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The role of the education systems and the labour market institutions in enhancing youth employment: a cross-country analysis

Floro Ernesto Caroleo[*]*, Elvira Ciociano, and Sergio Destefanis*

Abstract

Youth are a vulnerable category of workers, since they are in a delicate phase of their working life, the first entry in the labour market. Young graduates and early school leavers are involved in the school–to–work transition process, whose duration considerably varies across countries. In this paper we explore the impact of labour-market and educational institutions on youth labour-market performance across OECD countries for the 1985-2013 period. We build from different sources (mainly the IECD and the UNESCO) a data-set including series about labour-market institutions, youth population, schooling and the vocational education and training participation rates. We estimate a dynamic panel model, building upon Bassanini and Duval (2006), and articulating the analysis upon various age groups (15-24, 20-24). Union density, the minimum wage and the level of economic activity stand out as important determinants of youth employability (educational attainment and expenditure on public education mattering to a lesser extent). VET participation also matter, although only in countries where the dual apprenticeship system is important.

1. Introduction

The effects of youth unemployment can be particularly serious, because they occur at the beginning of the working life of a person and may have substantial scarring effects (O'Higgins, 2010; Manfredi et al. 2010; Caporale and Gil-Alana, 2014). Moreover, youth unemployment has very detrimental effects on welfare and, in the longer term, on future employment prospects and earnings (Gregg and Tominey, 2005; Mroz and Savage, 2006), on human capital accumulation (Caroleo, 2012) and on fertility rates (Jimeno and Rodriguez-Palenzuela, 2002). Besides, the long lasting global crisis begun in 2008 has disproportionately affected young people and exacerbated the weakness of their condition in the labour market.

Education and skills formation are generally related to the possibilities of a young worker of being employed: indeed, the observed differences in the severity of youth unemployment across countries can also depend on how the national school-to-work institutions are organised (Ryan, 2001). Young people with low levels of qualification facing higher risks of exclusion and lacking access to employment are a feature common to many economies. Unemployment rates of higher skilled people tend to be lower than those low skilled and their average employment rates are higher (Zimmermann et al., 2013). In developed countries (Quintini and Martin, 2014) the crisis has made harder the transition from school to work, especially for young people without an educational background matching the needs of the structural and technological change. Some countries have therefore created or reinforced institutions to support entry into the labour market. Yet, while the expansion of general education occurred in many countries in recent years has led to a substantial increase in overall levels of

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educational attainment, the quality of the education system and its linkage to the labour market have very often been questioned (Eichhorst et al. 2015).[1]

This paper focuses on the role of education systems and labour-market institutions in determining youth employment in a cross-country framework. We allow for various institutional and structural factors, building upon Bassanini and Duval (2006), and extend the literature in considering with some detail participation rates to vocational programmes at the secondary level of education (ISCED levels 2 and 3, according to the ISCED classification), and expenditures in education across OECD countries. Our analysis is articulated across two age groups (15-24, 20-24) and makes full allowance for the dynamic structure of the data.

The rest of paper has the following outline. In section 2 we review the debate on youth labour-market performance and school-to-work transition. Section 3 presents the empirical framework and the main results. Some concluding remarks are provided in section 4.

2. The Youth Labour Market

2.1 Determinants of youth labour-market performance

When analysing youth labour-market performance, several factors should be considered: the institutions governing the school-to-work transition (including the quality of the education system and the integration between school and work-based training), labour-market regulation (hiring and firing rules, safety nets and industrial relations systems), as well as demographic and cyclical patterns (Zimmermann et al., 2013).

Demographic structure affects young employability for two reasons: it influences the size of younger cohorts determining youth labour supply (Korenman and Neumark, 1997; Shimer, 2001); and it affects the social and cultural approach of a country towards young people. It is obvious that the more young people are in the labour market, the more jobs will be needed to accommodate them. This is the so called "cohort crowding hypothesis", according to which larger youth cohorts face reduced job opportunities in the presence of imperfect substitutability between workers of different ages and wage rigidities. When the entity of younger cohorts is very high, their entry into the labour force under bad economic conditions or sluggish demand can cause the origin of longer queues, since the labour market will absorb these young people slowly and/or insufficiently (Korenman and Neumark, 1997; Bassanini and Duval, 2006; Zimmermann et al., 2013). According to Jimeno and Rodriguez-Palenzuela (2002), demographic developments have a significant but limited impact on relative youth unemployment rates: youth workers mostly play a role of "buffer" to absorb macroeconomic shocks, through wider fluctuations in their unemployment rates: this is reflected in the very significant impact of cyclically related variables on the relative youth unemployment rates.

[1] Another important phenomenon affecting young workers is the growing mismatch between the educational or skill level they belong and the level required by jobs available in the labour market. The quality and orientation (general versus vocational) of the educational program (Leuven and Oosterbeek 2011; Caroleo and Pastore, 2016) are found among the major factors explaining the cross-country variation in overeducation and its persistence.

It has long been known that younger workers tend to be more severely affected by economic fluctuations (Clark and Summers, 1982; Verick, 2011; Manfredi et. al., 2010; Bell and Blanchflower, 2011; Bernal-Verdugo et al., 2012; O'Higgins, 2012; Choudry et al., 2012b; Zimmermann et al., 2013; Ghoshray et al. 2016). This phenomenon has various reasons: a disproportionate presence of youth among temporary jobs, their high concentration in some cyclically sensitive industries, as for example construction (Manfredi et al., 2010), and the so-called LIFO principle (last-in-first-out), applied by firms in times of crisis: they prefer to fire workers hired more recently, than the ones employed for a longer time. More recently hired people tend to be younger, with higher mobility and opportunities to find a job somewhere else (this is the inclination to job shopping highlighted in Caliendo, et al., 2011); moreover, they have less experience (Caroleo and Pastore, 2007). Bell and Blanchflower (2011) also find that the least educated young workers have been hit harder by the Great Recession.

Following the seminal papers of Nickell (1997) and Blanchard and Wolfers (2000) (see also Nickell et al. 2005), a wide consensus has formed around the belief that the rigidity of labour-market institutions plays a major role in the determination of long-run labour-market performance. These institutions cover the unemployment benefits system, the extent of active labour market policies, the wage determination system (union density, union coverage, degree of coordination, minimum wages), the tax wedge, the pervasiveness of employment protection legislation and the strictness of the legislation regarding the use of temporary contracts (OECD 1994). In Jimeno and Rodriguez-Palenzuela (2002) two institutional features stand out as the most relevant for the study of youth unemployment rates: those that increase the overall cost of the standard labour contract, for instance employment protection, and those which do not make provision for some contractual flexibility for the specificities of young workers. The first ones could make younger workers less attractive than the prime age ones, because the average lower job experience tends to decrease their average productivity. The second characteristics leave youth in a relative disadvantage with respect prime age workers, if the general labour market setting is predominantly rigid.

