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Improving Education
Outcomes in the Slovak
Republic

David Carey

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Abstract/ Résumé
Improving education outcomes in the Slovak Republic

Improving education outcomes is vital for achieving convergence with GDP per capita levels in Western European countries and for reducing income inequality. While some education outcomes are favourable, such as the low secondary-school drop-out rate, others have room for improvement: education achievement is below the OECD average and strongly influenced by socio-economic background; Roma children, who are mainly from disadvantaged socio-economic backgrounds, have particularly poor achievement; labour-market outcomes are poor for graduates of secondary vocational programmes not leading to tertiary education; and tertiary attainment is low, albeit rising. Reforms have been made in recent years or are planned to address many of these weaknesses, but much remains to be done. In particular, more progress needs to be made in increasing participation in early childhood education and care, reducing stratification in the education system, helping Roma children to integrate into the education mainstream, and in attracting high quality graduates to teaching, especially in socio-economically disadvantaged schools. In addition, secondary vocational education not leading to tertiary education needs to be made more pertinent to labour-market requirements. Tertiary education also needs to be made more attractive for technical secondary school graduates.

This paper relates to the *OECD Economic Survey of Slovak Republic 2007* (www.oecd.org/eco/surveys/slovakrepublic).

JEL classification: I2, I21, I28, J24

Keywords: Education, PISA, achievement, attainment, school system, tracking, streaming, Roma, teachers' skills, pre-school education, socio-economic background, general education, vocational education, secondary education, tertiary education

Améliorer les résultats de l'éducation dans la République slovaque

L'amélioration des résultats de l'éducation est vitale pour converger vers les niveaux du PIB par habitant des pays de l'Europe occidentale et pour réduire les inégalités de revenus. Alors que ces résultats sont favorables à certains égards – le faible taux de décrochage scolaire dans le secondaire par exemple –, des améliorations sont possibles dans d'autres domaines : les résultats du système éducatif sont inférieurs à la moyenne de la zone OCDE et varient énormément selon le milieu socioéconomique ; les enfants roms qui sont pour l'essentiel issus de milieux défavorisés affichent des résultats particulièrement médiocres ; les diplômés des filières professionnelles du secondaire ne donnant pas accès à l'enseignement supérieur ont un devenir peu brillant sur le marché du travail ; et le taux de diplômés du supérieur est faible, bien qu'en progression. Des réformes ont été opérées ces dernières années ou sont prévues pour remédier à nombre de ces insuffisances mais de grands progrès sont encore nécessaires. Il faut en particulier augmenter la fréquentation des structures d'accueil et d'éducation de la petite enfance, réduire la stratification du système éducatif, aider les enfants roms à intégrer le circuit scolaire ordinaire et attirer les diplômés de très haut niveau vers l'enseignement, en particulier dans les écoles défavorisées du point de vue socioéconomique. En outre, l'enseignement secondaire professionnel, qui ne donne pas accès aux études supérieures, doit être davantage adapté aux exigences du marché du travail. L'enseignement supérieur doit par ailleurs attirer davantage les diplômés des écoles secondaires techniques.

Ce document de travail se rapporte à l'*Étude économique de l'OCDE de la République Slovaque 2007* (www.oecd.org/eco/etudes/republiqueslovaque).

Classification JEL : I2, I21, I28, J24

Mots clés : Éducation, PISA, réussite scolaire, système scolaire, Roms, compétences des enseignants, éducation préscolaire, cadre socio-économique, éducation générale, formation professionnelle, éducation secondaire, l'enseignement supérieur

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IMPROVING EDUCATION OUTCOMES IN THE SLOVAK REPUBLIC

by David Carey¹

1. Education is critical to the process of converging to living standards in advanced European countries and strengthening social cohesion. Better education outcomes raise productivity and employment prospects and, if distributed more evenly, reduce income inequality and poverty. Slovakia already does well in certain respects, such as the low secondary-school drop-out rate, but performs less well in some others: overall education achievement is below the OECD average and socio-economic background has a large impact on results, with Roma doing particularly badly; graduates of upper secondary vocational programmes not giving access to tertiary programmes experience low earnings and high unemployment even in prime-working-age groups, suggesting that such education is not well adapted to labour-market requirements; tertiary attainment is low but rising quickly; and rather limited use of lifelong learning is being made to overcome weaknesses in the skills of the adult population and help with continuous adaptation to changing labour-market demand. Reforms are being undertaken or considered to overcome these weaknesses, but more needs to be done. Following a review of the key education outcomes that need to be improved, this chapter examines the causes of these weaknesses and makes suggestions for further reforms to improve performance.

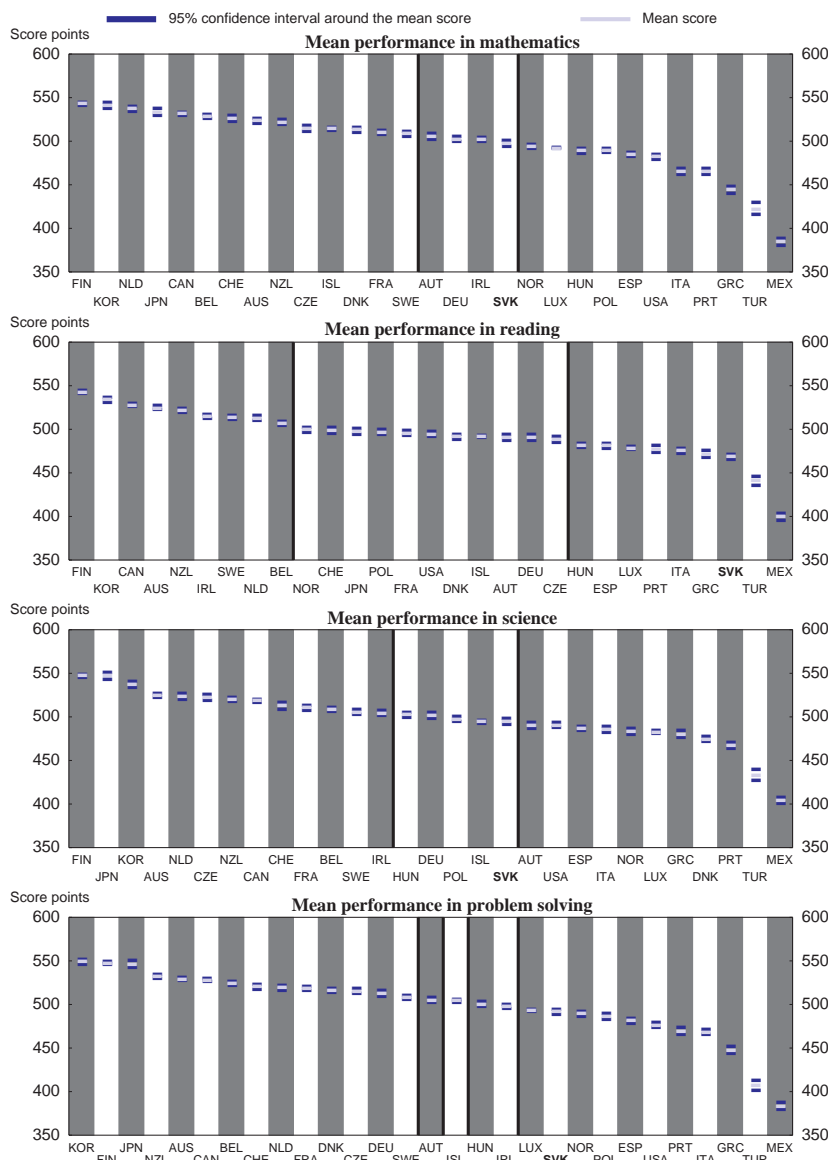
Education outcomes are below the OECD average

Overall achievement is below the OECD average and is significantly affected by social background

2. Slovak students' overall achievement in the 2003 OECD PISA study was below the OECD average. Scores were around the OECD average in mathematics and science but below average in reading and problem solving (Figure 1). Performance in reading was particularly weak. A multivariate regression analysis of the 2003 PISA results shows that they are more sensitive to socio-economic background (represented by the occupational status of parents) than in most other countries (Carey and Ernst, 2006, Table 1; Figure 2).

1. This paper is based largely on material from the *OECD Economic Survey of the Slovak Republic* published in April 2007 under the authority of the Economic and Development Review Committee (EDRC). The author would like to thank Malgorzata Kuczera, Val Koromzay, Andrew Dean, Jorgen Elmeskov and Andreas Wörgötter for valuable comments on earlier drafts. The paper has also benefited from discussion with the Slovak authorities. Special thanks go to Béatrice Guerard for technical assistance and to Sylvie Ricordeau and Susan Gascard for technical preparation.

Figure 1. Student performance in the 2003 OECD PISA study ¹



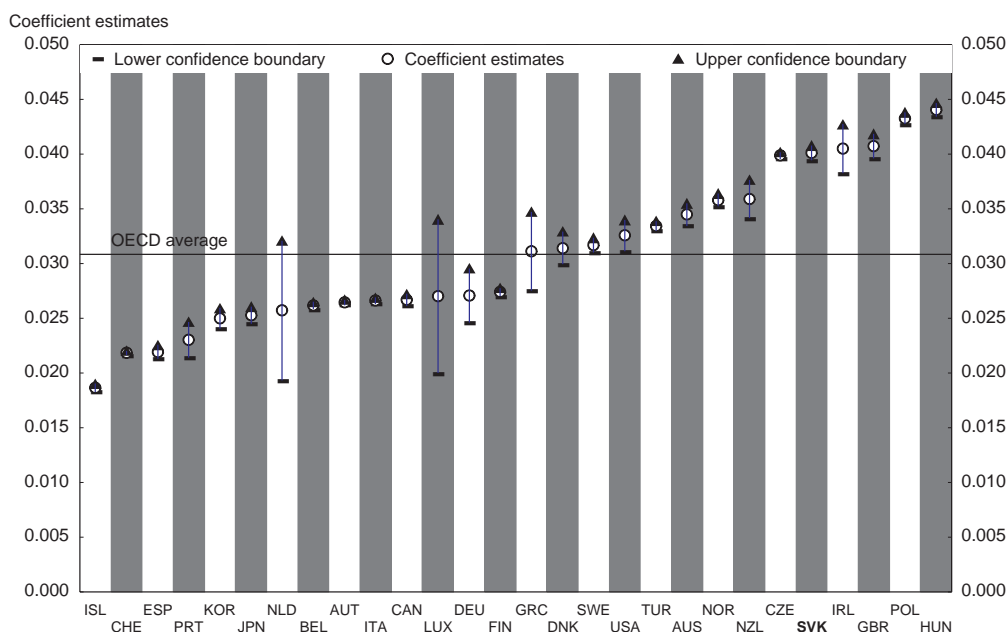
1. Mean scores are not significantly different from the OECD average in countries in the middle sector of each panel. Countries to the left have mean scores that are significantly above the OECD average while countries to the right have scores that are significantly below the OECD average. Although the mean score in problem solving in Iceland is lower than in Austria, this score nevertheless is significantly above the OECD average while that in Austria is not, owing to the narrower confidence interval around the mean for Iceland than for Austria – the 95% confidence interval around Iceland's mean lies above OECD average while that for Austria includes the OECD average.

Source: OECD PISA 2003 database. For further explanation, see OECD (2004a) and OECD (2004b).

