

# **Education at a Glance**

## **OECD Indicators 2008**

### **Annex 3: Sources, methods and technical notes**

#### **Chapter B: Financial investment in education**

Table: Specific notes by country in the different indicators

	B1			B2	B3	B4	B5	B6	B7
	coverage	method	interpretation	coverage	coverage	coverage	coverage	coverage	coverage
Australia				<a href="#">AUS</a>					
Austria	<a href="#">AUT</a>	<a href="#">AUT</a> <a href="#">AUT2</a>	<a href="#">AUT</a>						
Belgium				<a href="#">BEL</a>	<a href="#">BEL</a>				
Canada					<a href="#">CAN</a>		<a href="#">CAN</a>		
Czech Republic				<a href="#">CZE</a>			<a href="#">CZE</a>		
Denmark				<a href="#">DNK</a>			<a href="#">DNK</a>		
Finland				<a href="#">FIN</a>					
France	<a href="#">FRA</a>	<a href="#">FRA</a> <a href="#">DEU</a> <a href="#">DEU2</a>		<a href="#">FRA</a>			<a href="#">FRA</a>		
Germany				<a href="#">DEU</a>			<a href="#">DEU</a>		
Greece		<a href="#">GRC</a>		<a href="#">GRC</a>					
Hungary		<a href="#">HUN</a>							
Iceland		<a href="#">ISL</a>							
Ireland							<a href="#">IRL</a>	<a href="#">IRL</a>	
Italy		<a href="#">ITA</a>						<a href="#">ITA</a>	
Japan		<a href="#">JPN</a>	<a href="#">JPN</a>	<a href="#">JPN</a>					
Korea	<a href="#">KOR</a>	<a href="#">KOR</a>							
Luxembourg	<a href="#">LUX</a>								
Mexico	<a href="#">MEX</a>								
Netherlands	<a href="#">NLD</a>								
New Zealand									
Norway			<a href="#">NOR</a>	<a href="#">NOR</a>					
Poland	<a href="#">POL</a>			<a href="#">POL</a>			<a href="#">POL</a> <a href="#">POL2</a>		
Portugal	<a href="#">PRT</a>			<a href="#">PRT</a>					
Slovak Republic									
Spain	<a href="#">ESP</a>								
Sweden	<a href="#">SWE</a>	<a href="#">SWE</a>					<a href="#">SWE</a>	<a href="#">SWE</a>	
Switzerland			<a href="#">CHE</a>				<a href="#">CHE</a>		
Turkey				<a href="#">TUR</a>					
United Kingdom	<a href="#">UKM</a>	<a href="#">UKM</a>	<a href="#">UKM</a>						
United States	<a href="#">USA</a>								
Brazil									
Chile			<a href="#">CHL</a>						
Estonia									
Israel	<a href="#">ISR</a>			<a href="#">ISR</a>				<a href="#">ISR</a> <a href="#">ISR2</a>	
Russian Federation	<a href="#">RUS</a>			<a href="#">RUS</a>					
Slovenia	<a href="#">SVN</a>								

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## CHAPTER B: FINANCIAL INVESTMENT IN EDUCATION

### ■ Changes in the coverage of all indicators introduced in *Education at a Glance 2008*

**France:** Compared to years before 2003, the finance indicators for 2005 include the following modifications:

Change in the geographic area covered with the inclusion of overseas departments (*départements d'outre-mer* – DOM). Indicators for 2005 refer to France as a whole and are therefore coherent with the area covered in national accounting aggregates (GDP, public spending, etc.). In trend data indicators, previous years are marked as “m” to ensure consistency across years.

Change in the R&D spending areas covered so as to match the coverage of R&D spending on higher education used in the DSTI/OCDE data collection (reference to the *Frascati Manual*).

Update of the treatment methods used for information sources and of the statistical tools employed: in particular, overhaul of assessment techniques for certain types of spending, such as spending on payroll taxes, spending by local authorities (towns and cities, departments, regions) or spending by households.

## INDICATOR B1: How much is spent per student?

See also notes on Indicator B2. [#Back to table](#)

### ■ General notes

#### *Methodology*

#### ● Reference period

Adjustments were made for countries in which the financial year and the school year do not coincide. In order to match the enrolment data with the financial year 2005, a weighted average of the enrolment data for the academic years 2004/05 and 2005/06 was calculated. The data were weighted in accordance with the proportion of each school year that fell within the financial year 2005 (see Annex 2).

#### ● Estimation of expenditure per tertiary student over the duration of studies

Two alternative methods were employed to calculate the average duration of tertiary studies: the approximation formula and the chain method. For both methods, the result does not give the average duration needed for a student to graduate since all students participating in tertiary education are taken into account, including dropouts. Hence, the figure can be interpreted as the average length of time during which students stay in tertiary education until they either graduate or drop out. However, in the case of countries with low dropout rates (see Indicator A2), the result can serve as a good proxy for duration until graduation.

The estimates of cumulative expenditure on education over the average duration of tertiary studies were obtained by multiplying annual expenditure per student by an estimate of the average duration of tertiary studies.

Using the **approximation formula**, the latter estimate was approximated by the rate of turnover of the existing stock of enrolments, obtained from the ratio of flow data (entrants and leavers) to the corresponding numbers of students enrolled. The formula  $D = (S_{t-1} + S_t)/(Z_t + A_t)$  was used for this calculation, where  $S_t$  is the number of students enrolled at the end of year  $t$ ,  $S_{t-1}$  is the number of students at the beginning of year  $t$  (approximated by the number of students enrolled at the end of the preceding school year),  $Z_t$  is the number of students in their first year of study in year  $t$ , and  $A_t$  is the number of leavers in school year  $t$  (approximated by  $S_{t-1} + Z_t - S_t$ ). Full-time equivalents were used to estimate enrolments. The number of entrants to full-time programmes was used to estimate the inflow. All participants were included, even those who might not obtain a degree.

