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TIER WORKING PAPER SERIES  
TIER WP 14/12



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# **The impact of institutional context, education and labour market policies on early school leaving: a comparative analysis of EU countries**

Kristof De Witte<sup>1,2</sup>, Ides Nicaise<sup>1,3</sup>, Jeroen Lavrijsen<sup>1</sup>, Georges Van Landeghem<sup>1</sup>, Carl Lamote<sup>1</sup>, Jan Van Damme<sup>1</sup>

<sup>1</sup> KU Leuven, Belgium

<sup>2</sup> Maastricht University, the Netherlands

<sup>3</sup> Corresponding author: Ides.Nicaise@kuleuven.be

Preliminary version

April 25, 2013

## Abstract:

This article presents a comparative analysis of the determinants of early school leaving (ESL) at the country level. We decompose ESL rates into two components: a 'primary' rate reflecting unqualified school leaving from initial education, and a second component accounting for early school leavers who participate in training programmes. Both components may be influenced by structural and policy determinants. We examine how the ESL rate is affected by macro-economic and social context variables such as GDP/capita, growth, poverty, and youth unemployment, as well as system characteristics of the education system (such as legal school leaving age, grade retention, early tracking, and size of vocational education) and the labour market and social protection systems (minimum wages, unemployment insurance).

Keywords: Early School Leaving; Determinants; decomposition

JEL-classification: J23; J24; C23

## 1. Introduction

Early school leaving is currently high on the political agenda, as can be seen from the Europe 2020 strategy where its reduction to less than 10% is one of the headline targets. At present, we observe large differences in the rate of school dropout between European countries.<sup>1</sup> This paper examines how the institutional context, education and labour market policies correlate to the level of early school leaving, by exploiting variation over time and across countries.

The paper contributes to this growing literature on two points. First, there is an extensive literature correlating characteristics of students to early school leaving (ESL). For instance, it has been argued that boys, students retained in grade, students with a low socio-economic status or from ethnic minorities, low engaged students and low performing students are more likely to leave school before obtaining a qualification (for an overview see Alexander, Entwisle, & Kabbani, 2001; Lamb, 2011b; Nevala & Hawley, 2011; Rumberger, 2011; De Witte et al., 2013). This paper differs from the earlier literature by focussing on country characteristics rather than student specific elements. Differences between countries may be attributable to country specific differences in school systems or influences of the (local) labour market to ESL, and may thus provide arguments against or in favour of systemic reforms.

As a second contribution, we decompose the official indicator used in the European Union ‘early leavers from education and training’ (ELET) into two components: early school leavers from the formal initial education system who participate in some kind of further non-formal education or training, and others who do not. The aim of this article is to explore whether and how these differences correlate with characteristics of the educational system and the general environment in the individual EU countries.

This article unfolds as follows. In section 2, we present a review of the literature on how the institutional context, education and labour market policies might influence school dropout. Section 3 decomposes the traditional ESL indicator into ESL from formal education and ESL from education and training. Next, we discuss our empirical strategy (section 4). Section 5 presents the results, while section 6 concludes the paper.

## 2. Literature review

### *Influence of labour market characteristics*

When examining the influence of labour market influences on ESL, we can look at the decision to drop out of school within the framework of human-capital-investment theory (Becker, 1964). According to this theory, staying in school or leaving school can be considered as a rational choice process where a

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<sup>1</sup> We will use the terms ‘school dropout’ and ‘early school leaving’ interchangeably throughout this paper.

student tries to make a balance between the opportunity cost and benefits of continuing education. The effects of macro-economic and social context variables on ESL can be explained by the way in which they presumably affect the costs and/or benefits of further education.

When thinking about labour market influences on ESL, three major determinants have been identified in previous research (Cabus and De Witte, 2013; Card & Lemieux, 2001): the (youth) unemployment rate, the general economic condition/growth and the minimum wages.

