

Measuring Transition from School to Work in the EU: Role of the Data Source

Abstract

The transition of young people from school to the labour market is a key issue for policy makers and one of the priorities for the European Union within the Europe 2020 flagship initiative "Youth on the move". The newly adopted ET2020 Benchmark on Graduates' Employability contributes to this endeavor by estimating the employment rate after leaving education. It is computed using the *HATYEAR* variable (i.e. year when completed the highest educational degree) collected annually by the core Labour Force Survey (LFS) of Eurostat. In this paper, we make use of the variable *STOPDAT* (i.e. date when leaving school for the last time) collected in the LFS 2009 ad hoc module, on the entry of young people into the labour market, to test the validity of the *HATYEAR* variable as an efficient proxy of the starting date of the transition process. We find that the new ET2020 Benchmark indicator suffers from a systematic (rather than random) underestimation bias caused by the *HATYEAR* proxy. Moreover, we observe a significantly higher correlation between the Benchmark and its assumed European counterfactual indicators than between the re-defined indicator using the *STOPDAT* variable. Hence, our analysis confirms the new Benchmark indicator as a valid proxy of the transition process between school and work and as a strong tool for policy making.

Keywords Employability, Benchmark indicators, European statistics data

* Eurostat Unit F5

† European Commission -DG JRC-IPSC-Econometrics and Applied Statistics Unit-CRELL,
(author: Christelle Garrouste Post-doctoral Researcher christelle.garrouste@jrc.ec.europa.eu)

1 Introduction

In May 2011 the Commission unveiled plans for new European targets on the mobility and the employability of students to stimulate and guide education reforms in Europe¹. The two new benchmarks were formally adopted by the Council in November 2011 and May 2012 respectively (Council of the European Union 2012). They complete a set of joint targets which European Union (EU) countries have pledged to achieve by 2020, including reducing early school leaving, increasing the share of higher education graduates, and getting more adults to participate in lifelong learning. More specifically, while the new benchmark on the mobility of students aims at measuring the share of young people with learning experiences abroad, the new benchmark on education and training for employability aims at monitoring the success rate of young people with different education levels in the labour market in the years after graduation.

As depicted in the European Commission's Staff Working Paper (SEC(2011)670), the development of such benchmarks was motivated by a common political and scientific agreement that education and training lie at the heart of the EU's Europe 2020 strategy to exit the recession and establish the foundations for future knowledge-based growth and social cohesion. Helping young Europeans to acquire the knowledge, skills, experience and intercultural competences needed to succeed in the EU labour market is more essential than ever as the number of young jobseekers soars and youth unemployment stands at 20.8% (15-24 year olds in 2010). Ensuring that young people leave education with the best possible support to get their first job is critical, especially when the recession risks turning the inevitably difficult task of getting established on the labour market into something more long-term and structural. The potential cost of losing the "crisis" generation is very high both at individual and societal level.

¹ For a detailed overview of the political context of these new benchmarks, see European Commission (2002, 2007, 2008a, 2008b, 2008c, 2008d) and European Union (2006, 2007a, 2007b, 2009a, 2009b).

The ET 2020 states that an important objective of monitoring employability is meeting labour market “challenges” in “changing circumstances”. Such challenges can be described in a long-term (demographical change, global competition, migration, technological change) or in a short or medium-term perspective (e.g. the current economic crisis).

Employability is a complex and multi-faceted concept. The difficulty in applying a straightforward definition has been recognized by various studies (e.g., Gazier 1999; McQuaid and Lindsay 2005)². McQuaid and Lindsay (2005) highlight the existence of two alternative perspectives in the employability debate: one focuses only on the individual’s characteristics and skills, referring to the individual potential to obtain a job, while the other perspective takes into account also external factors (e.g. labour market institutions, socio-economic status) that influence a person getting into a job, moving in between jobs or improving their job. De Grip et al. (2004) call these factors ‘effectuation conditions’, i.e. the conditions under which workers can effectuate their employability.

There are a number of additional aspects considered in the literature such as the time lag between leaving education and employment, the degree of skills match between one’s educational background and his/her occupation as well as the type of contractual arrangement (full-time vs. part-time; permanent vs. temporary). Any definition based only upon individual characteristics and skills would disregard the potential influence of the institutional settings that support personally or collectively the transition from school to work, and help the employed workers to stay in their job and the non-employed workers to find a job.

Because the interest of the Commission is in identifying ways in which policies impact and can further enhance employability, the definition retained as reference is the one by Cedefop (2008): “Employability is the combination of

² See Arjona Peres et al. (2010a) for a detailed overview of the most common definitions of employability.

factors which enable individuals to progress towards or get into employment, to stay in employment and to progress during their career.”

According to this definition, a successful realization of individuals at each stage of their working life would require the presence of the right combination of employability factors. Education and Training (E&T) – formal, non-formal and informal - is a key determinant of a person's human capital, both initially and, through lifelong learning, in its updating and improvement over the working life. Good E&T should also stimulate motivation, build the skills important for the workplace and facilitate job search. Still, many employability factors lie beyond the scope of E&T policy. At the individual level, socio-economic determinants and personal attributes play an important role; while at the macro level, labour market regulations, structure of the economy and the overall economic situation constitute important employability conditions (Arjona Perez et al. 2010a and 2010b; European Commission 2011).

Hence, education's support for employability can be seen in three distinct phases:

- "*Preparation for employment*" within the continuum of formal E&T. Irrespective of the educational pathway chosen and the level of qualification attained, all young people should leave their initial education equipped with key competences and the necessary motivation and understanding of the labour market to allow them to progress in their future careers, all the while bearing in mind that preparation for employment is not the only purpose of formal education.
- "*Transition from education to employment*": this refers to the end of the "preparation for employment" phase. During this phase, the contribution of education and training systems could, for instance, occur through career guidance and counselling; and through the development of qualification frameworks which are transparent, comparable and understandable to potential employers.
- "*Stay in employment and progress in career*": this phase refers to the capacity of education and training systems to update and upgrade

continuously the knowledge and skills of workers. It implies an openness and accessibility of E&T systems to all adult learners.

