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# School to work outcomes during the Great Recession, is the regional scale relevant for young people's life chances?

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## ABSTRACT

The debate on territorial cohesion and spatial inequality recognises the role and influence different scales have on individuals' opportunities with extended effects especially for young people's life chances. In particular, a regional perspective into territorial disparities of socio-economic conditions and welfare in Europe provides a more fine-grained view on the existence of territorially diverging income and labour market conditions for youth that a national level analysis is not able to grasp. This paper focus on regional differences in school to work outcomes of young people using macro-panel data covering the period from 2005 until 2016. We use a plurality of indicators to study to what extent school to work transitions are better studied at regional level and to characterise those transitions in a more comprehensive way. Our findings demonstrate that there are huge differences both in the level and in the dispersion of young people's school to work outcomes across European territories. This tells us that the allegedly assumed national homogeneity of transition systems can definitely not be taken for granted. Moreover, we show that the Great Recession had strong but differentiated impacts at regional level.

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## KEYWORDS

Regional disparities; EU; Great Recession; NEET; youth unemployment; school-to-work transition

## Introduction

Young people entering the labour market are exposed to increasing uncertainties such as higher unemployment risks and precarious and atypical forms of employment than prime-age workers (De Lange et al. 2014; Blossfeld et al. 2014). These trends – characterising all advanced capitalist economies – have been exacerbated by the 2008 Great Recession (GR), raising concerns on young people as vulnerable outsiders in the labour market (Piopiunik and Ryan 2012). In this scenario, several EU interventions, like the Youth Guarantee, the European Alliance for Apprenticeships and the Juncker Plan, aimed at improving the position of young people in European labour markets.

Despite common trends, different institutional arrangements and forms of economic downturn can help explain the impact the GR had across national contexts (Eichhorst et al. 2010). These variations also contribute to produce differences in youth unemployment

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patterns both in terms of their magnitude and in labour market participation (Caroleo et al. 2017). Comparative research on school-to-work transitions mainly focused on institutional differentiation of national transition and labour market systems and on the way they shape youth labour market outcomes and life courses (Wolbers 2014; Tamesberger 2017). So far, the field has been dominated by a form of methodological nationalism assuming nation states as homogeneous objects of comparison (Raffe 2014). Less attention has been devoted to the impact of territorial variations among sub-national jurisdictions on the processes and outcomes of transitions.

However, cross-regional differences are remarkably high in Europe, and pertain to many dimensions, including per capita income, labour force participation, the distribution of skills and returns to education (Storper 2018; Dijkstra 2017). As far as young people are concerned, available evidence stressed relevant regional differences in the concentration of youth unemployment and NEET rates (Bruno et al. 2014; Möller 2017) and, more generally, in young adults' living conditions and structures of opportunities (Roberts 2009; Furlong et al. 1996).

In this contribution, we advance on the above-mentioned studies by analysing regional outcomes of school to work transitions, before and after the GR. We give account of variations within countries, challenging the unproblematic acceptance of the nation state as unit of analysis in school-to-work transition research (Raffe 2008). Our results show that the internal homogeneity of transitions systems cannot be taken for granted, due to relevant differences in outcomes and in the impact of the GR not only among but also within countries (Scandurra et al. 2020). By doing this, we argue in favour of a place-based approach tailored to local conditions, within a frame of calibrated active subsidiarity (Kazepov 2010), in order to address regional disparities in opportunities for young people, that are likely to re-produce and even increase inequalities.

We argue that the complementarities between regional institutional configurations and contextual socio-economic conditions have a crucial impact on school-to-work transitions, with extended effects on young people's life chances.

Considering this, we use European regions as unit of analysis in order to investigate contextualised evidence of multiple dimensions related to the outcomes of school-to-work transitions of young people. We address three main questions: (1) is the regional context relevant in shaping such outcomes? (2) How did the regional outcomes of school-to-work transitions change before and after the economic crisis? (3) What is the effect of economic conditions and transition regimes on the stability or change of transitions outcomes of young adults? Our focus is the variation of school-to-work transitions at regional level and over time, as well as the impact of socio-economic contexts and transition regimes. We do not investigate primarily the specific impact of institutional and policy determinants, since we consider school-to-work outcomes as the result, potentially varying over time, of complex interactions among socio-economic conditions, institutions and regional specificities. By doing this, we shed light on the relevance of the regional dimension in the outcomes of transitions, which we deem as underestimated in school-to-work research. Nevertheless, we are aware of the importance of different jurisdictions, specific institutions and policies. In our view, the disentanglement of this complexity builds on the foundations laid down in this paper and represents a path for future research.

In order to address these issues, the paper is divided into four sections. In section 1, we review the debate on school-to-work transition and argue that the regional scale was so far

neglected in empirical research, while it has a relevant role in shaping them. In section 2, we expand on our understanding of school-to-work transitions' outcomes and present the indicators of labour market access, stability and exclusion we used in the analysis. Section 3 focuses on the interaction at regional level between education, labour market and socio-economic indicators. We elaborate on changes in the outcomes of transitions in Europe in the last 10 years by combining indicators' trends. Then, we use persistence models (Blanden et al. 2007) for exploring change in school-to-work transition outcomes in European regions over the period, according to economic conditions. Further, we use a multi-level growth curve model to consider different regional patterns of school-to-work transitions. Section 4 draws some conclusions.

### **Labour market outcomes of young people: the relevance of the regional level**

In contemporary societies, young individuals face strong uncertainties in the transition to adulthood and labour market entry, as well as in the phase of family formation, so that they have been labelled as the 'losers' of globalisation processes (Buchholz et al. 2009). They often have to deal with complex vulnerabilities at the intersection of multiple risk factors, including the economic context of globalisation and demographic change; the institutional structure involving the education system, the labour market and the welfare state. The result is a life course often characterised by uncertain access to material resources and by the fragility of family and social networks (Blossfeld and Hofäcker 2014; Walther 2017).

Difficulties experienced in the transition from education to employment are usually deemed as particularly relevant in this regard. The transition from school to work refers to the life span between the end of individuals' enrolment in initial education and training and their stable settlement in the labour market (Wolbers 2014). Qualifications attained in education or training represent an important aspect influencing the distribution of school-leavers to jobs. The first phases of access and initial labour market positioning have a determinant impact on the subsequent working career, also in the long run (Barone and Schizzerotto 2011). Therefore, school-to-work transitions leading to labour market entry should be seen as both a risk and an opportunity for young people, resulting from the interaction between structuring characteristics (family backgrounds, education and labour market processes) within which young people reflexively make successive choices (Roberts 2009).

In the literature on labour market participation and inequalities, young people are often considered as outsiders and vulnerable (Lindbeck and Snower 2001). A group characterised by disadvantaged conditions and less opportunities with respect to other groups of insiders, for instance, middle-aged males with a permanent working position. They are usually exposed to above-average turnover rates between jobs and face higher risks of unemployment (Piopiunik and Ryan 2012). Many factors conspire in the difficulties experienced by young adults' in accessing employment. First, the on-going flexibilisation of the labour market brings about the spread of temporary and non-standard work arrangements (as opposed to a standard working relationship based on full time and permanent contract). This has increased the risk of being trapped in low-income and precarious dead-end jobs, with negative long-term effects on individual working biographies

and future pensions. Second, tertiarisation and the expansion of knowledge-intensive economic sectors imply a stronger disadvantage for low-educated people possessing low or obsolete skills, who mostly end up being unemployed or employed in the low value-added service sector (Bonoli 2012). One could object that younger generations are on average better educated than older cohorts are. However, and here we come to the third factor implied, when caught in the school-to-work transition phase they often lack job experience requested by employers (Pastore 2015). Ryan (2008) describes this paradoxical disadvantage as a double skill bias, as it refers both to low skills and to the lack of job-related and soft skills that can only be fully developed through work experience. Consequently, a stable employment is quite hard to reach for young labour market entrants.