The estimate is based on a number of simplifying assumptions: first, it is assumed that transition rates are constant over time. Second, expenditure in the current reference year is assumed to be typical of the total duration of studies.

Using the **chain method**, the duration of study is defined as the sum of the probabilities, for each year of study, that a student who has entered tertiary education will still be enrolled in that year of study.

The duration is therefore defined as:  $D = \sum_{i=1}^{10} q_i$ , where  $q_i$  is the probability that a student will reach the  $i$ -

th year of study, *i.e.* the proportion of individuals in the  $i$ -th year of study relative to those studying in the first year  $i-1$  years before. With the chain method all conditional probabilities are derived from data for two adjacent years, the reference year and the preceding year. Given the number of students  $s$  in year  $i$  of study in year  $t$  and the number of students in year  $i-1$  of study in year  $t-1$ , the transition rates can be calculated for each year of study as  $a_{i,t} = s_{i,t}/s_{i-1,t-1}$ . The transition rates give, for each year of study, the probability that a student in year  $i-1$  will continue studying in year  $i$ . The product of all transition rates 1 to  $i$  gives the probability, for year  $i$  of study that a student who started  $i-1$  years before will still be enrolled in year  $i$  of study. Finally, the sum of all conditional probabilities gives an estimate of the average duration of tertiary education. Expenditure in the current reference year is assumed to be typical of the total duration of studies. [#Back to table](#)

- **Trend data collection (financial years 1995, 2000, 2001, 2002, 2003, 2004, 2005)**

The trend data on expenditure were obtained by a special survey updated in 2006. OECD countries were asked to revise trend data for the **financial years 1995, 2000, 2001, 2002, 2003, 2004** according to the definitions and the coverage of the UOE 2007 data collection and then consistently with 2005 data.

All expenditure data, as well as the GDP for 1995, 2000, 2001, 2002, 2003 and 2004 are adjusted to 2005 prices using the GDP price deflator. [#Back to table](#)

- **Notes on specific countries**

#### *Coverage*

*See also notes on Indicator B2.*

**Austria:** Expenditure on R&D in the tertiary sector is partially excluded. Some expenditure by public institutions other than the Ministry of Education is excluded (social insurance bodies, chambers of trade and crafts, and federal funds – *Sozialversicherungsträger, Kammern, Bundesfonds*). [#Back to table](#)

**France:** As in *Education at a Glance 2006* and *2007*, research expenditure has been aligned with the DSTI data and now includes all R&D expenditure (higher education expenditure on R&D – HERD) without any exclusion. [#Back to table](#)

**Israel:** Expenditure on R&D cannot be separated from total expenditure but is included in the UOE data collection. [#Back to table](#)

**Korea:** Expenditure on some educational programmes provided by ministries other than the Ministry of Education is excluded (Police College, Polytechnic College, Military Academy, etc.). [#Back to table](#)

**Luxembourg:** The small difference between general and vocational programmes (see also Indicator C1) is due to the fact that expenditure occurring during the time spent in class is included. All other expenditure (for example expenditure of private enterprises) is not included in the calculation so that the costs of vocational programmes (especially dual programmes) are underestimated. [#Back to table](#)

**Mexico:** Only public expenditure on separately funded or separately budgeted research. [#Back to table](#)

**Netherlands:** Expenditure of private enterprises on dual vocational programmes is underestimated. [#Back to table](#)

**Poland:** Expenditure, particularly private expenditure, is underestimated. [#Back to table](#)

**Portugal:** Compared to data published in Education at a Glance 2007, at the tertiary level, for the first time, Portugal reported data from private institutions, namely: i) expenditure with the teachers and other pedagogical, administrative and professional personnel; ii) expenditure of households (private expenditure) – payments to independent private institutions. And we didn't even include data from some of them, such as Universidade Católica, and the institutions belonging to Fundação Minerva and Fundação Fernando Pessoa. [Back to table](#)

**Russian Federation:** Expenditure per student at the tertiary level of education is underestimated owing to missing private expenditure and because tuition fees are paid exclusively from private funds for about one-third of tertiary type-A and tertiary type-B students. [#Back to table](#)

**Slovenia:** Expenditure for basic education is not divided according to ISCED between primary and lower secondary education. All expenditure for basic education (primary and lower secondary together) is shown under lower secondary education. Expenditure per student in lower secondary education is thus expenditure per student in basic (primary and lower secondary) education.

Expenditure for basic education also includes expenditure for some units of pre-primary education organised in some basic education schools, so that expenditure per student for basic education is slightly overestimated and expenditure per student for pre-primary education is slightly underestimated.