Of these three phases, two are already monitored by an extensive framework. Indeed, "*Preparation for employment*" is covered by 4 of the 5 benchmarks under the ET 2020 while "*Stay in employment and progress in career*" is covered by the fifth ET 2020 benchmark on adult participation in lifelong learning. The phase relating to the "*Transition from education to work*" is not yet addressed. This is where a young person's employability will depend most directly on the quality of what he/she has learned in his/her formal education and its relevance for the labour market. It is therefore the phase upon which the work on a possible benchmark on education for employability has been most heavily focused.

This paper presents the proposed indicator by the European Commission on transition from education to employment and investigates its sensitivity to changes in the definition of the date of exit of education. More specifically, it shows that the definition of the date of exit of education varies according to the data source and tests the size of the bias.

2 Towards a measure of the transition from education to employment

The transition from school to work, frequently defined as the period between the end of an individual's primary involvement in education and training and his stable settlement in a work position (Müller and Gangl 2003), is a critical period in the life of young people. A transition from education to first job associated with a long period of unemployment could have significant adverse implications for future labour market outcomes in terms of future earnings and work experience as well as for future family life in terms of delaying or preventing departure from the parental home, setting up a family and having children (Brzinsky-Fay 2007; Korpi et al. 2003).

As Müller and Gangl (2003) point out, from a macro-perspective, the pattern of individual transitions reflects the integration of young people into the

labour market. The transition process has two important dimensions – the duration and the match, or the quality of the job obtained. While the match or quality of the job can not yet be measured as a benchmark due to lack of comparable data across countries and weaknesses of the ISCED-ISCO comparability scales, the focus can only be on the duration of transition. The duration of transition gives important indications as to the dynamics and level of interaction of the education and training (E&T) systems and the labour market. Low time interval between education and a first (significant) job could be a good indication of the responsiveness of the E&T systems to labour market demands in terms of occupational profiles. Decrease in the time period between leaving education and entering the labour market means better opportunities for young people, a group that shows high unemployment rates in initial transition from education to work.

The transition process depends upon a variety of micro and macro level factors (e.g., gender, socio-economic background, macroeconomic conditions, etc.) among which education is an important factor and research illustrates that higher level of education increases employment possibilities. The impact of the economic crisis on young people illustrates this vulnerability of youth in the transition period. According to the Human Capital theory, one of the main mechanisms through which education has an impact on labour market outcomes is by increasing the productive skills of students (Becker 1964; Mincer 1974). The level of educational attainment and quality of education are therefore essential in facilitating transition to the labour market (Psacharopoulos and Schlotter 2010; Hillage and Pollard 1998; Harvey 1999).

From a macro-perspective, the OECD Thematic Review on the Transition from Initial Education to Working Life (OECD, 2000) underlines three key ingredients for successful transition which are related to E&T: (i) well organized pathways that connect initial education with work and further activity; (ii) widespread opportunities to combine workplace experience with education; and (iii) good information and guidance. The presence of apprenticeships in the curriculum or work experience while studying leads to the acquisition of job

and/or sector-specific skills and higher probability of entering into skilled occupations. Some research has concentrated on the effects of vocational training and apprenticeship on the transition to first job and has shown evidence of faster transition to work for students which have undertaken apprenticeships (e.g. Bonnal et al. 2000; Bassanini et al. 2005). E&T systems which develop good interaction with enterprises and have effective career counselling and job finding assistance facilitate greatly the transition process. They ensure more equity in the access to the labour market by compensating for some socio-economic factors which impact negatively on the transition process for certain groups (for further details see Arjona Perez et al. 2010a and 2010b).

The challenges of integrating young people increased during the recession. The share of active 20-34 year olds in employment has deteriorated between 2008 and 2009. While for the high educated, the share in employment has decreased by approximately 3 percentage points between 2008 and 2009 (from 87 in 2008 to 83.8%) it has decreased by close to 4.5 percentage points for the medium level educated (from 76.7% to 72.1%). Likewise, more than half of the 8 percentage points decrease suffered by the low educated since 2006 (from 61.3% in 2006 to 53.3% in 2009) occurred between 2008 and 2009. Hence, the higher the level of educational attainment a young person has, the greater his/her chance of a successful transition to employment.

Proposing a benchmark on the contribution of E&T to employability in this current economic situation is particularly challenging as the labour market outcomes of graduates are highly dependent upon the general macro-economic conditions. Whether the economic recovery will result in the creation of a significant amount of new jobs or jobless growth will depend upon the exit strategies and public policies and their success in reaching a balance between flexibility and security on the labour market (European Commission 2007).

In addition, the forecasted demographic changes for the next 10-20 years will change the composition of the labour force and consequently the labour market opportunities for the different groups. The percentage of younger people (15-29) is forecasted to fall from 28.2% in 2008 to 25.4% in 2020, while that of

older people (50-64) to increase from 28.1% to 32.0% (Cedefop 2010a, 2010b). The change in the demographic situation and the ageing population calls for a much stronger emphasis on the successful integration of young people in the labour market in order to achieve effective and full use of all resources.

Interventions from the E&T systems could be timely, aiming at introducing new ways for facilitating a smoother transition from education (e.g. better career counselling activities, closer contact with enterprises, etc.). At the same time, reallocation of workers due to the economic crisis and the rate of creation of new jobs depending upon the speed of recovery will strongly affect the employment rates of graduates and consequently any indicator on the success of transition. Furthermore, with regards to matching the labour market needs, reform of curricula could take much more time and the impact could be observed with a much longer lag.

Any indicator/benchmark on education for employability should therefore differentiate employment prospects according to educational attainment and should reflect the objective of upgrading attainment levels. With regard to people with low skills, whose employability has suffered most in the recession and is likely to further deteriorate in the labour market of the future, the primary aim for E&T systems is to reduce the number falling into this category. Nevertheless, they should leave education with good levels of attainment across all key competences to facilitate success and later progress in the labour market.

Hence, the proposed benchmark measures successful transition by focusing on employment. As already stated, given existing data availability, it is not possible at this stage to monitor the relationship between educational attainment level and the quality of the first job. This will only be possible if there is a better matching of ISCED classifications for educational qualifications with the ISCO job classification which could allow the analysis of the quality of the first job and the development of a benchmark on the "quality of transition" from education to early-stage employment.

