcomes, probably due to the difficulties of on-the-job training and constraints on the economic dynamic imposed by the lockdowns. These multifaceted effects must be thoroughly evaluated in years to follow at the regional level to understand the contingent impact and the extent of recovery and return to pre-pandemic educational and labour market outcomes for youth.

The findings from the cluster analysis highlight that most CLEAR regions from Italy, Greece, Spain, Bulgaria and partially Portugal present signs of a low skills equilibrium, as the shares of low educated are above average, and the highly qualified are below average,

employment opportunities and the participation of youth in the labour market are low with high NEET rates. However, some regions from these countries show different traits, with more favourable contextual conditions and learning outcomes for youth, as is the case for some Northern regions of Spain, Italy and Portugal and, for instance, the region of Sofia in Bulgaria. Regions from Germany, Austria and Finland instead had more robust levels of youth labour market integration and more dynamic socio-economic context, with generally above-average levels of educational attainment and employment outcomes. As for changes over time, the findings highlight the presence of path dependency for EU and CLEAR regions, indicating a tendency to continue along their established trajectories that resulted in significant divergence in human capital and youth regional employment outcomes across the EU. The persistence of these patterns underscores the need for targeted interventions and policies to address the underlying causes of the territorial divide and promote more inclusive and balanced employment opportunities for youth across all EU regions. It is crucial to continue monitoring and analysing the dynamics of youth educational and employment outcomes to inform policy decisions and ensure effective interventions that can break the cycle of high persistence and foster improved employment prospects for youth in EU territories. Despite this general pattern, it is also important to note that some changes have been observed: some Mediterranean territories in Italy, Spain and Greece couple deteriorating youth labour market opportunities with an increasing upward trend in the supply of human capital. The observed changes in these territories may be attributed to various factors, such as the decreasing cost-benefit opportunities for investing in education. Positive trends in youth integration can also be observed in several Eastern EU regions in Bulgaria and other Eastern EU countries after 2007.

As an exploration of new research avenues in the Annex, we add an analysis of microdata. In particular, this analysis explores, *first*, the extent to which the national context filters the effects of specific characteristics (e.g., migration, gender, parental education) on educational outcomes and, *second*, on labour market outcomes of young adults. The former includes indicators on educational attainment and early leaving from education and training (ELET), the latter on NEET rate (not in employment, education, or training) and job skills. This analysis paves the way for further analysis that we intend to carry out during the life span of the project, addressing – if data will allow that – more explicitly the local dimension of these indicators and considering selected larger metropolitan areas in Europe.

All in all, our findings highlight the relevance of contextual factors (e.g., the regional socio-economic structure) that underlie the observed patterns of LOs. EU regions strongly differ concerning educational attainment, labour market outcomes and socio-economic conditions. Comparative analysis should not, therefore, take homogeneity below the national level for granted but rather investigate how spatial disparities at the subnational level affect the opportunities of young people. These factors bear significant policy

implications, particularly as regions with more favourable economic configurations may have a greater capacity to benefit from national education and labour market policies. On the flip side, this could point to the risk of territorial effects magnifying the combined consequences of disadvantages for low-skilled youth in deprived regions (Cefalo & Scandurra, 2023; Fusaro & Scandurra, 2023). The existence of pockets of exclusion within lagging regions poses specific challenges for social and educational policies and European cohesion. It is imperative to prevent the spread of spatial inequalities, as this represents a significant challenge for the *European Social Model*. Efforts should be directed towards developing targeted policies and interventions that promote equal opportunities and mitigate the negative consequences faced by disadvantaged youth in these regions.

Findings should be interpreted carefully due to some limitations. We consider aggregate regional outcomes based on available comparable data. Socio-economic differences of access within social groups are considered by education level, but we could not consider the intersectionality of these differences to investigate cumulative disadvantages further. The next step for developing this analysis would be to compare these groupings with other clustering exercises to highlight, for instance, more specific connections related to the prevailing economic sectors or migration trends. Further, institutional differentiations were not systematically included in the analysis due to limitations in the availability of comparative measures at the subnational level. Following CLEAR WPs (from WP4 onwards) should take on this point, contributing to unpacking the complex mechanisms that connect multilevel institutions and territorial contexts (Rodriguez-Pose, 2020; Kazepov & Cefalo, 2022). The quantitative explorative assessment presented should be seen as the first contribution to a mixed method strategy that integrates quantitative data with in-depth institutional and qualitative analyses carried out in the following WPs. This would help avoid the risk of literal and de-contextualised interpretations of index scores by clarifying the presence of contextualities, uncertainties and measurement limitations that are flattened by using mere quantitative indicators.

Notwithstanding the limitations mentioned above, results bear essential policy implications, showing that underachievement has relevant intersectional and territorial traits which should be considered by policy design and provision. First, policies should target subgroups of multiple disadvantages that exhibit a higher risk of early dropout from education, with potential scarring effects on future life courses and working careers. Further, context-blind policies risk resulting in the reproduction of an even increase of existing inequalities, as interventions would instead require appropriate mechanisms of territorial sensitivity to avoid future surges of regional divergence. We consider that this report and the CLEAR project find their place within a research agenda aiming at investigating the regional dimension of learning outcomes and spatial disparities in youth opportunities across EU countries and territories, looking at the variations of outcomes as well as at the impact of institutional and socio-economic conditions of different welfare

mixes. Further empirical studies should advance in explaining and unpacking these complex territorial dynamics.

This presented Report is the culmination of a comprehensive work of identification, selection, collection and organisation of data at aggregated national, regional and even individual levels. In this Report, we have mainly provided explorative and descriptive findings, with multivariate clustering techniques deployed to combine different elements of LOs and regional contextualities. These findings do not exhaust the potential of the information collected; instead, this Report opens promising avenues for future research within the CLEAR framework. As mentioned, the following steps will first include coordinating with other WPs in CLEAR to build meaningful analytical bridges between the data analysis of WP3 and the methodological approaches of the following WPs. In particular, associations and variations highlighted by the broad systematic comparative analysis within WP3 can be further investigated with more fine-grained institutional, policy and case-study analysis within WP4, WP5 and WP6. Moreover, we plan to elaborate and deepen our understanding of the amount of data gathered during the WP3 in future dissemination activities and publications to develop a territorial and context-sensitive agenda in analysing LOs, school-to-work transitions and youth labour market integration. Starting from the exploratory and descriptive approach of this Report, we plan to refine our interpretation of complex mechanisms underlying spatial disparities in LOs and their relationship with socio-economic contextual conditions, deploying a mix of quantitative, institutional and policy analysis. In doing this, we turn not only to a scientific audience but also aim at producing an impact on policy-making in Europe and within EU countries, contributing to the promotion and improvement of youth opportunities in all European territories, as young people represent the future of our European community.

