

Education at a Glance 2007

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OECD Briefing Note for Sweden

Governments are paying increasing attention to international comparisons as they search for effective policies that enhance individuals' social and economic prospects, provide incentives for greater efficiency in schooling, and help to mobilise resources to meet rising demands.

In response to this need, the OECD Directorate for Education devotes a major effort to the development and analysis of quantitative, internationally comparable indicators, which are published annually in *Education at a Glance*. These indicators enable educational policy makers and practitioners alike to see their education systems in the light of other countries' performances and, together with OECD's country policy reviews, are designed to support and review the efforts that governments are making towards policy reform.

This note contrasts **key findings for Sweden** with **global trends among OECD countries**, under the headings: quantity and quality challenges, equity challenges, and resource and efficiency challenges.

Education at a Glance 2007, as well as its executive summary, all data and web-only tables, can be downloaded free of charge at www.oecd.org/edu/eag2007.

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QUANTITY AND QUALITY CHALLENGES

*Previous editions of **Education at a Glance** have shown how demands for more and better education have driven a massive quantitative expansion of education systems in OECD countries, particularly at the tertiary level of education. What has been the impact of this on labour market returns? Has the increasing supply of well-educated labour been matched by the creation of an equivalent number of high-paying jobs? Or one day will everyone have a university degree and work for the minimum wage?*

It is certainly conceivable that at least some new graduates will end up doing jobs that do not require graduate skills and that they will obtain these jobs at the expense of less highly qualified workers. Such a crowding-out effect may be associated with a relative rise in unemployment among people with low qualifications (as higher-qualified workers take their jobs), but also potentially with a reduction in the pay premium associated with tertiary qualifications (as a rise in graduate supply outstrips any rise in demand for graduate skills).

***Education at a Glance 2007** examines this question and the results suggest that the expansion has had a positive impact for individuals and economies and that there are, as yet, no signs of an “inflation” of the labour-market value of qualifications.*

Global trends

Education systems continue to expand at a rapid pace.

- In most OECD countries, among adults aged 55 to 64 (who entered the workforce in the 1960s and early 1970s) between 7 and 27% have completed higher education, except in Canada and the United States where more than 30% have done so. Among younger adults aged 25 to 34, at least 30% have obtained tertiary qualifications in 19 countries and over 40% have in 6 countries (Indicator A1). On average, the proportion of the population with tertiary qualifications has risen from 19 to 32% of the population between these two groups.
- Although most countries have seen at least some growth in tertiary enrolments (Indicator C2) and in tertiary attainment, the rate of expansion has varied widely from one country to another and from one time period to another. Much of the growth has come from periods of rapid, policy-driven expansion in certain countries. Korea, Ireland and Spain, for example, more than doubled the proportion of tertiary graduates entering the workforce between the late 1970s and the late 1990s from initially low levels. In the United States and Germany, however, the proportion remained largely unchanged, with relatively high levels in the United States and comparatively low levels in Germany (Indicator A1).
- Current rates of graduation from traditional universities range from around 20% or less in Austria, Germany and Turkey to more than 40% in Australia, Denmark, Finland, Iceland, Italy, the Netherlands, New Zealand, Norway and Poland. These graduation rates tend to be higher in countries where the programmes provided are of shorter duration.
- On average across OECD countries, the graduation rate for shorter, vocationally oriented programmes represents 9% of the typical age cohort, and 1.3% for

Key results for Sweden

Sweden reaches the ceiling for upper secondary education while still expanding tertiary education.

- Upper secondary attainment levels are high in Sweden with more than 84% of the population having attained this level of education (68% OECD average). Among younger individuals 91% have at least attained upper secondary education (Table A1.2a). With such a large portion of the population having achieved upper secondary education, the growth has been moderated in recent years.
- On the other hand, Sweden has seen an impressive growth in tertiary qualifications over past generations and among the younger population (25-34-year-olds) 37% holds a university degree in comparison with 25% among the 55-64-year-olds. This expansion of higher education is at par with the OECD average. Sweden is, however, behind the top 6 countries where more than 40% among the younger cohort has obtained tertiary qualifications.
- The growth in tertiary enrolment rates has risen sharper in Sweden than OECD as a whole. Eighty percent entered tertiary (5A) program in 2003 (Table C2.5). This figure has dropped somewhat in 2005 (76%) largely reflecting improved employment prospects for younger individuals. Nevertheless, the growth in tertiary enrolment suggest that attainment levels will rise considerably also in the future.
- Graduation from traditional universities stands at 37.7% which is similar to the OECD average (Table A3.1). Sweden is together with Germany, Portugal and Switzerland the countries that graduation rates from advanced research programmes (PhD or equivalent) exceed 2 percent (Sweden 2.2%). Sweden thus holds a position as one of the countries with the highest graduation rates in advanced research

