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ABSTRACT

This new annual publication, a companion volume to the fourth edition of "Education at a Glance: OECD Indicators," presents a series of concise analyses on themes relevant to educational policy, based upon selected international education indicators. The analyses are presented in the following four chapters: (1) "An Overview of Enrolment (sic) and Expenditure Trends"; (2) "Educational Outcomes: Measuring Student Achievement and Adult Competence"; (3) "Transition from School to Work"; (4) "Teachers' Pay and Conditions". One annex offers "Data for the Figures" in 22 tables. (Author/LMD)

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INDICATORS OF EDUCATION SYSTEMS

EDUCATION AT A GLANCE

Analysis

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Pursuant to Article 1 of the Convention signed in Paris on 14th December 1960, and which came into force on 30th September 1961, the Organisation for Economic Co-operation and Development (OECD) shall promote policies designed:

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- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

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- *to promote and support the development of research activities in education and undertake such research activities where appropriate;*
- *to promote and support pilot experiments with a view to introducing and testing innovations in the educational system;*
- *to promote the development of co-operation between Member countries in the field of educational research and innovation.*

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REGARDS SUR L'ÉDUCATION
Analyse

FOREWORD

This new annual publication presents a series of concise analyses on policy relevant themes, based upon selected international education indicators. Since 1992, the OECD has been publishing indicators developed under the INES Project at the Centre for Educational Research and Innovation, in co-operation with the OECD's Unit for Education Statistics and Indicators. These indicators have been presented in the three previous editions of *Education at a Glance*. This year, the indicators themselves are published, in the same format as previously, in *Education at a Glance* - OECD *Indicators*, appearing at the same time as this analytical volume.

This shorter document takes up selected themes of key importance to governments, and analyses their relevance for education policy. It draws mainly on the OECD's own indicators, but brings in external sources where these are relevant to the analysis. Subsequent editions will extend the range of policy issues examined. The document is published on the responsibility of the Secretary-General of the OECD.

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INTRODUCTION

Education systems in OECD Member countries are being adapted to meet two major new challenges. The first is to bring advanced learning to the whole population rather than an elite: the past three decades have seen a general expansion to make post-compulsory education accessible to many. As this expansion continues, another key objective has come to the fore: to make learning a lifelong activity, rather than concentrated around the years of initial education. OECD education ministers, meeting in Paris in 1996, committed themselves to strategies for implementing "lifelong learning for all".

OECD countries are trying to make learning an activity for all citizens of all ages...

To help them pursue such strategies, ministers asked the OECD to monitor developments in Member countries, in order to create a better understanding of where progress is being made. It is relatively easy to describe the expansion of education systems, notably in terms of higher rates of participation at the upper secondary and tertiary levels, and to identify the consequences of such trends for public spending. A greater challenge is to find out whether this spending has been effective. As millions more young people sit for longer in classrooms and lecture halls, are they emerging better-equipped for the adult and working world? And are the conditions right for them to continue learning throughout their lives?

...and the OECD is committed to monitor the development of strategies for lifelong learning.

In seeking the answers to such questions, governments, educators and the general public are increasingly interested in the performance of education systems in countries other than their own. Crude comparisons of the educational achievements of nations are of little help in themselves. But a better understanding of how various countries are developing their education systems to help meet new social and economic challenges can give valuable insights into the potential effect of different strategies, as well as providing an external standard against which to measure progress in one's own country.

There is a desire to compare the education performance of countries and to understand what lies behind it...

Educational policy makers today have a richer array of international data on trends in OECD Member countries than ever before. The OECD's educational indicators project (INES) has now published four successive volumes of indicators, presenting comparable information on a wide range of education and training topics. In interpreting them, politicians, senior policy officials and the public would like to be able to identify key measures of how well each education system is performing.

....and there is an unprecedented amount of information to draw upon.

The best comparable international data is on inputs and throughputs – on how much is spent on each level of education, and who passes through it. This allows analysis not only of overall trends in participation and spending, but also different ways in which countries distribute resources (Chapter 1).

The best data is on participation and spending...

The level of resources devoted to education has stagnated over the past 20 years. On average, 5.8 per cent of GDP was spent on education from public sources in 1993 – exactly the same proportion as in 1975. The lack of data in most countries makes it hard to calculate trends in total spending, including from private sources. But in the few countries for which data is available since 1985, the private share has mainly

... which shows that the amount spent on education has been stagnant...

remained constant. In most countries private education spending in 1992 was less than 1 per cent of GDP; in Germany (Former Territory of the Federal Republic), Japan, Spain and the United States it was higher, but in no case more than 2 per cent.

... and although the number of young people has been falling, rising rates of participation sometimes mean less funding per student...

Stable spending levels during a period in which the number of young people has declined in most countries can in one sense be seen as giving positive support for education. But in the same period, the demand for education and the average length of time spent in it have greatly increased. As enrolments have increased, the resources devoted to each student has in many cases deteriorated. In the coming years, rising participation rates are unlikely to be balanced by demography, since the youth population has stopped falling and is even rising in many countries. So it will become even harder to maintain the level of spending per student.

... but it is the effectiveness of this spending that is all-important...

But more money for education does not automatically produce better educational results. Policy makers are increasingly concerned about the effectiveness of education, in terms of its outcomes for students. Moreover the importance now attached by education ministers to the application and continuation of learning during adulthood means that outcomes cannot only be measured in terms of performance in tests at school.

...so there is a need for measures of outcomes, both in terms of scholastic achievement and adult competences...

Finding key international indicators of educational outcomes, and hence of the effectiveness of systems, is a difficult task. Each country has its own educational structures and objectives. So there is no single measure of a nation's educational "output", equivalent to gross domestic product in the case of economic output. However, the potential for developing useful international measures of the outcomes of education for individuals is being demonstrated in two ways (Chapter 2). First, tests of standards achieved in subjects learned at school, especially core ones like reading, mathematics and science, can help produce international benchmarks that can be valuable tools for national authorities in developing their own performance standards. Second, tests of adult competences can create a broader understanding of how well the populations of different countries perform, by looking at their ability to apply skills such as reading in the context of everyday life and work. In both cases, unequal performance within countries can be at least as significant for policy development as a comparison across countries.

...and governments should face up to the cost of developing such measures...

Both kinds of test need to be carried out on a more regular and systematic basis to meet the needs of policy makers. Such exercises are not cheap for governments, but are essential for any meaningful understanding of the effectiveness of education systems in an international context. The cost of such tests is negligible compared to the $1 000 billion dollars a year spent by OECD Member countries on these systems.

...which already indicate that more education brings uneven benefits, so governments should look more closely at the cost-effectiveness of spending at each level.

The international evidence that does exist shows that even though higher levels of initial education yield, on average, significant advantages in adult life, they are not a passport to success. Graduates as well as drop-outs can find themselves unemployed, and sometimes display low levels of functional literacy. In giving more of their citizens access to further and higher education, countries have to look carefully at the usefulness of this extra learning, at the process of transition between learning and work, and at how far education systems encourage learning to continue throughout the life-span. There is a need to question whether the existing pattern of resource allocation to different stages in the learning cycle is necessarily the best one.

A priority is to improve links between working and learning during the increasingly complex and lengthy transition from full-time education to stable employment...

Education systems, moreover, cannot be developed in isolation from other policies to help citizens of OECD Member countries adapt to a changing world. The OECD *Jobs Study* in 1994 put learning at the centre of a strategy to increase employment. To be well-equipped for a new kind of labour market, it argued, people need a high-quality initial education, a well-managed transition from school to work and the capacity to continue updating their skills. The transition from education to employment, therefore, can be seen as the linchpin of lifelong learning. But this transition is a longer and more complex process than it was in the past (Chapter 3). Managing the transition is no longer merely a question of identifying skills to be taught on vocational education programmes. The challenge now is to ensure that experiences of learning and work during the transition period are complementary. At the same time, the goals of vocational education need to be re-examined. Traditionally, they have been seen as once-and-for-all programmes of induction into defined trades. Now, young people need to be prepared more generally for the uncertain years ahead. There is a need both to integrate general and vocational programmes and to enable young people to move easily between different kinds of education, training and work experience during this period of their lives, rather than being channelled into narrow pathways. More schooling can be an effective tool for reducing youth unemployment, under two conditions:

- That the crucial period of upper secondary education is well-designed to achieve better results for all, with low drop-out rates, and to create a better articulation between learning experiences in school and work environments. Various forms of alternation between school and work, particularly apprentice-type programmes, have proved to be effective in reducing youth unemployment, but this kind of programme requires a serious partnership between public and private sectors;
- That countries invest adequate resources to create high-quality and diversified educational options appropriate to different students' needs, rather than merely channelling lower-achieving students into educational ghettos.

...but any educational improvement is dependent on attracting good teachers, in difficult demographic conditions; imaginative new teaching structures may be needed to maintain acceptable teacher salaries at acceptable cost...

But no improvements to the structure of education will produce better outcomes without high-quality teaching. In many countries, the supply of good teachers could be threatened in the years ahead by a combination of demography and austerity (Chapter 4). There has been a significant ageing of the teaching force in most countries, partly because teachers recruited at a time of high student numbers are now approaching retirement age. So a new cycle of teacher recruitment will soon be needed. There is urgency of dynamic policies to recruit teachers for the future needs of the formal education system. Government should avoid to be put suddenly in front of a dramatic inadequacy of teachers' supply. But in the majority of countries, teacher salaries have not risen as fast as per-capita national income. This need not mean that teaching is less attractive overall, as in some countries their working conditions have been improved by a reduction in the ratio of students to teachers. As the number of children rises again from the low levels experienced in the 1980s, governments will have to consider ways of containing costs while keeping pay and conditions at acceptable levels. To do so, they would do well to consider new ways of structuring classroom teaching, to raise teacher productivity in a manner that teachers themselves regard as worthwhile.

Educational indicators must be interpreted with caution, bearing in

In all of this the tertiary sector clearly has an important role. However the choice of topics for this first analytical volume has necessarily been selective. Issues related to the development of tertiary sector will be examined in the future versions. Readers of this volume should bear in mind that the science of understanding and interpreting

mind that indicators:

international education indicators is still in its infancy. As the science develops, so the analysis will aim to become progressively more helpful to policy makers. But to be so, it is necessary for policy makers to avoid some common misunderstandings about what indicators can and cannot do:

mean little without qualitative understanding...

- Numbers can never on their own give an adequate understanding of trends in education. Quantitative indicators are often a necessary condition for sound analysis of educational developments but they are never sufficient. For example, tests of student achievement can yield interesting information in comparing the performance of education systems, but without an understanding of the curricular objectives of each country it is impossible to evaluate the success of their respective systems.

pose questions for countries rather than measuring who is best...

- Indicators indicate: they cannot on their own measure the adequacy of performance. If a country's pattern of educational spending differs from the average, for example, its people might ask themselves whether they are happy with this difference, and whether they are getting value for money.

need to be designed around the purpose they will serve...

- A group of indicators designed to serve one policy goal might not be effective or even appropriate for addressing another. Different objectives, such as explaining relationships between various aspects of education, predicting the effect of a policy initiative or describing the state of the present education system, require different kinds of information.

and are so far of limited use in explaining causal relationships.

- Indicator data is poorly suited to addressing many of the questions of causality that policy makers want to know. The world is not a laboratory, and macro data on education systems cannot distinguish between the many different influences on whether a young person decides for example to become a scientist. There is some scope for understanding more about causality, for example by looking at longitudinal data and by combining evidence on education systems with non-educational indicators. But that requires dedicated work over a number of years.

Yet it is useful for countries to compare the relative speed at which they are progressing towards common goals...

With these qualifications, indicators are an essential tool for understanding the development of education systems in OECD Member countries during an important period of transition. Their objectives have changed from giving high quality education to a minority of young people, to providing lifelong access to learning to everybody. Indicators can help show the relative speed at which countries are reaching these objectives, and some of the costs and benefits that have arisen during this transition.

...and to improve their imperfect understanding of the ways in which education systems can contribute to the creation of learning societies.

By broadening their objectives from the management of closed "systems" to the encouragement of learning as a lifelong activity, education ministers are setting themselves a complex new task. Understanding the relationships that influence patterns of learning throughout the life-cycle will always be more difficult than evaluating how successfully children perform at school. But indicators on relationships between educational and other experiences are being strengthened. The data that exist today should encourage governments to reassess the links between the school curriculum and the skills needed by adults, as well as improving connections between learning and work for people of all ages. Yet there is still a serious gap in our understanding of the contribution made to this process by learning outside public educational institutions, and better data are needed on private effort in education, especially at the enterprise level. This is not a plea for launching another expensive

data collection exercise. There should be ways of collating and using the best data sets generated within the private sector.

So the framework is now in place for a new articulation between data, indicators and analysis. As this framework is developed in future years, it should be possible to understand in more detail how governments and other actors can achieve better integration between learning and full social, economic and democratic participation in society.

Reader's note: **The data behind the analysis**

The graphics illustrating the indicators do not include any data. The numeric values are given in the corresponding tables in the Annex. The corresponding indicators quoted at the bottom of the figures refer to the indicators of the accompanying volume *Education at a Glance - Indicators*. Technical information, additional explanations, country notes explaining countries' specificities, comparability problems, and calculation methods can be found in the Annexes of *Education at a Glance - Indicators*.

CHAPTER 1

AN OVERVIEW OF ENROLMENT AND EXPENDITURE TRENDS

SUMMARY

Recent decades have seen a rise in the level of educational attainment of the population of OECD countries, as more people participate in education beyond compulsory schooling. This trend has had an important effect on educational costs, despite the effect of falling numbers of young people in most countries.

Variations between countries in educational spending relative to national income can be attributed to several factors. The most important are the proportion of young people enrolled in education and the average amount spent on educating each of them. Spending per student is in turn associated primarily with the level of teacher salaries and the number of pupils per teacher.

- Upper secondary education has become the norm in most countries. It has been completed by half of those who left school during the 1960s, by two-thirds of people who left in the 1980s and by around 80 per cent of today's young people. Variation between countries has been substantially reduced.

- Tertiary education spread less quickly from the 1960s to the 1980s, but continues to reach an ever-increasing number of people. However, considerable country variations remain.

- The decline in the population of secondary school age in most countries has been compensated by higher participation, so in most countries secondary enrolments have risen.

- Spending on education on average has tended to remain fairly stable as a proportion of GDP since the mid-1970s, but has risen in the lowest-spending countries.

- Education spending as a proportion of GDP is most clearly linked to participation rates and to how much is spent per student. The latter varies by a factor of six in OECD countries.

- Spending per student is affected mainly by variations in average salaries and by ratios of students to teachers. These ratios vary most widely in tertiary education.

This chapter clarifies a number of issues facing OECD countries, without seeking to put forward specific policy recommendations. It presents new analyses that aim to help policy makers understand better what lies behind country differences in education spending. Higher levels of enrolment have been an important cause of additional expenditure in recent years. However, the bill for education has also been influenced by how much is spent per student, and this in turn reflects differences in the cost of teachers. Choices to be made about how much to pay teachers and the ratio of teachers to pupils are explored further in Chapter 4.

EDUCATIONAL ATTAINMENT HAS RISEN

The educational attainment of the population of OECD countries has grown rapidly over the past 50 years. Upper secondary education has changed from being a privilege of an elite minority to being the expected norm for most young people. A growing number, although not yet the majority, is also gaining various higher qualifications – at the "tertiary" level. These trends follow the expansion of public education systems, driven by the rising educational expectations of both individuals and society, by the changing nature of the labour market, and latterly by the growth in unemployment.

OECD data reveals three particularly striking trends in patterns of educational attainment:

- A large increase over the past 30 years in the numbers completing various levels of education beyond compulsory schooling;
- A narrowing of country differences, as some countries that had relatively low attainment levels in the 1960s have been catching up with others;
- The persistence of departures from education before completion of the upper secondary phase by a significant minority of young people.

It is difficult to chart historical rates of graduation from upper secondary or tertiary education, because reliable international indicators have only recently been produced. The best measure of the educational attainment of successive generations is therefore to ask today's adults about their highest level of education, and to consider the results of each age cohort. For example, the proportion of 45 to 54 year-olds who report that they have completed upper secondary education gives a good indicator of completion rates at that level during the 1960s. This is the basis of the following commentary, drawn from OECD analysis of responses to labour force surveys.

UPPER SECONDARY BECOMES THE NORM

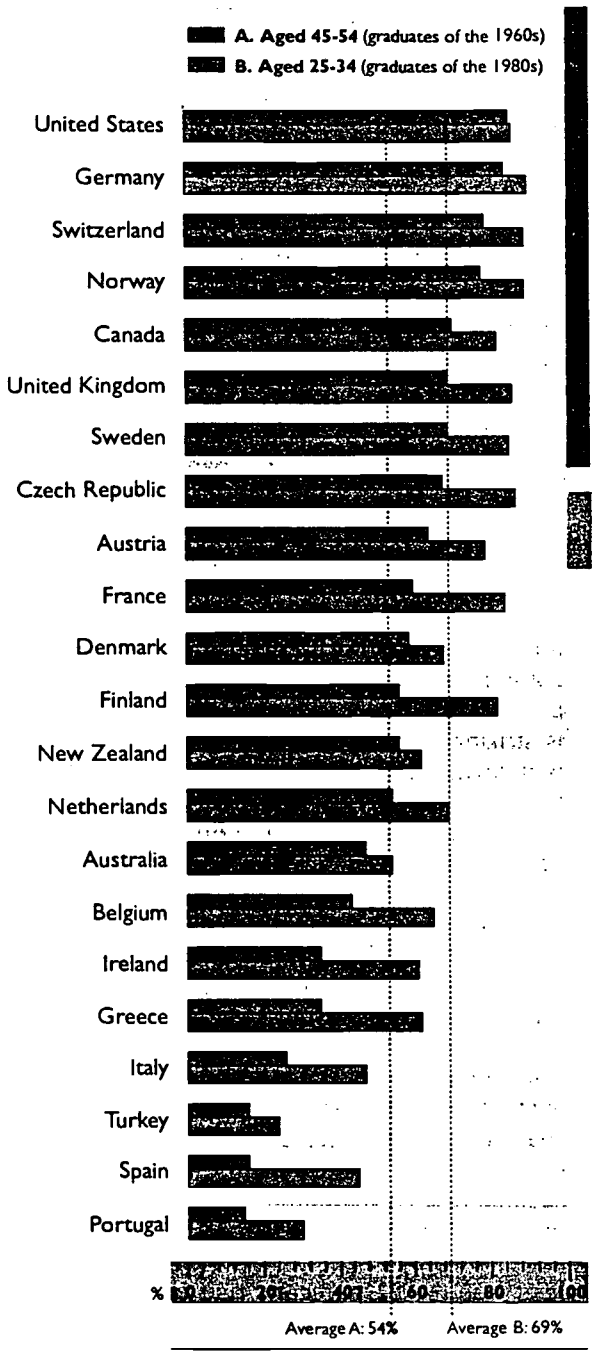
The completion of upper secondary schooling is becoming an increasingly essential part of schooling in OECD countries. Although most countries legally allow young people to leave education at the end of the lower secondary cycle – usually at the age of 15 or 16 – those who do so face poor long-term job prospects. Figure 1.1 shows that even by the 1960s, just over half of young people in today's OECD countries were successfully passing through upper secondary systems, which had originally been designed for some 10 to 20 per cent of the population. But country differences were great, ranging from the United States, where five in six young people already completed high school, to southern European countries, where only between one in six and one in three obtained an upper secondary qualification.

By the 1980s, an average of over two-thirds of young people were completing upper secondary education, and in only four out of 21 countries was it still a minority. A number of countries had caught up with the United States: in five European countries, the completion rate exceeded 85 per cent. Moreover, direct measures of recent graduation rates, published in *Education at a Glance - Indicators*, show that there has been a further catching up in the early 1990s. In Spain, for example, by 1993, 68 per cent of teenagers were gaining upper secondary qualifications, which were held by only 45 per cent of people in their late 20s and early 30s, and by only 16 per cent of people 20 years older. In all but five countries, the completion rate is in the present decade between 70 per cent and 90 per cent. So upper secondary completion is firmly the norm, yet one from which a significant minority continue to be left out.

COMPARISONS OF ATTAINMENT

Some caution is needed in comparing educational attainment across countries, since countries classify educational programmes differently according to national circumstances. So, for example, the apparently low level of tertiary attainment in Austria for both 25 to 34 and 45 to 54 year-olds is partly associated with the classification of many advanced vocational programmes at the upper secondary level. These programmes may be more similar in content and orientation to non-university tertiary programmes in some other countries. The United Kingdom includes in upper secondary level completers at the school leaving age of 16 and completers of advanced programmes at ages 17 and 18.

Figure 1.1 **Upper secondary graduation**
Percentage of the population who have completed at least upper secondary education



Source: OECD database (Labour Force Survey).
Data for the figure page 67.
See also indicator C1 in EAG-Indicators.

A GROWING MINORITY COMPLETE TERTIARY

Since the 1960s, high rates of upper secondary school completion have spread to most OECD countries.

Upper secondary education generally covers studies from the end of compulsory education to the beginning of higher education and includes dual apprenticeship training.

Countries are ranked by percentage graduating in the 1960s.

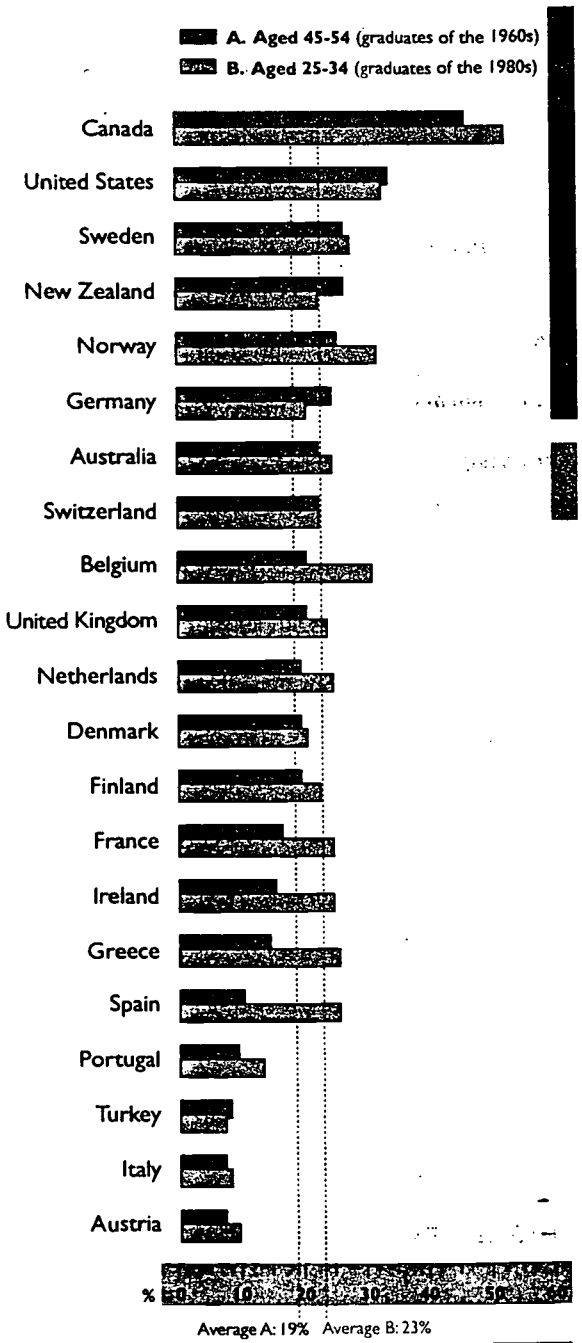
The difference between rates of completion of tertiary education in the 1960s and 1980s was not as marked as for upper secondary education (Figure 1.2 overleaf). (Tertiary education covers all advanced courses above upper secondary level.) Despite a steady expansion in most countries, rates in North America remained clearly above those in Europe. Some of the "catching up" occurred within Europe, with Ireland, France, Greece and Spain rising from relatively low graduation levels. As with upper secondary education, actual graduation rates recorded in *Education at a Glance* during the 1990s show a further rise. For example, the proportion graduating at university level (which covers only part of the tertiary sector) rose from 16 per cent to 27 per cent in the United Kingdom and from 20 per cent to 31 per cent in Australia between 1988 and 1994.

Figure 1.2 overleaf under-estimates rises in the rate of tertiary completion in some countries, because the younger cohort includes significant numbers of people who may still gain a tertiary qualification in future. In some countries, not everyone in their late 20s have completed their initial education; this helps explain why in Germany and Switzerland, attainment levels are about the same or higher for 45 to 54 year-olds. There is also in some countries (eg. United States) a growing tendency for adults to return to education and to gain tertiary or upper secondary qualifications.

HIGHER PARTICIPATION COMPENSATES FOR FEWER YOUNG PEOPLE

Greater participation puts an additional financial burden on public authorities and private households who contribute to the funding of education.

Figure 1.2 **Tertiary level graduation**
Percentage of the population who have completed a tertiary qualification



Source: OECD database (Labour Force Survey).
Data for the figure page 67.
See also indicator C1 in EAG-Indicators.

In most countries, the proportion of people gaining higher qualifications rose modestly between the 1960s and 1980s.

Tertiary education graduation relates to both university and non-university higher education programmes.