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Figures

Country specific effects of High Education to be Not in Employment, Education or Training (NEET) (EU LFS 2020) Data Centre, University of Vienna

Country specific effects of Higher Education on Job Skills (EU LFS 2020) Data Centre, University of Vienna

Country specific effects of low parental education on education attainment (EU LFS 2020) Data Centre, University of Vienna

Country specific effects of low parental education on the risk of being (EU LFS 2020) Data Centre, University of Vienna

Early Leavers Rate, 18-24 years (2021) by Early Leavers Rate, 18-24 years (2007), selected NUTS 2 Regions (EDAT_LFSE_16) https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_16/default/table?lang=en

Educational Attainment by ISCED levels (2014 vs. 2021) (EDAT_LFSE_04) https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_04/default/table?lang=EN

Educational Attainment, 25-34 years, ISCED 0-2 2021 by 2007 (EDAT_LFSE_04) https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_04/default/table?lang=EN

Educational Attainment, 25-34 years, ISCED 5-8 2021 by 2007 (EDAT_LFSE_04) https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_04/default/table?lang=EN

Effects (log Odds) on Early Leavers from Education and Training (ELET) (EU LFS 2020) Data Centre, University of Vienna

Effects (log odds) on the risk to be Not in Employment, Education or Training (NEET) (EU LFS 2020) Data Centre, University of Vienna

Effects on Educational Attainment (Skill-Level 1-4) (EU LFS 2020) Data Centre, University of Vienna

Effects on Job Skills (EU LFS 2020) Data Centre, University of Vienna

Employment Rate, 15-34 years old, ISCED 0-2, NUTS Regions (2007-2021) (EDAT_LFSE_33) https://ec.europa.eu/eurostat/databrowser/view/EDAT_LFSE_33/default/table?lang=en

Employment Rate, 15-34 years old, ISCED 5-8, NUTS Regions (2007-2021) (EDAT_LFSE_33) https://ec.europa.eu/eurostat/databrowser/view/EDAT_LFSE_33/default/table?lang=en

Employment Rate, 20-34 years old, ISCED Total, NUTS 2 Regions (2007-2021) (EDAT_LFSE_33)
https://ec.europa.eu/eurostat/databrowser/view/EDAT_LFSE_33/default/table?lang=en

Employment Rate, ISCED 0-2, 20-34 years by NEET Rate, 15-29 years (2021) (EDAT_LFSE_38 and EDAT_LFSE_33)
https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_38/default/table?lang=en

https://ec.europa.eu/eurostat/databrowser/view/EDAT_LFSE_33/default/table?lang=en

Employment Rate, ISCED 5-8, 20-34 years by NEET Rate, 15-29 years (2021) (EDAT_LFSE_38 and EDAT_LFSE_33)
https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_38/default/table?lang=en

https://ec.europa.eu/eurostat/databrowser/view/EDAT_LFSE_33/default/table?lang=en

Employment Rate, ISCED 5-8, 20-34 years by NEET Rate, 15-29 years (2007 vs. 2021) (EDAT_LFSE_38 and EDAT_LFSE_33)
https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_38/default/table?lang=en

https://ec.europa.eu/eurostat/databrowser/view/EDAT_LFSE_33/default/table?lang=en

Gender Percentage Point Differences (Female minus Male) of Employment Rates, 20-34 years by Educational Attainment, ISCED 5-8, 2021 (Reference Lines at 0=No Gender Gap) (EDAT_LFSE_38 and EDAT_LFSE_04)
https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_38/default/table?lang=en

https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_04/default/table?lang=EN

General government expenditure by function (COFOG), divergence from the EU27 average (GOV_10A_EXP)
https://ec.europa.eu/eurostat/databrowser/view/HRST_ST_RCAT__custom_6651047/default/table?lang=en

Groups of regions according to their Moving Average 2007–2019 (EU LFS and Regional Accounts) Eurostat Online Database

Groups of regions according to their Rate of Change 2007–2019 (EU LFS and Regional Accounts) Eurostat Online Database

NEET Rate 15-29 by GDP PPS (2007- 2021) (EDAT_LFSE_38 and NAMA_10R_2GDP)
https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_38/default/table?lang=en

https://ec.europa.eu/eurostat/databrowser/view/nama_10r_2gdp/default/table?lang=en

NEET Rate 15-29 years, NUTS 2 regions (EDAT_LFSE_38)
https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_38/default/table?lang=en

NEET Rate, 15-19 years by Sex (2021), NUTS 2 Regions (EDAT_LFSE_38)
https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_38/default/table?lang=en

NEET Rate, 15-29 years by GDP PPS (2021 (EDAT_LFSE_38 and NAMA_10R_2 GDP) https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_38/default/table?lang=en

https://ec.europa.eu/eurostat/databrowser/view/nama_10r_2gdp/default/table?lang=en

NEET Rate, 15-29 years, NUTS 2 Regions (2007 – 2021) (EDAT_LFSE_22) https://ec.europa.eu/eurostat/databrowser/view/EDAT_LFSE_22/default/table?lang=en

Regional Comparison of Early Leavers, 18-24 years old, 2007 vs. 2021 (EDAT_LFSE_16) https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_16/default/table?lang=en

Regional Distribution of Early Leavers, 18-24 years 2021 by 2007 (EDAT_LFSE_16) https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_16/default/table?lang=en

Regional GDP per inhabitant in PPS expressed as percentage of the EU average (set to equal 100) 2021 by 2007 (NAMA_10R_2GDP) https://ec.europa.eu/eurostat/databrowser/view/nama_10r_2gdp/default/table?lang=en

Regional Old Age Dependency Ratio in relation to the EU average 2021 by 2007 (EMO_R_PJANIND2) https://ec.europa.eu/eurostat/databrowser/view/DEMO_R_PJANIND2__custom_1446484/default/table?lang=en

Regional Variation of Early Leavers by Sex, 2021 (EDAT_LFSE_16) https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_16/default/table?lang=en

Annex 1 – Microdata exploration

Within educational research, the analysis of youth learning outcomes stands as an overarching objective. A very fundamental issue for this pursuit is the inherent methodological choice regarding the unit of analysis. Whilst generally many studies have traditionally favoured aggregated data, over the last three decades many efforts have been made to produce information about learning outcomes at different levels of aggregation including also individual data. Prominent among these initiatives are OECD´s international large-scale assessments for students (Programme for International Student Assessment, PISA) and adults (Programme for the International Assessment of Adult Competencies, PIAAC). This transition towards individual data has enabled scrutinizing the multifaceted landscape of youth learning.

There are several advantages of using individual-level data vs. aggregated data; one of the most important is to provide researchers with finer grained insights about specific characteristics. This mitigates the risk of the ecological fallacy (Firebaugh 2001; King 1997), which consists in making inferences based on the false assumption that relationships observed at one unit of aggregation hold true to another level. In fact, individual data proffer more detailed and precise information than aggregated data do by providing information on individuals as well as on groups dynamics. This depth information is extremely useful for conducting more sophisticated and nuanced analyses aiming at identifying patterns and trends that may not be visible at an aggregated data level.

However, individual data collection can be expensive and time-consuming to collect. Additionally, there are privacy and security risks associated with using individual data, as it sometimes involves handling personal information. Individual data provide, further, the opportunity for subgroup exploration and the possibility to capture more sophisticated and interrelated patterns. However, individual data are, in most cases, more difficult to obtain and more resource-intensive to analyse than aggregated data.

In contrast, aggregated data enables analysis of general trends and patterns across different levels of aggregation. For analysing learning outcomes, European regions provide a valuable level of aggregation for making comparisons, also considering data availability over the last two decades (Scandurra et al. 2020).

Still, it is important to recognize that EU regions do not entirely correspond to an administrative local authority within the division of power within member states. Another important limitation for producing regional indicators on using individual data for studying learning outcomes is the absence of complete information on the sample structure and territorial identification both in the European Union Statistics on Income and Living Conditions (EU-SILC) and the European Labour Force Survey (LFS), which are potentially the most adequate data sources for the research objective[xxii]. Almost a third of the EU regions in both surveys do not have complete territorial information, which raises issues of external validity of the results.

In an ideal scenario, researchers would aspire to understand learning outcomes and more broadly individual risks within the context they are produced at their finest level of disaggregation. While this principle has been underscored by many theorists in social sciences, it remains practically feasible only in selected cases and for specific territories.