In addition to long-time trends of youth labour market making more difficult the transition from school-to-work, research shows that youth unemployment is particularly sensitive to economic fluctuation, due to insider/outsider and last-in/ first-out dynamics (Möller 2017). Despite educational expansion, the onset of the economic crisis generally had adverse effects on youth labour market outcomes, with strong increases of youth unemployment and precarisation (Botrić and Tomić 2017; Coppola and O'Higgins 2016). In turn, this raised growing concerns on the shadows cast by 'scarring effects' on employment careers, and on the existence of a 'lost generation' of young people (ILO 2013). However, it is well recognised that the impact of the crisis on youth labour market and school-to-work transitions' outcomes varied across countries as a reflection of country-specific institutional and structural factors mediating the response to cyclical crises and long-term common trends (Piopiunik and Ryan 2012; De Lange et al. 2014).

Research on school-to-work transitions recently took a comparative turn, recognising and addressing the analysis of cross-national differences shaping processes and outcomes of transitions. This research strand often focused on the comparison of national transition systems (Pastore 2015), understood as features of countries' institutional arrangements that shape transitions from education to work. Scholars look at the complementary features of institutional and structural arrangements that filter long-term structural trends and shorter-term cyclical variations affecting the bridge from education to work (Smyth et al. 2001). Along a similar line, research on youth labour market identified labour market regimes (Tamesberger 2017; O'Higgins 2015), suggesting that complementarities between labour market institutions contribute to explain cross-national variation in youth labour market outcomes (O'Higgins and Pica 2017). Hadjivassiliou et al. (2016) stress that institutional factors interact in complex ways, constituting configurations with own underlying logic and design. These youth transitions regimes operate at the macro-level in shaping outcomes for young people in the passage from education to the labour market. Following Pohl and Walther's (2007) and Walther's (2017) classification, the authors use institutional analysis to assess the performance of countries belonging to different clusters (regimes). The *universalistic regime* (DK, FI, SE, NO) is characterised by an inclusive education system which is also strongly linked with the labour market, as employers play an increasingly relevant role in delivering vocational training. Labour segmentation reflects in high shares of temporary employment, with well-developed active policies supporting job search. In the *employment-centred regime* (AT, BE, DE, FR, LU, NL), countries are characterised by selective and standardised education and training systems. Employers and social partners are highly involved in the provision of vocational

training through school-based and dual training. The labour market displays high occupational specificity that relies on educational certifications. In countries of the *liberal regime* (UK, IE), education systems are comprehensive, vocational training tends to be not standardised, with low involvement of employers. The low employment protection makes the labour market less segmented than in previous regimes but with a high share of precarious work. In countries of the *mediterranean regime* (EL, ES, IT, CY, PT), the education system is formally non-selective, with a minor role played by vocational training. Employment protection is high especially for permanent employees and the benefits system is comparatively less generous. In the *post-socialist/transitional regime* (BG, CZ, EE, HU, LT, LV, PL, RO, SK), the education system is comprehensive and general education tend to be a more popular choice than vocational training. Employers involvement in vocational training is usually low, with weak linkages with the labour market, resulting in considerable skills mismatches. Labour market regulation varies substantially among these countries.

Comparative research on school to work transitions has been dominated by a form of methodological nationalism Raffé (2014), where countries are seen as homogeneous and discrete units, rather than as internally diverse entities. It is true that institutional and structural arrangements form the context of education-work transitions that shape the processes and outcomes of transitions (Bol and van de Werfhorst 2013). However, differences in the institutional setting as in the impact of cyclical and structural conditions exist both between and within nations (Biggart et al. 2015). In the past decades, the regional dimension has gained increasing relevance in comparative research (Ranci 2010; Glauser and Becker 2016), due to two major trends interacting one another: (1) the increases of regional disparities; (2) the relevance of local welfare states arrangements.

The first trend refers to the persisting and even increasing regional and territorial disparities in living conditions across Europe (Dijkstra 2017), marking the divide between disadvantaged regions and privileged productive ones, normally located in metropolitan areas, with high level of resource efficiency and innovative capacity. Regional inequalities have a strong influence on individuals' opportunities, as recognised by the debate on territorial cohesion and spatial inequality (Barca 2009). The second trend refers to the processes that kicked off a territorial reorganisation of social policies. The resulting rescaling dynamics limited the role of the central state and at the same time attributed greater relevance to subnational scales of governance (Kazepov 2010; Charron et al. 2015). In federal states, the articulation of responsibilities in the provision of labour market and education policies, brings about relevant regional differences in policy provisions and outcomes, as shown for instance by the territorial differentiation of the NEET population in Austria (Bacher et al. 2017). However, also unitary states present decentralised exercises of authority in certain policy fields, affecting performance and effects of provision (Biela et al. 2013). Recent contributions highlight how local welfare systems emerged within national frameworks because of the transformative processes that impacted industrialised countries from the 1960s to the 1990s (Andreotti et al. 2012). Local welfare systems interact with the above-mentioned territorial disparities, deeply affecting social inequalities and vulnerabilities (Ranci et al. 2014).

In this light, Atkinson et al. (2002), Ranci et al. (2014) stress the importance of regional and place-based indicators in comparative research, as regional contextual conditions can have a crucial impact on transitions and subsequently individual life chances

(Dalziel 2015). This implies considering the result of the interplay between contextual factors, as a manifestation of socio-economic trends in the region, and institutional factors related to welfare provision and structures of multilevel governance. Therefore, we argue that regional and local contextual conditions have a crucial impact on processes and outcomes of school-to-work transitions of young people, with potentially extended effects on their life chances. This argument finds further support within the realm of youth studies exploring the relationship between young people and the places in which they live (Hall et al. 2009). Moreover, the regional level is relevant from a policy perspective as shown by the EU cohesion objectives and the structural funds increasingly targeted to lagging and disadvantaged regions.

There is extensive research on regional convergence and divergence in the EU showing how regions responded to different labour market and socio-economic challenges (Di Cataldo and Pose 2017; Iammarino et al. 2018). As far as young people are concerned, the two subjects of regional and youth labour markets have been generally considered as separated, due to reduced data availability (Perugini and Signorelli 2010). Recent empirical evidence shows significant differences, both in institutions and labour market performance, also across regions within countries in youth unemployment and NEET rates (Bruno et al. 2014; Möller 2017).

To date, comparative regional or sub-regional investigations on school-to-work transitions after the economic crisis have been limited. In our contribution, we consider a wider range of indicators with respect to recent studies on regional unemployment and youth labour market, mainly focusing on unemployment and NEET rates. More specifically, we consider the importance of education and of qualifications in determining the outcomes of transitions in terms of employment, as well as the 'speed' of transitions and the stability of integration (Müller 2005; Quintini et al. 2007). We adopt a quantitative approach as a wide lens to investigate the relationship between place and youth that allows us to compare cross-regional variations and changes over time of school-to-work transition outcomes. This implies that we do not look at processes (Brzinsky-Fay 2014) as periodical sequencing on transitions related to longitudinal-individual data, but we analyse indicators of outcomes (Raffe 2014) aggregated at regional level.

## Data and methods

We assume that we can better understand school-to-work transitions and their effects over the life course, if we go beyond a country perspective. We consider the NUTS2 level as the unit of reference that represents the maximum level of territorial disaggregation for conducting comparable, in-depth and context-based analysis of youth labour markets conditions. NUTS is the Nomenclature of Territorial Units for statistics that subdivides the EU into regions at three different levels (NUTS 1, 2 and 3). According to EUROSTAT, NUTS2 is the geographical unit for application of regional policies and it provides increasingly data at this territorial level.