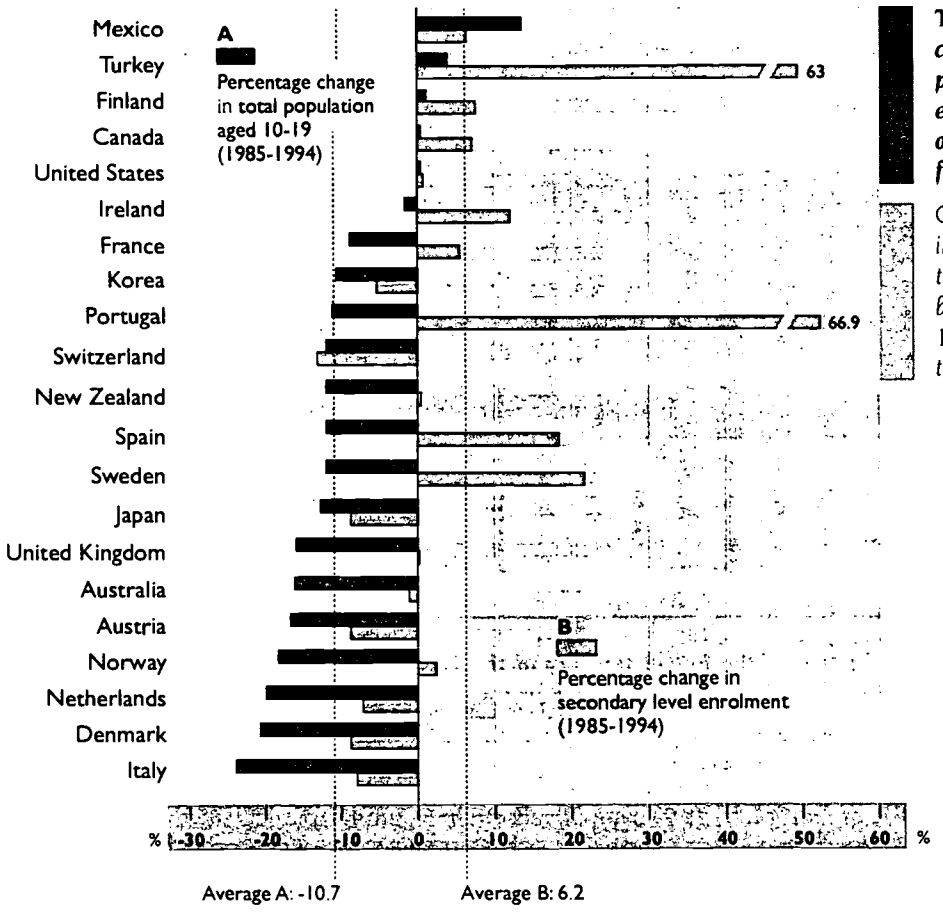
Countries are ranked by percentage graduating in the 1960s.

This extra cost is compounded by the fact that post-compulsory education, where enrolments have been rising, usually costs more per student than primary and lower secondary schooling. However, a fall in birth rates in OECD countries since the early 1960s potentially reduced the total cost of compulsory schooling, as it caused the school-age population to decline – although the number of teachers rarely declines in proportion as is indicated in Chapter 4 below.

The combined effect of higher participation rates and fewer young people over the past decade is illustrated at secondary level in Figure 1.3. Secondary education includes both a compulsory phase (lower secondary), in which enrolments tend to fall directly with population, and a post-compulsory phase (upper secondary), in which participation rates can have a balancing effect. It is striking that in a number of countries, higher participation has outweighed lower birth-rates, so total enrolment has risen. This illustrates one reason why a decline in the number of young people will not necessarily cut overall education costs.

The largest increases in secondary enrolment have been in Turkey and Portugal, where participation rates had been relatively low. Total enrolment levels can be influenced however not just by the number participating at each stage, but by increases in the number of years spent at a particular level. This appears to explain how in Sweden, where upper secondary participation was already high in the mid-1980s and where the 10 to 19 population has since fallen by 12 per cent, there has nevertheless been a 22 per cent rise in secondary enrolments. The standard length of Swedish upper secondary schooling has been prolonged from two to three years.

Figure 1.3
Secondary education and demography
Changes in enrolment in secondary education and in population aged 10-19, 1985-94



The rate of participation by young people in secondary education has outweighed their falling numbers.

Countries are ranked in descending order of the percentage change between 1985 and 1994 in total population aged 10-19.

Source: OECD education database.
Data for the figure page 67. See also indicators C3 and P1 in EAG-Indicators.

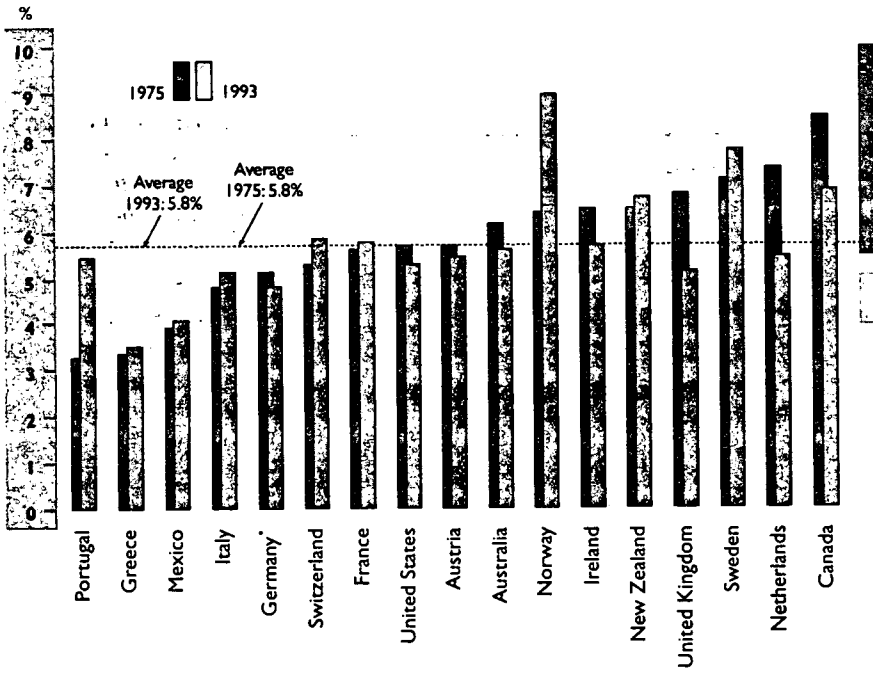
NATIONAL SPENDING ON EDUCATION HAS CONVERGED

In recent decades, governments have had to make some difficult choices about the overall level of public spending, about the proportion devoted to education and about the distribution of the education budget across levels. Rising participation, changing curricular provision and teachers' pay demands have exerted upward pressure on education spending, while demography and general public spending restraint have created pressure for a reduction. Not all factors are controllable by policy makers, but it is still worth understanding the way in which different countries have responded to these pressures, by analysing:

(i) what has happened to total educational spending over time in different countries;

(ii) what components influence the level of spending, and the relative importance of these components in different countries today. This is the subject of the next section.

Figure 1.4
Change in educational resources
Proportion of GDP spent on education from public sources, 1975 and 1993



On average, the proportion of national income spent on education has remained stable, but the lowest-spending countries have seen a rise.

Countries are ranked by 1975 spending.

Source: OECD education database.
* 1975 data for Germany relate to the former territory of the Federal Republic.
Notes: – Public subsidies to households are included.
– Due to lack of data for many countries it is only possible to compare spending over the last 20 years using public expenditure.

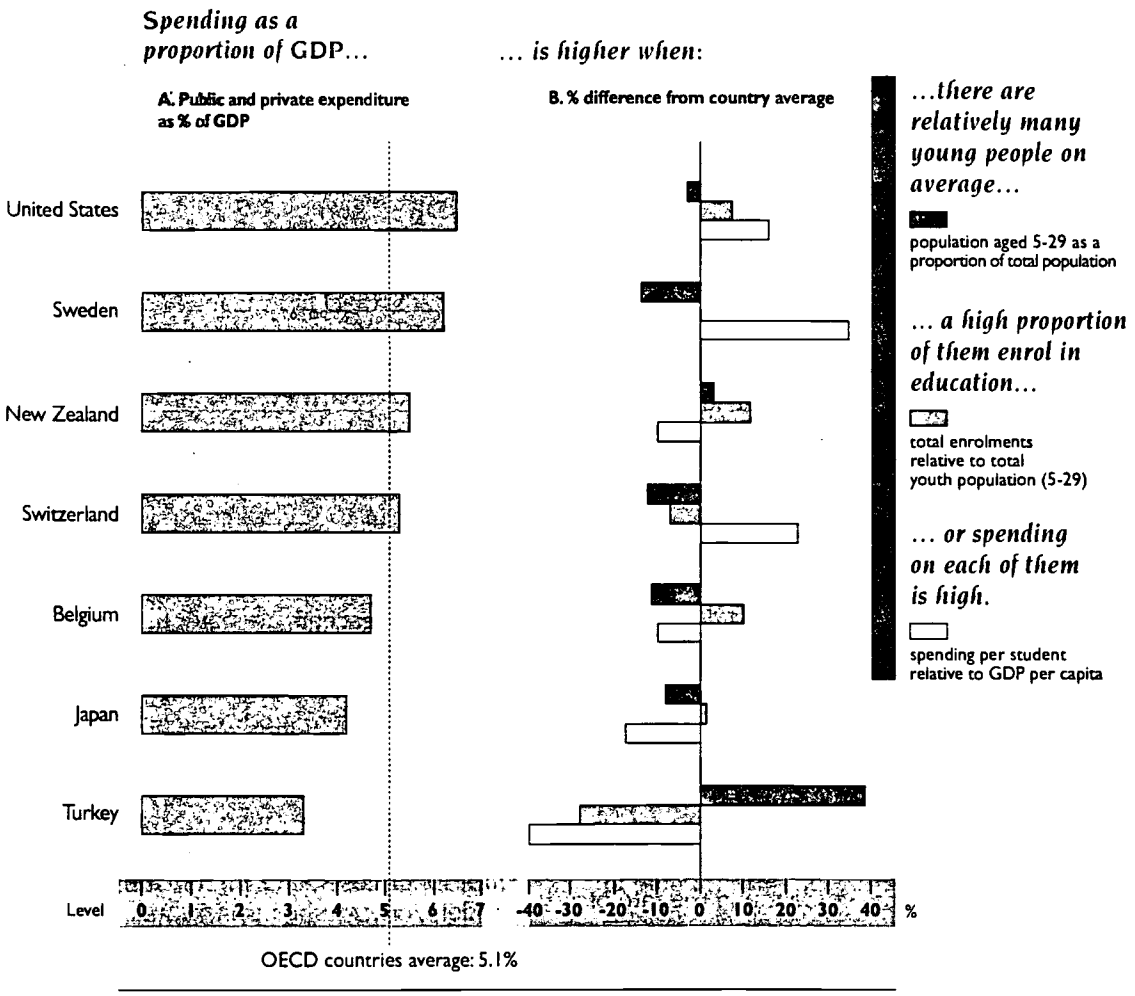
Data for the figure page 67. See also indicator F1 in EAG-Indicators.

Since the mid-1970s, the proportion of GDP spent by the public sector on education has stabilised in most countries (Figure 1.4). This can be explained by the overall influence of public-sector austerity, following a period in which public spending had grown steeply. Higher educational participation has recently been balanced by a relative reduction in teacher salaries, which grew more slowly than per-capita GDP in most countries between 1985 and 1993 (Figure 4.3 below). However, in those countries that spent the lowest percentage of GDP on education in 1975, this proportion has since risen. Thus the past two decades have seen a degree of convergence in public education spending: every country spending below 5 per cent of GDP on education in 1975 subsequently saw an increase or no change; a majority of countries spending above 5 per cent saw a decrease or remained the same. It should be noted that some countries shown in Figure 1.4, particularly the United States and Germany, have significantly higher levels of private funding for post-compulsory education than others. In the case of Germany, private expenditure is mainly accounted for by enterprise expenditure for the "dual" training system. This may contribute to more limited spending by the public sector. In the future, the capacity of countries to muster private funds for education may be as important as what happens to public spending.

WHAT LIES BEHIND DIFFERENCES IN EDUCATION SPENDING

What determines differences in the proportion of GDP devoted to education by various countries? Recent improvements in data on educational finance collected by the OECD make it possible

Figure 1.5
Factors affecting expenditure relative to GDP, 1993
(selected countries)



Source: OECD education database.
Data for the figure page 68.

to separate out various components that lie behind this "headline" figure. There is not yet, however, sufficient data to analyse reliably what has been happening to these components over time.

Figure 1.5 shows in part (A) the proportion of GDP spent by OECD countries on education in 1993 (in this case from private as well as public sources) and in part (B) the influence of three components that determine this figure for a selected number of countries. Full details for all countries are provided in the annex. The seven countries represented in Figure 1.5 were drawn randomly to illustrate different patterns underlying expenditure. The three small country bars show the size of each respective component relative to the OECD average. The three components are:

- *The proportion of young people in the population.* The more young people, the higher the spending, given certain rates of enrolment and of spending per student.

- *The proportion of young people enrolled in education.* Higher participation rates mean more enrolments and more spending.
- *The ratio of spending per student to* GDP *per capita.* For any given proportion of the population who participate in education, the cost to the country will depend on how much is spent on each student compared to average income per person.

Figure 1.5 can be used for any country to see which are the most important determinants of its educational spending as a proportion of GDP, relative to other countries. For example, the United States devote a large amount to each student relative even to its high per-capita GDP, to make it one of the highest spenders in total. In New Zealand, by contrast, spending per student is relatively low, but its government still ends up with an above-average education bill because a large proportion of young people participate. Belgium also has high participation, but this is partly cancelled out by a smaller-than average proportion of young people in the population. Switzerland has even smaller youth cohorts, who participate less than average. Since relatively few Swiss people are therefore students, it is possible to spend more on each of them than in most other OECD countries, even relative to Switzerland's very high GDP per capita, without bringing spending as a proportion of total GDP much above average.

More generally, the following relationships help explain country differences:

- The amount spent per student and the rate of participation of young people are the two factors most closely related to education spending as a proportion of GDP;
- Expenditure per student is closely related to GDP per capita, since spending is strongly influenced by teacher pay and hence by general income levels;
- The proportion of young people in the population is positively related to total educational spending, but to a smaller extent than other components.

It should be noted that unlike Figure 1.4, Figure 1.5 includes private sources of spending where available. However, coverage of this data for 1993 is not universal or complete across countries. For example, Japan, which is known to have high levels of private spending, does not report all of it. This may tend to understate the amount spent per student for Japan. Moreover, the money spent by enterprises on continuing vocational training for their workers is not included in Figure 1.5. In some countries, however, some initial enterprise-provided training is reported, such as the "dual" apprenticeship system in Germany.

WHAT DETERMINES SPENDING PER STUDENT

Governments that have expanded public support for education in recent decades have had to consider the total cost of providing for more students. However, the cost is influenced not just by enrolment numbers, but by how much is spent for each student. Most of that spending goes on teachers. To understand further why countries vary widely in the amount they spend, it is possible to break down the determinants of spending per student into three components:

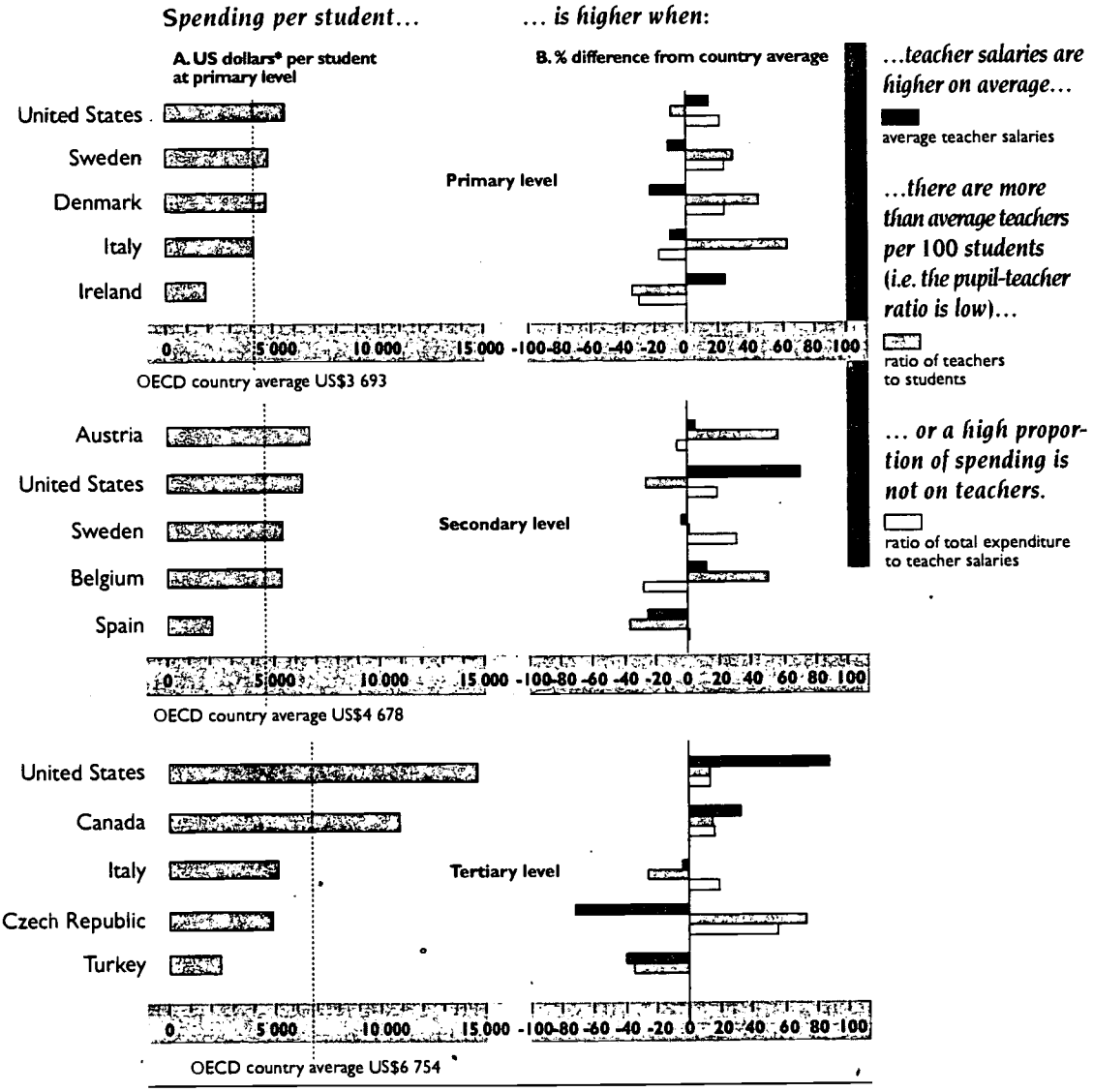
- How much teachers are paid: the higher their salaries, the greater the cost per student;
- How many teachers are needed for every hundred children: more teachers for a given number of students means a higher cost per student;
- How much is spent on non-teaching costs for every dollar spent on teachers: the higher these additional costs, the higher the spend per student, other things being equal.

This section looks at the influence of the above components at each level of education for OECD countries for which data are available. It should be borne in mind that this analysis compares each country to the average of the countries providing data, which may be considerably different from the average for the OECD as a whole.

Data are available for 11 countries at primary level, for nine countries at secondary level and eight at tertiary level. Figure 1.6 shows data for an illustrative selection of countries at each of the three main levels of education.

The inter-relationship between the various components of expenditure per student depends

Figure 1.6
Factors affecting spending per student, 1993
(selected countries)



Source: OECD education database.
* Converted by purchasing power parity.
Data for the figure page 69.

on a complex inter-play of factors, some but not all of which can be controlled by policy makers. In some cases, decisions on one factor will have a bearing on another. For example, negotiations on teacher pay may be directly or indirectly linked to the issue of class sizes. Chapter 4 below examines some of these trade-offs in more detail for primary and lower secondary education; the present section confines itself to noting variations in the importance of each of the three components of cost per student at each educational level.

In part (A) the bar shows the overall variation in cost per student; in part (B) the three bars show

how each of the three components contributes to this variation. So, for example, high per-pupil spending in the United States can be attributed partly to high teacher salaries, but also to higher than average non-teacher costs, which at primary and secondary level are nearly half of total spending. Ireland, on the other hand, keeps non-teacher costs very low at all levels, and also uses a relatively small number of teachers for every hundred students in primary and secondary education. The result is that Irish primary schools are able to pay teachers 25 per cent more than the average for the 11 countries, yet still keep spending per pupil at just over half the country average. Sweden is a mirror image of this picture, paying teachers relatively little, but accepting small pupil-teacher ratios and relatively high non-teacher costs, which contribute to higher-than-average spending per pupil. It should be noted that the "salary" costs referred to in Figure 1.6 also include the cost of non-salary benefits such as health insurance and employer pension contributions.

More generally, the following observations can be made:

- Teacher pay is on average around 40 per cent higher at tertiary level than at primary and secondary levels. However, higher spending on teachers at higher levels does not mean that their pay takes up a greater slice of education spending. At the primary and secondary levels, the proportion of spending devoted to teachers is similar, just above 60 per cent. At tertiary level, where administrative and support structures are more complex, it drops to 40 per cent.
- Teacher compensation, and the ratio of teachers to students seem to be more closely related to expenditure per pupil than the relative size of non-teaching costs. At secondary level, both salaries and teacher-pupil ratios are closely correlated with per-student spending. At tertiary level, more or less generous staffing levels are particularly likely to account for higher or lower spending per student.
- The underlying components of tertiary education vary more widely than those for primary or secondary. Ratios of students to teaching staff, for example, vary from 10 in the Czech Republic to 27 in Turkey.

The apparent pattern of expenditure per student at tertiary level is affected by the way in which student enrolment is reported. In some countries, students are all counted as if they were full time, regardless of their course load or number of hours a week spent studying. This means that students in these countries may be over-counted, and thus cost per student under-estimated. There is also a problem of distinguishing research costs from teaching costs. To the extent that research is related to postgraduate training and other teaching activities, expenditure on research in tertiary institutions has in principle been included. However, the coverage of research expenditure in tertiary spending data still varies across countries.

CONCLUSIONS

The figures presented in this chapter show elements of convergence in education systems, as well as ways in which differences persist. There has been a degree of convergence in participation and overall spending levels, as countries who had not previously expanded upper secondary and tertiary education to a wide section of the population have started to do so. Yet considerable differences in spending per student persist, reflecting differences in teacher salary levels and in the way in which education spending is structured in various countries. Higher spending is not itself a sign of higher quality: countries need to know whether they get value for money from their educational expenditure. For this they need to have information about the central outcome of education: student achievement. This is the subject of the next chapter. ■

CHAPTER 2

EDUCATIONAL OUTCOMES: MEASURING STUDENT ACHIEVEMENT AND ADULT COMPETENCE

SUMMARY

There is a growing demand for indicators that show outcomes of education systems, in terms of student achievement as well as others measures, such as labour market success, rather than just inputs and processes. International outcome measures, that can help countries put their own national standards in context, have so far been inadequately developed. But two recent surveys illustrate how such outcomes indicators can be of use to policy makers:

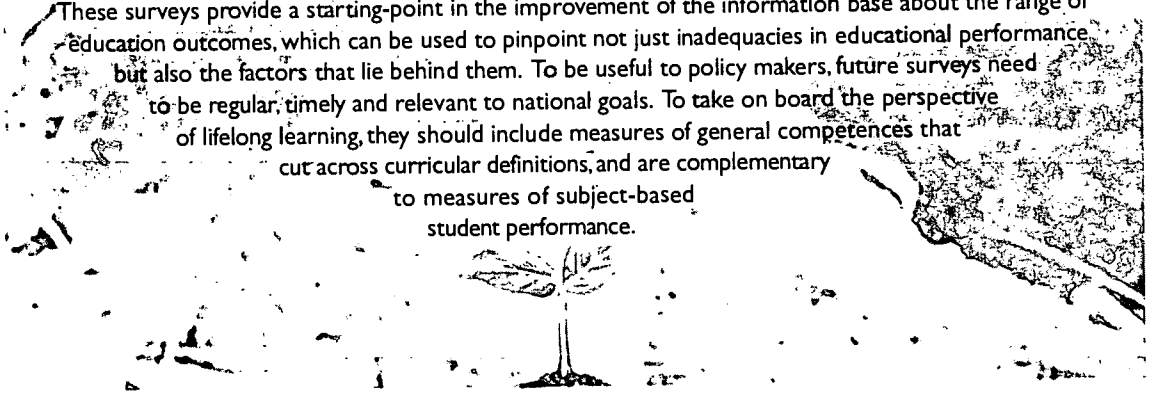
The *Third International Mathematics and Science Study* shows that:

- Differences between the mathematics and science achievement of school children in different countries are substantial. In some countries, the average scores of children enrolled in the eighth grade are above or below the OECD mean by more than twice the average difference in performance of children a grade level younger.
- Under-achievement is widespread in most countries: in 21 out of 26 countries, the level of mathematics achievement of the bottom 25 per cent of eighth graders is not enough to bring them up to the average score of pupils one year younger.

The *International Adult Literacy Survey* provides for the first time a cross-country measure of the distribution of the skills needed to carry out literacy tasks in the context of everyday life and work. It shows that:

- More important than overall country differences in performance, is the fact that everywhere a significant proportion of the adult population has a low level of literacy. In all countries surveyed in 1994, at least a quarter of adults are at the bottom two of five literacy levels, and are likely to have problems coping with the demands of everyday life and work.
- The level to which adults have been educated is the best single predictor of their literacy. Yet in Germany and Sweden, around half of adults over 30 who have not completed upper secondary school nevertheless perform at the top three literacy levels, while in the United States, half of young adults with high school but not college education are on the bottom two levels.
- Younger age-groups are on average more literate, partly because skills may be lost with age. But there is also potential to improve them: the survey indicated that regular practice of literacy tasks inside and outside work has a positive effect.

These surveys provide a starting-point in the improvement of the information base about the range of education outcomes, which can be used to pinpoint not just inadequacies in educational performance but also the factors that lie behind them. To be useful to policy makers, future surveys need to be regular, timely and relevant to national goals. To take on board the perspective of lifelong learning, they should include measures of general competences that cut across curricular definitions, and are complementary to measures of subject-based student performance.



DEVELOPING PERFORMANCE MEASURES

How well are our schools and other educational institutions performing? Parents, students, the general public and those responsible for running education systems all want to know how well the population is being educated. The most common way of assessing educational outcomes at the student, institution and system level is to compare the performance of students within each country. A school whose students get good marks, perform well in examinations or gain admission to the best universities is considered to have performed well. But how good is the education system itself? Does it provide young people with the skills and knowledge they will need to enter the labour market and to become lifelong learners who analyse, reason and communicate their ideas effectively? These are important questions for which clear answers are not always readily available.

There has recently been a growing demand for indicators that show whether the resources invested in education and training are providing satisfactory returns. Such indicators are considered important for three main purposes: to make education more accountable; to serve as a tool for school improvement, especially where different schools or programmes with similar inputs achieve varying results; and to allow standards to be monitored centrally under conditions of devolved administration and extended partnership with employers and workers. These considerations are leading to a shift in public and governmental concern, away from mere control over the resources and content of education towards a focus on outcomes. At the same time, advances in educational measurement have made it possible to collect and report aggregated performance data in ways that make them a useful tool for evaluating the quality, equity and effectiveness of education and training.

The articulation of demand combined with technical advances in measurement have influenced not only policy agendas but also the practice of data collection and reporting. Periodic assessments of student performance are now common in many OECD countries, and the results are widely reported and used as benchmarks for performance, in public debate as well as by those concerned with school improvement. The information can be used to judge whether the levels of performance are adequate, to identify specific aspects of student, school or system failure and to promote systemic reform and improvement.