Recent advancements in spatial analysis, economic geography and social science have opened the possibility to link via census contextual information on a redefined grid level. Statistical offices are pursuing this avenue and in a short medium term they promise to deliver the possibility to match and link information at a very fine-grained territorial information. This is one of the most promising and detailed way to explore interaction effects between individual and contextual factor(s). A compelling example is the degree of urbanization (Dijkstra et al 2020) that EUROSTAT has adopted, and several official statistics offices are discussing now. This application exemplifies the linkage of various data sources using several techniques concerning urbanization characteristics of a territory.

Describing, measuring, and comparing learning outcomes across European countries and regions present substantial conceptual and methodological challenges. The measures chosen in WP3 based on aggregated data enabled us to investigate inequalities in learning outcomes and regional opportunity structures by focusing on the interplay of education systems, labour market, socio-economic, demographic, and institutional contexts. The findings presented in the cross-national report revealed significant fragmentation across and within certain countries and provide strong arguments for a spatial justice perspective (Cefalo et al. 2023). They underscored, further, the importance of associating learning outcomes, like educational attainment, with economic geography and other related areas of inquiry (Massey 2005).

However, this kind of representation based on aggregated data cannot show how *spatial* contexts affect *individual* educational and labour market outcomes. Individual opportunities and risks result from the individual combination of socioeconomic characteristics. The most important characteristics in this context are those of social origin. However, how these characteristics influence individual opportunities and risks strongly depend on the cultural, social, economic, and political context. To understand this mechanism, it is crucial to consider the extent to which these spatial contexts moderate the processes underlying educational attainment and labour market opportunities. To achieve this and considering the limitations deriving from aggregated data, we decided to explore, as an additional task within WP3, the utilisation of microdata, i.e., data at the level of individuals, and include an additional analysis based on them. The deadline extension for WP3 provided us the necessary time resources to conduct an explorative analysis with microdata from EU LFS.

The integration of microdata in our analysis allows us to investigate opportunities and risks associated with the interactions between spatial contexts and individual characteristics (as defined above) and gather insights into the nuances of inequality

reproduction at the micro level. We focus on the interactions between country-level and individual-level characteristics based on the assumption that the education system is functionally embedded in a society's political, economic, social, and ultimately cultural system (Fend 2008). Educational attainment and labour market return to education heavily depend on the structure of the education system and its integration into different functional contexts (Bol & Van de Werfhorst 2013; Busemeyer & Trampusch 2012; Blossfeld et al. 2015). It is likely that these the properties of the functional systems and the embedding of the education system vary greatly at the country level, although there is scholarly research pointing out to the importance of sub-national context (Kazepov et al. 2022; Scandurra et al. 2021). The use of microdata enables a more in-depth description of the interrelationships between individual opportunities and risks on the one hand and the characteristics of country contexts on the other.

From a sociological point of view, the influence of parental education on the educational attainment of young adults is one of the most important characteristics as it can be used to assess intergenerational mobility, the fairness of the educational system and the reproduction of social inequality through education (Bourdieu & Passeron 1990; Carlarco 2014; Breen & Müller 2020; Blossfeld et al. 2019). Thus, we are first interested in the influence of parents' educational background on young adults' educational attainments and the extent to which this influence depends on the national contexts in which young adults live.

Further, we use microdata to explore how educational attainment translates into individual labour market returns and income opportunities. School-to-work transitions provide a good indication of how education and economy are interlinked. Again, the education and skill production system are assumed to be functionally embedded in economic and labour market structures, which are highly country specific (DeLange, Gesthuizen & Wolbers 2014). The focus is therefore on showing the extent to which the national context moderates the effects of (socioeconomically determined) individual characteristics, firstly, on educational outcomes and, secondly, on labour market opportunities. The former includes indicators on educational attainment and early leaving from education and training (ELET), the latter indicators on NEET rate (not in employment, education, or training) and job skills.

To examine the interactions between individual socioeconomically determined educational and labour market opportunities and country-specific contexts, data from the 2020 Labor Force Survey (EU-LFS) were used. This is the most current data set containing all information necessary for the analysis with one (major) limitation: the data collection and, subsequently, the observations are influenced by the Covid-19 pandemic. Since age is stored in intervals of 5 years in the Scientific Use File of the EU-LFS, our sample includes young adults between the ages of 20 and 34. The information needed for the analysis is not available for all countries in the EU LFS. Information on parents' educational backgrounds is missing in 8 countries (Switzerland, Denmark, Finland, Iceland,

Luxembourg, Norway, Sweden and the United Kingdom). We do not limit the analysis to the 8 CLEAR countries as we assume that the observable differences and their underlying mechanisms are generic. Accordingly, the analytic sample comprises 23 countries, including the 8 CLEAR countries except for Finland. Since the reliability of educational attainment classifications is often problematic in international comparisons (Ortmanns & Schneider 2016), we combined the ISCED (2011) classification into a four-level classification: basic education=ISCED Level <=1; secondary education=ISCED Level 2, 3, 4; post-secondary and tertiary education= ISCED 5; higher education= ISCED Level 6, 7 ,8. This combined classification also corresponds with the skill levels classification of the International Standard Classification of Occupations (ISCO) indicating what level of qualification a person must have in order to perform a certain occupational activity (International Labor Organization, 2023). We will use this comparability to examine the impact of educational attainment on labour market outcomes.

To estimate the effects of individual socioeconomic characteristics and their interaction with the country level, we use multilevel analyses. For this purpose, error terms are included in the estimation for the country-specific means of the outcomes (educational attainment and labour market outcomes) as well as for the individual factors explaining the outcomes. We used the empirical Bayes method to calculate the country specific effects.

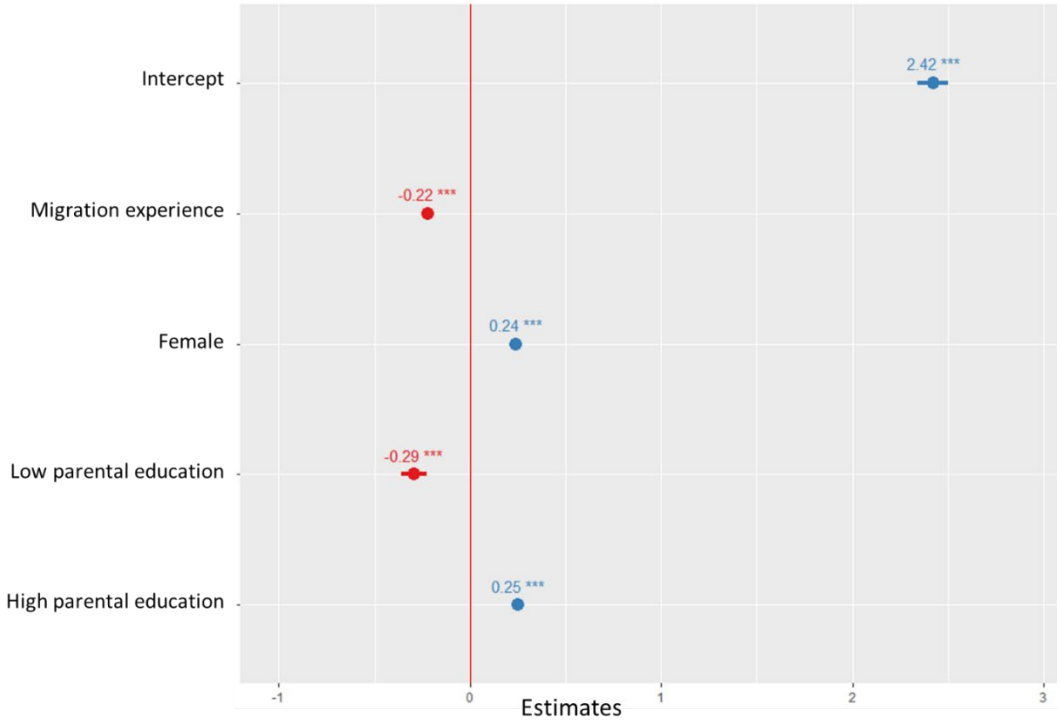
Learning outcomes – Educational attainment

In a first step, we used microdata from the EU-LFS (2020) covering 23 countries to investigate the average impact of various individual characteristics such as gender, migration background, and parental educational attainment on the educational attainment of young adults. Initially, the focus is only on these individual characteristics, regardless of the country in which young people live.

