

EDITORIAL

By Barbara Ischinger, Director for Education

The effects of tertiary education expansion: a high-calibre workforce or the overqualified crowding out the lesser qualified?

Higher education graduation rates have grown massively in OECD countries in recent decades. But what is the impact of this on labour markets? Has the increasing supply of well-educated labour been matched by the creation of an equivalent number of high-paying jobs? Or one day will everyone have a university degree and work for the minimum wage? The analysis below of this year's edition of *Education at a Glance* suggests that the expansion has had a positive impact for individuals and economies and that there are, as yet, no signs of an "inflation" of the value of qualifications. The sustainability of the continued expansion will, however, depend on re-thinking how it is financed and how to ensure that it is more efficient.

In most OECD countries, among adults aged 55 to 64 (who entered the workforce in the 1960s and early 1970s) between 7 and 27% have completed higher education (have tertiary qualifications), except in Canada and the United States where more than 30% have done so. Among younger adults aged 25 to 34, at least 30% have obtained tertiary qualifications in 19 countries and over 40% have in 6 countries (Indicator A1). The proportion of the population with tertiary qualifications has risen from 19 to 32% of the population between these two groups.

Although most countries have seen at least some growth in tertiary enrolments (Indicator C2) and in tertiary attainment, the rate of expansion has varied widely from one country to another and from one time period to another. Much of the growth has come from periods of rapid, policy-driven expansion in certain countries. Korea, Ireland and Spain, for example, more than doubled the proportion of tertiary graduates entering the workforce between the late 1970s and the late 1990s from initially low levels, whereas in the United States and Germany the proportion remained largely unchanged, with relatively high levels in the United States and comparatively low levels in Germany (Indicator A1).

Governments pursuing an expansion of tertiary education have often acknowledged doing this in the understanding that more high-level skills are needed in an advanced knowledge economy, requiring a much greater proportion of the workforce than previously to be educated beyond the secondary school level. And indeed, in many countries there has been significant growth of jobs and industries in sectors dependent on a more skilled workforce. However, the question remains – what will be the effect increasing the supply of the well-educated on the labour market? It is certainly conceivable that at least some of the new graduates end up doing jobs that do not require graduate skills and that they obtain these jobs at the expense of less highly qualified workers. Such a crowding out effect may be associated with a relative rise in unemployment among people with low qualifications (as higher-qualified workers take their jobs), but also potentially with a reduction in the pay premium associated with tertiary qualifications (as a rise in graduate supply outstrips any rise in demand for graduate skills).

Improved coverage of international trend data linking educational qualifications and labour market outcomes makes it possible to investigate this issue in *Education at a Glance 2007* in a way that was not possible in the past. The analysis below draws on Indicator A1, which shows that there are substantial rewards associated with attaining tertiary education and substantial penalties associated with failing to reach at least the upper secondary standard.

In all OECD countries, the average earnings premium associated with tertiary compared to upper secondary education is more than 25% and in some is more than 100% (Indicator A9). In addition, the average unemployment rate among those only with lower secondary education is 5 percentage points higher than those whose highest level is upper secondary, and 7 points higher than those with tertiary education (Indicator A8). Analysis also shows that while unemployment is substantially higher than the average among those with low qualifications, this penalty has not deteriorated in those countries that have expanded tertiary education, as the crowding-out hypothesis would have suggested. On the contrary, in the countries expanding most rapidly, a small rise in the relative risk in the late 1990s was followed by a fall in the early 2000s. However, in those countries that did not expand tertiary education, there has been a rise in the relative risk of unemployment. Indeed, in these countries a failure to complete upper secondary education is now associated with an 80% greater probability of being unemployed, compared to less than 50% in those countries that have increased tertiary education the most.

Equally important, countries expanding tertiary education attainment more in the late 1990s tended to have a greater fall (or smaller rise) in unemployment between 1995 and 2004 than countries with less tertiary expansion. For example, France, Ireland and Korea had the fastest growth in tertiary attainment and close to zero or negative growth in unemployment, whereas Germany, the Czech Republic and the Slovak Republic had low or no growth in tertiary attainment but substantial growth in unemployment among the unqualified. While there is not a perfect match – Finland had no tertiary expansion but a fall in unemployment, Poland expanded tertiary education but unemployment rose too – the general trend is again the opposite of what one would expect according to the crowding-out hypothesis (Indicator A1).