How useful a role can international comparisons play in this process? Most countries set their own performance standards against which to measure the level of student achievement and the effectiveness of educational institutions. These performance standards need to be derived from the agreed goals of education systems and embedded in a broad frame of reference. The approach commonly taken to standard setting is to use panels of experts and wide consultations with employers, teachers and other interested parties in order to define benchmark criteria. International comparisons of what children and adults have learned and can do may contribute to this setting of standards by providing a useful point of reference that is external to the functioning of any one education system. This does not mean setting international norms for student achievement or job-relevant skills, but rather offering a useful tool for the validation of national standards.

In co-operation with Member countries and other international organisations, the OECD has led a large effort to improve the international comparative knowledge base of education. The aim has been to establish a set of international indicators that could be used for analytical and evaluative purposes. This effort has been successful in many respects. But the success has brought into sharp focus the inadequacy of current arrangements for the production of policy-relevant internationally comparable information about the capabilities of both students in relation to what they learn at school and adults in relation to the skills they need for everyday and working life.

Nevertheless, some information on individual outcomes of education and training is available and some of this is presented in this chapter. The focus is on the data collected in 1994-95 in two large-scale international surveys, one concerning school children and the other dealing with adults. The difficulty of undertaking internationally

comparable surveys of student achievement and adult performance should not be underestimated. The results presented in the subsequent sections are considered valid and comparable. Even so, they are not perfect in every respect. In the presentations that follow, the focus is therefore less on absolute values and more on the ranges of performance between and within countries.

It should also be stressed that it was not possible in this volume to present a full analysis of the rich data set compiled for the Third International Mathematics and Science Study (TIMSS). The OECD has not had access to the full set of data resulting from this survey, which would have been needed to carry out sound policy analysis. The summary results that have been made available are presented below, in the form of descriptive indicators from which limited conclusions can be drawn. More detailed analysis is possible from the second set of data used here, the results of the International Adult Literacy Survey (IALS), based on analysis of the full data set.

STUDENT ACHIEVEMENT IN MATHEMATICS AND SCIENCE

A recent OECD study of student performance standards in ten countries arrived at two overarching conclusions:

> "The first is that raising standards in core subjects for all students and at all levels is today the main priority of national, regional and local education authorities. The second is that the public, parental and student interest requires that education systems provide sound information on how schools and individual students are performing".[1]

The achievement of students in foundation disciplines such as mathematics, science, reading and cross-curricular domains is one of the key criteria for an assessment of the performance of education systems. Competence levels in mathematics and science are of particular importance in modern economies, which increasingly depend on scientific discoveries and technological innovation. This section reviews the standards achieved at the grade levels attended by the majority of 13 year-olds on an internationally comparable test of performance in mathematics and science. It draws on indicators derived from the Third International Mathematics and Science Study, conducted during the school year 1994/95 by the International Association for the Evaluation of Educational Achievement (IEA) and sponsored by the governments of the participating countries (see box above).

1. OECD, 1995: *Performance Standards in Education. In Search of Quality*. Paris, p. 26.

THE IEA THIRD INTERNATIONAL MATHEMATICS ANS SCIENCE STUDY

The goal of the IEA Third International Mathematics and Science Study was to measure student achievement in mathematics and science and to obtain information on the social and educational context in which such performance occurs. More than 550 000 students at the grade levels in which most 9 and 13 year-olds are enrolled (typically grades 3/4 and 7/8) as well as students in the final year of upper secondary education took part in this study. To obtain information on the factors that influence student achievement, data from around 31 000 teachers and 13 000 schools in 44 countries were also collected. Students were set tasks that were carefully selected to be compatible with the science and mathematics curricula of the various countries: questions that might discriminate against students of some countries due to particularities of their curricula were avoided. A scale was constructed on which tasks of varying difficulty were placed and the ability of students was then expressed by a score on this scale.

OVERALL RESULTS

Figure 2.1 (p. 27) shows the relative standing of mathematics and science achievement for children at a grade level that is more or less standardised across countries in terms of the age of students. For each country, it shows the range in which the mean score can confidently be said to lieon the basis of the sample of children tested.

In addition, the bars for each country shows the range of results achieved by the middle half of the population ranked by achievement. This bar gives a broader picture of how well each country's students are doing.

The scale of Figure 2.1 has no intrinsic meaning: it was constructed as a convenient method of distinguishing between high and low achievement on the test. But one way to understand the meaning of differences on this scale is to measure the difference between the achievement of students in successive school years. So a sample of children one year younger than the main (typically eighth grade) sample was also tested. This showed that on average in OECD countries, children advance by 33 points in mathematics and 39 points in science between the seventh and eighth grades of formal education (for a detailed description of the national grade levels tested, see *Education at a Glance - Indicators*). This result should not be used to infer that a student who is 100 points above average in mathematics is therefore "three grades ahead": since the curriculum progresses from one grade to the next, it is not known how an eighth-grader would score on a test designed for eleventh-graders. Nevertheless, the apparent rate of progress over a year helps to place the scale of scores in context.

Figure 2.1 reveals that differences between countries in the average achievement in mathematics and science are substantial as compared to the average gap between children a year apart in age. For example, mean mathematics achievement in both Japan and Korea exceeds the OECD average by more than twice the typical difference in achievement between the seventh and eighth grades. High performance in mathematics is also shown by students in Flemish Belgium and the Czech Republic. Students in Portugal lag considerably behind.

These differences give just a snapshot of student performance in two subject areas and cannot be used to infer that certain education systems function better than others. Differences may be due to differences in the amount of instructional time allocated to mathematics and science or the order in which certain concepts are introduced (see Indicator P11 in *Education at a Glance - Indicators*). Nevertheless, the extent to which the performance of students at the same age level exceeds those in other countries in these two subject areas can inform the review of the standards which can be relevant to their development in each country. It helps indicate what kind of standard might reasonably be expected, and raises questions for countries performing poorly, even if the indicator in itself cannot provide the answers.

Results and country rankings are broadly similar in mathematics and in science, but with a number of exceptions. Some countries do show substantially higher performance in one discipline than in the other. English children, for example, perform better in science than in mathematics, while in France the picture is reversed. The fact that countries vary in their performance in the two disciplines suggests that country variation cannot be explained entirely in terms of the demographic or socio-economic context but may reflect, in part, differences in factors susceptible to policy influence, such as curriculum and instruction.

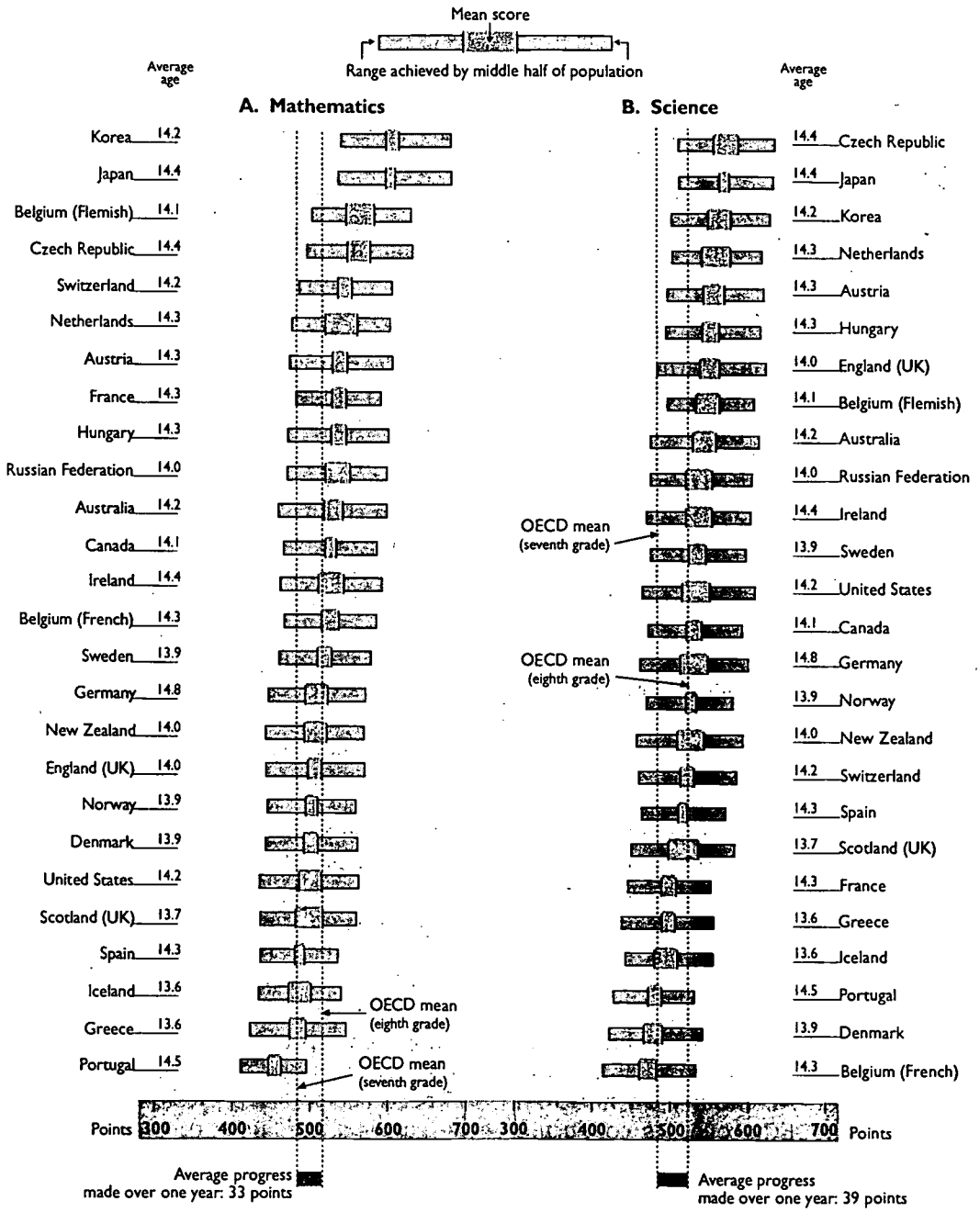
The high level of performance in Japan, Korea and the Czech Republic are the more impressive as the financial resources these countries devote to their educational institutions appear rather moderate when compared with those of other OECD countries. Spending per student on educational institutions at the secondary level in the Czech Republic, Japan and Korea, for example, is US$ 1 903, $4 356 and $2 026 respectively while OECD countries as a whole spend $4 730 per secondary student, with expenditures exceeding $6 480 in Austria, Germany, Switzerland and the United States (see Indicator F3 in *Education at a Glance - Indicators*).

The fact that there appears to exist neither a strong nor a consistent relationship across countries between the level of resources on the one hand, and mathematics and science achievement on the other, suggests that country variation cannot be explained alone in terms of financial resources but that the search for improved school performance must extend to factors that lie beyond educational inputs. This conclusion mirrors that of many national studies of school effectiveness, which show that while resource levels and socio-economic factors may explain broad disparities

Figure 2.1

Average achievement in Mathematics and Science, 1994

Test score achieved by children in the eighth grade



Source: IEA, *Third International Mathematics and Science Study.*

Data for the figure page 70.

See also indicator R7 in EAG-Indicators.

Country variation in student achievement is substantial compared to the average gap between children a year apart in age.

Countries are ranked in descending order of the mean score.

in outcomes, there is still significant variation left among schools that are equally resourced and serve similar socio-economic groups. In other words, some schools achieve higher standards than others even though they operate under broadly similar conditions.

The available data do not allow reliable cross-national comparisons of student achievement over time since the curriculum framework, the assessment instruments and the target populations have changed. However significant shifts in the rank order of countries since previous surveys can be indicative of the success of policy intervention and curricular reform to raise levels of student achievement. Comparing the results of the Third International Mathematics and Science Study with the First and Second IEA International Mathematics Studies, undertaken in 1964 and 1981 respectively, shows, for example, that France gradually advanced from the seventh rank in 1964 to the fourth in 1995 and Sweden improved its position from rank nine to rank six (this comparison is based on nine countries which participated in all three surveys).

INEQUALITY IN STUDENT ACHIEVEMENT

Mean achievement is only one way of measuring the performance of classes, schools, school types or education systems. Averages mask disparities that have become more important as the need for all-round educational excellence increases. The demand for high-skilled labour in modern economies cannot be satisfied by a small elite of high performers. Parents and the public share with educators and policy makers a deep concern about under-achievement among significant numbers of students, that risks leaving them without the basic skills needed to function in adult life or in the labour market. An inquiry on national educational goals in OECD countries, conducted by the OECD in 1995[2], found that in all ten of the participating countries a stated goal was to achieve excellence throughout the education system. Eight countries stated equal access to educational opportunities as one of their goals.

2. OECD, 1995: Report of the Network A GOALS Survey. Unpublished document.

In almost all countries disparities in student achievement in mathematics and science still present a significant challenge to the education system. It is therefore instructive to compare also how well the highest and lowest achievers in a country perform in relation to the international average. The performance of the best students in mathematics and science in a country may have implications for the share of that country in the pool from which tomorrow's mathematicians, engineers and scientists will emerge. Conversely, a high proportion of students at the lower end of the scale can give rise to concern that a significant share of tomorrow's taxpayers and voters will not have the necessary understanding of basic mathematical and scientific concepts that enables them to make informed judgements in a modern knowledge-based world.

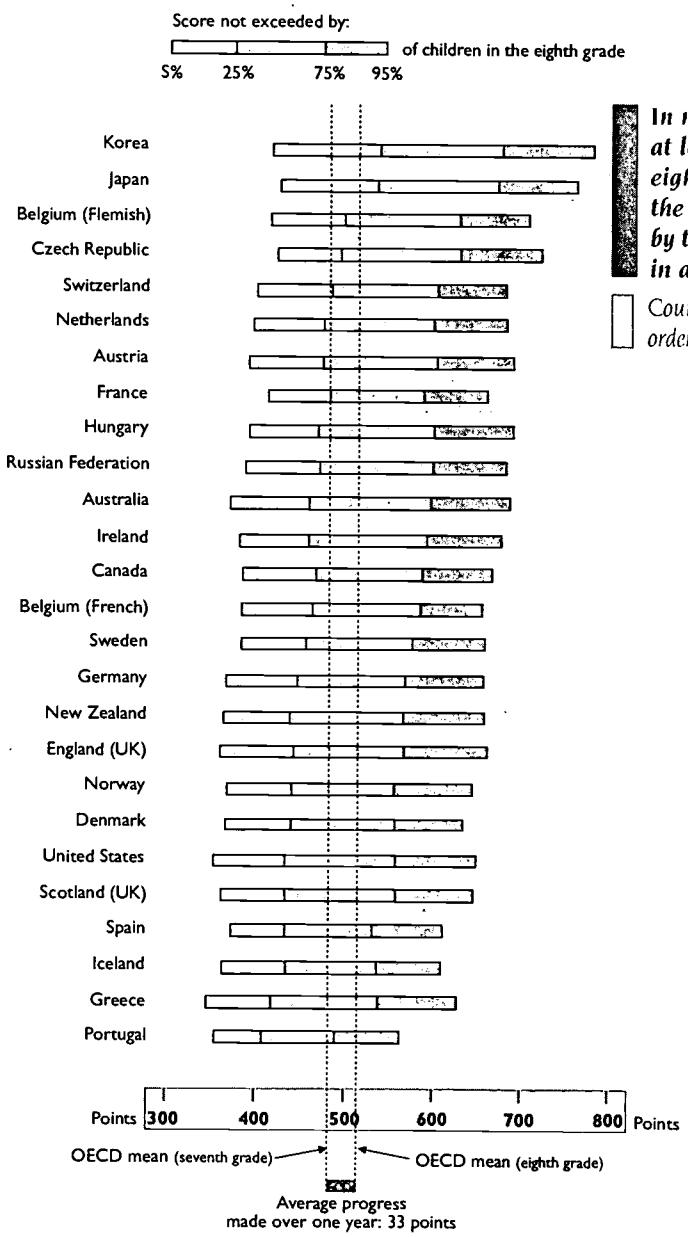
Figure 2.2 shows some striking differences between countries in terms of the distribution of results in mathematics. At one extreme, over three-quarters of eighth-graders in Japan and Korea show mathematics achievement scores above the OECD average. At the other, even some of the 25 per cent best performing students in Portugal fail to reach the OECD average.

A concern more general than these extreme cases of a few countries where most students do very well or very badly has to do with the low performance of large numbers of pupils relative to the international average, which is a problem in the majority of countries. At the level of the eighth grade, the bottom quarter of most countries' populations lags considerably behind: in all but five of the 26 systems shown the level of mathematics achievement of the bottom 25 per cent of students is not enough to bring them up to the average score of pupils one year younger. The difference between the 25 per cent best- and poorest-performing students in mathematics is in all countries over twice the typical difference in achievement between the two grade years tested. In seven countries, this "interquartile range" is over four times the difference between grades. The lag of the bottom 5 per cent of the population is far greater. In all countries, they do worse than the average student in the lowest performing country. Students at these levels have, for example, typically not attained the most basic

ERRATUM
Education at a Glance – Analysis
(96 96 10 1) ISBN 92-64-15357-8

Figure 2.2 page 29 should be replaced by the following :

Figure 2.2
Distribution of mathematics achievement, 1994-1995
Children in the eighth grade



In most countries, at least a quarter of eighth-graders fail to reach the mathematics score attained by the average seventh-graders in all OECD countries.

Countries are ranked in descending order of the mean score.

Source: IEA, *Third International Mathematics and Science Study.*
Data for the figure page 70. See also indicator R7 in EAG-Indicators.

arithmetic skills to handle simple fractions or whole-number subtractions.

The distribution of achievement scores within each country can also produce indicators of equity – that is, of equality of access and opportunity. Better information on the characteristics of students most likely to fail can help educators and policy makers to start to find solutions. Students who show poor achievement scores may experience the combined impact of various disadvantages in their background: growing up poor, living in a poor neighbourhood, having parents with lower levels of education, balancing time for schoolwork with work outside home or at home, and lacking the basic skills to escape from a limited track of remedial classes. Young people in these situations have a range of needs. To cope with them, teachers, administrators and policy makers have to understand what puts students at risk.

The results from the Third International Mathematics and Science Study show a clear relationship between socio-economic factors such as parental education or educational resources at home and student achievement. On average across OECD countries, students who reported that their parents had not completed upper secondary education scored, on average 26 points – that is almost one grade-year equivalent – lower on the mathematics scale than their peers for whom at least one of the parents had completed the upper secondary level (see Table 4.3 in IEA, 1996). When compared with students for whom the highest level of parental education was the completion of university level education, the difference rises to more than 55 score points. Nevertheless, here too significant differences in these disparities between countries show that there is room for policy intervention.

All countries place a high level of importance on reducing educational disparities between the sexes. Gender differences in mathematics and science scores at age 13 can affect pathways to further education and training as well as career opportunities later in life. Whereas in mathematics the gender gap is moderate – with a slight advantage for boys – the differences in science are considerable. They favour boys in all 26 systems, with score differences ranging from 12 points or less in Australia, Canada, the Russian Federation and the United States to 25 points or more in Denmark, Korea and New Zealand. This difference is reflected in tertiary education, where in some countries twice as many men as women obtain a science-related degree. Only in Italy, Korea and Turkey do fewer than 20 per cent more men do so (see Indicator R14 in *Education at a Glance - Indicators*).

The problem of variation in student achievement is addressed by different countries in different ways, both through the institutional organisation of education systems and through curricular provision. Some countries have implemented selective secondary school systems which restrict access to the more privileged school-types. This is based on the belief that overall achievement could be maximised by arranging relatively homogenous groups of learners. Other systems seek to equalise educational opportunities on the basis of a mixed system, which combines increased admission to the academic tracks of systems with some degree of differentiation in core subjects. Many countries deal with the variation between students in achievement, aptitudes, social background and motivational and affective characteristics at the school level.

LEVELS OF ADULT LITERACY

Although the school system can help to ensure that students acquire the necessary foundation skills, nations can no longer solely rely on a policy of gradually expanding initial schooling to meet demand for new and high-level competences generated by the economy. Knowledge and skills need to be acquired and updated beyond the initial stage of education and throughout an individual's life. In the following sections, the chapter therefore broadens the picture of educational outcomes by examining literacy skills among adults of working age.

Assessing the skills of adults rather than just testing school children is not merely a matter of measuring achievement among a different group. To the extent that education aims to equip children for adult life, testing adult skill in relation to everyday tasks is partly a measure of how successful education systems have been in this

initiation function. More particularly, at a time when OECD countries increasingly regard the education level of their work force as a key determinant of future economic success, the performance of education systems needs to be measured at least partly in relation to how well educated adults have mastered competences needed in their working lives. So internationally relevant standards of educational performance need to incorporate the testing of such skills. How well adults have mastered them should be looked at alongside the performance of children in school subjects to help understand how well school systems are geared to the future needs of their students.

Literacy is a key foundation skill on which the development of other adult competences crucially depends. A well-educated and literate workforce yields national comparative advantage and harnesses forces to counteract polarisation and social exclusion. Today, adults need a high level of literacy to function well: society has become more complex and low-skill jobs are disappearing. Therefore, inadequate levels of literacy and numeracy among a broad section of the population potentially threaten the strength of economies and the social cohesion of nations. Yet policy makers in most countries have hitherto lacked any empirical knowledge about the distribution of generic skills such as literacy in the population.

It is against this background that in 1994 seven countries undertook the first International Adult Literacy Survey, using a representative sample of their adult populations. In all, more than 24 000 respondents aged 16 to 65 years were interviewed for about 20 minutes and then took a 45-minute literacy skill test in their homes in their national languages. Statistics Canada provided overall management and scientific co-ordination for this large-scale operation, supported by OECD, EUROSTAT and UNESCO and agencies such as the National Center for Education Statistics and the Educational Testing Service in the United States. A further five countries completed the main data collection for this survey for their own populations during the latter half of 1995, and an additional ten are planning to do so in 1997.

A NEW WAY OF MEASURING LITERACY

Previous estimates of adult literacy levels across countries relied on estimates of how many people had mastered the most basic reading and writing skills, based on evidence such as how many

HOW CAN YOU EQUATE AN ENGLISH AND A FRENCH TEST WHEN NO-ONE TOOK BOTH TESTS?

The task pool developed for the International Adult Literacy Survey was large, and the materials used in the survey were selected from everyday tasks judged to be culturally appropriate and relevant by all countries in the survey. Once the selection of test items was agreed, with nearly half of the items coming from European countries and the other half from North America, each country adapted the materials to their own languages using a set of standard guidelines. This ensure that the psychometric properties (such as layout, design, and print size) of the materials were identical for everyone.

The pool of test materials was developed collaboratively and piloted in each country to ensure that each item functioned in the same way across languages and cultures. Some 175 literacy tasks were constructed for the field test. Of these, 114 proved valid across cultures and were selected for final use.

Subtle differences in design and implementation, and in the pattern of non-response across languages and cultures do introduce some error into the literacy estimates. This error was reported when the survey estimates were released. While design differences across languages are a source of error, Statistics Canada, the Educational Testing Service, and the national study teams have performed exhaustive analyses to understand the nature and extent of error associated with the differences in design and implementation.

people had completed a particular school grade level. The International Adult Literacy Survey (IALS) follows a different approach, pioneered recently at the national level in the United States and Canada, with the following features:

- IALS no longer defines literacy merely in terms of a basic threshold of reading performance, distinguishing the few who completely fail the test (the "illiterates") from nearly all those growing up in OECD countries who reach the minimum threshold (those who are "literate"). Rather, it defines literacy as a continuum. Proficiency levels along this continuum denote how well adults use written information to function in society.

- The survey defines literacy in terms of three domains, each encompassing a common set of skills relevant for diverse tasks:

Prose literacy – the knowledge and skills needed to understand and use information from texts including editorials, news stories, poems and fiction;

Document literacy – the knowledge and skills required to locate and use information contained in various formats, including job applications, payroll forms, transportation schedules, maps, tables and charts; and

Quantitative literacy – the knowledge and skills required to apply arithmetic operations, either alone or sequentially, to numbers embedded in printed materials, such as balancing a chequebook, figuring out a tip, completing an order form or determining the amount of interest on a loan from an advertisement.

- The test requires participants to perform tasks based on everyday situations, of varying levels of difficulty. The items are designed to be translatable across languages and cultures (see box page 31). All test items were open-ended and taken from "real life" stimuli; they reflect the literacy requirements encountered in everyday life. In each of the three literacy domains a scale from 0 to 500 was constructed, upon which tasks of varying difficulty were placed. A person's literacy ability was then expressed by a score in each domain, defined as the point on the scale at which he or she had an 80 per cent chance of successfully performing a given task. For analytical purposes, the ranges of scores achieved are grouped into five proficiency levels:

Level 1 indicates persons with very poor skills, where the individual may, for example, be unable to determine the correct amount of medicine to give a child from information printed on the package.

At *Level* 2 respondents can deal only with material that is simple, clearly laid out, and in which the tasks involved are not too complex. Level 2 describes a level of skill that is weak, but more hidden than level 1. It identifies people who can read, but test poorly. They may have developed coping skills to manage everyday literacy demands, but their low level of proficiency makes it difficult for them to learn new job skills.

Level 3 is regarded by experts as a suitable minimum for coping with demands of everyday life and work in a modern society. It denotes roughly the skill level required for successful secondary school completion and college entry. Like higher levels, it requires the ability to integrate several sources of information and solve more complex problems.

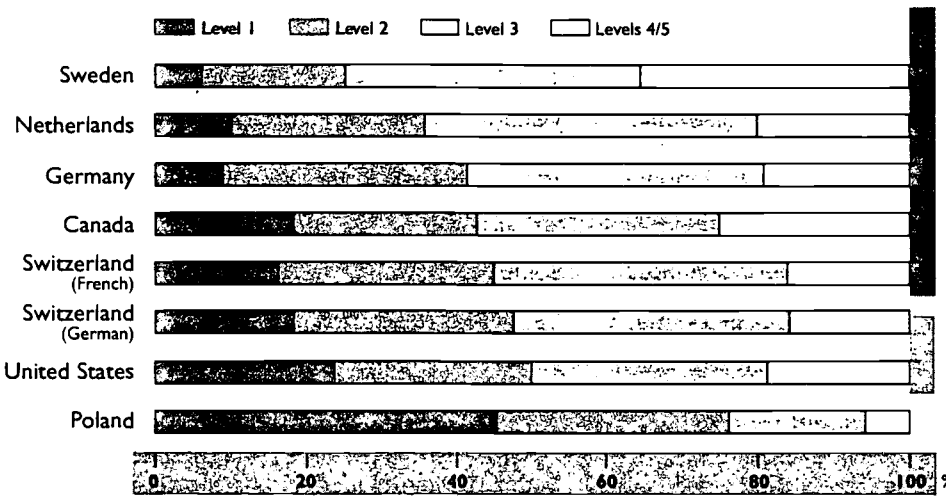
Levels 4 and 5 tend to describe respondents who have received some post-secondary education, who demonstrate the use of higher-order thinking skills. Since the numbers achieving level 5 are small (under 5 per cent in most countries), these two levels are combined for analytical purposes.