The literature has conflicting views on the impact of temporary employment on the school-to-work transition. This contract type may increase labour market flexibility in those European countries with excessive employment protection regulation or that need to speed up the transition process towards a market economy. The widely debated issue is whether temporary jobs are actually a stepping-stone to permanent work, without causing a long-lasting wage penalty, or a dead end. Indeed, temporary work often becomes a low-pay trap as young people tend to accept low-pay jobs. Instead of accumulating work experience to find high pay-high quality jobs later, they remain trapped for many years or even for the rest of their lives (Bruno et al., 2013).

In this paper we lay stress on the institutions concerning schooling, training and school-to-work transition, which can also play a key role in determining the success of the younger workers, especially during the phase of the transition from school to work (O'Higgins, 2001; Cahuc et al., 2013; Choudry et al., 2012a, Eichhorst et al., 2013; Banerji et al., 2015; Ghoshray et al. 2016). The different institutional environment could

explain cross-country and intertemporal variations of youth integration into employment, and institutions targeted at the activation, the employability, the skills and knowledge improvement of youth, can play a role in fighting youth unemployment, and different strategies could be implemented to contrast it (Eichhorst, 2016).

2.2 School-to-work transition

Youth are considered a vulnerable category of workers since they are in a delicate phase of their working life, the first entry into the labour force. They are involved in the school–to–work transition (Piopiunik and Ryan, 2012), typically defined as the period between the end of compulsory schooling and the attainment of full-time and/or stable employment.[2] Several reasons justify a particular vulnerability. Workers at the first experience do not have the same knowledge, skills, competences that can be learnt only at work. As a result, young workers often show high turnover rates (this is the *youth experience gap* highlighted in Caroleo and Pastore 2007 and Pastore 2011. Many young workers conciliate part-time job with the study and/or the searching activities for a work, frequently alternating periods in the work force with periods of inactivity, which gives rise to a not always linear transition school-to-work that entails growing precariousness and less job satisfaction (Martin et al., 2007). This situation can be worsened by other specific characteristics: gender, ethnicity, disability, regional disparity, the organisation of the family economy (Berloffa et. al., 2015), initial differences in skills and education, and rigidities on the side of institutions (school, university, training system, labour agencies as well as labour market legislation; see on this Caroleo and Pastore, 2007, 2009).

Piopiunik and Ryan (2012) propose a useful classification of the policy interventions specific for the transition school-to-work into three groups: a) active labour market programmes (ALMP) (see also Caliendo and Schmidl 2016; Martin et al., 2007; Caliendo et al., 2011) based on short-run strategies aimed at improving labour market efficiency, increasing of the labour supply, integrating unemployed workers into the labour market (Escudero, 2015)[3]; b) VET systems aimed at equipping people with knowledge, know-how, skills and/or competences required in particular occupations or class of occupations or trades on the labour market (Cedefop, 2008); in this case effects are expected over a longer time spectrum; c) Apprenticeship, that is a system of cooperation between firms and vocational schools in initial training (Ryan, 2001) allowing the acquisition of general and transferable skills during class-based VET, and combining structured learning on the job and actual work experience within a training company (Eichhorst et al., 2015).

Generally ALMP's are characterised by a lack of integration with the educational system, whereas in VET systems the continuity with schooling is fundamental. Competences and qualifications acquired should be made comparable to those acquired in the academic tracks to promote possibilities of transfers between the two systems (Eichhorst et al., 2015). On the other hand, the distinction between VET and apprenticeship can be

[2] This definition can vary according to the statistical uses and to the interpretations (Raffe, 2008; Elder, 2009; Manfredi and Quintini, 2009; Elder and Matsumoto, 2010).

[3] The most recent European ALMP program is the "Youth Guarantee" or "job guarantee". It is a system through which a government or local authorities and the public employment services commit to offering a young person a job, training or re-training within a certain period of being made unemployed or leaving formal education (Pastore, 2015).

ambiguous, as vocational education may have work-based components (e.g. apprenticeships, dual-system education programmes). Depending on how VET systems are organised and implemented in the institutional setting, are integrated into the formal educational path, on the place where it is carried out (at general schools, and/or at specific training centres or colleges), on the degree of specificity of the provided skills, Eichhorst et al. (2015) identify three types of VET systems: a) school-based education system, b) a dual apprenticeship system in which school-based education is combined with firm-based training, c) informal training.

Our interest in VET systems finds, in particular, its motivation to the fact that, during the current recession, the best performances in terms of youth labour market outcomes have been observed in the countries where a dual apprenticeship system is prevailing, that is Germany, Austria, Denmark. More generally, it could be asked which VET systems are more conducive in the long run to favourable youth labour market outcomes (Hanushek et al., 2011; Zimmermann et al., 2013; Rodríguez-Planas et al., 2015; van Ours, 2015; Ryan 2007), and whether more VET increases youth employment. Evidence in this field is by no means as abundant as the findings related to cycle, demographics and (to al lesser extent) overall labour-market institutions. In the next section, we provide first some descriptive evidence about this issue, and then some econometric estimates considering VET participation alongside with other educational and institutional variables.

3. Youth Employment, Institutions and VET Systems. Some Dynamic Panel Estimates.

3.1) Analysing youth employment. The empirical issues

Analysing from an empirical standpoint the relationship between youth employment, labour-market institutions and VET systems is an undertaking potentially affected by various problems. One has to allow for various measures of performance, due to the multi-dimensionality of the problem under scrutiny. Furthermore, since schooling potentially interacts with other institutions, the issue must be analysed taking into account as wide a set of institutions as possible. The likely endogeneity of institutions is another source of problems for the analysis: reverse causality may run from labour-market changes to policy changes (Bassanini and Duval, 2006). Moreover, there is not a uniform definition across countries of VET systems, nor data are complete or available, at least for quite long time series. The lack of data and precise definitions for VET programmes could make useless the implementation of usual estimation methods.

Finally, and perhaps foremost, differences in economic conditions, labour market institutions, education and labour market policies may result in systematic cross-country differences in the chances of youth to enter the labour market. This suggests that empirical analysis should make distinctions across countries according to their different institutional arrangements.

Cross-country classifications of institutional differences are based on theories, prevailing regimes and laws, organisational philosophies (see Wilkinson and Wood, 2012). Generally speaking, the most famous classification among countries based on institutional attributes is the Varieties of Capitalism approach, proposed

by Hall and Soskice (2001) in which two types of market economy are defined: Liberal Market Economies and the Coordinated Market Economies (LMEs and CMEs, respectively). Another classification, particularly helpful in order to distinguish countries on the basis of labour-market institutions, is proposed by Esping-Andersen (1990) and relates to the welfare state systems.