<p>programmes leading to advanced research qualifications.</p>	<p>programmes.</p> <ul style="list-style-type: none"> • Shorter vocational oriented programmes are less common in Sweden with only 4.5% of the students graduating from these types of programmes. • The survival rate (Table A3.6) for those entering tertiary education is low in Sweden (61%) in comparison with the OECD average (70%) which explains a large portion of the difference between enrolment rates (80%) and graduation rates (37.7%). Although most individuals benefit from participating in higher education the returns are substantially higher for those completing their education than for those leaving the education system before their graduation. One of the key issues for the higher education system in Sweden is thus to improve the success rate for those entering tertiary education. •
<p><i>In most countries, the number of science graduates has increased faster than the overall number of graduates.</i></p> <ul style="list-style-type: none"> • The number of persons with a tertiary science degree per 100,000 employed persons ranges from below 700 in Hungary to above 2200 in Australia, Finland, France, Ireland, Korea, New Zealand and the United Kingdom (Table A3.4). • The ratio of younger to older age groups with science as a field of study is 3.0, compared with a ratio for all fields of study of 2.3. In Austria and Canada, the ratio is larger than 4.0, in Hungary and Ireland larger than 6.0, and in Portugal and Spain larger than 8.0 (Table A1.5). 	<p><i>Sweden continues to increase the number of people with science and engineering degrees.</i></p> <ul style="list-style-type: none"> • The ratio of younger to older age groups with science as a field of study is above four (4.3) in Sweden (Table A1.5). This replacement ratio is close to five (4.7) for engineering indicating a substantial expansion of adults with these degrees. The ratio of younger to older with engineering degree is twice as large as the OECD average of 1.9. • However, the number of science graduates (Table A3.4) per 100,000 employed persons (1,495) is just above the OECD average and substantially below top countries such as Finland (2,290) and Australia (2,141) which suggest that there is still room for further expansion in this field of education. • While the number of individuals with science and engineering degrees has increased, the ratio of younger to older age groups with education as a field of study has not. For Sweden together with Denmark, Germany, Netherlands, and United Kingdom, this ratio is below 1, which might signal a potential problem of finding replacements as the older generation of teachers retire in the coming years.
<p><i>The effects of tertiary expansion: a high calibre workforce or the overqualified crowding out the lesser qualified?</i></p> <ul style="list-style-type: none"> • The labour-market and financial incentives for attaining tertiary qualifications continue to remain high for both men and women, despite the rapid growth in the number of those obtaining qualifications. This can be seen when contrasting the advantages of tertiary 	<p><i>Despite increasing educational levels the benefits of higher education have not deteriorated.</i></p> <ul style="list-style-type: none"> • In the Sweden, the earnings advantage for university-level graduates aged 30-to-44 years over persons with an upper secondary qualification is 31% which is together with Denmark the lowest earnings differential among countries with data on this indicator. The Czech Republic, Portugal, United Kingdom and the

education for individuals in terms of higher average earnings, lower risks of unemployment and the public subsidies they receive during their studies, with the costs that individuals incur when studying, such as tuition fees, lost earnings during studies and higher tax rates later in life. In all countries with comparable data, the private rate of return for those who acquire tertiary degrees immediately following school is higher than real interest rates, and often significantly so, at at least 9.8% in all eleven countries for which data are available – except for Denmark, New Zealand and Sweden (Table A9.6).

- The average unemployment rate among those only with lower secondary education is 5 percentage points higher than those whose highest level is upper secondary and 7 points higher than those with tertiary education (Indicator A8). The data show that while unemployment is substantially higher than the average among those with low qualifications, this situation has not worsened in those countries that have expanded tertiary education. However, in those countries that did not expand tertiary education, there has been a rise in the relative risk. Indeed, in these countries a failure to complete upper secondary education is now associated with an 80% greater probability of being unemployed, compared to less than 50% in those countries that have increased tertiary education the most.
- Countries expanding tertiary education attainment more in the late 1990s tended to have a greater fall (or smaller rise) in unemployment between 1995 and 2004 than countries with less tertiary expansion. For example, France, Ireland and Korea had the fastest growth in tertiary attainment and close to zero or negative growth in unemployment; Germany, the Czech Republic and the Slovak Republic had low or no growth in tertiary attainment but substantial growth in unemployment among the unqualified (Indicator A1).
- The indicators provide no evidence that the lesser qualified are crowded out from the labour market and there is much to point to the opposite: that the least educated individuals benefit in terms of better employment opportunities when more people enter higher education. In addition, an analysis of trends in the absolute level of unemployment for upper-secondary educated adults suggests that changes in the level of unemployment during the period 1995 to 2004 are unrelated to changes in tertiary attainment levels. In fact, for both upper and lower secondary unemployment, there is no statistically significant correlation between an expansion in tertiary attainment and movement in unemployment rates after controlling for growth in GDP. There is, however, a significant correlation between increases in tertiary and upper secondary attainments and the fall in relative unemployment for lower-secondary educated adults.

United States all have earnings differentials above 75%. When including all tertiary qualifications, the earnings advantage is, at 27% which is also low in comparison with other countries and this figure has been relatively stable in recent years (around 30% or below).

- The low earnings advantage of obtaining a university level degree also manifests itself in relatively low private rate of returns of investing in tertiary education. Sweden together with Denmark shows the lowest internal rate of return for an individual obtaining a university degree, 8.9% for males and 8.2% for females (Table A9.6). Despite large public subsidies to higher education private returns to tertiary education are less than in most other countries, indicating that the incentives to invest in and to complete higher education is not as pronounced as in other OECD countries. The private rate of return for completing upper secondary education is in comparison substantially higher (18.7% for males and 13.1% for females) in Sweden.
- The benefits of higher education in Sweden are instead visible in improved employment prospects (Table A8.3a). Employment rates for those with tertiary education is 6 percentage points higher relative to upper secondary and post-secondary non-tertiary educated individuals and 21 percentage points higher than for those without upper secondary education. The employment advantage of having a tertiary education has not decreased over the last decade.
- Similarly those with tertiary education in Sweden appear to enjoy more stable labour market conditions than those with lower education attainments (Table A8.4a). Since 1991 unemployment rates have been varying between 1.1% and 4.5% for those with tertiary attainments while unemployment rates for upper secondary educated ranges from 2.3% to 8.7% the during the same period. The advantage of having attained tertiary education has decreased somewhat since 2000 but is still sizable in comparison with lower secondary education (4 percentage-points lower unemployment rate).
- Although both males and females with upper secondary or tertiary attainment have earnings advantages compared with those of the same gender who do not complete upper secondary education, earnings differentials between males and females with the same educational attainment remain substantial. When all levels of education are taken together (*i.e.* total earnings are divided by the total number of income earners, by gender) the earnings of females between the ages of 30 and 44 range from 51% of those earned by males in Korea, to 84% of those earned by males in Luxembourg; in Sweden it is 72%.