The data provide thus no evidence that the lesser qualified are crowded out from the labour market and there is much to point to the opposite: that the least educated individuals benefit in terms of better employment opportunities when more people enter higher education. It may be that the expansion of the high end of the educational ladder is, apart from generating growth, also providing more equitable employment opportunities. In addition, an analysis of trends in the absolute level of unemployment for upper-secondary educated adults suggests that changes in the level of unemployment during the period 1995 to 2004 are unrelated to changes in tertiary attainment levels. In fact, for both upper and lower secondary unemployment, there is no statistically significant correlation between an expansion in tertiary attainment and movement in unemployment rates after controlling for growth in GDP.

Indeed, GDP and productivity seem to drive unemployment prospects regardless of changes in tertiary attainment. There is, however, a significant correlation between increases in tertiary and upper secondary attainments and the fall in relative unemployment for lower-secondary educated adults. All this suggests that employment prospects among the least well-educated are principally tied to growth in the economy and in general to productivity, to which an adequate supply of high-skilled labour can potentially contribute. Strong overall economic health would appear to more

than compensate for any crowding out effects, with the net outcomes for relatively less-educated groups being positive. The positive employment impact of economic growth is greater for those without tertiary qualifications than for graduates, perhaps because employers are more willing to meet the cost of retaining those with higher qualifications during difficult economic times.

Furthermore, analysis also suggests that oversupply of skills does not create unemployment among those with tertiary qualifications or a slump in their pay. Although this does not imply that tertiary graduates enter jobs in line with their qualifications, it still indicates that the benefits of higher education have not deteriorated as higher education has expanded. And while there have been some small rises in the relative risk of unemployment for graduates, this has been no worse where tertiary attainment has expanded fastest. Indeed, in all OECD countries graduates face much lower levels of unemployment than do other groups. In terms of pay, the data suggest some curbing of an increasing advantage for tertiary graduates where their supply has risen fastest, but not a general fall. This evidence corroborates similar results from cross-sectional studies, suggesting that lower-educated groups share in the benefit of more tertiary education and that the extra skills produced have largely been absorbed by the labour market. In tracking these phenomena over time, it is interesting to note that positive effects seem to be more pronounced in recent years, contradicting the notion that tertiary education, so far, is expanding too rapidly.

It is hard to predict the future from these past trends. Will the expansion of higher education continue at this rapid pace, driven by an ever-rising demand for the highly skilled? Or will it level off and will relative earnings decline? At the beginning of the 20th century, few would have predicted that, among OECD countries, upper secondary education would be largely universal by the end of the century. So it is equally difficult to predict how tertiary qualifications will have evolved by the end of the 21st century.

What is clear is that, for now at least, the demand for more and better education continues to rise, with still substantial payoffs in terms of earnings and productivity gains. And enrolments continue to grow in OECD countries, with more than 50% – in some countries more than 75% – of high school graduates now entering university-level education (Indicator C2).

How will countries pay for this expansion, given that spending per student has already begun to decline in some countries, as enrolments rose faster than spending on tertiary education (Indicator B1)? Establishing innovative financing and student support policies that mobilise additional public and private funding in ways that better reflect the social and private benefits of tertiary education will certainly be part of the answer. And many countries are moving successfully in this direction, some without creating barriers for student participation (Indicator B5).

So far, the Nordic countries have achieved expansion by viewing massive public spending on higher education, including both support of institutions and support of students and households, as an investment that pays high dividends to individuals and society. Australia, Japan, Korea, New Zealand, and the United Kingdom have expanded participation in tertiary education by shifting some of the burden of financial provision to students. In Australia, for example, a risk-free loan programme that suppressed liquidity constraints for poorer students was introduced; this has not, however, had a negative effect on the equity of access for students from low socio-economic backgrounds. In contrast, many European countries are not increasing public investments in their universities nor are universities allowed to charge tuition fees,

with the result that the European average for spending per tertiary student is now well below half the level of spending in the United States (Indicator B1).

But it is equally clear that more money alone will not be enough. Investments in education will need to become much more efficient too. For the first time, *Education at a Glance* examines this question and estimates that, on average across OECD countries, taxpayers could expect 22% more output for current inputs (Indicator B7). This efficiency indicator is exploratory at this stage; it covers only elementary and secondary schooling and it will require substantial further development over the years to come, not least to capture a wider range of educational outcomes. However, it indicates the scale of effort that is needed for education to re-invent itself in ways that other professions have already done and to provide better value for money.