Recently, there has been an increasing interest in defining identification criteria based on the relationship between national institutional archetypes and educational and training systems, and in general school-to-work transition institutions (Dolado, 2015; Zimmermann et al., 2013; Goergen et al., 2012; Ryan and Piopiunik, 2012; Hanushek et al., 2011; Caroleo and Pastore, 2007). As a broad rule they distinguish economies in which VET involves largely or entirely full-time schooling, and economies in which part-time schooling is combined with work-based learning as part of apprenticeship.

In this paper we adopt two types of classification of the OECD countries under scrutiny. The first one builds upon Hall and Soskice, as well as Esping-Andersen, and is based on differences in the economic and institutional structures. The resulting groups are: "Central European" countries (dubbed as *Central*): Austria, Belgium, Germany, Netherlands, Switzerland; "Anglo-Saxon" countries (*Anglo*): Australia, Canada, Ireland, New Zealand, UK, USA; *Mediterranean* countries: France, Italy, Portugal, Spain; and *Nordic* countries: Finland, Norway, Sweden, Denmark.

The second criterion takes into account the distinction between countries on the basis of the different VET systems. Following Hanushek et al. (2011) we distinguish: "highly vocational" countries (dubbed as *hi-vet*), having a high share of participants to VET: Belgium, Finland, Norway, Sweden; "dual" vocational countries (dubbed as *dual*), having not only a high share of VET participation but also a high percentage of participants in combined school and work-based programs: Austria, Denmark, Germany, Netherlands, Switzerland; "non-firm vocational" countries, having some school-based VET in a system geared toward general education and dubbed as *nofirm*: Australia, France, Italy, Portugal, Spain; "non-school vocational" countries (dubbed as *noschool*) having little or no VET but relying on in-firm apprenticeship: Canada, Ireland, New Zealand, UK, USA.[4]

Following our discussion at the end of the previous section, we now provide some descriptive evidence on youth employment across these country groups.

[4] Neither classification can account for a country traditionally included in cross-country exercises for OECD countries, namely Japan. Subsequently, Japan is not included in our estimates.

Table 1 *– Some descriptive evidence on youth employment by country groups*

Economic-institutional classification	Employment rate, age 15-24 (mean and s.d.)	Employment rate, age 20-24 (mean and s.d.)	**VET- based classification**	Employment rate, age 15-24 (mean and s.d.)	Employment rate, age 20-24 (mean and s.d.)
Central	49.58, 13.22	65.44, 10.37	*Dual*	57.20, 7.89	70.59, 4.65
Anglo	55.07, 7.94	68.30, 4.92	*Hi-vet*	44.67, 11.70	60.79, 9.69
Mediterranean	33.64, 8.36	48.71, 8.40	*Nofirm*	53.83, 8.18	67.19, 4.69
Nordic	52.81, 9,64	66.02, 8.44	*Noschool*	39.18, 13.31	53.71, 12.47

This descriptive evidence shows that, by and large, dual apprenticeship countries do better than the other ones. However is not possible to deduce a simple relationship between youth employment and VET. European countries with a high share of VET participants fare almost as well as dual countries, but are outperformed by the "noschool" Anglo-Saxon countries.

3.2) The empirical set-up

We now try to shed some further light on these issues by providing some econometric evidence within a dynamic panel data model. We use the study on labour market institutions done by Bassanini and Duval (2006) as starting point, since it explores the effect of the main labour market institutions on different workers' groups. The following remarks are in order. First Bassanini and Duval only consider workers aged 20–24: we also consider the more traditional definition of young people aged 15-24. Second, additionally to labour-market institutions, they also consider some demographic and educational variables (relative youth cohort and the relative youth education) for VET and. Bassanini and Duval (2006) use. We add to these other educational features, the general educational attainment, the VET participation rates, and various measures of the expenditures in public education. Finally, Bassanini and Duval only provide static estimates (actually Jimeno and Rodriguez–Palenzuela, 2002, do the same). But lagged dependent variables could be very useful proxies both for the persistence associated to labour market performances and the relationships between past performances and policy actions. Evidence evocative of both phenomena is found in Destefanis and Mastromatteo (2010; 2012). Furthermore Pena-Boquete (2016), when analysing the aggregate determination of female labour force participation, has recently found that static estimates may give rise to misleading inference. Hence we proceed to the estimation of full-fledged dynamic estimates, selecting our preferred specifications through a general-to-specific search maximising coefficient significance. The estimated equation is:

$$emp_{it} = \beta\, emp_{it-1} + \Sigma\, \nu_j X_{it-j} + \Sigma\, \chi_j Si_{t-j} + \Sigma\, \lambda_j Z_{it-j} + \alpha_i + \tau_i + \delta_t + \varepsilon_{it} \qquad (3.1)$$

where emp_{it} is the youth employment rate (in the country i and in the year t), and j = 0, 1. X_{it} is a vector of variables representing specific policies and institutions: employment protection legislation, tax wedge, the percentage of active labour market policies expenditures over GDP, minimum wages, unemployment benefits,

and union density. S_{it} is the vector of the education-related variables: VET participation, educational attainment, relative youth education, and the percentage of expenditures in public education. Z_{it} is a vector of control variables: the relative cohort of youth population on total population, and the output gap. The equations include country fixed effects, α_i, country-idiosyncratic linear trends, τ_i, and time dummies, δ_t. Equation (3.1) follows a basically linear specification (Bassanini and Duval did the same). Only educational attainment is taken in natural logarithms. We have also attempted with full-fledged loglinear specifications, but they entailed a lower fit.

We have data for nineteen OECD countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, New Zealand, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States, for the 1985–2013 period. Our main source has been the OECD statistics portal. We have taken from it the employment rates, the indicator of employment protection legislation, the tax wedge measure, the percentage of active labour market policies expenditures over GDP, the minimum to median wage indicator,[5] and union density. The relative youth cohort, youth population over total working age population, the percentage of expenditure in public education,[6] and the output gap, also come from the OECD statistics portal. On the other hand, in order to measure duration and replacement rate of the unemployment benefit system, we use the indicators of duration and generosity proposed by Scruggs et al. (2014). These data have been integrated with other (mainly education-related) variables. The VET participation, that is the ratio of technical/vocational (ISCED 2 and 3) over total secondary enrolment, comes from the UNESCO UIS statistics portal. Educational attainment and relative youth education, the difference between the number of education years of total population aged 15 and over and the number of education years of total population aged 25 and over come from the Barro-Lee Website (these data are given only over five-year intervals, which meant that we had to interpolate them for the missing years; in this exercise we also used the 2015 predicted data). There are missing data for some countries and years, and hence we end up with an unbalanced panel dataset. Further details about the dataset are available upon request.