First, consider the influence of unemployment in general and youth unemployment in particular. Unemployment might affect ESL in different ways, depending on the focus on adult unemployment or youth unemployment (Micklewright, Pearson, & Smith, 1990). The overall *adult* unemployment may affect the student's decision in two different ways: if students observe that qualified as well as unqualified adults have similar unemployment probabilities, they may be less inclined to continue education. Tumino and Taylor (2013) refer to this effect as the 'discouraged student' effect, where high adult unemployment increases dropout rates. After all, if even qualified adults are unemployed, what's the benefit for the student to stay in school? On the other hand, if adults with a qualification encounter less problems on the labour market, this encourages young people to continue in education, because these students notice that additional schooling may protect them from unemployment. Second, we consider the specific effect of *youth* unemployment. The current youth unemployment (and the related higher probability of unemployment for the ESLs) reduces the opportunity cost of further education and thus encourages students to stay in school. On the other hand, the generosity of the unemployment insurance system (in terms of eligibility, conditionality, level and duration of benefits) may attenuate the threat of unemployment and its impact on ESL.

As for the influence of adult unemployment, the results of previous research support the 'discouraged student' effect: higher adult unemployment leads to higher dropout rates and this effect holds true in different European countries (for Spain: Petrongolo & San Segundo, 2002; For the UK: Tumino & Taylor, 2013). Youth unemployment on the other hand, has a correlation in the opposite direction: higher youth unemployment leads to lower rates of ESL in different European countries (Clarck, 2011; Petrongolo & San Segundo, 2002).

Unemployment of the parents may also lead to economic deprivation and childhood poverty. This poverty may in itself be a strong predictor of ESL. Children who were poor at birth, were three times more likely to leave school before graduation compared to children without a poverty background (Rumberger, 2011). Poor families lack the (material as well as human and cultural) resources to support the education career of their children.

Previous research remains inconclusive on the influence of minimum wages. Montmarquette et al. (2007) concluded that a higher minimum wage leads to more dropout because young people who are considering to leave school are attracted by the high minimum wage on the labour market, while the potential wage gain from further education is reduced. This view was challenged by Pedace and Rohn (2011), who took into account the effect of minimum wages on unemployment duration. Pedace and Rohn concluded that higher minimum wages result in higher unemployment risks for ESLs. This, in turn,

reduces the ESL rate as explained above. A third group of authors find no effect at all of minimum wages on ESL (Warren & Hamrock, 2010) or only for a small subgroup of students (Crofton et al., 2009).

The impact of unemployment on ESL is especially relevant in times of economic crisis when unemployment rates are high, particularly among young people. Besides the relation between the *level* of economic development and unemployment, there is a relation between economic *growth* and ESL (Cabus & De Witte, 2012). In this context, Asteriou and Agiomirgianakis (2001) investigated the direction of this relationship: does economic growth (GDP increase) lead to a higher enrolment in secondary education, or does a higher enrolment in secondary education lead to more economic growth? Their results point towards the latter; the more students enrolled in secondary education, the higher the GDP. On the other hand, using a utility model on Dutch vocational education data, Cabus and De Witte (2013) argue that an increase in GDP (i.e., GDP growth) significantly reduces the early school leaving rate.

### ***School characteristics***

In addition to labour market characteristics, the decision to leave school can also be influenced by several characteristics of the education system. To begin with, European countries differ strongly in the way students are grouped together. In this debate, there are typically two extremes: the (early) grouping of students based on their ability (in e.g. Germany & Austria) versus a comprehensive (lower) secondary education (in e.g. Sweden and Norway). Especially the first type of grouping has been criticised in the literature. Hanushek and Woessmann (2011) discuss some of the recent results concerning the effects of tracking and conclude that the effect of tracking on achievement interacts with the social background of the students. It seems to be the case that in countries with early tracking, especially children from low socioeconomic backgrounds perform more poorly compared to low-SES children in countries without early tracking. For students with a higher SES, there is no effect of tracking on achievement. This means that early tracking exacerbates social inequality in outcomes. On the other hand, it has been argued that a well-developed vocational education sector, typical of some tracked systems, may prevent early school leaving, because attractive labour-market perspectives for vocational graduates may work as an incentive to stay in education (Shavit & Müller, 2000; Lavrijsen, 2012).