Data used for the employability benchmark is computed from the core annual Labour Force Survey of the European Union (EU-LFS). The EU-LFS is a

quarterly and annual, large sample survey providing results for the population in private households in the EU, EFTA (except Liechtenstein), and the Candidate Countries. This data source enables for the estimation of annual trends since 2004, which are essential for monitoring and assessment of a benchmark indicator.

Concretely, it is then important to define properly what is meant by the time at which an individual ends his involvement in E&T and what is meant by “first job(s)”. Because a first significant job may be defined differently according to the labour market structure and individual motivations and expectations (i.e. part-time vs. full-time or permanent vs. fixed-term contract)³, it is essential to define the first job in the broadest and most inclusive way as possible when doing cross-country comparisons. Moreover, conceptualizing the ‘outcomes’ of the transition process is a challenging task. Countries vary in the structure and pace of their transition processes. Consequently, transition outcomes may appear quite different when young adults from different countries are compared one year after leaving school, but may become quite similar five years after leaving school (van der Velden and Wolbers 2008).

Given the nature of the EU-LFS data, a number of data-driven choices had to be made with regard to the definition of the time of start of the transition period, the age bracket and the time period for evaluating the successful transition from education to work (see Garrouste 2011 for details). First of all, the start of the transition period had to be proxied by the year when a person receives his/her highest educational diploma/degree (variable *HATYEAR* in the core annual EU-LFS). In order to avoid counting individuals enrolled in further education or training activities, a control was added for non-enrollment in education or training activities in the four weeks preceding the interview using both the variables *COURATT* and *EDUCSTAT*.

In terms of the definition of the 20-34 years old age bracket for this indicator, consistency with current developments related to the EU 2020 and

³ See ILO (2008) for a detailed discussion on this topic.

ET2020 benchmarks have been taken into account. On the one hand, the lower bound of 20 years was adopted in correspondence with the new age bracket of 20-64 years old introduced with the employment rate headline target of the Europe 2020 strategy. This change over the previous 15-64 years old age bracket was introduced to meet the objectives of raising educational levels and lowering school dropout rates and were justified by the fact that the employment rate for the categories 15-19 is very low as this is a group often still in education. On the other hand, the upper bound of 34 years old was chosen in correspondence with the current benchmark on tertiary attainment evaluated for the 30-34 years old. Hence, in order to include new tertiary level graduates, the targeted cohort of the education for employability benchmark indicator was finally defined as 20-34 years old.

Figure 1 presents the employment rate of the 20-34 years old by number of years since completion of their highest educational attainment among those not currently enrolled in any further education or training. It reveals the clear existence of a “transitory year” immediately after leaving education during which more than one third of the youth is not employed. This result can be both data-driven and labour-market driven. Indeed, the EU-LFS asks the respondents about the year of highest graduation and the year of start of current job. Hence, if a respondent graduated in December 2007 and got first employed in January 2008, he will be registered as employed 1 year after graduation. Moreover, in some countries, it is common for graduates to enroll in unpaid apprenticeships and stages directly after graduation, which may neither be reported as part of their education and training (if not formally stipulated in the prerequisites for the completion of a diploma) nor as a first employment contract (because of their non-remunerated nature). These limitations can therefore produce an underestimation bias of the results for the period “less than one year after completion of highest education”.

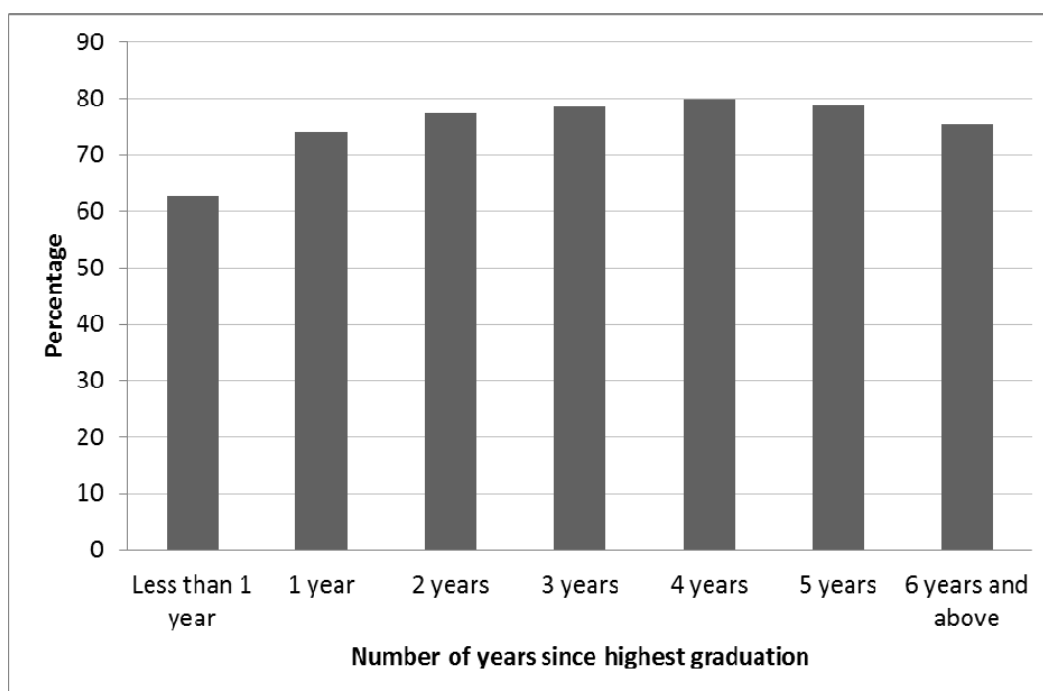


Fig. 1 Employment rate of the 20-34 years old not currently enrolled in further education or training, by number of years since completion of the highest educational attainment (EU27 average), 2009 (Source: Authors' computations based on the core annual EU-LFS, 2009)

Then, when looking at the employment rates of the 20-34 years old at least 1 year after graduation, we observe a progressive increase up to 4 years after followed by a progressive drop beyond 4 years. This result being based on a measure of stock rather than flow of graduates in employment, it is important to keep in mind the fact that we are observing individuals that entered the labour market in different years and were therefore affected by different structural and conjunctural settings. Among these individuals, some may have been in employment ever since the day of their graduation, without interruption, while others may have experienced multiple unemployment spells. Overall, what Figure 1 reveals is that the largest number of 20-34 years old is employed within 4 years after graduation. Beyond that, it gets harder and harder for that age cohort to find a job.