For tertiary education, this means creating and maintaining a system of diverse, sustainable and high-quality institutions with the freedom to respond to demand and accountability for outcomes they produce. It means ensuring that the growth and development of tertiary educational systems are managed in ways that improve access and enhance quality. And it means that universities will have to evolve so that their leadership and management capacity matches that of modern enterprises. Much greater use needs to be made of appropriate strategic financial and human-resource management techniques in order to ensure long-term financial sustainability and meet accountability requirements. Institutions must be governed by bodies that have the ability to think strategically and reflect a much wider range of stakeholder interests than only the academic community. Such change may not come easily, but the need for it cannot be ignored nor the risk of complacency denied. The OECD will continue to monitor progress in this area with the aim of helping countries rise to the challenges.

Barbara Islinger

INTRODUCTION: THE INDICATORS AND THEIR FRAMEWORK

■ The organising framework

Education at a Glance – OECD Indicators 2007 provides a rich, comparable and up-to-date array of indicators that reflect a consensus among professionals on how to measure the current state of education internationally. The indicators provide information on the human and financial resources invested in education, on how education and learning systems operate and evolve, and on the returns to educational investments. The indicators are organised thematically, and each is accompanied by information on the policy context and the interpretation of the data. The education indicators are presented within an organising framework that:

- Distinguishes between the actors in education systems: individual learners, instructional settings and learning environments, educational service providers, and the education system as a whole;
- Groups the indicators according to whether they speak to learning outcomes for individuals or countries, policy levers or circumstances that shape these outcomes, or to antecedents or constraints that set policy choices into context; and
- Identifies the policy issues to which the indicators relate, with three major categories distinguishing between the quality of educational outcomes and educational provision, issues of equity in educational outcomes and educational opportunities, and the adequacy and effectiveness of resource management.

The following matrix describes the first two dimensions:

	1. Education and learning outputs and outcomes	2. Policy levers and contexts shaping educational outcomes	3. Antecedents or constraints that contextualise policy
I. Individual participants in education and learning	1.I The quality and distribution of individual educational outcomes	2.I Individual attitudes, engagement and behaviour	3.I Background characteristics of the individual learners
II. Instructional settings	1.II The quality of instructional delivery	2.II Pedagogy and learning practices and classroom climate	3.II Student learning conditions and teacher working conditions
III. Providers of educational services	1.III The output of educational institutions and institutional performance	2.III School environment and organisation	3.III Characteristics of the service providers and their communities
IV. The education system as a whole	1.IV The overall performance of the education system	2.IV System-wide institutional settings, resource allocations and policies	3.IV The national educational, social, economic and demographic contexts

The following sections discuss the matrix dimensions in more detail:

■ **Actors in education systems**

The OECD indicators of education systems programme (INES) seeks to gauge the performance of national education systems as a whole, rather than to compare individual institutional or other sub-national entities. However, there is increasing recognition that many important features of the development, functioning and impact of education systems can only be assessed through an understanding of learning outcomes and their relationships to inputs and processes at the level of individuals and institutions. To account for this, the indicator framework distinguishes between a macro level, two meso-levels and a micro-level of education systems. These relate to:

- The education system as a whole;
- The educational institutions and providers of educational services;
- The instructional setting and the learning environment within the institutions; and
- The individual participants in education and learning.

To some extent, these levels correspond to the entities from which data are being collected but their importance mainly centres on the fact that many features of the education system play out quite differently at different levels of the system, which needs to be taken into account when interpreting the indicators. For example, at the level of students within a classroom, the relationship between student achievement and class size may be negative, if students in small classes benefit from improved contact with teachers. At the class or school level, however, students are often intentionally grouped such that weaker or disadvantaged students are placed in smaller classes so that they receive more individual attention. At the school level, therefore, the observed relationship between class size and student achievement is often positive (suggesting that students in larger classes perform better than students in smaller classes). At higher aggregated levels of education systems, the relationship between student achievement and class size is further confounded, *e.g.* by the socio-economic intake of schools or by factors relating to the learning culture in different countries. Past analyses which have relied on macro-level data alone have therefore sometimes led to misleading conclusions.

■ **Outcomes, policy levers and antecedents**

The second dimension in the organising framework further groups the indicators at each of the above levels:

- Indicators on observed outputs of education systems, as well as indicators related to the impact of knowledge and skills for individuals, societies and economies, are grouped under the sub-heading *output and outcomes of education and learning*;
- The sub-heading *policy levers and contexts* groups activities seeking information on the policy levers or circumstances which shape the outputs and outcomes at each level; and
- These policy levers and contexts typically have *antecedents* – factors that define or constrain policy. These are represented by the sub-heading *antecedents and constraints*. It should be noted that the antecedents or constraints are usually specific for a given level of the education system and that antecedents at a lower level of the system may well be policy levers at a higher level. For teachers and students in a school, for example, teacher qualifications are a given constraint while, at the level of the education system, professional development of teachers is a key policy lever.

