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Teacher Costs

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Teacher Costs

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Notes

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The re-edition of this technical brief includes revised figures for teacher costs indicators in Lithuania, reflecting the Purchasing Power Standard (PPS) applied to the euro.

TABLE OF CONTENTS

PURPOSE

The purpose of this technical brief is to assess current methodologies for the collection and calculation of teacher costs in European Union (EU) Member States in view of improving data series and indicators related to teacher salaries and teacher costs. To this end, CRELL compares the Eurydice collection on teacher salaries with the similar Organisation for Economic Co-operation and Development (OECD) data collection and calculates teacher costs based on the methodology established by Statistics Canada as explained in Indicator B7 in Education at a Glance[1] (OECD, 2014). This indicator allows for analysing the different factors that influence teacher costs: teacher salaries, teaching time, instruction hours and student/teacher ratios, as well as class size. The analyses will provide specific information on the contribution of the different factors used to derive the **Salary Cost of Teachers per Student (CCS)** and how they might depend on the way data for the different factors are collected. On the basis of assessing the different data collections with similar methodologies, suggestions for development work that could be undertaken to align the Eurydice and OECD data collections are offered.

1. BACKGROUND

Education expenditure, including primary, secondary and tertiary education, in the EU (Eurostat, 2011) is, on average, around 5% of GDP. Considering primary and secondary education alone, education expenditure amounts to 3.4% (1.19 in primary and 2.23 in secondary) of GPD in the EU28 (Eurostat, 2011). Compensation of employees at the primary, secondary and post-secondary non-tertiary education are mostly reflected in teacher salaries and at the EU level these are around 60% of total education expenditure (Eurostat, 2012). COFOG figures for 2013 put average employee compensation for the EU28 at 60%[2]. This represents a considerable share of the total expenditure on education and gives an indication of how countries invest in education. However, the choices countries make in relation to other system level variables are likely to affect the proportion of salary costs of teachers relative to total education expenditure. Teachers' salary weighs more or less in terms of a school input variable depending on other factors such as class size and instruction/teaching time of teachers. For this reason, indicator B7, presented in

[1] http://www.mels.gouv.qc.ca/fileadmin/site_web/documents/PSG/statistiques_info_decisionnelle/bulletin_stat_36_en.pdf;

[2] CRELL calculations based on COFOG data - table *gov_10a_exp*, available from Eurostat.

Education at a Glance and proposed by Statistics Canada (Education Statistics Bulletin, 2008), reflects the salary cost of teachers per student. In other words, it is an indicator of how much a teacher costs a given educational system, rather than how much a teacher earns.

2. CURRENT EVIDENCE

There is no simple relationship between overall spending on education and student performance

Hanushek and Luque (2003) show that there is a clear relationship between spending per student and GDP per capita. Richer countries tend to spend more per student than poorer countries (Dolton & Marcenaro-Gutierrez, 2011). Nevertheless, as Dolton and Marcenaro-Gutierrez (2011) state there are "several countries, e.g. Japan and the Netherlands, which have comparatively moderate expenditure per student and still remain among the countries with the highest level of students' attainment (pp. 4-5)." According to Hanushek, Kain and Rivkin (2005) the quality of teachers is the most important determinant of students' achievement and several recent studies corroborate this idea (Goldhaber, 2002). Additionally, teacher quality has been repeatedly invoked to explain student outcomes in international large-scale assessments in education[3] in countries like Singapore, South Korea and Finland (Twenty-first Report, 2012). These countries recruit all their teachers from the top third of high school graduates and teachers are well compensated in Singapore and Korea, while less so in Finland. Conversely, in the US the best graduates are not entering the teaching profession (Hanushek, 2011). Thus, while spending in education may be related to efficiency, educational attainment it is not easily explained solely by expenditure.

The need to attract the best into teaching has also been very present in policy discussions in recent years and Hanushek's research (2011) is often cited as the best source of evidence that attracting the best pays off in terms of the accumulation of human capital. He found that the best teachers can achieve an additional year's worth of learning for their students compared to the least effective teachers. Nonetheless, as TALIS data show other characteristics may be

[3] See for example analysis of TIMSS and PISA. TIMSS is an international assessment of mathematics and science achievement organized by the International Association for the Evaluation of Educational Achievement (IEA) and conducted at the 4th and eighth grade levels in 4-year cycles since 1995. PISA is the OECD Programme for International Student Assessment conducted since 2000 that assesses the competences of 15-year old students in reading literacy, mathematics and science.

important to raise students' achievement, namely improving teacher training and school working conditions (OECD, 2014d). The European Commission summarizes current evidence from TALIS as follows:

> "In order to ensure that teaching is (perceived as) an attractive career choice policy-makers will want to pay attention to working conditions and salaries, the quality and relevance of Initial Teacher Education, opportunities for professional development and career advancement as well as the availability of tailored support, especially for beginning teachers (European Commission, 2014, p. 12)."

No clear relation between general increases in teacher salaries and better achievement of students

Recent OECD (OECDb, 2014) analyses indicate that paying teachers well is part of the equation to achieve excellence: "Systems that pay teachers well tend to perform slightly better in mathematics" (p. 3). Out of 15 EU Member States participating in PISA 2012, in only two was there a non-significant relationship between teachers' salaries and mathematics performance. In the remaining 13 Member States, there was a positive relationship between secondary teachers' salaries and students' achievement in mathematics. Nonetheless, this evidence is limited to secondary school teachers and on calculations based on the average salary of teachers after 15 years of experience. A different question is whether increasing teacher salaries on the basis of a seniority pay structure is linked to improved student performance. In the large majority of European Member States, teachers' salaries increase in line with length of service (Eurydice, 2014a)." Nonetheless, between 2008 and 2013 several countries registered a decrease in teacher salaries (Eurydice, 2014a).

Using data from the US, Hanushek (2003) showed that increasing teachers' salaries on the basis of seniority does not result in better achievement for students. More specifically, Hanushek (2003) has shown that the increase in salary linked to post-graduate training and years of experience of US teachers are "pay parameters" weakly related to students' achievement. In contrast, Dolton and Marcenaro-Gutierrez (2011) recently found that …" in 39 countries participating in PISA and TIMSS between 1995 and 2005, a 15% increase in teacher pay increased student performance by between 6% and 8% (UNESCO, 2014, p. 254).

The studies reviewed stand as examples of current efforts to understand the relationship between the salary cost of teachers and students' achievement, but they are merely illustrative of recent findings. Existing evidence is not conclusive with respect to the link between student performance and teachers' salaries. Similarly, there is no evidence on whether the decrease in

teachers' salaries during 2011-2013 (Eurydice, 2014a), as a consequence of the financial crisis, negatively influenced students' performance. What seems certain is that the salary cost of teachers is one factor that greatly affects education expenditure and that different school input variables affect expenditure. For example, if countries reduce class size the *salary cost of teachers per student* will likely increase. Conversely, if countries increase the teaching time of teachers the *salary cost of teachers per student* will likely decrease (all other variables remaining equal).

3. DATA COLLECTIONS

4.1 TEACHER SALARIES

Eurydice collects data on teacher salaries according to the **minimum** and **maximum annual** basic gross statutory salary of full-time and fully qualified teachers in Euros[4]. **Teachers' basic statutory salary** is the remuneration awarded to a teacher, who is a childless, unmarried person, holding the minimum qualifications required to teach at a specific level of the education system (Eurydice 2014a, p. 108).[5]

In the Eurydice collection the 13th month and holiday pay (where applicable) are included in the annual salary, but the employers' social security and pension contributions are not considered. In general, data are collected by central authorities. The gross annual statutory salary is the amount paid by the employer in a year, including general increases to salary scales. This salary does not include other salary allowances or financial benefits (related, for example, to further qualifications, merit, overtime, additional responsibilities, geographical location, the obligation to teach classes in challenging circumstances, or accommodation, health or travel costs). The minimum salary is the gross salary received by teachers at the start of their career. The maximum salary is the gross salary received by teachers and school heads on retirement or after a certain number of years' service. The maximum salary includes only increases related to length of service and/or age (Eurydice, 2014a).

[4] Euros considering the average exchange rate during the reference period.

[5] Specifically, Eurydice defines this remuneration for both teachers and school heads as: "The basic remuneration awarded to a teacher/school head who holds the minimum qualifications required to teach or to manage a school at a specific level of the education system and who is a childless, unmarried person".

In addition, for each country/region Eurydice includes the following information in the national data sheets: decision-making levels for setting teachers' basic statutory salaries in public schools; salaries arrangements in the private sector; actual salary levels if available; information on salary increase/decrease in the previous year and salary allowances for teachers. The prime sources of information of Eurydice are official documents issued by central (top-level) education authorities. However, in countries where such official documents do not exist, other documents and agreements which are recognised and accepted by education authorities are used.

The OECD collects different indicators related to teacher salaries[6]. Statutory salaries refer to scheduled salaries according to official pay scales. The salaries reported are gross (total sum paid by the employer) less the employer's contribution to social security and pension, according to existing salary scales. Salaries are "before tax", i.e. before deductions for income tax. Salaries after 15 years of experience refer to the scheduled annual salary of a full-time classroom teacher. Statutory salaries may refer to the salaries of teachers with the minimum training necessary to be fully qualified, or salaries of teachers with the typical qualifications, plus 15 years of experience.

For the Salary Cost of Teachers per Student calculation OECD relies on **statutory s**alaries, specifically reflecting "the scheduled annual salary of a full-time classroom teacher with the minimum training necessary to be fully qualified plus 15 years of experience". These statutory salaries are derived from OECD-INES Survey on Teachers and the Curriculum and are reported according to official pay scales.

OECD also collects data on actual salaries defined as "the annual average earnings received by full time teachers aged 25-64, before taxes. It includes work-related payments such as annual bonuses, result-related bonuses, extra pay for holidays and sick-leave pay. Income from other sources, such as government social transfers, investment income, and any other income that is not directly related to their profession, are not included" (OECD, 2015, p. 434).

Moreover, the OECD collects and reports (OECD, 2014a) the starting statutory salary of teachers with minimum training, after 10 years of experience, after 15 and at the top of the salary scale, always considering minimum training. Following the latest NESLI (2015) developments,

[6] Notes on definitions and methodologies for each country are provided at http://www.oecd.org/edu/EAG2015-Annex3-D2D3D4D5D8.pdf.

the OECD started reporting in the Education at a Glance 2015 the statutory salaries of teachers with typical and minimum qualifications (for Starting salary, after 10 years, after 15 & Top of scale).

Lastly, OECD uses teachers' actual salaries when comparing their salaries with similarly educated workers. Improvements in this comparison "are crucial in order to have a more accurate measure for the attractiveness and importance of salaries in recruitment and keeping teachers" (NESLI 2015, 2, p.4). Current developments related to OECD's data collection on teacher salaries (NESLI, 2015) include the implementation of a NESLI survey on the **availability of data on the distribution of the teachers' population by different levels of educational attainment**. This information will make the comparison more robust, because it will offer a more accurate measure of how the salaries of teachers compare to other workers with similar levels of qualification. This indicator will be a ratio composed of teachers' actual salaries as the numerator and the earnings of full-time, full year workers (age 25-64) weighted by the percentage of teachers with similar ISCED levels of attainment as the denominator (NESLI, 2015).

At present, and as reported in Education at a Glance 2015, the OECD compares the actual salaries of teachers with those of similarly educated workers who have tertiary education (ISCED levels 5 to 8). The new 2011 ISCED levels classification is used instead of ISCED 97 so this comparison continues to refer to tertiary educated teachers and to compare their salaries with other tertiary educated workers. Since programmes previously classified in level 5 of ISCED 1997 are allocated to levels 5, 6 or 7 in ISCED 2011, this breakdown is more informative (NESLI, 2015). Specifically, it makes apparent that most countries award a Bachelor degree (level 6) to primary school teachers and a master's degree (level 7) to secondary school teachers. Accordingly, teacher salary data is going to be reported by the educational attainment level of teachers in the future (NESLI, 2015). A corresponding breakdown should be taken into account when comparing the salary of teachers with that of similar workers. This would results in an improved indicator on teacher salaries relative to other similarly educated workers. So far, because in the majority of European Member States data from EU-SILC are used, only the wages of workers with tertiary education as a whole were used for comparison purposes (NESLI, 2015).

The following Table shows how different salary data is collected by Eurydice and by the OECD.

Table 1. Data on Teachers' Salaries collected by Eurydice and OECD

Data Collections on Teacher Salaries	
Eurydice	OECD
Minimum and maximum annual basic gross statutory salary of teachers	Teacher's statutory salaries - based on typical and minimum qualifications - at different points in their career (starting, after 10 years of experience, after 15, at the top of the salary scale)
Average actual salaries	Annual actual teacher compensation
Average number of years to obtain the maximum statutory salary	Years to go from minimum to maximum salary
Salary allowances for teachers, criteria and decision-making levels	Criteria and decision-making for determining additional bonuses

Note: The statutory salaries collected by Eurydice and OECD distinguish between ISCED levels 1, 2 and 3 (primary, lower- and upper secondary education).

4.2 Other Factors Influencing Teacher Costs

One of the purposes of this briefing is to estimate **Salary Cost of Teachers per Student (CCS).** In addition to teachers' salaries (estimated by statutory salary after 15 years of experience**)** other indicators are used in Education at a Glance (EAG) to estimate **CCS.** They are the following:

- Instruction time of students "insT" - estimated as the annual intended instruction time, in hours, for students;
- Teaching time of teachers "teachT" - estimated as the annual number of teaching hours for teachers;
- Student/teacher ratio "Ratiostud/teacher" - the ratio of student to teaching staff.
- Class size "ClassSize" - a proxy of class size using information from "insT", "teachT", "Ratiostud/teacher".