To study the country specific effect of parental educational attainment on the educational attainment of young adults, then a country-specific error term was integrated into the model. The results of this model allow us to assess the strength of the relationship between parental educational attainment and young adults' educational attainment depending on country contexts and the strength of this effect in single countries.

To do so, we estimated first the average impact of gender, migration experience, and parental educational attainment on young adults' (aged between 20 and 34 years) educational attainment (combined four-level educational attainment classification) in all 23 European countries (N=142.343). Figure 25 shows the influence of these factors. Controlling for migration experience and parental educational attainment, the average level of educational attainment (levels 1-4) of women in Europe is 2.66, about 0.24 (p=.000) points higher than that of young men. The difference is highly significant.

Figure 25. Effects on Educational Attainment (Skill-Level 1-4)



Source: Own calculation, EU-LFS 2020

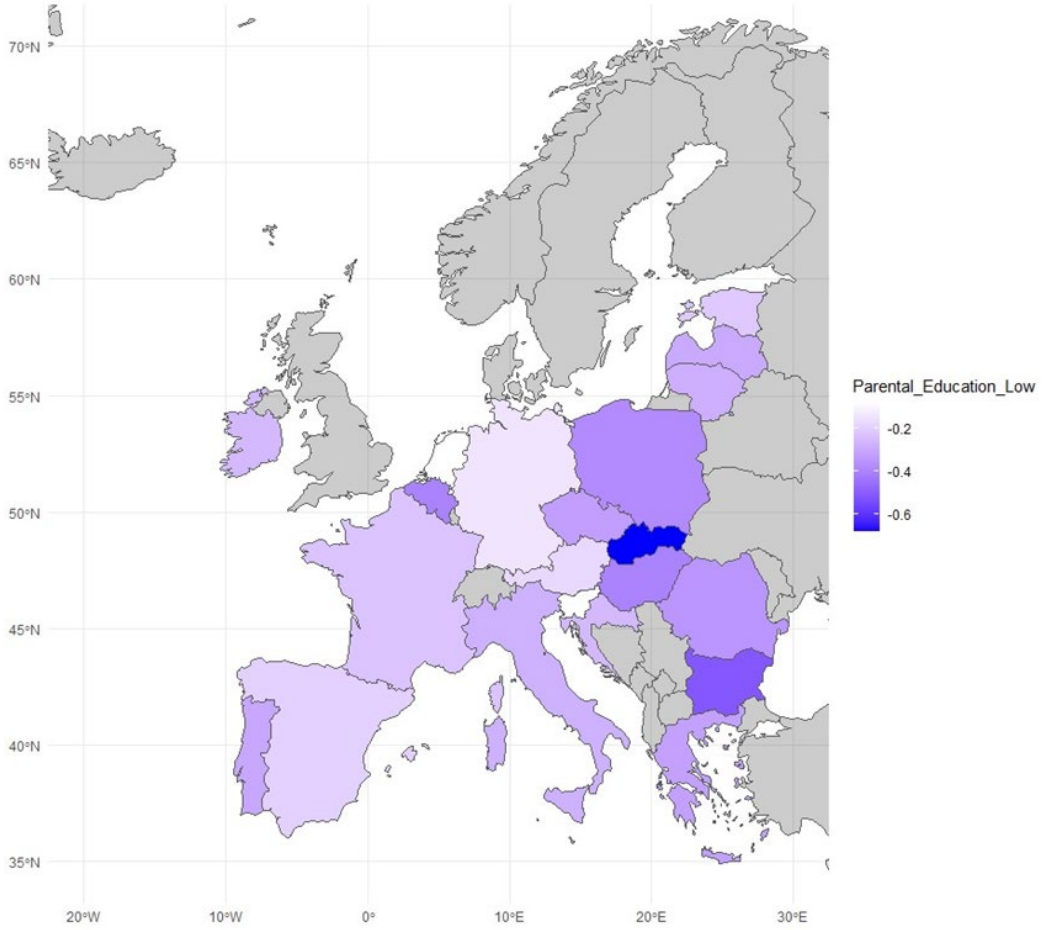
Migration experience (born in a country other than the current country of residence) has a negative impact on average educational attainment. Controlling for gender and parental educational attainment, the average level of educational attainment (levels 1-4) of young adults with migration experience is on average 0.22 (p=.000) points lower than for residents without migration experience across the 23 European countries. The difference is highly significant. The fact that migration in the first generation has a negative impact on educational attainment may have several reasons. Possible reasons might be lower language skills, disadvantages in the education system, problems with the recognition of prior learning and foreign degrees or may lie in the fact that migration to Europe is on average not high skilled immigration.

Of particular interest is the impact of parental educational attainment on young adults' educational attainment. Parental educational attainment is captured in the LFS in a three-level scale (low= ISCED 0-2, medium=ISCED 3-4, high= ISCED 5-8). We estimated this influence in the model for parents with low education and high education; the medium level is the respective reference. The impact of low parental educational attainment on the educational opportunities of young adults is an important indicator of the reproduction of social inequality through education, the selectivity of the education system, intergenerational social mobility, and opportunities for advancement through education. Figure 25 clearly shows that the average influence of low educated parents on the educational attainment of young adults in Europe is remarkable.

Moreover, the reference value here is medium-educated parents, not highly educated parents. Controlling for gender and migration experience, the average skill level (1-4)

decreases by 0.29 (p=.000) compared to young adults with medium educated parents. The effect is highly significant. In contrast, the average skill level of young adults (on the scale of 1 to 4) whose parents have a high level of education is 0.25 (p=.000) points higher than that of the reference group. This effect is highly significant, too.

Figure 26. Country specific effects of low parental education on education attainment



Source: Own calculation, EU-LFS 2020

The high significance of parental educational attainment on educational attainment is further evidence on the reproduction of social inequality through education. The education system is functionally embedded in a society's political, economic, social, and cultural system (Fend 2008), and these aspects usually differ at the country level. We calculate the country-specific effects of parental educational attainment as described above. These coefficients indicate the size of the effect of parental educational attainment on the educational attainment of young adults in a country (Figure 26). As described above, the average effect of low parental educational attainment on young adults' educational attainment in Europe is -0.29 on a scale of 1-4. This relationship is negative in every European country; however, it varies between -0.08 in the Netherlands and -0.68 in Slovakia. In Bulgaria, too, the correlation between parental education levels and educational attainment is very close (-0.51). Although Bulgaria did not stand out in the cross-national report in terms of educational attainment (cf. CNR p. 17), there are particular risks for young adults whose parents have low levels of education. The reasons

for the remarkable disparities across countries may be many. Low educated parents often have low income and, thus, fewer resources (e.g., for additional learning opportunities or a stimulating learning environment), which, in turn, reduce children's opportunities (Boudon 1974). It then depends on whether the state compensates for such disadvantages by investing in the education and welfare system. It is striking that especially in the Dependend Market Economies of Eastern and Central Europe, where spending on the welfare state and education tends to be low (Nölke & Vliegenthart, 2009), the relationship between parents' educational attainment and children's educational opportunities is also so close. This suggests that the lack of welfare state and educational policy compensation leads to an unbounded correlation between parents' education and their children's educational opportunities. However, whether this is a good explanatory approach or whether other country-specific factors such as culture play a role is a question for further research.