■ Policy issues

Each of the resulting cells in the framework can then be used to address a variety of issues from different policy perspectives. For the purpose of this framework, policy perspectives are grouped into three classes which constitute the third dimension in the organising framework for INES:

- Quality of educational outcomes and educational provision;
- Equality of educational outcomes and equity in educational opportunities; and
- Adequacy, effectiveness and efficiency of resource management.

In addition to the dimensions mentioned above, the time perspective as an additional dimension in the framework, allows dynamic aspects in the development of education systems to be modelled also.

The indicators that are published in *Education at a Glance 2007* fit within this framework, though often they speak to more than one cell.

Most of the indicators in **Chapter A** *The output of educational institutions and impact of learning* relate to the first column of the matrix describing outputs and outcomes of education. Even so, indicators in **Chapter A** measuring educational attainment for different generations, for instance, not only provide a measure of the output of the educational system, but also provide context for current educational policies, helping to shape policies on, for example, lifelong learning.

Chapter B *Financial and human resources invested in education* provides indicators that are either policy levers or antecedents to policy, or sometimes both. For example, expenditure per student is a key policy measure which most directly impacts on the individual learner as it acts as a constraint on the learning environment in schools and student learning conditions in the classroom.

Chapter C *Access to education, participation and progression* provides indicators that are a mixture of outcome indicators, policy levers and context indicators. Entry rates and progression rates are, for instance, outcomes measures to the extent that they indicate the results of policies and practices in the classroom, school and system levels. But they can also provide contexts for establishing policy by identifying areas where policy intervention is necessary to, for instance, address issues of inequity.

Chapter D *Learning environment and organisation of schools* provides indicators on instruction time, teachers working time and teachers' salaries not only represent policy levers which can be manipulated but also provide contexts for the quality of instruction in instructional settings and for the outcomes of learners at the individual level.

READER'S GUIDE

Coverage of the statistics

Although a lack of data still limits the scope of the indicators in many countries, the coverage extends, in principle, to the entire national education system (within the national territory) regardless of the ownership or sponsorship of the institutions concerned and regardless of education delivery mechanisms. With one exception described below, all types of students and all age groups are meant to be included: children (including students with special needs), adults, nationals, foreigners, as well as students in open distance learning, in special education programmes or in educational programmes organised by ministries other than the Ministry of Education, provided the main aim of the programme is the educational development of the individual. However, vocational and technical training in the workplace, with the exception of combined school and work-based programmes that are explicitly deemed to be parts of the education system, is not included in the basic education expenditure and enrolment data.

Educational activities classified as “adult” or “non-regular” are covered, provided that the activities involve studies or have a subject matter content similar to “regular” education studies or that the underlying programmes lead to potential qualifications similar to corresponding regular educational programmes. Courses for adults that are primarily for general interest, personal enrichment, leisure or recreation are excluded.

Calculation of international means

For many indicators an OECD average is presented and for some an OECD total.

The OECD average is calculated as the unweighted mean of the data values of all OECD countries for which data are available or can be estimated. The OECD average therefore refers to an average of data values at the level of the national systems and can be used to answer the question of how an indicator value for a given country compares with the value for a typical or average country. It does not take into account the absolute size of the education system in each country.

The OECD total is calculated as a weighted mean of the data values of all OECD countries for which data are available or can be estimated. It reflects the value for a given indicator when the OECD area is considered as a whole. This approach is taken for the purpose of comparing, for example, expenditure charts for individual countries with those of the entire OECD area for which valid data are available, with this area considered as a single entity.

Note that both the OECD average and the OECD total can be significantly affected by missing data. Given the relatively small number of countries, no statistical methods are used to compensate for this. In cases where a category is not applicable (code “a”) in a country or where the data value is negligible (code “n”) for the corresponding calculation, the value zero is imputed for the purpose of calculating OECD averages. In cases where both the numerator and the denominator of a ratio are not applicable (code “a”) for a certain country, this country is not included in the OECD average.

For financial tables using 1995 data, both the OECD average and OECD total are calculated for countries providing both 1995 and 2004 data. This allows comparison of the OECD average and OECD total over time with no distortion due to the exclusion of certain countries in the different years.