The CCS reflects the system-level cost of teachers per student, rather than indicating how much a teacher earns. Thus, it provides information to OECD countries, in a comparative perspective, about the cost of teacher compensation in US dollars within each educational system. In this way, the compensation of teaching staff can then be considered in relation to

total education expenditure in different countries. Furthermore, the different components allow for an evaluation of how different measures affect educational costs.

According to OECD estimations (OECD, 2014c), the main drivers of **CCS** are **Teacher Salaries and Class Size.**

For the calculation of the **CCS**, the OECD estimates **Class Size** or the number of students per class using a number of different data collection elements: the ratio of students to teaching staff, the amount of instruction time and time teachers spend teaching. More specifically, OECD estimates class size by multiplying the Ratiostud/teacher by insT: and then dividing the result by teachT.[7]

The **Student/teacher** ratio is calculated by OECD based on data collection pertaining to student numbers in full - time equivalents and the number of teaching staff in full - time equivalents. The ratio is obtained by dividing the first by the last. The **UOE**[8] data collection on education statistics is used for this calculation.

Teaching time refers to the actual teaching time or the annual average number of hours that full-time teachers teach a group or class of students including all extra hours such as overtime. The data can be from administrative registers, statistical databases, representative sample surveys or other representative sources.

Instruction time is collected jointly by Eurydice/OECD (Eurydice, 2014b) since 2013 and refers to the intended recommended instruction time during compulsory education (intended instruction time), and includes the compulsory and non-compulsory part of the curriculum that students are entitled to receive in public schools. It refers to minimum annual instruction time in full-time compulsory general education.

The last two factors that enter in the **CCS** computation measure different components, since teaching time refers to teachers and instruction time refers to students. Moreover, teaching time does not capture the time teachers spend in administrative tasks and class preparation, among other teacher duties.

[7] OECD uses two class size definitions and variables: the first one is the simple ratio between number of students and number of classes. This indicator is analysed in indicator D2 of Education at a Glance (2015). The other variable as described here (and which gives very different results); is used as one of the factors in the salary costs calculations for indicator B7 (see Education at a Glance 2015, tables B7.3 and B7.4) but is not analysed on its own as such.

[8] UOE is a joint data collection of international statistics on education and training systems administrated by the three international organisations: the United Nations Educational, Scientific, and Cultural Organisation Institute for Statistics (UNESCO-UIS), the Organisation for Economic Co-operation and Development (OECD) and the Statistical Office of the European Union (EUROSTAT).

4. TEACHERS' SALARIES COMPARISON

In order to assess the different methodologies in the collection of one of the main drivers of the Salary Cost per Student (**CCS)** - teacher salaries, CRELL presents and discusses the main differences in the Eurydice and OECD figures. So, as to have comparable figures on teacher salaries for the EU countries based on the Eurydice data collection and on similar OECD data[9], CRELL presents the results on salaries in Euros converted using purchasing power standard (PPS)[10] for household final consumption expenditure.

CRELL presents the analysis for the following European countries/regions, according to data availability (28 MSs with BE and UK in communities/regions): Belgium – French Community (BF), Belgium – German-speaking Community (BD), Belgium – Flemish Community (BN), Bulgaria (BG), Czech Republic (CZ), Denmark (DK), Germany (DE), Estonia (EE), Ireland (IE), Greece (EL), Spain (ES), France (FR), Croatia (HR), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovak Republic (SK), Finland (FI), Sweden (SE), England-Wales (UK-ENG/WLS), Northern Ireland (UK-NIR) and Scotland (UK-SCT).

According to the definitions previously presented, the main difference between the Eurydice and the OECD data collections on statutory teacher salaries is that Eurydice collects minimum and maximum salaries of fully qualified teachers, while OECD considers the statutory salary of teachers with minimum training at different points in their careers.

Country specific notes for Eurydice data on teachers' salaries[11]. (Figure 1 to 3)
Spain: **(a)** Data on salaries of non *Catedráticos* teachers; **(b)** Data on salaries at ISCED 2-3 of *Catedráticos* teachers.
France:. At ISCED 3, **(a)** Data on the salaries of teachers *in Lycées*; **(b)** Data on the salaries of teachers in *Lycées professionnels.*
Italy: At ISCED 3, **(a)** Data for teachers with a *Laurea magistrale* (Master's degree); **(b)** Data for teachers that have completed non-university studies.
Austria: At ISCED 2, **(a)** Data on salaries of *Volksschule and Hauptschule* teachers; **(b)** Data on salaries of *Allgemeinbildende Höhere Schule* teachers.

[9] Data on teachers' salaries refers to annual teachers' salaries, in public institutions and is presented in the Education at a Glance 2015 in equivalent dollars (USD), converted using purchasing power parities (PPPs) for private consumption.
[10] Data retrieved in October 2015 from the Eurostat website [prc_ppp_ind], year 2013, update 18-09-2015.
[11] For more detailed information and country specific notes on teachers' salaries see Eurydice data collection, Eurydice (2014a, p. 10)

Figure 1. Teachers' salaries in primary education using OECD data and Eurydice data (2013)[12]

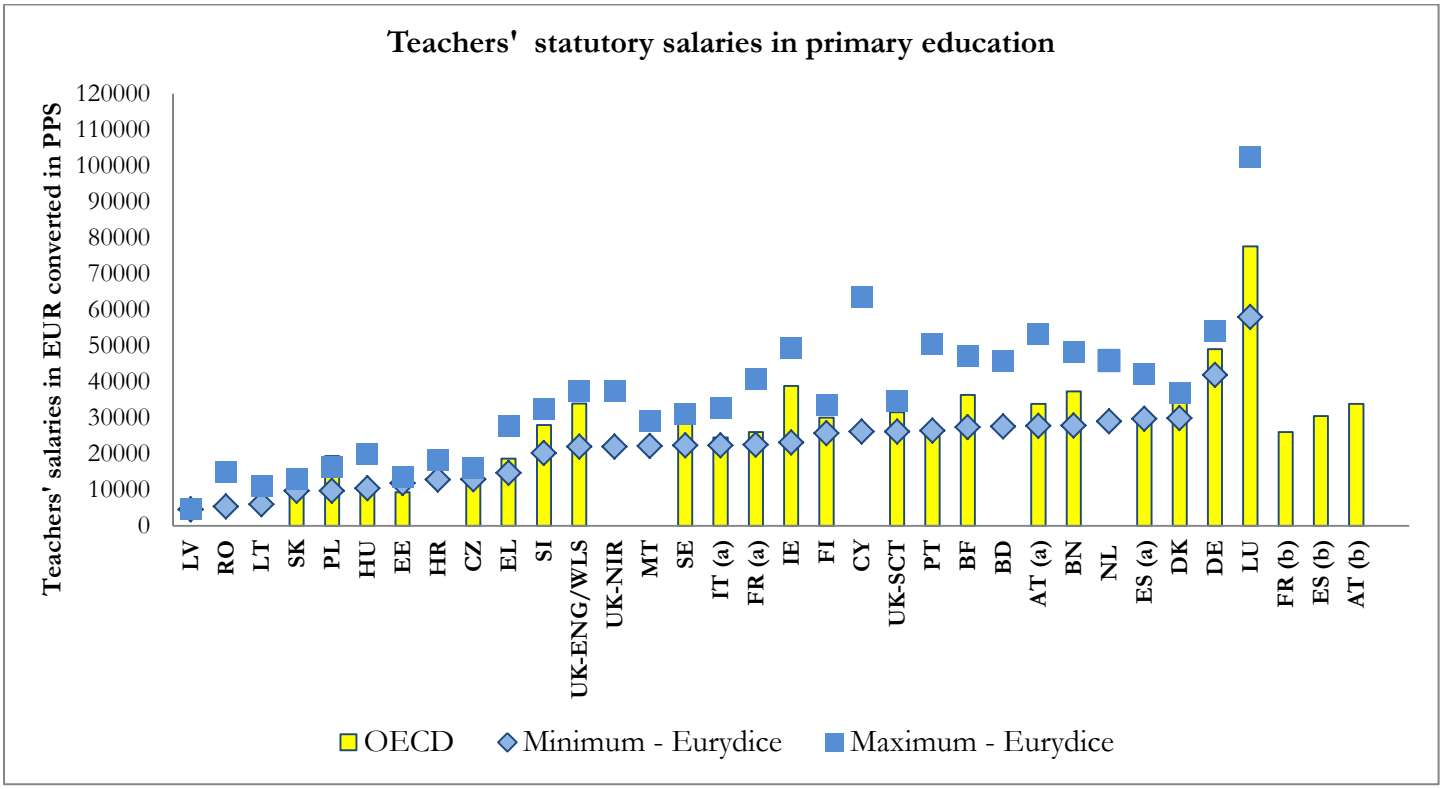
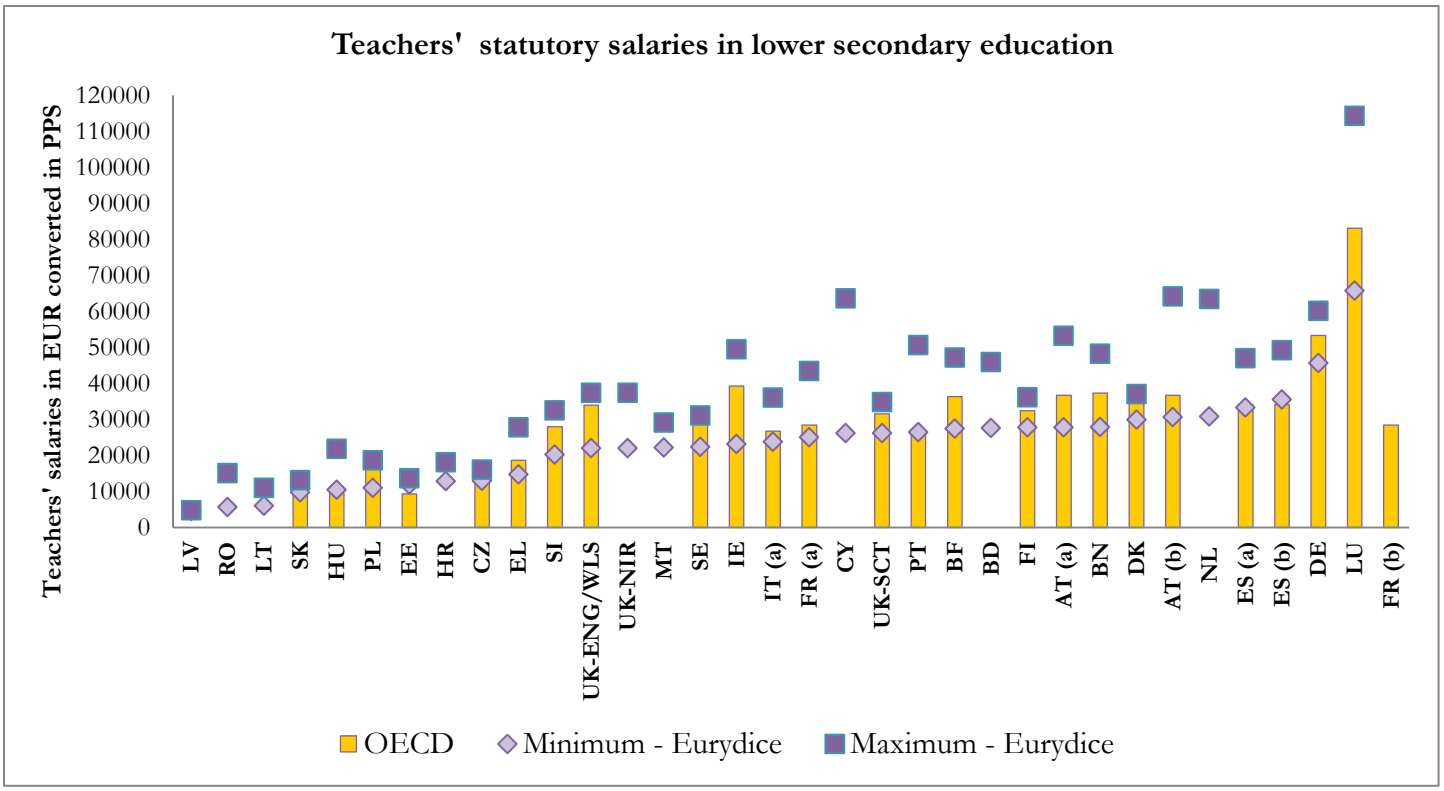
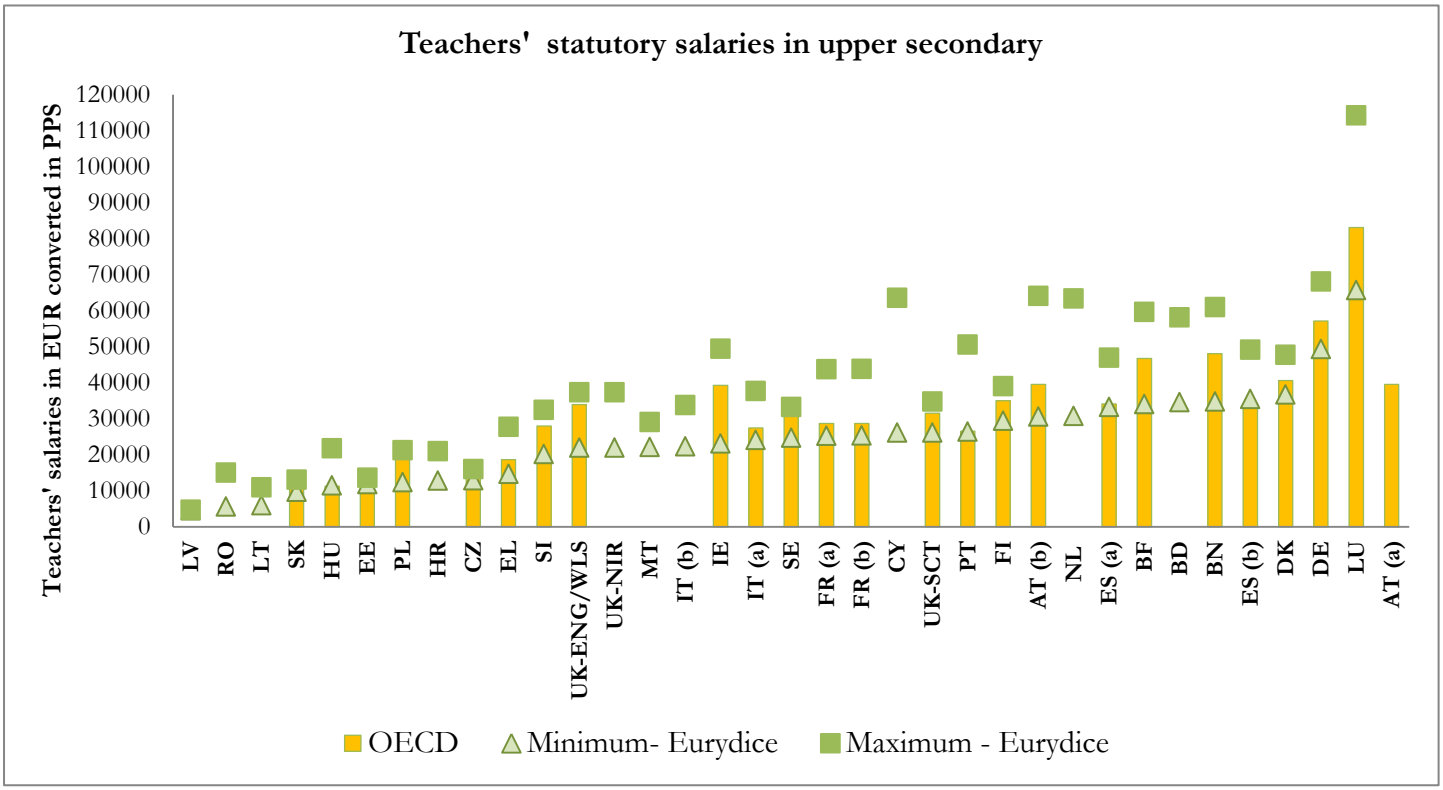