This result is to some extent confirmed by empirical research based upon longitudinal panel data (e.g., ECHP or EU-SILC), namely that, on average, young graduates take 24 months to find their first job, with important variations across

countries and educational attainment levels, ranging from 13.2 to 34.6 months (Quintini 2007). Because countries vary in the structure and pace of their transition processes, transition outcomes may appear quite different when young adults from different countries are compared one year after leaving school, but may become quite similar five years after leaving school (van der Velden and Wolbers 2008).

Moreover, it has been demonstrated that a transition from education to first job associated with a long period of unemployment can have significant implications for future labour market outcomes. It can adversely affect future earnings and work experience (e.g., Arulampalam et al. 2000). The ‘scarring’ theory of unemployment suggests that possible reasons are depreciation of human capital through atrophy (i.e. not using skills leads to losing them) (van Loo et al. 2001), or the fact that employers tend to use an individual’s previous labour market experience as a screening mechanism. Thus, a way of assessing whether E&T systems have the capacity to support a “successful” transition to the labour market is by measuring whether their graduates manage to avoid falling into a long-term unemployment trap shortly after leaving their institution.

Therefore, the benchmark indicator was finally collected only for the 20 to 34 year-olds who had graduated at their highest level 1 year before the interview, 2 years before the interview or 3 years before the interview, and who did not attend any education or training in the four weeks preceding the interview. The indicator measures the stock of youth employed in the 3 years following graduation, excluding the very first months to avoid any underestimation biases potentially caused by the nature of the data or the nature of the first professional experience.

Despite the evident potentials of this indicator for policy making to get a snapshot of the status the employability of young graduates across Europe, Eurostat and the Centre of Research in Education and Lifelong Learning (CRELL) of the Joint Research Center of the European Commission were asked by the European Council to investigate its robustness before adopting it as a new

European benchmark indicator. Parts of this exercise are reported in the following section.

3 Robustness check of this measure with the LFS 2009 Ad hoc module

Garrouste (2011) conducted some preliminary correlation estimates with other relevant existing benchmark indicators, namely the ET2020 Employment Rate benchmark (for the 20-64 years old), the indicator of GDP per capita in PPS, the Early School Leaving benchmark, the Tertiary Education Attainment benchmark and the Population-at-risk of Poverty or Exclusion benchmark. The results show that the Education for employability indicator is, as expected, strongly and significantly correlated to each of the above indicators, except the Tertiary Education attainment benchmark. This lack of correlation with the later indicator simply confirmed the fact that employability is not simply a question of level of educational attainment but captures many other important features affecting the capacity of young individuals to be efficiently absorbed by the labour market.

For a robustness check of this measure to be complete, it shall also test for the sensitivity of the estimated results to different types of marginal changes in its formulation. In this paper, we propose to test for a change in the definition of the starting time of the transition period between education and employment. We exploit the added variables of the EU-LFS Ad hoc module of 2009 to generate an indicator against which the benchmark results can be compared. Since 2000, a specific thematic module is attached each year to the EU-LFS. In 2000 and 2009, 11 additional variables on the transition of young people from school to work were proposed.

The most important aim of the 2009 module is to collect key aspects of the transition starting by an estimation of (i) the average age when leaving formal education for the last time and average time to start the first significant work; (ii) the type of the transition from school to work few years after graduation; (iii) the impact of orientation of educational attainment and (iv) the impact of the education level of parents and country of birth. Results from the 2009 module are

likely to be disseminated from October 2011 around three main topics: (i) main features of the entry of young people into the labour market in 2009; (ii) transition of young people in higher education; and (iii) transition of persons with lower secondary education (with a focus on early leavers from education and training)⁴.

Among the 11 additional variables provided by the ad hoc module, the one of interest for this exercise is the *STOPDAT* variable, which we use as a counterfactual for the variable *HATYEAR* from the Core LFS. On the one hand, the variable *HATYEAR* refers to the year when the highest diploma was obtained, in other words the year of graduation. It is a standard way of collecting information on educational attainment in the Core LFS. On the other hand, the variable *STOPDAT* collected in the ad hoc module of 2009 refers to the year of leaving formal education for the last time. Although much more accurate, this question is more difficult to collect and can therefore not be included in the regular LFS.

We test the extent of variation of the sample size for four sub-groups of individuals:

- The ideal situation: the first group is the one who obtained their highest diploma the same as they declare having left formal education for the last time ($HATYEAR=STOPDAT$).
- Validation of competences: the second group is composed of individuals who left school more than 3 years ago but graduated between 1 and 3 years ago because, for example, of the validation of competences ($HATYEAR>STOPDAT$).
- Uncompleted programs: this group left education recently but got a diploma long time ago. Examples are persons who completed courses in ISCED 3 (upper secondary) who went up to tertiary education but failed. In cases like this diploma from upper secondary is still the highest

⁴ For information on the regulation: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:009:0007:0011:EN:PDF>

diploma obtained in spite of probably some years of tertiary education (*HATYEAR<STOPDAT*).

- Rest of the population: case “D” refers to persons who left formal education and training more than 3 years ago.

Table 1 integrates the cases “A”, “B”, “C” and “D” with an additional reference to the date of occurrence (3 years ago or less or more than 3 years ago).

Table 1 Distribution of the population aged 20-34 who left education by date of graduation and leaving formal education: Approach

		Leaving education (AHM 2009)	
		3 years ago or less	More than 3 years ago
Graduation (CORE LFS)	3 years ago or less	A	B
	More than 3 years ago	C	D

Table 2 provides a quantification of populations “A” to “D”. Among the 76 millions of people aged 20-34 who left formal education in the EU, 13 millions of people left education in the last three years considering the approach used in the 2009 ad-hoc module (populations A+C, i.e. date when leaving formal education for the last time). The population is around 14 millions in 2009 when considering the date of graduation (populations A+B, variable from the core LFS).