Expenditure for upper secondary education also includes expenditure for units of post-secondary tertiary vocational education (first short 5B programmes) organised in some upper secondary schools. Consequently expenditure per student for upper secondary education is slightly overestimated and expenditure per student for tertiary education is slightly underestimated. [#Back to table](#)

**Spain:** Expenditure for retirement of personnel other than teachers in public institutions is not included. [#Back to table](#)

**Sweden:** For pre-primary education the expenditure per student only includes the universal, free pre-school part of three hours per day during term-time. The average attendance time for children in pre-school is twice as long and the total expenditure of all pre-school activities is therefore twice as large. [Back to table](#)

**United Kingdom:** Upper secondary vocational students are excluded from the calculation of expenditure per student, as they were counted on a “whole year” rather than on a “snapshot” basis. [#Back to table](#)

**United States:** Funds for major federal R&D centres administered by universities are excluded. [#Back to table](#)

- **Estimation of the duration of tertiary education calculated using the chain method**

**Austria, Germany and Italy:** No distinction is made between part-time and full-time studies at the university level. However, for expenditure over the duration of studies the effect balances out, since reporting part-time students as full-time students leads both to an underestimate of annual expenditure and to an overestimate of the duration of studies. [#Back to table](#)

**Austria:** The estimation of the average duration is affected by methodological changes over time. Data underlying the estimated duration in Table B1.3b were collected separately on ISCED 5A and 6 for the first time in the UOE data collection 2005. The duration, however, was calculated for ISCED 5A/6 combined and explicitly took into account entrants to level 5A as well as to level 6. In previous years, in contrast, only total entrants to university education (*i.e.* to level 5A/6 combined) were reported; continuing students, who progressed to level 6 without having left university after completion of level 5A, were not counted as entrants. Therefore the current results are not directly comparable with those published in *Education at a Glance 2006*. [#Back to table](#)

**France:** Panel data were used to estimate the average duration of tertiary studies. [#Back to table](#)

**Germany:** The average duration of university studies calculated by the chain method does not include students in the 11th year of study or beyond in the denominator. As a consequence the calculated average duration and cost of university studies are about 7% too high. [#Back to table](#)

**Greece:** The 5th year of tertiary-type B study includes the 6th year and beyond. The 7th year of tertiary-type A and advanced research programmes includes the 8th year and beyond. This leads to an underestimation of the duration. [#Back to table](#)

**Hungary:** Distribution between ISCED levels 1, 2, and 3 is estimated. [#Back to table](#)

**Iceland:** Panel data were used to estimate average duration of tertiary studies. [#Back to table](#)

**Japan:** Expenditure on special training colleges(general course), miscellaneous schools and educational administration are not allocated by level. [Back to table](#)

**Korea:** The maximum duration of tertiary-type B education is four years. The 6th and 8th years and beyond of university education are included in the 7th year of study. [#Back to table](#)

**Sweden:** For pre-primary education the expenditure per student only includes the universal, free pre-school part of three hours per day during term-time. The average attendance time for children in pre-school is twice as long and the total expenditure of all pre-school activities is therefore twice as large. [Back to table](#)

**United Kingdom:** The chain method was amended slightly in order to use the available UK data. Average durations were calculated separately using the chain method for each of the main types of course at tertiary level. To take account of the fact that many students go on to take a further course after their initial course, these figures were then combined according to the numbers of students following each of the main paths at tertiary level. The total average durations shown for university and all tertiary levels are therefore weighted averages of the individual average durations of each type of course. Coverage excludes those studying in further education institutions; these account for less than 10% of all students at the tertiary level. [#Back to table](#)

### *Interpretation*

Changes in expenditure per student between *Education at a Glance* 2005, 2006, 2007 and 2008.

**Austria:** Owing to different reporting standards between the UOE questionnaire and Austrian accounting systems, figures on expenditure per student as published in *Education at a Glance* differ considerably from expenditure per student as calculated and published in Austria. [#Back to table](#)

**Chile:** An estimation of the expenditure of public schools based on data provided by municipalities was included for the first time in *Education at a Glance 2007*. This information was not available in previous years. An adjustment is now made from primary to upper secondary education. Because of this, comparison of 2005 and 2004 data shows a very small increase in the indicator for “primary to tertiary level” and a decline in some levels (secondary education especially). In *Education at a Glance 2007* a change was made in the methodology to classify the programmes offered at tertiary level into the ISCED level classification. This led to important changes in enrolments between levels 5B and 5A/6 in the data for 2004 and for 2005. [#Back to table](#)

**Japan:** In *Education at a Glance 2008*, calculation methods used for private expenditure were modified. Although trend indicators in *Education at a Glance 2008* are comparable since those are developed by modified data, indicators for private expenditure are not comparable with previous version of *Education at a Glance*.

Previously national universities were positioned as a part of the government organization and thus classified as “public institutions”. Since April 2004, national universities are incorporated, given corporation status and autonomous management is ensured. However, some authority relating to administrative important matters rest with the Minister of Education, Culture, Sports, Science and Technology, such as appointment of the president of each national university, approving medium-term plan, approving issues of university bond, and dismissal of university directors who have the rights on voting on important items of the administration of the university. Therefore national university corporations are still classified as “public institutions”. [Back to table](#)

**Norway:** Compared to data published in *Education at a Glance 2007*, expenditure per student at pre-primary level increased significantly as a result of a change in methodology and more consistency in the data. It would appear that expenditure has increased from NOK 3 831.6 million in 2004 to NOK 4 784.3 million in 2005. However, the actual increase due to improved methodology is only from NOK 4 644.1 million in 2004 to NOK 4 784.3 million in 2005. [Back to table](#)

**Switzerland:** Expenditure per student at the university level is very high in *Education at a Glance 2006* and *Education at a Glance 2007*. This is mainly due to the structure of the university system: a large number of universities in relation to the size of the country (partly due to the three language regions), the small size of some universities, a wide range of provision at each university, and relatively low student-to-teaching staff ratios. Furthermore, teachers' salaries at the university level are comparatively high. Advanced research programmes are not included in tertiary education. In addition to this Switzerland has a high level of R&D spending. Spending on education per student would be considerably lower if the R&D component were excluded. [Back to table](#)

**United Kingdom:** Compared to data published in *Education at a Glance 2007*, expenditure per student at the pre-primary level decreased significantly and expenditure per student at the tertiary level increased significantly as a result of a change in methodology and greater consistency in the data. [Back to table](#)