3. The large impact of socio-economic background in Slovakia on PISA scores is also evident in the in-depth bivariate analysis of mathematics results included in the 2003 PISA study (OECD, 2004a). This analysis shows that the economic, social and cultural status (ESCS) of students has one of the largest effects on results among OECD countries (*ibid*, Figure 4.10), despite there being less variation in ESCS in Slovakia than in most other OECD countries (*ibid*, Table 4.3a). A decomposition of this effect (*ibid*, Figure

4.11) shows that it reflects a high degree of segregation by socio-economic background between schools² (*ibid*, Table 4.5) and a strong impact of a school's average student ESCS on performance (*ibid*, Figure 4.13).³

Figure 2. **The effect of students' socio-economic background on 2003 PISA scores in selected OECD countries¹**



1. This graph shows coefficient estimates with 95% confidence intervals for the variable 'Highest occupational status of parents' from the multiple regression analysis in Carey and Ernst (2006, summarised in Table 1 and described in more detail in Annex A1). The OECD average is calculated for all OECD countries with available data (see *ibid*, Table 1).

Source: OECD, PISA 2003 and OECD calculations.

Tertiary attainment is rising but remains well below the OECD average

4. Tertiary education attainment is low in Slovakia. Only 12% of the population aged 25-64 has completed tertiary education compared with an OECD average of 25% (OECD 2006a, Table A1.3a). This proportion is still only 14% for the 25-34 age group compared with an OECD average of 31%. Moreover, tertiary graduation rates in 2004, mostly from relatively long (5-6 years) programmes, were still

2. The proportion of variation in socio-economic background that is between schools (η^2) can be considered as a measure of segregation by socio-economic background (Wilms and Paterson, 1995): theoretically, η^2 can range from zero, in which case the distribution of socio-economic background is the same in every school, to one, in which case students within schools have the same socio-economic background but the schools vary in their average socio-economic background (OECD, 2004a, p. 205). $1 - \eta^2$, which can be considered as an index of socio-economic inclusion, is low in Slovakia (*ibid*, Table 4.5, column 12).
3. The overall gradient (β_t) between student performance and socio-economic background is related to the between- (β_b) and within- (β_w) school gradients through the segregation (η^2) and inclusion ($1 - \eta^2$) indices as follows (*ibid*, footnote 18, p. 205):

$$\beta_t = \beta_b * \eta^2 + \beta_w * (1 - \eta^2).$$

considerably lower than the OECD average (Figure 3).⁴ Low tertiary attainment may be partly attributable to weak incentives to obtain tertiary qualifications until recently. For example, gross earnings of persons with tertiary-type-A attainment in 1998 were only around 120% of earnings for persons with upper secondary attainment. Since then, however, the relative earnings advantage of persons with such qualifications has increased markedly, to some 190% in 2004. This earnings premium is high by international comparison (Figure 4), possibly reflecting the low supply of persons with tertiary attainment. Moreover, the recent tax reform introducing a flat 19% income tax rate above a tax-free income allowance further increased the return on tertiary-type-A⁵ attainment.⁶ Tertiary-type-B⁷-earnings premiums, by contrast, have barely changed, remaining low. Another factor may be the limited supply of tertiary-type-B programmes, which are shorter than type-A programmes, more occupationally oriented and usually lead to direct access to the labour market. In the absence of such programmes, some students may choose not to acquire tertiary qualifications at all rather than to pursue a longer and less occupationally-relevant type-A programme.

5. Net entry rates into tertiary education have increased markedly in recent years, exclusively in tertiary-type-A programmes. Net entry rates into such programmes rose by 10 percentage points from 2000 to 2004, to 47% (Figure 5, Panel A).⁸ However, such entry rates increased by almost as much on average in other countries, with the result that the gap between Slovakia and the OECD average in net entry rates into tertiary-Type A programmes barely changed (it was 6 percentage points in 2004). This gap largely corresponds to the shortfall in net tertiary-type-A graduation rates in Slovakia from the OECD average (see Figure 4, Panel A). Net entry rates into tertiary-type-B programmes, like graduation rates from such programmes, remain very low in Slovakia (Figure 5, Panel B).

4. A similar picture emerges from data on new tertiary graduates as a proportion of the population aged 20-29: this proportion was 2.7% for males and 3.7% for females in 2004, compared with OECD averages of 3.7% and 5.1%, respectively.

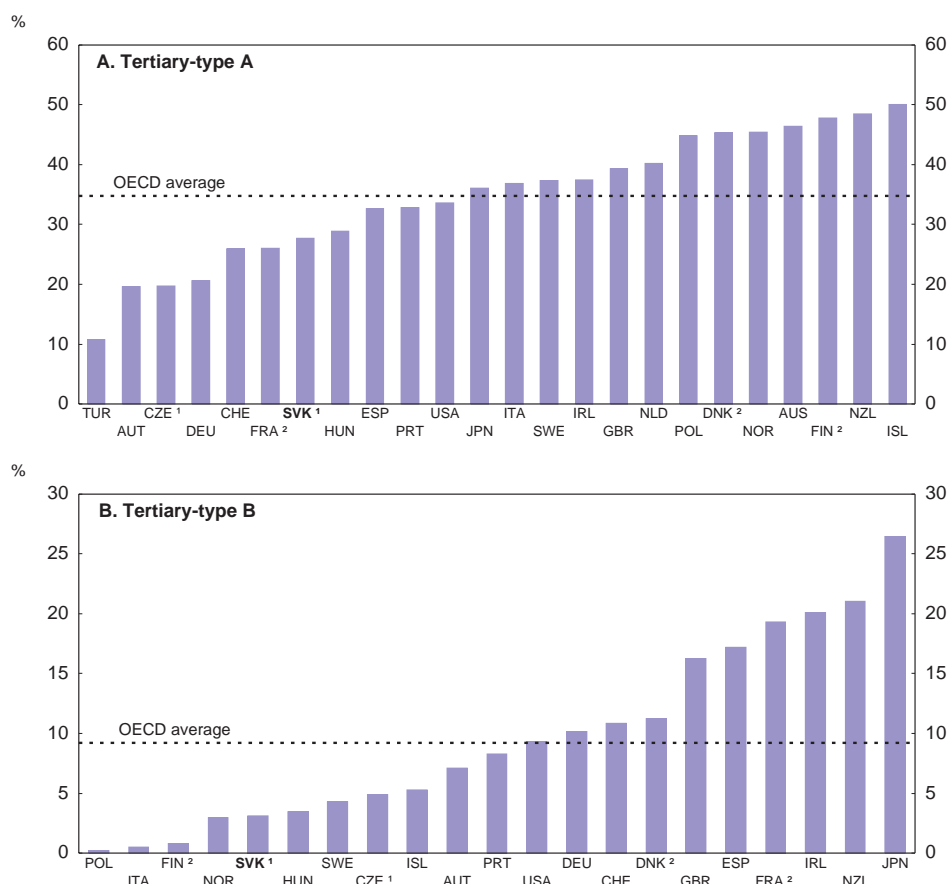
5. Tertiary-type-A programmes lead to university degrees corresponding to a Bachelor's or a Master's degree in the Bologna system. These degrees are classified in the International Standard Classification of Education (ISCED) as ISCED 5A. Such programmes take at least three years to complete (for a Bachelor's degree or its equivalent).

6. Assuming that a person with tertiary attainment earns 167% of the earnings of a person with upper secondary attainment, the tax reform reduced the tax rate on a single tertiary graduate's additional labour earnings by 8.1 percentage points from 2003 to 2005, to 43.3%. By contrast, the tax rate on average earnings of a single person only declined by 4.6 percentage points to 38.3%; this tax rate is also relevant because it affects the opportunity cost of lost earnings while studying. Hence, the tax reform increased the return on tertiary-type A education.

7. Tertiary-type-B programmes are classified at the same level of competencies as tertiary-type-A programmes but are more occupationally oriented and usually lead to direct labour market access. The programmes are typically shorter than type-A programmes – usually two to three years – and generally are not intended to lead to university-level degrees. Such programmes are classified as ISCED 5B.

8. Net entry rates (OECD, 2006, Table C2.1) represent the proportion of persons of a synthetic age cohort who enter a certain level of tertiary education at one point during their lives. The net entry rate is defined as the sum of net entry rates for single ages. The total net entry rate is therefore the sum of the proportions of new entrants to tertiary education aged i to the total population aged i , at all ages. Since data by single year are only available for ages 15 to 29, the net entry rates for older students are estimated from data for 5-year age bands. This approach gives lower entry rates than reported in the Annual Report on the State of Higher Education in Slovakia (Ministry of Education of the Slovak Republic, 2006), where entry rates are calculated as new entrants of all ages relative to the population aged 19. Such a calculation yields an entry rate to tertiary education (full-time and part-time) in 2005 in Slovakia of 66.9%.

Figure 3. Tertiary graduation rates, 2004



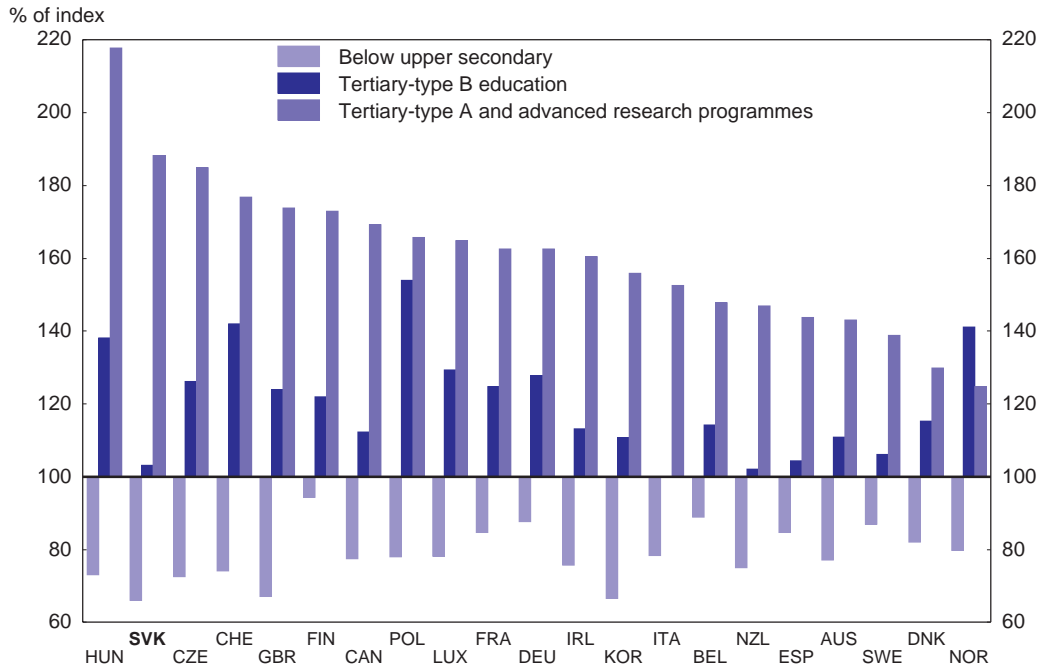
1. Gross graduation rate may include some double counting.

2. Year of reference 2003.

Source: OECD (2006), *Education at a Glance*, Table A3.1.