Figure 2. Teachers' salaries in lower secondary education using OECD data and Eurydice data (2013)[10]



[12] Countries are ranked in ascending order of teachers' minimum salary collected by Eurydice. More detailed information is presented in Annex A (Table A.1.).

Figure 3. Teachers' salaries in upper secondary education using OECD data and Eurydice data (2013)[10]



Figures 1 to 3 show that for Eurydice data within each educational level there is a wide difference between the minimum and the maximum salaries in most communities/regions in Europe. In general, the OECD figures are closer to those of the minimum teacher salary collected by Eurydice. That is, the salary of teachers' calculated by OECD is, in the majority of EU countries, similar to the one referring to data from the minimum salary collected by Eurydice. The teachers' salaries using OECD data and Eurydice data are presented in Annex A (Table A.1.). The reader is reminded that OECD collects other teacher salary indicators, namely the minimum and maximum teacher salaries at the start and at the top career levels as listed in section 4.1. For the purpose of the **CCS** calculation, however, the OECD uses statutory salaries of fully qualified teachers plus 15 years of experience.

Looking at the figure and the corresponding table in the annex A, in 14 countries there are no differences between education levels (for both Eurydice and OECD), whereas in the other 17 countries (for both Eurydice and OECD), there are differences a) between the 3 levels, b) between primary and secondary education, or c) between primary and lower secondary education on the one hand and upper secondary education on the other.

Also, from Eurydice data it is apparent that some countries have very low minimum statutory teacher salaries, like Latvia, Romania, Slovak Republic (below 10, 000 euros) and some have much

high salaries, above 40,000 euros, like Germany and Luxembourg in all education levels. In addition, in some countries, including Ireland, Cyprus and Romania the difference between the minimum and the maximum salary is very large – more than doubles. Conversely, in Latvia, Estonia, Slovak Republic the difference is very small.

5. SALARY COST OF TEACHERS PER STUDENT (CCS)

The methodology adopted by OECD is the one used by Statistics Canada[13] and shown in Indicator B7 in Education at a Glance (OECD, 2015). As previously mentioned, this indicator weighs different factors that influence the salary costs of teachers per student (teacher salaries, student/teacher ratio, teaching time of teachers, instruction time of students and class size). The mathematical relationship between the different factors mirrors a country's options (at least some of the quantifiable ones) in terms of education policies and related expenditures. In this sense, expenditure is broken down into compensation of teachers and other expenditures. Compensation of teachers or **Salary Cost of Teachers per Student** (**CCS**) (OECD, 2014, p. 288) is estimated as follows:

*Salary Cost of Teachers per Student (**CCS**) by Level of Education*

$$CCS = SAL \times instT \times \frac{1}{teachT} \times \frac{1}{ClassSize} = \frac{SAL}{Ratiostud/teacher} \quad (1)$$

Where the factors are defined as follows:

SAL: teachers' salaries (estimated by statutory salary after 15 years of experience[14])

insT: instruction time of students (estimated as the annual intended instruction time, in hours, for students)

teachT: teaching time of teachers (estimated as the annual number of teaching hours for teachers

ClassSize: a proxy of class size (number of students per classroom)

Ratiostud/teacher: the ratio of student to teaching staff.

To compute this indicator the formula includes either 2 factors or 4 factors. The indicators, using both 2 and 4 factors in *Education at a Glance* are calculated for primary (ISCED 1), lower secondary (ISCED 2) and upper secondary[15] education (ISCED 3) levels.

[13] http://www.mels.gouv.qc.ca/fileadmin/site_web/documents/PSG/statistiques_info_decisionnelle/bulletin_stat_36_en.pdf;

[14] Defined by OECD as "the scheduled annual salary of a full-time classroom teacher with the minimum training necessary to be fully qualified plus 15 years of experience".

CRELL computes the salary cost of teachers per student **for EU countries**, using the formula (1), both for 2 and 4 factors with data from teachers' salaries from 2013 collected by Eurydice and by OECD. The formula for 2 factors is as follows:

Salary Cost of Teachers per Student (CCS) for 2 factors

$$CCS = \frac{SAL}{Ratiostud/teacher} \quad (2)$$

The formula for 4 factors is as follows:

Salary Cost of Teachers per Student (CCS) for 4 factors

$$CCS = SAL \times instT \times \frac{1}{teachT} \times \frac{1}{ClassSize} \quad (3)$$

Table 2 below summarizes the data sources used for all the factors considered. More information on the technical details for the computations including the different factors considered in the **CCS** estimates can be found in Annex B.

In what concerns data on teachers' salaries, CRELL uses Eurydice data collection, namely minimum and maximum annual basic gross statutory salary in Euros (EUR) (Eurydice, 2014a). Regarding the factor measuring the ratio of student to teaching staff, CRELL relies on the latest data available from the Eurostat website on Pupil/Student - teacher ratio for all levels of education.

[15] In upper secondary level data is not available for some of the factors.

Concerning the 4 factors included in the indicator, CRELL uses the most updated Eurostat data on class size presenting the average class size for primary and lower secondary levels of education[16]. For instruction time of students, CRELL relies on the Joint Eurydice OECD Instruction time data collection[17] related to the curriculum that students are entitled to receive in public schools. Finally, for teaching time of teachers CRELL uses data collected by Eurydice on the teaching hours for all ISCED levels of education from 2011/2012.[18] Data on teaching time in Education at a Glance for the **CCS** estimates is presented in hours per year. In order to have comparable data with OECD, CRELL uses data from Eurydice on teaching time per week for lower secondary education and multiplies it for the number of weeks of teaching in each EU country. For primary and upper secondary levels of education CRELL relies on data from OECD available in Education at a Glance 2014.

[16] Data on average class size is limited to primary and lower secondary education because class size is difficult to define and compare at higher educational levels, where students often attend several different classes, depending on the subject area.

[17] More information on instruction time of students can be found in Eurydice (2014b), Recommended Annual Instruction Time in Full-time Compulsory Education Instruction Time in Europe Recommended Annual 2013/14 - Eurydice – Fact and Figures.

[18] Information on teaching hours per week for the reference year 2011/2012 from Eurydice (2013), Key data on Teachers and School Leaders in Europe 2013.

Table 2. Data sources for the calculations of Salary Cost of Teachers per Student

SOURCES			
FACTORS	OECD calculations	CRELL calculations	
	Education at a Glance 2015[19]	Eurydice	Eurostat[20]
SAL: teachers' salaries	Education at a Glance 2015[21]	Minimum and maximum annual basic gross statutory for teachers[22] (For ISCED 1, 2 and 3)	
insT: instruction time of students (hours per year)	Eurydice OECD joint data 2013/2014[23]		
teachT: teaching time of teachers (hours per year)	Education at a Glance 2015[24]	(For ISCED 1, 2 and 3)[25]	
ClassSize: class size (number of students per classroom)	Education at a Glance 2015		Eurostat website (For ISCED 1 and ISCED 2)
Ratiostud/teacher: the ratio of student to teaching staff (number of students per teacher).	Education at a Glance 2015		Eurostat website (For ISCED 1, 2 and 3)

Below CRELL presents the estimates of **CCS** using 2 and 4 factors for the EU countries considering different levels of education (primary, lower secondary and upper secondary[26]) based on Eurydice data on minimum and maximum annual basic gross statutory salary and OECD data used to compute the **CCS** (OECD, 2015).

[19] Information from OECD (2015), Education at a Glance 2015: OECD Indicators, OECD Publishing. http://dx.doi.org/10.1787/eag-2015-en. For notes and technical details see Annex 3, at http://www.oecd.org/edu/EAG2015-Annex3-D1.pdf and http://www.oecd.org/edu/EAG2015-Annex3-D2D3D4D5D8.pdf.

[20] Data from 2012 available at http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=educ_iste&lang=en . For definitions see http://ec.europa.eu/eurostat/cache/metadata/en/educ_uoe_h_esms.htm

[21] At upper secondary level, teachers' salaries refer to general programmes.

[22] Information from Eurydice (2014), Teachers' and School Heads' Salaries and Allowances in Europe, 2013/14. See the report for more detailed information on data collection, country notes and year of collection by country.

[23] Information from OECD (2015), Education at a Glance 2015: OECD Indicators, OECD Publishing. http://dx.doi.org/10.1787/eag-2015-en. and from Eurydice (2014b), The Recommended Annual Instruction Time in Full-time Compulsory Education in Europe 2013/14 - Eurydice – Fact and Figures.

[24] At upper secondary level, teaching time refer to general programmes.

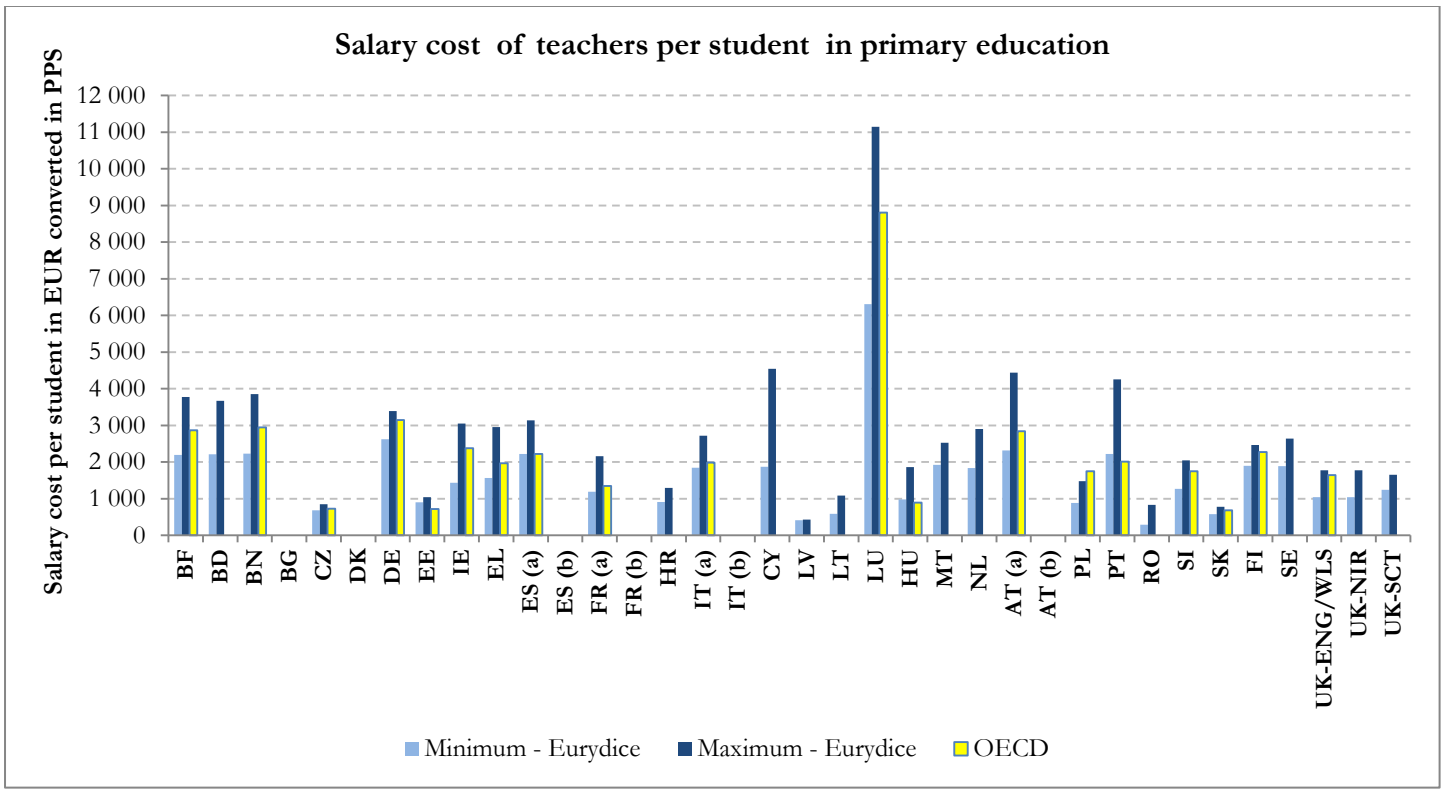
[25] Information on teaching hours per week for the reference year 2011/2012 from Eurydice (2013), Key data on Teachers and School Leaders in Europe 2013.