All this suggests that employment prospects among the least well-educated are principally tied to growth in the economy and in general to productivity, to which an adequate supply of high-skilled labour can potentially contribute.

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

The gap in earnings between males and females may be explained by many factors, including differences in the amount of time that males and females spend in the labour force, and the high incidence of part-time work among females. To some extent it may also be due to different career and occupational choices (Table A9.1b).

The internationalisation of tertiary education is proceeding rapidly.

- In 2005, over 2.7 million tertiary students were enrolled outside their country of citizenship. This represented a 5% increase in total foreign student intake reported to the OECD and the UNESCO Institute for Statistics from the previous year.
- Student mobility – *i.e.* international students who travelled to a country different from their own for the purpose of tertiary study – ranges from below 1 to almost 18% of tertiary enrolments. International students are most numerous in tertiary enrolments in Australia, Austria, France, New Zealand, Switzerland and the United Kingdom.
- France, Germany, the United Kingdom and the United States receive more than 50% of all foreign students worldwide. In absolute numbers, international students from France, Germany, Japan and Korea represent the largest numbers from OECD countries. Students from China and India comprise the largest numbers of international students from partner economies.
- In Spain, Switzerland and the United States, and the

Sweden holds its global education market share by providing English programmes and not charging any tuition fees.

- The share of the international education market is relatively modest for Sweden which receives 1.4% of all foreign students enrolled in tertiary education. Compare with the big destinations for foreign students, United States (22%) and UK (12%), Sweden still places itself well ahead of its Nordic neighbors (Chart C3.2; Table C3.8 on the web).
- In 2005, international students comprised 4.4% of all tertiary enrolment in Sweden (Table C3.1) with most students enrolled in social sciences, business and law (32%) and in engineering and manufacturing and construction programmes (22.9%) (Chart C3.4 and Table C3.5).
- Apart from English speaking countries, Sweden together with Denmark, Finland, and Netherlands are those countries which provides many education programmes in English. The Nordic countries, including Sweden, also do not charge any tuition fees for international students in public universities.

<p>partner economy Brazil, more than 15% of international students are enrolled in advanced research programmes.</p> <ul style="list-style-type: none">• 30% or more of international students are enrolled in sciences, agriculture or engineering in Finland, Germany, Hungary, Sweden, Switzerland, the United Kingdom and the United States.• International graduates contribute to 20% or more of the graduate output for tertiary-type A programmes in Australia and the United Kingdom. The same holds for foreigners graduating in Belgium. The contribution of international and foreign graduates to the tertiary graduate output is especially high for advanced research programmes in Belgium, Switzerland, the United Kingdom and the United States.	
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EQUITY CHALLENGES

While individuals with high level qualifications continue to see strong labour-market returns, those without strong baseline qualifications, defined by the OECD as those who have not attained a qualification at the upper secondary level, have seen rapidly deteriorating labour-market prospects in most countries. It is therefore increasingly important for education and training systems to ensure that young adults leave schools with strong baseline qualifications or attain these subsequently.

Education at a Glance 2007 completes the data on the graduate output at the upper secondary level and the incidence and intensity of job-related non-formal education with new data on the relationship between social background and both learning outcomes at schools and participation in university-level education. The strength of the relationship between the socio-economic background of individuals and their educational outcomes provides one way of examining to what extent countries are using their potential in generating future human capital and allows for assessment of equity in the distribution of learning opportunities.

<i>Global trends</i>	<i>Key results for Sweden</i>
<p><i>In most OECD countries, upper secondary education is becoming universal, but in some countries a sizeable minority is left behind.</i></p> <ul style="list-style-type: none"> • The proportion of individuals in the population who have successfully completed upper secondary education (see notes on definition at the end) has been rising in almost all OECD countries, and rapidly in some. In more than half of all OECD countries the proportion of 25-to-34-year-olds with upper secondary qualifications now exceeds 80%, and in Canada, the Czech Republic, Korea, the Slovak Republic and Sweden it exceeds 90% (Table A1.2a). • Those who have attained at least upper secondary education enjoy substantial earnings advantages (Chart A9.4). For many countries, the earnings disadvantage of those without upper secondary qualifications has significantly worsened (Table A9.2a). • Gender differences in employment and unemployment rates are largest among those without upper secondary education (Chart A8.1) 	<p><i>Sweden ranks high among the OECD countries in having a large proportion of the population with upper secondary education and at the same time large labour market penalties exist for not completing this level of education.</i></p> <ul style="list-style-type: none"> • Ranked by upper secondary educational attainment in the population, Sweden occupies the 8th position among 55-to-64-year-olds in the 29 OECD countries with data (<i>i.e.</i> those who completed school some 40 years ago) and the 5th position among 25-to-34-year-olds, who completed school a decade ago. Note that the individuals (25-to-34-year-olds in 2004) in this analysis passed the age of sixteen in between 1985 and 1995. Sweden now have higher completion rates compared with instance USA but is still lower than Korea which ranks 23rd among 55-to-64-year-olds but 1st among 25-to-34-year-olds (Table A1.2a). • Employment rates for those without an upper secondary education stand substantially lower in Sweden than for those completed this level of education, 66% compared with 81%. Employment rates for those without upper secondary education have never recovered from the economic crises in the beginning of the 1990s when employment rates were close to 80% (78% in 1995). The disadvantage of not having an upper secondary education is thus substantial in terms of employment prospects in Sweden as in the rest of the OECD countries (Table A8.3a).
<p><i>Schools and societies face major challenges in integrating immigrants.</i></p> <ul style="list-style-type: none"> • International migration has become a key issue in most OECD countries, sparking intense debate on how immigrants can be successfully integrated into societies and labour markets. OECD PISA adds an 	<p><i>Sweden is the country where second generation students have the largest improvement in mathematical performance.</i></p> <ul style="list-style-type: none"> • The mathematic performance for the first generation of immigrant students is substantially below those of