Figure 4. **Relative earnings from employment (2004 or latest available year) ¹**

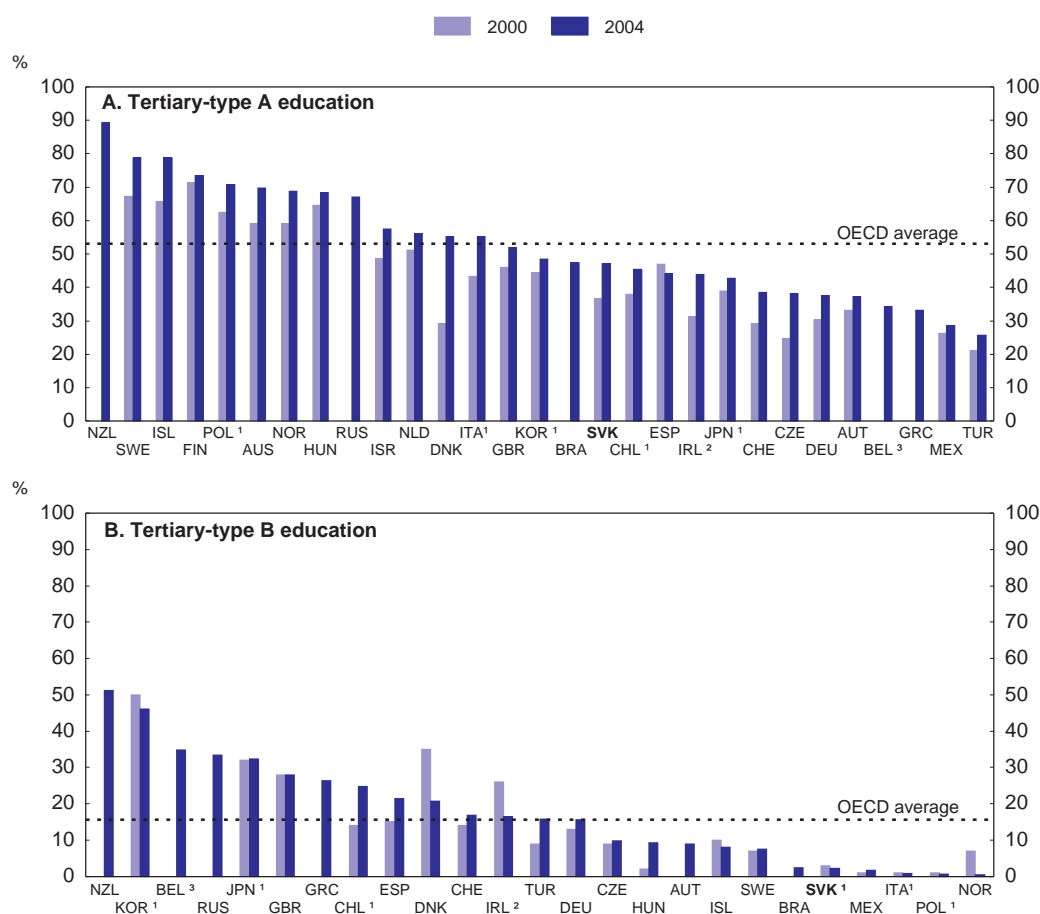
By level of educational attainment for 25-to-64 year-olds
(upper secondary and post-secondary non-tertiary education = 100)



1. Years of reference: 2001 for Australia; 2002 for Ireland, Italy and Luxembourg; 2003 for Belgium, Canada, Denmark, Finland, Korea, Norway and Sweden.

Source: OECD (2006), *Education at a Glance*, Chart A9.2, and Statistical Office of the Slovak Republic.

Figure 5. **Entry rates into tertiary education**
Sum of net entry rates for each year of age

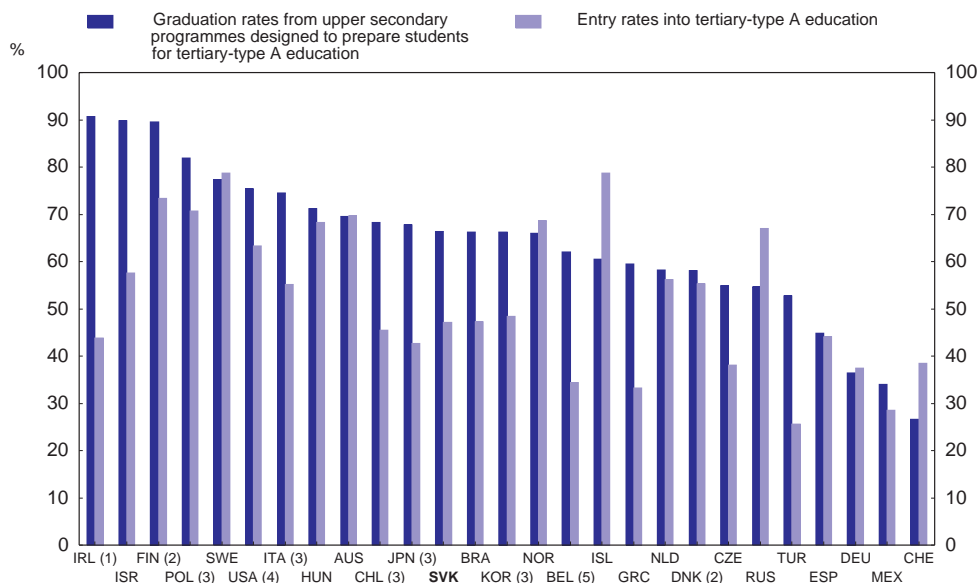


1. Entry rate calculated as gross entry rates. This applies to Italy and Poland only in 2000 and to Slovak Republic only in 2000 for tertiary type-B programmes.
2. Full-time entrants only.
3. Excludes the German-speaking Community of Belgium.

Source: OECD (2006), *Education at a Glance*, Table C2.1.

6. The below OECD average net entry rate into tertiary-type A programmes in Slovakia contrasts with the high graduation rate from secondary programmes designed to prepare students for such studies (Figure 6). While there are also other countries (Belgium, Greece, Ireland, Japan, and Turkey) in which a large proportion of students qualified for such studies do not undertake them, these countries tend to have high net entry rates into tertiary-Type-B programmes, in contrast to Slovakia.

Figure 6. Access to tertiary-type A education for upper secondary graduates, 2004



1. Full-time entrants only.
2. Year of reference 2003.
3. Entry rate for tertiary-type A programmes calculated as gross entry rates.
4. Tertiary-type A education includes tertiary-type B education.
5. Excludes the German-speaking Community of Belgium.

Source: OECD (2006), *Education at a Glance*, Chart A2.2.

The Roma population has particularly poor education outcomes

7. Education attainment is extremely low for the Roma population (Table 1). According to the 2001 population census, three quarters of Roma only had primary school attainment or less, compared with about one quarter for the rest of the population.⁹ Only 2% of Roma had completed upper secondary school and almost none held tertiary qualifications. Attainment remains weak for young cohorts of Roma. Based on official data from the Institute of Information and Forecasting of Education, there were only 170 Roma children studying at secondary schools (4 of them in grammar schools) out of around 88 000 students and 15 Roma children studying at higher education institutions out of around 28 000 students in 2004/2005 (Salner, 2005a, p. 8 for numbers of Roma students,¹⁰ and OECD 2006a, Table C4.4a, for estimates of the total secondary and tertiary student populations), even though Roma represent around 13% of the relevant age cohorts.¹¹ Most Roma graduates of primary school do not take any vocational training and do not build any professional career (Dluhošová, 2005). According to the State School Inspection, achievement in schools where Roma pupils make up a significant share is unsatisfactory (*ibid*).

9. A survey examining the education standard of the Roma population in 1999 in the Eastern Slovak district of Gelnica showed that a relatively high percentage of Roma parents (40.8% of Roma mothers and 41.2% of Roma fathers) had not completed even primary education. Approximately the same proportion of Roma parents had completed primary education, and 14.6% of Roma mothers and 15.5% of Roma fathers had completed vocational training. Only 1.3% of Roma parents have completed full-fledged secondary education, which in Slovakia is considered to correspond to completing a four- or five-year ISCED 3A or 3B course with a “maturita” school leaving certificate (Mrázová, 1999, reported in Dluhošová, 2005).
10. Actual numbers are probably slightly higher as this is based on self-reporting.
11. Vaňo (2005) estimates that Roma make up 14.3 % of compulsory-school-age children (6-15) in 2005.

Table 1. **Level of education attained according to the 2001 Census**

In per cent

| Highest level of education attained | Women | | Men | |
|-------------------------------------|-------|--------|------|--------|
| | Roma | Slovak | Roma | Slovak |
| Primary (including incomplete) | 79.5 | 30.0 | 74.1 | 18.9 |
| Vocational | 8.2 | 18.3 | 14.0 | 32.1 |
| Secondary vocational | 1.4 | 4.5 | 2.4 | 5.5 |
| Complete secondary | 1.9 | 36.4 | 2.2 | 30.2 |
| Higher | 0.2 | 9.2 | 0.4 | 11.6 |
| No education | 4.3 | 0.3 | 3.1 | 0.3 |
| Data not available | 4.5 | 1.3 | 3.8 | 1.4 |

Source: Statistical Office of the Slovak Republic, 2001, as reported in Salner (2004, Table 4).

8. Roma are estimated to make up about 7% of the Slovak population (Váno, 2005, p. 28). Their share in the total population is projected to rise to about 10% by 2025 owing to their high birth rate: the fertility rate for Roma women of child bearing age is 2.7, compared with 1.2 for other Slovak women. The share of Roma in compulsory-school-age children (aged 6-15) is projected to rise to around 17% by 2025.¹² With these demographic developments, Roma could make a significant contribution to the national economy if they acquired the skills necessary to participate productively in a modern economy. Failure to obtain such skills would result in an increasingly large cost to the welfare system.

Reforms to enhance outcomes

Increase participation and investment in early childhood education and care

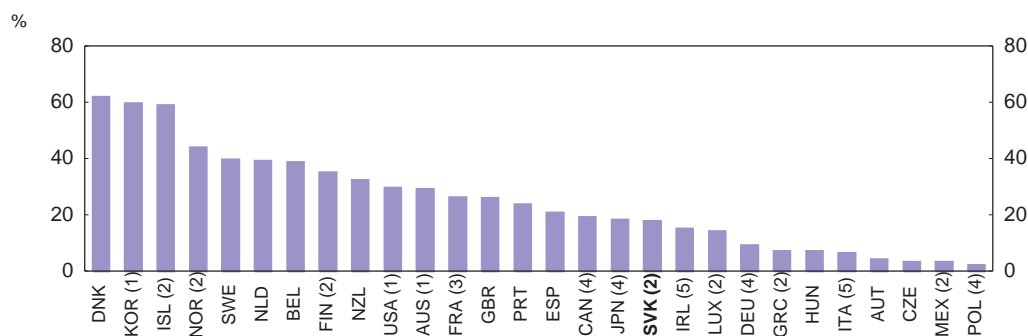
9. The cornerstone of lifelong learning is early childhood education and care (ECEC), which covers both childcare arrangements for infants and toddlers and pre-school education (kindergarten in Slovakia). The skills acquired in ECEC impact on learning in subsequent stages of education – as Carneiro and Heckman (2003) put it, “skill begets skill”. High-quality centre-based programmes enhance school-related achievement and behaviour of young children, especially of poor children and of children whose parents have little education (Brooks-Gunn, 2003).¹³ By developing cognitive and non-cognitive skills that are important for success both in education and in the labour market, quality ECEC can contribute more effectively than later policy interventions to increasing the proportion of the population gaining tertiary qualifications (Carneiro and Heckman, 2003). Less than 20% of Slovak children aged less than

12. The share of children below the age of 15 in the Roma population is 34% and increasing; by contrast, this share in the total population is 18% and declining (Vaño, 2005, for this and the following sentences). Children make up 40% of the Roma population in segregated settlements, 33% in partially integrated communities and a similar proportion to the national average for integrated Roma. 50 000 children below 15 live in segregated settlements, 65 000 in partially integrated communities and 15 000 in a completely integrated environment.

13. Access to quality ECEC arrangements also facilitates increased labour-force participation and hours worked by women by making it easier for mothers of young children to reconcile family and work responsibilities. It also has a positive impact on fertility rates (d’Addio and Mira d’Ercole, 2005).