Jimerson et al. (2002) concluded that grade retention is (one of) the most powerful predictor(s) of dropout (even after controlling for achievement). The reason for this effect is not clear and different theories were proposed (Finn, 1989; Rumberger, 2011) and tested (Stearns et al., 2007), but a genuine 'causal' relation has not been established yet.

Recently, Cabus and De Witte (2011) tested the impact of a (apparently) very straightforward intervention for reducing ESL: raising the age of compulsory education. The idea behind raising the age of compulsory education is very simple: the longer students stay in school, the higher the number of students that obtain a high school diploma. This idea was also tested by Wenger (2002) who found that raising the legal age of leaving school by 2 years (from 16 to 18), significantly reduced the probability of dropping out. At first sight, the results of Cabus and De Witte are in line with Wenger (2002): a rise in the legal school leaving age leads to a decrease in the number of dropouts. However, they suggest that

this 'relative decrease' was partly caused by an increased dropout rate in the group of students that were exempted from this measure. Raising the compulsory education age may also have some negative side-effects, as forcing potential dropouts to stay in school may generate disruptive behaviour in class (Wenger, 2002).

We conclude this section on school characteristics with an overview of the effects of public funding for education on ESL. Previous authors observed that this did not have a crucial, if any, influence on early school leaving. Mora et al. (2010) investigated the relation between expenditure per student, class-size and pupil-teacher ratio on the share of early school leavers in the different Spanish regions. They found an effect of the expenditure per student on the number of dropouts, but admitted that the magnitude of this effect is very small. When we take a broader scope and consider the relation between educational expenditure and student performance in general, there seems to be no effect of educational expenditure at all (Hanushek, 2003), except on inflated school grades rather than on standardized attainments (De Witte et al., 2012). As Vegas and Coffin (2012) note, it is not how much money is spent that matters, but how it is spent.

### ***The impact of second chance education***

Full-time secondary education is not the only way to obtain a diploma or qualification. In different countries it is possible to enrol in some form of second chance education or lifelong learning programmes (Kritikos & Ching, 2005; Lamb, 2011a). However, Lamb (2011a) argued that such alternatives may actually induce students to drop out if they are perceived as 'a shortcut' towards a diploma. Other studies focussing on returning dropouts are very scarce (Chuang, 1997; Goldman & Bradley, 1996; Ross & Gray, 2005). In this alternative pathway/second chance research, there is one line of research that is popular in the US: research on the General Educational Development (GED) credential. Over the years, this GED was the subject of some very critical papers (e.g. Heckman, Humphries, La Fontaine, & Rodriguez, 2008; Heckman et al., 2010; Tyler, 2003). It is argued that this alternative may encourage dropout, rather than offering a second chance to students who already dropped out. Students who have repeated one or more grades are older than their classmates and lagging behind their age-mates, and may find it more attractive to – as Heckman et al. (2010) calls it – take 'the easy way out'. This is in line with the findings of Glorieux et al. (2011), which suggest that in Flanders students with a history of grade retention see the quick route to the 'central examination commission' as an attractive alternative for spending another year in the classroom with (younger) students.

Before concluding this section, it is worth noting that a range of other system characteristics may influence national ESL rates. For example, in the labour market and social protection spheres, specific regulations for young people, such as differences in rules for access to unemployment benefits or youth activation schemes, may explain why young people's behaviour does not match with the theoretical predictions. Unfortunately, data appear to be lacking on some of these system characteristics.

Nevertheless, we will try in what follows to reach beyond the findings of the existing literature and to test further hypotheses. One of these unexplored areas relates to cultural barriers: in some countries, ESL is particularly high among immigrants, which – in addition to their socio-economic circumstances - may be due to a lack of awareness regarding the return on investment in education.