<p>important new perspective to the discussion by assessing the educational success of 15-year-old students from immigrant families. It is clear that serious challenges lie ahead for education systems, particularly in Europe. Indicators show that:</p> <ul style="list-style-type: none"> • Among the 14 OECD countries with significant immigrant populations, first-generation students lag 48 score points behind their native counterparts on the PISA mathematics scale, equivalent to more than a school year's progress, on average. The performance disadvantage of second-generation students also remains significant, at 40 score points. The disadvantage of students with an immigrant background varies widely across countries, from insignificant amounts in Australia, Canada, New Zealand and Macao-China to more than 90 score points in Belgium and Germany even for second-generation children. • Second-generation students (who were born in the country of the assessment) tend to perform better than their first-generation counterparts (who were born in another country), as one might expect since they did not need to make transitions across systemic, cultural and linguistic borders. However, the gains vary widely across countries. In Canada, Luxembourg, Sweden and Switzerland and the partner economy Hong Kong-China, second-generation students perform significantly better than first-generation students, with the performance gap reduced by 31 score points in Switzerland and 58 score points in Sweden, while in Germany and New Zealand second-generation students born in these countries perform worse than first-generation students. • The mathematics achievement of the highest performers among students with an immigrant background varies much less across countries than the achievement of the lowest performing students with an immigrant background. • Despite performing less well on the whole than native students and generally coming from less advantaged families, students who have experienced immigration first-hand tend to report, throughout the OECD area, higher levels of interest and motivation in mathematics. 	<p>native Swedish students (92 units) with only Belgium performing worse on this scale (Table A6.1a). Although first-generation of immigrant students have high instrumental motivation towards mathematics it does not translate into high mathematic performance (Chart A6.3). Part of the explanation for the low performance among the first generation of immigrant students could possibly be found in the composition of immigrants and language barriers that prevent students from gaining required proficiencies in mathematics.</p> <ul style="list-style-type: none"> • Very few immigrant students of the first generation perform well in mathematic. Only 3.3% (17.2%) of the students perform at level 5 and 6; and 8.4% (21.1%) perform at proficiency level 4 (with native students' performance in parenthesis) which is the worst performance of first generation immigrant students in all OECD countries (Tables A6.2a and A6.2c). • However, Sweden stands out as the country where the second generation of immigrant students makes the greatest improvements in mathematic performance. Second generation students score 58 points better than the first generation of students in comparison the OECD average is 8 points. In this sense the integration of immigrants appears to work well in an international context (with the caution that the populations are not the same). The challenge thus seems to be to provide better support when immigrant children arrive in Sweden and to provide a better integration of first generation of immigrants.
<p><i>Countries vary greatly in how well they succeed in enabling students from blue-collar backgrounds to participate in higher education.</i></p> <ul style="list-style-type: none"> • Ireland and Spain stand out as providing the most equitable access to higher education, whereas in Austria, France, Germany and Portugal students from a blue-collar background are about one-half as likely to be in higher education as compared with what their proportion in the population would suggest (Indicator 	<ul style="list-style-type: none"> • No data available for Sweden

<p>A7).</p> <ul style="list-style-type: none"> • When measuring the socio-economic status of students in higher education by their fathers' educational background large differences between countries emerge. In many countries, students are substantially more likely to be in higher education if their fathers completed higher education. Students from such a background are more than twice as likely to be in higher education in Austria, France, Germany, Portugal and the United Kingdom than are students whose fathers did not complete higher education. In Ireland and Spain this ratio drops to 1.1 and 1.5, respectively. • Among the countries providing information on the socio-economic status of students in higher education it appears that inequalities in previous schooling are reflected in the intake of students from less advantaged backgrounds. Countries providing more equitable access to higher education – such as Finland, Ireland and Spain – were also the countries with the most equal between-school performances, as show by data collected in 2000 by OECD PISA. 	
<p><i>Initial education alone can no longer satisfy the rising and changing demand for skills, but job-related education and training is still least common among those who need it most.</i></p> <ul style="list-style-type: none"> • In many countries, non-formal continuing education and training now also plays a significant role in raising the stock of knowledge and skills. In Denmark, Finland, Sweden and the United States, more than 35% of employees take part in non-formal job-related education and training each year. At 27%, the corresponding participation rate in the United Kingdom is also still well above the OECD average of 18%. At the other end of the scale, Greece, Hungary, Italy, the Netherlands, Poland, Portugal and Spain provide such training to fewer than 10% of employees (Table C5.1a). • In OECD countries, on average, the participation rate in non-formal continuing education and training among employees who have not completed upper secondary education is less than half of the rate among those with upper secondary education and less than a quarter of the rate seen among those with tertiary education. In the United Kingdom these differences are significantly larger than in most OECD countries. 	<p><i>In Sweden job-related education and training is geared towards more educated groups but evenly spread over the working life.</i></p> <ul style="list-style-type: none"> • Sweden ranks fifth among OECD countries in terms of the number of education and training hours an adult can expect to receive over a typical working life. As in most OECD countries, individuals without an upper secondary education receive substantially less education and training relative to their more educated counterparts. An individual with tertiary education can expect to receive more than 2.5 times as much education and training in Sweden during the working life in comparison with an individual without upper secondary education. • Sweden is one of the most equitable countries in terms of providing training to men and women and to all ages. There is little difference in how much training one can expect depending on whether one is a woman or man. Sweden is also one of few countries providing training throughout the working life. Those at younger age (25-34 year-olds) can expect to receive 142 hours of education and training and those in their end of their working life (55-64-year-olds) can expect to receive 137 hours. In contrast France, ranked third in terms of overall hours of education and training received, a young adult (25-34 year-olds) can expect to receive 366 hour of education and training whereas older adults (55-64-year-olds) can expect to receive only 23 hours