## INDICATOR B2: What proportion of national wealth is spent on education?

### ■ General notes

#### *Methodology*

The “domestic” approach (reference to GDP) is preferred to the “national” one (reference to GNP) in the calculation of Indicator B2 because it is consistent with other concepts used in education statistics and in the 2007 UOE data collection. Thus, educational programmes and providers and student mobility are considered in the UOE data collection from the domestic point of view. For example, funds from international agencies and other foreign sources are included in the educational expenditure requested (see the *OECD Handbook*, 4.6.2 and 4.6.3); the coverage of the statistics on enrolments or on the activities of education institutions is made on a domestic basis, *i.e.* the host country must report enrolments of foreign students and the educational activities of foreign institutions. However, by taking GNP instead of GDP as reference, expenditure as a percentage of GNP would be at least 5% higher than expenditure as a percentage of GDP in the Czech Republic, Hungary, New Zealand and Switzerland and would be more than 15% higher in Ireland and Luxembourg (see Table 1).

**Table 1:** Differences between gross domestic product and gross national product (reference period: calendar year 2005, current prices)

	Gross domestic product	Gross national product
<a href="#">Australia</a>	965 969	928 567
<a href="#">Austria</a>	245 330	242 807
<a href="#">Belgium</a>	301 966	303 643
<a href="#">Canada</a>	1 375 080	1 350 540
<a href="#">Czech Republic</a>	2 987 722	2 841 415
<a href="#">Denmark</a>	1 551 967	1 569 726
<a href="#">Finland</a>	157 162	158 202
<a href="#">France</a>	1 717 921	1 737 224
<a href="#">Germany</a>	2 244 600	2 265 000
<a href="#">Greece</a>	198 609	194 624
<a href="#">Hungary</a>	22 055 093	20 753 816
<a href="#">Iceland</a>	1 021 510	989 645
<a href="#">Ireland</a>	161 498	137 529
<a href="#">Italy</a>	1 423 048	1 423 884
<a href="#">Japan</a>	501 402 600	513 583 200
<a href="#">Korea</a>	810 515 900	809 299 800
<a href="#">Luxembourg</a>	30 032	25 008
<a href="#">Mexico</a>	8 361 107	..
<a href="#">Netherlands</a>	508 964	512 162
<a href="#">New Zealand</a>	156 630	145 593
<a href="#">Norway</a>	1 945 716	1 959 166
<a href="#">Poland</a>	983 302	950 892
<a href="#">Portugal</a>	149 010	146 224

<a href="#">Slovak Republic</a>	1 471 131	1 433 587
<a href="#">Spain</a>	908 450	895 705
<a href="#">Sweden</a>	2 735 218	2 731 095
<a href="#">Switzerland</a>	463 673	507 321
<a href="#">Turkey</a>	487 202	486 401
<a href="#">United Kingdom</a>	1 233 976	1 258 722
<a href="#">United States</a>	12 376 100	12 439 300

Source: OECD Analytical Data Base, June 2008.

- **GDP data**

The theoretical framework underpinning the calculation of GDP has been provided for many years by the United Nations' publication, *A System of National Accounts*, which was released in 1968. An updated version was released in 1993 (commonly referred to as SNA93).

Statistics on educational expenditure relate to the financial year 2005. For countries in which GDP is not reported for the same reference period as data on educational funding, GDP is estimated as:  $w_{t-1} (GDP_{t-1}) + w_t (GDP_t)$ , where  $w_t$  and  $w_{t-1}$  are the weights for the respective portions of the two reference periods for GDP that fall within the educational financial year. Adjustments were made for **Australia, Japan, the United Kingdom and the United States** (see Annex 2).

- **Calculation of the index in Tables B2.3 and B3.1**

Tables B3.1 (columns 11 and 12), B3.2a (columns 14 and 15), and B3.2b (columns 11 and 12) show the changes in expenditure on educational services between 1995 and 2004. All expenditure reported for 1995 was expressed in 2005 constant USD, adjusted to the 2005 price level using the GDP deflator (see Annex 2). The data on expenditure for 1995 were obtained by a special survey in 2002 and updated in 2006.

Table B2.3 also shows the index of change between 1995 and 2005 in expenditure on educational institutions from public and private sources. Data for calendar years 2000, 2001, 2002, 2003 and 2004 were already collected in previous versions of *Education at a Glance* but were updated in 2007. [Back to table](#)

#### *Interpretation*

**Norway:** The measured decline in expenditure between 1995 and 2005 is due to a substantial change in the price deflator at the level of total GDP, caused primarily by an increase in oil prices. The table thus does not reflect the change in real expenditures. [#Back to table](#)

## ■ Notes on specific countries

### *Coverage*

**Australia:** At the tertiary level of education, the proportion of public expenditure on educational institutions decreased from 64.8% in 1995 to 47.8% in 2005. The main reason for the increase in the private share of spending on tertiary institutions for Australia was changes to the Higher Education Contribution Scheme (HECS) that took place in 1997. A further change – HECS increase – took effect in 2006 and will affect future indicator results. The changes in HECS were part of a reform process aimed at providing more funds overall for higher education, partly through increased contributions from students and former students. [#Back to table](#)

Most of the HECS payments made to universities are funded in the first instance by the government. In 2005, of about AUD 2.3 billion in HECS charges paid to universities, only about AUD 396 million was paid up front by students. These students received a 20% subsidy (about AUD 99 million from the government), which was paid directly to universities on their behalf. Most of the balance represented HECS loans from the government paid directly to universities. In the indicator, the AUD 99 million in HECS subsidies for those who paid up front and the HECS loans are treated as transfers from the government. Subsequently, all of the AUD 2.3 billion in HECS is counted as private final expenditure on universities.