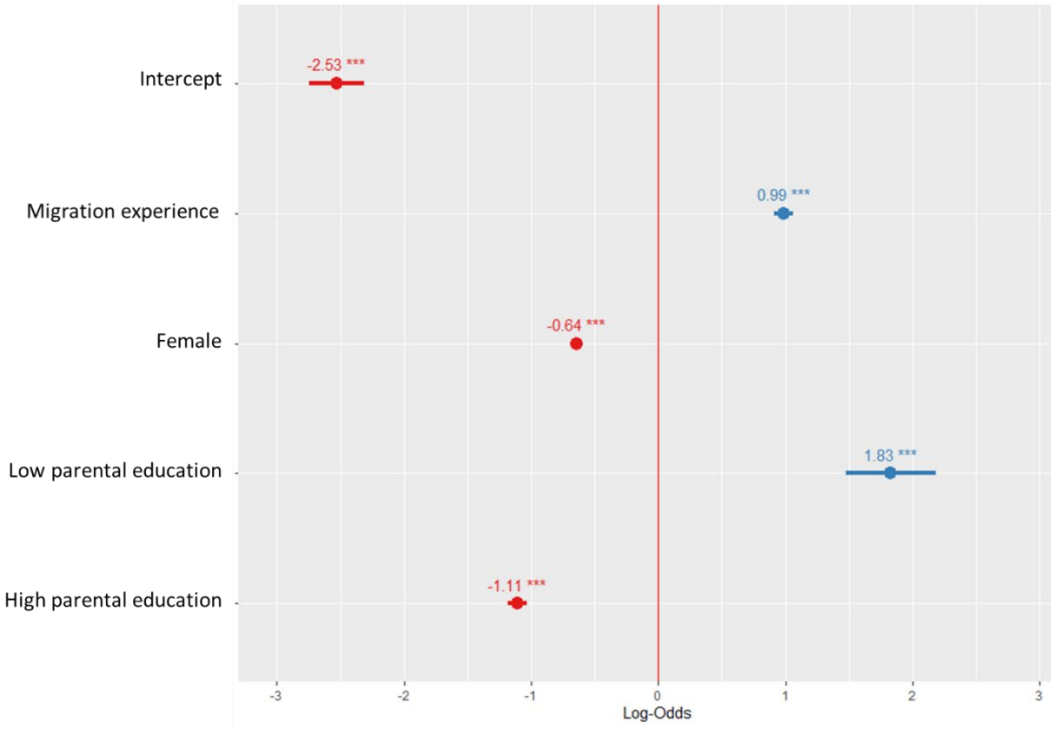
Learning outcomes – Early leavers from education and training (ELET)

The findings of the cross-national report revealed that although the share of early school leavers has been shrinking in the last decade, still, there are substantial differences across countries and regions. We assume that the risk of being an early leaver from education and training (ELET) depends strongly on the interaction between individual, socioeconomically determined characteristics, and country level features and lead to specific risks for young adults. As with educational attainment, it is assumed that parental education is instrumental in determining young adults' risk of being an early school leaver. The influence of parental educational attainment on the risk of early school leaving can be seen as another specific mechanism of the reproduction of social inequality. Since most dropouts mostly occur at transition points of the educational system (Scharf et al 2020), the indicator on early school leaving provides hints on the structure of the educational system as well as on state interventions towards selectivity at the transition points. We estimate the effects with a logistic multilevel model by inserting a country-specific error term for the intercept and the effect of parental education. In addition, we control for migration experience and gender.

Figure 27 shows the effects of migration experience, gender, and parental educational attainment on the probability of being an early school leaver in Europe (23 countries, N= 142.312). The effects shown in Figure 27 are log odds. In the following, for easing the interpretation, the log odds coefficient is converted into simple probabilities (average marginal effects). As already shown above, migration experience is an important factor on the micro level when examining educational opportunities. Young adult first-generation migrants are 7% more likely of being early school leavers compared to natives. Women are on average 5% less likely of being ELET than men of the same age group. The average probability of being an early school leaver increases by over 13% (p=.000) for young adults whose parents have a low level of education. For young adults with high parental educational background, this average probability decreases by about 8%

(p=.000) (reference are young adults with medium level educated parents). All values are highly significant. The negative influence is apparently particularly strong.

Figure 27. Effects (log Odds) on Early Leavers from Education and Training (ELET)