For many indicators an EU19 average is also presented. It is calculated as the unweighted mean of the data values of the 19 OECD countries that are members of the European Union for which data are available or can be estimated. These 19 countries are Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Ireland, Luxembourg, the Netherlands, Poland, Portugal, the Slovak Republic, Spain, Sweden and the United Kingdom.

■ Classification of levels of education

The classification of the levels of education is based on the revised International Standard Classification of Education (ISCED-97). The biggest change between the revised ISCED and the former ISCED (ISCED-76) is the introduction of a multi-dimensional classification framework, allowing for the alignment of the educational content of programmes using multiple classification criteria. ISCED is an instrument for compiling statistics on education internationally and distinguishes among six levels of education. The glossary available at www.oecd.org/edu/eag2007 describes in detail the ISCED levels of education, and Annex 1 shows corresponding typical graduation ages of the main educational programmes by ISCED level.

■ Symbols for missing data

Six symbols are employed in the tables and charts to denote missing data:

- a* Data is not applicable because the category does not apply.
- c* There are too few observations to provide reliable estimates (*i.e.* there are fewer than 3% of students for this cell or too few schools for valid inferences). However, these statistics were included in the calculation of cross-country averages.
- m* Data is not available.
- n* Magnitude is either negligible or zero.
- w* Data has been withdrawn at the request of the country concerned.
- x* Data included in another category or column of the table (*e.g.* *x*(2) means that data are included in column 2 of the table).
- ~ Average is not comparable with other levels of education.

■ Further resources

The website www.oecd.org/edu/eag2007 provides a rich source of information on the methods employed for the calculation of the indicators, the interpretation of the indicators in the respective national contexts and the data sources involved. The website also provides access to the data underlying the indicators as well as to a comprehensive glossary for technical terms used in this publication.

Any post-production changes to this publication are listed at www.oecd.org/edu/eag2007.

The website www.pisa.oecd.org provides information on the OECD Programme for International Student Assessment (PISA), on which many of the indicators in this publication draw.

Education at a Glance uses the OECD's StatLinks service. Below each table and chart in *Education at a Glance 2007* is a url which leads to a corresponding Excel workbook containing the underlying data for the indicator. These urls are stable and will remain unchanged over time. In addition, readers of the *Education at a Glance* e-book will be able to click directly on these links and the workbook will open in a separate window.

Codes used for territorial entities

These codes are used in certain charts. Country or territorial entity names are used in the text. Note that in the text the Flemish Community of Belgium is referred to as "Belgium (Fl.," and the French Community of Belgium as "Belgium (Fr.)."

AUS Australia	ITA Italy
AUT Austria	JPN Japan
BEL Belgium	KOR Korea
BFL Belgium (Flemish Community)	LUX Luxembourg
BFR Belgium (French Community)	MEX Mexico
BRA Brazil	NLD Netherlands
CAN Canada	NZL New Zealand
CHL Chile	NOR Norway
CZE Czech Republic	POL Poland
DNK Denmark	PRT Portugal
ENG England	RUS Russian Federation
EST Estonia	SCO Scotland
FIN Finland	SVK Slovak Republic
FRA France	SVN Slovenia
DEU Germany	ESP Spain
GRC Greece	SWE Sweden
HUN Hungary	CHE Switzerland
ISL Iceland	TUR Turkey
IRL Ireland	UKM United Kingdom
ISR Israel	USA United States