In other words, while the two approaches provide similar results for 11 millions of persons (14.3% of the reference population), in 7% of the cases (populations B and C) the dates are not within the same ranges. Out of these 7% of cases:

- In 4.2 percentage points of cases, the highest educational attainment level (graduation) was obtained after leaving formal education for the last time. This typically corresponds to validation of competences acquired within a job or continuing non-formal education. Sweden and the United Kingdom have values twice above the EU average. Denmark, Ireland, France, the Netherlands, Finland and Iceland have values up to 6%.

- In 2.9 percentage points of cases, people left the formal education system with a diploma obtained in the past, i.e. they left education without successfully completing their educational programme. Countries above the EU average are Belgium, Denmark, France, the Netherlands, Finland, Sweden, and Iceland.

Table 2 Distribution of the population aged 20-34 who left formal education by year of graduation and leaving education: 2009 results

		Leaving education (AHM 2009)		
		3 years ago or less	More than 3 years ago	Total (millions of people)
Graduation (CORE LFS)	3 years ago or less	14.3%	4.2%	14.1
	More than 3 years ago	2.9%	78.7%	62.3
	Total (millions of people)	13.1	63.3	76.4

Source: Eurostat, EU-LFS, 2009 ad hoc module sample.

It should be reminded that the results of the ad hoc module are still provisional and that the estimations provided depend largely on the quality of the information collected on the date when leaving education for the last time in the LFS module. Some countries have indeed already reported to Eurostat that the date for leaving education for the last time was still difficult to capture for certain interviewees despite the efforts made to correct for the problems encountered in the 2000 module on the same topic, especially in northern Europe where the transition from school to work is rather progressive.

All in all, although the populations “A”, “B” and “C” might be difficult to distinguish in certain cases, an analysis of employment rates for these three populations allows assessing the robustness of the indicator to different measures of dates.

Table 3 shows employment rates, average of 3 years after graduation and/or leaving education for the last time (excluding the first months), for the age cohort 20-34. The table also shows the impact using either year of highest successfully completed education as in the Core LFS and the basis for work on the benchmark

(*HATYEAR*) or year when leaving formal education for the last time as in the ad hoc module (*STOPDAT*).

Table 3 Benchmark changes in relation to the benchmark indicator, EU-27, 2009

	Benchmark (core LFS)	Changes in relation to the benchmark (percentage points)	
	Reference population A + B	Reference population A only (1)	Reference population A + C (1)
EU-27	76.9	+2.1	+1.4

Source: Eurostat, EU-LFS, 2009 ad hoc module sample. Note: (1) as in Table 2.

The first column of Table 3 illustrates the employment rates in the Core LFS and the basis for work towards a benchmark on employability while the last two columns show the changes in employment rates in relation to the benchmark. An overview of the data shows increases in the EU averages when different categories are used in the analysis in relation to the benchmark. The highest employment rates are found in category “A” (common to both core LFS and ad hoc module) with an increase of 2.1 percentage points at the EU level. The use of category A+C (ad hoc module 2009) also shows a 1.4 percentage points increase in employment rates. Hence, overall, the benchmark indicator appears to underestimate the actual employment rate of the 20-34 years old having effectively left education.

Moving from reference population A+B to reference population A lowers employment rates meaning population B has a lower employment rate. As already mentioned reference population B have been involved in validation of their skills and competences and might have had spells of unemployment. This group is also linked to difficult transition and this invariably affects the average employment rates of the group. Reference population A+C has a slight lower employment rates compared to reference population A but has higher employment rates than population A+B. This can be interpreted to mean that reference population C has a higher employment rate than reference population B. Population C though associated with uncompleted educational programmes

still have an added value from these programmes as well as education already completed and this helps to increase the chances of employment.

Table 4 Impact of considering reference population A+C by educational level

	Benchmark (core LFS)	Impact of considering Reference population A + C (1)	Educational attainment	
	Total		At most upper secondary	Tertiary
EU-27	76.9	+1.4	+1.1	+2.8

Source: Eurostat, EU-LFS, 2009 ad hoc module sample. Note: (1) as in Table 2.

Table 4 presents the changes in employment rates in relation to the benchmark as illustrated in Table 3 and the impact of considering reference population A+C by educational level. The figures shows a 1.4 percentage points increase when considering the ad hoc module 2009 (A+C) and a 1.1 percentage points increase when considering persons with at most upper secondary education. With the category of persons with tertiary education, the employment rates increase by as much as 2.8 percentage points. This means considering educational level does not have a strong impact unless when considering the category of tertiary education.

Table 5 Benchmark changes in relation to the benchmark indicator – country results

	Benchmark (core LFS)	Changes in relation to the benchmark	
	Reference population A + B	Reference population A only (1)	Reference population A + C (1)
BE	79.5	+5.7	+1.8
BG	73.7	+1.6	+1.1
CZ	84.5	+0.7	+0.2
DK	86.5	-0.1	-1.1
DE	82.4	+0.6	+0.5
EE	62.4	+4.4	+3.4
IE	74.5	+2.2	+1.3
EL	64.6	+3.1	+3.7
ES	70.3	+0.4	+0.9
FR	75.2	+5.0	+2.2
IT	60.4	+3.9	+4.7
CY	78.0	+1.6	+2.0
LV	69.6	-2.8	-5.4

	Benchmark (core LFS)	Changes in relation to the benchmark	
	Reference population A + B	Reference population A only (1)	Reference population A + C (1)
LT	70.9	-0.9	-1.4
LU	84.7	+1.3	+0.9
HU	75.3	+2.0	+1.0
MT	93.3	-2.0	-2.8
NL	90.4	+0.3	-0.3
AT	85.3	-0.4	-2.0
PL	78.0	+3.2	+3.2
PT	81.4	+2.4	+2.0
RO	77.6	+12.1	+11.9
SI	82.2	+1.7	-0.7
SK	74.4	+2.3	+2.7
FI	75.5	-0.7	-2.6
SE	80.9	+0.9	-2.1
UK	78.7	+1.7	+0.7

Source: Eurostat, EU-LFS, 2009 ad hoc module sample. Note: (1) as in Table 2.