The choice of schooling variables is highly driven by the availability of the data. The VET participation has been chosen because it derives from one of the richest data archives about VET systems. The fact that the related data are collected on the basis of the ISCED classification, allows, at least partially, to overcome the lack of homogeneous juridical definitions for VET and apprenticeship across countries.

Our econometric approach is based upon the ARDL estimator proposed in Pesaran and Shin (1999). Provided the correct order is chosen for the ARDL model, this estimator provides consistent estimates of the short-run parameters and super-consistent estimates of the long-run coefficients. Some recent works (Destefanis and Mastromatteo, 2015; Pena-Boquete, 2016) find that regressor endogeneity is likely to be important in this ambit, strengthening the case for the adoption of estimation techniques dealing with this problem. In a dynamic panel framework, system GMM would appear as a natural choice, but in our case the

[5] Following the literature, we use this indicator for assessing the impact of minimum wages.

[6] We have experimented with both the percentage of expenditure in public education over GDP, and the percentage of expenditure in public education over final government consumption expenditure. The latter gave slightly better results, which is comforting, because it is in principle a better measure of the focus of a given government on education.

number of countries is too small for appropriate application of this technique. On the other hand, when dealing with the estimation of the long-run coefficients, an appropriate choice of the orders of the ARDL model is sufficient to correct for the problem of endogenous regressors. This also means that, in commenting upon our results, we shall focus on the estimates for the long-run coefficients.

3.3) The main results

For every dependent variable (the time variations of emp and emp2024; see the Legend in the Appendix for the list of abbreviations we used), we estimated a different equation for each country group. We used the Akaike Information Criterion (AIC), and the Schwarz Criterion (SC) to select the orders of the ARDL model, obtaining in all cases the (1, 1) specification. The estimated equations are shown in Tables A.1-A.4 in the Appendix.

Generally speaking, our estimates indicate that dynamics is important and that both structural and educational variables and institutional variables are needed in order to make sense of the evolution of youth employment in the countries under scrutiny. The results for institutional variables mark some novelties vis-à-vis the literature on youth labour-market performance. Employment protection legislation is only significant, with a positive sign, for both *Anglo* samples. Unemployment benefit generosity is never significant.[7] Both results starkly differ with respect to those obtained in Bassanini and Duval (2006), who obtain a strong negative impact on employment for both variables. Differences in the sample period and the robustness of the adopted indicators seem to matter more than those in the estimation method and in the dynamic specification (we estimated some static equations, but their results differ considerably from the Bassanini and Duval's ones. Results are available upon request). A similar comment may apply to the tax wedge, which is only significant in the *Dual* and *Nofirm* samples (both for age 20-24) with a different sign.

Active labour market policies are significant for both *Anglo* samples, and again for the *Dual* and *Noschool* samples (age 20-24), but the *negatively* affect employment. They only are significant with the expected positive sign for *Hi-vet* sample (age 20-24). We note that this particular variable was never included in macroeconomic estimates (such as Bassanini and Duval's ones). On the other hand, Caliendo and Schmidl (2016), reporting results from the microeconometric literature, write that "The particularity of the youth labor market situation and the results from the meta-analyses suggest that assessments of the effectiveness of ALMP for adults are most likely not valid for youth. So far, no consensus exists on the effectiveness of the different ALMP programs for this age group. … Overall, the aggregate evidence of the effectiveness of ALMP is somewhat discouraging, suggesting that some – but not all – elements of ALMP programs can be a solution for the youth unemployment problem. (Caliendo and Schmidl, 2016, p. 3) (see also Eichhorst, 2016; Escudero, 2015). We will pick up this point again in our concluding remarks.

[7] The unemployment benefit duration indicator from Scruggs et al. (2014), or various indicators for the unemployment benefit system for the OECD, were equally not significant.

The other institutional variables provide results that, although circumscribed to some country samples, are more in line with a priori expectations. The minimum wage reduces employment for the *Central* and *Anglo* samples (not so much for the age 20-24 subset in the latter case), and again in the *Noschool* (age 15-24) and *Hi-vet* (age 20-24) samples. Union density negatively affects employment for the *Anglo* samples, and approaches significance (always with a negative sign) for the *Noschool* and *Nofirm* samples (age 15-24).

By and large, the *Anglo* and the *Noschool* samples (which are closely related) are the ones most affected by institutional variables. The samples based on the Vet classification, especially for the 20-24 age segment, are, on the other hand, the most impervious to institutional influences.

Regarding the education-related variables, VET participation is significant and positive in the *Central* and *Dual* samples. This is rather in line with a priori expectations. On the other hand it is significant and positive for the *Anglo* (age 20-24) sample and again approaches significance with a negative sign for the *Noschool* (age 20-24) sample. This suggests that the outcome of this variable is highly context-dependent and that policy advice about it should be carefully considered. The other educational variables are mostly significant for the *Mediterranean* and *Anglo* samples, and, to a lesser extent, for the similar *Nofirm* and *Noschool* samples. Relative youth education has the expected negative sign, while educational attainment increases employability. The percentage of expenditure in public education over final government consumption expenditure is only significant for the *Mediterranean* and *Nofirm* samples, where indeed it could be surmised that it should matter most.

Turning finally to the control variables, the relative youth cohort favours employment in the *Anglo* and *Noschool* samples, and rather less expectedly, in the *Nofirm* (age 20-24) sample. Only in the *Dual* (age 20-24) sample there is the a priori expected negative effect. The output gap is always significant with the expected positive sign, but never for the *Mediterranean* and *Nofirm* samples. In this case, the presumption of a strong cyclical sensitivity of the youth labour market is not borne out by our results.

4. Concluding Remarks

In this paper we study the effects of labour market institutions and education-related variables on youth employment rates in a sample of eighteen OECD countries through the 1985 – 2013 period. We provide some panel estimates, paying attention to a proper dynamic specification of our equations, and splitting our countries in two different classifications (each composed of four country samples).

Looking at the labour-market institutions, minimum wage and union density seem the institutions that have more significant effects on youth employment. These results are in line with a priori expectations, but further research may be needed to make sense of the insignificant results we find for epl, unemployment benefits, and tax wedge. As far as the unexpected sign of active labour market policies are concerned, it is worthwhile quoting again Caliendo and Schmidl (2016), who say that "Overall, the findings with respect to employment outcomes are only partly promising. While job search assistance (with and without monitoring)

results in overwhelmingly positive effects, we find more mixed effects for training and wage subsidies, whereas the effects for public work programs are clearly negative" (Caliendo and Schmidl, 2016, p.1) Hence in future research, we plan to experiment with disaggregated measures of active labour market policies.