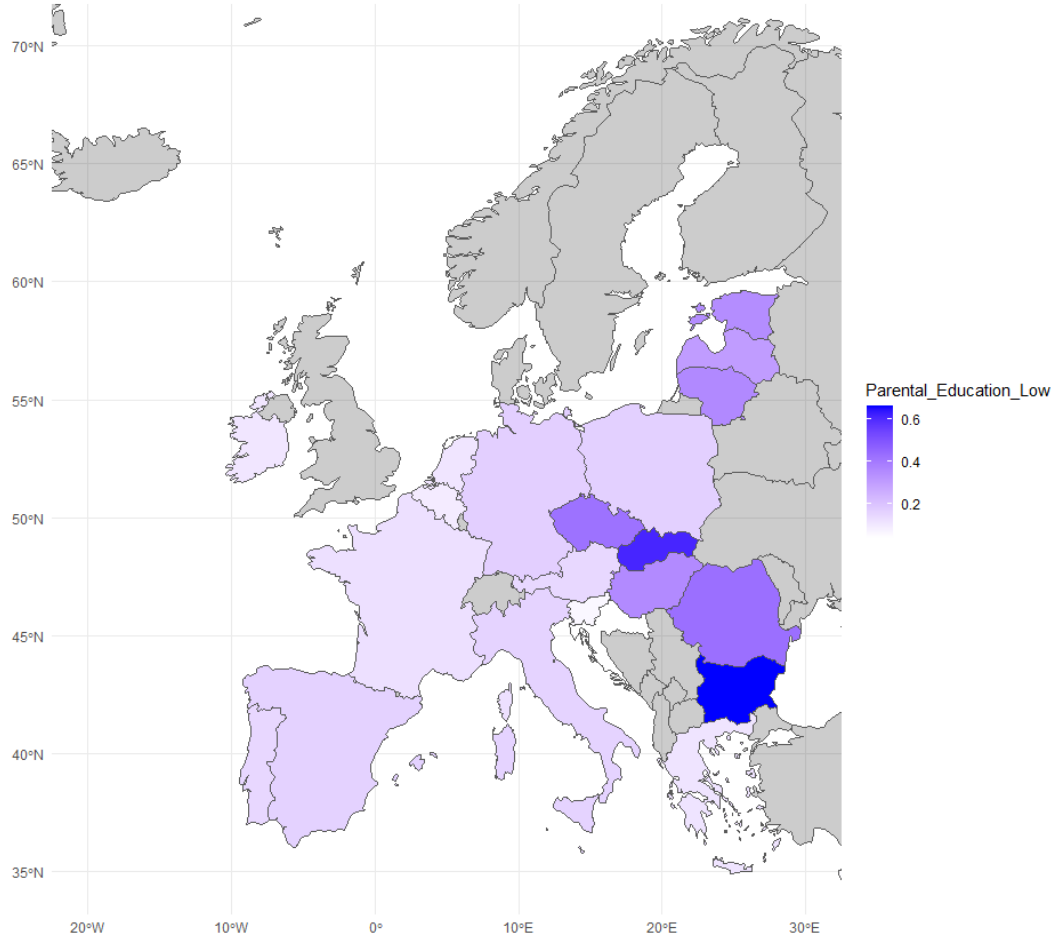
Source: Own calculation, EU-LFS 2020

More interesting than the average effects in Europe are the country-specific effects. Figure 28 shows the country-specific effects of low parental education on the probability of being an early school leaver. We control for migration experience and gender. As shown in Figure 27, the effect of low parental education on the risks of being an early school leaver is relatively heterogeneous. This suggests that there are correspondingly large differences for specific groups. The figure shows that there are significant differences in this effect across the 23 European countries. The cross-country comparative report showed that almost all 8 CLEAR countries had succeeded in significantly reducing the rate of ELET. Overall, the rates are below 15% in all countries in 2021 (cf. CNR p.23). The EU's target of achieving an overall rate below 10% is therefore within realistic reach. Nevertheless, there are clear differences between countries when examining the degree to which the individual risk of being an ELET depends on social background.

Cross-country differences are significant. Again, it is the Eastern European countries (apart from Poland) where the link between parental education and the educational opportunities of their children is particularly close. The probability of being an early school leaver increases by 63% in Bulgaria if the parents have only a low level of education. In Slovakia, this probability increases by 58%. In contrast, the risk of young adults becoming early school leavers in Croatia increases by only 3.3% if the parents have only a low level of education. Apparently, these differences cannot be independent from country-specific educational and social policies and efforts to compensate such disadvantageous effects

of origin through targeted interventions. These differences are more pronounced at the interfaces and transitions in the education system than in educational attainment because this is where the greatest selectivity takes place. The extent to which public education and social spending moderates the reproduction of educational inequality is a question for further research. The question on the significance of regional contexts on the connection between parental education and the risks of being an ELET is a further desideratum.

Figure 28. Country specific effects of low parental education on the risk of being ELET



Source: Own calculation, EU-LFS 2020

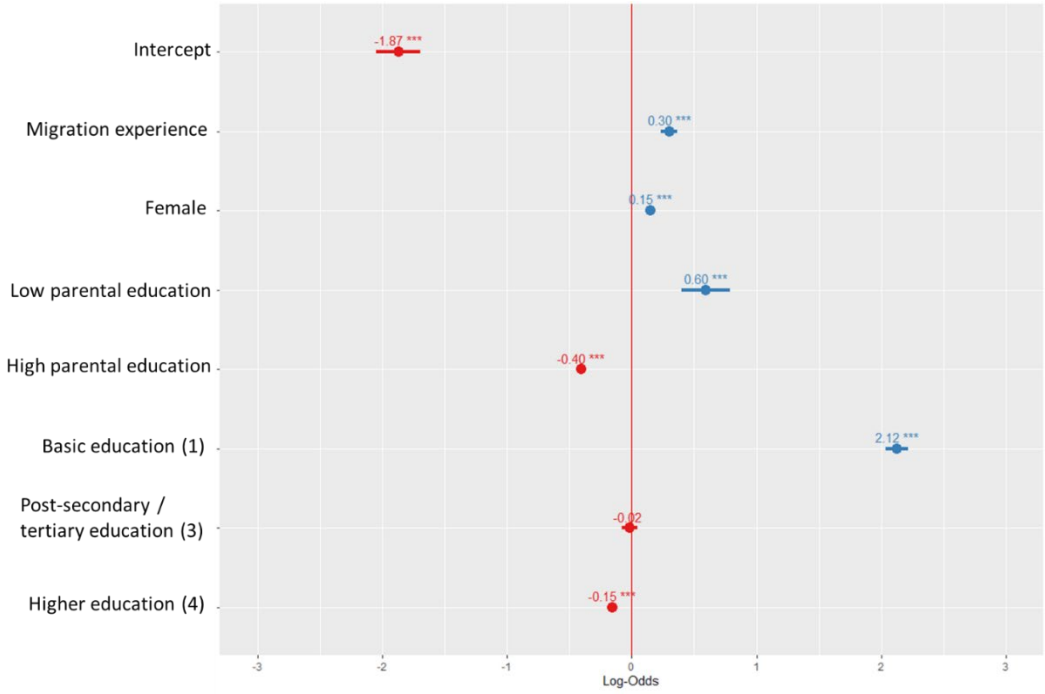
Labour market outcomes – Not in employment, education or training (NEET)

In addition to educational outcomes, labour market outcomes of education are particularly important. Following assumptions of human capital theory (Becker 1976), educational decisions are investments in one's own productivity with the aim of achieving advantages on the labour market and higher earnings. From the perspective of signalling theory (Spence 2002), educational qualifications are an important and crucial signal to employers that applicants have the skills and the ability to achieve high productivity. Education should accordingly result in significant returns on the labour market. These returns are crucial for educational biographies because educational decisions and motivation to learn depend, among other reasons, on the expected benefits and returns

(Eccles 2005). We assume that transitions to the labour market, the chance to find an appropriate job and to earn an adequate income depend on the embeddedness of the education system in the economic and production system and the labour market structures. An important indicator for education-to-work transitions is the rate of young adults who are not in employment, education, or training (NEET). We are interested in how and to what extent this relationship is moderated by country context.

First, we estimated a multilevel model (N= 142.312) across all 23 countries in the EU-LFS (Figure 29).

Figure 29. Effects (log odds) on the risk to be Not in Employment, Education or Training (NEET)