[26] With exception of the 4 factors analysis for upper secondary as there is no data collected at this level.

6.1 Salary Cost of Teachers per Student using 2 factors

Regarding the Salary Cost of Teachers per Student using 2 factors (formula 2), Figures 4 to 5 show the Salary Cost per Student by level of education using OECD data and Eurydice[27] data on teachers' salaries. The figures for the Salary Cost of Teachers per Student and for the 2 factors composing the estimate of **CCS** - teachers' salaries and for the ratio of student to teaching staff - calculated both by CRELL and by OECD[28] (Education at a Glance) are presented in Figures 4 to 6 and in the Annex A (Table A.2 and Table A.3, respectively).

Figure 4. Salary Cost per Student in primary education using 2 factors



[27] Teachers' salaries from Eurydice (2014a) are presented in Euros. CRELL converted the Eurydice values using purchasing power standard (PPS) for household final consumption expenditure.

[28] Data on salary cost of teachers per student are presented in the Education at a Glance 2015 in equivalent dollars (USD), converted using purchasing power parities (PPPs) for private consumption. CRELL adjusted these results in EUROS converted in purchasing power standard (PPS) for household final consumption expenditure.

Figure 5. Salary Cost per Student in lower secondary education using 2 factors

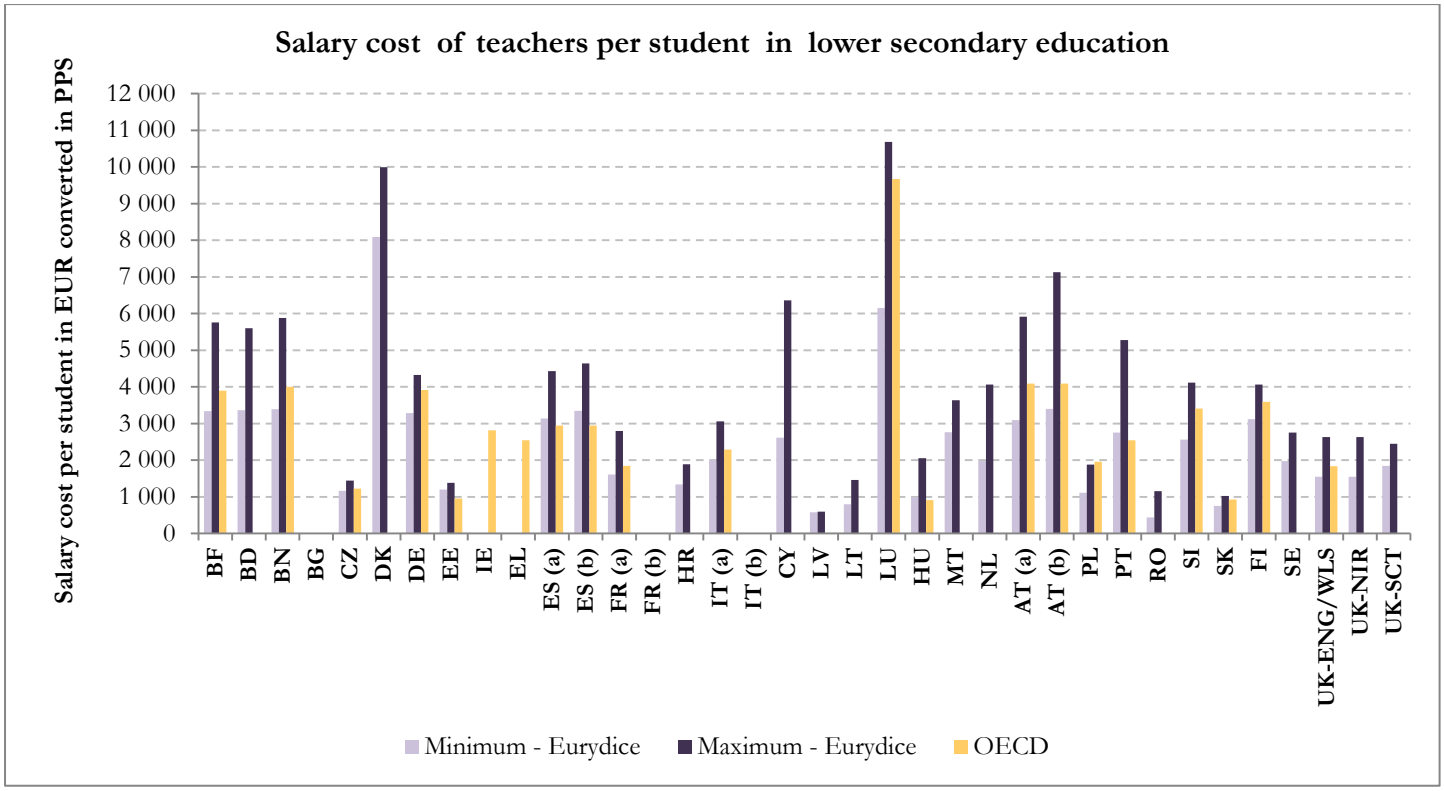
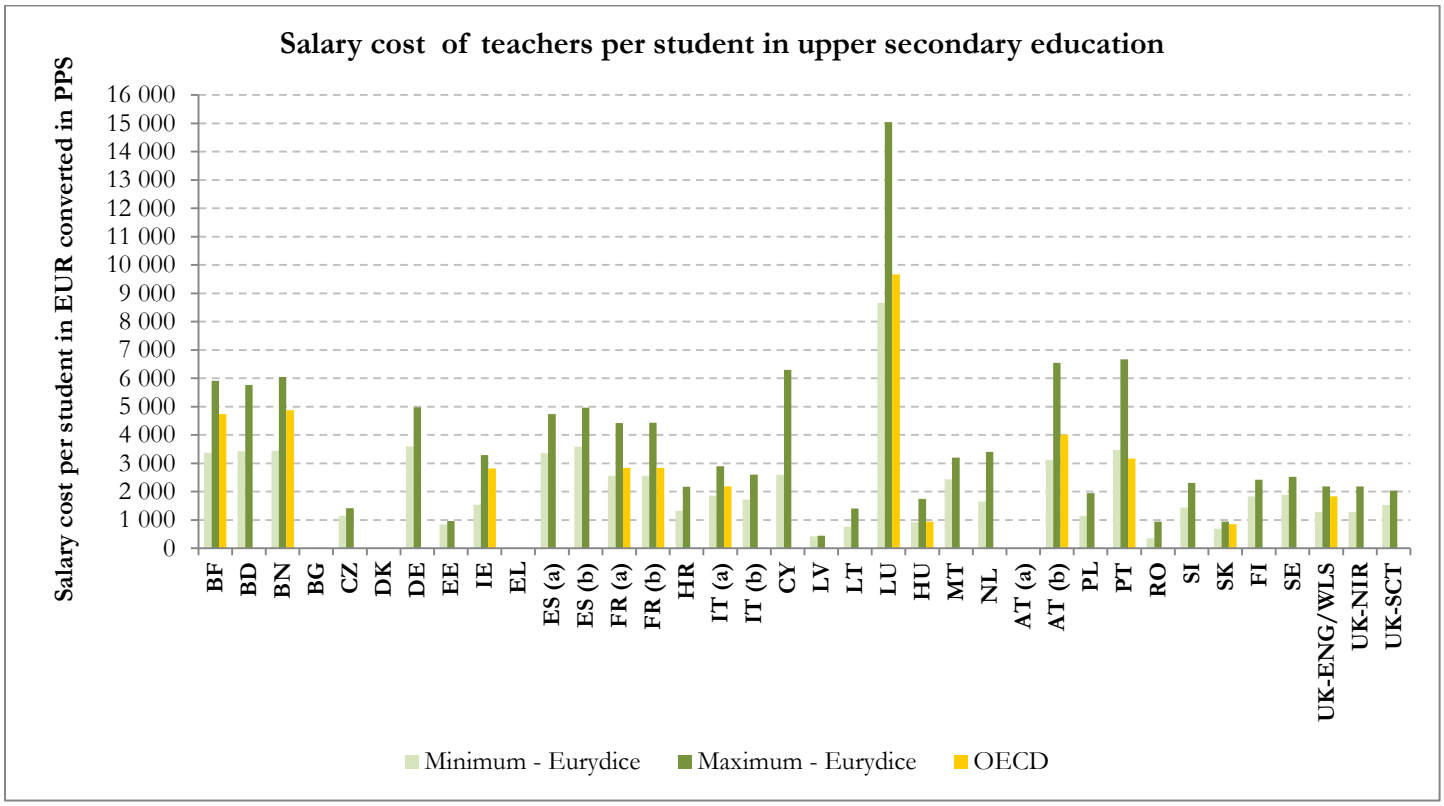


Figure 6. Salary Cost per Student in upper secondary education using 2 factors



The results indicate that there is a wide variation in salary cost of teachers per student between levels of education among countries, both for data collected by Eurydice and using data presented in Education at a Glance. The results for the salary cost of teachers per student using Eurydice data by educational level are the following (in Euro converted into PPS):

a) Primary Education/Minimum Teacher Salary range from 294 in Romania to 6, 308 in Luxembourg;

b) Primary Education/Maximum Teacher Salary range from 430 in Latvia and 11, 144 in Luxembourg;

c) Lower Secondary/Minimum Teacher Salary range from 436 Romania and 8,092 in Denmark;

d) Lower Secondary/Maximum Teacher Salary range from 598 in Latvia and 10, 684 in Luxembourg;

e) Upper Secondary/Minimum Teacher Salary range from 356 in Romania and 8, 654 in Luxembourg;

f) Upper Secondary/Maximum Teacher Salary range from 442 in Latvia and 15, 043 in Luxembourg.

In summary, these results show that the **CCS** computed using the maximum statutory salary, for all countries, except in Luxembourg, Estonia and Finland, is lower in primary education than in lower secondary. In general, this result is driven by the decrease in student/teacher ratio in lower secondary when compared to primary education. However, for example, Estonia and Romania present lower **CCS** values in upper than in lower secondary education. This is because the ratio of student to teaching staff increases in upper secondary, producing higher **CCS** in lower secondary education.

The results for the salary cost of teachers per student using OECD data for the countries for which data is available by educational level are more in line with those of Eurydice for minimum salary. For example, in primary education the **CCS** is lower than 1,000 euros using both the Eurydice and the OECD data in the Czech Republic and Estonia. The same is true in Hungary and Slovak Republic for all education levels.

Rather than indicating how much teachers earn across EU countries, the **CCS** estimates provide an indicator that reflects the system-level cost of teachers per student. Taking into consideration the ratio of students to teaching staff, this indicator mirrors a country's options in terms of education policies and related expenditures. Tables 3, 4 and 5 show country results

ranked in descending order of teachers' minimum and maximum salaries and the corresponding Salary Cost per Student considering data from Eurydice and OECD.

The tables show that introducing the student-teacher ratio along with teacher salaries in the **CCS** two-factor computation produces a decrease in the salary cost of teachers in all education levels in all countries. In primary education, for Eurydice data, the **CCS** share varies from 6.4% to 27% of teachers' salaries, while using OECD data that variation is from 5.4% to 13%. In lower secondary education the **CCS** is from about 5% to 11% of teachers' salaries either using Eurydice or OECD data. Similar percentages of the comparison between **CCS** and teachers' salaries are found in upper secondary education.

Additionally, the country rankings vary widely according to teachers' salaries and CCS, depending of the data source and across educational levels. The Tables also show that some countries like Luxemburg have very slight variations according to educational level and practically the same ranking for salaries and for **CCS**. Others, such as Portugal, change considerable in ranking according to minimum and maximum salaries and this change can be more or less pronounced depending on ISCED level. Similarly, other countries (for instance, Austria, Belgium - French community, Belgium - Flemish community and Spain) change positions depending on whether the CCS was calculated using Eurydice data or OECD data and the change is more or less pronounced depending on the educational level. A caveat in this comparison is that the OECD data is only available for a few countries.