VET participation has positive effects on youth employment, but only in the country samples where it could be expected a priori to have such effects. Other educational variables have a (mostly positive) impact ON youth employability in the samples where VET participation is supposed not to be very important. Finally, we find little support for the crowding-out effect of the relative youth cohort, and the a priori idea of a strong cyclical sensitivity of youth employment is not fully supported by our evidence.

In the future we want to pursue this research by analysing other types of country classification (eventually exploring data-based classifications). Another issue worth of future research relates to the type of employment contracts. The empirical framework used in this paper can be easily extended to allow for this important feature of labour markets in advanced countries.

References

Banerji A., Lin H. and S. Saksonovs (2015), "Youth Unemployment in Advanced Europe: Okun's Law and Beyond" IMF Working Paper, Washington, DC. .

Bassanini A. and R. Duval (2006), "Employment Patterns in OECD Countries: Reassessing the Role of Policies and Institutions", OECD Social, Employment and Migration Working Papers n. 35, Paris.

Bell D. N. F. and D. G. Blanchflower (2009), "What Should Be Done about Rising Unemployment in the UK?", IZA Discussion Papers n. 4040, Bonn.

Berloffa G., Modena F. and P. Villa (2015), "Changing labour market opportunities for young people in Italy and the role of the family of origin" Bank of Italy, Temi di discussione (Working papers) N. 998, Rome.

Bernal-Verdugo L. E., Furceri D. and D. M. Guillaume (2012), "Crises, Labor Market Policy, and Unemployment", International Monetary Fund Working Paper 65, IMF.

Blanchard O. and J. Wolfers (2000), "The Role of Shocks and Institutions in the Rise of European Unemployment: The Aggregate Evidence", The Economic Journal Vol. 110, No. 462, Conference Papers: C1-C33.

Bloom N., Bond S.R., Van Reenen J. (2001), *The dynamics of investment under uncertainty*. Institute for Fiscal Studies WP 01/05.

Blundell, R.; Bond, S. (1998): "Initial conditions and moment restrictions in dynamic panel data models", Journal of Econometrics, 87: 115-143.

Bruno G. S. F., Caroleo F. E. and O. Dessy (2013), "Stepping Stones versus Dead End Jobs: Exits from Temporary Contracts in Italy after the 2003 Reform" Rivista Internazionale di Scienze Sociali, 2013, 1: 31-60.

Cahuc P., Carcillo S. and U. Rinne (2013), "Youth Unemployment in Old Europe: The Polar Cases of France and Germany",IZA Journal of European Labor Studies: 2-18.

Caliendo M., Künn S. and R. Schmidl (2011), "Fighting Youth Unemployment: The Effects of Active Labor Market Policies" IZA Discussion Paper No. 6222. Bonn (IZA).

Caliendo M., Schmidl R. (2016), Youth unemployment and active labor market policies in Europe, IZA Journal of Labor Policy, 5:1.

Caporale G. M. and L. Gil-alana (2014), "Youth Unemployment in Europe: Persistence and Macroeconomic Determinants," Comparative Economic Studies, vol. 56(4): 581-591.

Caroleo F. E. (2012), "The hard access to the labour market of youth leaving school: what policy choices?" MPRA - Munich Personal RePEc Archive Paper n. 37645.

Caroleo F. E. and F. Pastore (2007), "The Youth Experience Gap: Explaining Differences across EU Countries", Università di Perugia, Quaderni del Dipartimento di Economia, Finanza e Statistica n. 41.

Caroleo F. E. and F. Pastore (2009), "Le cause del(l'in)successo lavorativo dei giovani", Economia & Lavoro, 3:107-131.

Caroleo F. E. and F. Pastore (2016), "Overeducation: A disease of the school-to-work transition system", in G. Copola and N. O'Higgins (eds), Youth and the Crisis Unemployment, Education and Health in Europe, Routledge, London.

Cedefop (2008), Terminology of European education and training policy. A selection of 100 key terms, European Centre for the Development of Vocational Training.

Choudry M., Marelli E. and M. Signorelli (2012)a,"Youth and total unemployment rate: the impact of policies and institutions" Rivista internazionale di Scienze Sociali, n. 4.

Choudry M., Marelli E. and M. Signorelli (2012)b, "Youth unemployment rate and impact of financial crises", International Journal of Manpower, 33 (1):76 - 95.

Clark, K. B. and L. H. Summers (1982), "The Dynamics of Youth Unemployment", In Freeman R. B. and D. A. Wise (eds), The Youth Labor Market Problem: Its Nature, Causes, and Consequences, University of Chicago Press, Chicago: 199 – 234.

de la Fuente, A., Doménech R. (2012). Educational attainment in the OECD, 1960–2010, version 3.0. Barcelona GSE working paper no. 658.

de la Fuente, A., Doménech, R. (2015). Educational attainment in the OECD, 1960–2010. Updated series and a comparison with other sources, Economics of Education Review 48, 56–74.

Destefanis S., Mastromatteo G. (2010), "Labour-market Performance in the OECD: Some Recent Cross-country Evidence", International Journal of Manpower, 31, 7, 713-31.

Destefanis S., Mastromatteo G. (2012), Assessing the reassessment: A panel analysis of the Lisbon Strategy, Economics Letters, 115 (2), 148-151.