OVERALL DISTRIBUTIONS OF LITERACY

Figure 2.3 presents the estimated proportion of the population aged 16 to 65 performing at each level on the document scale in the seven countries for which results are available. In general, the pattern of performance is fairly similar across the countries tested. The distribution of literacy between groups of adults with various characteristics, discussed in the following sections, is of greater interest. However, the following observations can be made on the overall results:

- Sweden's adults clearly outperform those in other participating countries on all three scales.

Figure 2.3
Percentage of the population aged 16 to 65 performing at each literacy level, document scale, 1994



Between a quarter and a half of the population in OECD member countries fail to reach literacy level 3, considered by experts as a minimum for coping with modern life and work.

Countries are ranked by % at levels 1 and 2 combined.

Source: OECD education database; OECD and Statistics Canada, 1995.
Data for the figure page 71. See also indicator R30 in EAG-Indicators.

This result is consistent with high ranking in reading achievement of Swedish students at age 14 in the IEA's Reading Literacy Study that was undertaken in 1991.

- The margins of error associated with the estimates suggest that all countries except Sweden and Poland have relatively similar overall levels of adult literacy proficiency. Some of the apparent differences among the countries are not statistically significant.

- In every country, the number of people with low literacy skills gives cause for concern. Over 10 per cent of adults have very poor skills (level 1) on all scales in all the countries except Sweden and Germany. But even in these countries, at least 25 per cent of adults fail to score above level 2, and can therefore be expected to encounter problems in coping with everyday literacy tasks.

- The pattern of achievement in most of the countries is similar for prose, document and quantitative literacy. However, German and Swiss adults perform better on the document scale than the prose scale, and better still on the quantitative scale.

- For all countries in the survey except Poland, the mid-range literacy levels (levels 2 and 3 in the document scale) contain the largest proportion of adults: 49 to 72 per cent of the population. This suggests that policy intervention should be targeted not only at those with the poorest skills but also at those who can read simple prose and perform elementary arithmetic operations, but cannot cope with more complex analytical demands.

Whether these country differences reflect differences in the quality, emphasis, content or structure of national educational systems or rather post-schooling effects (continuing education and training, opportunities to engage in or to pursue literacy related activities) is difficult to determine. The results presented here are essentially diagnostic in nature. It is the linking of these results back to differences in national educational systems or post-schooling practices that may provide the information

required to improve educational output and/or upgrade the functional literacy skills of adults.

THREE FACTORS THAT INFLUENCE LITERACY

If literacy is defined in relation to its use in everyday life, a wide array of influences affect how literacy skills are developed and how they are distributed within populations. Initial formal education is only one means of acquiring literacy, which combines with subsequent learning and experience to determine an adult's ability to perform literacy tasks. Three factors that stand out as having a significant relationship with the distribution of literacy in the population are considered below: initial education, adult education, and age. A fourth factor for which there is a strong relationship is labour force status: those who are unemployed and those who are neither working nor studying are much more likely to have low literacy levels than workers or students. Young unemployed people in particular often lack the foundation skills in literacy and numeracy that they need to enter jobs (see Chapter 3 below).

(i) Educational attainment

As might be expected, people with more education are, on average, more literate. But literacy as measured by IALS is not curriculum-based but based on tasks encountered in everyday life, including the work place. It is therefore possible for highly-educated people to display low literacy and vice versa. The extent of correspondence between education and literacy measured in this way is therefore some indication of how adequately education systems prepare young people for the world beyond school and how well the post-school world makes use of their initial learning.

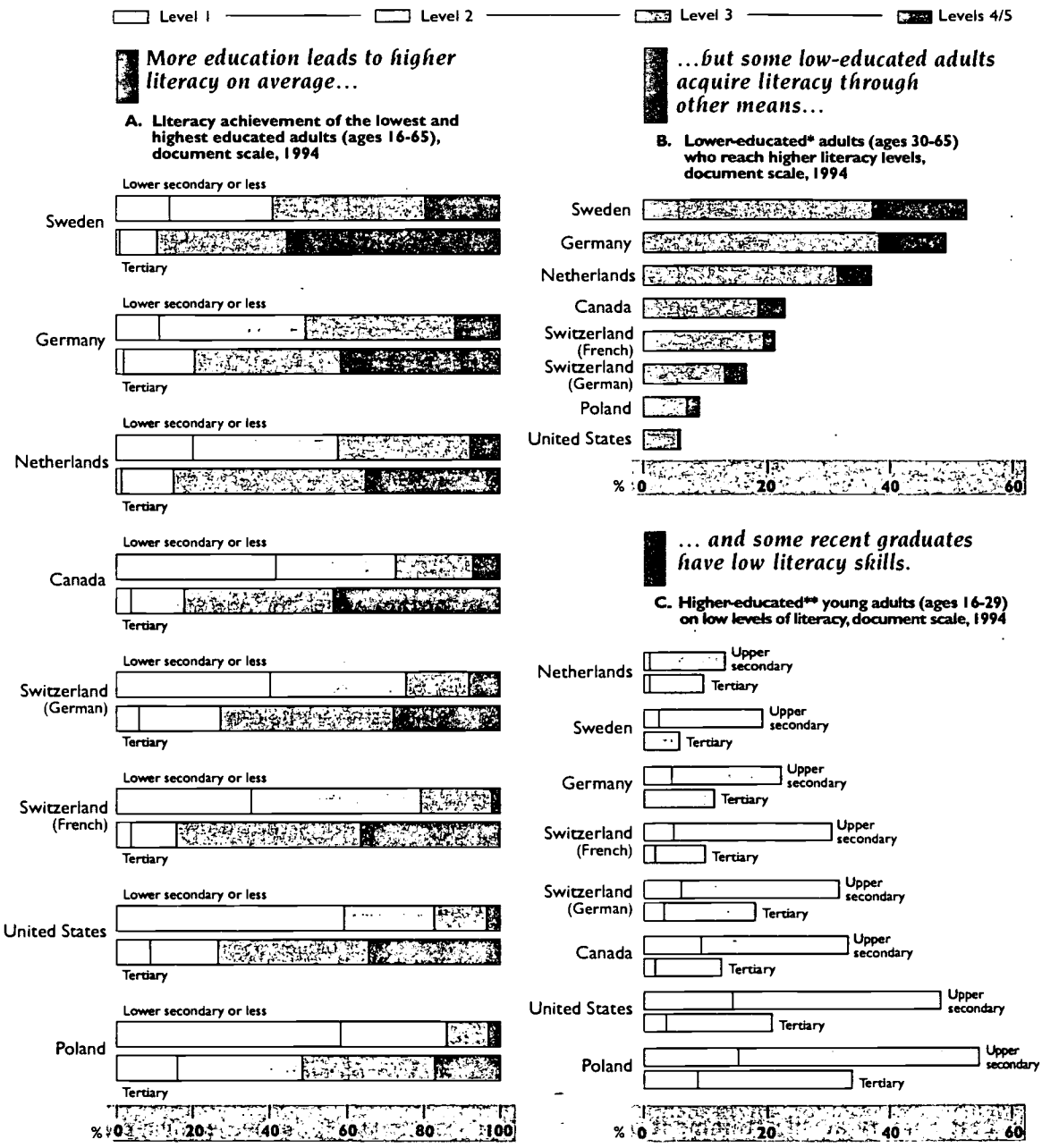
Much of the observed country differences in the literacy distributions shown in Figure 2.3 above can be attributed to differences in the distribution of educational attainment between countries. Part (A) of Figure 2.4 shows that low-educated adults in the age group 16 to 65 years perform on average much worse than highly-educated ones. Those without upper secondary education are predominantly at levels 1 and 2, and those with university or non-university tertiary qualifications are predominantly at levels 3 to 5. However, a comparable level of educational attainment does not appear to produce the same result, in literacy terms, in different countries. For example a Swede with tertiary qualification level has a 55 per cent chance of scoring at one of the top two literacy levels in the document scale, compared to a 43 per cent chance for a Canadian, a 28 per cent chance for a German-speaking Swiss and a 17 per cent chance for a Pole, all with a similar educational background.

Moreover, it is also notable that in every country some people with high educational levels perform poorly on the literacy test, while some with less education perform well. Part (B) of Figure 2.4 shows how many people in each country reach level 3 or above as adults even though they have not completed upper secondary education. (To get a better estimate of this phenomenon, people under 30 are excluded, to avoid counting people still in the course of completing their education.) It shows that while most people who are highly-literate are also well-educated, a significant number of adults in all countries manage to achieve a high level of literacy without the benefit of an extended educational career. The results are particularly impressive for Germany, the Netherlands and Sweden, where one-third or more of all adults lacking a qualification at upper secondary level perform at proficiency levels commonly associated with upper secondary or even post-secondary graduation (levels 3, 4 and 5).

Conversely, part (C) of Figure 2.4 shows how many educationally qualified young people, who have completed upper secondary school or tertiary education relatively recently, perform at literacy levels 1 and 2, which are below what would be expected at this level of education. The incidence of this phenomenon varies considerably between countries. For upper secondary graduates it varies from one in two in the United States and Poland to about one in eight in the Netherlands. For graduates of tertiary education, low literacy is rare in some countries – it is below 10 per cent in French-speaking Switzerland, Sweden and the Netherlands – but disturbingly high in others. In the United States one fifth and in Poland one third of tertiary graduates under 30 do not score above level 2.

Figure 2.4

Literacy level by educational attainment of the population aged 16 to 65, document scale, 1994



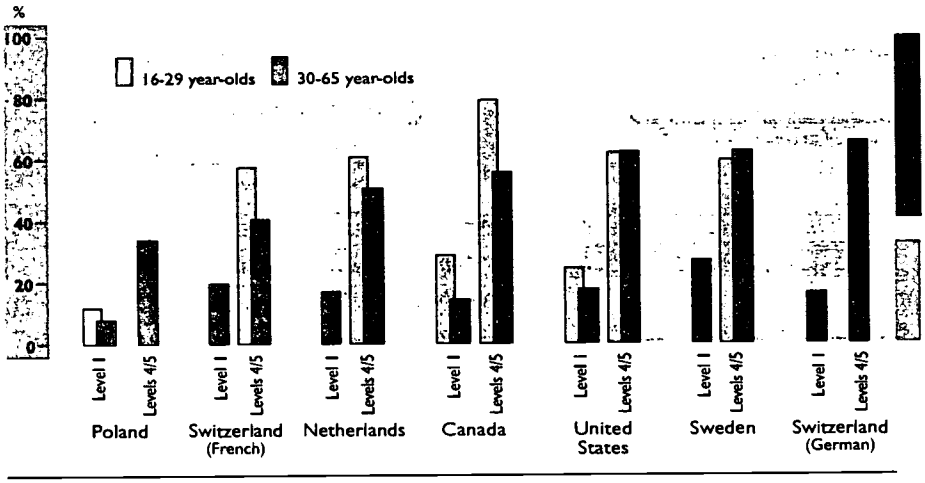
Source: OECD education database; OECD and Statistics Canada, 1995.

* Lower-educated adults are considered adults who have received no formal qualification beyond lower secondary education.

** Higher-educated adults are considered adults who have completed high school or obtained a tertiary-level qualification.

Data for the figure page 71. See also indicator R31 in EAG-Indicators.

Figure 2.5
Further education and training by literacy level, document scale, 1994
Percentage at each level who have participated in education or training in the past year



Source: OECD education database; OECD and Statistics Canada, 1995.
Data for the figure page 72.

Evidence provided in OECD and Statistics Canada (1995) suggests that, in most countries, discrepancies between educational attainment and literacy proficiency increase with rising age. This finding may, in part, be due to changes over time in the quality of initial education, but also suggests that literacy skills once acquired can be lost if they are not used and developed.

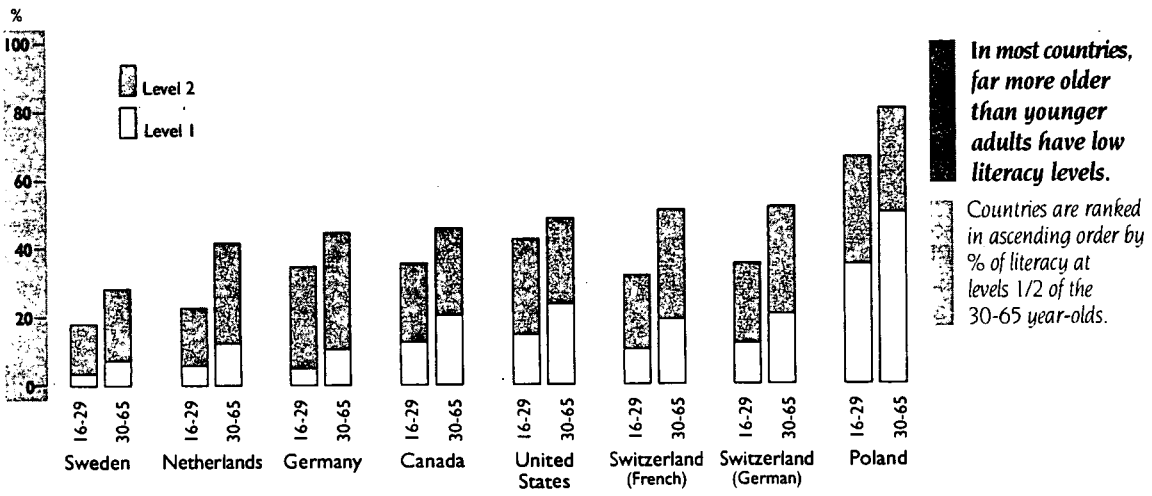
These results show that having the "right" formal qualifications is no guarantee of high literacy, nor are low educational attainment levels necessarily a permanent impediment to achieving it. With the information available, it is difficult to say whether it is the quality and content of basic education in a country such as Sweden that has contributed to the high functional literacy levels observed in that country at all attainment levels, or whether there are institutional or cultural factors that encourage the maintenance and development of literacy skills throughout the life cycle (see Indicator R32 on youth versus adult literacy levels in *Education at a Glance - Indicators*).

(ii) Further education and training

The acquisition of literacy does not end when young people leave initial education. Many of their experiences as adults can enable them to build on literacy skills. In some cases this can involve participation in further education and training.

Figure 2.5 shows that adults in the labour force with high literacy (levels 4/5) are more likely than those with low literacy (level 1) to have participated in some form of education or training during the previous year. It is not possible to calculate the degree to which these learning experiences contribute to high literacy, or whether they simply reflect the higher tendency of more educated groups to participate in further learning. Nevertheless, it is of interest to policy makers to know whether learning programmes are reaching the people who most need to improve their literacy skills. If further education and training add to skill, which can reasonably be assumed, then training markets operate in ways that will enhance the division between poorly and highly skilled individuals.

Figure 2.6
Literacy performance by age, document scale, 1994
Percentage of population in different age-groups scoring at levels 1 and 2



Source: OECD education database; OECD and Statistics Canada, 1995.
Data for the figure page 72.

Two results stand out from Figure 2.5. First of all, there is a remarkable similarity among the OECD Member countries in the survey in terms of both the proportion of the labour force that participates in organised learning activities and the way that participation is distributed by literacy skill. For the younger age-group, people at literacy level 4 or 5 are between two and three times more likely to participate than those on level 1. Secondly, in some countries, people over the age of 30 are less likely to go on courses than the under-30s. The decline in participation is particularly sharp for people with low literacy, who in Canada, Poland and the United States participate much less when they are older. Sweden is the exception. Older Swedes performing at levels 4 and 5 are slightly more likely to be involved in education or training than their juniors.

(iii) Age

To what extent do the literacy skills of the young differ from those of the older population? This question is of particular interest because of the light it can shed on the effects of the changes over time in enrolment, emphasis, structure and content of educational programmes. In addition, since the young age-group considered here (16 to 29 year-olds) have in many cases only recently or not yet entered the work force, cross-country comparisons may provide some insight on the extent to which differences in literacy skills are a product of educational systems or reflect post-schooling effects.

Figure 2.6 shows the proportion of the population in two age groups (16 to 29 and 30 to 65 years) scoring at levels 1 and 2 on the document scale.

In all countries, the proportion of people with low literacy skills is greater for older adults than for younger ones. Much of this gap can be explained by differences in the educational level of younger populations. Expanded participation in upper secondary and tertiary education (see Figures 1.1 and 1.2 above) means that 16 to 29 year-olds are better educated on average than 30 to 65 year-olds, so it is not surprising that fewer perform poorly in terms of literacy. In all countries there are significantly larger numbers of low-literate adults in the

older age-group. The age-related differences in performance are especially large in the Netherlands and Switzerland (French and German). These differences, however, mask the finding that some adults continue to develop their literacy skills as a result of using them in work and other settings, while others lose them through lack of use.

Young adults are more likely to achieve high literacy levels than are older adults. In all OECD countries in the survey apart from the United States, between 9 per cent and 13 per cent fewer adults over 30 than under 30 attained levels 4 and 5 on the document scale. In the United States the proportions of young and older adults scoring at the top two literacy levels is similar (20 per cent), representing comparatively poor performance among the young and high performance in the older age group.

Generally, the distribution of literacy among young people in each country tends to reproduce that observed for older people, albeit at higher levels. This suggests that younger and older people have been subjected to similar influences in each country, even though the under-30s have had limited experience of life outside education. It is possible that persistent characteristics of national school systems transcend reforms introduced over recent decades and outweigh differences in experience in later life. Alternatively, it is possible that wider societal attitudes towards literacy and learning that permeate the school system, the work place and society at large create similarities within each country.

3. Results were obtained in an ordinary least squares regression analysis, standardized solution. The same model was specified for each country. It specified the following variables as predictors of performance on the prose, document and quantitative scales: age/10; age squared, respondents' educational attainment based on highest completed level, mothers' years of schooling, fathers' years of schooling, dummy employed, dummy student, dummy education or training in the last year, literacy practice at work, and literacy practice at home. The models captured up to 48 per cent of the variance in the dependent variables.

COMPARING THE IMPORTANCE OF FACTORS ASSOCIATED WITH LITERACY

The significance of the International Adult Literacy Survey is not just that it demonstrates the feasibility of assessing literacy in a reliable way. It also makes it possible, for the first time, to examine the association between literacy performance in the adult population and other determinants of economic and social success for individuals and societies. The results can be used to detail the relationships between individual literacy, educational attainment, labour market participation and employment, and literacy practices at work, at home and in the community.

There is not space here for a detailed analysis of these relationships. However, a number of significant results obtained in analyses comparing the importance of respective influences[3] are worth noting, as examples of the kind of insights that can be gained by simultaneously analysing the importance of several variables in such a survey:

- Education is clearly the most powerful predictor of literacy. This involves not only the level of educational attainment of the respondents but also the attainment of the parents or the family of origin. Father's education tends to be the more important factor in most countries; in the United States, however, father's and mother's education seem to carry about the same weight.
- After educational attainment, the significantly predictive factors in determining literacy proficiency are the literacy environments at home and at work. The richness of the literacy-supporting materials in these environments, and the frequency with which they are used, appear to have more decisive influences on proficiency than either gender, labour force status or adult education and training. In some countries, the effect of a literacy-rich work environment outweighed the effect of the home environment – by a factor of four in the United States. Literacy proficiency increases when employers demand and reward literacy skills.
- Age is a major predictor of literacy performance in most countries, with increasingly negative effects with increasing age. The relationship with age is less clear-cut in Switzerland and the United States than in other countries.

- Gender does not seem to influence the proficiency scores much once the level of educational attainment has been accounted for, but there are exceptions. Women perform significantly worse in Sweden and Poland – interestingly, the countries with the best and worst results overall.
- Adult education and continuing vocational training are related to literacy performance, but the link is much weaker than with initial schooling. It is strongest in German-speaking Switzerland and Canada.

Literacy appears to improve with practice, and deteriorates if not used. The behaviour of each individual can thus help determine not only the acquisition but also the retention and further development of that person's literacy. People with a given level of education are, on average, more literate if they use their ability to read and employ numbers at work and in their daily lives. But the proportion of people who write reports and letters at work, or who read books and newspapers at home, varies considerably between countries. The clear message to employers and governments is that measures to improve adult literacy will be most effective if they are part of a wider effort to sustain and increase the day-to-day use of reading, writing and learning.

DISCUSSION AND POLICY CONCLUSIONS

Education policy in many countries has sought to encourage flexibility and accountability in the school system, to some extent by loosening central hold over inputs, opportunity and educational content. Many countries have increasingly come to direct attention to the specification of goals for education and the setting of performance standards for students, schools and education systems as a whole.

Valid and reliable measures on outcomes at the student, institutional and system levels are critical for the success of these strategies. International surveys of educational achievement can be a valuable instrument for education policy analysis by providing a realistic reference framework for educational outcomes. These international comparisons can help policy makers to identify successes to build on and the weaknesses to be remedied.

Both of the studies analysed in this chapter reveal important differences in educational outcomes among countries that operate under similar demographic and socio-economic conditions. But they also reveal that disparities in achievement within all countries, at both the top and the bottom end of the scale, still present a formidable challenge to everyone concerned with education. At the same time, by identifying factors associated with these differences, they provide valuable evidence to policy makers about the kind of measures that are likely to reduce them. For example, in view of the continued importance of the gender gap in science achievement, an important policy objective could be to secure a sufficient supply of the required skills and knowledge among both sexes, to reflect the growth of employment in high-technology, science-based sectors.

Indicators ranking countries on relevant aspects of performance provide a legitimate input for benchmarking, standard-setting and evaluation purposes. But their production is not the sole or even the most important reason why countries agree to undertake jointly complex comparative studies like those described in this chapter. The most important reason is that policy makers expect the surveys to yield insights into the mix of factors which contribute to the development of competency, and how these factors operate similarly or differently among the countries. For such studies to meet these expectations, several conditions need to be met in comparative surveys:

- The results must be reliable, valid, comparable and interpretable;
- Outcome information must be produced and reported in a timely fashion;
- Outcome data must be related directly to system goals and educational processes;
- The outcomes must cover crucial skills that cross curriculum areas as well as subject-based knowledge.

The first International Adult Literacy Study has established an important precedent for surveys that extend beyond curriculum-based skills. Literacy is thought to be a powerful determinant of the innovative and adaptive capacity of the labour force. The very definition of literacy needs to change with the times.

Even though the citizens of OECD countries are often better educated and live in more literate environments than in the past, the increasing complexity and demand for literacy in everyday situations means that a large number of adults find their literacy skills insufficient in daily life and at work. So even those judged to be literate by yesterday's standards may need remedial education or skills upgrading tomorrow. This fact needs to be recognised as much by individuals themselves as by governments and educators. The IALS results showed a low awareness among those with low literacy that they have a problem. For example, despite facing a higher risk of unemployment, members of this group do not on the whole recognise literacy as a factor that limits their job prospects.

In future, the international knowledge base will need to be based on a combination of:

- instruments for the comparative evaluation of the performance of education systems, giving clues to ways in which policy objectives can better be met; and
- instruments for the assessment of how well the labour force is equipped with skills and knowledge needed for life.

To integrate these elements into a single knowledge base, evidence of competence in the labour force will need to feed back into knowledge about student achievement in ways that prompt improvements of education and training systems. This will require a better understanding about the relationship between school learning and the ongoing development of competences useful in adult life.

The International Adult Literacy Survey has been important in extending to the investigation of individual outcomes some of the principles already established in other OECD work on education indicators. It has created a collaboration between organisations and individuals concerned respectively with research, statistics and policy. It has shown how countries with common but not identical concerns can work together. It is to be hoped that equally effective mechanisms for the regular collection of student achievement indicators can now be found, to create a fuller understanding of a wide range of educational outcomes, without unwarranted delay and at reasonable cost.

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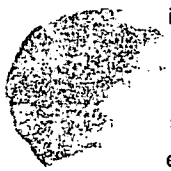
CHAPTER 3

TRANSITION FROM SCHOOL TO WORK

SUMMARY

Countries put an increasing emphasis on improving the transition from education to employment, not just for the disadvantaged but for all young people. A longer, more complex transition than existed in the past provides opportunities for combining learning and work, as well as increasing the risk of unemployment and other forms of exclusion. Managing the transition no longer means simply finding ways of initiating young people into work and teaching them specific skills, but also helping them to become effective learners throughout their adult lives.



• The main period of transition averages about six years in OECD countries. It has not increased in the past decade, but it has been delayed – starting in the late teens and ending by the mid-twenties.

• During this transition, many young people are simultaneously students and workers – up to half of 16-19 year-olds in some countries although much fewer in others. The biggest growth has been in full-time students working part-time rather than as apprentices. More attention could be given to ways of linking this work experience to student learning.

• Young people who drop out without finishing upper secondary education face severe long-term risks on the job market. Although youth unemployment has fallen in some countries, a growing number of teenagers, particularly women, drop out of both the labour market and education.

• In some countries, young people continue to build skills and competences after they enter work; in others they appear to lose them.

• Vocational preparation that is well-supported by employers is less likely to be followed by unemployment than either general education or school-oriented vocational education. But everywhere there is a need to reduce divisions between general and vocational education, and to improve pathways between different kinds of programme.

A comprehensive policy for the transition from education to employment needs to be based on an understanding of the changing pattern of school leavers' experiences. Policies to enhance learning at work require close partnerships with employers and others. At the same time, education systems need to remain as flexible as possible to allow young people to find their own pathways between different kinds of education, training and work. During 1997 and 1998, an OECD thematic review of the transition from education to work will be looking in more detail at how these pathways are organised and followed in practice, and at what governments can do to improve the quality of learning during the transition.

A CENTRAL PRIORITY FOR OECD COUNTRIES

Improving the transition from school to work has been a policy priority for OECD member countries for two decades. The concern has arisen in particular because of problems faced by early school leavers and young people who lack skills, in the face of high youth unemployment. But it is now recognised that the transition can pose problems for young people across a broad span of educational backgrounds, and not just for those who are unemployed.

Economic and social change has made the process of full integration into adult society more difficult and prolonged. It is not as clear as in the past where exactly this process begins and ends. In most countries and for most young people, transition is no longer merely a process of crossing a short bridge between full-time education and a stable full-time job. Rather it is part of a continuous journey that starts well before students leave school and does not end when they first enter work. This change has come about largely because of the particularly vulnerable position of young people in a labour market in which stability has decreased for workers of all ages.