	<p>(Table C5.1b).</p> <ul style="list-style-type: none"> • Life long learning is thus a reality in Sweden with education and training relatively equally distributed among women and men and over the working life. The key issue for Sweden is the access to education and training for those with low level of education.
<p><i>In some countries, student's expectations for their own educational future are also closely related to their social background.</i></p> <ul style="list-style-type: none"> • Some 57% of 15-year-olds in OECD countries expect to go to university, but this rate varies from as high as 95% of students in Korea to as low as 21% in Germany. Indicators show that expectations vary within countries according to individual performance levels, gender, socio-economic background and immigrant status. Data collected in 2003 through OECD PISA show that 15-year-olds' expectations for completing a university-level programme are closely linked with their performance in mathematics and reading. Regardless of their relative academic abilities, 15-year-olds from lower socio-economic backgrounds are less likely to expect to complete tertiary education than those from higher socio-economic backgrounds. In most countries, 15-year-old students from immigrant backgrounds are more likely to expect to complete a university-level programme than their native counterparts. The relative expectations of these students are even higher when compared with native students of similar aptitudes and socio-economic backgrounds. 	<p><i>High hopes and motivation among immigrant students but poor performance makes enrolment into university difficult.</i></p> <ul style="list-style-type: none"> • Expectation among 15-year-olds in Sweden to go to university match those of the OECD average (57.7%) but with a substantially larger portion expecting to enter into more vocational oriented (ISCED 5B) studies than the OECD average (24.3% versus 12.6%). • More females than males expect to complete higher education, at 38%, and 29%, respectively (Table A4.3a). When examining traditionally more male oriented subjects Sweden also displays similar patterns as in many other OECD countries. The number of male tertiary science graduates is still almost twice as many as females. Science graduates per 100,000 employed 25-34-year-olds stands at 2 061 for males and 1 195 for females (Table A3.4). • Disregarding academic abilities, the most socio-economically advantaged quarter of students are 2.1 times more likely to expect to complete a university-level qualification than their counterparts from lower socio-economic backgrounds (Table A4.4). • Immigrant students have higher expectations than native students in Sweden. First generation immigrant students' expectations about university studies are close to two (1.93) times higher than native born students. The figure for second generation immigrant students is 1.7 times higher than for native students. Accounting for immigrant students' academic performance and socioeconomic status, the odds increases to 5.7 for first generation students and 3.3 for second generation students. This increase in expectations indicates a mismatch between academic achievements (and socioeconomic backgrounds) and aspirations that could potentially be difficult to reconcile when these students enter higher education.

RESOURCE AND EFFICIENCY CHALLENGES

*The expansion of education has been accompanied by massive financial investments. **Education at a Glance 2007** shows that between 1995 and 2004, and for all levels of education combined, expenditure on educational institutions increased by an average of 42% in OECD countries. The sustainability of the continued expansion will, however, depend on re-thinking how education is financed and how to ensure that it is more efficient. In some countries, spending per student has already begun to decline – most notably in the Czech Republic, Hungary, the United Kingdom and Poland – as enrolments rose faster than spending on tertiary education.*

While significant additional investments in education will be important, it is equally clear that more money alone will not be enough. Investments in education will also need to become more efficient. The education sector has not yet re-invented itself in ways that other professions have done to improve outcomes and raise productivity. Indeed, the evidence suggests the reverse, namely that productivity in education has generally declined because the quality of schooling has broadly remained constant, while the price of the inputs has markedly increased. As the place and mode of educational provision have largely remained unchanged, the labour-intensiveness of education and the predominance of teachers' salaries in overall costs (with payscales based on qualifications and automatic increases) have made personnel costs rise over time.

Global trends	Key results for Sweden
<p>OECD countries spend 6.2% of their collective GDP on educational institutions, but the increase in spending on education between 1995 and 2004 fell behind growth in national income. There is further scope for enhancing the efficiency of educational spending.</p> <ul style="list-style-type: none"> • More people are completing upper secondary and tertiary education than ever before, and in many countries the expansion has been accompanied by massive financial investments. Between 1995 and 2004 and for all levels of education combined, expenditure on educational institutions increased in the 24 countries with comparable data for the period. The increase was, on average, 42% in OECD countries. The increase is usually larger for tertiary education than for primary to post-secondary non-tertiary levels of education combined. • At the tertiary level of education, the increase of expenditure over the period 1995-2004 was more pronounced from 2000 onward than before 2000 in nearly one-half of OECD countries. Between 2000 and 2004, expenditure increased by more than 30 percentage points in the Czech Republic, Greece, Mexico, Poland, the Slovak Republic and Switzerland and the partner economy Chile. • It is important to relate overall spending on education to the investment made per student. OECD countries as a whole spend USD 7 572 per student annually between primary and tertiary education, that is – USD 5 331 per primary student, USD 7 163 per secondary student and USD 14 027 per tertiary student, but these averages mask a broad range of expenditure across countries. As represented by the simple average across all OECD countries, countries spend twice as much per student 	<p>Sweden has shown consistent increases in educational investment, in terms of a rising share of GDP being devoted to education.</p> <ul style="list-style-type: none"> • Sweden has shown consistent rises in its investment in education, not just in absolute terms, where increases were observed in most countries over recent years, but also relative to national income: Spending on educational institutions increased from 6.2% of GDP in 1995 to 6.4% in 2000 and 6.7% in 2004. Sweden ranks 7th among the OECD countries in spending on educational institutions as percentage of GDP. If one also considers that during this period Sweden has enjoyed good economic growth, substantially more resources have been channeled to the education system. In contrast, in one-third of the OECD countries with available data, spending on educational institutions did not match growth in national income, such that expenditure as a proportion of GDP actually declined (Chart B2.1, based on Table B2.1a). • Most of the resources are focused on primary and secondary education. Sweden spends more on core educational services in primary and secondary education and less in tertiary education than most OECD countries. Primary, secondary and post secondary educational institutions receives 4.03% of GDP compared with an average spending of 3.48% of GDP among OECD countries whereas core educational services at tertiary level receives 0.90% of GDP in Sweden compared with the OECD average of 1.04% of GDP (Table B6.1)

at the tertiary level than at the primary level.