We use six indicators to investigate to what extent school-to-work transitions varied and have been affected by different regional contexts in the last decade, configuring territorially differentiated opportunity structures over the life course. Moreover, by using various indicators we provide a wider overview on youth transitions, not focusing exclusively on the most disadvantaged young people (MacDonald 2011). Data were extracted



from EUROSTAT<sup>1</sup> for the time span 2005–2016, encompassing a decade during which European territories underwent radical changes. The indicators we selected are extensively used in the literature and in the policy debate on youth labour market and school-to-work transitions.<sup>2</sup> Some of them are used as benchmark for the EU 2020 strategy. Specifically, we selected six indicators, all expressed as percentage on the total reference population (reported in Table 1).<sup>3</sup>

With respect to the literature on the topic, our approach has two main advantages. First, the view of a plurality school-to-work outcomes and second, the longitudinal view over more than 10 years. By doing this, we can consider change in different outcomes of school-to-work transitions, as a result of complex configurations given by the interaction of institutions, socio-economic conditions and regional contexts. We provide evidence for a more fine-grained view of youth integration and vulnerability according to contextual conditions, as we are not limiting our analysis only to unemployment and NEET rates. Moreover, we investigate the process of change over time of such outcomes, providing a more dynamic picture of youth transition's outcomes than analysis based on a single year or on restricted time-windows. We recognise of course the limitations associated to this approach. Given the plurality of outcomes considered, and the layer of complexity added by the longitudinal lens we adopt, the main focus is here the exploration of regional variation and the explanation of longitudinal dynamics. We deem this as a necessary explorative and descriptive step paving the way for future research more interested in the identification of specific drivers of single relevant indicators. Moreover, considering more indicators implies difficulties in the selection of the age-range. We are aware that varying age groups implies different challenges, and we tried to limit this problem by maintaining 20–34 as the age range of indicators of labour market access. The adoption of this age group improves cross country comparability and provides a more accurate focus on the final of school-to-work outcomes, also allowing to account for differences in length and type of education and training programmes and labour market entry across countries in Europe. This group of indicators refers to the match between education and employment. By considering the highest level of education achieved, we distinguish a group of highly qualified, tertiary educated (ISCED 5-8) and a group of low qualified (ISCED 0-2). The Employment Rate after 3 years of Educational Completion (EREC) represents how fast the matching between education and employment is produced. Thus, this is the rate of people who after 3 years from the achievement of their educational qualification are employed. As for exclusion, the NEET rate is an indicator of inactivity and 'joblessness' (Quintini et al. 2007) grouping together both young people being not employed, and those out of formal education and training. This helps focusing on a larger group than the unemployed (Tamesberger and Bacher 2014), composed by people who are

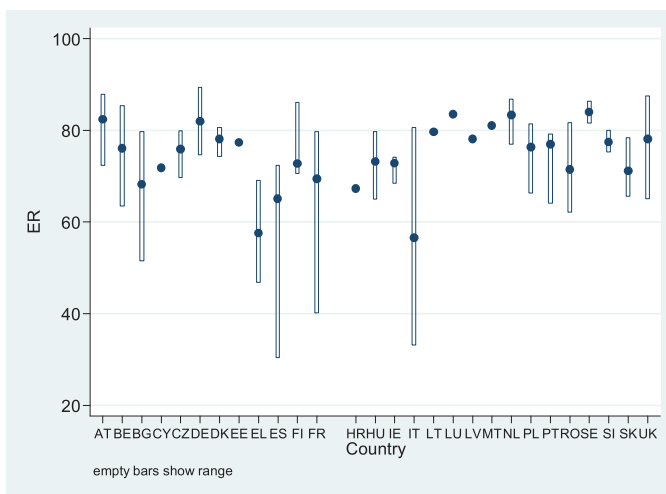
**Table 1.** Indicators used.

Indicators	Age reference	Dimension	Abbreviation
Employment rate	20–34 years	Access	ER
Employment rate of tertiary educated (ISCED 5-8)	20–34 years	Access	EREAH
Employment rate of lower educated (ISCED 0-2)	20–34 years	Access	EREAL
Employment rate after 3 years of educational completion	20–34 years	Access	EREC
Youth unemployment ratio	15–24 years	Exclusion	YUR
NEET rate	18–24 years	Exclusion	NEET

Source: Eurostat online database, LFS.

experiencing different degrees of exclusion from the labour market (Roberts 2011). The indicator is calculated having as denominator the total youth population and not only the youth labour force, in order to discount for differences in education systems that have major impact on the employment of young people. The main shortcoming of the NEET indicator is that it still groups heterogeneous categories (Vancea and Utzet 2018) such as unemployed, disabled, mono-parental mothers, etc. (Furlong 2006; Cuzzocrea 2014; Sergi et al. 2018). Therefore, we included in the analysis the youth unemployment ratio as an indicator of exclusion from the labour market. We considered the ratio instead of the youth unemployment rate because, similarly to NEET, YUR represents the share of people who are available for work and have taken active steps to find one without success in the last month, as a percentage of the total population of the same age.<sup>4</sup> For NEET the reference group is 18–24 years youth and 15–24 for YUR. Although fairly rigid, this age-range is still useful for comparisons across time and regions (Perugini and Signorelli 2010).

We process the data following a four-step sequence. The first segment of the empirical strategy provides descriptive statistics, displaying country averages, standard deviation and min-max range in the first and last year of the period considered (i.e. 2005 and 2016). The results are reported in Figure 1 for the employment rate and in Table A1 for all indicators used. As a second step, in Table 2, we estimate the variance components for relevant level of our data (e.g. region, country, year and regime). In Table 3, we estimate the evolution over time of the six selected indicators, averaging out national specific effects (being 2005 the reference category). Then we estimate an autoregressive model in logs, following an approach similar to that used in the intergenerational income mobility literature (Blanden et al. 2007), which we interpret as a regional intertemporal persistence model. In Figure 2, we show these estimates which represent the extent to which the level of each of the indicators selected are related to their level at the beginning of the period. We split the sample according to regional GDP in 2005 (the beginning of the



**Figure 1.** Employment Rate (ER), 15–34 years, country mean and range, year 2015. Source: Authors' own calculation on Eurostat online database, LFS.

**Table 2.** Indicators variance explained at regional, country, year and regime-level, years 2006–2016.

Source of variance	ER		EREAH		EREAL		EREC		YUR		NEET	
	Variance	% Variance	Variance	% Variance	Variance	% Variance	Variance	% Variance	Variance	% Variance	Variance	% Variance
Region	33.33	40.79	18.26	25.20	54.84	30.77	37.46	22.73	2.81	20.21	16.32	29.72
Year	2.51	3.07	2.27	3.13	1.07	0.60	4.90	2.97	1.04	7.49	1.27	2.32
Country	10.91	13.35	15.04	20.76	44.33	24.87	35.57	21.58	3.06	22.01	14.01	25.51
Regime <sup>a</sup>	18.61	22.78	20.01	27.61	32.63	18.31	47.58	28.87	2.72	19.57	14.96	27.25
Residual	16.35	20.01	16.89		45.38		39.28		4.26		8.35	
Observations	3254		3254		3178		3123		2710		3157	
Constant	76.74		85.16		58.65		75.82		8.47		15.15	
Log likelihood	−9656.76		−9541.43		−1099.76		−1055.42		6117.04		−8308.37	

<sup>a</sup>Youth transition regimes according to Hadjivassiliou et al. (2016), Walther (2017), Pohl and Walther (2007): universalistic, employment-centred, liberal, mediterranean, post-socialist/transitional.