The move from initial education into employment cannot be seen in isolation from other transitions that young people will need to make throughout their lives. The OECD's 1994 *Jobs Study* identified three main areas where reform is needed to secure a better relationship between education, training and the labour market:

- the quality of initial education;
- the transition from initial education to employment; and
- continuing investment in learning during adult life.

High-quality initial education and post-school learning opportunities are important in helping young people anticipate and cope effectively with change. The process by which young people move from school to work can influence the extent to which the benefits of initial education are retained, and to which opportunities for new learning are opened up. So this transition can be seen as the linchpin of a process of lifelong learning, rather than merely as a difficult stage of life which young people need to be helped through.

A strategy for lifelong learning requires active collaboration among a wide range of agencies and groups. Many of the factors that determine the success or otherwise of young people's entry into work are beyond the direct influence of education policy makers alone. A response needs to be co-ordinated between education and labour ministries, and among government, employers, trade unions and community groups.

This chapter uses data from *Education at a Glance - Indicators* and other OECD sources to document the changing nature of the school to work transition. It suggests implications for policy in terms of the strategies needed to make the transition smoother and more helpful in meeting young people's long-term learning needs. Indicators cannot themselves provide policy solutions in this complex area, but they can inform policy discussions by drawing attention to young people's changing experiences.

WHAT ARE TEENAGERS DOING: LEARNING, WORKING, BOTH OR NEITHER?

An overview of young people's education and work activity between the ages of 16 and 19 provides a starting point to understanding the transition. Figure 3.1 shows how many were in education/training, in work, in both and in neither in 1984 and in 1994. Here, an average is shown for 15 OECD countries; country breakdowns for parts (A) and (D) are given in the following two sections of this chapter. This way of presenting data covers all the activities of an age group in a single analysis, rather than looking at educational and employment activities separately.

The biggest changes over the decade were a growth in the proportion of teenagers remaining in full-time education, and a reduction of those employed who were not also studying. Full-time education has now become the principal activity of 16 to 19 year-olds, with full transition to work being delayed until a later age. Employment

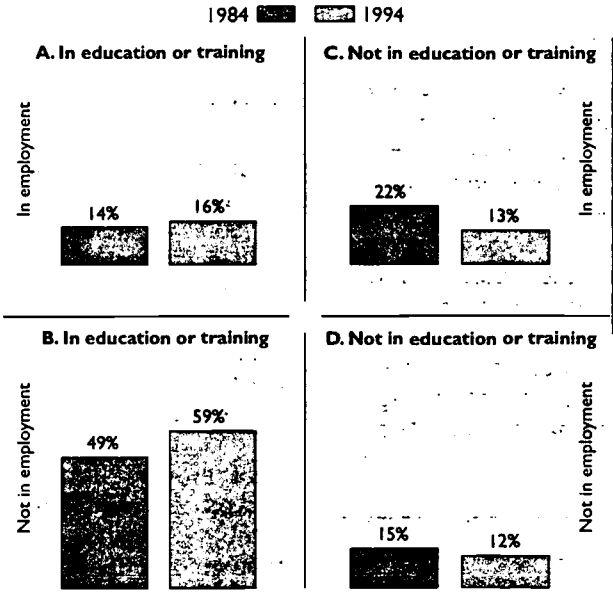
without studying, which was once the main activity of 16 to 19 year-olds in many countries, is becoming progressively rarer.

Two other broad trends are evident from Figure 3.1. First, the proportion of 16 to 19 year-olds who combine education or training with employment has risen from an average of 14 per cent to 16 per cent. Although this rise is not dramatic, in some countries it has been much greater, from a higher starting point, than average. In Australia, the proportion in this group rose from 20 per cent to 26 per cent, in Canada from 23 per cent to 30 per cent, in Denmark from 39 per cent to 51 per cent and in the Netherlands from 22 per cent to 33 per cent. Overall, the growth in the proportion who were combining studying and working, plus the even larger rise in the proportion studying but not working, meant that by 1994 on average 75 per cent of 16 to 19 year-olds were enrolled in education or training, compared to 63 per cent a decade earlier. This has been a substantial rise in educational participation by any standards.

Figure 3.1

Education and employment activities of 16-19 year-olds

% of 16-19 year-olds in 1984 and 1994 (15-country average)



Source: Labour force survey data for 12 European countries, Australia, Canada and the USA compiled for OECD *Employment Outlook* 1996. The countries concerned are listed in Figure 3.2.

Notes: To ensure that the data are broadly comparable the analysis in this chapter has sometimes required the use of classifications and terms that differ from national practice. Details of the data sources and assumptions are in Chapter 4 of OECD *Employment Outlook* 1996. Apprentice-type programmes are classified in the "In employment and in education or training" category. For the Netherlands and Spain 1987 is used instead of 1984; for Portugal 1986 is used instead of 1984; for the USA 1993 is used instead of 1994. German data for 1984 refer to the-then Federal Republic and for 1994 to the reunified country.

The growing tendency of teenagers to start the transition by combining work and education is symptomatic of a trend that is common to people leaving full-time education in their 20s. Among teenagers the most common ways of combining work and education are where full-time students hold part-time jobs, and where they hold apprenticeships. Since these two particular forms of combining learning and working are likely to be very different in terms of their consequences for entry into working life, they are separately identified in the analyses that follow.

A welcome trend identified by Figure 3.1 is a decline in the average proportion of 16 to 19 year-olds who are neither in education/training nor in employment: from 15 per cent in 1984 to 12 per cent in 1994. Such teenagers are likely to face particular risk of long-term economic and social exclusion, and it is encouraging to record a general decline in their incidence, linked to higher participation in education. However, as shown in the breakdown of these data later in this chapter, not all countries have experienced a decline, and the position of young women in particular has worsened in a number of cases. In Italy, Portugal and Spain, over 15 per cent of 16 to 19 year-olds are now in neither work nor education.

Most late teenagers now remain in education, and very few have full-time jobs. Every 16-19 year-old appears in one of the four categories, which therefore sum to 100%.

A LONG, VARIED TRANSITION

The process of moving from being a non-working student to being a non-studying worker takes different forms and lasts different lengths of time in various OECD countries. Two indicators of interest to policy makers in understanding country differences, as well as recent developments, are:

- the age-span over which the transition typically occurs; and
- the ways in which work and education are combined during the transition.

Figure 3.2 provides estimates of the broad span of age over which the transition takes place, and how this changed between 1984 and 1994. There is no single time at which the transition from education to employment can be said to begin or to end, so any definition is bound to be arbitrary. But for the purpose of comparing the length of the process over time and across countries, the following definition of the typical period of transition in each country is adopted here:

> From the age at which young people are no longer predominantly studying without working, to the age at which the majority are working without studying.

More specifically, the transition has been assumed to start at the first single year of age at which fewer than three-quarters of young people in the country are in education and not employed. It is assumed to end at the age where more than half are employed and not enrolled in education or training programmes outside their work environment. (The reason for not looking at three-quarters of the age-group at this latter stage is because in countries where lower proportions of women work, there is never an age where three-quarters of the population are working. In fact, much of the variation among countries in the length of transition for young people as a whole is accounted for by inter-country differences in the length of transition experienced by young women.)

This indicator shows that:

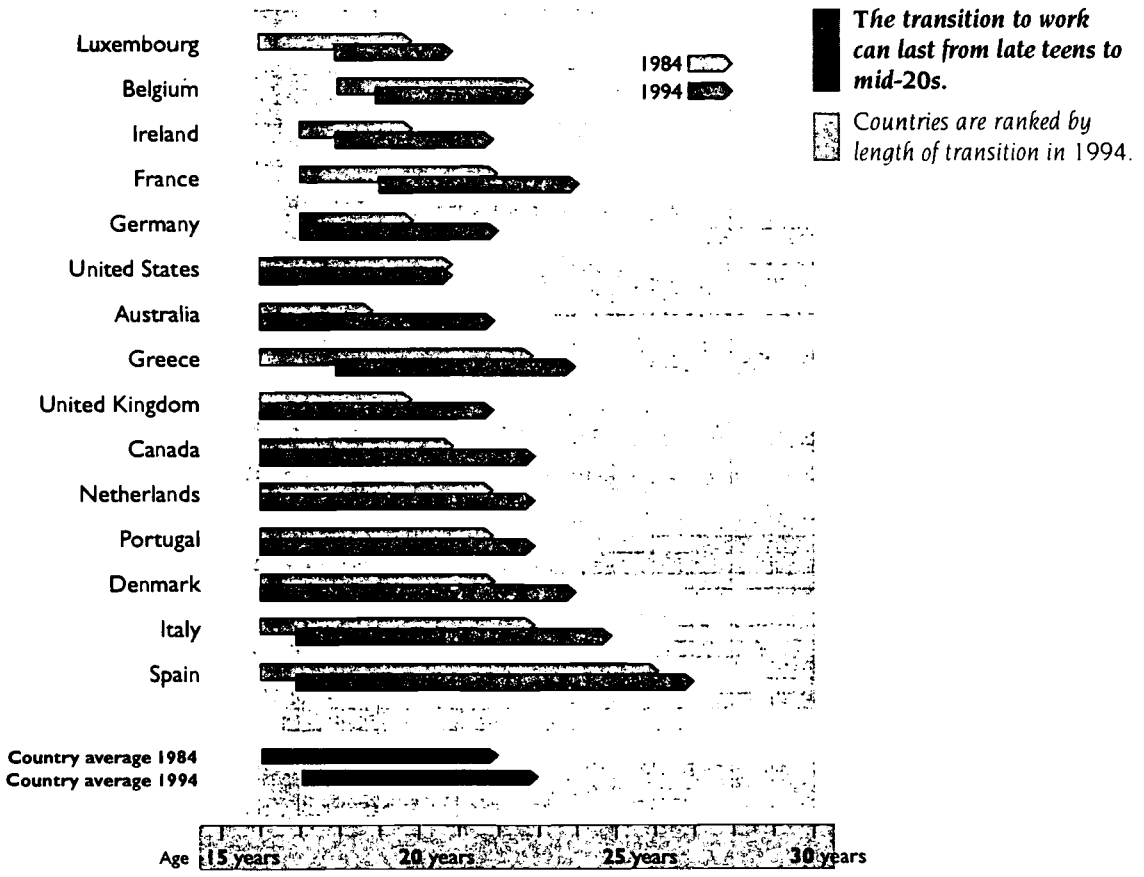
- Transition can be a lengthy process. On average among OECD countries it takes around six years between the time that most young people are studying without working and the time that most have fully left education to go into jobs.
- In the past decade, the transition has not got longer on average, but it has been delayed by one year, starting on average at 17 rather than at 16, as young people spend longer periods in secondary school.

Given the difficulties experienced in youth labour markets in many countries, it may seem surprising that the length of transition has not increased since the mid-1980s. But in many countries, the world of work had already changed greatly by that time, and the six years of transition identified through this indicator would have contrasted strongly with the norm of going straight from secondary education into full-time work a generation previously. Moreover, the standard international definition of what it means to be in work does not capture the difference between transitional and settled employment. Anybody who works more than one hour a week in paid employment or in a family enterprise is considered to be employed. It may well be that the length of time taken to get a stable job has increased since 1984, but that many people find themselves in casual or temporary forms of work before that stage.

Another important characteristic of the transition process is the extent to which young people combine education and work before starting full-time employment. The fact that transition still starts before the end of secondary education in most countries (Figure 3.2), even though most young people now obtain an upper secondary qualification (Figure 1.1) is explained by the growing numbers who are both studying and working. Figure 3.3 (p.46) shows in more detail how many 16 to 19 year-olds there are in this category – broken down by country and by whether or not the work and study are combined in an apprenticeship scheme.

Across the OECD countries for which these data are available, the principal growth has been not in apprenticeships but in participation in other forms of education and training combined with employment. In general, the proportion in apprenticeships has fallen in the countries that had reasonably large apprenticeship systems. On the other hand, the growing phenomenon of teenagers who work

Figure 3.2
The length of the transition
Age range of transition from school to work*



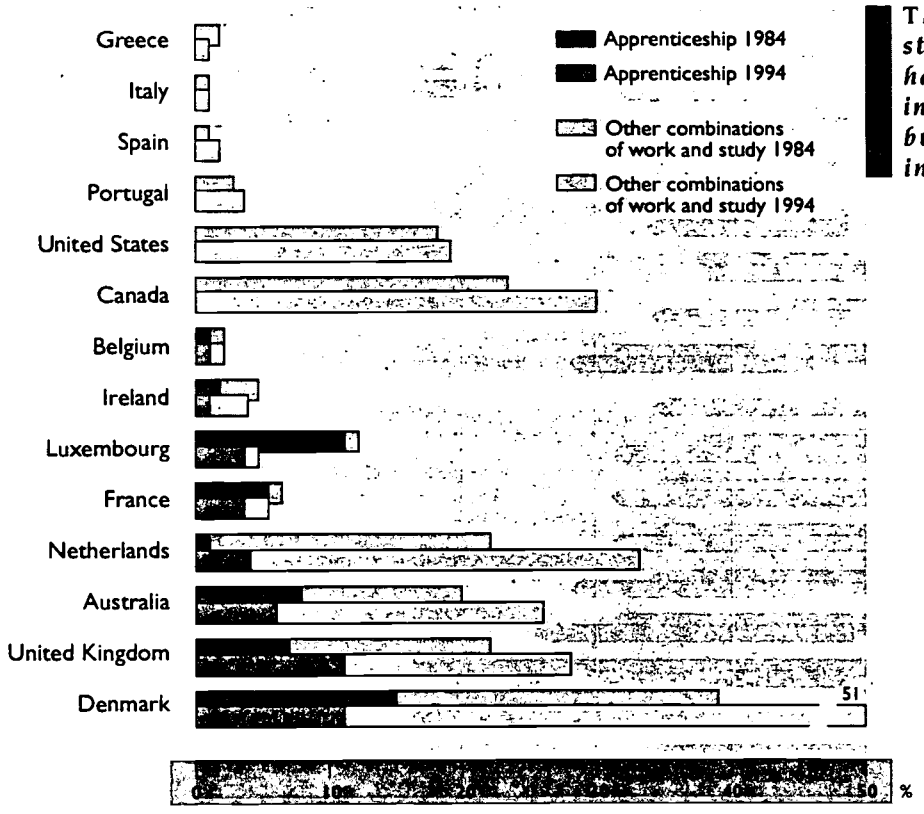
Source and Notes: As for Figure 3.1.
* Defined as the age-range: starting in the first year of age in which fewer than 75% of the population are in education without working; ending the first year of age in which 50% of the population are in work but not in education.
Data for the figure page 72.

part-time while students has created a blurring in the school-to-work transition process.

The other striking feature of Figure 3.3 overleaf is the wide variation among countries in the proportion who combine work and education. In 1994 the figure ranged from just 1 per cent of young Greeks and Italians to over half of young Danes. What the figures do not describe is the influence of this intermediate phase between full-time education and full-time employment on young people's attitudes to or performance in either the working or the learning side of their lives.

Different countries have different conceptions of the transition and the role of combined learning and working within it. German-speaking countries have adopted a model of gradual transition within a highly-structured framework. Apprenticeship-type programmes give young

Figure 3.3 **Working while studying**
Proportion of 16-19 year-olds combining work with education/training, 1984 and 1994



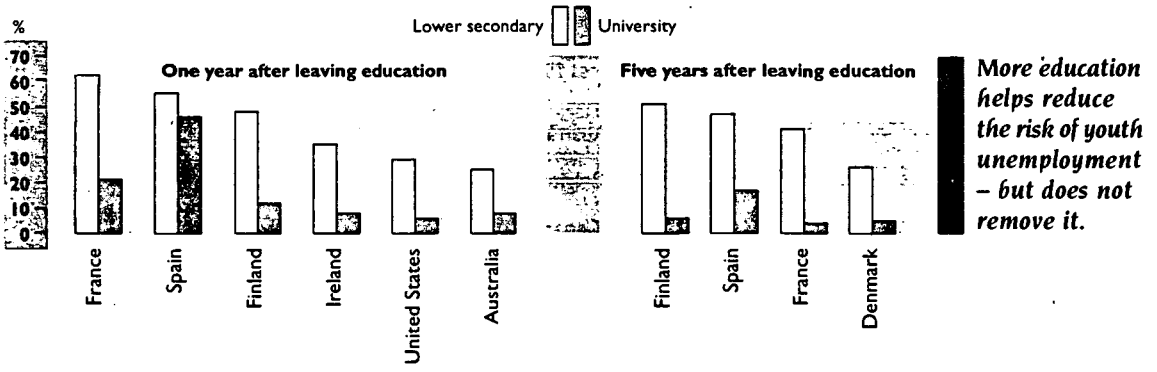
The number of student-workers has grown rapidly in some countries, but remains small in others.

Source: As for Figure 3.1.
Note: "Other combinations of work and study" excludes training that is conducted only in the work environment. For other notes, see Figure 3.1.
Data for the figure page 72.

people a chance to learn directly about the world of work while still being able to pursue more theoretical studies on day release. At the other extreme, such countries as Ireland and Japan have had systems with discrete boundaries between the period of learning and the subsequent period of working, in which school or university leavers are recruited on the strength of their educational results and have little or no subsequent contact with formal educational institutions. (There are however critical variations within this group of countries in the degree to which workers are subsequently trained and developed by their employers.)

In between, there are a number of countries in which combined work and education is becoming more common, but not always within a structured framework. Australia, Canada, Denmark and the Netherlands have seen the biggest increases in the proportion of teenagers who combine education and work other than through an apprenticeship. In some cases, work mixed with study arises from deliberate initiatives to develop work experience. In many others, it is driven by the need for young people who stay longer in education to make ends meet. Australian research has found that male students are more likely to hold part-time jobs and to

Figure 3.4
Unemployment and educational level, 1994
Unemployment rate of recent leavers from lower secondary and university education (in %)



Source: OECD education database.
Data for the figure page 73. See also indicator R24 *in* EAG-Indicators.

work longer hours than female students, and that those male students who have jobs achieve worse academic results[1]. In this sense, participation in part-time work may be another indicator of separation from school for some male students. The influence of working part-time while studying on students' long-term development is an area for further research and policy formulation.

Educators and policy makers need to look not only at idealised models of vocational preparation, but also at the world as it is. The recent trend in many countries has been towards an increase in unsystematic forms of overlap between learning and working. In not all countries have educators fully recognised the growing incidence of part-time work by full-time students. Neither is there much evidence of a debate on whether school curricula or operating procedures need to change to accommodate – and possibly benefit from – this phenomenon.

THE RISK OF EXCLUSION

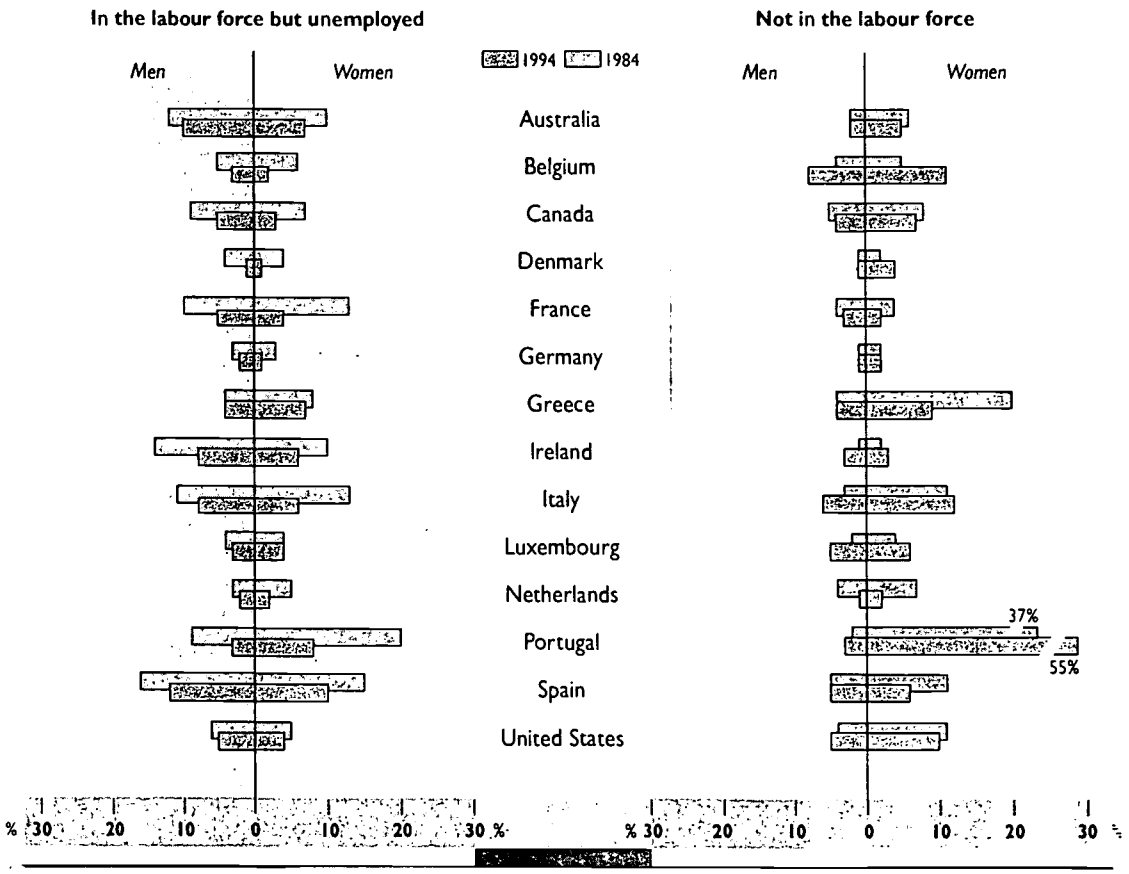
In societies where it is now the norm to complete upper secondary education (see Chapter 1), those who fail to do so are at serious risk of economic and social exclusion, not just in their teenage years but throughout their adult lives. This is made clear by *Education at a Glance - Indicators* data that record unemployment rates for school leavers from different levels of education one year and (for a few countries) five years after leaving education. Figure 3.4 reproduces these data for the two ends of the educational spectrum, early school-leavers and university graduates.

Notwithstanding the care that is needed when interpreting youth unemployment rates (see box, page 49), it is clear that those who leave before completing secondary school are more likely to be unemployed. This seems to be particularly the case in countries that place a heavy emphasis on general education at the secondary school level, and where a secondary school certificate is considered a minimum requirement for entry into most jobs. That is not to say that education is a passport to employment. In two countries that supplied data, France and Spain, unemployment rates remain high for university graduates one year after graduation, and in Spain they also remain high after five years.

Given the risks involved in early exit from education, it is particularly worrying that on average some one in eight 16 to 19 year-olds in OECD countries are neither in work nor in education or

1. Robinson, L., and Long, M., 1992: "Student workers. New data on gender and educational differences". *Youth Studies Australia*, Spring, pp. 14-20.

Figure 3.5 **Young people in neither education nor employment**
Proportion of 16-19 year-olds



Source and Notes: As for Figure 3.1.
Data for the figure page 73.

Teenage unemployment has fallen on average, but more school leavers have dropped out of the labour force completely.

training. Although Figure 3.1 showed that the proportion of teenagers in this position fell from 1984 to 1994, there remains cause for concern. Figure 3.5 shows that the proportion is high and/or rising in some countries. It also shows that young women are more severely affected than young men. There is a striking difference between, say, the 2-3 per cent of young Danish, Dutch and German men who are in neither education nor work, and the figure of over 15 per cent for young women in Greece, Italy, Portugal and Spain.

Figure 3.5 moreover, makes an important distinction between non-workers who remain in the labour force (that is, those defined as unemployed) and those who are out of the labour force altogether. In most countries, the young people who are registered as unemployed have access to a variety of active labour market programmes that offer some prospect of assisting them to gain jobs. Although evaluation of such programmes suggests that they are not always effective in helping unemployed people into work[2], at least they provide a structured form of contact with the wider society. People who leave the labour force entirely are even more

2. OECD, 1996: *Enhancing the Effectiveness of Active Labour Markets Policies*. Paris.

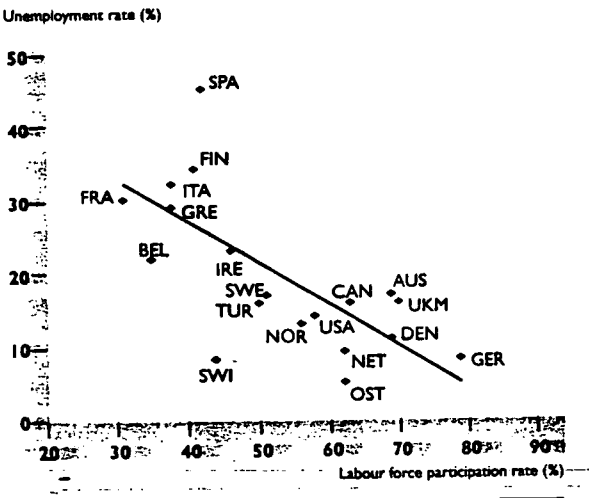
YOUTH UNEMPLOYMENT: AN ELUSIVE MEASURE

In many countries, youth unemployment is said to be at worrying levels – sometimes running at one-third or more. But these figures need to be treated with care – especially in international comparisons.

Youth unemployment is officially measured as a proportion of young people in the labour force, i.e. those in work plus those looking for work. But the youth labour force represents very different proportions of the total age-group in different countries – varying from 31 per cent of 15 to 24 year-olds in France to 79 per cent in Germany. So "a third of the youth labour force is unemployed" can mean anything from one in ten to one in four of all those in a particular age-range.

Where more young people remain in education due (partly) to poor job prospects, youth unemployment may rise as a proportion of the smaller labour force, even though a similar number are looking for work. Figure 3.6 shows that countries in which fewer young people enter the labour market tend to have higher rates of youth unemployment. Taken as a proportion of the total age-group, youth unemployment rates therefore vary less between countries than if they are taken as a proportion of the labour force. For example, only 14 per cent of American 15 to 24 year-olds in the labour force are unemployed, compared to France's 30 per cent. But since the proportion of this age-group who are in the labour force is nearly twice as high in the United States, unemployment as a percentage of all 15 to 24 year olds is 9 per cent in France and 8 per cent in the United States.

Figure 3.6
Youth unemployment and labour force participation
Unemployment and labour force participation rates, 15-24 year-olds



Youth unemployment rates are higher where fewer young people look for work.

Source: OECD database
Data for the figure page.73.
See also indicator R21 (B) *in* EAG-Indicators.

Apprenticeships can also cloud interpretation. Labour market statistics generally count apprentices as in the labour force and employed. Therefore countries with a high proportion of apprentices tend to record lower youth unemployment, other factors being equal.