Destefanis S., Mastromatteo G. (2015), The OECD Beveridge Curve: technological progress, globalisation and institutional factors, Eurasian Business Review, 5, 1, 151–172.
Dolado J. J. (Ed) (2015), *No Country for Young People? Youth Labour Market Problems in Europe*, A VoxEU.org eBook, CEPR Press: London.
Eichhorst W. (2016), "Promoting Youth Employment in Europe: Evidence-based Policy Lessons", IZA Policy Paper No. 119, December.
Eichhorst W., Hinte H. and U. Rinne (2013), Youth Unemployment in Europe: What to Do about It?" IZA Policy Paper No. 65, Bonn.
Eichhorst W., Rodríguez-Planas N., Schmidl, R. And K. F. Zimmermann (2015), "A Roadmap to Vocational Education and Training Systems Around the World", Industrial and Labor Relations Review, 68 (2): 314-337.
Elder S. and M. Matsumoto (2010), "Characterizing the school-to-work transitions of young men and women: evidence from the ILO school-to-work transition survey". ILO, Employment Working Paper, n.51.
Elder S. (2009), ILO school-to-work transition survey: A methodological guide, ILO, Geneva.
Esping-Andersen G. (1990), *The Three Worlds of Welfare Capitalism*, Cambridge: Polity Press.
Escudero V. (2015), "Are active labour market policies effective in activating and integrating low-skilled individuals? An international comparison", International Labour Office, Research Department Working Paper No. 3, February.
Goergen M., Brewster C., Wood, G. and A. J. Wilkinson (2012), "Varieties of Capitalism and Investments in Human Capital", *Industrial Relations: A Journal of Economy and Society*, Vol. 51, pp. 501-527.
Ghoshray A., Ordóñez J. and H. Sala (2016), "Euro, crisis and unemployment: Youth patterns, youth policies?", Universitat autònoma de Barcelona, Facultat d'Economia i Empresa, Departament d'Economia Aplicada Document de Traball 16/09.
Gregg P. and E. Tominey (2005), "The wage scar from male youth unemployment". Labour Economics 12: 487–509.
Hall P. A. and D. W. Soskice (2001), *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*. Oxford: Oxford University Press.
Hanushek E. A., Woessmann L. and L. Zhang (2011), "General Education, Vocational Education, and Labor-Market Outcomes over the Life-cylce", NBER Working Paper 17504, October 2011
Korenman S. And D. Neumark(1997), "Cohort crowding and youth labor markets: A crossnational analysis", NBER Working Paper No. 6031.
Jimeno J.F. and D. Rodríguez-Palenzuela (2002), "Youth unemployment in the OECD: Demographic shifts, labour market institutions, and macroeconomic shocks", European Central BanK Working Paper, n. 155.
Leuven E. and H. Oosterbeek (2011), "Overeducation and Mismatch in the Labor Market" in Hanushek E., Machin S. and L. Woessmann (eds.), Handbook of the Economics of Education, Elsevier Science, Vol. 4: 283 – 326
Manfredi T. and G. Quintini (2009), "Going Separate Ways? School - to - Work Transitions in the United States and Europe", OECD Social, Employment and Migration Working Papers n. 90.
Manfredi T., Scarpetta S. and A. Sonnet (2010), "Rising Youth Unemployment During The Crisis: How to Prevent Negative Long-term Consequences on a Generation?" OECD Social, Employment and Migration Working Papers, n. 106.
Martin J.P., Martin S., and G. Quintini (2007), "The Changing Nature of the School-to-Work Transition Process in OECD Countrie", IZA Discussion Paper n. 2582, Bonn.
Mroz T. A. and T. H. Savage (2006), "The Long-Term Effects of Youth Unemployment", Journal of Human Resources, Vol. 41, n. 2: 259-293
Nickell S. (1997), "Unemployment and Labor Market Rigidities: Europe versus North America", Journal of Economic Perspectives, vol. 11, 3: 55-74.
Nickell, W., (2006). CEP – OECD Institutions Data Set (1960-2004).
Nickell S., Nunziata L. and W. Ochel (2005), "Unemployment on the OECD since the 1960s. What do we know?" The Economic Journal, 115 (January):1–27.
OECD (1994). The OECD Jobs Study. Facts, Analysis, Strategies, OECD, Paris
O'Higgins N. (2001), Youth unemployment and employment policy: A global perspective, ILO, Geneva.

O'Higgins N. (2010), “The impact of the economic and financial crisis on youth employment: Measures for labour market recovery in the European Union, Canada and the United States”, ILO, Employment Working Paper n.70.

O'Higgins N. (2012), “This Time It’s Different? Youth Labour Markets During ‘The Great Recession’”, Comparative Economic Studies 54, 395–412.

Pastore F., (2011) Fuori dal tunnel,. Giappichelli, Torino.

Pastore F. (2015), "The European Youth Guarantee: Labor Market Context, Conditions and Opportunities in Italy," IZA Discussion Papers n. 8921, Bonn.

Pena-Boquete Y. (2016), “Further developments in the dynamics of female labour force participation”, *Empirical Economics*, 50(2), 463-501.

Pesaran M. H. and Y. Shin (1999), “An autoregressive distributed lag modelling approach to cointegration analysis”, in S. Strom (ed.), *Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch Centennial Symposium*, Chapter 11, Cambridge University Press, Cambridge.

Piopiunik, M. and P. Ryan (2012), “Improving the transition between education/training and the labour market: What can we learn from various national approaches?” European Expert Network on Economics of Education (EENEE), Analytical Report n. 13.

Quintini, G. and S. Martin (2014), “Same Same but Different: School-to-work Transitions in Emerging and Advanced Economies”, OECD Social, Employment and Migration Working Papers, No. 154, OECD Paris.

Raffe D. (2008), “The concept of transition system”, Journal of Education and Work, 21, (4): 277-296.

Roodman D. (2009a), How to Do Xtabond2: An Introduction to Difference and System GMM in Stata, *Stata Journal*, 9 (1), 86-136.

Roodman D. (2009b), A Note on the Theme of Too Many Instruments, *Oxford Bulletin of Economics and Statistics*, 71 (1), 135-158.

Ryan P. (2001), “The School-to-Work Transition: A Cross-National Perspective”, Journal of Economic Literature, 39, (1): 34-92.

Ryan P. (2007), Has the youth labour market deteriorated in recent decades? Evidence from developed countries, Arbetsrapport/Institutet för Framtidsstudier; 2007:5.

Rodríguez-Planas N., Schmidl R. and K. F. Zimmermann (2015), “A Roadmap to Vocational Education and Training Systems Around the World”, ILR Review, 68(2), March 2015: 314–337.

Scruggs L., Detlef J. and K. Kuitto (2014), "Comparative Welfare Entitlements Dataset 2. Version 2014-03." University of Connecticut and University of Greifswald.

Shimer R. (2001), “The Impact Of Young Workers On The Aggregate Labor Market”, Quarterly Journal of Economics, 116: 969-1007.

van Ours J. C. (2015), “The Great Recession was not so Great”, University, CentER DP, Tilburg.

Verick S. (2011), “Who is Hit Hardest during a Financial Crisis? The Vulnerability of Young Men and Women to Unemployment in an Economic Downturn” in: Islam I. and S. Verick (eds), From the Great Recession to Labour Market Recovery: Issues, Evidence and Policy Options, ILO/Palgrave Macmillan, London.

Wilkinson, A. and G, Wood (2012) “Institutions and Employment Relations: The State of the Art”, *Industrial Relations: A Journal of Economy and Society*, 51, (s1), 373–388

Zimmermann K. F., Biavaschi C., Eichhorst W., Giulietti C., Kendzia M. J., Muravyev A., Pieters J., Rodríguez-Planas N. and R. Schmidl (2013), "Youth Unemployment and Vocational Training", Foundations and Trends in Microeconomics: Vol. 9: No. 1–2: 1-157.