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TABLE OF CONTENTS

	Name of the indicator in the 2006 edition
Foreword	3
Editorial	11
Introduction	15
Reader's Guide	19
CHAPTER A THE OUTPUT OF EDUCATIONAL INSTITUTIONS AND THE IMPACT OF LEARNING	23
Indicator A1 To what level have adults studied?	24
Table A1.1.a. Educational attainment: adult population (2005)	36
Table A1.2.a. Population that has attained at least upper secondary education (2005)	37
Table A1.3.a. Population that has attained tertiary education (2005)	38
Table A1.4. Fields of education (2004)	39
Table A1.5. Ratio of 25-to-34-year-olds with ISCED 5A and 30-to-39-year-olds with ISCED 6 levels of education to 55-to-64-year-olds with ISCED 5A and 6 levels of education, by fields of education (2004)	40
Indicator A2 How many students finish secondary education?	42
Table A2.1. Upper secondary graduation rates (2005)	50
Table A2.2. Trends in graduation rates at upper secondary level (1995-2005)	51
Table A2.3. Post-secondary non-tertiary graduation rates (2005)	52
Indicator A3 How many students finish tertiary education?	54
Table A3.1. Graduation rates in tertiary education (2005)	67
Table A3.2. Trends in tertiary graduation rates (1995-2005)	68
Table A3.3. Percentage of tertiary graduates, by field of education (2005)	69
Table A3.4. Science graduates, by gender (2005)	70
Table A3.5. Relationship between motivation in mathematics at 15 years old (PISA 2003) and tertiary-type A graduation rates, by gender	71
Table A3.6. Survival rates in tertiary education (2004)	72
Indicator A4 What are students' expectations for education?	74
Table A4.1.a. Percentage of students expecting to complete different levels of education (2003)	84
Table A4.2.a. Percentage of students expecting to complete ISCED levels 5A or 6, by mathematics performance level (2003)	85
Table A4.3.a. Percentage of students expecting to complete ISCED levels 5A or 6, by gender (2003)	86
Table A4.4. Odds ratios that students expect to complete ISCED levels 5A or 6, by socio-economic status (2003)	87
Table A4.5. Odds ratios that students expect to complete ISCED levels 5A or 6, by immigrant status (2003)	88

Indicator A5	What are students' attitudes towards mathematics?	90
Table A5.1.	Means on students' attitudes towards mathematics, approaches to learning, and school-related indices (2003).....	99
Table A5.2a.	Relationship between students' attitudes towards mathematics and mathematics performance (2003).....	100
Table A5.2b.	Relationship between students' approaches to learning and mathematics performance (2003).....	101
Table A5.2c.	Relationship between school-related indices and mathematics performance (2003).....	102
Indicator A6	What is the impact of immigrant background on student performance?	104
Table A6.1a.	Differences in mathematics performance, by immigrant status (2003)....	113
Table A6.2a.	Percentage of native students at each level of proficiency on the mathematics scale (2003).....	113
Table A6.2b.	Percentage of second-generation students at each level of proficiency on the mathematics scale (2003).....	114
Table A6.2c.	Percentage of first-generation students at each level of proficiency on the mathematics scale (2003).....	114
Table A6.3.	Index of instrumental motivation in mathematics and student performance on the mathematics scale (2003).....	115
Indicator A7	Does the socio-economic status of their parents affect students' participation in higher education?	116
Indicator A8	How does participation in education affect participation in the labour market?	124
Table A8.1a.	Employment rates and educational attainment, by gender (2005).....	132
Table A8.2a.	Unemployment rates and educational attainment, by gender (2005)....	134
Table A8.3a.	Trends in employment rates, by educational attainment (1991-2005)...	136
Table A8.4a.	Trends in unemployment rates by educational attainment (1991-2005).....	138
Indicator A9	What are the economic benefits of education?	140
Table A9.1a.	Relative earnings of the population with income from employment (2005 or latest available year).....	156
Table A9.1b.	Differences in earnings between females and males (2005 or latest available year).....	158
Table A9.2a.	Trends in relative earnings: adult population (1997-2005).....	159
Table A9.3.	Trends in differences in earnings between females and males (1997-2005).....	160
Table A9.4a.	Distribution of the 25-to-64-year-old population by level of earnings and educational attainment (2005 or latest available year).....	162
Table A9.5.	Private internal rates of return for an individual obtaining an upper secondary or post-secondary non-tertiary education, ISCED 3/4 (2003).....	165
Table A9.6.	Private internal rates of return for an individual obtaining a university-level degree, ISCED 5/6 (2003).....	165