One lesson to be drawn is that where, for example, most teenagers delay entry to the labour market, measures of youth unemployment for people in their 20s become the most relevant indicators of the success of those leaving education in finding work. In countries with high educational participation among 20 to 24 year-olds, the unemployment rate for 25 to 29 year-olds may even be the most useful one.

vulnerable to social and economic exclusion. This is the group where women non-workers are particularly concentrated. In considering programmes for the excluded, policy makers therefore need to think about the future of people who are not presently registered as looking for work as well as those who are. There is also a need to consider when designing benefit systems what factors can cause young people to withdraw from the labour market altogether. As the OECD *Jobs Study* argued, there needs to be an emphasis on active integration into the labour force rather than passive receipt of benefit. But if excessively stringent availability for work criteria cause young people to leave the labour force entirely, they will be at even greater risk over the long term.

LEARNING AFTER ENTERING WORK

Employment brings the opportunity not just to earn a living, but to build self-confidence, to apply previous learning and to acquire skills and knowledge. Entry-level jobs vary in the extent to which using and developing knowledge forms part of the working environment. There is evidence that where young people's initial employment does not challenge them to continue learning, previously acquired skills and knowledge fade. Furthermore, it appears that there are national differences in the extent to which "learning jobs" are available to young people.

Evidence of this comes from the 1995 International Adult Literacy Survey (IALS), which analysed, for seven OECD countries, the relationship between adult literacy levels and age, educational background, labour force status, and the extent to which work and non-work settings required literacy to be used. A discussion of the findings is included in Chapter 2 above. In the context of school-to-work transition there were several key results:

- Literacy and numeracy skills can be an important influence on obtaining, and holding, a job. In general, the young unemployed have lower literacy and numeracy skills than young workers; the skills gap is particularly wide in Germany and the Netherlands. Since there is also evidence that skills fade when they are not being used, two resulting policy objectives are particularly evident: to ensure that the education system provides all young people with adequate literacy and numeracy skills in the first place; and to ensure that the young unemployed have on-going educational and training programmes to maintain or improve their skills base.

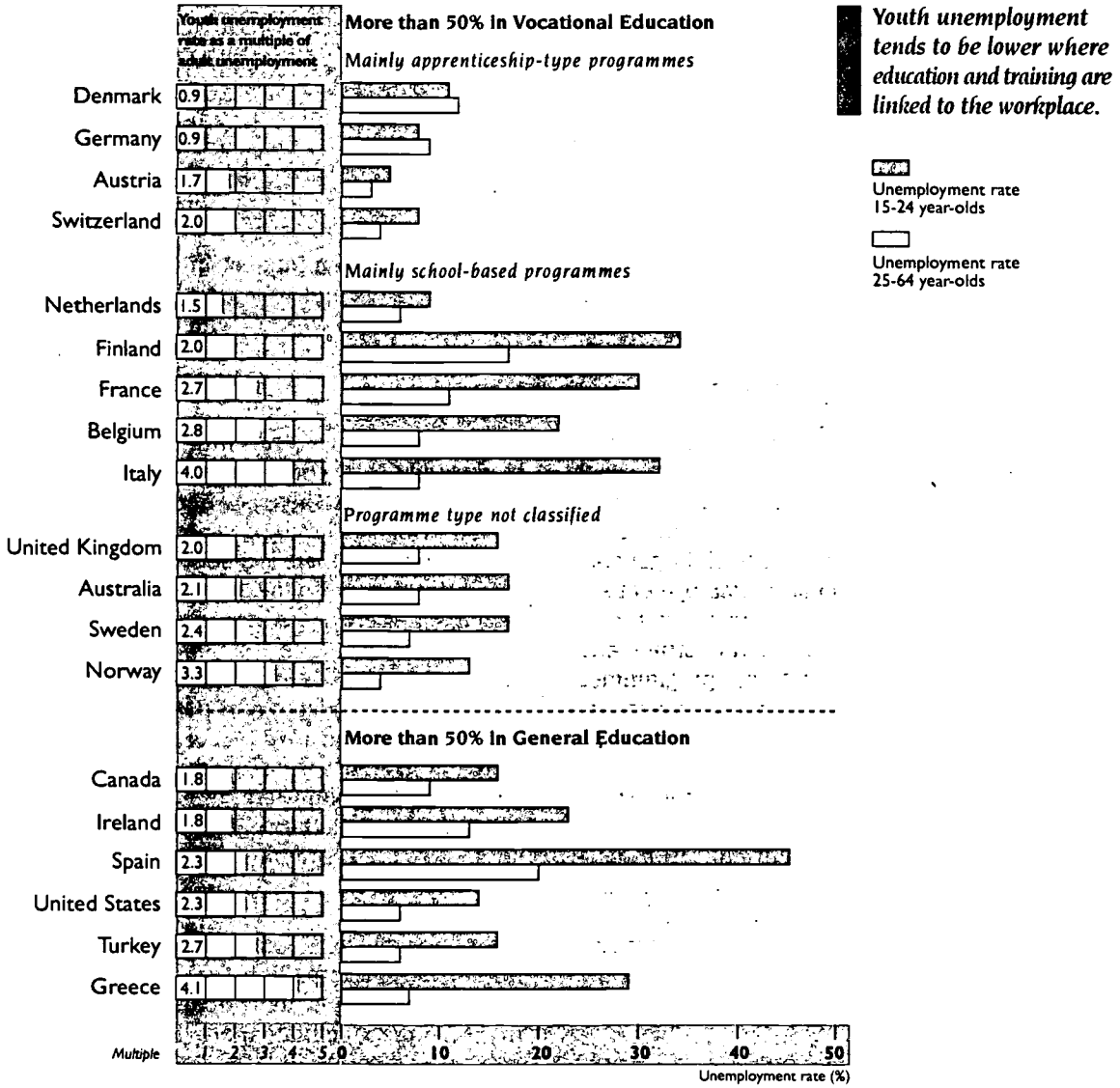
- Post-school activities that are rich in learning opportunities can help to overcome some of the disadvantages of limited formal education. The survey found that significant numbers of adults who had left school early had literacy levels more commonly associated with high school or even university graduates. This phenomenon was particularly common in Germany, the Netherlands and Sweden, countries where both work and non-work environments were found to place relatively high demands on people to maintain and develop their skills.

- Literacy and numeracy skills that are not regularly used tend to diminish over time. Adults with high levels of formal education qualifications, but who are not working and living in environments that require and support literacy development, perform at relatively low literacy levels.

- Workers who participate in employment-based training have higher literacy skills than those who do not. Literacy skills can help determine access to training opportunities; and training can be an important stimulus to further skill development.

In countries where young people move directly from initial education and training to relatively secure long-term employment, they are likely to have more opportunities to develop their skills. Where young people hold many short-term and part-time jobs before finding secure employment, it may be more difficult for them to build on previous learning. The OECD's 1996 *Employment Outlook* found that on average, young Americans aged 25 have held some seven jobs since the age of 16, or almost one per year. This is two to three times the average number of previous jobs held by 25 year-olds in Germany, for example.

Figure 3.7 **Relative youth unemployment by school system type, 1994**
Proportion of upper secondary level enrolments



Source: OECD education database.
Data for the figure page 73. See also indicators P3 *and* R21 *in* EAG-Indicators.

The IALS report concludes that adult literacy depends on what people do as adults as well as what they have learned as students. The implication for policy makers is that education and training programmes can only be part of a strategy to improve worker skills. Policies to support the development of young people as they pass into work need also to consider whether work is structured in a way conducive to continued learning. There are limits to the influence of government action on its own in this respect, and the issue needs to be confronted in partnership with employers.

POLICIES FOR THE TRANSITION: BEYOND THE DESIGN OF VOCATIONAL EDUCATION

The trends identified in this chapter show that the transition from school to work is often a lengthy process with a variety of influences on the development of young people's skills and their integration into employment. The nature of vocational education and training is an important influence, but not the only one.

The barriers between vocational and general education are starting to break down, with the growing recognition that young people need to develop the capacity to learn continuously rather than simply learning a specific set of job-related skills.

Figure 3.7 on the previous page classifies countries according to whether most upper secondary school pupils are in vocational and technical education programmes and, if so, whether they are mainly apprenticeship-type or school-based. In general, lower ratios of youth to adult unemployment are found in countries with strong apprenticeship-type systems – Denmark, Germany and Austria – and where workplace-based vocational programmes form a major part of upper secondary education, such as in the Netherlands. It is noteworthy that the ratio of youth to adult unemployment rates is little different on average between countries where vocational education is primarily school-based and those countries where general education programmes dominate at upper secondary level. It seems that vocational programmes at school do not necessarily improve average job prospects unless there are strong links to the workplace and employer support.

Unemployment should not be the only measure used of the "success" or otherwise of the transition to working life. This is especially so when the interpretation of youth unemployment rates can be problematic (see box page 49). Other important indicators include the time taken to find a job, earnings, and job satisfaction. Efforts to develop internationally comparable data in these areas need to be strengthened.

A key factor in the success to date of apprentice-type systems has been the close alignment of curriculum, assessment and certification with the occupationally-based structure of the labour market that young people enter in these countries. These conditions have developed in a particular historical context and are difficult to reproduce elsewhere. Furthermore, even in the countries concerned there is considerable debate about the future shape of initial education and training, with many concerns being raised about the cost and inflexibility of work-based systems, particularly in an increasingly dynamic economic environment.

There is increasing interest in OECD countries in the more general concept of the alternation of education and work, of which the traditional apprenticeship is only one form.

In seeking ways of improving the alignment between education, training and the labour market, all OECD countries face similar difficulties and tensions. There is a demand for general skills and for high levels of general education, but at the same time there is a need for learning that is directly relevant to the work setting. Employer support is likely to be strongest for vocational programmes that do not lead on to further education, but such programmes may attract less support from students and parents. Disadvantaged youth, and in particular those at risk of dropping out of both education and the labour market, often require specially tailored programmes, but the very act of tailoring can stigmatise such programmes and blunt their effectiveness.

A common thread in policy initiatives to improve school-to-work transition, which looks beyond the development of individual programmes, is the attempt to facilitate more flexible pathways between different kinds of work and learning. OECD countries, in different ways and at varying speeds, are moving to create systems in which:

- there is less separation between general and vocationally specific learning on the individual programmes;
- following one course of study does not foreclose another: in particular, pathways between more general and more vocational routes are kept open;
- there are opportunities after entering work to return to full-time education as well as to

undertake part-time continuing education and training;

- certification is portable between different learning environments;
- there are financing mechanisms that facilitate access by disadvantaged groups to continuing education and training.

No country has yet attained all of these objectives. But a better understanding of the routes that young people actually take, as they went an often circuitous route from education towards a stable position in the workforce, can help policy makers find ways of better helping young people prepare for a dynamic and challenging future.

THE OECD PRIORITISES THE TRANSITION

The OECD has placed considerable emphasis on the themes of this chapter in recent years. Major publications have included:

- The OECD *Jobs Study* (1994) which identified the improvement of transition from school to work as a central priority for member governments;

- *Vocational Education and Training: Towards Coherent Policy and Practice* (1994), which examined the linkages between vocational and general education and training in meeting new economic needs and young people's aspirations;

- *Our Children at Risk* (1995) which reviewed programmes and strategies to improve the transition to work for young people from disadvantaged backgrounds;

- *Lifelong Learning for All* (1996) which elaborated the role that school-to-work transition can play in implementing lifelong learning;

- *Pathways and Participation in Vocational Education and Training* (1996) which analysed the organisation of, and participation in, different pathways through initial vocational education and training;

- *Employment Outlook* (1996) which included an analysis of changes in youth labour markets in OECD countries; and

- *School to Work Transition in OECD Countries: A Comparative Analysis* (edited by D. Stern, forthcoming, Hampton Press USA) which analysed different national approaches to school-to-work transition.

In 1997 and 1998 the OECD will conduct a thematic review of the transition to working life in selected OECD countries that will include a focus on the responsibility of governments for improving the transition and the scope for action. ■

CHAPTER 4

TEACHERS' PAY AND CONDITIONS*

SUMMARY

To be effective, education systems above all need high quality, well motivated teachers. As the generation of teachers recruited in the baby-boom years approaches retirement, it will be crucial to make the profession attractive to new entrants. But since teacher pay represents the greater part of what OECD countries spend on education, it needs to be kept within affordable boundaries. As well as teacher salaries, the size of classes and the number of hours worked by teachers affect both costs and the attractiveness of teaching.

• A disproportionate number of teachers – 40 per cent on average – are now aged between 40 and 50.

• The salary of an experienced primary school teacher varies from one to two times average GDP per capita in OECD countries. These variations are only partly explained by the higher relative position of teachers in less affluent countries. In some richer countries like Switzerland, Luxembourg and Germany they also do well relative to average national income.

• The hours and conditions of teachers differ greatly from one country to another, and may partly compensate for variations in salary. For example, Swedish and Norwegian primary school teachers are relatively poorly paid, but have less than two-thirds as many contracted teaching hours as Swiss teachers, and are on average responsible for only half as many children as Irish teachers, who have high relative pay.

• Teacher pay grew faster than prices in most OECD countries from 1985 to 1993. But only in a few countries did it grow faster than wages. In general, it grew more slowly in countries where pupil-teacher ratios were falling.

• Rising costs per student in most OECD countries arose in some cases from rising teacher salaries and in others from shrinking pupil-teacher ratios.

Some countries that have facilitated a reduction in class size, by allowing the ratio of pupils to teaching staff to fall, have also limited the increase in salaries. For teachers in these countries, the modesty of pay rises may be partly compensated by better classroom conditions. Some other countries have kept class size higher, but also raised relative teacher pay. These trade-offs may not always be part of an intentional strategy, but in practice, the more a country pays teachers the harder it will be to afford low pupil-teacher ratios, and vice versa. Quantitative indicators cannot however on their own show the impact of teacher pay or classroom conditions on the quality of teaching.

EDUCATION'S HIGH-STAKES BALANCING ACT

Teachers' pay has taken on major policy importance in OECD countries in the past decade. The trends set out in Chapter 1 reflect increased pressure on OECD countries to expand education at the upper secondary and tertiary levels and to improve educational quality at lower levels. But these pressures are subject to new fiscal constraints as OECD countries adjust to more competitive global economic conditions and, in Europe, to meeting the Maastricht conditions for monetary union.

Under these conditions, teachers' pay has been an important issue because:

- teachers are generally viewed as the key to improved education; although pay levels do not directly determine teacher performance, the rewards and conditions of teaching can influence recruitment, retention and teacher morale;
- their salaries represent the greater part of education spending – some 60 per cent in the case of primary and secondary education;
- teachers are generally organised into powerful collective bargaining units, often able to influence the direction of educational reform and educational costs.

So how much teachers are paid can influence quality and has an important bearing on costs. It can affect whether nations recruit the most able graduates into the teaching profession, as well as their capacity to adjust overall public spending to the realities of fiscal constraints.

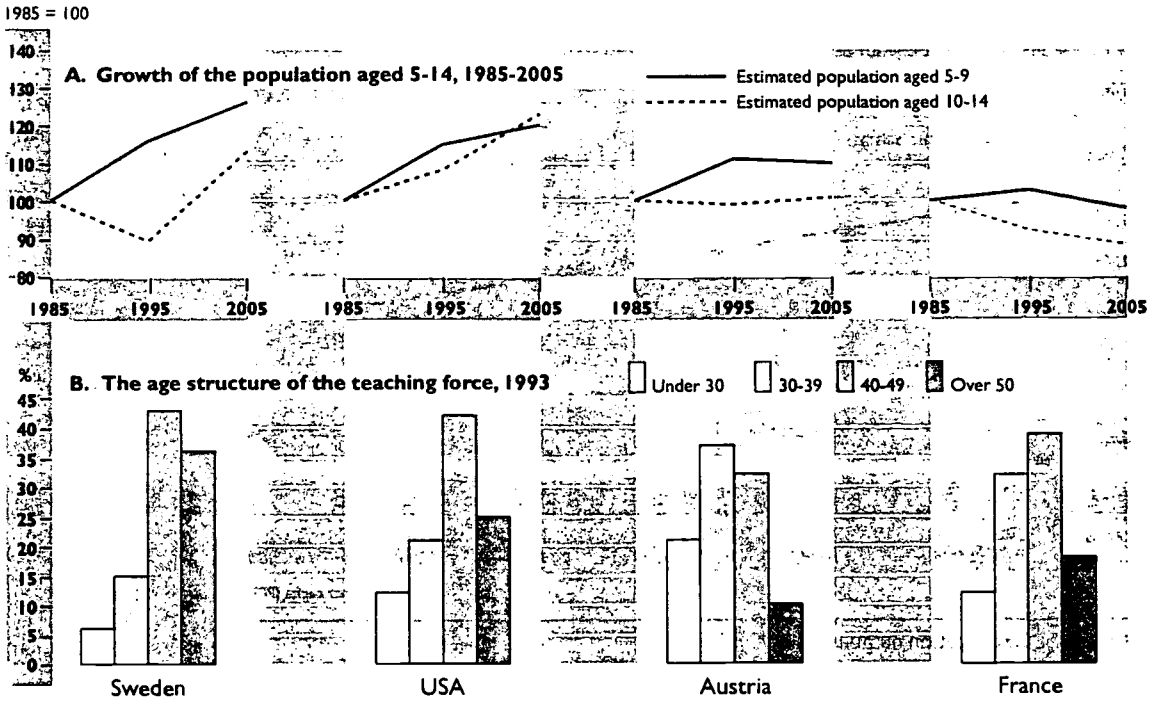
The labour market for teachers is strongly affected on both the supply side and the demand side by fluctuations in the number of young people. Demand for teachers fell during the 1980s and early 1990s as the number of young people went down. But today, youth cohorts are starting to rise again. And over the next two decades, the large number of teachers recruited during the 1970s in Europe and during the 1960s in North America, when the "baby boom" generation was at school, will be reaching retirement age. There is a particular bulge in the teacher cohort presently aged 40 to 49, who on average account for 40 per cent of teachers. The number aged under 30 fell in the European Community from 18 per cent in 1985 to 11 per cent in 1993.

Figure 4.1 shows how the present structure of teacher supply compares to the recent and future trend in pupil numbers in four OECD countries. These countries have been chosen merely to illustrate alternative patterns of demand and supply: this graph does not constitute an OECD indicator. It should be borne in mind that the base year, 1985, was a low year for pupil numbers in most countries. In the extreme case, Sweden, one-quarter more students will have to be taught by a profession one-third of whose members are now over 50. Danish and German teachers share the highly-skewed age profile of their Swedish colleagues: in all three countries, more than 70 per cent are over 40 and 6 per cent or fewer are under 30. In the United States, student numbers are also rising steeply, and an earlier baby boom has created a heavy concentration of older teachers. Austria's more even teacher age structure and the fact that youth population is more stable in Austria and France make teacher supply shortages less likely in these countries. The demographic trends shown in Figure 4.1 do not give a full picture of supply and demand, but they give cause to believe that some countries could have difficulties recruiting sufficient numbers of suitably qualified teachers.

So new teacher recruitment will be an important issue for OECD countries over the coming decade. The ability of countries to recruit good teachers does not depend only on their pay and conditions. The status of teaching within the country is important, as are other labour market conditions. Even where teacher pay is relatively low, if high unemployment limits other job prospects the security of teaching may make it attractive to new graduates. But teacher pay is an important factor in the equation, and there are now reliable comparative data on this aspect of the labour market for teachers.

The OECD indicators provide a starting point in understanding what has been happening to the relative pay of teachers, how far this affects the quality of teaching and the impact on educational spending. Data on the respective salaries of starting and experienced teachers, relative to average pay

Figure 4.1
Teacher supply and demand (selected countries)



Pupil numbers are growing again, while the teachers recruited to educate the last baby-boomers are approaching retirement.

Source: OECD education database.
Data for the figure page 74.

and incomes in each country, give an indication of the financial attractiveness of entering the teaching profession and of remaining within it. This needs to be set alongside the attractiveness of classroom conditions, for which the ratio of pupils to teachers serves as one useful indicator.

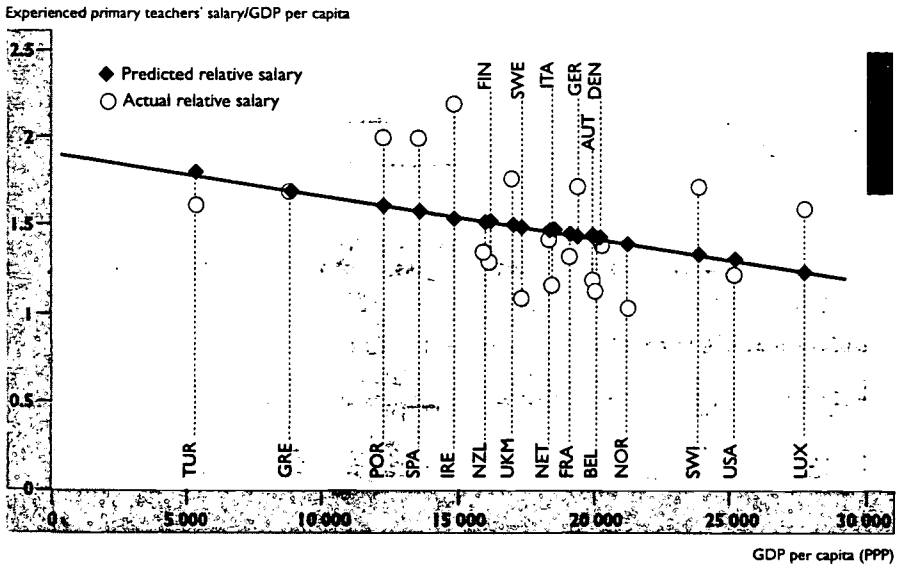
Teacher pay combined with the pupil-teacher ratio influence not only the attractiveness of teaching but also average spending per pupil. It is possible to see from the indicators to what extent differences in per-pupil costs in various countries arise from variations in how much teachers are paid, and to what extent they arise from differences in the number of children each of them teaches.

The hardest connections to establish reliably are between the pay and conditions of teachers, educational quality and the level of student achievement. Recent OECD research confirms the common-sense view that teachers who feel valued perform better in the classroom. But evidence of a relationship between the pay or quality of teachers and outcomes for students has so far proved elusive. As data on student achievement is strengthened (see Chapter 2), a future objective will be to identify closer links between how resources are spent on teachers and the final outcome for students.

HOW MUCH ARE TEACHERS PAID?

The most straightforward way of comparing the pay of teachers across countries is to look at their salaries in relation to average income per person (GDP per capita). This is a measure of how well off a teacher is in comparison to the average

Figure 4.2
Experienced primary teachers' salary relative to GDP per capita as a function of GDP per capita, 1993-1994



In richer countries, teachers tend to earn less relative to average incomes than teachers in poorer countries.

Source: OECD education database.

inhabitant of each country – although it does not take account of non-salary teacher remuneration, such as benefits in kind.

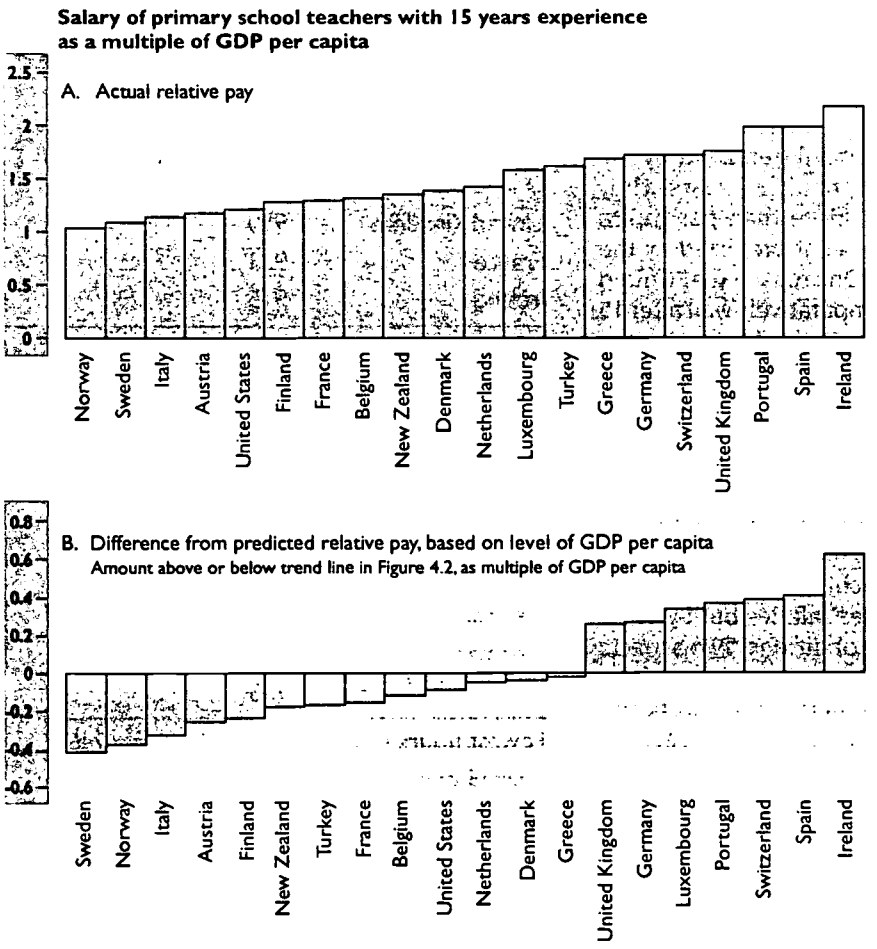
But in countries that are poorer and have lower numbers of well-qualified workers, one would expect the pay of teachers to be higher relative to the average inhabitant than in richer countries. This is because teachers in poorer countries typically are educated to a level shared by a smaller proportion of the population. There is indeed an inverse correlation between GDP per capita and salary of teachers relative to GDP per capita: the richer the country, the lower the relative level of teacher pay. Figure 4.2 shows this relationship: there is a significant correlation, although some countries pay significantly more or less than would be "predicted" by the trend line on the basis of each respective country's GDP per capita. One relevant indicator is how far relative teacher pay in each country varies from this predicted value.

Figure 4.3 shows the salaries of teachers relative to GDP per capita in each country. It also shows, in part (B) that these relative salaries vary from what would be predicted from the country's level of national income per person. This second set of figures represents deviations from the trend line shown in Figure 4.2 of relative salary against GDP per capita.