APPENDIX – The Econometric estimates

Table A.1 – The employment rate, age 15-24, the economic-institutional classification

regressors	samples			
	Central	Anglo	Mediterranean	Nordic
emp				
t-1	-0.40	-0.39	-0.31	-0.33
	0.00	*0.00*	*0.00*	*0.00*
epl				
Δ	-1.81	1.92	-0.66	1.66
	0.16	*0.14*	*0.53*	*0.32*
t-1	-0.47	2.42	-0.36	-0.38
	0.72	*0.03*	*0.74*	*0.80*
taxWedge				
Δ	-0.20	-0.02	0.23	-0.07
	0.18	*0.73*	*0.15*	*0.74*
t-1	-0.55	-0.92	-1.81	1.92
	0.29	*0.20*	*0.20*	*0.28*
almpgdp				
Δ	5.18	-3.03	2.11	-1.70
	0.05	*0.07*	*0.34*	*0.23*
t-1	2.95	-3.16	-0.55	-0.93
	0.21	*0.06*	*0.75*	*0.62*
minW_medW				
Δ	0.25	-0.03	-0.14	--
	0.62	*0.03*	*0.54*	*--*
t-1	-1.04	-0.05	-0.28	--
	0.05	*0.00*	*0.15*	*--*
gener				
Δ	-10.26	-4.90	4.29	4.13
	0.28	*0.07*	*0.17*	*0.60*
t-1	-11.33	4.46	4.96	-0.85
	0.31	*0.13*	*0.27*	*0.89*
ud				
Δ	-0.26	-0.23	-0.12	-0.15
	0.41	*0.01*	*0.59*	*0.59*
t-1	-0.09	-0.20	-0.05	-0.45
	0.67	*0.01*	*0.77*	*0.14*
vet				
Δ	0.07	-0.08	0.11	-0.03
	0.57	*0.16*	*0.39*	*0.86*
t-1	0.29	-0.03	-0.07	-0.14
	0.02	*0.44*	*0.94*	*0.50*
EducExp				
Δ	-0.01	-0.05	0.17	0.07
	0.73	*0.32*	*0.02*	*0.68*
t-1	0.02	-0.05	0.32	0.11
	0.71	*0.19*	*0.00*	*0.56*
Educ	-7.73	19.30	40.72	-26.24
	0.33	*0.14*	*0.03*	*0.45*
relEduc	-1.88	-3.99	-10.00	-5.65
	0.73	*0.15*	*0.06*	*0.30*
relcoh				
Δ	-2.01	1.62	-1.87	-0.35
	0.14	*0.06*	*0.00*	*0.67*
t-1	-0.13	0.77	-0.16	-0.44
	0.80	*0.02*	*0.66*	*0.20*
ygap				
Δ	0.13	0.40	0.27	0.87
	0.57	*0.00*	*0.25*	*0.00*
t-1	0.55	0.44	0.03	0.59
	0.09	*0.00*	*0.92*	*0.00*
N	124	157	107	111
R2-adj.	0.50	0.75	0.71	0.70
AR(1)	0.17	0.11	0.28	0.36

Table A.2 – The employment rate, age 20-24, the economic-institutional classification

regressors	samples			
	Central	Anglo	Mediterranean	Nordic
emp2024				
t-1	-0.51	-0.45	-0.43	-0.35
	0.00	*0.00*	*0.00*	*0.00*
epl				
Δ	0.48	1.22	-0.76	0.80
	0.76	*0.41*	*0.56*	*0.61*
t-1	0.09	1.88	-0.52	-0.27
	0.96	*0.09*	*0.77*	*0.84*
taxWedge				
Δ	-0.12	-0.04	0.15	-0.28
	0.50	*0.70*	*0.46*	*0.18*
t-1	-0.05	-0.02	0.08	0.07
	0.79	*0.77*	*0.75*	*0.68*
almpgdp				
Δ	1.27	-3.13	0.68	-1.97
	0.60	*0.07*	*0.80*	*0.12*
t-1	2.63	-3.23	-1.75	0.23
	0.31	*0.08*	*0.42*	*0.87*
minW_medW				
Δ	0.39	-0.02	-0.12	--
	0.50	*0.41*	*0.68*	*--*
t-1	-1.19	-0.03	-0.40	--
	0.02	*0.14*	*0.13*	*--*
gener				
Δ	-3.16	-3.80	5.60	-0.92
	0.75	*0.33*	*0.21*	*0.88*
t-1	-14.44	1.71	5.26	-4.36
	0.25	*0.62*	*0.39*	*0.48*
ud				
Δ	0.17	-0.25	0.07	0.03
	0.61	*0.01*	*0.80*	*0.89*
t-1	0.22	-0.15	-0.05	-0.30
	0.43	*0.02*	*0.84*	*0.22*
vet				
Δ	0.06	-0.08	0.20	-0.08
	0.69	*0.26*	*0.29*	*0.55*
t-1	0.19	-0.12	-0.02	-0.03
	0.08	*0.01*	*0.90*	*0.85*
EducExp				
Δ	-0.01	-0.05	0.12	0.16
	0.86	*0.26*	*0.24*	*0.29*
t-1	0.04	-0.07	0.27	0.12
	0.57	*0.10*	*0.04*	*0.46*
Educ	-10.94	18.27	35.81	-6.17
	0.23	*0.13*	*0.10*	*0.84*
relEduc	-4.02	-8.14	-11.09	-7.15
	0.47	*0.00*	*0.11*	*0.11*
relcoh2024				
Δ	-1.12	1.37	-0.52	0.56
	0.14	*0.06*	*0.00*	*0.67*
t-1	-0.28	0.23	0.53	-0.87
	0.80	*0.02*	*0.66*	*0.20*
ygap				
Δ	0.05	0.38	0.56	0.89
	0.84	*0.00*	*0.06*	*0.00*
t-1	0.58	0.45	0.41	0.81
	0.09	*0.00*	*0.24*	*0.00*
N	122	157	107	111
R2-adj.	0.41	0.70	0.64	0.80
AR(1)	0.40	0.08	0.38	0.03