A8

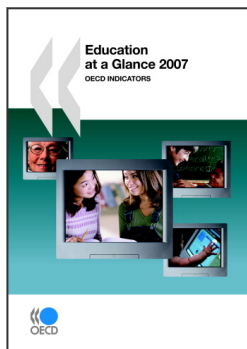
A9

		Name of the indicator in the 2006 edition
Table A9.7.	Public internal rates of return for an individual obtaining an upper secondary or post-secondary non-tertiary education, ISCED 3/4 (2003).....	166
Table A9.8.	Public internal rates of return for an individual obtaining a university-level degree, ISCED 5/6 (2003).....	166
CHAPTER B FINANCIAL AND HUMAN RESOURCES INVESTED IN EDUCATION..... 167		
Indicator B1	How much is spent per student?.....	170
Table B1.1a.	Annual expenditure on educational institutions per student for all services (2004).....	186
Table B1.1b.	Annual expenditure per student on core services, ancillary services and R&D (2004).....	187
Table B1.2.	Distribution of expenditure (as a percentage) on educational institutions compared to number of students enrolled at each level of education (2004).....	188
Table B1.3a.	Cumulative expenditure on educational institutions per student for all services over the theoretical duration of primary and secondary studies (2004).....	189
Table B1.3b.	Cumulative expenditure on educational institutions per student for all services over the average duration of tertiary studies (2004).....	190
Table B1.4.	Annual expenditure on educational institutions per student for all services relative to GDP per capita (2004).....	191
Table B1.5.	Change in expenditure on educational institutions for all services per student relative to different factors, by level of education (1995, 2004).....	192
Indicator B2	What proportion of national wealth is spent on education?.....	194
Table B2.1.	Expenditure on educational institutions as a percentage of GDP, by levels of education (1995, 2000, 2004).....	205
Table B2.2.	Expenditure on educational institutions as a percentage of GDP, by level of education (2004).....	206
Table B2.3.	Change in expenditure on educational institutions (1995, 2000, 2001, 2002, 2003, 2004).....	207
Table B2.4.	Expenditure on educational institutions as a percentage of GDP, by source of fund and level of education (2004).....	208
Indicator B3	How much public and private investment is there in education?.....	210
Table B3.1.	Relative proportions of public and private expenditure on educational institutions for all levels of education (1995, 2004).....	219
Table B3.2a.	Relative proportions of public and private expenditure on educational institutions, as a percentage, by level of education (1995, 2004).....	220
Table B3.2b.	Relative proportions of public and private expenditure on educational institutions, as a percentage, for tertiary education (1995, 2004).....	221
Table B3.3.	Trends in relative proportions of public expenditure on educational institutions and index of change between 1995 and 2004 (1995=100, constant prices), for tertiary education (1995, 2000, 2001, 2002, 2003, 2004).....	222

Indicator B4	What is the total public spending on education?	224	B4
Table B4.1.	Total public expenditure on education (1995, 2004).....	230	
Table B4.2.	Distribution of total public expenditure on education (2004).....	231	
Indicator B5	How much do tertiary students pay and what public subsidies do they receive?	232	B5
Table B5.1a.	Estimated annual average tuition fees charged by tertiary-type A educational institutions for national students (academic year 2004-2005).....	244	
Table B5.1b.	Distribution of financial aid to students in tertiary-type A education (academic year 2004-2005).....	246	
Table B5.1c.	Financial support to students through public loans in tertiary-type A education (academic year 2004-2005).....	248	
Table B5.2.	Public subsidies for households and other private entities as a percentage of total public expenditure on education and GDP, for tertiary education (2004).....	250	
Indicator B6	On what resources and services is education funding spent? ...	252	B6
Table B6.1.	Expenditure on institutions by service category as a percentage of GDP (2004).....	260	
Table B6.2.	Expenditure on educational institutions by resource category and level of education (2004).....	261	
Indicator B7	How efficiently are resources used in education?	262	
Table B7.1.	Estimates of technical efficiency for primary and lower secondary public sector education	268	
CHAPTER C	ACCESS TO EDUCATION, PARTICIPATION AND PROGRESSION	269	
Indicator C1	How prevalent are vocational programmes?	270	
Table C1.1.	Upper secondary enrolment patterns (2005).....	277	
Table C1.2.	Annual expenditure on educational institutions per student for all services, by type of programme (2004).....	278	
Table C1.3.	Performance of 15-year-old students on the PISA mathematics scale by programme orientation (2003).....	279	
Indicator C2	Who participates in education?	280	C1, C2
Table C2.1.	Enrolment rates, by age (2005).....	291	
Table C2.2.	Trends in enrolment rates (1995-2005).....	292	
Table C2.3.	Transition characteristics from age 15 to 20, by level of education (2005).....	293	
Table C2.4.	Entry rates to tertiary education and age distribution of new entrants (2005).....	294	
Table C2.5.	Trends in entry rates at the tertiary level (1995-2005).....	295	
Table C2.6.	Students in tertiary education by type of institution or mode of study (2005).....	296	
Indicator C3	Who studies abroad and where?	298	C3
Table C3.1.	Student mobility and foreign students in tertiary education (2000, 2005).....	317	