Table 5 shows the first preliminary results by country. It reveals that the impact of the use of the different categories varies among the countries. While the benchmark indicator underestimates by more than 10 percentage points the employment rate in Slovakia (under revision) and up to 5% in Belgium, Estonia and France, it overestimates it in the case of Latvia, Spain, Malta and Finland by up to 5.4 percentage points. Interestingly, the least sensitive countries to a change in data category are Czech Republic, Germany, Spain and the Netherlands, with less than 1 percentage point difference. For all other countries, the underestimation ranges between 1.0 and 5.4 percentage points, with the Netherlands, the Czech Republic and Bulgaria at the bottom and Romania, France and Belgium at the top of variation.

Finally, we looked at the effect of this bias on the correlation between the employability rate and its closest counterfactuals (namely, the ET2020 employment rate benchmark, the GDP per Capita in PPS, the EU2020 benchmark on population at-risk-of-poverty or exclusion, the EU2020 early school leaving benchmark indicator and the ET2020 Tertiary Educational Attainment Benchmark). Figures 2a to 3c illustrate these changes on the correlation between

each of our three employability measures and the employment rate, and GDP per capita in PPS, respectively. We find that the best fit is always obtained with the variable *HATYEAR*.

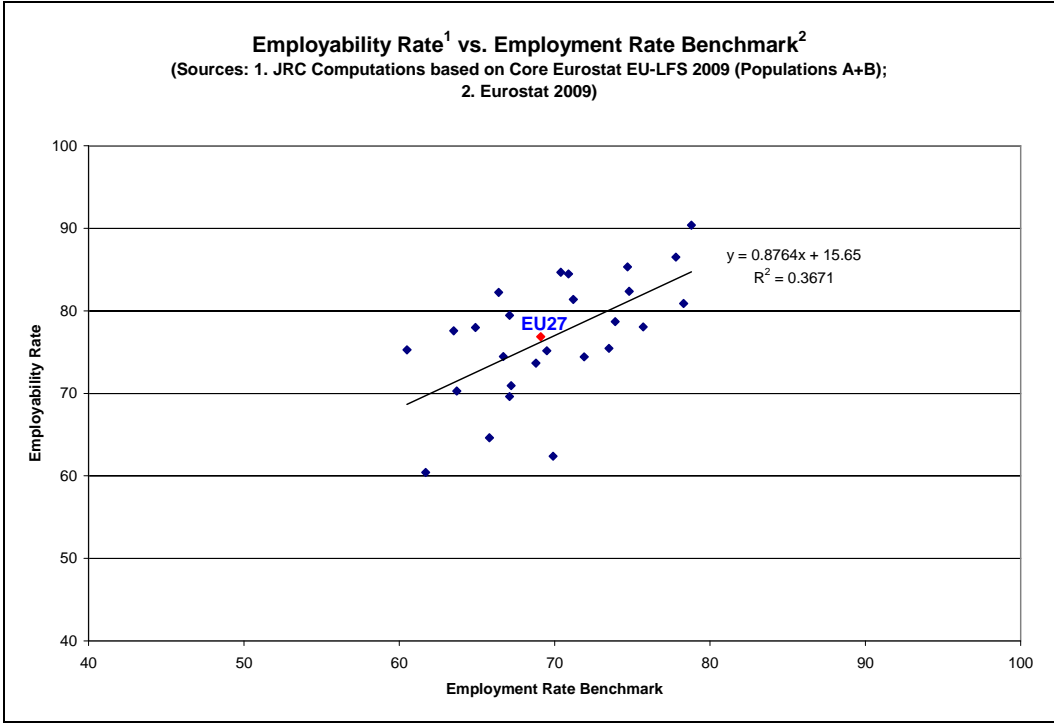


Fig. 2a Employability vs. Employment Rate Benchmark - measured with the Core LFS *HATYEAR* variable (Populations A+B)

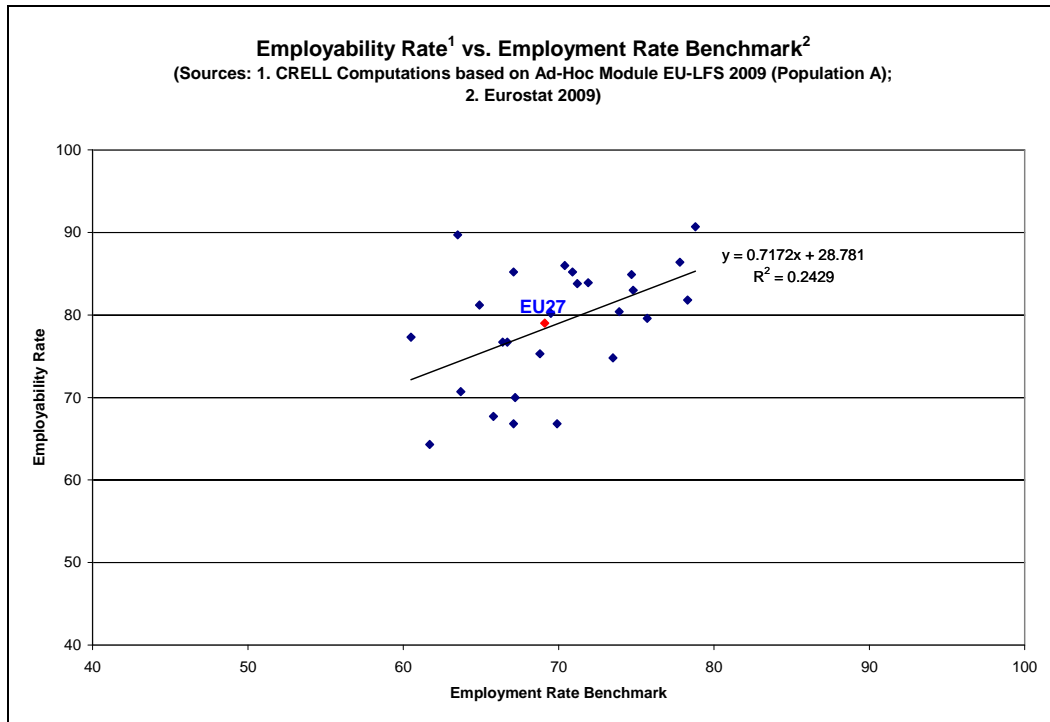


Fig. 2b Employability vs. Employment Rate Benchmark - measured with the Ad hoc Module LFS *STOPDAT* variable (Population A)