- Lower unit expenditure does not necessarily lead to lower achievement and it would be misleading to equate lower unit expenditure generally with lower quality of educational services. For example, the cumulative expenditure of Korea and the Netherlands is below the OECD average and yet both are among the best-performing countries in the OECD PISA 2003 survey.
- Countries with low levels of expenditure per student can nevertheless show distributions of investment relative to GDP per capita similar to those countries with high levels of spending per student. For example, Hungary, Korea, Poland and Portugal, and the partner economy Estonia – countries with expenditure per student and GDP per capita below the OECD average at primary, secondary and post-secondary non-tertiary level of education – spend a higher proportion of money per student relative to GDP per capita than the OECD average.
- Expenditure per student at primary, secondary and post-secondary non-tertiary levels increased by 50% or more between 1995 and 2004 in Greece, Hungary, Ireland, Poland, Portugal, the Slovak Republic and Turkey, and the partner economy Chile. On the other hand, spending per student at the tertiary level has in some cases fallen, as expenditure does not keep up with expanding student numbers
- Expenditure on education tends to rise over time in real terms, as teachers' pay (the main component of costs) rises in line with general earnings. On the one hand, rising unit costs that are not paralleled by increasing outcomes raise the spectre of falling productivity levels in education. Across OECD countries, preliminary analysis suggests that there is potential for increasing learning outcomes by 22% while maintaining current levels of resources (output efficiency). The analysis also suggests that the scope for reducing the resources devoted to education while maintaining the current levels of outcomes is slightly larger, at 30% (input efficiency). Differences in estimates of efficiency for different types of school (e.g. public and private) tend to be modest, when looking at the OECD as whole, though efficiency savings are greater for smaller schools than for larger schools (Indicator B7).

Education has received a growing share of the public budget, with most of the resources invested at the school level.

- The share of public expenditure that is devoted to education has also increased in Sweden at faster pace than in the OECD on average. Between 1995 and 2004 the share of all public spending devoted to educational institutions, or paid in the form of subsidies to households, increased from 10.7 to 12.9%, while the OECD average increased by 1.1 percentage points from 12.3% to 13.4% (Table B4.1). Proportionally, public spending on education is still below the OECD average but an increasing share of public spending is invested in the education system.
- Most of the additional resources were invested in school education, where expenditure increased between 1995 and 2004 by 39% in absolute terms, the same as the OECD average increase. Spending on tertiary institutions increased, at 44%, which was less than the average increase (55%) in OECD countries (Table B1.5). When accounting for the increase in students, expenditures for primary and secondary education increased with 17% (OECD average 38%) while spending on tertiary education actually decreased one percent (OECD average 9%). Higher education in Sweden had thus to manage with less resources during the period while most countries increased their contributions.

Spending per student in Sweden is above the OECD average at the primary, secondary and tertiary levels.

- To assess their potential impact on the quality of educational services, the resources invested in education need to be seen in relation to the number of students enrolled. On that measure, spending per student across all levels of education (excluding pre-primary education) in Sweden is, at USD 9 085 (equivalent), above the OECD average of USD 7 061. The spending per student at the primary level (USD 7 469) is above the corresponding OECD average (USD 5 832), spending per student at the secondary level (USD 8 039) is above the corresponding OECD average (USD 7 276). At USD 16 218, spending at the tertiary level significantly exceeds the OECD average of USD 11 100 (Table B1.1).
- A substantial portion of the spending per students in tertiary education relates to R&D activities. Sweden and Switzerland stands out as those countries spending most on R&D. With USD 7 863 spent in Sweden and USD 9451 spent in Switzerland this far exceeds the OECD average of USD 3 181 per student. The large R&D share of tertiary expenditure leaves the average for core educational services (USD 8 355) just above the OECD