### **3. Early leavers from formal education and training: definition of concepts**

This section discusses the relationships between two indicators published by Eurostat: ‘early leavers from formal education’ (ELFE), and ‘early leavers from education and training’ (ELET). Both indicators are derived from the EU Labour Force Survey (LFS) and measure the size of yearly cohorts of young people leaving secondary school ‘without any qualification’. Time series of the annual indicator values for the 27 EU countries are available (Eurostat, 2010, European Commission, 2012).

The ‘early leavers from education and training’ (ELET) indicator is defined as: “the percentage of the population aged 18-24 having attained at most lower secondary education and not being involved in further education or training. The numerator of the indicator refers to persons aged 18 to 24 who meet the following two conditions: (a) the highest level of education or training they have attained is ISCED 0, 1, 2 or 3c short and (b) they have not received any education or training in the four weeks preceding the survey. (...)”<sup>2</sup> whilst the ‘early leavers from formal education’ (ELFE) indicator is stated to refer to “early leavers from formal education only: this shows the impact of restricting the calculation to participation in formal education instead of formal and non-formal for the usual indicator.”<sup>3</sup> The difference ELFE – ELET denotes the percentage of the population aged 18-24 having attained at most lower secondary education and not involved in formal education but still engaged in non-formal education or training. It is relevant to note that usually—and in a country with compulsory education up to eighteen almost certainly—a considerable number of persons in the younger part of the age range are still in secondary education, working towards a qualification.

The possibility that the lower part of the age range 18–24 may refer to an important number of persons still enrolled in secondary education and that the size of this fraction may vary between countries, must also be kept in mind when interpreting correlations of the ELFE (and ELET) indicator with country characteristics such as the age of compulsory education. The presence of more persons aged 18–24 in secondary education, all other things being equal, lowers the value of this indicator. This is somewhat counterintuitive: it means that of two countries with the same ‘final’ output, the one with the less efficient system (that keeps students longer in secondary education) will have the lower (i.e. more favourable) ELFE value.

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<sup>2</sup> Eurostat website, Metadata accompanying data file edat\_lfse\_14.

<sup>3</sup> [ESTAT-USER-SUPPORT@ec.europa.eu](mailto:ESTAT-USER-SUPPORT@ec.europa.eu), private communication, 14 August 2012, with reference to the data file edat\_lfse\_15 on the Eurostat website.

A final issue to bear in mind when interpreting correlations with these indicators has to do with the ‘training’ component expressed by the difference ELFE – ELET. Insofar as this component refers to training by an employer, it introduces an element in the indicator ELET which seems more closely related to labour market conditions (and youth unemployment) than to the performance of the secondary education system. Van Landeghem et al. (2012) indicate that unqualified secondary school students beyond the legal school leaving age tend to react to an economic downturn by staying on in secondary education. If other factors—such as the rate of re-entry in secondary education or the entry rate of young adults in adult education—are constant, this reaction would push the ELFE-indicator down. It seems unlikely, however, that the ELFE – ELET component could remain constant in such circumstances, as a worsening in labour market conditions is likely to drive up youth unemployment and to take away opportunities for training. The net change in ELET might go either way, depending in the relative size of the decrease in ELFE and ELFE-ELET. The ELET, ELFE and ELFE-ELET data for EU-27 countries (Eurostat data) are presented in Table 1.

Table 1: ELET, ELFE and ELFE-ELET for EU-27, in percent (Eurostat data, 2011)

country	ELET	ELFE	ELFE-ELET	country	ELET	ELFE	ELFE-ELET
EU-27	13.5	14.4	0.9	LT	7.9	7.9	0
BE	12.3	12.8	0.5	LU	6.2	6.9	0.7
BG	12.8	12.9	0.1	HU	11.2	11.4	0.2
CZ	4.9	5.1	0.2	MT	33.5	34.6	1.1
DK	9.6	13.3	3.7	NL	9.1	10.2	1.1
DE	11.5	11.8	0.3	AT	8.3	9.3	1.0
EE	10.9	11.4	0.5	PL	5.6	5.7	0.1
IE	10.6	10.8	0.2	PT	23.2	24.7	1.5
EL	13.1	13.3	0.2	RO	17.5	18.6	1.1
ES	26.5	29.3	2.8	SI	4.2	4.4	0.2
FR	12.0	12.9	0.9	SK	5.0	5.0	0
IT	18.2	18.6	0.4	FI	9.8	10.6	0.8
CY	11.2	11.3	0.1	SE	6.6	8.2	1.6
LV	11.8	12.3	0.5	UK	15.0	16.4	1.4