Figure 4.3 shows that experienced primary-school teachers' salaries in OECD countries range from just below per-capita GDP to just over twice as high as per-capita GDP. Irish, Portuguese and Spanish teachers stand out from other countries: they earn 2.0 to 2.1 times GDP per capita compared to less than 1.8 in the next-highest country, the United Kingdom. Italian, Norwegian and Swedish teachers have the lowest relative pay, with ratios of 1.0 to 1.1.

However, these differences are slightly narrowed when adjusting for the expected difference between richer and poorer countries, since the three countries with the highest ratios all have below-average GDP per capita and those with the lowest ratios are all relatively affluent. On the bottom half of the graph, Ireland and Spain still stand out as the countries most generous to their teachers. But Swiss teachers, whose high relative

Figure 4.3 **Annual salaries, 1994**



Primary school teacher salaries range from one to two times GDP per capita...

...but differences are less when compared to expected relative salary, which is higher in poorer countries.

Source: OECD education database; Eurydice for Luxembourg and United Kingdom.
Data for the figure page 74. See also indicator P35 in EAG-Indicators.

pay would not be expected in so affluent a country, rise to third place, and Luxembourg teachers move from near the middle to near the top of the distribution. Turkish teachers move from the top half to the bottom half of the rankings, and United States teachers move in the opposite direction. Nevertheless, this adjustment does not make a big difference to most countries' rankings.

These figures show the relative pay in primary education. The picture is similar for experienced teachers at the lower secondary level, with the main difference that their pay is in general higher in almost all countries (Turkey and Norway are exceptions). Teachers in Ireland, Portugal and Spain again do well, but in this case Portuguese teachers enjoy by far the highest salaries relative to GDP per capita, and Swiss ones are ahead of teachers in Spain – even without adjusting for Switzerland's high per capita national income. Norwegian lower secondary school teachers do worst, earning no more than their primary school colleagues. Lower secondary teachers from the United States and Sweden also fare badly.

The data in Figure 4.3 are for experienced teachers. In most countries the position of starting teachers, relative to the international average, is very similar

to that of their senior colleagues. One exception is the United Kingdom whose starting teachers fare relatively worse, at both primary and secondary levels, than those who have been in the profession for 15 years. Primary school teachers in the United Kingdom start off earning 4 per cent above GDP per capita, around the level predicted by the international trend; but by the time they have been working 15 years, they are earning 76 per cent more than per capita GDP, compared to 48 per cent predicted by the trend in other countries. One reason that United Kingdom teachers do comparatively well after 15 years is that, unlike many of their colleagues in other countries, they have by then reached the peak of their earnings.

PAY, CONDITIONS AND THE ATTRACTIVENESS OF TEACHING

The attractiveness of teaching is influenced not just by the level of teacher salaries but by other aspects of their working conditions. Two aspects that are likely to be important to many teachers are the number of hours that they must work and the number of children that they must teach.

One potentially attractive feature of teaching compared to many professions is that it is not a "nine to five" job with a relatively small amount of annual leave each year. School hours are much shorter than normal working hours, and school holidays longer than those taken by most workers. Although teachers may spend many hours working outside school time, the amount of free time is an important feature of the job for many teachers, especially those with children. The level of attractiveness of teaching in these terms varies considerably in different countries, some of which impose much lighter teaching loads than others.

It is difficult to make valid comparisons across countries of the number of hours worked by teachers, who often carry out duties outside their contracted hours. Nevertheless, the contracted number of hours in the classroom gives one indicator of the burden imposed. Certainly, to teachers themselves, the number of teaching hours is an important consideration, even though the level of work put in outside these hours may be variable.

Table 4.1
Number of teaching hours per year (primary education)

Some countries set longer teaching hours than others.

Most hours (over 10% above average: 912)	
Switzerland	1085
Netherlands	1000
United States	958
United Kingdom	950
France	923
Ireland	915
Near-average hours (746-912)	
Spain	900
Finland	874
Belgium	832
Turkey	830
Portugal	828
New Zealand	788
Germany	760
Denmark	750
Italy	748
Fewest hours (at least 10% below average: 746)	
Luxembourg	730
Austria	709
Greece	696
Norway	686
Sweden	624

Table 4.1 shows the number of annual teaching hours of primary school teachers in each of 20 countries. This averages 829 hours, but is over 40 per cent lower for Swedish teachers at one extreme than for Swiss ones at the other. At lower and upper secondary levels there are fewer teaching hours on average (777 and 688 per year respectively), but the distributions are similar.

Do annual salaries in any way reflect the number of teaching hours? Referring back to Figure 4.2, there does seem to be a tendency (if not

a universal rule) to reward longer-working teachers more than shorter-working ones. In three of the six countries where primary teachers' hours are over 10 per cent longer than average (Table 4.1), experienced teachers have relative salaries well above the expected level. In two, the United States and the Netherlands, they are just slightly below it. Conversely, four of the five countries with the shortest hours pay teachers much lower salaries than would otherwise be expected; Luxembourg, however, pays significantly more. This is not to suggest that governments make decisions about teachers' hours in conjunction with decisions about their pay. But countries like Norway and Sweden may well be able to sustain relatively low pay rates without suffering teacher shortages, because of other attractions in the job.

The same could be true for classroom conditions. An important indicator of teacher work conditions is the ratio of pupils to teaching staff, which affects class size, even though it does not determine it. (For example, a higher number of teachers may be used to provide more support work rather than smaller classes. But such support may itself make a teacher's job easier. And within a given teaching structure, more generous staffing will mean smaller classes.) Poorer staffing levels can make teaching more demanding, and sometimes more frustrating. Potentially, large classes could offset the advantages of high pay in a teacher's preferences, and small classes could help compensate for lower pay.

Table 4.2 shows the ratio of primary school pupils to teachers in OECD countries. This ratio tends to be lower in richer countries than in poorer ones. The range is even greater in lower secondary schools: from six pupils per teacher in Belgium to over 44 in Turkey.

Differences in pupil-teacher ratios help to explain some of the pay differences among OECD countries. For example, the relatively low salaries of Swedish and Norwegian teachers is in part compensated by good working conditions. In the United Kingdom and Ireland, on the other hand, both pay and pupil-teacher ratios are relatively high. But in New Zealand, teachers receive relatively low pay even though they are each responsible for more children on average than other countries.

Table 4.2
Number of pupils per teacher (primary education)

Teachers are responsible for twice as many children in some countries than in others.

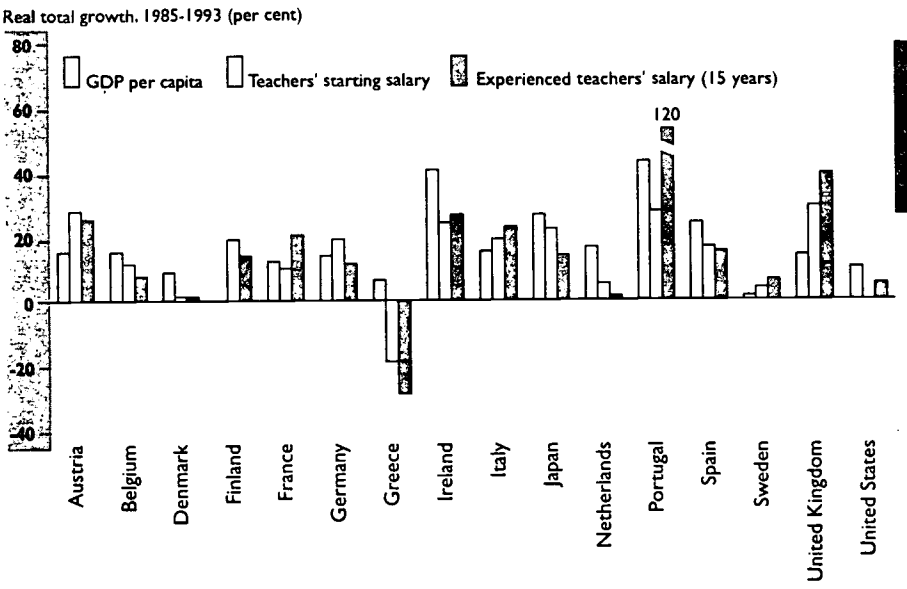
Over 20	
Turkey	27.6
Ireland	24.4
Netherlands	22.4
United Kingdom	21.7
New Zealand	20.5
Germany	20.4
15 to 20	
France	19.3
United States	19.0
Greece	19.0
Finland	18.0
Spain	17.6
Switzerland	15.3
Norway	15.0
Under 15	
Belgium	13.2
Luxembourg	13.0
Sweden	12.4
Portugal	12.1
Austria	11.8
Denmark	11.2
Italy	9.9

HOW MUCH HAS TEACHER PAY INCREASED SINCE 1985?

Primary school teachers' salaries, adjusted for inflation, rose between the 1985/86 and the 1993/94 school years in all but one of the sixteen OECD countries for which data are available.

How big were these gains? Figure 4.4 (overleaf) sets teacher salary increases against the general rise in income, as measured by GDP per capita. By this measure, starting teachers made relative gains in six out of the 13 countries that report this data, and experienced teachers in five out of

Figure 4.4
Growth in teachers' salary
Real growth in: GDP per capita; teachers' starting salary and experienced teachers' salary (primary education), 1985-1993 (in %)



Teachers saw their salaries grow in almost all countries, but in only a minority did they outstrip average income.

Source: OECD education database; Eurydice; French Ministry of Education for France; ILO for Japan and Portugal; NCES, *Digest of Educational Statistics*, 1996 for United States.

Data for the figure page 74.

16 countries. Austria, Finland, Portugal and the United Kingdom stand out as countries where teachers made the greatest salary gains relative to national income. In Greece, Ireland, Japan and the Netherlands they did the worst, with salaries growing at least 10 per cent more slowly than per-capita GDP. There was an important difference, however, between on the one hand Greece, where teacher salaries stagnated or fell in terms of their buying power, and on the other Ireland and Japan, where teachers became better off, but their pay did not keep pace with rapid general growth in those countries.

What explains this variation in the gains primary teachers made? There are several possibilities.

Faster economic growth might potentially cause a boost in relative teacher salaries, because of its impact on public revenues available. When governments are flush with revenue, teachers can make larger gains, even relative to GDP growth or relative private sector wages, than when governments are strapped. A first analysis of the figures indeed shows that teacher gains correlate more closely with economic growth rates than with any other factor. But that result is heavily influenced by the exceptional situation of Portugal, which simultaneously experienced high rates of growth and very large increases in average teachers' salaries over the period in question.

When Portugal is excluded from the analysis, the growth of relative teacher salary is in fact unrelated to GDP per capita growth. The period 1985-93 was atypical for public spending policies: some countries began slowing down public spending growth relative to GDP growth during these years because increased global competition made it more difficult for countries to maintain taxes on corporations and hope to keep production at home. Increasingly, high social spending has been seen as a drag on private sector employment expansion. This translated into a weak relation between relative teacher salary increases and GDP per capita growth; as noted above, in some high-growth

countries teachers lost ground. In the future, teachers cannot count on making gains relative to per capita incomes (or to manufacturing wages) during a period of economic growth, as many did in the 1960s and 1970s.

The degree of austerity in public spending. If it is not GDP per capita growth differences that explain this variation in average primary school teachers' gains in salary relative to average income gains, what does? One explanation may lie in the degree of austerity in public spending that countries implemented during the past eight years. But when Portugal, with its large increase in relative teacher salaries, rapid growth of GDP per capita, and absence of austerity policy, is excluded from an analysis of teacher salary increases, neither the growth of GDP per capita nor whether a country's public spending grew less or more than GDP had a significant effect on salaries.

The lowering of pupil-teacher ratios. Did primary school teachers get smaller increases in pay in some OECD countries because pupil-teacher ratios were lowered? This looks like a possibility. In the four countries in which relative teacher pay rose sharply (Austria, Finland, Portugal and the United Kingdom), all but Portugal maintained high pupil-teacher ratios, and hence could raise teacher pay as a compensation for saving on the employment of more teachers. In general, teachers got smaller salary increases in those countries where pupil-teacher ratios fell more. That this was the case suggests that teachers bear at least part of the cost of the trend toward lower pupil-teacher ratios. It also suggests that parents may desire fewer pupils per teacher in schools and want to see educational systems change in that direction even if it means that teachers get lower salary increases. Further, since at least part of the reason for lower pupil-teacher ratios in OECD primary schools in recent years has been the inability of governments to fire teachers even when the growth of the school-age population slows down drastically, this means that governments are pushed to cut costs by reducing salary increases. But because countries did not fully offset the decline in pupil-teacher ratio with reductions in teachers' salaries, costs per pupil continued to rise in these years. This will be discussed in the next section.

USING THE DATA AVAILABLE

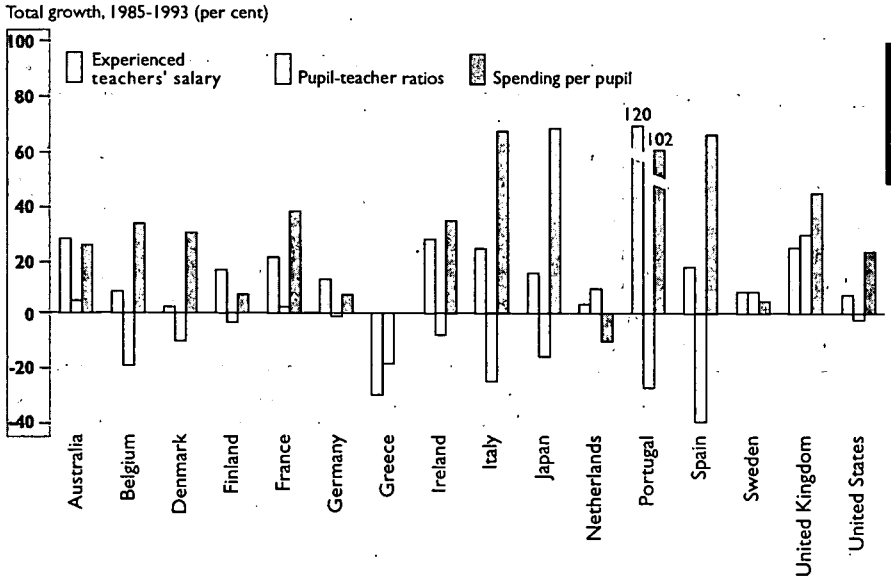
Since data are not available from the OECD for 1985, the analysis in this section used Eurydice data to compare teachers' salaries in 1985 and 1993. These figures were collected for the European Commission's 1996 report (*Les chiffres clés de l'éducation dans l'Union européenne*), and combined with salary data from the National Center for Educational Statistics for the United States, from the French Ministry of Education for France, and data reported to the International Labour Office by Portugal and Japan in a 1994 survey. The 1993 Eurydice figures were cross-checked for consistency with 1993 OECD indicators salary data. Because the Italian salary figure for Eurydice differed significantly from the OECD figure, the latter was used. All other figures were reasonably consistent. Gathering better data on teacher pay and working conditions over time in OECD countries should be a high priority for future indicator work.

Although pupil-teacher ratios over time have declined in most OECD countries, this is not a universal trend, suggesting that the combination of demographic and political forces that tend to push down the pupil-teacher ratio do vary from country to country. For example, in some countries, such as Belgium, Italy, Portugal, and Spain, the reductions in pupil-teacher ratios from the mid-1980s to the mid-1990s were large; in most countries, the declines were more modest; and in a few, such as Austria, the Netherlands, Sweden and the United Kingdom, there were moderate increases in pupil-teacher ratios.

WHAT IMPLICATIONS DO TEACHER PAY POLICIES HAVE FOR SPENDING ON EDUCATION?

The teacher pay bill accounts for most spending on primary and secondary education – so educational spending per pupil is heavily influenced by both teacher salary levels and the ratio of pupils to teachers (see Chapter 1 above). The level of this spending is heavily influenced

Figure 4.5
Two components of increased spending per pupil
Real growth in: experienced teachers' salary, pupil-teacher ratios and spending per pupil (primary education), 1985-1993 (in %)



Rising salaries and lower pupil-teacher ratios have each contributed to higher teacher costs.

Source: As for Figure 4.4.
Data for the figure page 74. See also indicators P35, R32 and F3 in EAG-Indicators.

by how much a nation can afford: on average, spending per pupil at primary level is US$ 250 higher for every $1 000 difference in a country's GDP per capita.

But there are also policy choices. Estimates across OECD countries suggest that, regardless of GDP per capita, declines in pupil/teacher ratios as well as increases in the salaries of experienced teachers contribute significantly to increases in the cost of primary education. On average, if a country chooses to have one fewer pupil per teacher, the cost per pupil rises by the purchasing-power equivalent of US$ 150. The same increase in cost per pupil would result from a $1 700 raise in teacher salaries. These are the terms of the trade-off facing OECD governments.

But what in practice has been the greatest influence on spending per pupil over the past decade: changes in teacher salaries or in pupil-teacher ratios? This has been a particularly interesting question at a time when a fall in the number of children can potentially push up per-pupil costs if the teaching force is not cut back proportionately, while pressure on public spending creates a strong incentive to keep unit costs down. The way in which governments have resolved these questions can help inform the decisions facing countries in an austere future.

Figure 4.5 shows that spending per pupil rose in real terms in all but one of 15 OECD countries between 1985 and 1993. It fell in the Netherlands; in three countries spending per pupil rose more slowly than GDP per capita. But in the remaining 11 countries, spending per pupil grew faster than GDP per capita. In the majority of these countries, this was partly because the number of pupils per teacher went down, and in five countries – Belgium, Denmark, Italy, Japan and Spain – the change in this ratio was greater than changes in teacher salaries.

Overall, excluding the exceptional case of Portugal, spending per pupil was about equally influenced by falling pupil-teacher ratios and

by rising salaries. This is true whether the figures are analysed in terms of real increases or adjusted for growth in GDP per capita. On average, in countries where salary increases were higher, this was at least partially offset by lower declines in the pupil-teacher ratio.

These results suggest a much more "balanced" strategy to educational spending in recent austere times than in the expansionist 1960s and 1970s. Austria, Finland, Germany, Ireland, the United Kingdom and the United States, have raised teacher salaries but contained the rise in spending per pupil by not letting pupil teacher ratios fall too far, and in some cases even raising them. Belgium and Denmark, on the other hand, have kept teacher salaries relatively unchanged, but lowered pupil-teacher ratios. Italy, Japan, Portugal and Spain were less restrained, allowing salaries to rise and ratios to fall, and hence causing very large increases in per-pupil spending. In contrast, Sweden held down teacher salary increases and allowed their pupil-teacher ratios to rise.

The cross-national results suggest that there is a distinct tendency in OECD countries to lower pupil-teacher ratios in primary, and also in secondary, schools. This tendency is not necessarily a result of a specific policy decision on educational grounds: it is influenced both by the aspiration of teachers and parents to have smaller classes and by the political difficulty of reducing teacher numbers in proportion to falling enrolments caused by demographic decline. But since there is also a pressure to keep down spending per pupil, falling teacher-pupil ratios may be traded against lower pay rises.

The changes in the past eight years, however, suggest a second scenario: some countries will choose to pay teachers more, in the belief that higher quality education requires recruiting and keeping high quality teachers, but will allow pupil-teacher ratios to rise. Countries that instead choose to, or are forced to, reduce pupil-teacher ratios, can often not afford to offer higher pay as a means of attracting high-quality entrants to teaching. Generous staffing levels may in themselves help to attract and retain good teachers, by making the job more rewarding. But all countries also need to think imaginatively about how better staffing can be used to reform and perhaps restructure classroom teaching in ways that make it more effective. ■

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* This chapter has been prepared by Martin Carnoy, Professor of Education and Economics, Stanford University and Karen DeAngelis, Ph.D. candidate in the economics of education in the same university.

ANNEX

Data for the figures

Chapter 1

Table: Figure 1.1
Upper secondary graduation

Percentage of the population who have completed at least upper secondary education

	Age groups	
	25-34	*45-54*
United States	86	85
Germany	90	84
Switzerland	89	79
Norway	89	78
Canada	82	70
United Kingdom	86	69
Sweden	85	69
Czech Republic	87	68
Austria	79	64
France	84	60
Denmark	68	59
Finland	82	56
New Zealand	62	56
Netherlands	69	54
Australia	54	47
Belgium	65	43
Ireland	61	35
Greece	62	35
Italy	47	26
Turkey	24	16
Spain	45	16
Portugal	30	15
AVERAGE	***69***	***54***

Countries are ranked in descending order by % for 45-54 year-olds.

Table: Figure 1.2
Tertiary level graduation

Percentage of the population who have completed a tertiary qualification

	Age groups	
	25-34	*45-54*
Canada	51	45
United States	32	33
Sweden	27	26
New Zealand	21	26
Norway	31	25
Germany	20	24
Australia	24	22
Switzerland	22	22
Belgium	30	20
United Kingdom	23	20
Netherlands	24	19
Denmark	20	19
Finland	22	19
France	24	16
Ireland	24	15
Greece	25	14
Spain	25	10
Portugal	13	9
Turkey	7	8
Italy	8	7
Austria	9	7
AVERAGE	***23***	***19***

Countries are ranked in descending order by % for 45-54 year-olds.

Table: Figure 1.3
Secondary education and demography

Changes in enrolment in secondary education and in population aged 10 to 19, 1985-94

	% change enrolment	*% change population*
Mexico	13.6	6.5
Turkey	63.0	4.3
Finland	7.6	1.5
Canada	7.3	0.7
United States	1.3	0.5
Ireland	12.3	-1.0
France	5.6	-8.2
Korea	-5.4	-10.8
Portugal	66.9	-10.9
Switzerland	-13.1	-11.1
New Zealand	0.4	-11.4
Spain	18.1	-11.5
Sweden	21.9	-11.6
Japan	-8.1	-12.2
United Kingdom	0.1	-15.3
Australia *	-1.2	-16.4
Austria	-8.5	-16.4
Norway	2.7	-17.9
Germany	-11.2	-19.6
Netherlands	-7.1	-19.7
Denmark	-8.1	-20.0
Italy	-7.5	-23.2
AVERAGE	***6.2***	***-10.7***

* Excluding TAFE.

Source: Population data are taken from *United Nations World Population Prospects, 1950-2050* (1994 Revision). Enrolment data are taken from OECD database and refer to the total of full-time and part-time students (headcount).

Table: Figure 1.4
Change in public spending on education

Proportion of GDP spent on education from public sources, 1975 and 1993

	1975	*1993*
Portugal	3.3	5.4
Greece	3.4	3.5
Mexico	3.9	4.1
Italy	4.8	5.1
Germany *	5.1	4.8
Switzerland	5.3	5.8
France	5.6	5.7
United States	5.7	5.2
Austria	5.7	5.5
Australia	6.2	5.6
Norway	6.4	9.0
Ireland	6.5	5.6
New Zealand	6.5	6.7
United Kingdom	6.8	5.1
Denmark	6.9	6.6
Sweden	7.1	7.7
Netherlands	7.4	5.4
Canada	8.5	6.9
AVERAGE	***5.8***	***5.8***

Note: Public subsidies to households are included.

* Data for Germany refer to the former territory of the Federal Republic in 1975 and to the entire territory of Germany in 1993.

Countries are ranked in ascending order by value.

Table: Figure I.5
Factors affecting expenditure relative to GDP, 1993

	Percentage			Ratio of Exp/ENR to GDP/POP	Values relative to OECD average (=1)		
	Exp/GDP	YPOP/POP	ENR/YPOP		YPOP/POP	ENR/YPOP	Exp/ENR / GDP/POP
Canada	7.1	35.5	59.8	0.333	0.966	1.091	1.255
United States	**6.5**	**35.8**	**58.9**	**0.309**	**0.974**	**1.074**	**1.165**
Finland	6.5	32.4	63.4	0.315	0.882	1.157	1.189
Sweden	**6.2**	**31.7**	**54.8**	**0.358**	**0.864**	**1.001**	**1.349**
Norway*	5.9	34.3	59.1	0.293	0.935	1.077	1.107
Denmark	5.9	32.6	58.1	0.311	0.887	1.059	1.174
Australia	5.8	37.5	59.2	0.262	1.019	1.079	0.987
Hungary	5.6	34.7	50.7	0.319	0.945	0.925	1.205
New Zealand*	**5.5**	**37.8**	**61.0**	**0.239**	**1.028**	**1.114**	**0.901**
France	5.4	35.0	59.1	0.261	0.954	1.079	0.985
Switzerland*	**5.3**	**32.3**	**51.1**	**0.323**	**0.878**	**0.933**	**1.218**
Ireland	5.3	42.1	58.6	0.213	1.146	1.069	0.805
Korea	5.2	45.1	54.3	0.213	1.229	0.990	0.803
Germany	5.0	31.6	53.8	0.293	0.860	0.982	1.107
Spain	4.8	37.3	57.9	0.222	1.014	1.056	0.837
Portugal	4.7	36.9	50.9	0.253	1.004	0.929	0.953
Belgium*	**4.7**	**32.7**	**60.2**	**0.238**	**0.889**	**1.098**	**0.896**
Netherlands	4.6	34.4	56.6	0.238	0.937	1.033	0.899
Austria+	4.6	34.1	43.9	0.309	0.927	0.802	1.164
United Kingdom*	4.5	34.1	60.3	0.218	0.929	1.100	0.821
Italy	4.4	33.3	50.4	0.262	0.907	0.920	0.987
Czech Republic+	4.3	36.4	48.5	0.243	0.990	0.884	0.915
Iceland*	4.2	39.8	62.8	0.168	1.083	1.145	0.635
Japan	**4.2**	**33.9**	**55.7**	**0.221**	**0.923**	**1.015**	**0.832**
Mexico+	3.7	54.5	42.3	0.161	1.483	0.771	0.608
Greece *+	3.4	35.1	48.9	0.198	0.957	0.893	0.746
Turkey	**3.3**	**51.0**	**39.6**	**0.161**	**1.389**	**0.723**	**0.607**
AVERAGE	***5.1***	***36.7***	***54.8***	***0.265***	***1.000***	***1.000***	***1.000***

* Public sources of funding only.
\+ Public institutions only.
EXP equals total expenditure (public and private) for services provided in educational institutions (public and private) at ISCED levels 1 to 7 in 1993.
ENR refers to full-time equivalent student numbers at ISCED levels 1 to 7 in 1993/94.
YPOP refers to the population in the age-group 5-29 on 1 January 1994.
POP is total population over all age-groups on 1 January 1994.
Note 1: The ratio of expenditure to GDP in the above table differs from the ratio shown for all ISCED levels presented in the indicator F1.1a in *Education at a Glance-Indicators*, since the latter data include expenditure for pre-primary education.
Note 2: The ratio of expenditure to GDP is equal to the product of four other variables according to the following identity relationship:
EXP/GDP ≡ [(EXP/ENR) * (ENR/YPOP) * (YPOP/POP) * (POP/GDP)].
This relationship can be simplified further as: EXP/GDP ≡ [(YPOP/POP) * (ENR/YPOP) *Z)] where Z ≡ (EXP/ENR) /(GDP/POP).