	<p>average (USD 7 664) (Table B1.1b).</p> <p><i>Swedish 15 year-olds are performing as one would expect from the amount of resources put into schooling.</i></p> <ul style="list-style-type: none"> • The cumulative expenditure on educational institutions per student between the ages of 6 and 15 years is approximately USD 60 000 in Sweden (Chart B7.2). Accounting for the amount of spending, the performance on PISA mathematical scale is at par with expectations as Sweden is located at the regression line. In this respect, Sweden is doing better than Norway (which spends more money but produces lower scores), marginally better than Denmark (which spending more money and produces marginally higher score) and substantially worse than Finland which spends less money but produces substantially better mathematical performance among its 15 year-olds. In relation to OECD countries at whole, Swedish students are performing in line with the amount invested in them (no better no worse) (Chart B7.2).
<p><i>Instruction time, teachers' salaries, and student-teacher ratios vary widely among countries.</i></p> <ul style="list-style-type: none"> • The choices countries make about how many hours and years students spend in the classroom and the subjects they study reflect national priorities and preferences. Budgetary considerations also help shape education: Teachers' salaries represent the largest single cost in providing school education and, as such, are a critical consideration for policy-makers striving to both maintain the quality of education and to contain spending. While class size has become a hot topic in many OECD countries, evidence on its impact on student performance is mixed. Among the findings on these nuts-and-bolts educational policy issues: • Students in OECD countries are expected to receive, on average, 6 898 hours of instruction between the ages of 7 and 14, of which: 1 586 hours are between ages 7 and 8; 2 518 hours between ages 9 and 11; and 2 794 hours between ages 12 and 14. The large majority of intended hours of instruction are compulsory. • In OECD countries, students between the ages of 7 and 8 receive an average of 769 hours per year of compulsory instruction time and 793 hours per year of intended instruction time in the classroom. Students between the ages of 9 and 11 receive about 45 hours more per year, and those aged between 12 and 14 receive just over 90 hours more per year than those aged between 9 and 11. • Salaries for teachers with at least 15 years' experience in lower secondary education are over 	<p><i>Class size</i></p> <p>No data available for Sweden</p> <p><i>Student to teacher ratios are generally advantageous.</i></p> <ul style="list-style-type: none"> • Up to upper secondary education the ratio of students to teaching staff is typically lower in Sweden compared with the OECD average. In pre-primary education, Sweden together with Denmark, Hungary and New Zealand shows the most favourable student to teacher ratios among the OECD countries (Table D2.2). In upper secondary education and in post secondary non-tertiary education Swedish students generally have fewer teachers in relation to the OECD average. The student to teacher ratio in tertiary education is substantially below the OECD average but this is likely due to large amount of research that Swedish universities conduct. <p><i>Annual instruction time is short.</i></p> <ul style="list-style-type: none"> • From the age of 7 to 15 year old Swedish students generally receives 741 hours of instruction time per year which below the OECD average (Table D1.1). <p><i>Teachers are generally paid less and work more hours than in many OECD countries.</i></p> <ul style="list-style-type: none"> • At USD 30 802 for a primary school teacher with minimum training and 15 years of experience, Sweden comes 23rd among OECD countries (OECD average 37 603 USD). In terms of relative salaries within a country (teacher salary to GDP), Swedish teacher are relatively

<p>twice the level of GDP per capita in Korea and Mexico; in Iceland, Norway and the partner economy Israel, salaries are 75% or less than GDP per capita. Those salaries range from less than USD 16 000 in Hungary to USD 51 000 or more in Germany, Korea and Switzerland, and more than USD 88 000 in Luxembourg.</p> <ul style="list-style-type: none"> • The average class size in primary education is 22 students per class, but varies between countries from 33 in Korea to less than half that number in Luxembourg and the partner economy the Russian Federation. From 2000 to 2005, the average class size did not vary significantly, but the differences in class size between OECD countries seem to have diminished. Class size tends to have decreased in countries that had had relatively large class sizes (for example, in Japan, Korea and Turkey) whereas class size tends to have increased in countries with relatively small class sizes (for example, Iceland) (see 2000 data in Table D2.4 on the web only). • The number of students per class increases by an average of nearly three students between primary and lower secondary education, but ratios of students to teaching staff tend to decrease with increasing levels of education due to more annual instruction time, though this pattern is not uniform among countries. • In primary and secondary education, OECD countries spend 91% on current expenditure of which 63.5% is for the compensation of teachers, 15.5% for the compensation of other staff, and 19.9% for other current expenditure. At the tertiary level of education, 89.3% is devoted to current expenditure, of which 42.7% is for the compensation of teachers, 23.6% for the compensation of other staff, and 33.8% for other current expenditure (Table B6.2). 	<p>less paid than their counter parts in OECD countries (Table D3.1). The pay scale for teachers is typically also narrow in an OECD comparison. However, the working time required at school and the total statutory working time in hours over the school year is above the OECD average for all levels of education up to upper secondary education (Table D4.1).</p>
<p><i>Private sources of funding for education are becoming increasingly important.</i></p> <ul style="list-style-type: none"> • On average, over 90% of primary and secondary education in OECD countries, and nowhere less than 80% (except in Korea and in the partner economy Chile), is paid for publicly. However, in tertiary education the proportion funded privately varies widely, from less than 5% in Denmark, Finland and Greece, to more than 50% in Australia, Japan and the United States and in partner economy Israel, and to above 75% in Korea and in the partner economy Chile. • In all countries for which comparable data are available, for all levels of education combined, public funding increased between 1995 and 2004. However, private spending increased even more in 	<p><i>Sweden still provides higher education free of charge with large public financing but an increasing share of funding of higher education comes from private sources.</i></p> <ul style="list-style-type: none"> • The relative share of public financing of education is among the highest in the OECD countries (Table B3.2b) and the increase in educational investments in primary and secondary level of education has solely been funded by public money in Sweden (Table B2.4) • While the financing of the expansion in primary and secondary level of education has been done entirely by public sector money with negligible private funding, there has been a change, however, in the funding of tertiary education. In tertiary education close to 12% of the funding comes from private sources in 2004 compared with 6% in 1995 (Table B3.2b). Public expenditures for tertiary education have thus dropped