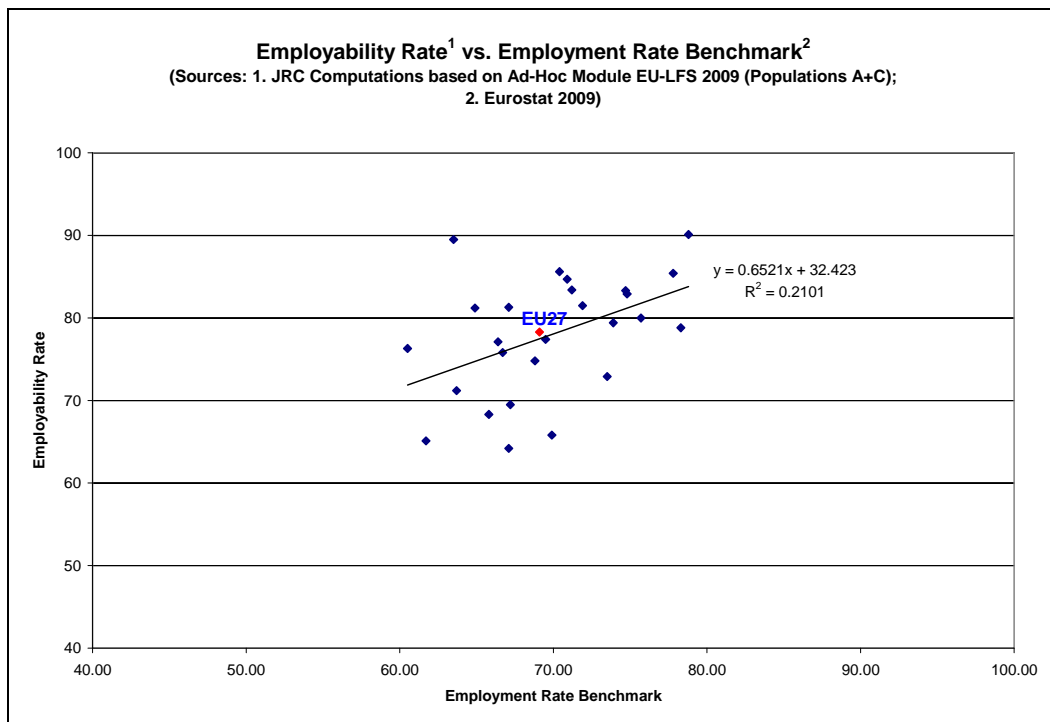


Fig. 2c Employability vs. Employment Rate Benchmark - measured with the Ad hoc Module LFS *STOPDAT* variable (Populations A+C)

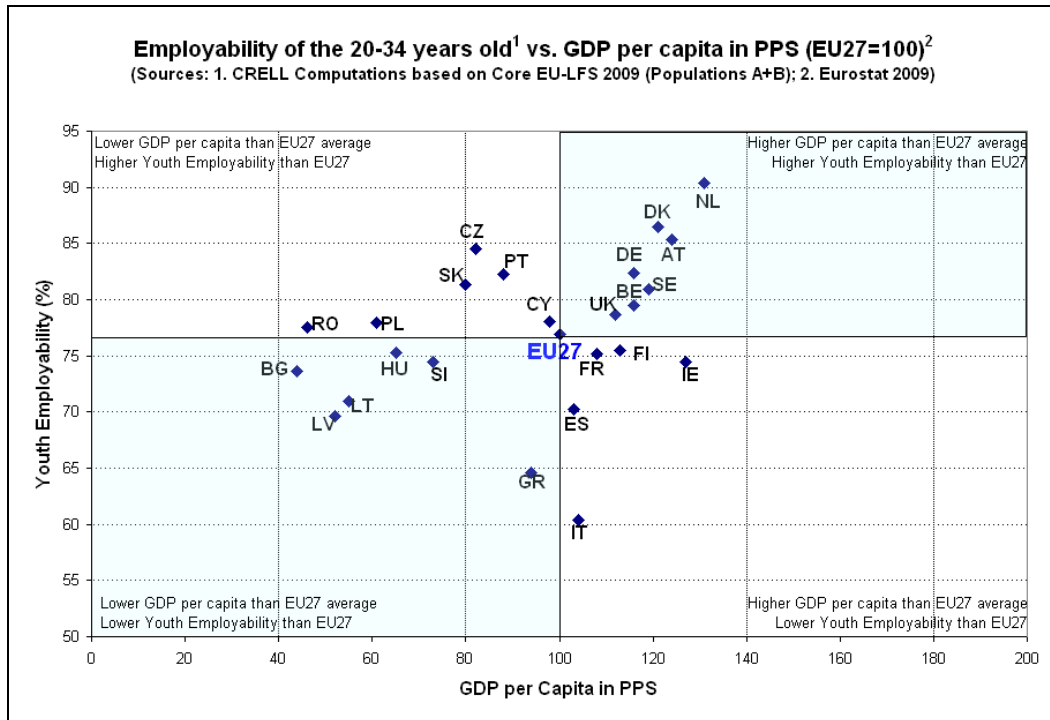


Fig. 3a Employability vs. GDP per Capita in PPS - measured with the Core LFS *HATYEAR* variable (Populations A+B)