**Table 3.** Evolution over the period of the indicators selected.

Variables	(1) ER	(2) EERAH	(3) EREAL	(4) EREC	(5) YUR	(6) NEET
2006 year	1.379*** (0.193)	1.186*** (0.276)	1.474*** (0.444)	2.580*** (0.378)	-0.521*** (0.0950)	-1.200*** (0.140)
2007 year	2.140*** (0.230)	2.185*** (0.286)	2.072*** (0.477)	4.217*** (0.424)	-1.335*** (0.133)	-1.595*** (0.235)
2008 year	2.612*** (0.281)	1.905*** (0.318)	2.918*** (0.516)	4.195*** (0.473)	-1.212*** (0.169)	-1.706*** (0.288)
2009 year	0.0778 (0.343)	0.537* (0.318)	-1.090* (0.591)	0.538 (0.534)	0.371* (0.220)	0.222 (0.320)
2010 year	-0.575 (0.376)	-0.572* (0.304)	-2.404*** (0.654)	-0.0265 (0.554)	0.800*** (0.220)	0.782** (0.322)
2011 year	-1.066*** (0.399)	-1.087*** (0.365)	-3.465*** (0.638)	-1.106* (0.599)	0.979*** (0.244)	1.120*** (0.357)
2012 year	-2.299*** (0.480)	-1.805*** (0.389)	-5.445*** (0.644)	-2.272*** (0.646)	1.629*** (0.263)	1.651*** (0.371)
2013 year	-2.933*** (0.516)	-2.613*** (0.402)	-6.547*** (0.677)	-2.808*** (0.695)	1.708*** (0.263)	1.565*** (0.383)
2014 year	-2.454*** (0.551)	-2.865*** (0.437)	-6.209*** (0.702)	-3.069*** (0.733)	0.833*** (0.242)	1.095*** (0.389)
2015 year	-1.906*** (0.550)	-2.248*** (0.431)	-6.082*** (0.698)	-1.632** (0.742)	0.172 (0.227)	0.580 (0.393)
2016 year	-0.969* (0.514)	-1.629*** (0.363)	-4.994*** (0.698)	0.0546 (0.652)	-0.582*** (0.215)	-0.157 (0.368)
Constant	84.90*** (1.205)	91.50*** (0.756)	64.08*** (2.066)	87.86*** (1.104)	5.536*** (0.672)	8.964*** (0.696)
Observations	3182	3235	3188	3100	3105	3085
Country dummies	YES	YES	YES	YES	YES	YES
R-squared Adj	0.391	0.578	0.412	0.580	0.527	0.502

Standard errors in brackets.

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

Source: Authors' own calculation on Eurostat online database, LFS.

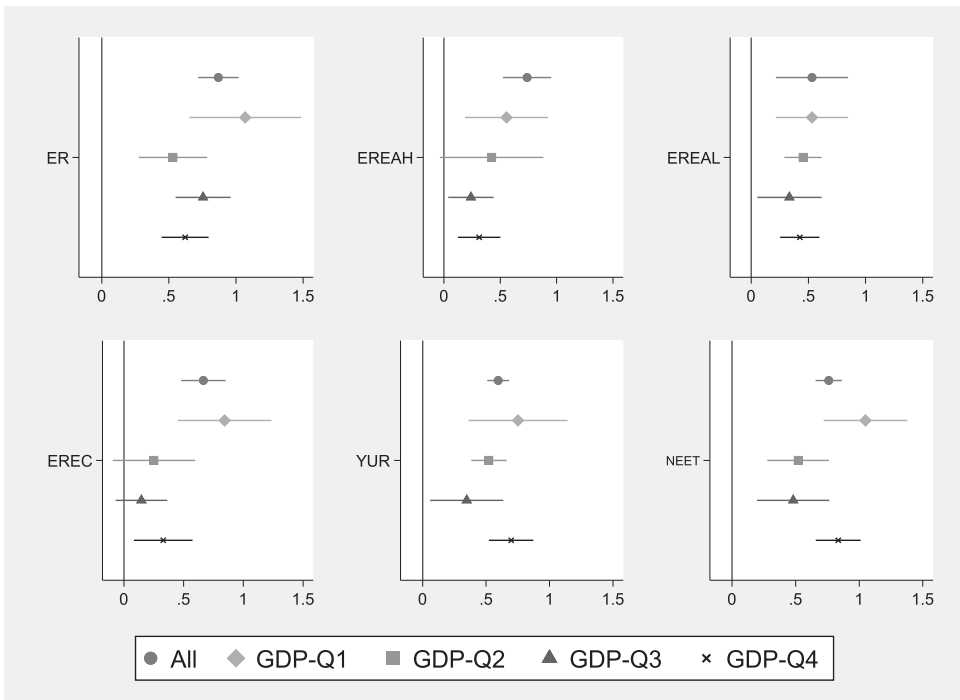
period analysed). We use equation (1).<sup>5</sup>

$$\ln(y_1) = \alpha^n + \beta \ln(y_0) + \gamma \ln(C_k) + \mu \tag{1}$$

where:

- $\ln(y_1)$  is the natural logarithm of the dependent variable, i.e. the employment rate at the end of the period in 2016.
- $\alpha^n$  is a group of dummy variables according to the country each region belongs to.
- $\beta \ln(y_0)$  is the persistence term showing the influence of the level of e.g. employment rate at the beginning of the period in 2005.
- $\ln(C_k)$  is a vector of control variables specified as log of levels in the base period, i.e. 2005.

Finally, we estimate a multilevel growth curve model to explore the pattern of regional changes in school-to-work-transitions. We include a set of dummies according to regimes of school-to-work transitions following the typology established by Pohl and Walther (2007) and used also by Hadjivassiliou et al. (2016). To analyse the change in the trajectories of youth labour market outcomes, we combine contextual and institutional characteristics of EU territories. Under this perspective, we build on a tradition of multilevel modelling (Jones et al. 1992). The availability of repeated measures for EU regions provided an opportunity for a multilevel analysis with the time variable as a covariate, also



**Figure 2.** Persistence effects according to GDP quartiles. Source: Authors’ own calculation on Eurostat online database, LFS.

referred to as the growth curve approach. Some of the advantages of such approach is increasing sample size and statistical power in order to estimate complex multilevel models and warranting more precise interval estimates. It allowed us to fit a model for youth labour market outcomes throughout 11 years simultaneously. In this way, we overcome some issues such as sparseness of data. All context-level variables were centred at their grand means within a given year. Lineal multilevel random coefficient model was estimated in STATA 15 using restricted maximum likelihood (REML) using both Satterwhite and Kenward-Roger's approximations which yield similar results.

## Results

Descriptive evidence shows that regional disparities in transition outcomes are very strong, not only between but also within national states (Figure 1). Looking at the mean regional employment rate of young people at country level in 2016, the divide between best performers like Sweden, Netherlands, Austria and Germany and worst performers like Italy and Greece picture a strong contrast between different transition systems. However, some countries reveal deep internal disparities and divergent tendencies with respect to youth labour market conditions, thus questioning the homogeneity of national transitions systems. The regional divide within Italy, for instance, is extremely pronounced, as the difference between the maximum and minimum regional employment rates is close to 50 percentage points, with an overall very high coefficient of variation of 0.24. The ER coefficient of variation and the min-max range are also high in several other countries like France, Spain and Bulgaria. Some countries combine high variability and high difference in min-max range, revealing strong disparities between high performing regions and lagging ones. This is particularly the case of Italy, France, Spain, Romania and Bulgaria that present the most regionally differentiated youth labour market conditions in our sample. Other indicators allow a more refined view of transition outcomes, by taking into consideration the relationship between educational qualifications and labour market integration. Opportunities for higher educated young people appear more favourable in all European countries, and also internal variations are quite limited. A notable exception is represented by Italy and Greece: the low national averages are dragged down by regions with very limited job opportunities even for higher educated young people, while best performing Italian and Greek regions display rates that are not far from those of other countries. On the other hand, low-educated young people face more difficult transitions, especially in East European countries. Regions with very few opportunities for low educated people (ISCED 0-2) are to be found also in internally differentiated countries like Italy, France and Spain.

Table 2 shows the source of variation in the six indicators of school-to-work-transitions. For almost all indicators, except EREAH and EREC, the regional level represents the highest source of variation. Country- and regime levels are an important source of variation in outcomes. This means that different institutional configurations at country level, as well as common traits in institutional complementarities and logics in the design of transition policies, have an impact on youth outcomes. Overall, we found evidence supporting the adoption of NUTS 2 regions as a unit of analysis: the outcomes of transition systems cannot be taken for granted as homogeneous within national boundaries, as the data show high variations below the country-level.