<p>nearly three-quarters of these countries. Nevertheless, in 2004, on average 87% of expenditure, for all levels of education combined, was still from public sources.</p> <ul style="list-style-type: none"> • The share of tertiary spending from private sources rose substantially in some countries between 1995 and 2004, but this was not the case at other levels of education. • On average among the 18 OECD countries for which trend data are available, the share of public funding in tertiary institutions decreased slightly between 1995 and 2000, as well as every year between 2001 and 2004. However, in general the increase of private investment has not displaced public financing, but rather complemented it. • In tertiary education, households cover the majority of all private expenditure in all countries with available data, except Greece, Hungary and Sweden. Private expenditure from other entities than households is still significant, representing 10% or more in Australia, Hungary, Italy, Korea, the Netherlands, Sweden, the United Kingdom and the United States, and the partner economy Israel. 	<p>from 93.6% in 1995 to 88.4% in 2004. In comparison with its neighbors, Denmark (96.7%) and Finland (96.3%), Sweden has an increasing share of the tertiary education financed by private resources. The OECD average for public expenditure on tertiary education was at 75.7% in 2004.</p> <ul style="list-style-type: none"> • Tuition fees are still not charged in Sweden and the increasing share of private funding of tertiary education have thus comes from an ability of higher educational institutions to attract money from private business, non-profit organizations, etc. Household expenditure on tertiary education still amounts to no more than 0.1% of the total expenditure. A closer relationship between private entities and tertiary institutions might not only provide the additional resources needed for the expansion of higher education but could also generate synergies in forms of increasing efficiency, innovations, and a better aligned higher education system to the demands of the labour market
<p><i>OECD countries where students are required to pay tuition fees can nevertheless have also large access to tertiary education.</i></p> <ul style="list-style-type: none"> • OECD countries where students are required to pay tuition fees and can benefit from particularly large public subsidies do not show lower levels of access to full-length, theory-based bachelor and masters degree university-level programmes, compared to the OECD average. For example, Australia (82%) and New Zealand (79%) have one of the highest entry rates to tertiary-type A education and the Netherlands (59%) and the United States (64%) are above the OECD average. The United Kingdom (51%) is just below the OECD average (54%), although entry to tertiary-type A education increased by 4 percentage points between 2000 and 2005. 	<p><i>Sweden and its neighbours continue to not charge tuition fees for higher education.</i></p> <ul style="list-style-type: none"> • In Sweden as well as the other Nordic countries (Denmark, Finland, Iceland, and Norway) tertiary education is typically free of any tuition fees (Chart B5.1). At the same time students in Sweden as well as the other Nordic countries generally also enjoy generous government back scholarships and loans for covering living expenses during their tertiary studies (Chart B5.3) which makes higher education an attractive alternative for young adults (despite low returns to education). This also shows in the enrolment rates to tertiary-type A education which is at 76% in Sweden, substantially above the OECD average of 54% (table C2.5). These generous terms are however paid back later in the working life as individuals are progressively taxed in accordance with their earnings. • Nevertheless, this generous higher education system might come at a price since graduation rates are far below that of entries to higher education. The survival rate in tertiary education is among the lowest in OECD, with only Greece and New Zealand showing worse performance (Chart A3.6). Since most students in Sweden have little invested of their personal wealth in education it might to some extent explain why students in Sweden are less compelled to complete their higher education.

NOTES

- “Educational attainment” is defined as the highest grade completed within the most advanced level attended in the educational system of the country where the education was received. Some countries may also find it useful to present data on educational attainment in terms of the highest grade attended.
- “Lower secondary education” is defined as schooling between the ages of 11 and 13. It generally continues the basic programmes of the primary level, although teaching is typically more subject-focused. Lower secondary education may either be “terminal” (*i.e.* preparing students for entry directly into working life) and/or “preparatory” (*i.e.* preparing students for upper secondary education). This level usually consists of three years of schooling in OECD countries.
- “Non-formal education” is defined as organised and sustained educational activities that are not typically provided in the system of schools, colleges, universities and other formal institutions that constitutes a continuous ladder of full-time education for children and young people. Non-formal education may take place both within and outside educational institutions, and cater to persons of all ages. For detailed definitions, see Indicator C5 in *Education at a Glance 2007*.
- “Post-secondary non-tertiary education” is defined as programmes straddling the boundary between upper secondary and post-secondary education from an international point of view, even though they might clearly be considered upper secondary or post-secondary programmes in a national context. Although their content may not be significantly more advanced than upper secondary programmes, they serve to broaden the knowledge of participants who have already gained an upper secondary qualification. The students tend to be older than those enrolled at the upper secondary level.
- “Pre-primary education” is defined as the initial stage of organised instruction, designed primarily to introduce very young children to a school-type environment, that is, to provide a bridge between home and a school-based atmosphere. They are centre or school-based, designed to meet the educational and developmental needs of children at least three years of age, and have qualified staff to provide an educational programme for children.
- “Primary education” usually begins at ages five, six or seven and generally lasts six years in OECD countries. Programmes at the primary level generally require no previous formal education, although it is becoming increasingly common for children to have attended a pre-primary programme before entering primary education. The boundary between pre-primary and primary education is typically the beginning of systematic studies characteristic of primary education, *i.e.* reading, writing and mathematics. It is common, however, for children to begin learning basic literacy and numeracy skills at the pre-primary level.
- “Statutory salaries” refers to teachers’ salaries according to official pay scales. The salaries reported are defined as gross salaries (total sum of money that is paid by the employer for the labour supplied) minus the employer’s contribution to social security and pension (according to existing salary scales). Salaries are “before tax”, *i.e.* before deductions for income taxes.
- “Tertiary-level education” is defined as higher education (HE). Indicators in *Education at a Glance 2007* cover both the current performance of the HE system and the proportion of the adult population (25-to-64-year-olds) who have attained HE qualifications. Tertiary programmes are generally divided by type of course: “tertiary-type A” (largely theory-based and designed to provide sufficient qualifications for entry to advanced research programmes and professions with high skill requirements, such as medicine, dentistry or architecture) and “tertiary-type B” (typically shorter and focused on practical, technical or occupational skills for direct entry into the labour market). “Graduation rate” is defined as the ratio of tertiary graduates to the population at typical age of graduation.
- “Upper secondary” education corresponds to the final stage of secondary education in most OECD countries. Instruction is often more organised along subject-matter lines. The entrance age to this level is typically 15 or 16 years.