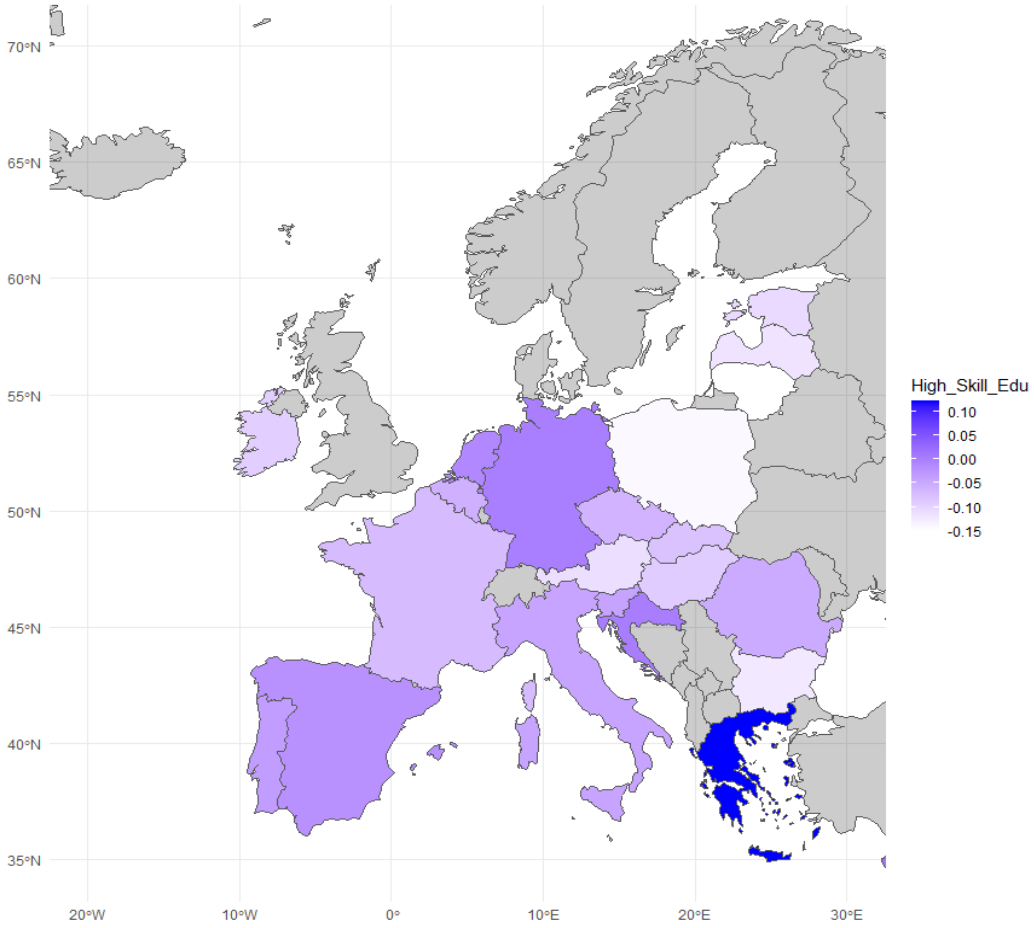
Source: Own calculation, EU-LFS 2020

Concretely, we estimated the influence of migration experience, gender, parents' educational attainment, and (4-level scale) educational attainment on the probability of young adults being a NEET (logistic regression). In order to describe the results presented in a more comprehensible way, we convert the log odds into probabilities (average marginal effects). For migrants, the probability of being a NEET is around 4% (p=.000) higher than for non-migrants. For women, the probability is 2% higher than for men (p=.000). Obviously, women's advantages in educational attainment do not translate into labour market outcomes. Particularly surprising is the fact that even when controlling for the educational attainment of a young adult, his transition to the labour market strongly depends on the educational background of his parents. Youth from parents with low educational attainment are 8% more likely of being a NEET compared to those whose parents have a medium level education. However, we find the clearest effects with respect to educational attainment. Young adults with only basic education (level 1 of 4) are 28% (p=.000) more likely to be NEET than young adults with secondary or upper secondary

education (ISCED levels 2, 3, 4), which is the reference here. Young adults with upper post-secondary education (ISCED 5) have no significantly different risk relative to young adults in the reference group. Young adults with tertiary education or higher (ISCED levels 6,7,8) have a significantly lower probability of being NEET, -2% (p=.000).

Figure 30 shows to what extent the risk of being a NEET is reduced by high educational attainment based on data from 23 European countries.

Figure 30. Country specific effects of High Education to be Not in Employment, Education or Training (NEET)



Source: Own calculation, EU-LFS 2020

It can be assumed that the average negative effect of higher education on the probability of being a NEET is not the same in every country. As figure 30 shows, high education has a negative effect on the risk of being a NEET in most countries. This risk is mostly reduced in the Baltic countries (-15% in Lithuania, -12% in Latvia) and in Poland (-14%). Surprisingly, we found a significantly increased risk in Greece of being a NEET among young adults with a high level of education. Contrary to the trend in other European countries, young adults with higher education in Greece have a higher risk of being a NEET than young adults with secondary education (increase by 12%). The cross-national report has also shown that a higher NEET rate can be observed in Greece. However, this was also observed in Italy and Bulgaria (cf. CNR p.30). Especially in Greece, however, the individual risk of not being in employment, education or training seems to affect academics in particular. This finding

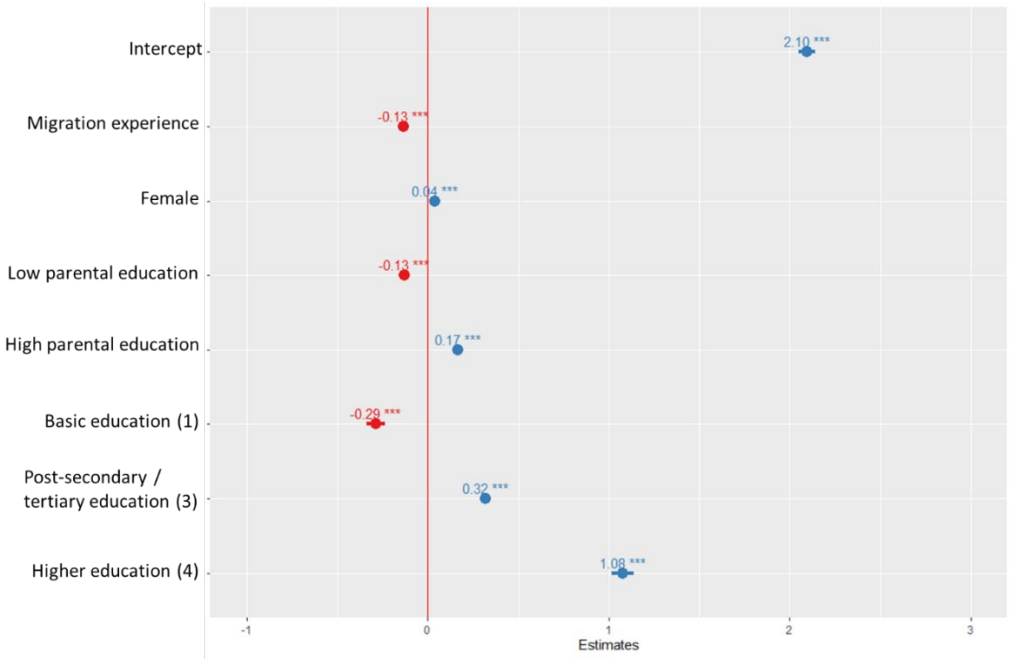
might reflect structural problems of the Greek labour market (skills mismatches, lack of jobs for academics, lack of job demand in general, low wages even for high qualified). In view of these labour market returns, the economic incentives to take up higher education are low.

Labour market outcomes – Job skills

Entering the workforce is a high-risk transition point in the life course of young adults. Unemployment is a risk; another risk is not being able to enter a profession that matches one's qualifications. As described above (p. 3), we have combined the ISCED scale into a 4-level scale corresponding to the 4 skill levels of the ISCO scale. The latter indicate the level of qualification a person must have in order to be able to perform an occupation. This allows us to make a direct comparison between educational attainment and the skill level of the job. This indicator is not described in the cross-national report. Nevertheless, it seems important to consider not only whether young adults succeed in taking up employment, but also whether they succeed in taking up an occupation that corresponds to their education. This is an important starting point for a career.

Figure 31 shows the effects of migration experience, gender, parental education, and educational attainment (4-level scale) on the skills needed for the job (4-level scale) in the 23 European countries observed (N= 142.312).