3 participate in formal childcare arrangements, which is relatively low by international comparison (Figure 7). By contrast, the net enrolment rate of children aged 3-5 in pre-school/school education is 71%, which is around the OECD average (Figure 8).

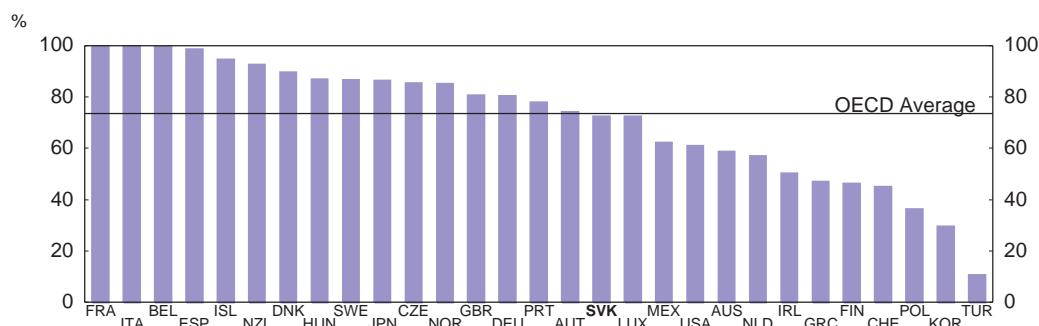
Figure 7. Proportion of children aged 0-2 using formal childcare arrangements, 2004



1. Year of reference 2000.
2. Year of reference 2001.
3. Year of reference 2002.
4. Year of reference 2003.
5. Year of reference 2005.

Source: OECD Family database, Table PF11.1.

Figure 1. Figure 8. Enrolment rates of children aged 3-5 in pre-school, 2004



Source: OECD Education database.

10. Unfortunately, the children not participating in ECEC are more likely to be from disadvantaged socio-economic backgrounds than are children participating: the opportunity cost of mothers caring for their own children is lower for low-skilled women, both because potential earnings are lower and because the probability of being employed is lower; childcare- and pre-school fees represent a larger proportion of the budget of low-income households; and disadvantaged socio-economic households may place less value on education.¹⁴ The participation rate in pre-school education of Roma children, who come from the most disadvantaged households in Slovakia,¹⁵ is only about one half of that of the rest of the population

14. Chiswick and DebBurman (2006) and Bainbridge *et al.* (2005) find that family income is one of the predictors of enrolment in early education and care programmes where they are not free of charge.

15. Mizsei (2006, p. 2) reports states "that the conditions in which most Roma live are alarming: long-term unemployment, very often linked with extreme poverty, lack of hygiene and basic health care, and a strong

according to a survey carried out by the Methodological Centre Prešov (MPC) in 2000 (Salner, 2005). The low participation of Roma children is unfortunate as they stand to gain most from such participation both because they generally come from poor households and because it could help them master the language of instruction and become familiar with the majority culture before beginning primary school.¹⁶

11. To encourage higher participation in pre-school education, especially of children from less advantaged socio-economic backgrounds, the authorities plan to make kindergarten free of charge for five year olds from 2008 onwards (at an annual cost of about 0.1% of GDP), which would be particularly beneficial for the Roma minority. A practical difficulty with increasing participation is that kindergartens are not available throughout the country as some municipalities are too small and too poor to be able to provide these facilities, especially where there are Roma settlements. Another problem with the provision of pre-school education is that there are large differences in the quality of kindergartens across the country related to the regional differences in wealth; responsibility for financing kindergarten was shifted from the central government to the regions and municipalities in 2004. To address both of these problems, the government should establish quality standards that must be respected in all parts of the country, including reasonable access to such facilities, and ensure that all municipalities have sufficient resources to be able to respect these standards, effectively by transferring tax revenues from wealthy municipalities with low social spending demands to less well off municipalities with high social spending requirements. In view of the substantial external benefits and contribution to social cohesion of pre-school education, the authorities should encourage greater participation of children from disadvantaged socio-economic backgrounds from age 4. Means tested subsidies for additional expenses, such as meals and out-of-school-hours care, should also be made available to ensure that these costs do not pose significant additional burdens on low-income households.¹⁷

12. In order to increase participation in early childhood care (*i.e.*, childcare for infants and toddlers aged up to 2-3), subsidies for such care should be increased and more tightly targeted on low-income households so that cost does not represent a barrier to participation of children from such households. This measure, together with the improvements in access to pre-school education discussed above, would also tend to reduce childhood poverty by increasing employment rates for mothers from low-income households. Such a reduction in child poverty would further reduce the impact of socio-economic background of education outcomes.

dependency on social assistance.” The State School Inspection reports that Roma children’s basic biological needs (*i.e.*, food, clothing, footwear etc) are often unsatisfied (Dluhošová, 2005, p. 55). Unemployment in Roma settlements is often around 100%. Settlements often have neither running water nor sanitary facilities. Another indicator of poverty is the high child mortality rate for Roma (20 per 1000), which is twice the national average; in settlements, the rate rises to 2.5 times the national average (Vaňo, 2005, p. 29).

16. Many Roma do not speak Slovak at home. They frequently have difficulty understanding instructions (in Slovak) at primary school – the State School Inspection has found that “... even in higher grades of primary schools, Roma pupils encounter problems with understanding read text” (Dluhošová, 2005, p. 54). The Inspection concluded that “Roma pupils’ substandard language skills and poor vocabulary negatively affect their education results” (*ibid*, p. 55).

17. Free meals for children from low-income families would be particularly helpful for Roma children, who probably often arrive at school hungry judging by the experience of Roma in Hungary reported in Rona and Lee (2001). By ensuring that they are adequately nourished, education would undoubtedly be more efficient and their long-term educational development and health status enhanced. Free meals in Hungary proved effective in attracting increased participation in pre-school of children from low-income households, including Roma children.

13. The increase in expenditure on ECEC being recommended here comes in the context of strong demands to increase public expenditure at other levels of education, including tertiary education. In deciding priorities, it should be borne in mind that expenditure on ECEC has high social returns - other things being equal, the rate of return on human capital investments is higher early in a person's life than later because they can be amortised over a longer period and because they raise the productivity of subsequent human capital investments (Carneiro and Heckman, 2003, p. 7);¹⁸ OECD 2006b, Annex IV provides a summary of international evidence in favour of public investment in ECEC – and enhances equity as low-income households benefit more than from some other public expenditures, such as those on tertiary education, which mainly benefit high-income households.¹⁹ This prioritisation is in line with OECD (2007a)²⁰ and EC (2006)²¹ recommendations.

14. The OECD study (OECD, 2006b) on ECEC that was based on thematic country reviews, contains many recommendations on what works well in ECEC and what does not to help policymakers distil reform strategies to improve the efficiency and equity of their country's ECEC. In this regard, Slovakia would do well to ensure that ECEC is well integrated into the education programme for children up to around 8 years old. There should also be a lead ministry in charge of ECEC issues to ensure that policies in this area are coherent. Moreover, early childhood care should be regulated to ensure that it meets high quality standards and public subsidies should only be available to centres that respect these standards. It is also important to have well trained staff for both early childhood care and pre-primary education.²²

15. The improvement in access to quality early childhood care envisaged here would undermine the rationale for the extremely long (3 years) parental-care-leave provisions in Slovakia, which are intended to allow parents to look after their children themselves. Parental leave of about 6 months to one year, with an adequate replacement wage or benefit and a guarantee of a return to the same or similar position at work, as found in most European countries, appears to be valuable both to infants and their parents (especially the mother) (OECD, 2006b, p. 12). The long duration of parental leave in Slovakia is likely to damage female career prospects (see OECD, 2007b, Chapter 2) and may not be in the developmental interests of children, especially those from lower socio-economic backgrounds. It would be preferable to shorten the duration of parental leave with the benefit for the remaining period up to three years being paid in the form of subsidies for childcare.

18. A central empirical conclusion of Carneiro and Heckman (2003, p. 7) for the United States is that “at current investment levels, efficiency in public spending would be enhanced if human capital investment were directed more toward the young and away from the old, unskilled and illiterate persons for whom human capital is a poor investment.”

19. “Spending on pre-primary and compulsory education significantly narrows income inequalities as it is the population in the lower tail of income distribution that benefits the most. Expenditure on tertiary education sometimes makes no difference to income inequality, but in many countries it favours the affluent, widening income inequality” (OECD, 2007, based on OECD, 2006c); unfortunately, Slovakia was not included in this analysis.

20. “Countries charging for early childhood education but not for tertiary education need to review their policies, since this approach does not appear consistent with equity” (OECD, 2007).

21. The EC encourages countries to invest more in pre-primary education and to revise their funding policies in the tertiary sector towards more equitable outcomes – free access to higher education does not necessarily guarantee equity.

22. Research indicates that young children emerge from early childhood care environments with better language skills when these environments are staffed by well educated personnel (Shonkoff and Philips, 2000; EPPE, 2004).

16. Targeted interventions to help young children from disadvantaged backgrounds should also be developed. Experience with such interventions in other countries has been very positive. For example, some such interventions in early childhood in the United States have had lasting effects on learning and motivation (Carneiro and Heckman, 2003, p. 46). In the Perry Preschool (longitudinal) programme, which entailed intensive mentoring of 4-5 year olds as well as interventions to involve parents in the education of their children, estimated cost-benefit ratios were very high.²³ In a similar vein, Olmsted and Montie (2001) conclude from a summary of research on the effects of parental involvement in early childhood education that when parents are encouraged and trained to carry out specific reading tasks with their children, positive effect on children's language and pre-literacy skills are reported. These findings are corroborated by the longitudinal project (EPPE) in the United Kingdom (Siraj-Blatchford *et al.* 2002, 2003; Sylva *et al.* 2003). Indeed, according to EPPE, parental support for emergent literacy in this period of development has an even greater impact than social class: "what parents do is more important than who they are" (OECD, 2006b, p. 66). In view of the large impact of socio-economic background on achievement in Slovakia and the dire situation of much of the Roma community, the potential payoff from such family-based interventions would likely be very high indeed.

Help Roma children to integrate into the education mainstream

17. As noted above, Roma education attainment and achievement are extremely low. This contributes to low labour market participation and extremely high unemployment – the unemployment rate approaches 100% in some segregated communities. Roma tend to be very poor. Poverty in the segregated communities is such that families cannot provide a home environment with appropriate study conditions for children (Vantuch and Jelínková, 2004, p. 31). Many Roma children are placed in special primary schools for the mentally handicapped.²⁴ Academic expectations are extremely low in these schools, making it impossible to re-integrate the mainstream. The assessment tests for making these placement decisions have until very recently been linguistically and culturally biased.²⁵ In some cases, such placement has been used as a means of segregating Roma children (Salner, 2005, p. 9).²⁶ Teaching quality in special primary schools is substandard according to the State Inspection and lacks a special pedagogical approach adapted to the students (Dluhošová, 2005, p. 49). Roma children that remain in standard primary schools often have to repeat grades: 62.4% of children in the 10th year (*i.e.*, repeating at least one year) in 2003/2004 were Roma (Salner, 2005, p. 7).

18. The Slovak authorities have progressively implemented reforms from PHARE projects, which aim to improve education outcomes for Roma minorities in central European countries. In this regard, the profession of teaching assistant was created in 2002. Teaching assistants help pupils to overcome language,

23. The programme returned \$5.70 through to age 27 per dollar spent and is projected to return \$8.70 through to the end of participants' lives per dollar spent (Carneiro and Heckman, 2003, p. 46).