Table 3. Comparison of Teachers' Salaries with the Salary Cost per Student (2 factors) in primary education[29]

	Eurydice								OECD			
	Minimum salary (2013)		CCS - minimum salary		Maximum salary (2013)		CCS - maximum salary		Salary (2013)		CCS	
	Country	Salary	Country	CCS	Country	Salary	Country	CCS	Country	Salary	Country	CCS
1	LU	58 032	LU	6 308	LU	102 524	LU	11 144	LU	77 637	LU	8 803
2	DE	41 948	DE	2 622	CY	63 603	CY	4 543	DE	49 081	DE	3 142
3	DK	29 939	AT (a)	2 318	DE	54 246	AT (a)	4 435	DK	38 877	BN	2 949
4	ES (a)	29 693	BN	2 225	AT (a)	53 226	PT	4 256	IE	38 864	BF	2 869
5	NL	29 007	PT	2 219	PT	50 651	BN	3 857	BN	37 363	AT (a)	2 842
6	BN	27 818	ES (a)	2 216	IE	49 452	BF	3 774	BF	36 359	IE	2 375
7	AT (a)	27 813	BD	2 209	BN	48 207	BD	3 672	UK - ENG/WLS	33 945	FI	2 276
8	BD	27 618	BF	2 190	BF	47 180	DE	3 390	AT (a)	33 878	ES (a)	2 219
9	BF	27 381	MT	1 924	NL	45 902	ES (a)	3 141	UK-SCT	31 584	PT	2 012
10	PT	26 403	FI	1 893	BD	45 898	IE	3 053	ES (a)	30 523	IT (a)	1 988
11	UK-SCT	26 157	SE	1 891	ES (a)	42 089	EL	2 953	FI	30 034	EL	1 966
12	CY	26 144	CY	1 867	FR (a)	40 812	NL	2 905	SE	29 539	SI	1 750
13	FI	25 744	IT (a)	*1 846*	UK-ENG/WLS	37 385	IT (a)	*2 714*	SI	27 987	PL	1 747
14	IE	23 172	NL	1 836	UK-NIR	37 385	SE	2 636	PT	26 564	UK-ENG/WLS	1 642
15	FR (a)	22 518	EL	1 563	DK	36 982	MT	2 530	FR (a)	26 058	FR (a)	1 349
16	IT (a)	*22 340*	IE	1 430	UK-SCT	34 785	FI	2 462	IT (a)	24 537	HU	896
17	SE	22 315	SI	1 272	FI	33 482	FR (a)	2 159	PL	19 375	CZ	730
18	MT	22 128	UK-SCT	1 240	IT (a)	*32 844*	SI	2 045	EL	18 665	EE	715
19	UK -ENG/WLS	21 957	FR (a)	1 191	SI	32 518	HU	1 860	CZ	13 706	SK	683
20	UK-NIR	21 957	UK -ENG/WLS	1 041	SE	31 100	UK-ENG/WLS	1 772	SK	11 562		
21	SI	20 224	UK-NIR	1 041	MT	29 089	UK-NIR	1 772	HU	9 528		
22	EL	14 693	HU	979	EL	27 757	UK-SCT	1 649	EE	9 329		
23	CZ	12 944	HR	907	HU	19 902	PL	1 481				
24	HR	12 875	EE	905	HR	18 440	HR	1 299				
25	EE	11 857	PL	887	PL	16 288	LT	1 084				
26	HU	10 475	CZ	685	CZ	15 998	EE	1 043				
27	PL	9 762	LT	589	RO	15 054	CZ	846				
28	SK	9 694	SK	577	EE	13 660	RO	832				
29	LT	5 944	LV	414	SK	13 124	SK	781				
30	RO	5 324	RO	294	LT	10 952	LV	430				
31	LV	4 559			LV	4 728						

[29] Countries are ranked in descending order. Teachers' salaries and CCS values are in Euros converted in PPS using the criteria explained in Annex A. More detailed information can be found in Tables A.1 and A.2.

Table 4. Comparison of Teachers' Salaries with the Salary Cost per Student (2 factors) in lower secondary education[29]

	Eurydice								OECD			
	Minimum salary (2013)		CCS - minimum salary		Maximum salary (2013)		CCS - maximum salary		Salary (2013)		CCS	
	Country	Salary	Country	CCS	Country	Salary	Country	CCS	Country	Salary	Country	CCS
1	LU	65 770	DK	*8 092*	LU	114 324	LU	10 684	LU	83 132	LU	9 668
2	DE	45 670	LU	6 147	AT (b)	64 143	DK	*9 995*	DE	53 333	AT (a)	4 088
3	ES (b)	35 492	AT (b)	3 398	CY	63 603	AT (b)	7 127	DK	39 438	AT (b)	4 088
4	ES (a)	33 251	BN	3 392	NL	63 423	CY	6 360	IE	39 287	BN	4 004
5	NL	30 812	BD	3 368	DE	60 145	AT (a)	5 914	BN	37 363	DE	3 918
6	AT (b)	30 580	ES (b)	3 348	AT (a)	53 226	BN	5 879	AT (a)	36 726	BF	3 897
7	DK	*29 939*	BF	3 339	PT	50 651	BF	5 754	AT (b)	36 726	FI	3 593
8	BN	27 818	DE	3 286	IE	49 452	BD	5 597	BF	36 359	SI	3 409
9	AT (a)	27 813	ES (a)	3 137	ES (b)	49 191	PT	5 276	ES (a)	34 097	ES (a)	2 945
10	FI	27 804	FI	3 124	BN	48 207	ES (b)	4 641	ES (b)	34 097	ES (b)	2 945
11	BD	27 618	AT (a)	3 090	BF	47 180	ES (a)	4 429	UK-ENG/WLS	33 945	IE	2 817
12	BF	27 381	MT	2 766	ES (a)	46 950	DE	4 327	FI	32 437	PT	2 547
13	PT	26 403	PT	2 750	BD	45 898	SI	4 116	UK-SCT	31 584	EL	2 540
14	UK-SCT	26 157	CY	2 614	FR (a)	43 409	NL	4 066	SE	30 062	IT (a)	2 289
15	CY	26 144	SI	2 560	UK-ENG/WLS	37 385	FI	4 063	FR (a)	28 460	PL	1 959
16	FR (a)	24 977	IT (a)	*2 011*	UK-NIR	37 385	MT	3 636	SI	27 987	FR (a)	1 847
17	IT (a)	*23 734*	NL	1 975	DK	*36 982*	IT (a)	*3 057*	IT (a)	26 735	UK-ENG/WLS	1 837
18	IE	23 172	SE	1 975	FI	36 162	FR (a)	2 801	PT	26 564	CZ	1 225
19	SE	22 315	UK-SCT	1 842	IT (a)	*36 069*	SE	2 752	PL	19 375	EE	952
20	MT	22 128	FR (a)	1 611	UK-SCT	34 785	UK-ENG/WLS	2 633	EL	18 665	SK	926
21	UK-ENG/WLS	21 957	UK-ENG/WLS	1 546	SI	32 518	UK-NIR	2 633	CZ	13 706	HU	913
22	UK-NIR	21 957	UK-NIR	1 546	SE	31 100	UK-SCT	2 450	SK	11 562		
23	SI	20 224	HR	1 341	MT	29 089	HU	2 057	HU	9 528		
24	EL	14 693	EE	1 198	EL	27 757	HR	1 884	EE	9 329		
25	CZ	12 944	CZ	1 166	HU	21 807	PL	1 876				
26	HR	12 875	PL	1 111	PL	18 572	LT	1 460				
27	EE	11 857	HU	988	HR	18 089	CZ	1 441				
28	PL	10 994	LT	793	CZ	15 998	EE	1 380				
29	HU	10 475	SK	757	RO	15 054	RO	1 158				
30	SK	9 694	LV	577	EE	13 660	SK	1 025				
31	LT	5 944	RO	436	SK	13 124	LV	598				
32	RO	5 665			LT	10 952						
33	LV	4 559			LV	4 728						

Table 5. Comparison of Teachers' Salaries with the Salary Cost per Student (2 factors) in upper secondary education[29]

	Eurydice								OECD			
	Minimum salary (2013)		CCS - minimum salary		Maximum salary (2013)		CCS - maximum salary		Salary (2013)		CCS	
	Country	Salary	Country	CCS	Country	Salary	Country	CCS	Country	Salary	Country	CCS
1	LU	65 770	LU	*8 654*	LU	114 324	LU	*15 043*	LU	83 132	LU	9 668
2	DE	49 340	DE	3 601	DE	68 115	PT	6 665	DE	57 172	BN	4 868
3	DK	36 749	ES (b)	3 585	AT (b)	64 143	AT (b)	6 545	BN	48 048	BF	4 733
4	ES (b)	35 492	PT	3 474	CY	63 603	CY	6 297	BF	46 709	AT (b)	4 011
5	BN	34 759	BN	*3 441*	NL	63 423	BN	*6 044*	DK	40 580	PT	3 164
6	BD	34 584	BD	*3 424*	BN	61 044	BF	*5 911*	AT (b)	39 523	FR (a)	2 834
7	BF	34 067	BF	*3 373*	BF	59 699	BD	*5 763*	IE	39 287	FR (b)	2 834
8	ES (a)	33 251	ES (a)	3 359	BD	58 210	DE	4 972	FI	35 015	IE	2 817
9	NL	30 812	AT (b)	3 120	PT	50 651	ES (b)	4 969	ES (a)	34 097	IT (a)	2 188
10	AT (b)	30 580	CY	2 589	IE	49 452	ES (a)	4 742	ES (b)	34 097	UK-ENG/WLS	1 834
11	FI	29 483	FR (b)	2 562	ES (b)	49 191	FR (b)	4 428	UK-ENG/WLS	33 945	HU	939
12	PT	26 403	FR (a)	2 557	DK	47 760	FR (a)	4 422	UK-SCT	31 584	SK	851
13	UK-SCT	26 157	MT	2 432	ES (a)	46 950	NL	3 410	SE	31 518		
14	CY	26 144	SE	1 874	FR (b)	43 836	IE	*3 297*	FR (a)	28 700		
15	FR (b)	25 365	IT (a)	*1 853*	FR (a)	43 781	MT	3 197	FR (b)	28 700		
16	FR (a)	25 315	FI	*1 831*	FI	39 035	IT (a)	*2 901*	SI	27 987		
17	SE	24 739	IT (b)	1 718	IT (a)	37 707	IT (b)	2 600	IT (a)	27 484		
18	IT (a)	24 083	NL	1 657	UK-ENG/WLS	37 385	SE	2 524	PT	26 564		
19	IE	23 172	IE	*1 545*	UK-NIR	37 385	FI	*2 425*	PL	19 375		
20	IT (b)	22 340	UK-SCT	1 530	UK-SCT	34 785	SI	2 306	EL	18 665		
21	MT	22 128	SI	1 434	IT (b)	33 796	UK-ENG/WLS	2 186	CZ	13 706		
22	UK-ENG/WLS	21 957	HR	1 327	SE	33 322	UK-NIR	2 186	SK	11 562		
23	UK-NIR	21 957	UK-ENG/WLS	1 284	SI	32 518	HR	2 170	HU	11 300		
24	SI	20 224	UK-NIR	1 284	MT	29 089	UK-SCT	2 034	EE	9 329		
25	EL	14 693	CZ	1 145	EL	27 757	PL	1 950				
26	CZ	12 944	PL	1 140	HU	21 807	HU	1 745				
27	HR	12 875	HU	918	PL	21 260	CZ	1 416				
28	PL	12 431	EE	841	HR	21 051	LT	1 404				
29	EE	11 857	LT	762	CZ	15 998	EE	969				
30	HU	11 476	SK	697	RO	15 054	RO	947				
31	SK	9 694	LV	426	EE	13 660	SK	944				
32	LT	5 944	RO	356	SK	13 124	LV	442				
33	RO	5 665			LT	10 952						
34	LV	4 559			LV	4 728						

6.2 Salary Cost of Teachers per Student using 4 factors

The **CCS** estimates presented below are based in the 4 factors used by OECD to calculate them (formula 3), namely, teachers' salaries, and instruction time of students (hours per year), teaching time of teachers and class size.

Regarding the instruction time values, CRELL uses the same values as they are based in the joint Eurydice/OECD data collection. As the OECD does not present the values for all EU countries, we collected the information for the missing countries from Eurydice (2014b). Concerning the teaching time of teachers, as previously mentioned, CRELL uses data from Eurydice (from 2011/12) for lower secondary education and data from the Education at a Glance 2015 (OECD, 2015) for primary and upper secondary education and reports all data in the same unit of measurement (hours per year). Additionally, we should note that CRELL uses the minimum reported teaching hours per week for Eurydice data. However, in Belgium – French community, Belgium Flemish, Belgium-German community, Estonia, Spain, France, Austria, Portugal, Romania, Slovenia, Slovak Republic, Finland and Croatia there is an additional number of teaching hours per week in at least one of the educational levels, ranging from 1 to 7 hours.

In what concerns class size, OECD uses a proxy of this factor by multiplying the Ratiostud/teacher by insT: and then dividing the result by teachT. Using this formula for estimating class size (number of students per classroom) the salary cost of teachers per student using 4 factors is equivalent to the one calculated using 2 factors. This is not the case when class size is not estimated using this formula. CRELL uses the average class size published by Eurostat, based on the UOE data collection, to calculate the **CCS**. Thus, the values of **CCS** estimated by CRELL using 2 and 4 factors are not identical, because the average and estimated class size are very different measures. Additionally, we show no values for **CCS** using 4 factors for upper secondary education (see footnote 7).

Table A.4 in the Annex A shows the figures for the 4 factors used to estimate **CCS** and Table A.5 presents the comparison of **CCS** values using 2 and 4 factors. Figures 7 and 8 below show the **CCS** values using 2 and 4 factors, considering OECD and Eurydice/Eurostat figures.

The **CCS** using both OECD and Eurydice data on teacher salaries is presented for 19 countries/adjudicated entities for primary education and 20 for lower secondary education. The graphs show that the results for the salary cost of teachers per student using 2 factors and using

4 factors are different. Moreover, in the majority of countries the **CCS** using 4 factors is lower than the **CCS** using 2 factors both for minimum and maximum teachers' salaries. This is true for primary and lower secondary education. Additionally, the **CCS** calculation using teacher minimum salary from Eurydice is closer to the **CCS** using OECD data both for 2 and 4 factors. Finally, the analysis based in the 4 factors corroborates that in lower secondary educational level the **CCS** is higher than the **CCS** in primary school.

Table A.4 of the Annex A shows that the estimated class size used by OECD in Education at a Glance for the CCS calculation, both for higher and lower secondary education, is much lower than the figures from the average class size measure. Thus, as the class size is in the denominator of the **CCS** formula, this may explain the lower values for the **CCS** calculation using 4 factors.