In [Table 3](#), we show the changes in transition outcomes between 2005 and 2016. A higher and significant value indicates an increase with respect to 2005, the reference year. We found general evidence of more favourable regional labour market conditions before the Great Recession, although the effects are different in size and time of occurrence across the indicators selected. The regional employment rates increased until 2008, due to an overall increase in youth employment participation, which was more acute for the lower educated young adults. Moreover, transitions appeared to be increasingly smooth in the pre-recession period, as shown by the strong increase of employment rates after 3 years of education completion (EREC) registered before 2009. All the indicators respond differently to the crisis, whose first impact is observable in 2010. YUR and more strongly EREAL experienced substantial drops. In this case, regional aggregated data show high coherence with trends observed in the comparative literature on youth labour market at national and individual level, especially in Southern-European countries (Dolado et al. 2013; Calero and Choi 2017). Young people aged 15–24 aiming for an early labour market entry and low qualified experienced a sharp decrease in their labour market opportunities during the Great Recession in Europe. Their lack of labour market experience and/or low education attainment prevent them either to enter or maintain their position in the labour market. The latter situation can be explained through *lifo* (last-in/first-out) dynamics, which were partially softened for those with higher education qualifications. As we saw, lower educated people experienced higher job market access before the Great Recession, often in flexible positions. During periods of increasing labour market uncertainty, however, higher educated entrants tend to crowd-out lower educated ones (De Lange et al. 2014). If we compare the EREAH with EREAL, we find that lower educated people were the first to lose their jobs, while the drops for the highest qualified were substantially reduced by approximately a third. This evidence seems to confirm the role of educational qualifications in smoothing school-to-work transitions across European regions, even if weakened by the socio-economic turmoil (Scarpetta et al. 2010).

YUR and NEET perform similarly over the period. The impact of the Great Recession on these indicators is statistically significant and resulted in an increase between 2010 and 2013 and a recent partial recovery to the pre-recession level. This shows that for young people actively searching, finding a job has become increasingly difficult over this period. After 2013, the coefficients are usually not significant, showing diverging trajectories among European regions, probably due to various combinations of patterns of economic recovery and substitution effects (Botrić and Tomić 2017). The latter refers to young people prolonging their education instead of participating on the labour market and thus increase their chances for future employment: their cost-opportunity to study is reduced by a drop of labour market opportunities. This share of young people is part of the total population 18–24 that is used as a basis for the calculation of the NEET<sup>6</sup> indicator.

Furthermore, we also provide evidence on how far the level and persistence of those outcomes are related to the school-to-work regimes.

From the viewpoint of regional cohesion policy, it is vital to understand the extent to which the outcomes of school-to-work transitions are path-dependent or change over-time. In [Figure 2](#) and [Table A2](#), we provide evidence about the persistence of those indicators through time by calculating autoregressive model, aiming at explaining the status in 2016 with the observed conditions in 2005. The specification includes the persistence

term (e.g. the 2005 regional level of each indicators) and country dummies. This gives an insight on how far recent school-transitions outcomes are related to their corresponding level at the beginning of the period. Higher persistence effects indicate a higher path-dependency of the indicators.

On average, the estimates show strong persistence effects<sup>7</sup>: especially the overall employment rate of young people, the NEET rate and the employment rate of higher educated display a stronger persistence over time. This means that regional employment tends to be strongly path-dependent over the considered time-span. The lowest persistence effect is reported for EREAL, which is the indicator that fluctuates the most over the period relative to the level of the beginning of the period. Regional labour market access of low-qualified appears to be more exposed to cyclical fluctuations, coherently with our previous results.

Furthermore, findings are disaggregated by the level of GDP, providing evidence for the relationship between socio-economic characteristics of the regions and their related school-to-work outcomes in a dynamic model. [Figure 2](#) reports the estimates splitting the sample in four quartiles based upon the regional per capita GDP in PPS in 2005.<sup>8</sup> This partition of the main dataset allows us to investigate whether the path-dependency affects all regions equally depending on their level of GDP. The results reveal some heterogeneity in the way the persistence effects play out. For instance, the sizes of persistence effects of ER vary across the level of GDP of the regions. The differences between poorest and the other regions are significantly different as shown in [Table A3](#). This indicates that over the period poorest regions are more dependent from their past record of employment rate compared to the richest regions. As a general trend, we observe that persistence effects are strongest for the poorest regions for all the indicators on access and exclusion. The richest regions tend to present higher effects than medium-high and medium-low regions (2nd and 3rd quartile of GDP) for NEET and EREC. For the last indicator, the persistence effects are all significant except when comparing the most affluent regions e.g. 3rd and 4th GDP quartiles. This could be indicative of the inability of lagging regions to escape the trap of poor economic conditions combined with poor labour market access and performances. Conversely, better contextual conditions favour smoother transitions from education to work even through periods of relative economic turmoil.

In [Table 4](#), we estimated a multilevel growth model to explain the levels and change of our indicators of outcomes according to configurations of transition regimes. We also controlled our results by regional socio-economic characteristics such as population size, share of population with tertiary education and GDP. We include a set of dummies, being the employment-centred regime the reference category. We notice that, over the time-span considered, Mediterranean, Post-Socialist and Liberal configurations had a significantly lower effect on the levels of ER, EREAL, EREAH and EREC, and higher overall level of NEET and YUR. As for regions from universal countries, their institutional configuration is associated with significant higher levels of ER and EREAH, but also of YUR, with respect to continental and employment-centred regions. Therefore, the institutional configuration of school to work transitions in regions from Southern and Eastern Europe is associated with the worst outcomes. Regions from liberal countries display slightly better youth outcomes than Mediterranean and transitional, but worse than employment-centred. Regions from universal Northern countries perform better in



**Table 4.** Multilevel growth curve model of school-to-work-outcomes.

	ER		EREAL		EERAH		EREC		YUR		NEET	
	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
Year	-0.269***	-0.0687	-0.386***	-0.0658	-1.035***	-0.117	-0.423***	-0.106	0.105*	-0.0448	0.179**	-0.0559
Universalistic	-0.440**	-0.146	-0.228	-0.127	-0.768***	-0.232	-0.333	-0.213	0.228*	-0.0893	0.0915	-0.122
Employment-centred	Ref		Ref		Ref		Ref		Ref		Ref	
Post-socialist/transitional	-1.061***	-0.105	-1.098***	-0.0939	-0.883***	-0.17	-1.760***	-0.157	0.655***	-0.0663	0.925***	-0.0858
Mediterranean	-1.474***	-0.0997	-0.954***	-0.0871	-1.319***	-0.157	-1.949***	-0.146	0.602***	-0.0616	0.732***	-0.0799
Liberal	-0.305**	-0.11	-0.404***	-0.0933	-0.178	-0.171	-0.516**	-0.158	0.354***	-0.0695	0.618***	-0.0911
Universalistic*year	3.675**	-1.321	-0.415	-0.866	8.231**	-2.730	1.720	-1.586	3.343***	-0.64	-1.868	-1.254
Employment-centred*year	Ref		Ref		REF		Ref		Ref		Ref	
Post-socialist/transitional*year	-2.147	-1.112	-0.846	-0.846	-6.519***	-1.822	-0.176	-1.417	-2.333***	-0.473	1.109	-0.923
Mediterranean*year	-3.337**	-1.182	-8.987***	-0.939	10.85***	-1.734	-10.00***	-1.534	2.417***	-0.451	6.040***	-0.93
Liberal*year	-1.018	-1.614	0.83	-1.331	1.349	-2.001	3.150	-2.123	2.648***	-0.535	1.073	-1.204
Ed. Att. (ISCED 5-8), centred	0.769	-1.101	3.356*	-1.367	3.959	-2.324	2.794	-2.083	-0.319	-0.697	-2.264*	-0.904
Population (ln), centred	-10.39*	-4.853	8.835	-4.732	-12.37	-8.483	-5.863	-7.844	11.82***	-2.690	13.92***	-3.825
GDP (ln), centred	28.89***	-1.370	22.64***	-1.646	31.90***	-2.740	40.15***	-2.430	-16.14***	-0.735	-22.91***	-1.011
Constant	81.95***	-0.616	91.97***	-0.465	63.94***	-1.134	84.09***	-0.788	5.252***	-0.305	10.61***	-0.539
Level 1 variance (years)	0.209***	0.027	0.046***	0.017	0.285***	0.063	0.273***	0.053	0.078***	0.010	0.149***	0.019
Variation (years)	19.250***	6.320	2.104	1.443	92.070***	8.914	17.710**	9.350	4.549***	1.306	19.290**	7.525
Level 2 variance (regime)	2.458***	0.785	2.086***	0.283	0.000	0.000	4.777***	1.313	0.075	0.114	0.893	0.806
Variation (country)	7.548***	0.242	13.1***	0.414	33.63***	1.098	25.87***	0.842	1.994***	0.07	4.142***	0.134
Log restricted-likelihood	-67620.233		-71062.121		-82759.606		-79064.304		-42985.382		-5983.054	
Observations	2511		2486		2455		2442		2135		2478	