A final comment relates to the statistical validity of ELFE and ELET indicators. The LFS samples are large in an absolute sense, because they cover a population of 15–64-years old. However, the indicator of real interest with regard to early school leaving is the status of a birth cohort at a particular age, say at 22—qualified or not; and in the latter case: still in education or training or not. The 22-years olds make up a (very) small subsample of the LFS-sample, which is inadequate for the proper monitoring of the year to year evolution in early school leaving. As an *ad hoc* remedy, therefore, the definition of the

indicator has been adapted, referring to the age range of 18–24. This increases the subsample size and reduces the sampling error to a publishable value.

#### 4. Data and model specification

Data relating to the determinants of ESL are drawn from different sources: OECD (PISA, Education at a glance, and other datasets), Eurydice and Eurostat (the Adult Education Survey, Labour Force Survey and other datasets). Details about the definitions as well as descriptive statistics can be obtained from the authors on request.

We apply a simple ordinary least squares (OLS) regression. In particular, we use the following model specification:

$$ESL_{it} = \beta_0 + \beta_1 X_{it} + \varepsilon_{it}$$

where the subscript  $i$  denotes a country and the subscript  $t$  stands for time.  $X$  is a vector with control variables, and  $\varepsilon$  an i.i.d. error term. Note that we cannot strictly interpret the outcomes as causal effects as we lack exogenous variation. The results should therefore be interpreted with caution. Further note that the OLS model ignores potential serial (intertemporal) correlation between the error terms. Therefore, the model has also been estimated with fixed effects and clustered standard errors at country level. This delivered robust outcomes<sup>4</sup>.

We estimate five different equations in which we include different sets of explanatory variables. A first model focuses on the most important control variables emerging from the literature review (e.g., Hanushek & Wößmann, 2006; Martin, 2009; Wenger, 2002). These include GDP/capita in purchasing power parities (PPP), GDP growth in current prices, the youth unemployment rate, adult unemployment rate (measured by Eurostat as unemployment in the 25-64 age group), minimum wage (as % of median wage in the country), public education expenditure as percentage of GDP and a year trend. The latter is in line with earlier work by De Witte and Rogge (2010) who argued that a trend term is necessary to capture the increasing awareness of the importance of obtaining a high school degree. As the number of observations on the variable minimum wage is limited, it is removed from the subsequent model specifications in order to increase the power of the analysis.

In a second model specification we add poverty and the percentage of migrants to the ‘baseline’ specification.

In the third regression model we examine the correlation between early school leaving and some key characteristics of the school system. More precisely, we add the legal school leaving age, percentage of students who have experienced grade retention between the start of primary school and age 15, age of first tracking and a time trend, school selectivity (percentage of students in schools where

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<sup>4</sup> In order to examine the robustness of the results, the four models have been estimated both with and without country and time fixed effects, as well as with and without clustered standard errors. The latter capture time invariant differences across countries and time. Obviously, in the specification with the country fixed effects, time constant variables are omitted from the regression. As the fixed effects variants delivered robust outcomes on the variables of interest, these results are omitted here but can be made available upon request.

students' record of academic performance is considered for admittance), ability grouping (percentage of students in schools that group students by ability) and vocationalism (the share of students in general education relative to vocational education).

A fourth model specification focuses on the obstacles to lifelong learning (LLL). As these obstacles are directly relevant only for post-initial education and training, this model will be applied exclusively to the equation where the dependent variable is ELFE-ELET (i.e. the proportion of school leavers engaging in adult education or training).

A final model specification combines all variables from previous specifications. It provides an overall view on what variables correlate to ELFE and ELFE-ELET.