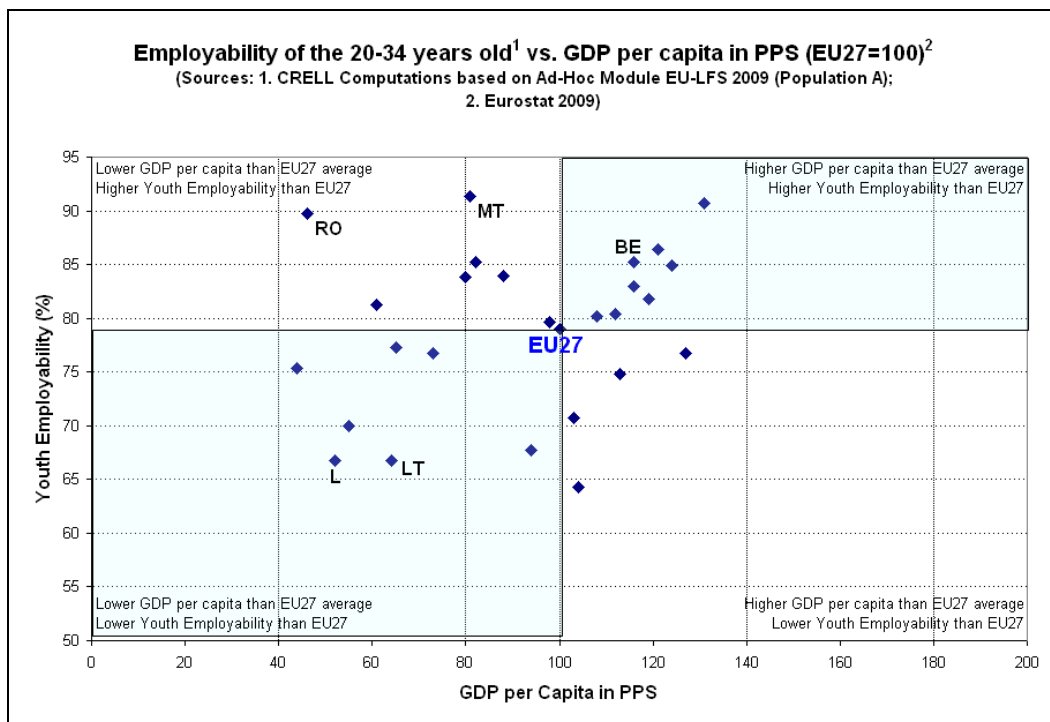


Fig. 3b Employability vs. GDP per Capita in PPS - measured with the Ad hoc Module LFS *STOPDAT* variable (Population A)

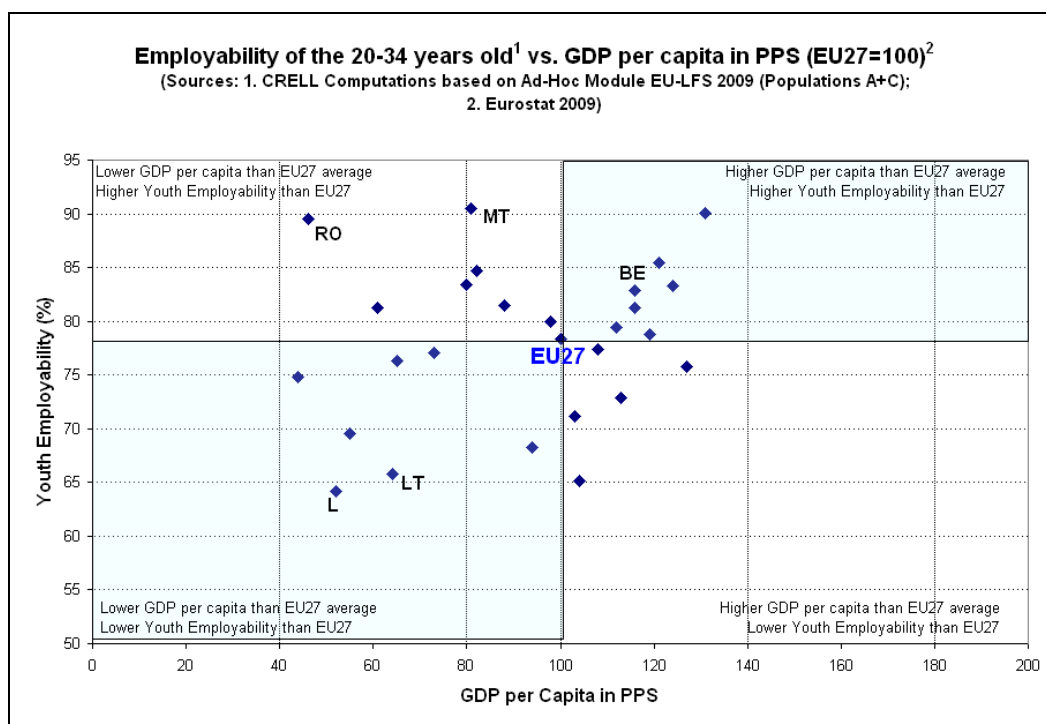


Fig. 3c Employability vs. GDP per Capita in PPS - measured with the Ad hoc Module LFS *STOPDAT* variable (Populations A+C)

4 Discussion and conclusions

Our analysis of the two variables *HATYEAR* and *STOPDAT* in relation to employment rates assumed that the variable *STOPDAT* is a more accurate measurement of time of leaving formal education for the last time. This assumption is confirmed by a significant difference in values between the two measures based on *STOPDAT* and the one based on *HATYEAR*, which reveals the presence of a systematic underestimation bias in the later.

Hence, despite the evident incapacity of a measure of employability based upon the *HATYEAR* variable to capture the actual/real date of start of the transition from education to employment, such a measure turned out to be nevertheless worth considering towards the definition of a benchmark. First of all, the bias being systematic rather than random, it is possible to easily correct for it by simply keeping in mind its presence when interpreting the values of the

benchmark indicator. Second, from a practical point of view, the collection of the *HATYEAR* variable is more straightforward in a cross-country survey than the *STOPDAT* variable. Third, we find that the Benchmark indicator correlates better with its assumed counterfactuals than any of the two measures using *STOPDAT*, which makes it more intuitively interpretable and applicable for policy making. Thus, the Benchmark indicator on Graduates' Employability adopted by the European Council in May 2012 proves to be a satisfactory proxy of the employment rate of young graduates in Europe.

Acknowledgments While most of the information related to the construct of the benchmark indicator is extracted from Arjona Perez et al. (2010a, 2010b), Garrouste (2011) and the European Commission Staff Working Paper (SEC(2011)670), the robustness checks presented in section 3 were prepared specifically for the purpose of this paper. The percentage-point changes are estimated on the LFS sample used for the 2009 ad-hoc module, i.e. generally conducted by countries on quarter 2 while the calculation for the benchmark is based on an annual average of the four quarters. The authors thank the participants to the International Conference "Catch the Train: Skills, Education and Jobs", organized by the European Commission, June 20-21, 2011, for comments and suggestions on a preliminary version. The authors take full responsibility for any remaining mistake.

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