Standard errors in parentheses.  
 \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

overall employment rate and employment rate of higher educated, but slightly worse in exclusion outcomes. Among the control variables, we found consistently significant positive effects of GDP on all access indicators, and negative effects on exclusion indicators. This confirms the results of [Figure 2](#), showing that in particular economic conditions have a strong and path-dependent effect on youth school-to-work transition outcomes.

## Discussion

The conditions of young people on the labour market continue to rise concerns. Scholars described them as the losers of globalisation and as a lost generation produced by the Great Recession (Buchholz et al. 2009; Blossfeld et al. 2014). From a policy perspective, several interventions at country level and at the European level, like for instance the European Youth Guarantee and the European Alliance for Apprenticeships, targeted the critical juncture connecting education to employment. Research on school-to-work transitions mainly focused on the national level. However, we argue that each regional context can enable (or hinder) specific opportunities for young people.

In our research, we analysed regional outcomes of young people's school-to-work transitions across Europe. By doing this, we went beyond research on regional unemployment and NEET rates, as we considered multiple indicators linked to two dimensions of the outcomes of school-to-work transitions for young people: access and exclusion. Thus, we go in the direction of a more panoramic view taking in also the outcomes of the 'ordinary' and working youth (Roberts 2011; MacDonald 2011). Although we are aware of the importance of specific institutional determinants and related policies addressing school-to-work transitions, our main focus was the variation of school-to-work transitions at regional level and over time, as well as the impact of institutional configurations, or regimes, and socio-economic contexts in a 10 years span. We singled out these aspects, in order to highlight the relevance of the regional dimension, which we deem as underestimated in school-to-work research. We consider this paper as a first step towards a research agenda aiming at investigating the regional dimension of school-to-work transitions, looking at the variations of outcomes as well as at the impact of institutional and socio-economic conditions of different welfare mixes (Antonucci et al. 2014). This will imply considering the impact of complementarities among institutions, policies and contextual characteristics, at different territorial scales, in shaping the passage from education to the labour market. Further empirical studies should advance in explaining and unpacking the complex regional dynamics of these transitions.

Our findings confirm that institutions at country level and regimes of countries with relatively similar institutional arrangements play a role in shaping youth outcomes. However, we also find out relevant and often overlooked differences both in the level and dispersion of young people's school to work outcomes across European territories, so that the internal homogeneity of transition systems cannot be taken for granted and might play relevant consequences at the policy design level. Moreover, we show that the Great Recession had strong but differentiated impacts at regional level. As general trends, we found that low qualified young people aiming for an early labour market entry experienced a sharp decrease in labour market opportunities after 2008. Conversely, educational qualifications contributed to buffer the impact of the turmoil for higher-educated people. However, the characteristics of the regional context strongly contributed to

shape such trends, especially for best performing and most disadvantaged regions. We found strong evidence of path dependency, with persisting effects of socio-economic conditions over the time-span considered. This evidence combines with the role played by institutional configurations at country level, that can be grouped in transition regimes which impact on regional youth outcomes as well. Presumably, in regions with disadvantaged contextual socio-economic conditions, less competitive economies and squeezing labour market demand negatively affect school-to-work transitions outcomes over time. Factors that contributed to low employment levels and development in lagging regions in the pre-crisis years, also made them less able to withstand economic and labour shocks, bringing to deteriorating opportunities for young people. Conversely, more dynamic and growing regions in the years of economic expansion developed a path dependency that has made them better equipped for generating employment opportunities for young people and better withstand the GR. Thus, they are also able to attract young workers of poorer territories, as also the recent increase in migration flows across European territories demonstrates. This is indicative of the inability of lagging regions to escape the trap of poor economic and labour market performance and of the difficulties faced by the national level to equalise socio-economic inequalities, in particular in Mediterranean and East-European and liberal countries. Indeed, their institutional configuration (characterised, for instance, by lower provision of vocational training), is associated with worst transition outcomes than continental and universal countries producing rather Matthew effects (Bonoli, Cantillon, and Van Lancker 2017) than compensating territorial disparities. As a consequence, during and in the aftermath of the GR, territorial differences in labour market integration of young adults remained high or even widened. Moreover, in more divided countries, like for instance Italy, regional disparities in opportunities are likely to re-produce and even increase inequalities.

Policy makers aiming at improving school-to-work outcomes of young people need to be aware of this inertia. The devolution of regulatory powers targeting youth integration in the labour market policies has been considered a suitable solution to existing differences. However, this devolution might bear also some risks. On the one side, structural and contextual conditions are hard to be changed, and therefore, policy makers need to take this into account when formulating expectations and objectives. On the other side, devolving policies might foster and further consolidate – also institutionally – regional disparities and inequalities (Kazepov 2010). What we would need is a calibrated positive subsidiarity in which regulatory responsibility are provided, accompanied by resources in a frame which attempts to equalise opportunity structures.

Our results could help to better target interventions to the most disadvantaged areas. While favourable territorial opportunity structures may require incremental innovation and policy, not to compromise their dynamic drive, this may not be the case for deprived contexts. These findings resonate with recent debates on territorial cohesion at the EU level, calling for place-sensitive distributed development policies (Iammarino et al., 2018). The persistence of disadvantaged contextual conditions, that we documented, may very well turn to inertial traps that cannot be addressed through one-size-fits all policy solutions. Not even incremental policy reform at regional and national level could be adequate, as the persisting of long-term negative institutional and socio-economic features may hinder the effectiveness of these interventions. This would call for a stronger leap in innovation and social policy, calling for a jump of scales in the governance level

from the local towards the national or the EU level. The recently implemented Juncker plan (*European Commission's Investment Plan for Europe, EC IPE*) is an ambitious infrastructure investment programme (2015–2017) aimed at unlocking public and private investments of approximately € 315 billion to counterbalance the effect of the crisis on unemployment in the areas of Europe with the highest job losses (COM (2014) 903 final). The general aim of this policy – in the spirit of the Europe 2020 strategy – is trying to get people back into work and revamp local economies, although the target groups and the inclusiveness of those measures still remain an open issue. A recalibration in line with contextual specificities and individual needs could be beneficial.

## Notes

1. Due to their size, some countries do not provide disaggregated data at regional level.
2. See for instance, Quintini, Martin, and Sébastien (2007), Raffé (2008, 2014).
3. For instance, the employment rate is the number of employed people aged 20–34 divided by the total number of people aged 20–34.
4. Some authors refer that cross-country comparability might be hindered when only the youth unemployment rate, according to the ILO labour-force concept, is used (Dietrich 2013; Tamesberger 2017). This is why the youth unemployment ratio is used in this article.
5. In all the estimations, we use cluster-robust standard errors at national level.
6. We replicate Table 2 adding controls for the regional GDP in PPS. The results maintain the same pattern; however, the size of the coefficient is reduced. For a matter of space, we do not report here the Table which is available upon request to the authors.
7. The first estimates in each graph represent the average effect.
8. Given that we estimate the elasticity of the indicators using a log-log model, we can interpret the persistence effect as % of the dependent variable. In Tables A3 and A4, we present the *F*-test to assess respectively if the estimated parameters are equal to 0 and whether the slopes of the coefficients are significantly different across GDP quartiles.