Figure 31. Effects on Job Skills

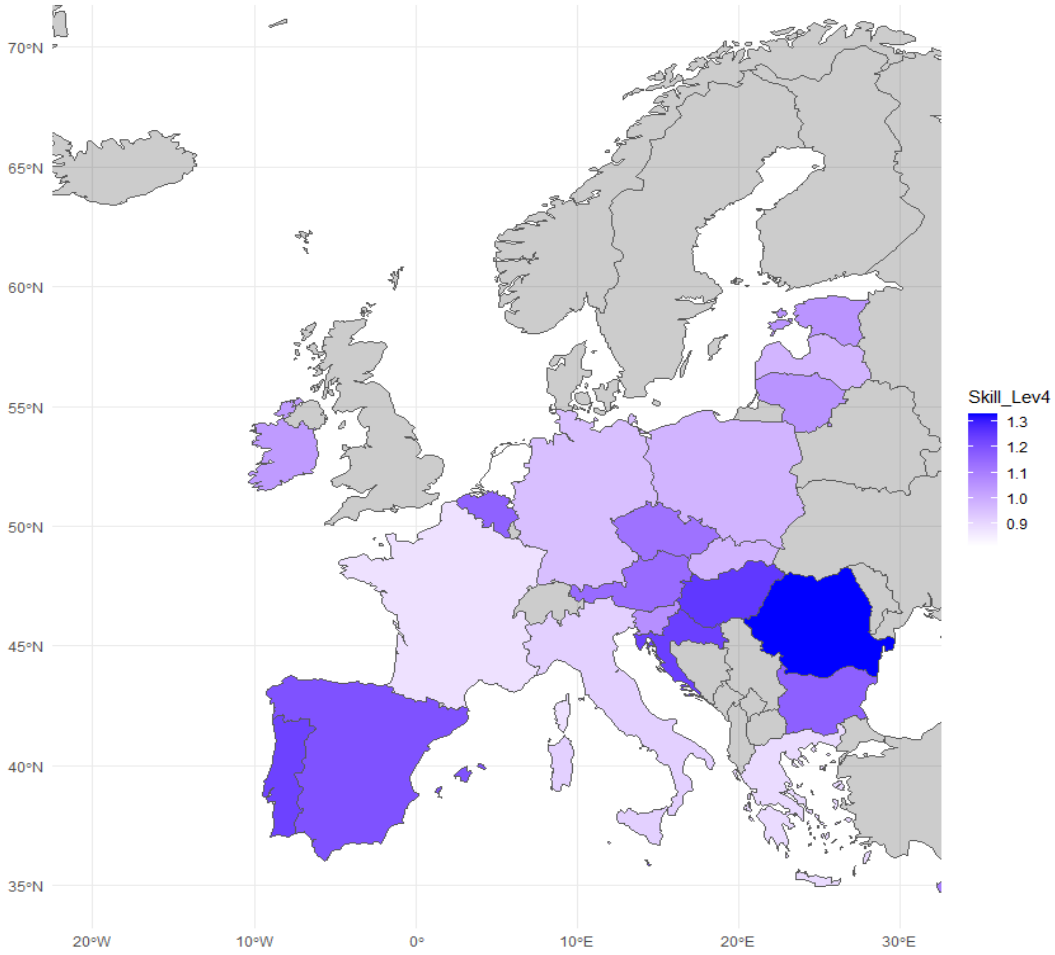


Source: Own calculation, EU-LFS 2020

Accordingly, only young adults who are in employment are considered. Migration experience reduces the skill level of the job by 0.13 points (p=.000) when controlling for educational attainment. Women have small but still significant advantages under the same conditions (0.04; p=.000). We found significant effects of parental education on job skills, even when controlling for young adults' educational attainment. The job skills of

young adults whose parents have higher education is 0.17 (p=.000) points higher. However, the educational attainment of young adults is crucial. The relationship between levels of educational attainment and job skill levels is very close. The job skill level of a young adult with higher education is 1.08 (p=.000) higher than that of young adults with only secondary education (level 2 of 4). Young male adults born in the country and with medium level educated parents have an average job skill level of 3.18 if they have a higher educational attainment (level 4). It seems that the interaction between education system and labour market works, in general, rather well in this respect. However, it can be assumed that this link doesn't function in the same way in every country in Europe. Again, we examine the country- specific effect of higher education on job skills to find out in which countries high investment in education pays off more and in which it pays off less. As shown in Figure 31, the average effect of higher education on job skills in Europe is 1.08 compared to secondary education. Figure 32 shows how this effect is pronounced in the individual countries.

Figure 32. Country specific effects of Higher Education on Job Skills



Source: Own calculation, EU-LFS 2020

As the figure shows, the effects are positive in all countries and relatively close to 1. The benefits of higher education in the form of highly skilled work are highest in Romania (1.33). Young adults (with a job) also have more demanding employment in Hungary,

Croatia, Portugal, and Spain. Young adults with higher education who succeed in entering the labour market, they also have higher-skilled jobs in these countries. This indicates that the allocation of human capital and labour demand is working well in these countries.

Summary

The microdata analysis undertaken in this part had an explorative character and it is at the very beginning. Starting from the findings in the cross-national report which revealed significant fragmentation across and within certain countries and underlined the importance of associating learning outcomes with both individual and country specific characteristics, we focused on the question on how national contexts affect individual educational attainment and labour market outcomes. The findings in this section challenge our preliminary assumptions on the importance of regional contexts of opportunities on learning outcomes and generate further research questions, which we will address in further research. Moreover, they reveal that research on learning outcomes, in terms of educational and labour market outcomes, must consider multiple risk factors which intersect, starting from - socioeconomically determined - individual characteristics and regional specificities to the institutional configurations of the education and training system, the labour market, and the welfare state. To adequately address the complexity of the issues identified above, emphasis should be put in place to encompass different disciplinary and theoretical perspectives and multiple level of analysis, and develop a methodology which integrates the different perspectives into an integrated methodological design (Scandurra et al. 2022).

[i] GDP PPS per Capita 2001 by 2007.html

[ii] This was done by transforming the GDP values for both years into a logarithmic form, which allows for a proportional interpretation of changes and is commonly used in economic growth analysis. The elasticity was then derived by subtracting the log-transformed GDP of 2007 from that of 2021, and dividing the result by the 14 years. This calculation yields an annualized rate of change in the logged GDP, representing the compounded yearly growth rate.

[iii] Old Age Dependency 2021 by 2007.html

[iv] From 2014 onwards, more nuanced data on ISCED 3-4, which now distinguishes between general and vocational secondary attainment, have been available.

[v] The timeframe is restricted to 2014 – 2021 because of many missing cases before 2014.

[vi] The analysis was not weighted by regional population sizes to focus on the variation across regions as entities.

[vii] EDATT ISCED 0-2 2021 by 2007.html

[viii] EDATT ISCED5-8 2021 by 2007.html

ix From a statistical standpoint, Portugal's homogeneity has to be taken with a grain of salt as data was only available for three regions in 2021.

x 
ELET 2021 by ELET 2007.html

xi 
NEET 2021 by NEET 2007.html

xii 
NEET Rate by GDP PPS % 2021.html

xiii 
NEET Rate by GDP PPS Capita (selected r

xiv 
EMPRATE 2021 by EMPRATE 2007.html

xv 
EMPRATE 2021 by EMPRATE 2007 (ISCED

xvi 
EMPRATE 2021 by EMPRATE 2007 (ISCED

xvii 
EMPRATE ED02 by NEET 2021.html

xviii 
EMPRATE ED58 by NEET 2021.html

xix 
emp rate, ed5-8 by neet rate 2007-2021.h

xx 
EMP RATE by EDATT, ISCED 5-8 (Gender Ga

xxi https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Human_resources_in_science_and_technology#Regional_characteristics_of_people_in_science_and_technology_occupations

xxii PISA and PIAAC are not considered adequate sources for the objectives of the CLEAR project: PISA assesses students of 15 years old, which is an age range outside the target of the CLEAR project; PIAAC doesn't cover all CLEAR countries, moreover, the fieldwork was conducted in 2012 for some countries (first round) and 2014 for other countries (second round), thus, data are not comparable over this time period.