Figure 7. Salary Cost per Student in primary education using 2 factors and 4 factors

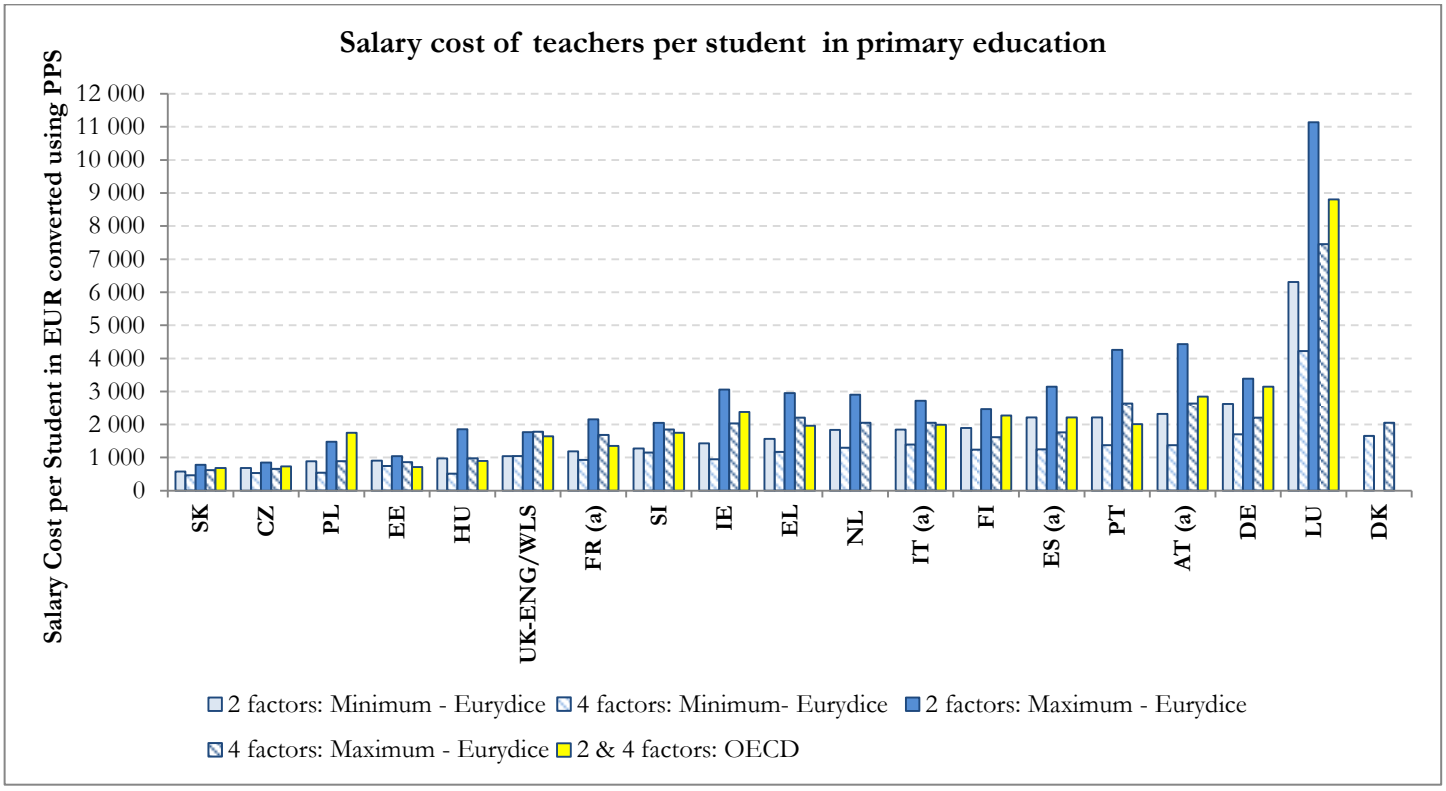
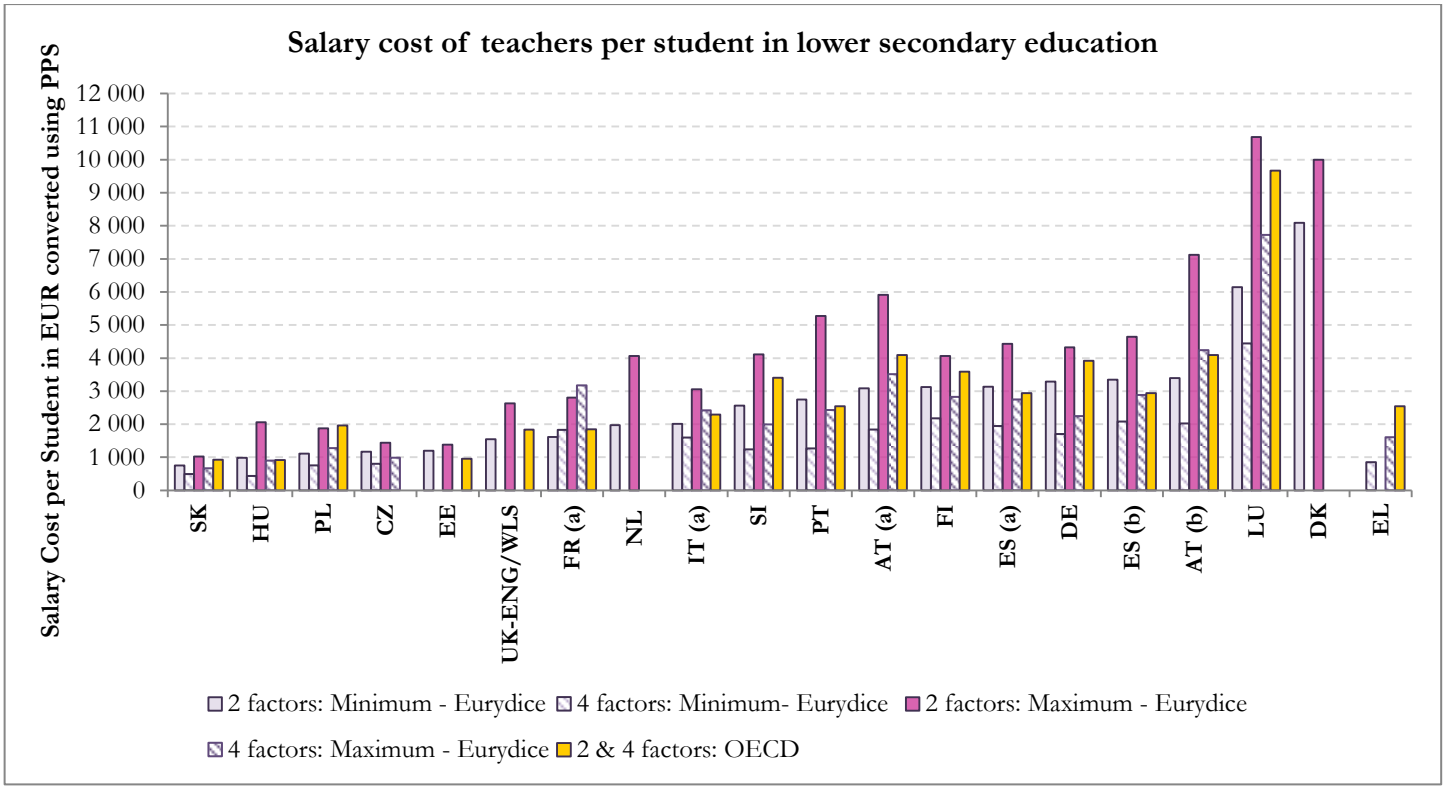


Figure 8. Salary Cost per Student in lower secondary education using 2 factors and 4 factors



7. Conclusion and Discussion

CRELL analyses using OECD and Eurydice data on teacher salaries, for the European Union, to calculate indicator B7 - **Salary Cost of Teachers per Student (CCS)** serves two purposes: 1) It offers an assessment of the different forms of data collection and 2) It offers information on each component in the computation of the CCS indicator (teachers' salaries, student-teacher ratio, teaching time, instruction time and class size) and its variation, depending on the data source. The latter purpose reflects the meaning of indicator B7 - it offers countries information about how different system-level components affect **CCS**. Regardless of the number of factors used to estimate **CCS**, teacher salary is one of the most important main drivers of the indicator. Nevertheless, as the analyses show, this indicator offers information that measures Salary Cost per Student and the results show that considering salaries alone does not give the full overview of the part they play in education expenditure.

Eurydice collects minimum and maximum statutory salaries of teachers, while OECD uses the statutory salaries for teachers with at least 15 years of teaching experience to compute the **CCS**. Accordingly, **if the objective is** to offer information about how much countries spend on teaching staff and how this might vary depending on other options (class size, teaching time, etc.), using the OECD's criterion for salary costs according to 15 years of teaching experience should be maintained. The OECD uses 15 years of experience because in most countries that is the average years of working experience of teachers (OECD, 2014a, p. 490). In this sense, OECD data provides a more accurate overview of country profiles in terms of the distribution of the working experience of the teachers in the labour force.

As this factor is one the main ones driving **CCS,** this measure is a better proxy for the spending contribution of teacher salaries in the overall teacher cost per student than using minimum or maximum salary. The minimum salary is associated with the fraction of the teacher force that is entering the teaching profession and thus has no teaching experience. On the opposite end, the maximum salary captures those teachers who have attained the top of the salary scale; most likely those that have the highest number of years of teaching experience and are approaching retirement.

If the objective is to attract new entrants to the teaching profession, as well as retaining existing teachers it seems appropriate to collect minimum and maximum salaries because these are better indicators of the salaries received by teachers at different points in their careers. Further developments in the Eurydice and OECD data collections planned for autumn 2017 - a joint collection is under consideration - might benefit from a discussion of the different aspects that reflect an actual salary. For example, OECD's actual salary data collection considers annual bonuses, result-related bonuses, extra pay for holidays and sick-leave pay. Holiday pay is the only component in common with the Eurydice statutory data collection, even though Eurydice collects information on the other components (Eurydice, 2014a).

Regarding criteria for data collection, Eurydice's criterion for including only the salary of unmarried and childless teachers should be reviewed in light of the actual distribution of teachers who have this profile. Beginning teachers are likely to fall under this category, whereas teachers with more teaching experience are more likely to be married with children. Moreover, pay scales across countries would need to be reviewed as to ascertain the common criteria. It could be that pay scales do not vary much according to the presence or absence of one or both criteria (i. e. married and childless). Additionally, given that the NESLI Survey on teachers' Salaries and Working Time will collect information on the formation of base salary and

additional payments in public institutions it seems crucial that a clear distinction is made between what constitutes additional payments that are made to all teachers (i.e holiday pay) and those that are made only to certain teachers (merit-pay, pay for additional duties and responsibilities).

Regarding data collection decisions, the OECD uses the minimum qualification of teachers for the computation of the **CCS.** Nevertheless, NESLI (2015) acknowledges that even though this is a key variable in the statutory teachers' salaries indicator, in some countries "minimum qualification" is more meaningful than in others (NESLI, 2015, p. 2). Thus, the network has agreed to continue collecting statutory salaries for teachers with minimum and typical qualifications. As agreed in the last NESLI meeting in autumn 2015, asking countries to indicate the percentage of teachers with minimum and with typical qualifications is included in the NESLI Survey on teachers' Salaries and Working Time. As is the case with the number of years of teaching experience, the distribution of teachers along pay scales according to different types of qualification may affect the **CCS**, as it necessarily reflects the salary cost of staff. In addition, the two different types of qualification, minimal and typical, and their respective salary may offer prospective teacher candidates and existing teachers an indication of the attractiveness of the teaching profession. For example, they could opt for acquiring the typical qualification rather than the minimal one, if that equates with a better salary.

In view of attracting the best, talented new entrants to the teaching profession, as well as retaining the best teachers teaching must be viewed as an attractive and competitive profession. A measure of how attractive the teaching profession ies in the comparison between teacher salaries and the salary of similarly qualified professionals. However, Hanushek (2011) cautions that this comparison may not be appropriate:

> "It is unclear precisely which professional occupations would provide an appropriate comparison. If the standard is privately employed professionals – say, lawyers, doctors, and accountants in private employment – a feature of the comparison is the overall structure of employment. Most private professionals have their salaries set much more in line with their individual productivity, and, consequently, these occupations have much higher employment risks than are found in teaching"(Hanushek, 2011, p. 115).

Importantly, the revised ISCED 2011 made it possible to distinguish among teachers who have obtained different ISCED levels (5, 6 or 7). This indicator is crucial to analyse how different Member States view and implement teacher training requirements and to consider future

European policies in this area. For example, with respect to the evaluation of the level of training required to teach pre-primary, primary and secondary students (ISCED 0, 1, 2, and 3), to consider how the salaries of teachers differ according to the attainment of different ISCED levels and to assess how they vary in relation to the salary of similarly educated workers. As previously mentioned in this report, current developments (NESLI, 2015) include a survey on the *availability of data on the distribution of the teachers' population by different levels of educational attainment*. Teachers' actual salaries is the numerator and the earnings of full-time, full year workers (age 25-64) is weighted by the percentage of teachers with similar ISCED levels of attainment as the denominator (NESLI, 2015). The full - time full year earnings for workers with tertiary education (ISCED 5 or less, ISCED 6, and ISCED 7 or more) are to be collected either directly by LSO or come from the EU database SILC (Statistics on Income and Living Conditions). For comparability purposes, the application of the NESLI (2015) survey will ensure that countries collect data on teacher salaries with the appropriate tertiary level breakdowns. Similarly, since 2016 will be the first year of the implementation of the revised classification of fields of education and training in EU household surveys, it will be possible to obtain the corresponding breakdown for similarly educated workers. Improvement in this indicator, as mentioned in section 4 of this report, are crucial to obtain a more accurate measure and one that can shed light on the attractiveness of the teaching profession.