24. Not only are many Roma children directly placed in special primary schools at 6 years of age, many others are transferred to such schools or otherwise removed from the education process during the course of primary education. According to the Methodological Centre Prešov (MPC) survey in 2000, the proportion of Roma children in primary school gradually decreases from 11.1% in the first year to 6.8% by the 9th year (Salner, 2005, p. 7).

25. Indeed, there is a growing body of evidence that the placement of a large proportion of children in special education is not justified and that they do not suffer from any mental handicap (Salner, 2005, p. 9).

26. This conclusion has been borne out by a number of international and domestic organisations (ERRC, SGI). Following the Slovak Governance Institute's petitions, the State School Inspection investigated eight schools suspected of practicing discrimination and concluded that these suspicions were justified (Salner, 2005, p. 9).

social and health barriers to education in kindergartens, primary schools and special primary schools.²⁷ Experience with teaching assistants has been positive. However, there are still not enough of them and they need more training. The authorities also introduced in 2002 the zero (pre-school) grade in primary school for children reaching the compulsory school attendance age (six-years old) but who are not yet ready for primary school education. However, this is unlikely to prove to be a satisfactory solution to the problem as international evidence suggests that effectively holding children back a grade does not contribute to higher achievement subsequently and may reinforce the influence of social background on outcomes (OECD, 2007a, Chapter 4, pp. 3-4). It would be preferable to prepare such children for primary education earlier by making kindergarten compulsory from ages 4, as suggested above. The authorities should also eliminate financial incentives for schools to have children classified as in special education. Instead, the additional resources for teaching socio-economically disadvantaged children should be allocated on the basis of the socio-economic backgrounds of school's student populations.

19. Again, in the context of the PHARE project, the authorities have prepared revised diagnostic tests that are intended not to be linguistically and culturally biased for determining whether children should be placed in standard primary schools or in specialised primary schools for the mentally handicapped. Following a positive experience with these tests when they were applied to a small sample of children in late 2005, their use has since been generalised. Unfortunately, the Pedagogical and Counselling Centres that make such placement recommendations have been severely under funded, notably in areas with large Roma populations (Salner, 2005, pp. 14). The government has decided to address this problem by shifting the funding of these centres from a per capita- to a per client basis. It may also be necessary to increase overall funding for these centres.

20. In another PHARE project, "Integration of Roma Children into Standard Elementary Schools," the revised diagnostic tests were used in September 2005 to identify children that had been misplaced in 20 specialised primary schools so that measures could be taken to re-integrate them in standard primary education. The project demonstrated that if a specific and individual approach to the development of the mental abilities of these children is adopted they are able to handle the transfer to standard primary schools. It will be necessary to continue to provide specialised help for these children to enable them to keep up with the standard primary school curriculum – they still suffer from the handicaps of extreme poverty and weak educational motivation that contributed to their being misplaced in specialised education in the first place. Experience in Hungary with a similar project demonstrated that failure to continue to provide individualised help resulted in Roma children again falling behind in standard primary school. While mainstream primary schools in Slovakia are supposed to provide individual intervention services for Roma students, schools often fail to do so despite repeated warnings from the Ministry of Education (Vantuch and Jelínková, 2004). The Ministry should provide tied grants for these services and make schools accountable for the use of these resources. Following the kindergarten example, greater parental involvement in primary education should also be encouraged. Second chance education for persons not having successfully completed lower secondary school (*i.e.*, less than ISCED 2) also needs to be improved (*ibid*, p. 32), enabling them to complete this level of education and continue to subsequent levels if desired.

21. The measures discussed above to improve Roma education outcomes would be even more effective if complemented by measures to reduce poverty amongst Roma. Labour-market arrangements that enable low-skilled persons to work are particularly important in this regard (see OECD, 2007b, Chapter 2). The introduction of in-work benefits, as suggested in OECD (2007b, Chapter 2), would help to make work pay for low-skilled persons such as most Roma. The effects of such a reform would be more

27. Their presence is also important to help combat the high rate of truancy among Roma children: a survey conducted by the Methodological Centre Prešov (MPC) in 2002 established that 55% of all absent classes were missed by Roma pupils and that their share of trancies was 95%, even though Roma children only made up 35% of the population in these schools (Dluhosva, 2005).

favourable if calls to increase the minimum wage as a share of the average wage were resisted and the authorities made liberal use of their powers to accept requests for exoneration from legal extension of sector-collective agreements so as to limit the loss of regional wage flexibility following the re-introduction of legal extension. It would also be important not to make EPL more restrictive, as this would reduce employers' willingness to take a chance with persons, such as Roma, who have weak labour market attachment. More effective enforcement of anti-discrimination legislation would also help, not only by making it easier for Roma to obtain employment, but also by increasing incentives for Roma to invest in human capital development. More also needs to be done to ensure that Roma have adequate housing, including by connecting Roma settlements to running water and sewage services. This would also help to improve health among Roma, another weak point in their social condition. Finally, Roma wanting to leave the segregated communities to integrate more fully into the majority community should be helped to do so, notably through access to social housing.²⁸

Reduce stratification in the education system

22. Slovakia's education system is highly stratified: it has a high number (five) of tracks into which students are sorted; selection between tracks starts at a young age (10); and academic (grammar school) and vocational education are separately provided (OECD, 2005a, Chart D6.1, and Table D6.1; and Annex A1, which describes the structure of the Slovak education system). Approximately 25% of each cohort enters the academic track (grammar schools) and a further 55% enters the advanced vocational track (Technical Secondary School) that also leads to upper secondary qualifications for entry to tertiary-type-A studies. Selection is mainly based on ability, with the best students going to grammar school, the least able going to vocational secondary school (VSS, which does not give access to tertiary education), and those in between going to technical secondary school (TSS). Within tracks, students are also sorted according to performance. An analysis of the 2003 PISA mathematics results suggests that the distribution of student scores between schools is wider and the impact of socio-economic background on student scores is larger in countries, such as Slovakia, which have more differentiated systems (Table 2²⁹). On the other hand, this analysis suggests that stratification does not significantly affect a country's average score on the 2003 PISA mathematics scale (see Table 2³⁰), although it did so on the 2000 PISA reading scale (*ibid.*, pp. 403; OECD, 2005b).

23. Highly stratified education systems tend to have a high degree of socio-economic segregation between schools: the correlation coefficient in the PISA 2003 study in mathematics between the proportion of the variation in socio-economic background that is between schools and the differentiation index³¹ is 0.65. Slovakia conforms to this pattern, having a higher proportion of the variation in socio-economic

28. Thirty per cent of Roma live in segregated settlements, where there is normally extreme poverty – often there is no running water or sanitary services. Fifty per cent of Roma are semi-integrated, and the remaining 20% are fully integrated into society (Vano, p. 27).

29. See row 9 and columns 1-3 and 6, row 10 and columns 8-9.

30. See row 7.

31. The differentiation index is a measure of the degree of stratification in school systems. This index is derived by averaging the standardised (mean zero, standard deviation of one) indices of first age of selection, the number of school types or distinct educational programmes available to 15-year olds, the proportion of grade repeaters at different levels, and the proportion of 15-year olds enrolled in programmes that give access to vocational studies at the next programme level or direct access to the labour market (OECD 2005a, Table D6.1, footnote 3). Values of the index are reported in the final column of Table D6.1 in OECD (2005a).

background between schools than in most other OECD countries.³² Children from advantaged socio-economic backgrounds tend to enter tracks that provide better preparation for higher education whereas children from disadvantaged backgrounds do not. In highly stratified systems, these tracks are found in different schools. Early tracking tends to reinforce this social segregation because young children are more dependent upon their parents and parental resources (OECD 2005a, p. 404). Socio-economic segregation between schools is inversely related to average PISA scores (in mathematics)³³ and positively related to the impact of socio-economic background on results.³⁴ Judging by international patterns, this feature of the Slovak education system may well be undermining average performance and contributing to weak social equity in education achievement.

24. Focusing on early tracking,³⁵ Hanushek and Wößmann (2005) find that it increases inequality in achievement at the secondary-school level once the inequality that already existed at the primary-school level is taken into account. This analysis was based on comparing results in the various recent international achievement tests at primary-school level (TIMMS 1995 and 1998, which tested 4th grade students in maths and science; PIRLS 2001, which tested 4th grade students in reading) with the corresponding secondary-school level results (TIMMS 1995, 1999, and 2003, which tested 8th grade students in maths and science; and PISA 2000/02 and 2003, which, for the purposes of this analysis, tested students in reading) for participating countries. These authors also found that early tracking had a significant negative effect on average reading achievement but obtained mixed results for mathematics and science achievement: only one of the three mathematics comparisons yielded a significant coefficient (and only at the 10% level of significance), which was negative, as for reading; in science, two of the three comparisons yield significant positive coefficients (although one of them is only significant at the 10% level). These results corroborate the PISA 2003 analysis concerning the impact of stratification on inequality of achievement and also point to a possible adverse effect on reading achievement. They suggest that early tracking may be contributing to the high social inequality of achievement in Slovakia highlighted by the PISA study as well the low average achievement in reading.

25. There are a number of reasons why socio-economic segregation between schools, which tends to be associated with early tracking, increases the impact of a student's socio-economic background on achievement. Schools with an above average socio-economic background offer a number of contextual advantages relative to schools with a below average socio-economic background: advantaged schools are likely to have fewer disciplinary problems, better student-teacher relations, more talented and motivated teachers, and a general school climate characterised by higher performance expectations (OECD, 2004a, p. 190). In addition, peer interactions are likely to reinforce performance in advantaged schools as talented students interact with each other. Other possible explanations for system differentiation increasing the impact of a student's socio-economic background on achievement include that: students not meeting performance standards can be relegated to other schools, tracks or streams with lower expectations in a highly differentiated system rather than being helped to improve their performance; and teachers may be obliged to give more individual attention to students in an environment that has a greater variety of abilities and backgrounds (OECD, 2005a, pp. 404).

32. The proportion of the variation in socio-economic background that is between schools, η^2 , is 32% in Slovakia, compared with an OECD average of 25% (OECD, 2004a, Table 3.5, 12th column – note that the “inclusion index” is defined as $1 - \eta^2$).

33. The correlation coefficient between OECD countries' socio-economic segregation between schools and average PISA scores in mathematics is -0.43.

34. The correlation coefficient between OECD countries' socio-economic segregation between schools and the impact of socio-economic background on students' PISA scores is 0.30.

35. This is defined as tracking before the age at which the relevant secondary-school test is performed. For PISA, this is before age 15, while for TIMMS it is before age 14.