The contribution of households to funding educational institutions is also overstated by indicators B2 and B3 because the results are also affected by the inclusion of fees paid by a substantial numbers of foreign students (about AUD 2 billion), and the lack of recognition in the indicators of HECS interest subsidies and HECS debts that are never repaid. [#Back to table](#)

**Belgium:** Data on the German-speaking Community are not integrated into the data for Belgium in the 2007 UOE data collection. [#Back to table](#)

**Belgium (Flemish Community):** In Table B2.4 private expenditure is underestimated since payments to independent private institutions are missing (information not collected). [#Back to table](#)

**Czech Republic:** Data from the Ministries of Justice, Defence and Internal Affairs are not included. [#Back to table](#)

**Denmark:** The allocation of expenditure on early childhood, primary and lower secondary education is estimated on the basis of the corresponding enrolments. Expenditure on pre-primary education includes some expenditure on day care. Day-care activities are fully integrated into the school day and not costed separately. It is debatable whether this expenditure should be classified as educational or not but **Denmark, Finland** and **Sweden** exclude expenditure on similar programmes. [#Back to table](#)

As a result of the revision of financial data previous to 2004, the data from 2002 and before are not directly comparable with the data from 2003, 2004 and 2005. [#Back to table](#)

**Finland:** Government transfers and payments to private entities, except financial aid to students, are excluded. [#Back to table](#)

**France:** For the first time, all expenditures included overseas departments (*départements d'outre mer*, DOM) in *Education at a Glance 2006*. Gross domestic product and total public expenditure were adjusted accordingly. [#Back to table](#)

**Germany:** Expenditure for instruction by enterprises in the “so-called dual system” (*i.e.* programme that combines school- and work-based instruction) is included in this indicator and in B1.

Public expenditure on education as a percentage of total public expenditure (Indicator B4) seems to rise between 1995 and 2005 (from 8.5 to 9.7%). However the low value in reference year 1995 is due solely to the liquidation of the Treuhand. [#Back to table](#)

**Greece:** Expenditure on early childhood education is included in expenditure on primary education. [#Back to table](#)

**Israel:** Scholarships and other grants to students include the gross amount of student loans owing to the lack of data on repayment of such loans.

Expenditure by non-profit institutions of own sources is not included. [#Back to table](#)

**Japan:** Expenditure on special training colleges, “miscellaneous schools” and educational administration are not allocated by level. [#Back to table](#)

**Norway:** At pre-primary level of education, expenditure on care is included. This leads to a slight overestimation of expenditure as a percentage of GDP. [#Back to table](#)

**Poland:** 1995 data cover public expenditure only. At the pre-primary level of education expenditures on care are included. [#Back to table](#)

**Portugal:** Regional and local transfers to the private sector are not included. Local direct expenditure on educational institutions is not included. [#Back to table](#)

**Russian Federation:** Compared to the previous year, expenditure on education increased significantly. The reason is the increase in the rate of inflation (about 10%) and in purchasing power parities (about 15%). However, public expenditure on education as well as all public expenditure (46%) increased, and expenditure on educational institutions as a percentage of GDP remains at the same level. The increase in expenditure at ISCED levels 5/6 may be partially explained by the substantial increase in expenditure for R&D. [Back to table](#)

**Turkey:** Regional and local (except Special Provincial Administration) direct expenditure on educational institutions is not included. Transfers are also not included. [#Back to table](#)

#### *Sources*

*See Indicator B1.*

## INDICATOR B3: How much public and private investment is there in education?

### ■ Notes on specific countries

*See notes on Indicators B1 and B2.*

#### *Coverage*

**Belgium:** Tables B3.2b and B3.3 only include expenditure charged by institutions. As of 2004 data, the survey on private expenditure on educational institutions does not allow for a breakdown of private expenditure between that imposed by institutions and that not imposed by institutions. Therefore a large part of expenditure imposed by institutions is included in total private expenditure. The private expenditure taken into account in Tables B3.2b and B3.3 is therefore underestimated. [#Back to table](#)

**Belgium (Flemish Community):** Private expenditure is underestimated since payments to independent private institutions are missing (information not collected) . [#Back to table](#)

**Canada:** The figures for the distribution of public and private sources of funds for 1995 have changed from those published in *Education at a Glance 2006* (from 93.7 and 6.3% in *Education at a Glance 2005* to 92.8 and 7.2% in *Education at a Glance 2006*). The changes result from a delayed application of ISCED 1997 to the 1995 figures. [#Back to table](#)

## **INDICATOR B4: What is the total public spending on education?**

- **Data on total public expenditure**

The theoretical framework underpinning the calculation of total public expenditure has been provided for many years by the United Nations' publication *A System of National Accounts*, which was released in 1968. An updated version was released in 1993 (commonly referred to as SNA93).

- **Notes on specific countries**

Total public expenditure on all services, excluding education, includes the expenditure on debt servicing (*i.e.* interest payments) that is not included in public expenditure on education. The reason for this exclusion is that some countries cannot separate interest payment outlays for education from those for other services. This means that public expenditure on education as a percentage of total public expenditure may be underestimated in countries in which interest payments represent a large proportion of total public expenditure on all services.