		Name of the indicator in the 2006 edition
Table C3.2.	Distribution of international and foreign students in tertiary education, by country of origin (2005).....	318
Table C3.3.	Citizens studying abroad in tertiary education, by country of destination (2005).....	320
Table C3.4.	Distribution of international and foreign students in tertiary education, by level and type of tertiary education (2005).....	322
Table C3.5.	Distribution of international and foreign students in tertiary education, by field of education (2005).....	323
Table C3.6.	Trends in the number of foreign students enrolled outside their country of origin (2000 to 2005).....	324
Table C3.7.	Percentage of tertiary qualifications awarded to international and foreign students, by type of tertiary education (2005).....	325
Indicator C4	How successful are students in moving from education to work?	C4
Table C4.1a.	Expected years in education and not in education for 15-to-29-year-olds (2005).....	335
Table C4.2a.	Percentage of the youth population in education and not in education (2005).....	337
Table C4.3.	Percentage of the cohort population not in education and unemployed (2005).....	339
Table C4.4a.	Trends in the percentage of the youth population in education and not in education (1995-2005).....	341
Indicator C5	Do adults participate in training and education at work?	C5
Table C5.1a.	Participation rate and expected number of hours in non-formal job-related education and training, by level of educational attainment (2003).....	353
Table C5.1b.	Expected number of hours in non-formal job-related education and training by age group and labour force status (2003).....	355
Table C5.1c.	Expected number of hours in non-formal job-related education and training, by level of educational attainment (2003).....	357
 CHAPTER D THE LEARNING ENVIRONMENT AND ORGANISATION OF SCHOOLS		
Indicator D1	How much time do students spend in the classroom?	D1
Table D1.1.	Compulsory and intended instruction time in public institutions (2005).....	369
Table D1.2a.	Instruction time per subject as a percentage of total compulsory instruction time for 9-to-11-year-olds (2005).....	370
Table D1.2b.	Instruction time per subject as a percentage of total compulsory instruction time for 12-to-14-year-olds (2005).....	371
Indicator D2	What is the student-teacher ratio and how big are classes?	D2
Table D2.1.	Average class size, by type of institution and level of education (2005).....	381
Table D2.2.	Ratio of students to teaching staff in educational institutions (2005).....	382
Table D2.3.	Ratio of students to teaching staff, by type of institution (2005).....	383

Indicator D3	How much are teachers paid?	384	D3
Table D3.1.	Teachers' salaries (2005).....	396	
Table D3.2.	Change in teachers' salaries (1996 and 2005).....	398	
Table D3.3a.	Adjustments to base salary for teachers in public institutions (2005).....	399	
Table D3.4.	Contractual arrangements of teachers (2005).....	401	
Indicator D4	How much time do teachers spend teaching?	402	D4
Table D4.1.	Organisation of teachers' working time (2005).....	411	
Indicator D5	How do education systems monitor school performance?	412	
Table D5.1.	Evaluation of public schools at lower secondary education (2005).....	418	
Table D5.2.	Use of information from school evaluation and accountability of public schools (lower secondary education, 2005).....	419	
ANNEX 1	Characteristics of Educational Systems	421	
Table X1.1a.	Typical graduation ages in upper secondary education.....	422	
Table X1.1b.	Typical graduation ages in post-secondary non-tertiary education.....	423	
Table X1.1c.	Typical graduation ages in tertiary education.....	424	
Table X1.2a.	School year and financial year used for the calculation of indicators, OECD countries.....	425	
Table X1.2b.	School year and financial year used for the calculation of indicators, partner economies.....	426	
Table X1.3.	Summary of completion requirements for upper secondary (ISCED 3) programmes.....	427	
ANNEX 2	Reference Statistics	429	
Table X2.1.	Overview of the economic context using basic variables (reference period: calendar year 2004, 2004 current prices).....	430	
Table X2.2.	Basic reference statistics (reference period: calendar year 2004, 2004 current prices).....	431	
Table X2.3.	Basic reference statistics (reference period: calendar year 1995, 1995 current prices).....	432	
Table X2.4.	Annual expenditure on educational institutions per student for all services (2004, USD).....	433	
Table X2.5.	Annual expenditure on educational institutions per student for all services (2004, EUR).....	434	
Table X2.6a.	Reference statistics used in the calculation of teachers' salaries, by level of education (1996, 2005).....	435	
Table X2.6b.	Reference statistics used in the calculation of teachers' salaries (1996, 2005).....	437	
Table X2.6c.	Teachers' salaries (2005).....	438	
Table X2.7.	Tax revenue of main headings as percentage of GDP (2004).....	439	
ANNEX 3	Sources, Methods and Technical Notes	441	
References		443	
Contributors to this Publication		445	
Related OECD Publications		449	



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