Table: Figure I.6
Factors affecting spending per student at primary level

	Absolute values				*Values relative to OECD average (=1)*		
	Expenditure per student US$	*Average teacher salary US$*	*Pupil-teacher ratio*	*Percentage of total spending on teachers*	*Average teacher salary*	*Ratio of teachers to pupils*	*Ratio of total expenditure to teacher comp.*
Switzerland + *	5 800	47 981	15.3	54.1	1.475	1.051	1.134
United States +	**5 583**	**49 687**	**17.7**	**51.1**	**1.509**	**0.924**	**1.199**
Sweden	**4 801**	**29 499**	**12.5**	**49.3**	**0.896**	**1.290**	**1.244**
Denmark	**4 713**	**25 658**	**11.1**	**49.2**	**0.779**	**1.454**	**1.245**
Austria +	4 293	33 910	11.8	67.0	1.030	1.363	0.916
Italy +	**4 107**	**29 836**	**9.9**	**73.7**	**0.906**	**1.631**	**0.832**
Belgium *	2 959	31 294	13.3	79.7	0.951	1.212	0.769
Australia	2 953	32 997	18.5	60.6	1.002	0.871	1.013
Spain	1 981	27 697	23.2	60.4	0.841	0.694	1.016
Ireland +	**1 915**	**41 158**	**24.4**	**87.9**	**1.250**	**0.658**	**0.697**
Czech Republic +	1 522	12 416	19.6	41.5	0.377	0.818	1.476
AVERAGE	*3 693*	*32 921*	*16.1*	*61.3*	*1.000*	*1.000*	*1.000*

+ Denotes public schools only.
* Public sources of funding only.

Factors affecting spending per student at secondary level

	Absolute values				*Values relative to OECD average (=1)*		
	Expenditure per student US$	*Average teacher salary US$*	*Pupil-teacher ratio*	*Percentage of total spending on teachers*	*Average teacher salary*	*Ratio of teachers to pupils*	*Ratio of total expenditure to teacher comp.*
Austria +	**6 665**	**34 804**	**8.2**	**64.1**	**1.049**	**1.571**	**0.948**
United States +	**6 323**	**56 350**	**17.4**	**51.1**	**1.698**	**0.735**	**1.187**
Denmark	6 111	32 112	10.2	51.7	0.968	1.261	1.174
Sweden	**5 418**	**31 746**	**12.7**	**46.2**	**0.957**	**1.010**	**1.313**
Belgium	**5 334**	**37 364**	**8.5**	**82.4**	**1.126**	**1.507**	**0.736**
Italy +	5 235	32 351	8.6	71.5	0.975	1.481	0.850
Ireland +	2 992	38 189	16.4	77.7	1.151	0.780	0.781
Spain	**2 077**	**25 152**	**20.3**	**59.6**	**0.758**	**0.630**	**1.019**
Czech Republic +	1 949	10 610	12.9	42.1	0.320	0.990	1.443
AVERAGE	*4 678*	*33 187*	*12.8*	*60.7*	*1.000*	*1.000*	*1.000*

+ Denotes public schools only.
* Public sources of funding only.

Factors affecting spending per student at tertiary level

	Absolute values				*Values relative to OECD average (=1)*		
	Expenditure per student US$	*Average teacher salary US$*	*Pupil-teacher ratio*	*Percentage of total spending on teachers*	*Average teacher salary*	*Ratio of teachers to pupils*	*Ratio of total expenditure to teacher comp.*
United States	**14 568**	**85 360**	**15.5**	**37.9**	**1.846**	**1.132**	**1.132**
Canada	**10 879**	**61 430**	**15.2**	**37.1**	**1.329**	**1.149**	**1.157**
Ireland +	6 961	54 336	15.8	49.4	1.175	1.107	0.869
Belgium	6 184	56 917	13.9	66.3	1.231	1.260	0.648
Italy +	**5 169**	**44 404**	**23.7**	**36.2**	**0.961**	**0.737**	**1.186**
Czech Republic +	**4 845**	**13 233**	**9.9**	**27.7**	**0.286**	**1.772**	**1.552**
Spain	3 078	27 025	19.1	46.1	0.585	0.918	0.932
Turkey	**2 349**	**27 125**	**26.9**	**42.9**	**0.587**	**0.650**	**1.001**
AVERAGE	*6 754*	*46 229*	*17.15*	*42.9*	*1.000*	*1.000*	*1.000*

+ Denotes public institutions only.
* Public sources of funding only.

Chapter 2

Table: Figure 2.1

A. Average achievement in Mathematics, eighth grade 1994

	Mean	s.e.	25th percentile	75th percentile
North America				
Canada	527	(2.4)	468	587
United States *	500	(4.6)	435	563
Pacific Area				
Australia **	530	(4.0)	460	600
Japan	605	(1.9)	536	676
New Zealand	508	(4.5)	443	570
European Union				
Austria **	539	(3.0)	474	608
Belgium (Flemish) *	565	(5.7)	502	631
Belgium (French) **	526	(3.4)	467	587
Denmark **	502	(2.8)	443	561
France	538	(2.9)	484	591
Germany **	509	(4.5)	448	572
Greece **	484	(3.1)	422	546
Ireland	527	(5.1)	462	594
Netherlands **	541	(6.7)	477	604
Portugal	454	(2.5)	411	495
Spain	487	(2.0)	436	536
Sweden	519	(3.0)	460	579
UK England *	506	(2.6)	443	570
UK Scotland **	499	(5.5)	436	559
Other OECD countries				
Czech Republic	564	(4.9)	496	633
Hungary	537	(3.2)	471	602
Iceland	487	(4.5)	435	540
Norway	503	(2.2)	445	560
Switzerland *	545	(2.8)	485	607
COUNTRY MEAN	*516*		*456*	*576*
Other non-OECD countries				
Korea	607	(2.4)	540	682
Russian Federation	536	(5.3)	471	600

s. e.: standard error of estimate.
* Countries met TIMSS sampling requirements only partially.
** Countries did not meet TIMSS sampling requirements.

B. Average achievement in Science, eighth grade 1994

	Mean	s.e.	25th percentile	75th percentile
North America				
Canada	531	(2.6)	472	594
United States *	534	(4.7)	465	608
Pacific Area				
Australia **	545	(3.9)	475	619
Japan	571	(1.6)	514	633
New Zealand	526	(4.4)	458	594
European Union				
Austria **	558	(3.7)	499	623
Belgium (Flemish) *	550	(4.2)	499	609
Belgium (French) **	471	(2.8)	415	532
Denmark **	478	(3.1)	423	541
France	498	(2.5)	446	553
Germany **	531	(4.8)	463	602
Greece **	497	(2.2)	439	557
Ireland	538	(4.5)	471	605
Netherlands **	560	(5.0)	505	619
Portugal	480	(2.3)	429	531
Spain	517	(1.7)	465	572
Sweden	535	(3.0)	476	598
UK England *	552	(3.3)	485	625
UK Scotland **	517	(5.1)	451	584
Other OECD countries				
Czech Republic	574	(4.3)	513	635
Hungary	554	(2.8)	497	616
Iceland	494	(4.0)	442	555
Norway	527	(1.9)	470	588
Switzerland *	522	(2.5)	460	587
COUNTRY MEAN	*523*		*464*	*586*
Other non-OECD countries				
Korea	565	(4.0)	504	629
Russian Federation	538	(4.5)	475	606

* Countries met TIMSS sampling requirements only partially.
** Countries did not meet TIMSS sampling requirements.

Table: Figure 2.2

Distribution of Mathematics achievement, eighth grade 1994-1995

	Percentile			
	5th	25th	75th	95th
North America				
Canada	389	468	587	670
United States *	356	435	563	653
Pacific Area				
Australia **	372	460	600	690
Japan	435	536	676	771
New Zealand	366	443	570	663
European Union				
Austria **	394	474	608	693
Belgium (Flemish) *	416	502	631	710
Belgium (French) **	385	467	587	658
Denmark **	369	443	561	641
France	415	484	591	666
Germany **	368	448	572	661
Greece **	347	422	546	633
Ireland	381	462	594	681
Netherlands **	397	477	604	688
Portugal	357	411	495	569
Spain	376	436	536	616
Sweden	384	460	579	661
UK England *	361	443	570	665
UK Scotland **	364	436	559	649
Other OECD countries				
Czech Republic	423	496	633	725
Hungary	391	471	602	693
Iceland	365	435	540	615
Norway	372	445	560	649
Switzerland *	401	485	607	685
COUNTRY MEAN	*380*	*456*	*576*	*660*
Other non-OECD countries				
Korea	418	540	682	786
Russian Federation	388	471	600	687

* Countries met TIMSS sampling requirements only partially.
** Countries did not meet TIMSS sampling requirements.
Source: IEA, 1996.

Table: Figure 2.3
Percentage of the population aged 16 to 65 performing at each literacy level, document scale, 1994

	Level 1		Level 2		Level 3		Levels 4/5	
	%	s.e.	%	s.e.	%	s.e.	%	s.e.
Canada	18.2	(1.9)	24.7	(1.5)	32.1	(1.8)	25.1	(1.3)
Germany	9.0	(0.7)	32.7	(1.2)	39.5	(1.0)	18.9	(1.0)
Netherlands	10.1	(0.7)	25.7	(0.8)	44.2	(0.9)	20.0	(0.8)
Poland	45.4	(1.3)	30.7	(1.0)	18.0	(0.7)	5.8	(0.3)
Sweden	6.2	(0.4)	18.9	(0.7)	39.4	(0.8)	35.5	(0.6)
Switzerland (French)	16.2	(1.3)	28.8	(1.4)	38.9	(1.3)	16.0	(1.1)
Switzerland (German)	18.1	(1.0)	29.1	(1.5)	36.6	(0.8)	16.1	(1.0)
United States	23.8	(0.8)	26.1	(1.1)	31.1	(1.0)	19.1	(1.0)

s.e.: standard error of estimate.
Source: OECD and Statistics Canada, 1995.

Table: Figure 2.4.
A. Literacy level by educational attainment of 16-65 year-olds, document scale, 1994

		Level 1		Level 2		Level 3		Levels 4/5	
	ISCED	%	s.e.	%	s.e.	%	s.e.	%	s.e.
Canada	0/1/2	41.6	(3.4)	31.2	(3.0)	20.2	(3.4)	7.0	(1.7)
	5/6/7	3.8	(2.8)	14.0	(1.8)	38.8	(3.0)	43.4	(5.0)
Germany	0/1/2	11.2	(1.0)	38.2	(1.5)	38.8	(1.9)	11.8	(1.7)
	5/6/7	2.0	(0.8)	18.5	(2.5)	38.1	(2.4)	41.5	(2.3)
Netherlands	0/1/2	20.1	(1.4)	37.6	(1.5)	34.5	(1.0)	7.8	(0.7)
	5/6/7	1.3	(0.4)	13.8	(1.3)	50.0	(2.2)	34.9	(1.8)
Poland	0/1/2	58.4	(1.3)	27.6	(1.2)	11.0	(0.6)	3.0	(0.3)
	5/6/7	16.0	(3.1)	32.5	(3.1)	34.4	(3.2)	17.1	(2.0)
Sweden	0/1/2	14.1	(1.4)	26.7	(1.8)	39.8	(1.7)	19.4	(1.5)
	5/6/7	0.9	(0.3)	9.8	(2.2)	34.0	(1.7)	55.3	(1.7)
Switzerland	0/1/2	35.2	(4.0)	44.2	(4.0)	18.6	(2.9)	2.1	(1.2)
(French)	5/6/7	3.7	(1.2)	12.0	(1.8)	47.9	(3.5)	36.3	(2.8)
Switzerland	0/1/2	40.1	(4.9)	35.3	(4.3)	16.4	(2.9)	8.2	(2.2)
(German)	5/6/7	5.8	(1.3)	21.3	(2.8)	45.2	(2.8)	27.7	(2.4)
United States	0/1/2	59.4	(3.2)	23.3	(2.4)	13.9	(1.8)	3.4	(0.9)
	5/6/7	8.7	(1.3)	17.9	(1.5)	39.1	(1.4)	34.3	(1.9)

ISCED 0/1/2 refers to completed primary or lower secondary education; ISCED 5/6/7 refers to completed tertiary university or non-university education.
s.e.: standard error of estimate.
Source: OECD and Statistics Canada, 1995.

B. Literacy level by educational attainment of 30-65 year-olds, document scale, 1994

		Level 3		Levels 4/5	
	ISCED	%	s.e.	%	s.e.
Canada	0/1/2	18.4	(4.3)	4.3	(1.7)
Germany	0/1/2	38.2	(2.1)	11.0	(2.0)
Netherlands	0/1/2	31.6	(1.3)	5.3	(0.5)
Poland	0/1/2	7.0	(0.7)	2.0	(0.4)
Sweden	0/1/2	37.2	(2.0)	15.4	(1.4)
Switzerland (French)	0/1/2	19.3	(3.0)	1.7	(1.2)
Switzerland (German)	0/1/2	13.1	(2.8)	3.4	(2.0)
United States	0/1/2	5.6	(1.0)	0.2	(0.2)

ISCED 0/1/2 refers to completed primary or lower secondary education.
s.e.: standard error of estimate.
Source: OECD and Statistics Canada, 1995.

C. Literacy level by educational attainment 16-29 year-olds, document scale, 1994

		Level 1		Level 2	
	ISCED	%	s.e.	%	s.e.
Canada	3	9.3	(2.3)	23.6	(2.4)
	5/6/7	1.7	(1.7)	10.8	(2.6)
Germany	3	4.5	(2.3)	17.4	(4.6)
	5/6/7	0.0	(0.0)	11.9	(6.8)*
Netherlands	3	1.0	(1.0)	12.0	(1.5)
	5/6/7	0.8	(0.9)	8.8	(2.7)
Poland	3	15.2	(2.9)	39.4	(3.2)
	5/6/7	8.5	(2.7)	25.0	(3.0)
Sweden	3	2.5	(0.6)	16.4	(1.5)
	5/6/7	0.0	(0.0)	5.8	(2.3)
Switzerland (French)	3	4.7	(1.5)	25.8	(3.3)
	5/6/7	1.7	(1.3)	8.1	(2.7)
Switzerland (German)	3	6.1	(1.8)	25.4	(4.0)
	5/6/7	3.7	(2.5)*	18.4	(5.6)*
United States	3	14.4	–	33.7	–
	5/6/7	3.7	–	16.7	–

ISCED 3 refers to completed upper secondary education.
ISCED 5/6/7 refers to completed tertiary university or non-university education.
* Sample size is insufficient to permit a reliable estimate; – not available.
s.e.: standard error of estimate.
Source: OECD and Statistics Canada, 1995.

Table: Figure 2.5
Proportion of the population that received any training or education in the 12 months prior to the interview by literacy level, document scale, 1994

		Level 1		Levels 4/5	
		%	s.e.	%	s.e.
Canada	16-29	28.6	(11.1)	79.2	(2.8)
	30-65	14.1	(5.5)	55.5	(3.1)
Germany[1]	–	–	–	–	–
Netherlands	16-29	19.6	(7.8)*	60.8	(4.0)
	30-65	16.9	(2.3)	50.5	(3.1)
Poland	16-29	11.7	(1.5)	30.4	(7.1)*
	30-65	7.8	(1.1)	33.8	(7.5)
Sweden	16-29	32.9	(6.7)*	59.4	(3.4)
	30-65	27.0	(6.1)	62.5	(1.9)
Switzerland (French)	16-29	21.7	(11.2)*	57.3	(8.7)
	30-65	19.7	(4.2)	40.5	(5.0)
Switzerland (German)	16-29	37.4	(9.0)*	78.7	(5.9)*
	30-65	16.2	(2.9)	65.5	(4.7)
United States	16-29	24.6	(7.1)	61.8	(9.0)
	30-65	17.4	(1.8)	62.2	(2.5)

* Sample size is insufficient to permit a reliable estimate; – not available.
1. German data not comparable due to an instrument translation anomaly.
Source: OECD and Statistics Canada, 1995.

Table: Figure 2.6
Literacy performance by age, document scale, 1994

		Level 1		Level 2	
		%	s.e.	%	s.e.
Canada	16-29	12.5	(1.4)	22.9	(1.7)
	30-65	20.3	(2.4)	25.4	(2.2)
Germany	16-29	4.9	(1.0)	29.8	(1.8)
	30-65	10.6	(0.8)	33.9	(1.3)
Netherlands	16-29	5.7	(1.3)	17.0	(1.6)
	30-65	12.1	(0.7)	29.6	(1.0)
Poland	16-29	34.8	(1.7)	31.6	(1.9)
	30-65	50.0	(1.5)	30.4	(1.1)
Sweden	16-29	3.4	(0.6)	14.6	(1.3)
	30-65	7.4	(0.5)	20.8	(1.1)
Switzerland (French)	16-29	10.1	(1.9)	21.6	(1.7)
	30-65	18.9	(1.5)	31.9	(2.0)
Switzerland (German)	16-29	12.0	(2.1)	23.3	(2.7)
	30-65	20.4	(1.3)	31.2	(1.5)
United States	16-29	14.5	–	27.9	–
	30-65	23.6	(1.0)	24.9	(1.3)

s.e.: standard error of estimate; – not available.
Source: OECD and Statistics Canada, 1995.

Chapter 3

Table: Figure 3.2
The length of the transition

	1984		1994	
Australia	16	19	16	22
Belgium	18	23	19	23
Canada	16	21	16	23
Denmark	16	22	16	24
France	17	22	19	24
Germany	17	20	17	22
Greece	16	23	18	24
Ireland	17	20	18	22
Italy	16	23	17	25
Luxembourg	16	20	18	21
Netherlands	16	22	16	23
Portugal	16	22	16	23
Spain	16	26	17	27
UK	16	20	16	22
USA	16	21	16	21
UNWEIGHTED MEAN	*16*	*22*	*17*	*23*

Source and *Notes:* As for Figure 3.1.

Table: Figure 3.3
Working while studying

	1984			1994		
	Apprenticeship	Other education or training	Total	Apprenticeship	Other education or training	Total
Australia	8	12	20	6	20	26
Belgium	1	1	2	1	1	2
Canada	–	23	23	–	30	30
Denmark	15	24	39	12	38	51
France	6	1	7	4	2	6
Greece	–	2	2	–	1	1
Ireland	2	3	5	1	3	4
Italy	–	1	1	–	1	1
Luxembourg	12	1	13	4	1	5
Netherlands	1	21	22	4	29	33
Portugal	–	3	3	–	4	4
Spain	–	1	1	–	2	2
UK	7	15	22	11	17	27
USA	–	18	18	–	19	19

Notes: "Other education or training" excludes training that is conducted only in the work environment; – not available.
For other notes, see Figure 3.1.
Source: As for Figure 3.1.

Table: Figure 3.4
Unemployment rates and educational level

	Lower secondary	*University*
One year after leaving education		
France	62	21
Spain	55	46
Finland	48	12
Ireland	35	8
USA	29	6
Austria	25	8
Denmark	–	–
Five year after leaving education		
France	41	4
Spain	47	17
Finland	51	6
Ireland	–	–
USA	–	–
Austria	–	–
Denmark	26	5

– not available.
Source: OECD education database.

Table: Figure 3.5
Young people (16-19 year-olds) in neither education nor employment

	Men				Women			
	1984		*1994*		*1984*		*1994*	
	Unemp-loyed	*Not in L Force*	*Unemp-loyed*	*Not in L Force*	*Unemp-loyed*	*Not in L Force*	*Unemp-loyed*	*Not in L Force*
Australia	12	2	10	2	10	6	7	5
Belgium	5	4	3	8	6	5	2	11
Canada	9	5	5	4	7	8	3	7
Denmark	4	1	1	1	4	2	1	4
France	10	3	5	2	13	4	4	2
Germany	3	1	2	1	3	2	1	2
Greece	4	4	4	4	8	20	7	9
Ireland	14	1	8	3	10	2	6	3
Italy	11	3	8	6	13	11	6	12
Luxembourg	4	2	3	5	4	4	4	6
Netherlands	3	4	2	1	5	7	2	2
Portugal	9	3	3	4	20	37	8	55
Spain	16	5	12	5	15	11	10	6
USA	6	4	5	5	5	11	4	10

Source and *Notes*: As for Figure 3.1.

Table: Figure 3.6
Youth unemployement and labour force participation

	A	*B*
France	31	30
Belgium	35	22
Greece	38	29
Italy	38	32
Finland	41	34
Spain	42	45
Switzerland	44	8
Ireland	46	23
Turkey	50	16
Sweden	51	17
Norway	56	13
USA	58	14
Austria	62	5
Netherlands	62	9
Canada	63	16
Australia	69	17
Denmark	69	11
United Kingdom	70	16
Germany	79	8

A = Labour force participation rate (%).
B = Unemployment rate (%).
Source: OECD database (Labour Force Survey).

Table: Figure 3.7
Relative youth unemployment by school system type, 1994

	A	*B*	*C*
More than 50% in Vocational Education			
Mainly apprenticeship-type programme			
Denmark	11	12	0.9
Germany	8	9	0.9
Austria	5	3	1.7
Switzerland	8	4	2.0
Mainly school-based programme			
Belgium	22	8	2.8
Finland	34	17	2.0
France	30	11	2.7
Italy	32	8	4.0
Netherlands	9	6	1.5
Programme type not classified			
Australia	17	8	2.1
Norway	13	4	3.3
Sweden	17	7	2.4
United Kingdom	16	8	2.0
More than 50% in General Education			
Canada	16	9	1.8
Greece	29	7	4.1
Ireland	23	13	1.8
Spain	45	20	2.3
Turkey	16	6	2.7
United States	14	6	2.3

A = Unemployment rate 15-24 year-olds.
B = Unemployment rate 25-64 year-olds.
C = Youth unemployment as a multiple of adult unemployment.
Source: Indicators P3 and R21 in *Education at a Glance - Indicators*.

Chapter 4

Table: Figure 4.1
Teacher supply and demand (selected countries)

Total population (thousands) by age-groups 5-9 and 10-14

	1985		1995		2005	
	5-9	10-14	5-9	10-14	5-9	10-14
Austria	427	498	468	475	470	491
France	3 702	4 208	3 815	3 854	3 615	3 698
Sweden	484	553	561	493	609	623
United States	16 764	17 045	19 213	18 457	20 036	20 934

	Change in total population of 5-9 year-olds			Change in total population of 10-14 year-olds		
	1985	1995	2005	1985	1995	2005
Austria	100	110	110	100	95	99
France	100	103	98	100	92	88
Sweden	100	116	126	100	89	113
United States	100	115	120	100	108	123

Percentage breakdown of the teaching force by age-group, 1993

	Sweden	USA	Austria	France
under 30	6	12	21	12
30-39	15	21	37	32
40-49	43	42	32	39
over 50	36	25	10	18

Data for 1985 are from United Nations demographic estimates.
Data for 1995 and 2005 are from the United Nations Population Division's medium variant population projections.
Source: *World Population Prospects 1950-2050* (1994 Revision).

Table: Figure 4.3
Annual salaries

A. Actual relative pay of primary school teachers with 15 years experienced as a multiple of GDP per capita		*B. Difference from predicted relative pay based on level of GDP per capita*	
Norway	1.027	Sweden	-0.425
Sweden	1.086	Norway	-0.369
Italy	1.152	Italy	-0.331
Austria	1.183	Austria	-0.264
United States	1.219	Finland	-0.246
Finland	1.293	New Zealand	-0.188
France	1.310	Turkey	-0.173
Belgium	1.315	France	-0.158
New Zealand	1.355	Belgium	-0.131
Denmark	1.391	United States	-0.102
Netherlands	1.423	Netherlands	-0.061
Luxembourg	1.587	Denmark	-0.050
Turkey	1.624	Greece	-0.027
Greece	1.685	United Kingdom	0.245
Germany	1.720	Germany	0.258
Switzerland	1.724	Luxembourg	0.324
United Kingdom	1.764	Portugal	0.355
Portugal	1.988	Switzerland	0.367
Spain	1.994	Spain	0.392
Ireland	2.177	Ireland	0.608

Source: OECD education database; Eurydice for Luxembourg and United Kingdom

Table: Figure 4.4
Growth in teachers' salary

Real growth in GDP per capita; teachers' starting salary and experienced teachers' salary (primary education), 1985-1993 (in %)

	GDP per capita	*Teachers' starting salary*	*Experienced teachers' salary (15 years)*
Austria	15.15	28.79	26.05
Belgium	15.57	11.48	7.63
Denmark	9.68	1.82	1.39
Finland	1.12	20.20	14.97
France ****	13.04	10.51	21.79
Germany	15.07	19.45	11.77
Greece	7.45	-18.77	-28.79
Ireland	41.22	24.16	26.73
Italy *	16.11	18.71	23.46
Japan **	27.40	23.6	14.0
Netherlands	17.56	6.08	2.26
Portugal **	43.81	29.5	120.0
Spain	25.07	17.65	16.09
Sweden	0.8	4.94	6.73
United Kingdom	13.89	29.99	2.55
United States ***	10.45	–	6.1

* Salary data for 1993 are taken from an OECD survey of teacher salary and working conditions (refer to *EAG - Indicators*, indicator P35)
** Internal Labour Office.
*** National Centre for Education Statistics, *Digest of Educational Statistics* (1995), Table 78.
**** Ministry of Education.
Source: For European Union countries other than Portugal, *Key Education Figures in the European Union* (1995), appendix J.

Table: Figure 4.5
Two components of increased spending per pupil

Real growth in: experienced teachers' salary, pupil/teacher ratios and spending per pupil (primary education), 1985-1993 (in %)

	Experienced teachers' salary	*Pupil-teacher ratios*	*Spending per pupil*
Austria	26.05	4.4	24.7
Belgium	7.63	-20.0	32.4
Denmark	1.39	-10.4	28.2
Finland	14.97	-3.7	6.2
France ****	21.79	3.2	36.9
Germany	11.77	-0.9	6.1
Greece	-28.79	-18.8	–
Ireland	26.73	-8.9	33.9
Italy *	23.46	-32.3	66.0
Japan **	14.0	-16.5	67.2
Netherlands	2.26	8.2	-10.6
Portugal **	120.0	-27.9	101.6
Spain	16.09	-39.5	65.2
Sweden	6.73	6.8	-3.9
United Kingdom	2.55	15.4	43.3
United States ***	6.1	-3.1	22.2

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Source: As for Figure 4.4.

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