Table 2. Intercorrelation matrix of averages of structural features across the OECD countries¹

| | Number of school types or district educational programmes available to 15-year-olds. | Proportion of 15-year-olds enrolled in programmes that give access to vocational studies at the next programme level or direct access to the labour market | First age of selection in the education system | Proportion of repeaters in primary education | Proportion of repeaters in lower secondary education | Proportion of repeaters in upper secondary education | Performance on the mathematics scale- Mean score | Performance on the mathematics scale- standard deviation | Total variance in student performance between schools | Strength of the relationship between the index of economic, social and cultural background, and student performance |
|--|--|--|--|--|--|--|--|--|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Number of school types or district educational programmes available to 15-year-olds. | 1 | | | | | | | | | |
| Proportion of 15-year-olds enrolled in programmes that give access to vocational studies at the next programme level or direct access to the labour market | 0.50 | 1 | | | | | | | | |
| First age of selection in the education system | 0.76 | 0.52 | 1 | | | | | | | |
| Proportion of repeaters in primary education | 0.39 | 0.27 | 0.23 | 1 | | | | | | |
| Proportion of repeaters in lower secondary education | 0.22 | 0.02 | 0.11 | 0.56 | 1 | | | | | |
| Proportion of repeaters in upper secondary education | 0.45 | 0.22 | 0.53 | 0.23 | 0.27 | 1 | | | | |
| Performance on the mathematics scale- Mean score | 0.09 | 0.26 | 0.23 | 0.21 | 0.17 | 0.40 | 1 | | | |
| Performance on the mathematics scale- standard deviation | 0.25 | 0.19 | 0.29 | 0.05 | 0.06 | 0.58 | 0.08 | 1 | | |
| Total variance in student performance between schools | 0.62 | 0.63 | 0.70 | 0.15 | 0.16 | 0.65 | 0.14 | 0.62 | 1 | |
| Strength of the relationship between the index of economic, social and cultural background, and student performance | 0.51 | 0.24 | 0.53 | 0.29 | 0.17 | 0.43 | 0.19 | 0.48 | 0.57 | 1 |

1. Data marked in bold are statistically significant at the 0.05 level (2-tailed). The proportion of explained variance is obtained by squaring the correlations shown in this figure.

Source: OECD PISA 2003 database; OECD Education database.

26. Stratification in the education system, and hence the impact of socio-economic background on achievement, could be reduced by delaying the age at which students are sorted into different tracks. For example, lower secondary education could be made comprehensive, with sorting into tracks delayed until age 16 (after the completion of compulsory education); this is the age at which first selection occurs in many other OECD countries. This would limit socio-economic segregation up to this age, providing children from disadvantaged socio-economic backgrounds with a school environment more conducive to good performance. Such a reform would also reduce the risk of late developers being locked into dead-end tracks. This is particularly important for social equity because talented children from homes with less social capital tend to develop later, when they are less dependent on parental social capital. The authorities have started to reduce stratification by encouraging the integration of Technical Secondary School (TSS) and Vocational Secondary Schools (VSS). This process should be taken further by also integrating TSS, which like grammar school (GS) leads to qualifications for entry to tertiary-type-A studies, and GS. Under such an arrangement, the common general education courses in the GS- and TSS tracks could be offered to students in joint classes, with students separating for courses that are not offered in both tracks. Another reform to reduce stratification would be to strengthen the linkages between the different education tracks, which would make it easier for students to move up to more promising and demanding tracks. Streaming³⁶ should also be reduced, especially for younger children, to reduce the risk of a lack of stimulation and low expectations undermining performance of weaker students. Reducing streaming tends not to affect average achievement, but does narrow its distribution. More heterogeneous classes do, however, place greater demands on teachers, obliging them to show a greater interest in individual student learning (OECD, 2007a).

36. Streaming refers to sorting students within a track and school into different classes most often based on academic performance.

Target increases in teacher salaries on overcoming skill shortages and attracting the best teachers to socio-economically disadvantaged schools

27. Education expenditure per (full-time equivalent) student in relation to GDP per capita has been low in Slovakia until recently (Figure 9).³⁷ Such expenditure varied from 69% of the OECD average for secondary education in 2003 to 88% for tertiary education; for primary education this proportion is 75%. Such low expenditure mainly reflected low teachers' salaries.³⁸ They were below the average wage in 2003 (Figure 10) and must have been very low indeed in relation to salaries for other employees with tertiary qualification given the very high earnings premium for tertiary education in Slovakia (see Figure 4). This situation has resulted in difficulties in recruiting and retaining teachers with skills that are valued in the private sector,³⁹ notably fluency in foreign languages (especially English), though not in enrolling students in teacher education.⁴⁰ Unqualified teachers taught up to 25% of primary classes, 30% of lower secondary classes, and 15% of vocational classes in 2001 (OECD, 2005b, p. 49).

37. Low expenditure per (full-time equivalent) student in relation to GDP per capita is not explained by Slovakia's relatively low level of GDP per capita – there is no relationship across OECD countries between these variables based on the following regression estimates (t-statistics are in brackets):

$$\text{EPSPSNT} = 20.586 + 0.087 \text{ GDPC} + \varepsilon$$

(10.462) (1.278)

No. of observations = 30; Adjusted R² = 0.021.

$$\text{ET} = 39.322 + 0.112 \text{ GDPC} + \varepsilon$$

(4.281) (0.335)

No. of observations = 28; Adjusted R² = -0.034.

Where:

EPSPSNT is annual expenditure on primary, secondary, and post-secondary non-tertiary education per full-time equivalent student relative to GDP per capita in 2003 (as shown in Figure 9, panel A);

ET is annual expenditure on tertiary education per full-time equivalent student relative to GDP per capita in 2003 (as shown in Figure 9, panel B); and

GDPC is GDP per capita converted to dollars at PPP exchange rates.

38. Again, there is no relationship across OECD countries between the ratio of teachers' salaries to average wages and GDP per capita (in PPP terms) based on the following regression estimates (t-statistics are in brackets):

$$\text{SR} = 1.091 + 0.003 \text{ GDPC} + \varepsilon$$

(4.574) (0.318)

No. of observations = 27; Adjusted R² = -0.036

Where:

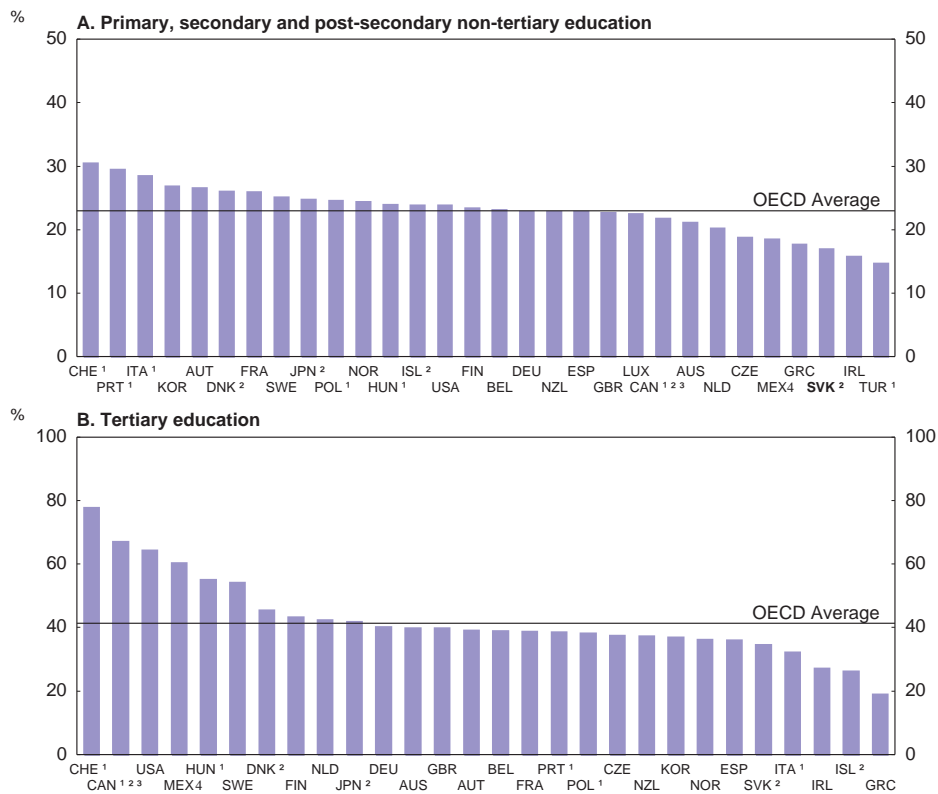
SR is the ratio of teachers' salaries to average wages; and

GDPC is GDP per capita converted to dollars at PPP exchange rates.

39. Santiago (2004) provides (non-Slovak) empirical evidence for the importance of salaries and alternative employment opportunities for the attractiveness of teaching. He finds that teacher salaries relative to those in other occupations influence: the decision to become a teacher after graduation; the decision to return to teaching after a career interruption; and the decision to remain a teacher. Relative earnings seem to be less important when the decision is whether to enrol in teacher education or another course (Hanushek and Pace, 2005).

40. The number of students entering initial teacher education programmes in Slovakia increased by more than 40% between 1995-97 and 1999-2001, one of the largest increases in the OECD (OECD 2005b, Figure 3.8). Many of these students subsequently choose not to enter the teaching profession. There is

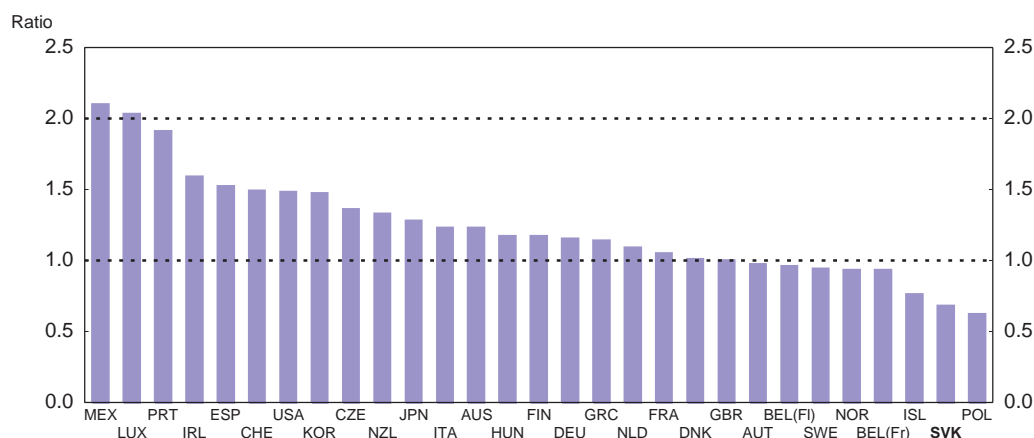
Figure 9. Annual expenditure on educational institutions per full-time equivalent student relative to GDP per capita, 2003



1. Public institutions only.
2. Post-secondary non-tertiary is included or partially included in tertiary education.
3. Year of reference 2002.
4. Research and development expenditure and thus total expenditure is underestimated.

Source: OECD (2006) Education at a Glance, Table B1.1C; OECD National Accounts Statistics.

international evidence that enrolment in initial teacher education programmes is often a second- or third choice or a fall-back option in case the graduate labour market deteriorates (*ibid.*, pp. 53-54).

Figure 10. Ratio of teachers' salaries in lower secondary education to average earnings, 2003 ¹

1. Teachers' salaries after 15 years of experience.

Source: OECD (2003), *Education at a Glance*, Table D3.1 and OECD Taxing Wages database.

28. Salaries for teachers have been substantially increased in Slovakia in the past three years and now stand at around 5% above the national average wage. The Ministry of Education has submitted a proposal to increase average teachers' wages to 140% of the national average wage over the next few years, which would bring this ratio to around the OECD average; such a measure would cost SKK 13 billion (0.9% of GDP) if implemented immediately. It is also proposed to increase from 2007 the monthly salary offered to young language teachers with previous work experience from SKK 19 000 to SKK 26 000 (*i.e.*, to about 25% above the overall average wage for teachers, but comparable to wages offered in private schools).⁴¹ There is also to be wage differentiation based on teaching quality and effort, but not according to private sector demand for the skills in question. The planned pay increases would be more effective in overcoming skill shortages if this factor were taken into account, resulting in larger pay increases for foreign-language, mathematics, and science teachers.