Finally, following Hanushek's rationale, it would be more appropriate to compare teacher salaries in the public sector with full year workers (age 25-64) with similar ISCED levels of attainment that also work in the public sector. Since in EU-SILC it is possible to derive an approximation of the public sector wage (i. e. NACE categories, such as "Public Administration and defence", Health and social work" and "Education"; European Central Bank, 2011), considering this approximation would make the comparison more meaningful. Another option would be to use data collected in the Labour Force Survey, which provides different classifications for the wages of respondents that work in the private sector and in the public sector (LFS User Guide - Volume 5[30]).

[30] User guide available at: http://www.ons.gov.uk/ons/guide-method/method-quality/specific/labour-market/labour-market-statistics/index.html

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ANNEX

ANNEX A[31]: SALARY COST OF TEACHERS PER STUDENT DETAILED DATA

[31] **Notes for the tables:**

: - Data not available for at least one of the components`

Empty cell - not applicable or no information available for the country

Values in italic - definition of Ratio Student/Teacher differs

m - information not available in Education at a Glance

NC - not calculated by OECD in Education at a Glance

a - Data are not applicable because the category does not apply in Education at a Glance

Spain: ES (a) Data on salaries of non *Catedráticos* teachers; ES **(b)** Data on salaries at ISCED 2-3 of *Catedráticos* teachers.

France:. At ISCED 3, FR **(a)** Data on the salaries of teachers *in Lycées*; FR **(b)** Data on the salaries of teachers in *Lycées professionnels.*

Italy: At ISCED 3, IT **(a)** Data for teachers with a *Laurea magistrale* (Master's degree); IT **(b)** Data for teachers that have completed
non-university studies.

Austria: At ISCED 2, AT **(a)** Data on salaries of *Volksschule and Hauptschule* teachers; AT **(b)** Data on salaries of *Allgemeinbildende Höhere Schule* teachers.

Table A.1. Teachers' salaries by level of education using OECD data and Eurydice data

		Teachers' Salaries (in Euro, converted using PPS for household final consumption expenditure)								
		Primary education			Lower secondary education			Upper secondary education		
		Minimum - Eurydice	Maximum - Eurydice	OECD	Minimum - Eurydice	Maximum - Eurydice	OECD	Minimum - Eurydice	Maximum - Eurydice	OECD
EU	**Code**									
Belgium FR	BF	27 381	47 180	36 359	27 381	47 180	36 359	34 067	59 699	46 709
Belgium DE	BD	27 618	45 898	NC	27 618	45 898	NC	34 584	58 210	NC
Belgium NL	BN	27 818	48 207	37 363	27 818	48 207	37 363	34 759	61 044	48 048
Bulgaria	BG	:	:	NC	:	:	NC	:	:	NC
Czech Republic	CZ	12 944	15 998	13 706	12 944	15 998	13 706	12 944	15 998	13 706
Denmark	DK	29 939	36 982	38 877	*29 939*	*36 982*	39 438	36 749	47 760	40 580
Germany	DE	41 948	54 246	49 081	45 670	60 145	53 333	49 340	68 115	57 172
Estonia	EE	11 857	13 660	9 329	11 857	13 660	9 329	11 857	13 660	9 329
Ireland	IE	23 172	49 452	38 864	23 172	49 452	39 287	23 172	49 452	39 287
Greece	EL	14 693	27 757	18 665	14 693	27 757	18 665	14 693	27 757	18 665
Spain	ES (a)	29 693	42 089	30 523	33 251	46 950	34 097	33 251	46 950	34 097
Spain	ES (b)				35 492	49 191	34 097	35 492	49 191	34 097
France	FR (a)	22 518	40 812	26 058	24 977	43 409	28 460	25 315	43 781	28 700
France	FR (b)							25 365	43 836	28 700
Croatia	HR	12 875	18 440	NC	12 875	18 089	NC	12 875	21 051	NC
Italy	IT (a)	22 340	32 844	24 537	23 734	36 069	26 735	24 083	37 707	27 484
Italy	IT (b)							22 340	33 796	
Cyprus	CY	26 144	63 603	NC	26 144	63 603	NC	26 144	63 603	NC
Latvia	LV	4 559	4 728	NC	4 559	4 728	NC	4 559	4 728	NC
Lithuania	LT	5 944	10 952	NC	5 944	10 952	NC	5 944	10 952	NC
Luxembourg	LU	58 032	102 524	77 637	65 770	114 324	83 132	65 770	114 324	83 132
Hungary	HU	10 475	19 902	9 528	10 475	21 807	9 528	11 476	21 807	11 300
Malta	MT	22 128	29 089	NC	22 128	29 089	NC	22 128	29 089	NC
Netherlands	NL	29 007	45 902	m	30 812	63 423	m	30 812	63 423	m
Austria	AT (a)	27 813	53 226	33 878	27 813	53 226	36 726			
Austria	AT (b)				30 580	64 143	36 726	30 580	64 143	39 523
Poland	PL	9 762	16 288	19 375	10 994	18 572	19 375	12 431	21 260	19 375
Portugal	PT	26 403	50 651	26 564	26 403	50 651	26 564	26 403	50 651	26 564
Romania	RO	5 324	15 054	NC	5 665	15 054	NC	5 665	15 054	NC
Slovenia	SI	20 224	32 518	27 987	20 224	32 518	27 987	20 224	32 518	27 987
Slovak Republic	SK	9 694	13 124	11 562	9 694	13 124	11 562	9 694	13 124	11 562
Finland	FI	25 744	33 482	30 034	27 804	36 162	32 437	29 483	39 035	35 015
Sweden	SE	22 315	31 100	29 539	22 315	31 100	30 062	24 739	33 322	31 518
England-Wales	UK-ENG/WLS	21 957	37 385	33 945	21 957	37 385	33 945	21 957	37 385	33 945
Northern Ireland	UK-NIR	21 957	37 385	NC	21 957	37 385	NC	21 957	37 385	NC
Scotland	UK-SCT	26 157	34 785	31 584	26 157	34 785	31 584	26 157	34 785	31 584

Table A.2. Salary cost of teachers per student by level of education using OECD data and Eurydice data on teachers' salaries

		Salary cost of teachers per student (2 factors) (in Euro, converted using PPS for household final consumption expenditure)								
		Primary education			Lower secondary education			Upper secondary education		
		Minimum - Eurydice	Maximum - Eurydice	OECD	Minimum - Eurydice	Maximum - Eurydice	OECD	Minimum - Eurydice	Maximum - Eurydice	OECD
EU	**Code**									
Belgium FR	BF	2 190	3 774	2 869	3 339	5 754	3 897	*3 373*	*5 911*	4 733
Belgium DE	BD	2 209	3 672	NC	3 368	5 597	NC	*3 424*	*5 763*	NC
Belgium NL	BN	2 225	3 857	2 949	3 392	5 879	4 004	*3 441*	*6 044*	4 868
Bulgaria	BG	:	:	NC	:	:	NC	:	:	NC
Czech Republic	CZ	685	846	730	1 166	1 441	1 225	1 145	1 416	m
Denmark	DK	:	:	m	*8 092*	*9 995*	m	:	:	m
Germany	DE	2 622	3 390	3 142	3 286	4 327	3 918	3 601	4 972	m
Estonia	EE	905	1 043	715	1 198	1 380	952	841	969	m
Ireland	IE	1 430	3 053	2 375	:	:	2 817	*1 545*	*3 297*	2 817
Greece	EL	1 563	2 953	1 966	:	:	2 540	:	:	m
Spain	ES (a)	2 216	3 141	2 219	3 137	4 429	2 945	3 359	4 742	m
Spain	ES (b)				3 348	4 641	2 945	3 585	4 969	m
France	FR (a)	1 191	2 159	1 349	1 611	2 801	1 847	2 557	4 422	2 834
France	FR (b)							2 562	4 428	2 834
Croatia	HR	907	1 299	NC	1 341	1 884	NC	1 327	2 170	NC
Italy	IT (a)	*1 846*	*2 714*	1 988	*2 011*	*3 057*	2 289	*1 853*	*2 901*	2 188
Italy	IT (b)							1 718	2 600	2 188
Cyprus	CY	1 867	4 543	NC	2 614	6 360	NC	2 589	6 297	NC
Latvia	LV	414	430	NC	577	598	NC	426	442	NC
Lithuania	LT	589	1 084	NC	793	1 460	NC	762	1 404	NC
Luxembourg	LU	6 308	11 144	8 803	6 147	10 684	9 668	*8 654*	*15 043*	9 668
Hungary	HU	979	1 860	896	988	2 057	913	918	1 745	939
Malta	MT	1 924	2 530	NC	2 766	3 636	NC	2 432	3 197	NC
Netherlands	NL	1 836	2 905	m	1 975	4 066	m	1 657	3 410	m
Austria	AT (a)	2 318	4 435	2 842	3 090	5 914	4 088			
Austria	AT (b)				3 398	7 127	4 088	3 120	6 545	4 011
Poland	PL	887	1 481	1 747	1 111	1 876	1 959	1 140	1 950	m
Portugal	PT	2 219	4 256	2 012	2 750	5 276	2 547	3 474	6 665	3 164
Romania	RO	294	832	NC	436	1 158	NC	356	947	NC
Slovenia	SI	1 272	2 045	1 750	2 560	4 116	3 409	1 434	2 306	m
Slovak Republic	SK	577	781	683	757	1 025	926	697	944	851
Finland	FI	1 893	2 462	2 276	3 124	4 063	3 593	*1 831*	*2 425*	m
Sweden	SE	1 891	2 636	m	1 975	2 752	m	1 874	2 524	m
England-Wales	UK-ENG/WLS	1 041	1 772	1 642	1 546	2 633	1 837	1 284	2 186	1 834
Northern Ireland	UK-NIR	1 041	1 772	NC	1 546	2 633	NC	1 284	2 186	NC
Scotland	UK-SCT	1 240	1 649	m	1 842	2 450	m	1 530	2 034	m

Table A.3. Factors used to compute the salary cost of teachers per student using 2 factors

		Ratio Student/Teacher					
		Primary education		Lower secondary education		Upper secondary education	
		Eurostat	OECD	Eurostat	OECD	Eurostat	OECD
EU	**Code**						
Belgium FR	BF	*12. 5*	12. 7	*8. 2*	9. 3	*10. 1*	9. 9
Belgium DE	BD	*12. 5*	NC	*8. 2*	NC	*10. 1*	NC
Belgium NL	BN	*12. 5*	12. 7	*8. 2*	9. 3	*10. 1*	9. 9
Bulgaria	BG	17. 5	NC	12. 8	NC	12. 3	NC
Czech Republic	CZ	18. 9	18. 8	11. 1	11. 2	11. 3	11. 1
Denmark	DK	:	M	*3. 7*	m	:	m
Germany	DE	16.	15. 6	13. 9	13. 6	13. 7	17. 5
Estonia	EE	13. 1	13.	9. 9	9. 8	14. 1	11. 3
Ireland	IE	16. 2	16. 4	:	13. 9	*15.*	13. 9
Greece	EL	9. 4	9. 5	:	7. 3	*:*	8. 1
Spain	ES (a)	13. 4	13. 8	10. 6	11. 6	9. 9	11.
Spain	ES (b)	13. 4	13. 8	10. 6	11. 6	9. 9	11.
France	FR (a)	18. 9	19. 3	15. 5	15. 4	9. 9	10. 1
France	FR (b)	18. 9	19. 3		15. 4	9. 9	10. 1
Croatia	HR	14. 2	NC	9. 6	NC	9. 7	NC
Italy	IT (a)	*12. 1*	12. 3	*11. 8*	11. 7	*13.*	12. 6
Italy	IT (b)	*12. 1*	12. 3		11. 7	*13.*	12. 6
Cyprus	CY	14.	NC	10.	NC	10. 1	NC
Latvia	LV	11.	NC	7. 9	NC	10. 7	NC
Lithuania	LT	10. 1	NC	7. 5	NC	7. 8	NC
Luxembourg	LU	9. 2	8. 8	*10. 7*	8. 6	*7. 6*	8. 6
Hungary	HU	10. 7	10. 6	10. 6	10. 4	*12. 5*	12.
Malta	MT	11. 5	NC	8.	NC	9. 1	NC
Netherlands	NL	15. 8	M	15. 6	m	18. 6	m
Austria	AT (a)	12.	11. 9	9.	9.	9. 8	9. 9
Austria	AT (b)	12.	11. 9	9.	9.	9. 8	9. 9
Poland	PL	11.	11. 1	9. 9	9. 9	10. 9	11.
Portugal	PT	11. 9	13. 2	9. 6	10. 4	7. 6	8. 4
Romania	RO	18. 1	NC	13.	NC	15. 9	NC
Slovenia	SI	15. 9	16.	7. 9	8. 2	14. 1	13. 5
Slovak Republic	SK	16. 8	16. 9	12. 8	12. 5	13. 9	13. 6
Finland	FI	*13. 6*	13. 2	*8. 9*	9.	*16. 1*	16.
Sweden	SE	11. 8	12. 7	11. 3	12.	13. 2	12. 8
England-Wales	UK-ENG/WLS	21. 1	20. 7	14. 2	18. 5	17. 1	18. 5
Northern Ireland	UK-NIR	21. 1	NC	14. 2	NC	17. 1	
Scotland	UK-SCT	21. 1	20. 7	14. 2	18. 5	17. 1	18. 5

Table A.4. Factors used to compute the salary cost of teachers per student using 4 factors[32]