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## Appendices

**Table A1.** Summary statistics of the selected indicators, year 2015.

Country	ER		EREAH		EREAL		EREC		YUR	NEET	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	Mean	SD
AT	82.4	4.82	90.1	2.85	53.6	9.6	81.6	4.62	10.6	7.5	1.9
BE	76.1	8	88.3	3.72	48.7	9.16	69.8	8.83	22.1	12.2	3.74
BG	68.2	9.09	85.1	5.33	34	6.21	60.9	14.79	21.6	19.3	8.01
CY	71.8		77.5		60.3		61.3		32.8	15.3	
CZ	75.9	3.91	76.8	4.44	37.1	8.11	78.9	4.85	12.6	7.5	2.59
DE	81.9	3.58	91.4	1.78	52.1	8.3	86.9	2.83	7.2	6.2	1.65
DK	78.1	2.8	84.7	1.37	57.1	7.23	76.9	3.42	10.8	6.2	0.8
EE	77.3		83.1		61.3		74.8		13.1	10.8	
EL	57.6	5.86	63.7	11.68	50	5.95	38.6	8.35	49.8	17.2	4.09
ES	65.1	10.38	76.9	7.36	53.6	9.87	54.2	8.08	48.3	15.6	4.53
FI	72.7	6.28	81.4	3.02	44.7	3.88	74.1	5.89	22.4	10.6	1.57
FR	69.4	11.63	83.4	8.49	42.8	11.3	63.3	14.69	24.7	12	6.11
HR	67.3	0.35	79.9	1.27	31.4	8.27	53	1.27	43	18.1	0.21
HU	73.2	6.33	82.7	2.5	45.6	9.77	73.6	4.49	17.3	11.6	3.57
IE	72.8	3.96	86.8	2.4	35.9	0.85	65.8	6.72	20.9	14.3	2.76
IT	56.6	13.79	67.2	14.31	44.5	12.36	41.3	14.68	40.3	21.4	6.67
LT	79.6		89.5		53.1		78.2		16.3	9.2	
LU	83.5		89.8		71.6		78.9		17.3	6.2	
LV	78.1		84.4		61.6		75.3		16.3	10.5	
MT	81.1		95.9		66.6		81.9		11.8	10.4	
NL	83.4	3.09	91.6	2.52	67.4	5.87	84.8	5.27	11.3	4.7	1.03
PL	76.4	4.28	87.4	3.41	45.2	4.51	73.3	6.46	20.8	11	2.13
PT	77	5.67	81.5	4.33	73.4	7.75	63.1	5.8	32	11.3	4.13
RO	71.5	7.95	87.1	6.45	56.3	13.31	60.8	10	21.7	18.1	6.7
SE	84	1.92	91.7	1.87	61.8	6.28	83.2	2.48	20.4	6.7	0.95
SI	77.4	3.32	83.9	1.91	53.3	8.41	67.6	4.03	16.3	9.5	1.48
SK	71.1	5.51	77.5	2.46	32.3	8.57	69.2	7.26	26.5	13.7	4.53
UK	78.1	5.07	89	4.11	55.2	10.44	76.8	8.35	14.6	11.1	2.69

Source: Authors' own calculation on Eurostat online database, LFS.



**Table A2.** Persistence model.

Variables	(1) ER	(2) EREAH	(3) EREAL	(4) EREC	(5) YUR	(6) NEET
ER(t0), ln	1.092*** (0.0886)					
EREAH(t0), ln		0.891*** (0.0862)				
EREAL(t0), ln			0.426** (0.154)			
EREC(t0), ln				0.818*** (0.104)		
YUR(t0), ln					0.600*** (0.113)	
NEET(t0), ln						0.752*** (0.0885)
GDP, 1st Q						
GDP, 2nd Q	2.096*** (0.444)	1.084 (0.773)	0.403 (0.609)	1.001* (0.577)	0.157 (0.267)	0.479* (0.273)
GDP, 3rd Q	1.700*** (0.595)	3.097*** (0.370)	-0.305 (0.653)	2.219*** (0.399)	0.160 (0.261)	0.0706 (0.302)
GDP, 4th Q	1.744*** (0.432)	3.451*** (0.563)	0.0502 (0.671)	2.428*** (0.442)	-0.0200 (0.264)	-0.241 (0.339)
GDP, 1st Q*ER(t0), ln	(Ref.)					
GDP, 2nd Q*ER(t0), ln	-0.483*** (0.102)					
GDP, 3rd Q*ER(t0), ln	-0.389*** (0.137)					
GDP, 4th Q*ER(t0), ln	-0.398*** (0.0998)					
GDP, 1st Q*EREAH(t0), ln		(Ref.)				
GDP, 2nd Q*EREAH(t0), ln		-0.237 (0.173)				
GDP, 3rd Q*EREAH(t0), ln		-0.683*** (0.0842)				
GDP, 4th Q*EREAH(t0), ln		-0.762*** (0.126)				
GDP, 1st Q*EREAL(t0), ln			(Ref.)			
GDP, 2nd Q*EREAL(t0), ln			-0.0825 (0.151)			
GDP, 3rd Q*EREAL(t0), ln			0.102 (0.162)			
GDP, 4th Q*EREAL(t0), ln			0.0168 (0.170)			
GDP, 1st Q*EREC(t0), ln				(Ref.)		
GDP, 2nd Q*EREC(t0), ln				-0.224 (0.131)		
GDP, 3rd Q*EREC(t0), ln				-0.496*** (0.0907)		
GDP, 4th Q*EREC(t0), ln				-0.541*** (0.101)		
GDP, 1st Q*YUR(t0), ln					(Ref.)	
GDP, 2nd Q*YUR(t0), ln					-0.0908 (0.134)	
GDP, 3rd Q*YUR(t0), ln					-0.102 (0.143)	
GDP, 4th Q*YUR(t0), ln					-0.0379 (0.141)	
GDP, 1st Q*NEET(t0), ln						(Ref.)
GDP, 2nd Q*NEET(t0), ln						-0.183* (0.104)
GDP, 3rd Q*NEET(t0), ln						-0.0428 (0.113)
GDP, 4th Q*NEET(t0), ln						0.0805 (0.125)
Constant	-0.369 (0.386)	0.485 (0.388)	2.215*** (0.625)	0.796* (0.461)	0.893*** (0.233)	0.557** (0.263)

(Continued)

**Table A2.** Continued.

Variables	(1) ER	(2) EREAH	(3) EREAL	(4) EREC	(5) YUR	(6) NEET
<i>R</i> -squared	0.865	0.852	0.604	0.851	0.889	0.861
Country dummies	YES	YES	YES	YES	YES	YES
Adj. <i>R</i> -squared	0.864	0.850	0.599	0.849	0.887	0.859

Robust standard errors in parentheses.

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

**Table A3.** *F*-test that all the coefficients associated with the interaction of Indicators at time 0 and GDP quartile are equal to 0.