29. For higher salaries to be as effective as possible in improving teacher quality, recruitment and selection mechanisms should be evaluated and reformed as necessary to ensure that they support the selection of the best candidates from the wider pool made available by the higher salaries. Similarly, it will be important to ensure that initial teacher education prepares candidates well and that teachers are encouraged to upgrade their skills continuously. Ensuring that school leadership is strong and given flexibility to manage while being held accountable for outcomes would also contribute to improving teaching quality. In this regard, school managers need to be given the competence to hire and fire teachers, which would require changing teachers' employment contracts so that they can be terminated.

30. The authorities should also take the opportunity to offer substantially higher salaries to attract high quality teachers to schools with children from disadvantaged socio-economic backgrounds as such children stand to gain the most from high quality teaching (Rivkin, Hanushek, and Kain, 2001, based on US evidence). Presently, there is no difference in teacher salaries between public-sector schools. In other countries with such arrangements, schools with students from disadvantaged socio-economic backgrounds are likely to have a succession of inexperienced teachers as the latter seek to transfer to an easier environment as soon as possible. There is no reason to believe that the consequences of such arrangements would be any different in Slovakia. This raises concerns about continuity of the education programme in such schools (OECD 2005c, p. 49-50). Moreover, schools in Slovakia with children mainly from

41. The latter measure aims to attract some of the many young lawyers able to work in foreign languages.

disadvantaged socio-economic backgrounds have the lowest proportion of qualified teachers (*ibid*, p. 52). It is vital that salary increases to attract high quality teachers to difficult schools be targeted and not general.⁴² Based on US evidence, the salary supplement needed to attract quality teachers to disadvantaged schools could be up to 50% (*ibid*). Implementing such a policy would entail providing more funding per student to schools with students mainly from disadvantaged socio-economic backgrounds than to other schools instead of providing the same funding per student to all schools, as presently occurs.

Make vocational secondary school education more pertinent to labour-market requirements

31. Unemployment rates for persons with upper-secondary-vocational attainment not leading to tertiary-type-A programmes⁴³ are high in Slovakia, even in prime-age groups (Figure 11). Although these rates decline in successively older age groups, unemployment rates for persons with higher education attainment fall more quickly. As a result, the unemployment rate for graduates of vocational secondary school rises from 130% of the rate for other persons with upper secondary attainment in the 15-24-age group to almost double this rate for the 35-44-age group. The comparison with unemployment rates for persons with tertiary attainment is even more unfavourable. These ratios are particularly high by international comparison. They suggest that vocational secondary schools in Slovakia are not providing students with skills that are in demand in the labour market.

32. Vocational secondary schools (VSS), which prepare student for direct entry to the labour market rather than for tertiary studies, lost touch with enterprises following the fall of communism (Vantuch and Jelínková, 2004). There is no typical apprenticeship training in Slovakia and there are no apprentices (*ibid*). Practical training is usually VSS-school based (*ibid*).

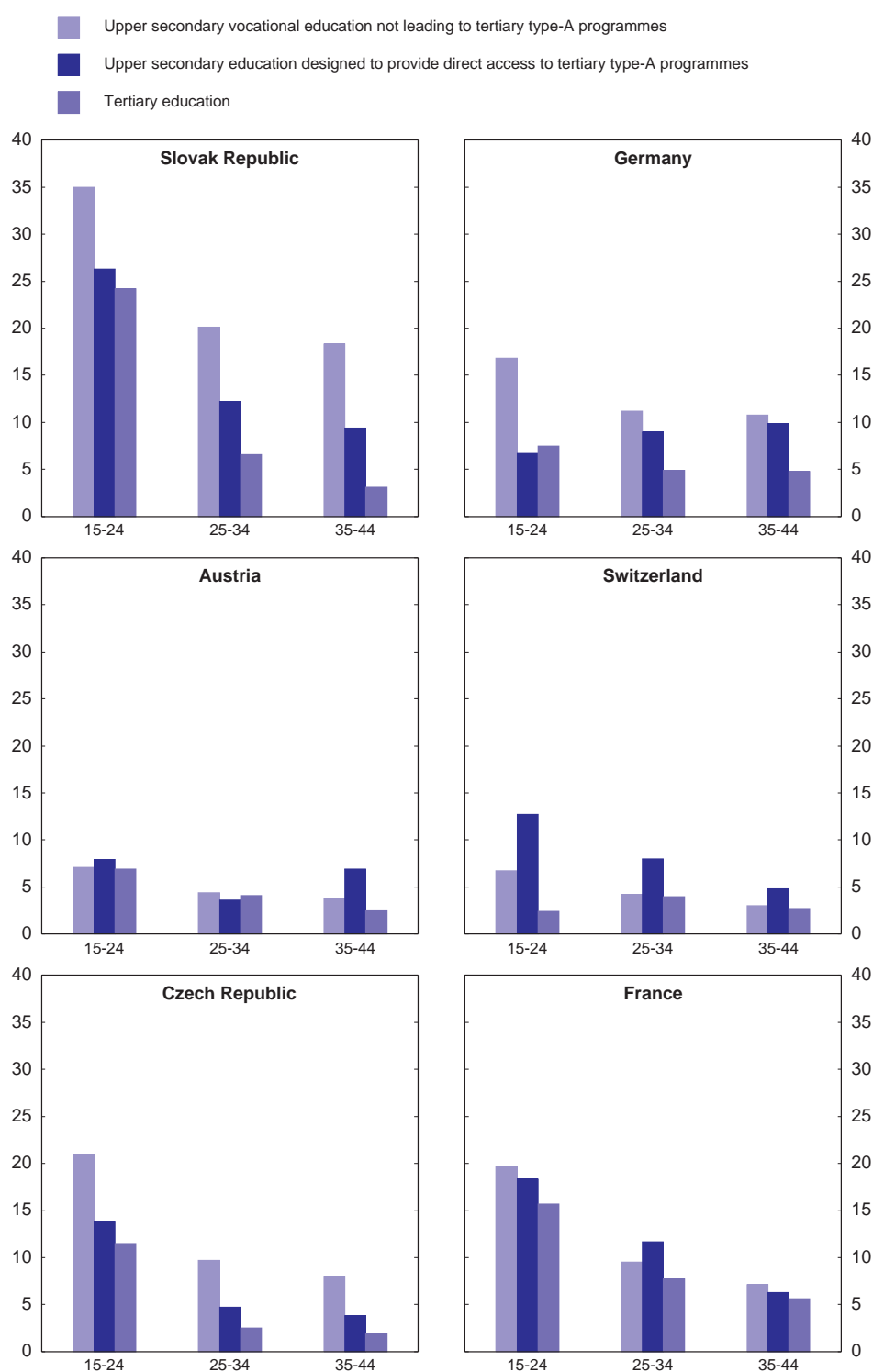
33. Greater employer involvement in VSS education is the key to making such education more pertinent to labour-market requirements. Links have been established recently between employers and VSS in some sectors, notably the automobile industry. Automobile firms have worked with regional VSS to revise curricula so that students acquire the skills that are needed in the industry. These arrangements appear to be very promising, although it will be necessary to ensure that curricula retain enough general education content to facilitate subsequent retraining if that should be necessary. More progress still needs to be made in involving employers in other sectors in curricula development. It would also be helpful to develop an apprenticeship system for the practical training component of VSS programmes, as in most other countries.

42. Empirical evidence from the United States shows that "...salaries relative to other districts rather than the absolute level of salaries is the important factor, as salaries appear to have a larger impact on the probability of switching than on exiting altogether" (Hanushek, Kain and Rivkin, 2001, pp. 19-20).

43. In Slovakia, persons with such attainment are graduates of vocational secondary schools. Programmes in these schools do not lead to either tertiary-A or tertiary-B programmes.

Figure 11. **Unemployment rates by level of education attainment and age group**

Per cent, 2004



Source: OECD Labour Force Statistics database.

34. Moves to amalgamate VSS and Technical Secondary School (TSS) in new entities known as Associated Secondary Schools (ASS), as discussed above, could help to raise education standards for

students in the VSS track, thereby preparing them better for labour market entry. In the first year since 2002/2003, when it became possible to create ASS, 90 were created; by comparison, there were still 287 TSS and 214 VSS in 2003/2004 (Vantuch and Jelínková, 2004, p. 18).

Make tertiary education more attractive for technical secondary school graduates

35. A relatively high proportion of TSS students gaining the “*maturita*” certificate, which is a prerequisite for university admission, do not in fact enter university. TSS graduates represent 40% of entrants to tertiary education whereas they make up around two thirds of graduation rates from upper secondary programmes designed to prepare students for tertiary type-A education. This is what underlies the relatively large gap between graduation rates from programmes preparing for tertiary type-A programmes and actual entry rates to such tertiary programmes (see Figure 6). By contrast, the overwhelmingly majority of grammar school graduates enter tertiary programmes.

36. One of the reasons for a relatively high proportion of TSS graduates not going on to tertiary education is that there are few relatively short (2-3 years) occupationally oriented programmes (*i.e.*, tertiary-type-B) in Slovakia (see Figure 5).⁴⁴ Such programmes have played a key role in the expansion of tertiary education in recent years in many other countries. One striking example is Finland, where the creation of tertiary-B institutions contributed to the doubling of higher education enrolments in 10 years (1990-2000) (OECD, 2006d). The expansion in tertiary education has often occurred mainly through tertiary-B programmes in some other countries because: such programmes tend to be cheaper per student (except in France); institutions are geographically spread more widely, facilitating participation by less well-off students;⁴⁵ and such programmes are more attractive to students who are not so interested in academic learning as in quickly entering the labour market with valuable skills. Based on experience in other countries, tertiary-B programmes that are most in demand prepare students for “modern” occupations that require academic competences (jobs related to business, technology, high level of IT, health occupations and social services) as opposed to “traditional” occupations, which are predominantly manual.⁴⁶ Graduates in “modern” occupations benefit from higher wage rates and more stable employment than graduates in “traditional” occupations. Tertiary-B education in “modern” occupations can also be continued at the university level as universities offer equivalent programmes (Grubb, 2003, p. 13).

37. In developing tertiary-B programmes, there a number of features of such programmes in the Netherlands (higher professional education, HBO) that aim to prepare students well for working life (Marginson *et al.*, 2007) that would be worth emulating: employers are involved in the education process – they participate in supervisory boards of HBO institutions, advise on development of programmes and their quality assurance; students gain practical experience in the workplace; students’ labour-market outcomes are monitored; and the dropout rate and timely completion of studies are taken into account for the distribution of financial support.

38. Another barrier to higher participation in tertiary education by TSS graduates is that they often fail to get high enough scores in entrance exams to be admitted to the most popular universities as full-time students, obliging them to pay high fees (around €1 000 per year) as part-time students or to study elsewhere; these arrangements also discourage participation in lifelong learning. Such fees have been unofficial until now but the government plans to make them official. Popular universities have been tightly

44. This is considered to be one of the major bottlenecks in the education system that is contributing to low enrolment in higher education (Vantuch and Jelínková, 2004, p. 32).

45. For example, in Norway there are only four universities but 26 state colleges (tertiary B).

46. These occupation definitions come from Grubb (2003). In the United States, 85% of community college students enrol in courses leading to “modern” occupations (Grubb, 2003).

restricting access for full-time students, increasing scope for fee income from part-time students: in the most popular universities, only 20% of students applying for full-time studies are accepted, whereas 60% of applicants for part-time studies are accepted. To reduce this barrier to participation and to make the financing of tertiary education fairer – the students accepted as full-time students are likely to come from more socio-economically advantaged households and to have higher life-time earnings – tuition fees should be aligned for full-time and part-time students, as is the case in most other countries. In setting such fees, the authorities should take into account not only the costs of tuition but also potential earnings net of tax. Given that the tertiary-A-earnings premium is high, and that there is limited progression in the tax system⁴⁷ and relatively little redistribution through the social security system (old-age pensions are proportional to contributions, unemployment benefit duration is short), there is considerable scope to raise fees for such students without making such education unattractive. Concomitantly, fees for tertiary-B students would need to be set at lower rates to reflect lower earnings premiums. At the same time, loans with income-contingent repayments, as in number of other OECD countries, would need to be made available to ensure that liquidity constraints do not exclude some students and to reduce the risk on returns to private investment in tertiary education.