		Instruction time (for students, hours per year)						**Teaching time** (for teachers, hours per year)						**Class size** (number of students per classroom)					
		Primary education		Lower secondary education		Upper secondary education		Primary education		Lower secondary education		Upper secondary education		Primary education		Lower secondary education		Upper secondary education	
		Eurydice	OECD	Eurydice	OECD	Eurydice	OECD	Eurydice	OECD	Eurydice	OECD	Eurydice	OECD	Eurostat	OECD	Eurostat	OECD	Eurostat	OECD
EU																			
Belgium FR	BF	849	849	971	971	849	849	744	721	670	661	632	601	:	14.9	:	13.7		13. 9
Belgium DE	BD	840	NC	960	NC	a	NC		NC		NC		NC	:	NC	:	NC		NC
Belgium NL	BN	821	821	928	928	928	928	740	752	666	669	629	625	:	13.8	:	12.9		14. 7
Bulgaria	BG	469	NC	765	NC	864	NC		NC		NC		NC	20. 7	NC	22.1	NC		NC
Czech Republic	CZ	676	676	874	874	a	a	666	827	666	620	706	592	19. 8	15.4	21.3	15.8		m
Denmark	DK	754	754	930	930	a	a		662		662		369	20. 6	m	21.1	m		m
Germany	DE	683	683	866	866	a	a	790	800	711	752	711	715	21.	13.3	24.5	15.7		m
Estonia	EE	661	661	823	823	a	a	490	619	490	619	490	568	17.	13.9	15.7	13.0		m
Ireland	IE	915	915	935	935	935	935	915	915	735	735	735	735	24. 4	16.4	:	17.8		17. 8
Greece	EL	783	783	785	785	a	a	630	569	496	415	496	415	17. 3	13.1	21.9	13.9		m
Spain	ES (a)	787	787	1 061	1 061	a	a	925	880	666	713	648	693	21. 4	12.3	24.5	17.2		m
Spain	ES (b)	787	787	1 061	1 061	a	a	925	880	666	713	648	693	21. 4	12.3	24.5	17.2		m
France	FR (a)	864	864	991	991	1 036	1 036	936	924	648	648	540	648	22. 7	18.1	25.1	23.6		16. 2
France	FR (b)	864	864	991	991	1 036	1 036	936	924	648	648	540	648	22. 7	18.1	25.1	23.6		16. 2
Croatia	HR	473	NC	637	NC	a	NC		NC		NC		NC	16. 9	NC	20.8	NC		NC

[32] Data on Instruction time for Belgium DE, Bulgaria, Croatia, Cyprus, Latvia, Lithuania, Malta, and Romania was based on Eurydice (2014b), Recommended Annual Instruction Time in Full-time Compulsory Education in Europe 2013/2014.

Data on Teaching time is based in the minimum teaching hours per week from Eurydice (2013). However, some countries like BF, BD, BN, EE, ES, FR, HU, AT, PT, RO, SI, SK, FI and HR can have an additional number of teaching hours per week in, ranging from 1 to 7 hours, in at least one of the educational levels. For UK-ENG/WLS on the data on Teaching Time includes figures for England and not for Wales.

		Instruction time (for students, hours per year)						**Teaching time** (for teachers, hours per year)						**Class size** (number of students per classroom)					
		Primary education		Lower secondary education		Upper secondary education		Primary education		Lower secondary education		Upper secondary education		Primary education		Lower secondary education		Upper secondary education	
		Eurydice	OECD	Eurydice	OECD	Eurydice	OECD	Eurydice	OECD	Eurydice	OECD	Eurydice	OECD	Eurostat	OECD	Eurostat	OECD	Eurostat	OECD
Italy	IT (a)	891	891	990	990	904	904	858	752	702	616	702	616	19.	14.6	21.0	18.8		18. 5
Italy	IT (b)	891	891	990	990	904	904	858	752	702	616	702	616	19.	14.6	21.0	18.8		18. 5
Cyprus	CY	798	NC	859	NC	a	NC		NC		NC		NC	18. 4	NC	21.2	NC		NC
Latvia	LV	591	NC	794	NC	a	NC		NC		NC		NC	15. 7	NC	14.9	NC		NC
Lithuania	LT	912	NC	1197	NC	a	NC		NC		NC		NC	15. 2	NC	19.8	NC		NC
Luxembourg	LU	924	924	845	845	845	845	756	810	648	739	648	739	15. 7	10.1	19.3	9.8		9. 8
Hungary	HU	616	616	710	710	832	832	629	601	629	601	629	597	20. 9	10.9	21.2	12.3		16. 8
Malta	MT	782	NC	788	NC	788	NC		NC		NC		NC	19. 8	NC	21.0	NC		NC
Netherlands	NL	940	940	1 000	1 000	925	925		930		750		750	22. 6	m	:	m		m
Austria	AT (a)	705	705	900	900	936	936	684	779	646	607	646	589	18. 3	10.8	21.1	13.3		15. 7
Austria	AT (b)	705	705	900	900	936	936	684	779	646	607	646	589	18. 3	10.8	21.1	13.3		15. 7
Poland	PL	635	635	810	810	a	a	532	629	526	555	518	551	18. 4	11.2	22.4	14.4		m
Portugal	PT	806	806	877	877	805	805	925	747	814	609	814	609	20. 8	14.3	22.5	15.0		11. 1
Romania	RO	509	NC	836	NC	851	NC		NC		NC		NC	19. 4	NC	20.9	NC		NC
Slovenia	SI	664	664	767	767	a	a	640	627	640	627	560	570	18. 7	16.9	19.6	10.0		m
Slovak Republic	SK	680	680	828	828	879	879	643	832	643	645	643	617	17. 3	13.9	19.6	16.0		19. 3
Finland	FI	632	632	844	844	a	a	684	677	532	592	456	550	19. 4	12.3	20.3	12.9		m
Sweden	SE	754	754	754	754	a	a		a		a		a	:	m	:	m		m
England-Wales	UK-ENG/WLS	861	861	911	911	950	950		722		745		745	25. 1	24.7	19.3	22.6		23. 6
Northern Ireland	UK-NIR		NC		NC		NC		NC		NC			25. 1	NC	19.3	NC		NC
Scotland	UK-SCT	a	a	a		a	a	874	855	874	855	874	855	25. 1	m	19.3	m		m

Table A.5. Salary cost of teachers per student using 2 and 4 factors

		Salary cost of teachers per student (2 factors) (in Euro, converted using PPS for household final consumption expenditure)									**Salary cost of teachers per student (4 factors)** (in Euro, converted using PPS for household final consumption expenditure)					
		Primary education			Lower secondary education			Upper secondary education			Primary education		Lower secondary education		Upper secondary education	
		Minimum-Eurydice	Maximum-Eurydice	OECD	Minimum-Eurydice	Maximum-Eurydice	OECD	Minimum-Eurydice	Maximum-Eurydice	OECD	Minimum-Eurydice	Maximum-Eurydice	Minimum-Eurydice	Maximum-Eurydice	Minimum-Eurydice	Maximum-Eurydice
EU																
Belgium FR	BF	2 190	3 774	2 869	3 339	5 754	3 897	*3 373*	*5 911*	4 733						
Belgium DE	BD	2 209	3 672	NC	3 368	5 597	NC	*3 424*	*5 763*	NC						
Belgium NL	BN	2 225	3 857	2 949	3 392	5 879	4 004	*3 441*	*6 044*	4 868						
Bulgaria	BG	:	:	NC	:	:	NC	:	:	NC						
Czech Republic	CZ	685	846	730	1 166	1 441	1 225	1 145	1 416	m	534	660	636	797		
Denmark	DK	:	:	m	*8 092*	*9 995*	m	:	:	m	1656	2046				
Germany	DE	2 622	3 390	3 142	3 286	4 327	3 918	3 601	4 972	m	1706	2206	1378	1703		
Estonia	EE	905	1 043	715	1 198	1 380	952	841	969	m	744	857				
Ireland	IE	1 430	3 053	2 375			2 817	*1 545*	*3 297*	2 817	950	2027				
Greece	EL	1 563	2 953	1 966	:	:	2 540	:	:	m	1168	2207	813	850		
Spain	ES (a)	2 216	3 141	2 219	3 137	4 429	2 945	3 359	4 742	m	1242	1760	1345	1946		
Spain	ES (b)				3 348	4 641	2 945	3 585	4 969	m			1345	2077		
France	FR (a)	1 191	2 159	1 349	1 611	2 801	1 847	2 557	4 422	2 834	928	1681	1435	1826		
France	FR (b)							2 562	4 428	2 834				0		
Croatia	HR	907	1 299	NC	1 341	1 884	NC	1 327	2 170	NC						
Italy	IT (a)	*1 846*	*2 714*	1 988	*2 011*	*3 057*	2 289	*1 853*	*2 901*	2 188	1392	2047	1241	1594		
Italy	IT (b)							1 718	2 600	2 188						
Cyprus	CY	1 867	4 543	NC	2 614	6 360	NC	2 589	6 297	NC						
Latvia	LV	414	430	NC	577	598	NC	426	442	NC						
Lithuania	LT	589	1 084	NC	793	1 460	NC	762	1 404	NC						

		Salary cost of teachers per student (2 factors) (in Euro, converted using PPS for household final consumption expenditure)									Salary cost of teachers per student (4 factors) (in Euro, converted using PPS for household final consumption expenditure)					
		Primary education			Lower secondary education			Upper secondary education			Primary education		Lower secondary education		Upper secondary education	
		Minimum-Eurydice	Maximum-Eurydice	OECD	Minimum-Eurydice	Maximum-Eurydice	OECD	Minimum-Eurydice	Maximum-Eurydice	OECD	Minimum-Eurydice	Maximum-Eurydice	Minimum-Eurydice	Maximum-Eurydice	Minimum-Eurydice	Maximum-Eurydice
Luxembourg	LU	6 308	11 144	8 803	6 147	10 684	9 668	*8 654*	*15 043*	9 668	4219	7453	3950	4444		
Hungary	HU	979	1 860	896	988	2 057	913	918	1 745	939	514	977	295	431		
Malta	MT	1 924	2 530	NC	2 766	3 636	NC	2 432	3 197	NC						
Netherlands	NL	1 836	2 905	m	1 975	4 066	m	1 657	3 410	m	1297	2053				
Austria	AT (a)	2 318	4 435	2 842	3 090	5 914	4 088				1375	2631	1684	1836		
Austria	AT (b)				3 398	7 127	4 088	3 120	6 545	4 011			1684	2019		
Poland	PL	887	1 481	1 747	1 111	1 876	1 959	1 140	1 950	m	535	893	1003	756		
Portugal	PT	2 219	4 256	2 012	2 750	5 276	2 547	3 474	6 665	3 164	1370	2628	957	1264		
Romania	RO	294	832	NC	436	1 158	NC	356	947	NC						
Slovenia	SI	1 272	2 045	1 750	2 560	4 116	3 409	1 434	2 306	m	1146	1843	1289	1237		
Slovak Republic	SK	577	781	683	757	1 025	926	697	944	851	458	620	442	492		
Finland	FI	1 893	2 462	2 276	3 124	4 063	3 593	*1 831*	*2 425*	m	1240	1612	1768	2174		
Sweden	SE	1 891	2 636	m	1 975	2 752	m	1 874	2 524	m						
England-Wales	UK-ENG/WLS	1 041	1 772	1 642	1 546	2 633	1 837	1 284	2 186	1 834	1044	1777				
Northern Ireland	UK-NIR	1 041	1 772	NC	1 546	2 633	NC	1 284	2 186	NC						
Scotland	UK-SCT	1 240	1 649	m	1 842	2 450	m	1 530	2 034	m						

ANNEX B: TECHNICAL NOTES FOR CCS FACTORS

insT: instruction time of students (hours per year)

Data on ***instruction time*** are from the 2013 Joint ***Eurydice-OECD Instruction time*** data collection. The figures for instruction time for the OECD countries, reported in the Education at a Glance 2015 - Belgium Fr., Belgium Fl., Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Italy, Luxembourg, Hungary, Netherlands, Austria, Poland, Portugal, Slovenia, Slovak Republic, Finland and Sweden are from the Education at a Glance 2015.

For Belgium DE, Bulgaria, Croatia, Cyprus, Latvia, Lithuania, Malta and Romania we proceed as follows: we relied on the figures from Eurydice's' report entitled "Recommended Annual Instruction Time in Full-time Compulsory education in Europe 2013/2014" and used the values of the total minimum compulsory curriculum for primary and secondary level. In order to have instruction time in hours per year, for primary education level we calculated the average of all the values presented. In order to have figures for lower secondary and upper secondary education levels we took in consideration the duration of each one of the educational levels[33] in each country and we calculated the average of the instruction time of total minimum compulsory for lower and upper secondary levels.

teachT: teaching time of teachers (hours per year)

Data *on teaching time* in Education at a Glance is presented in hours per year. CRELL used in the calculations:

1) Data from the Education at a Glance 2015 for ISCED 1, 2 and 3.
2) For ISCED 1, 2 and 3, CRELL used the minimum number of teaching hours from Eurydice[34] data from 2011/2012) and in order to have comparable values with the ones presented in the Education at a Glance, CRELL multiplied the number of teaching hours by the number of weeks of teaching presented in the Education at a Glance 2014 (data from 2012).

ClassSize: class size (number of students per classroom)

1) OECD: data from the Education at a Glance 2015 for all ISCED levels
2) EUROSTAT: data from the Eurostat website for ISCED 1 and 2.

Ratiostud/teacher: the ratio of student to teaching staff (number of students per teacher).

1) OECD: data from the Education at a Glance 2015 for all ISCED levels.
2) EUROSTAT: data from the Eurostat website for all ISCED levels.

[33] Information from the Education at a Glance 2015 - OECD (2015), Education at a Glance 2015: OECD Indicators, OECD Publishing. http://dx.doi.org/10.1787/eag-2015-en

[34] Information collected from Eurydice (2013), Key data on Teachers and School Leaders in Europe 2013, pages 75 and 76.

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