Three different outcome variables were used: (a) the traditional ELET early school leaving estimator provided by Eurostat; (b) the 'pure' ELFE indicator presented in section 3 (capturing all dropouts from initial education); and (c) the difference between the ELET and ELFE indicator – relating to early school leavers who engaged in adult education or training. Category (c) can be considered as the probability of participation in 'second-chance education and training'. As the estimates for (a) and (b) were very similar, only the results relating to (a) and (c) will be reported here. Other results are available upon request.

## 5. Results

The results of the four model specifications applied to the ELET and ELFE-ELET data are presented, respectively, in Tables 2 and 3.

Except for the baseline model, GDP/capita has a negative influence on early school leaving (table 2). It is significantly negative in the 'school system' model specification. The higher the level of economic development of a country, the lower is the ESL rate. Likewise, in most model specifications, GDP *growth* in current prices has a negative and significant influence on early school leaving. This suggests that a growing economy induces students to stay on at school. As regards ELFE-ELET (table 3), the level of GDP/capita mostly has the expected positive effect, although insignificantly different from 0. Curiously, economic growth seems to strongly reduce participation in post-school learning, suggesting a strong pull effect from the labour markets.

In the third model specification, youth unemployment has a significant positive influence on ELET (table 2). On the other hand, it does have a negative effect on the proportion of early school leavers in training (table 3). Both effects seem to contradict the theoretical expectation that, due to lower opportunity costs, young people should participate *more* in education. However, as we argued in the survey of the literature, other factors may outweigh this effect: discouragement (the feeling that further investment in education is not worthwhile), or the 'added worker effect' (additional family members entering the labour market when one of the earners loses his job). Obviously, the latter effects seem to reflect a myopic rationale of ESL.

In line with the literature, we observe that adult unemployment has a positive significant influence on ELET. Auxiliary regressions (available upon request) indicate that excluding adult or youth unemployment from the regression does not alter the estimated coefficients. Conversely, adult unemployment does not have a significant influence on the difference between ELET and ELFE, and is therefore not included in Table 3.

The minimum wage has a negative though insignificant influence on ELET. This weakly confirms the findings by Pedace and Rohn (2011) who argue that, due to the increased employment costs, less unqualified young people are pulled away from school.

In most model specifications the generosity of educational funding correlates negatively and significantly with early school leaving. As can be expected, we do not observe any significant correlations with the ELFE-ELET indicator.

The year trend has a negative, but non-significant influence on ELET and ELFE-ELET. The negative correlation points to the increasing awareness of students to acquire a school certificate. It may be non-significant due to the short time period covered by our study.

The second model specification shows that, the higher the poverty rate in a country, the higher is ESL in general - and ESL from formal education in particular. This is in line with the literature (see Section 2). Interestingly, we do not observe a significant correlation between the poverty rate and early school leavers in training. In the poverty model, we find additionally that an increased proportion of new immigrants correlates significantly and positively with the ELET indicator. This higher ESL among immigrant populations may be attributable to cultural barriers, in addition to their socio-economic deprivation. Analogously, the immigration rate has a negative effect on participation second-chance learning.

In the third model ('school system') specification, the legal school leaving age has a negative effect on ELET. The longer the duration of compulsory education, the lower the risk of school dropout. This is straightforward as a higher (compulsory) school leaving age increases the probability of obtaining a high school certificate, while it has no significant effect on second-chance learning.

Grade retention appears to boost early school leaving. We observe a positive correlation between the percentage of 15-year-old students who reported to have repeated at least one year and the ESL rate. This finding is in line with the literature (Jimerson et al., 2002). On the other hand, the demotivation effect of grade retention within formal education appears to be (partly) compensated for by a positive effect on participation in second-chance education and training (table 3).

In line with earlier literature, our estimates suggest no significant relationship between tracking age and ESL.

It is interesting to observe that the percentage of students in selective schools (where academic performance is considered for admittance) has a significant negative influence on school dropout. This can be more easily understood if selectivity is interpreted as an indicator of competition between

schools. School competition enhances the quality of education and may in this way prevent school fatigue and dropout. On the other hand, students who do drop out early tend to be more frustrated by the 'rat race' and to participate less in further learning (see table 3).