Increase participation in continuing vocational education and training (CVET) and lifelong learning (LLL)

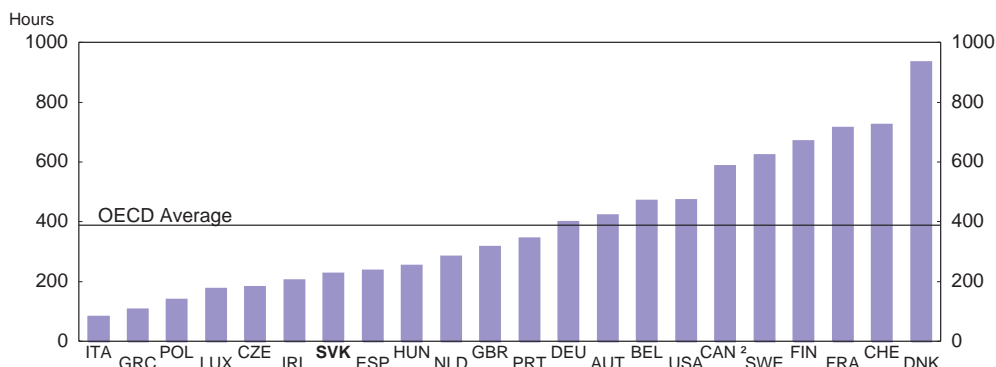
39. Participation in non-formal job-related education and training is relatively low by international comparison (Figure 12). On average, Slovaks can expect to spend 225 hours over the course of a typical working life (from 25-64 years of age) in such training compared with an OECD average of 389. This low participation reflects a low number of hours per participant in CVET - the proportion of the labour force participating in CVET is around the OECD average (OECD, 2006a, Table C5.1a) – suggesting that participation is unlikely to have a large effect on participants' productivity. The expected number of hours spent in CVET over a typical working life is particularly low for persons without tertiary education attainment (Figure 13). CVET is being used less than in wealthier OECD countries to develop the skills of persons with upper secondary attainment.

40. A barrier to development of the CVET/LLL markets is that there are no national policies introducing quality assurance (Vartuch, 2004). This may help to explain the particular weakness in participation in longer duration courses, where participants' investments and hence potential losses from making a poor choice are larger. Another weakness is that arrangements for supporting the validation of non-formal and informal learning within the national and European qualifications frameworks are not yet in place. Putting these arrangements in place is important for promoting equity because many of the least advantaged build up key competences and skills in non-formal and informal education EC (2006). Validating such learning would remove dead ends in learning pathways (*ibid*). It would also encourage greater participation in CVET courses by persons needing to complement their validated learning with additional study to obtain recognised qualifications. The government should ensure that official accreditation is available for programmes that meet certain minimum standards and should give priority to

47. Taxation of the extra labour earnings that tertiary-A graduates achieve can be approximated by assuming that they earn on average 167% of the earnings of persons with upper secondary attainment; this premium is somewhat below that in Slovakia (see Figure 4) but is representative for many OECD countries. Taking the case of a single taxpayer, taxation of the additional labour earnings achieved by graduates over and above upper secondary earnings is 43.3% in Slovakia (OECD Taxing Wages Database, 2005). This rate is comparable with that in the United Kingdom (42.5%). However, whereas 30% of funding for tertiary education institutions in the United Kingdom in 2003 came from private sources, this proportion was only 14% in Slovakia (OECD, 2006a, Table B3.2b). On the other hand, countries such as France and Germany in which private sources of finance for tertiary education are relatively low, at 19% and 13% respectively, have higher taxation of graduates' additional labour earnings: such tax rates are 57.6% and 56.3%, respectively.

putting in place arrangements for the accreditation of non-formal and informal learning within the national and European qualifications frameworks. This may necessitate some clarification of responsibilities for LLL between the Ministry of Education and the Ministry of Labour.

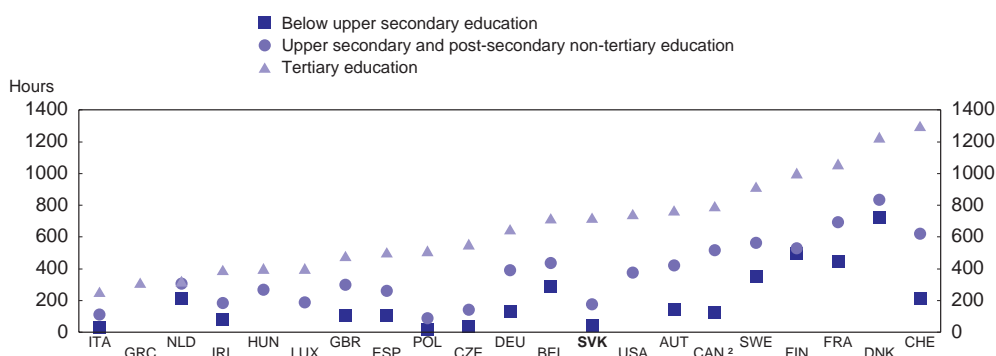
Figure 12. **Expected hours in non-formal job-related training, 2003¹**



1. This chart shows the expected number of hours that individuals can expect to spend in non-formal job-related education and training over a typical working life (from 25-to-64 years old).
2. Year of reference 2002.

Source: OECD (2006), *Education at a Glance*, Table C5.1a.

Figure 13. **Expected hours in non-formal job-related education and training by level of educational attainment, 2003¹**



1. Expected number of hours in non-formal job-related education and training for 25-to-64-year-olds in the population by level of educational attainment.
2. Year of reference 2002.

Source: OECD (2006), *Education at a Glance*, Table C5.1a.

41. Another factor that may help to explain the weaker participation in CVET in Slovakia than in most other countries is that there are no fiscal incentives (Vartuch, 2004). While firms are able to deduct the costs of their employees participating in training, employees are not able to do likewise. A neutral tax policy would be to allow them to deduct costs for certified training against future earnings.

Box 1. Policy recommendations to improve education outcomes

Improving student achievement and reducing the impact of socio-economic background

The planned reform to make kindergarten free of charge from age 5 should be taken further by encouraging increased participation of children from lower socio-economic backgrounds from age 4. The government should ensure that municipalities not offering an adequate supply of kindergartens are financially able to do so and in fact do so. This reform is vital for improving Roma education outcomes.

Roma children should be helped to integrate into the education mainstream by:

- Extending the PHARE pilot project that identified children that had been misplaced in specialised education and helped them to reintegrate the education mainstream to all special schools and continuing to provide specialised assistance to children transferring to standard primary schools to enable these children to keep up with the standard curriculum.
- Eliminating financial incentives for schools to have children classified as participating in special education, instead making the extra payments based on children's socio-economic backgrounds.
- Increasing the supply of teaching assistants and giving them more training; they help pupils to overcome language, social, and health barriers to education.

Stratification in the education system should be reduced by:

- Taking the recent reform permitting the integration of technical secondary schools and vocational secondary schools further by also encouraging the integration of technical secondary schools and grammar schools, with the general education courses common to both tracks being offered jointly.
- Delaying the age at which first selection into education tracks is made until 16, and reducing streaming of young children.

For increases in teacher salaries to be as effective as possible in improving teacher quality, especially in schools with children from disadvantaged socio-economic backgrounds, the authorities should:

- Ensure that recruitment and selection procedures are well designed to recruit the best candidates, that initial teacher education prepares candidates well, and that teachers are encouraged continuously to upgrade their practice;
- Give school principals the flexibility to manage, notably by being able to hire and fire teachers, and hold principals accountable for outcomes;
- Give the largest salary increases to high quality teachers willing to teach in schools with children from disadvantaged backgrounds (such children stand to gain the most from high-quality teaching) and to teachers in subjects in which there are skills shortages (foreign languages, mathematics and science).

Making vocational secondary school education more pertinent to labour-market requirements

Employer involvement in vocational secondary school curricula development should be increased to adapt such education better to labour-market requirements. The automobile industry's experience with such involvement has been very positive but needs to be emulated in other sectors.

An apprenticeship system for the practical training component of vocational secondary school programmes should be developed.

Making tertiary education more attractive to technical secondary school graduates

Short (2-3 years) occupationally oriented programmes (i.e., tertiary B) should be developed. Such programmes are likely to provide more attractive pathways to tertiary attainment for many technical secondary school graduates than the more academic (tertiary-A) programmes almost exclusively on offer.

The high “unofficial” tuition fees paid by part-time students, who are often technical secondary school graduates, in popular universities should be banned. The government should also reconsider its policy of not introducing tertiary fees for full-time students as this reduces incentives for efficiency in the tertiary education sector and undermines social equity, the greatest benefits going to the better off. Any such fees should be aligned for full-time and part-time students and be set so as to make a significant contribution to costs in light of the high tertiary earnings premium in Slovakia and the limited progression in the tax system.

Loans with income-contingent repayments should be made available to ensure that liquidity constraints do not exclude some students and to reduce the risk on returns to private investment in tertiary education.

Increasing participation in continuing vocational education and training (CVET)/lifelong learning (LLL)

The government should ensure that official accreditation is available to programmes meeting certain minimum quality standards.

Priority should be given to putting in place arrangements for the accreditation of non-formal and informal learning within the national and European qualifications frameworks.

Employees’ costs of participation in CVET/L should be made tax deductible.

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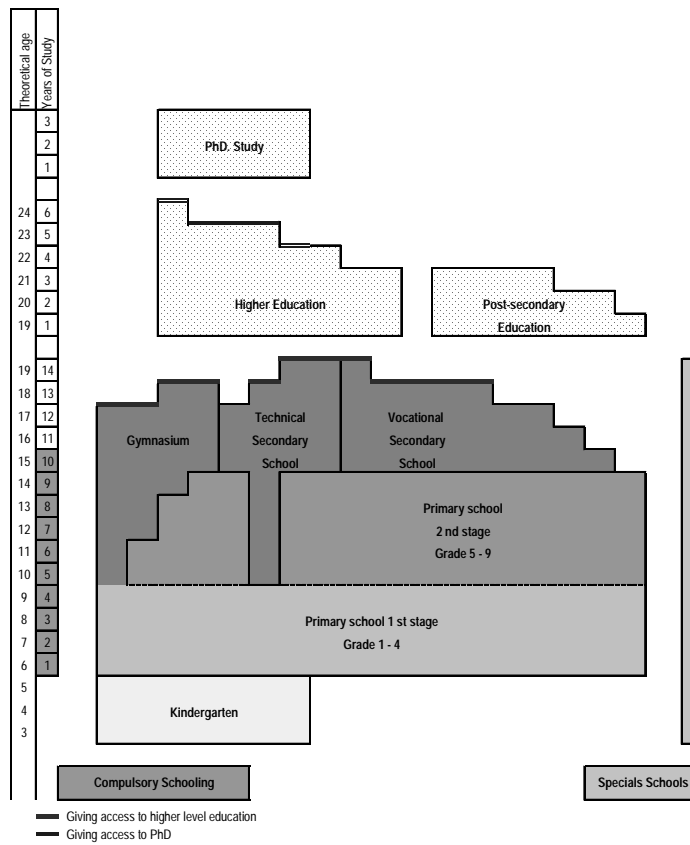
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Annex A1

Structure of the school system



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