See notes on Indicator B2. [#Back\\_to\\_table](#)

## **INDICATOR B5: How much do tertiary students pay and what public subsidies do they receive?**

### *Methodology*

Data on tuition fees charged by educational institutions were collected through a special survey undertaken in 2006 and refer to the school year 2004/05. The figures represent the weighted average of the main tertiary-type A programmes and do not cover all educational institutions. The figures reported can be considered as good proxies and show the difference among countries in terms of tuition fees charged by the main educational institutions and for the majority of students. [#Back to table](#)

### ■ **Notes on specific countries**

*See notes on Indicator B2.*

**Canada, Denmark and Germany, Poland and Sweden:** Subsidies in kind, such as free or reduced-price travel on public transport systems, are excluded. [#Back to table](#)

**Czech Republic:** Scholarships are included in direct expenditure for educational institutions. [#Back to table](#)

**France:** The amount of financial aid to students is underestimated. The indicator does not take into account family allowances (the share that goes to student cannot be estimated), housing allowances (*allocations de logement social* and *allocations personnalisées au logement*, which represent about 70% of the total amount of scholarships/grants and concern one-third of students), and tax reductions (which represent about 75% of the amount of scholarships/grants and benefit families that pay income taxes and generally do not benefit from scholarships/grants). Taking these financial aids (except family allowances) into account would multiply by about 2.5 the amount of financial aid to students. [#Back to table](#)

**Ireland:** Students in tertiary education benefit from subsidised bus and rail travel (systems owned and funded by the state). The expenditure involved in this subsidy is currently unknown. Students in tertiary colleges and universities can make use of limited on-campus medical facilities funded both from central (exchequer) grants and from the registration fees paid by students. The level of government funding in this area is not known. [#Back to table](#)

**Poland:** Family allowances that are contingent on student status are not included. [#Back to table](#)

**Switzerland:** Fees for health insurance are publicly subsidised for students from low-income backgrounds. These subsidies amount to several tens of millions of CHF but are excluded. [#Back to table](#)

## INDICATOR B6: On what services and resources is education funding spent?

See also notes on Indicators B1 and B2.

### ■ Notes on specific countries

#### *Coverage of ancillary services*

Expenditure by educational institutions on ancillary services, such as student meals, room and board on campus and student transport, should include fees paid by students and families for those services. However, countries' coverage of private spending on ancillary services is uneven. While a number of countries exclude private spending on ancillary services, Australia, France, Hungary, Spain, Turkey and the United States provide information on private spending on ancillary services. [#Back to table](#)

**Ireland:** Ancillary services at the primary to post-secondary non-tertiary level include only school transport. [#Back to table](#)

**Israel:** Ancillary services are included in total expenditure on educational institutions. [#Back to table](#)

#### *R&D coverage (see Indicator B1)*

#### *Notes on distribution of current and capital expenditure*

**Israel:** Total personnel compensation includes taxes on employment. Current expenditure other than compensation of personnel includes consumption of fixed capital.

Expenditure of non-profit institutions from own sources is included in the UOE data collection. [#Back to table](#)

**Italy:** Since the financial year 1998, at ISCED levels 0-3 IRAP, other than compensation of personnel, is reported in current expenditure. [#Back to table](#)

**Sweden:** School and university buildings are rented. Rent payments are included in current expenditure. [#Back to table](#)

#### *Sources*

See Indicator B1.

## INDICATOR B7: How efficient is public spending on education?

### Methodology

Table B7.2: Contribution of various factors to salary cost per student at upper secondary level of education (2004)

Method: This table shows the salary cost per student at the upper secondary level of education, as a percentage of GDP per capita, the difference from the OECD average and the contribution of various factors to the difference from the OECD average. The salary cost per student is calculated as the teacher's salary multiplied by annual instruction time for the student, divided by the annual amount of teaching time of teachers and the average class size.

$$CCS = SAL \times instT \times \frac{1}{teachT} \times \frac{1}{ClassSize} = \frac{SAL}{Ratio_{stud/teacher}}$$

Data used refer to *Education at a Glance 2007* (see table below): salaries (SAL) refer to statutory salaries of teachers with 15 years of experience and minimum training (Indicator D3); instruction time (instT) refers intended instruction time for 15-year-olds (Indicator D1); teaching time (teachT) refers to net teaching time (Indicator D4); and class size (ClassSize) has been estimated based on the ratio of students to teaching staff, teaching time and instruction time (see Box D2.1 in Indicator D2). Some estimations have been made for missing data.

For explanation of the method used, see [www.mels.gouv.qc.ca/stat/Bulletin/bulletin\\_31an.pdf](http://www.mels.gouv.qc.ca/stat/Bulletin/bulletin_31an.pdf).

Table B7.3: Relationships between expenditure per student as a percentage of GDP per capita and ten explanatory variables at the upper secondary level of education (2005, 25 OECD countries).

Method: Multi-linear regression analysis between expenditure per student as a percentage of GDP per capita and ten explanatory variables related to general, school, teacher and student contexts at the upper secondary level of education. Among the 30 OECD countries, Canada was excluded owing to insufficient data for the reference year, and four other countries (Belgium, Greece, Spain and the United Kingdom) were also excluded as data on expenditure per student were not separately available for upper secondary level of education (only for total secondary level of education).

Explanations: A multi-linear model is investigated in order to study the effects of different variables on expenditure per student. A first selection of variables to be included in the model was made based on the matrix of correlation coefficient between the different variables (see table below). In the matrix of correlation between expenditure per student and other variables, expenditure per student is the most closely correlated with GDP per capita (coefficient of 0.90), followed by statutory salary after 15 years of experience (coefficient of 0.81). A regression including only one of these two explanatory variables explains a large part of the variation in expenditure per student (between 67 and 77%). The inclusion of these variables in regression models may capture most of the sources of the variation in expenditure per student and hide the effect of other variables. Moreover, statutory salaries of teachers are also highly correlated to GDP per capita (correlation factor of 0.79).