As regards ability grouping, we do not observe any significant correlation with ELET, but a positive effect on second-chance learning: this suggests that at least some young people avoid the frustration of being grouped in low-ability classes by taking alternative routes outside the mainstream school system.

The relative share of students in general versus vocational education has a positive and significant influence on early school leaving. This confirms that a well-developed vocational track may reduce early school leaving because it enhances the direct utility of a secondary education degree and thus acts as a safety net for less academically inclined students.

Fourth, looking at the 'LLL obstacles' variant of the ELFE-ELET equation, the findings suggest that some barriers to LLL have the expected discouraging influence on the probability of dropouts using second-chance provision. In particular, barriers due to distance, and (insignificantly) family responsibilities appear to discourage participation of early school leavers in training. Curiously, most other barriers seem to *encourage* (rather than discourage) school dropouts to participate in second-chance training. These findings call for further investigation: a possible explanation is that those obstacles apply mainly to mainstream education. They may therefore prevent young people from participating in full-time education and make them opt for non-formal learning as an alternative. This may point to some ambiguity in the role of second-chance provision: it may function either as a 'safety net' for dropouts from the mainstream education system, or just as an alternative option for students. The latter role actually makes second-chance provision compete with mainstream education and may pull young people out of school. However, it is also possible that some of our findings are unreliable due to very small proportions of school dropouts participating in post-school education and training.

Finally, combining the insights from previous models, the 'combined model specification' confirms earlier findings. The  $R^2$  and adjusted  $R^2$  reflect the percentage of variance in the data explained by each model. For the traditional ELET indicator, the 'baseline' model specification can explain about 50% of the variation in the data. This declines to 48% when including poverty (probably due to the number of missing data for the included variables), but increases to 78% in the 'school system' specification and even up to 85% in the 'combined' model specification. Note that the predictive power of the 'second-chance' models (ELFE-ELET) is much smaller: at best, in the LLL variant, we can explain about 72% of the variation in the data.

Table 2: Dependent variable ELET as defined by Eurostat (i.e., early leavers from formal education and training)

Variable	Baseline	Poverty	School system	Combined
GDP/capita in PPP	1.01E-04	-8.55E-05	-1.24E-04***	-1.11E-04**
GDP growth in current prices (%)	-88.42***	-99.10***	-14.75	-24.67
Youth unemployment rate (%; age group <25 years)	0.02	-0.05	0.09*	-0.005
Adult unemployment rate (%; age group 25-74 years)	0.96***			0.14
Education funding	-0.33*	-0.29*	-0.09	-0.09
Minimum wage (as % of median wage)	-21.33			
Year	-0.27	-0.48	-0.06	-0.06
Poverty rate (%)		0.84***		0.42***
Migrants (%)		8.80E-03**		2.43E-03
Legal school leaving age			-2.58***	-2.55***
% grade retention			0.48***	0.38***
tracking age			-0.36	-0.35
% students in schools where academic performance are considered for admittance			-0.09***	-0.08***
% students in schools that group students by ability			-0.02	-0.05
% students in general education			0.21***	0.17***
Constant	562.88	977.09	179.27	180.16
Number of observations	94	130	134	114
R <sup>2</sup>	0.54	0.51	0.80	0.87
R <sup>2</sup> adjusted	0.50	0.48	0.78	0.85

Table 3: Dependent variable ELFE-ELET as defined by Eurostat (i.e., early leavers participating in second-chance education or training)