Table A.3 – The employment rate, age 15-24, the VET-based classification

regressors	samples			
	Dual	Noschool	Nofirm	Hi-vet
emp				
t-1	-0.41	-0.38	-0.27	-0.38
	0.00	*0.00*	*0.00*	*0.00*
epl				
Δ	0.27	2.91	-0.61	2.75
	0.88	*0.14*	*0.44*	*0.09*
t-1	0.04	1.66	-0.22	3.29
	0.98	*0.31*	*0.84*	*0.17*
taxWedge				
Δ	-0.41	-0.02	0.16	0.15
	0.04	*0.82*	*0.17*	*0.41*
t-1	-0.56	-0.09	0.43	0.35
	0.02	*0.23*	*0.01*	*0.04*
almpgdp				
Δ	-1.68	-4.29	3.05	-0.94
	0.52	*0.13*	*0.10*	*0.55*
t-1	-4.45	-5.28	1.18	1.41
	0.03	*0.05*	*0.45*	*0.34*
minW_medW				
Δ	1.16	-0.03	-0.26	0.87
	0.21	*0.07*	*0.10*	*0.15*
t-1	0.11	-0.06	-0.09	-0.60
	0.84	*0.01*	*0.52*	*0.26*
gener				
Δ	4.15	-4.71	4.04	4.49
	0.63	*0.18*	*0.11*	*0.58*
t-1	8.88	4.84	3.12	-5.81
	0.38	*0.16*	*0.42*	*0.38*
ud				
Δ	-0.24	-0.19	-0.42	-0.09
	0.52	*0.10*	*0.01*	*0.70*
t-1	-0.07	-0.15	-0.23	-0.32
	0.84	*0.14*	*0.12*	*0.20*
vet				
Δ	0.07	-0.17	0.08	0.01
	0.94	*0.08*	*0.39*	*0.99*
t-1	0.25	-0.05	0.03	-0.05
	0.09	*0.53*	*0.57*	*0.79*
EducExp				
Δ	0.01	0.01	0.14	0.01
	0.85	*0.98*	*0.06*	*0.64*
t-1	-0.09	-0.05	0.24	0.03
	0.44	*0.91*	*0.00*	*0.96*
Educ	-6.93	24.00	17.29	-7.69
	0.41	*0.12*	*0.20*	*0.80*
relEduc	1.15	-2.12	-8.05	-8.82
	0.86	*0.53*	*0.06*	*0.22*
relcoh				
Δ	1.02	1.43	-1.66	-0.88
	0.28	*0.14*	*0.00*	*0.23*
t-1	-0.20	1.14	0.42	-0.59
	0.57	*0.00*	*0.19*	*0.12*
ygap				
Δ	0.17	0.42	0.39	0.77
	0.52	*0.00*	*0.01*	*0.00*
t-1	0.32	0.42	0.06	0.85
	0.31	*0.01*	*0.73*	*0.00*
N	123	129	135	112
R2-adj.	0.52	0.74	0.66	0.73
AR(1)	0.19	0.34	0.01	0.78

Table A.4 – The employment rate, age 20-24, the VET-based classification

regressors	samples			
	Dual	Noschool	Nofirm	Hi-vet
emp2024				
t-1	-0.41	-0.47	-0.34	-0.52
	0.00	*0.00*	*0.00*	*0.00*
epl				
Δ	0.24	3.18	-0.79	3.07
	0.90	*0.23*	*0.47*	*0.06*
t-1	-0.02	2.68	-0.12	3.04
	0.99	*0.14*	*0.94*	*0.24*
taxWedge				
Δ	-0.29	-0.05	0.12	0.12
	0.23	*0.73*	*0.43*	*0.52*
t-1	-0.31	-0.02	0.19	0.27
	0.17	*0.76*	*0.35*	*0.12*
almpgdp				
Δ	-3.28	-3.11	1.89	-0.28
	0.20	*0.24*	*0.34*	*0.85*
t-1	-1.50	-2.58	0.78	2.84
	0.32	*0.39*	*0.68*	*0.06*
minW_medW				
Δ	0.36	-0.08	-0.31	0.94
	0.74	*0.72*	*0.11*	*0.14*
t-1	0.37	-0.03	-0.22	-0.93
	0.44	*0.29*	*0.23*	*0.11*
gener				
Δ	-3.26	-4.79	7.40	3.69
	0.69	*0.29*	*0.03*	*0.58*
t-1	0.09	1.90	6.93	-6.13
	0.39	*0.61*	*0.16*	*0.30*
ud				
Δ	0.35	-0.21	-0.32	-0.26
	0.25	*0.10*	*0.12*	*0.31*
t-1	-0.07	-0.11	-0.19	-0.46
	0.77	*0.30*	*0.26*	*0.03*
vet				
Δ	-0.15	-0.14	0.22	0.02
	0.33	*0.26*	*0.11*	*0.88*
t-1	0.34	-0.14	0.17	-0.23
	0.07	*0.11*	*0.19*	*0.99*
EducExp				
Δ	-0.00	-0.02	0.06	-0.00
	0.99	*0.72*	*0.49*	*0.99*
t-1	-0.97	0.78	1.56	-0.82
	0.16	*0.35*	*0.18*	*0.88*
Educ	-7.57	22.74	22.63	-16.85
	0.45	*0.13*	*0.14*	*0.60*
relEduc	1.25	-7.15	-12.44	-13.48
	0.86	*0.01*	*0.02*	*0.06*
relcoh				
Δ	0.42	1.05	0.19	0.54
	0.65	*0.36*	*0.88*	*0.69*
t-1	-0.20	1.14	0.42	-0.59
	0.05	*0.15*	*0.10*	*0.14*
ygap				
Δ	0.31	0.38	0.53	0.67
	0.14	*0.01*	*0.00*	*0.00*
t-1	0.60	0.48	0.22	1.06
	0.03	*0.02*	*0.27*	*0.00*
N	121	129	135	112
R2-adj.	0.50	0.68	0.63	0.78
AR(1)	0.51	0.19	0.01	0.13

Legend - Definitions and Sources of the Variables

emp. Employment - to- population ratio, age 15-24 (OECD).

emp2024. Employment - to- population ratio, age 20-24 (OECD).

epl. Employment Protection Legislation Indicator (OECD).

taxWedge. Measure of the difference between labour costs to the employer and the corresponding net take-home pay of the employee for a single-earner couple with two children (OECD).

almpgdp. Expenditure on Active Labour Market Policies as a percentage of GDP (OECD).

minW_medW. Minimum wage to median wage indicator (OECD).

gener. unemployment benefit generosity (Scruggs et al., 2014).

ud. Trade union density: union membership/employment (OECD).

vet. Technical/vocational (ISCED 2 and 3) over total secondary enrolment (UNESCO UIS).

EducExp. Percentage of expenditure in public education over final government consumption expenditure (OECD).

Educ. Average years of schooling (logarithm; Barro-Lee Website, data downloaded in 2016; missing annual data have been interpolated; predicted data have been used for 2015).

relEduc. Difference between the number of education years of total population aged 15 and over and the number of education years of total population aged 25 and over (Barro-Lee Website, data downloaded in 2016; missing annual data have been interpolated; predicted data have been used for 2015).

relcoh. Youth population (age 15-24) to the total working age population (OECD).

relcoh2024. Youth population (age 20-24) to the total working age population (OECD).

ygap. Output gap: deviation of actual GDP from potential GDP as % of potential GDP (OECD).

Each column refers to the country sample indicated in the table header and specified in the text. In all models we have included yearly dummies and country-idiosyncratic linear trends, not shown in the interest of parsimony. Δ is the difference operator, and t-1 refers to a one-period lagged variable. Coefficient significance levels are provided in italics. N is the number of observations. The *R2–adj*. is the coefficient of determination adjusted for degrees of freedom. Diagnostics are presented for the Arellano–Bond test for first order serial correlation (*AR(1)*, distributed as a normal). We provide p-values for all these tests.