To avoid multicollinearity and the explanation of the variation of expenditure per student mainly by level of GDP, the dependent variable in the model is expenditure per student as a percentage of GDP per capita (rather than expenditure per student alone), and statutory salaries are divided by GDP per capita as well. Teachers' statutory salaries as a proportion of GDP per capita still explain 14% of the variation in expenditure per student as a proportion of GDP per capita. [Back to table](#)

Summary table of indicators from *Education at a Glance 2007*

Upper secondary education	exp. per student	exp. per student / GDP per capita	General context						School context				
			GDP per capita	Educational exp. ss % of GDP	% of 5-29 year-olds in the population	% of 15-19 year-olds in the population	% of pop (25-64) having attained at least ISCED 3	% of private exp	Instruction Time (age 15)	Teaching time	Instruction time/teaching time	Ratio student/teaching staff	% of exp. other than compensation
Australia	8,853	29	30,875	0.9	28.61	6.82	65.03	19.71	1022.40	810	1.26	12.1	30.86
Austria	9,962	30	33,235	1.4	24.87	5.93	80.59	5.94	1050	589	1.78	11.3	24.46
Belgium	7,751	24	31,975	2.7	25.13	5.88	66.10	5.56	985	671	1.47	9.9	13.29
Canada	6,491	20	32,413	3.6	28.03	6.78	85.24	8.11	m	m	m	m	24.5
Czech Republic	4,790	25	19,426	1.2	26.22	6.50	89.93	13.85	970	617	1.57	12.8	45.12
Denmark	9,466	29	32,335	1.3	24.97	5.47	81.02	0.93	840	560	1.50	13.4	26.53
Finland	6,555	22	29,833	1.4	25.92	6.13	78.79	1.78	858	550	1.56	18.0	41.68
France	9,883	34	29,006	1.5	26.49	6.48	66.29	9.30	1147	625	1.84	10.3	27.34
Germany	10,459	35	29,916	1.2	23.04	5.75	83.11	36.69	897	717	1.25	14.0	23.25
Greece	5,213	19	27,691	1.2	27.59	6.53	57.14	4.75	1307	559	2.34	8.8	20.35
Hungary	3,968	24	16,519	1.2	26.17	6.32	76.39	4.34	1106	555	1.99	12.2	24.53
Iceland	7,330	22	33,271	1.6	31.66	7.20	62.87	4.80	888	560	1.59	10.8	31.72
Ireland	7,309	20	36,536	0.7	31.26	7.51	64.51	3.42	891	735	1.21	15.5	28.45
Italy	7,971	29	27,744	1.3	21.43	5.00	50.09	4.17	1069	601	1.78	11.0	27.14
Japan	7,883	27	28,930	0.9	22.45	5.48	84.00	24.10	869	429	2.03	13.0	21.67
Korea	7,485	36	20,723	1.4	30.40	6.48	75.53	34.87	1020	553	1.84	16.0	36.03
Luxembourg	17,731	27	64,843	0.9	25.28	5.72	65.85	9.30	750	642	1.17	9.0	28.19
Mexico	2,564	25	10,145	0.8	43.37	10.29	21.32	28.95	1124	848	1.33	25.8	12.85
Netherlands	7,037	21	33,571	0.8	25.42	5.98	71.82	12.14	1067	750	1.42	16.2	25.24
New Zealand	7,424	30	24,834	1.6	30.55	7.40	78.71	18.43	950	950	1.00	12.9	27.39
Norway	12,498	30	41,880	1.4	26.87	6.11	77.23	0.00	855	524	1.63	9.6	28.05
Poland	2,949	23	13,089	1.1	30.76	8.13	51.42	3.10	884	677	1.31	12.9	32.70
Portugal	5,962	31	19,324	1.0	24.91	5.88	26.45	0.22	872	513	1.70	8.0	9.57
Slovak Republic	3,155	22	14,651	1.3	30.91	7.95	85.66	19.88	893	627	1.42	14.3	38.07
Spain	6,701	26	26,018	3.0	23.99	5.59	48.77	7.46	979	693	1.41	8.1	24.97
Sweden	8,218	26	31,072	1.3	25.66	6.16	83.59	0.12	741	855	0.87	14.0	39.52
Switzerland	15,368	44	34,740	1.7	24.44	5.82	83.01	36.63	950	674	1.41	10.5	21.08
Turkey	1,808	25	7,212	0.9	39.68	8.92	27.23	4.78	959	567	1.69	16.2	26.20
United Kingdom	7,090	22	31,780	2.9	26.68	6.54	66.69	15.44	950	893	1.06	11.8	36.46
United States	10,468	26	39,660	1.0	29.61	7.04	87.77	9.86	980	1080	0.91	16.0	27.99
OECD average	7,638	27	28,358	1.46	27.72	6.89	68.18	11.34	959	665	1.50	12.9	27.39

Note: cells highlighted in grey indicate that some estimations have been made. These estimations are not published in Education at a glance 2007