Variable	Baseline	Poverty	School system	LLL obstacles	Combined
GDP/capita in PPP	1.11E-05	1.602E-05	2.02E-05	-6.56E-06	-2.61E-05
GDP growth in current prices (%)	-13.83*	-8.61*	-8.17*	-9.44*	-4.08
Youth unemployment rate (%; age group <25 years)	-0.03	-0.02	-.04*	-0.01	-0.03
Education funding	0.01	0.02	0.02	0.04	0.02
Minimum wage (as % of median wage)	-6.85*				
Year	-0.12	-0.06	-0.06	-0.03	0.02
Poverty rate (%)		-0.02			0.05
Migrants (%)		.002***			-.003**
Legal school leaving age			0.07		-0.35
% grade retention			1.45E-03		.11***
tracking age			0.07		-0.18
% students in schools where academic performance are considered for admittance			-.02**		-.05***
% students in schools that group students by ability			.02**		-.06***
% students in general education			7.90E-0.3		-0.02
LLL too expensive				-5.71E-03	.16***
LLL lack of employer support				0.02	.18***
LLL conflict work				.04*	.09**
LLL family respons				-.05**	-0.05
LLL too far				-.08***	-.35***
LLL health age				-.04*	.08*
LLL other				0.10***	.19***
Constant	253.99	120.52	125.50	64.48	-22.03
Number of observations	94	130	134	134	119
R <sup>2</sup>	0.17	0.24	0.40	0.57	0.72
R <sup>2</sup> adjusted	0.11	0.19	0.34	0.52	0.66

Note: \* p<0.05; \*\* p<0.01; \*\*\* p<0.001

## 6. Conclusion and policy implications

In this paper, the official ESL-indicator for the EU, produced by Eurostat, was decomposed into two subgroups which behave differently, depending on the circumstances. In particular, we distinguished between dropouts from initial education (ELFE), and those who drop out but re-enter non-formal education or training. The latter group is relatively small but appears to act as a buffer against unemployment. Governments need to be aware of the growing importance of this group of ‘second chance learners’; they should systematically try to pull down the barriers in access to lifelong learning.

Whereas early school leaving is traditionally regarded as irrational behaviour of young people, our paper adopts a rational cost-benefit calculus framework and identifies a number of system characteristics of economies, labour markets and education systems that may affect young people’s decision to drop out. Some of these characteristics – such as the wealth of countries - remain largely out of reach for policy makers; others can be altered through policy decisions. Our analysis indicates which types of interventions are relatively effective. In some cases, we are also able to falsify some hypotheses about measures that are advocated on ideological grounds but appear to be of little importance.

It goes without saying that a favourable socio-economic environment (economic growth, the prevention of youth unemployment, the fight against poverty and effective integration strategies for newly arrived immigrants) contributes to more successful school completion rates. Within the field of education policy, the most effective strategies identified in our empirical analysis relate to (a) the extension of compulsory education, (b) the reduction of grade retention, and (c) an attractive strand of vocational education at upper secondary level. On the other hand, rather surprisingly, our findings suggest that system characteristics which are usually associated with more unequal educational outcomes (such as early tracking or ability grouping) tend to have little impact on ESL. Selectivity in school admission indeed appears to have a favourable effect on (the reduction of) ESL: this may be attributed to the fact that selectivity goes in pair with competition and better quality of education.

Although our model was based on the assumption of human capital investment as a rational choice process, some findings indicate that young people tend to look mainly at short-term benefits and to underestimate the long-run effects of their choices. The fact that youth unemployment enhances school dropout can be understood as the consequence of discouragement; however, this ignores the established fact that a qualification is the best protection against the risk of unemployment. Similarly, our analysis of participation in second-chance education and training suggests that this provision tends to act – at least, partly - as a (poor) substitute for mainstream education instead of a safety net. There appears to be a genuine risk that the mere existence of this ‘second-chance’ provision actually pulls young people out of school, and makes them opt for second-chance provision as a ‘first chance’ alternative. Admittedly, more in-depth research is needed to confirm or invalidate this hypothesis.

This ‘myopia’ in the decision process of early school leavers pleads for sensitisation campaigns and, if necessary, coercion. For example, the legal school leaving age may be replaced with an obligation

to complete secondary education. Such a measure may look very challenging at first, but it will undoubtedly influence the expectations, commitment and behaviour of all stakeholders: students as well as teachers, school authorities, employers and policy makers. All of them have a role to play in achieving success for all young people.

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TIER WP 14/12  
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ISBN 978-94-003-0078-1