ER	EREAH	EREAL	EREC	YUR	NEET
Test param $\ln ER_{2006} * \text{gdp}$	Test param $\ln EREAH_{2006} * \text{gdp}$	Test param $\ln EREAL_{2006} * \text{gdp}$	Test param $\ln EREC_{2006} * \text{gdp}$	Test param $\ln YUR_{2006} * \text{gdp}$	Test param $\ln NEET_{2006} * \text{gdp}$
(1) $2.\text{gdp} * \ln ER_{2006} = 0$	(1) $2.\text{gdp} * \ln EREAH_{2006} = 0$	(1) $2.\text{gdp} * \ln EREAL_{2006} = 0$	(1) $2.\text{gdp} * \ln EREC_{2006} = 0$	(1) $2.\text{gdp} * \ln YUR_{2006} = 0$	(1) $2.\text{gdp} * \ln NEET_{2006} = 0$
(2) $3.\text{gdp} * \ln ER_{2006} = 0$	(2) $3.\text{gdp} * \ln EREAH_{2006} = 0$	(2) $3.\text{gdp} * \ln EREAL_{2006} = 0$	(2) $3.\text{gdp} * \ln EREC_{2006} = 0$	(2) $3.\text{gdp} * \ln YUR_{2006} = 0$	(2) $3.\text{gdp} * \ln NEET_{2006} = 0$
(3) $4.\text{gdp} * \ln ER_{2006} = 0$	(3) $4.\text{gdp} * \ln EREAH_{2006} = 0$	(3) $4.\text{gdp} * \ln EREAL_{2006} = 0$	(3) $4.\text{gdp} * \ln EREC_{2006} = 0$	(3) $4.\text{gdp} * \ln YUR_{2006} = 0$	(3) $4.\text{gdp} * \ln NEET_{2006} = 0$
$F(3, 23) = 9.04$	$F(3, 23) = 22.09$	$F(3, 23) = 2.90$	$F(3, 23) = 10.95$	$F(3, 21) = 0.39$	$F(3, 23) = 4.37$
$\text{Prob} > F = 0.0004$	$\text{Prob} > F = 0.0000$	$\text{Prob} > F = 0.0566$	$\text{Prob} > F = 0.0001$	$\text{Prob} > F = 0.7627$	$\text{Prob} > F = 0.0142$

**Table A4.** *F*-test that all the slopes of Indicators at time 0 and GDP quartiles are significantly different.

ER	EREAH	EREAL	EREC	YUR	NEET
test 1.gdp*lnER2006 = 2.gdp*lnER2006 <i>F</i> (1, 23) = 22.60 Prob > <i>F</i> = 0.0001	test 1.gdp*lnEREAH2006 = 2.gdp*lnEREAH2006 <i>F</i> (1, 23) = 1.89 Prob > <i>F</i> = 0.1828	test 1.gdp*lnEREAL2006 = 2.gdp*lnEREAL2006 <i>F</i> (1, 23) = 0.30 Prob > <i>F</i> = 0.5892	test 1.gdp*lnEREC2006 = 2.gdp*lnEREC2006 <i>F</i> (1, 23) = 2.92 Prob > <i>F</i> = 0.1009	test 1.gdp*lnYUR2006 = 2.gdp*lnYUR2006 <i>F</i> (1, 21) = 0.46 Prob > <i>F</i> = 0.5049	test 1.gdp*lnNEET2006 = 2.gdp*lnNEET2006 <i>F</i> (1, 23) = 3.09 Prob > <i>F</i> = 0.0922
test 1.gdp*lnER2006 = 3.gdp*lnER2006 <i>F</i> (1, 23) = 8.01 Prob > <i>F</i> = 0.0095	test 1.gdp*lnEREAH2006 = 3.gdp*lnEREAH2006 <i>F</i> (1, 23) = 65.94 Prob > <i>F</i> = 0.0000	test 1.gdp*lnEREAL2006 = 3.gdp*lnEREAL2006 <i>F</i> (1, 23) = 0.39 Prob > <i>F</i> = 0.5368	test 1.gdp*lnEREC2006 = 3.gdp*lnEREC2006 <i>F</i> (1, 23) = 29.95 Prob > <i>F</i> = 0.0000	test 1.gdp*lnYUR2006 = 3.gdp*lnYUR2006 <i>F</i> (1, 21) = 0.51 Prob > <i>F</i> = 0.4824	test 1.gdp*lnNEET2006 = 3.gdp*lnNEET2006 <i>F</i> (1, 23) = 0.14 Prob > <i>F</i> = 0.7081
test 1.gdp*lnER2006 = 4.gdp*lnER2006 <i>F</i> (1, 23) = 15.88 Prob > <i>F</i> = 0.0006	test 1.gdp*lnEREAH2006 = 4.gdp*lnEREAH2006 <i>F</i> (1, 23) = 36.77 Prob > <i>F</i> = 0.0000	test 1.gdp*lnEREAL2006 = 4.gdp*lnEREAL2006 <i>F</i> (1, 23) = 0.01 Prob > <i>F</i> = 0.9221	test 1.gdp*lnEREC2006 = 4.gdp*lnEREC2006 <i>F</i> (1, 23) = 28.99 Prob > <i>F</i> = 0.0000	test 1.gdp*lnYUR2006 = 4.gdp*lnYUR2006 <i>F</i> (1, 21) = 0.07 Prob > <i>F</i> = 0.7911	test 1.gdp*lnNEET2006 = 4.gdp*lnNEET2006 <i>F</i> (1, 23) = 0.42 Prob > <i>F</i> = 0.5248
test 2.gdp*lnER2006 = 3.gdp*lnER2006 <i>F</i> (1, 23) = 0.94 Prob > <i>F</i> = 0.3435	test 2.gdp*lnEREAH2006 = 3.gdp*lnEREAH2006 <i>F</i> (1, 23) = 5.94 Prob > <i>F</i> = 0.0229	test 2.gdp*lnEREAL2006 = 3.gdp*lnEREAL2006 <i>F</i> (1, 23) = 7.89 Prob > <i>F</i> = 0.0099	test 2.gdp*lnEREC2006 = 3.gdp*lnEREC2006 <i>F</i> (1, 23) = 3.50 Prob > <i>F</i> = 0.0742	test 2.gdp*lnYUR2006 = 3.gdp*lnYUR2006 <i>F</i> (1, 21) = 0.02 Prob > <i>F</i> = 0.8835	test 2.gdp*lnNEET2006 = 3.gdp*lnNEET2006 <i>F</i> (1, 23) = 5.89 Prob > <i>F</i> = 0.0235
test 2.gdp*lnER2006 = 4.gdp*lnER2006 <i>F</i> (1, 23) = 1.04 Prob > <i>F</i> = 0.3188	test 2.gdp*lnEREAH2006 = 4.gdp*lnEREAH2006 <i>F</i> (1, 23) = 5.91 Prob > <i>F</i> = 0.0233	test 2.gdp*lnEREAL2006 = 4.gdp*lnEREAL2006 <i>F</i> (1, 23) = 0.91 Prob > <i>F</i> = 0.3502	test 2.gdp*lnEREC2006 = 4.gdp*lnEREC2006 <i>F</i> (1, 23) = 5.89 Prob > <i>F</i> = 0.0235	test 2.gdp*lnYUR2006 = 4.gdp*lnYUR2006 <i>F</i> (1, 21) = 0.23 Prob > <i>F</i> = 0.6348	test 2.gdp*lnNEET2006 = 4.gdp*lnNEET2006 <i>F</i> (1, 23) = 10.81 Prob > <i>F</i> = 0.0032
test 3.gdp*lnER2006 = 4.gdp*lnER2006 <i>F</i> (1, 23) = 0.01 Prob > <i>F</i> = 0.9165	test 3.gdp*lnEREAH2006 = 4.gdp*lnEREAH2006 <i>F</i> (1, 23) = 0.80 Prob > <i>F</i> = 0.3793	test 3.gdp*lnEREAL2006 = 4.gdp*lnEREAL2006 <i>F</i> (1, 23) = 0.94 Prob > <i>F</i> = 0.3417	test 3.gdp*lnEREC2006 = 4.gdp*lnEREC2006 <i>F</i> (1, 23) = 0.53 Prob > <i>F</i> = 0.4732	test 3.gdp*lnYUR2006 = 4.gdp*lnYUR2006 <i>F</i> (1, 21) = 0.91 Prob > <i>F</i> = 0.3512	test 3.gdp*lnNEET2006 = 4.gdp*lnNEET2006 <i>F</i> (1, 23) = 6.79 Prob > <i>F</i> = 0.0158