Upper secondary education	Teachers context				Student context		
	Teachers statutory salaries (after 15 years of experience)	Ratio of salary to GDP per capita	% of annual variation from starting to top salaries	% of teachers aged 50 or more	Enrolment rate (16 years of age)	% of repeaters among the 15-year-olds	% of students enrolled in vocational progr.
Australia	44,526	1.30	4.12	34.90	93	9.4	61.5
Austria	39,531	1.15	2.16	27.42	92	13.6	78.5
Belgium	51,728	1.57	2.09	32.07	101	32.4	69.6
Canada	m	m	m	m	m	12.2	m
Czech Republic	24,868	1.21	1.41	33.80	100	3.6	79.5
Denmark	47,374	1.39	4.27	40.50	93	3.5	47.9
Finland	43,346	1.40	1.40	40.44	96	2.4	63.9
France	33,974	1.12	1.88	35.42	97	42.3	56.4
Germany	55,195	1.79	0.89	40.78	96	23.1	60.3
Greece	31,439	1.06	1.16	28.91	101	8.3	36.0
Hungary	19,541	1.12	1.57	30.51	96	11.3	24.1
Iceland	31,966	0.88	1.50	44.30	94	1.0	36.8
Ireland	46,709	1.20	2.90	36.48	96	14.8	34.3
Italy	32,813	1.17	1.29	56.19	88	16.0	61.5
Japan	47,863	1.56	2.94	27.98	97	0.0	24.7
Korea	51,516	2.33	2.78	15.24	95	1.0	28.5
Luxembourg	88,634	1.26	1.86	31.12	82	40.4	63.4
Mexico	21,347	2.01	5.65	34.90	54	31.6	10.2
Netherlands	61,511	1.75	3.98	42.18	95	30.9	68.2
New Zealand	36,894	1.42	8.60	37.66	87	6.2	40.0
Norway	37,778	0.80	1.25	51.22	94	0.0	60.8
Poland	10,263	0.83	5.24	27.31	97	4.6	45.0
Portugal	32,275	1.62	3.70	18.18	80	34.2	31.0
Slovak Republic	8,163	0.56	1.59	36.53	95	3.0	74.2
Spain	42,552	1.55	0.98	23.59	94	31.7	42.6
Sweden	34,108	1.06	1.31	49.17	97	3.9	53.6
Switzerland	70,300	1.97	1.64	36.71	90	23.6	64.7
Turkey	19,847	2.57	0.78	34.90	55	19.0	42.2
United Kingdom	43,835	1.46	7.89	34.43	94	5.0	72.2
United States	41,044	0.98	1.60	34.99	96	13.2	0.0
OECD average	<b>39,515</b>	<b>1.39</b>	<b>2.65</b>	<b>35.11</b>	<b>91</b>	<b>15</b>	<b>49</b>

Note: cells highlighted in grey indicate that some estimations have been made. These estimations are not published in Education at a glance 2007.

Table: Correlation between indicators from Education at a Glance 2007

	exp. per student	exp. per student / GDP per capita	GDP per capita	Educational exp. ss % of GDP	% of 5-29 year-olds in the population	% of pop (25-64) having attained at least ISCED 3	% of private exp	Instruction Time (age 15)	Teaching time	Instruction time/ teaching time	Ratio student/ teaching staff	% of exp. other than compensation	Teachers statutory salaries (after 15 years of experience)	Ratio of salary to GDP per capita	% of annual variation from starting to top salaries	% of teachers aged 50 or more	Enrolment rate (16 years of age)	% of repeaters among the 15-year-olds	% of students enrolled in vocational progr.
<b>ISCED 3 Correlation</b>																			
exp. per student	1.00	0.57	0.87	0.01	-0.51	0.40	0.15	-0.32	0.06	-0.23	-0.40	-0.06	0.82	-0.07	-0.17	0.19	0.24	0.24	0.25
exp. per student / GDP per capita		1.00	0.11	-0.11	-0.25	0.13	0.53	-0.07	-0.06	0.00	-0.17	-0.18	0.39	0.38	-0.07	-0.08	-0.07	0.22	0.06
GDP per capita			1.00	0.09	-0.48	0.40	-0.13	-0.33	0.11	-0.27	-0.38	0.03	0.80	-0.26	-0.14	0.25	0.34	0.17	0.23
Educational exp. ss % of GDP				1.00	-0.22	0.14	-0.06	0.01	0.14	-0.14	-0.40	-0.02	0.10	0.02	0.12	-0.08	0.26	0.03	0.29
% of 5-29 year-olds in the population					1.00	-0.49	0.12	0.16	0.25	-0.15	0.66	-0.04	-0.45	0.26	0.25	-0.09	-0.70	-0.03	-0.43
% of pop (25-64) having attained at least ISCED 3						1.00	0.18	-0.24	0.08	-0.15	-0.11	0.49	0.28	-0.36	-0.15	0.21	0.72	-0.45	0.32
% of private exp							1.00	0.13	0.19	-0.10	0.32	-0.06	0.27	0.48	0.17	-0.21	-0.12	0.05	-0.04
Instruction Time (age 15)								1.00	0.02	0.53	0.06	-0.31	-0.24	0.12	0.00	-0.19	-0.04	0.21	-0.16
Teaching time									1.00	-0.81	0.32	0.09	0.06	-0.04	0.45	0.17	-0.07	0.10	-0.16
Instruction time/ teaching time										1.00	-0.25	-0.25	-0.21	0.07	-0.37	-0.27	0.07	-0.06	-0.07
Ratio student/ teaching staff											1.00	0.11	-0.21	0.34	0.23	0.12	-0.47	-0.11	-0.33
% of exp. other than compensation												1.00	-0.15	-0.33	-0.07	0.25	0.36	-0.59	0.36
Teachers statutory salaries (after 15 years of experience)													1.00	0.30	-0.04	-0.01	0.16	0.36	0.21
Ratio of salary to GDP per capita														1.00	0.10	-0.31	-0.55	0.32	-0.16
% of annual variation from starting to top salaries															1.00	-0.14	-0.17	-0.10	-0.10
% of teachers aged 50 or more																1.00	0.04	-0.19	0.29
Enrolment rate (16 years of age)																	1.00	-0.33	0.30
% of repeaters among the 15-year-olds																		1.00	0.02
% of students enrolled in vocational progr.																			1.00

