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COMMISSION STAFF WORKING DOCUMENT

Employment and Social developments in Europe 2018

CHAPTER 3

Equal opportunities: skills, education and overcoming disadvantages

1. INTRODUCTION ⁽¹⁾

The EU is undergoing rapid economic transformations which are accelerating the demand for skills.

The shift towards digital product and factor markets, together with globalisation and population ageing, will continue fuelling the demand for people who are better educated and more appropriately skilled. The speed of these transformations defines the pace at which workers must adapt to the new working environment. Workers are confronted with major restructuring of jobs ⁽²⁾ and the need to develop new skills in a short time. The demand for information processing as well as for high-level cognitive and interpersonal skills is growing rapidly. ⁽³⁾ Workers who can supply the skills relevant to these professions are in short supply, ⁽⁴⁾ and the shortages are projected to aggravate.

These transformations will create winners, while others are at risk of being left behind.

Firms in certain sectors struggle to recruit skilled staff, especially in office professions and computer-related, engineering and other maths-intensive jobs. ⁽⁵⁾ In addition, the health and social care professions as well as teaching have entered the list of occupations facing bottlenecks. ⁽⁶⁾ Those able to adapt quickly to the permanent changes and to supply the skills needed in these jobs stand a good chance of gaining high returns for themselves as well as for their employers. This is because highly skilled labour attracts capital investment in new technologies. Skilled labour and capital are complementary: their combination delivers higher productivity growth. By contrast, those who are unable to improve on skills and qualifications are at risk of being crowded out of the labour market, both by better-skilled labour and by physical capital. ⁽⁷⁾

Many Europeans face difficulties in keeping up with the new skill needs. It is important to help all Europeans acquire the relevant skills and qualifications (formal education) to cope with these

⁽¹⁾ This chapter was written by Jörg Peschner. Contributions by Petrica Badea are gratefully acknowledged.

⁽²⁾ More than one in five workers in the EU have been confronted with major restructuring at their workplace during the last three years. Eurofound (2017), p. 95.

⁽³⁾ OECD (2016:1), The Survey of Adult Skills: Reader's Companion, OECD Publishing, p. 127.

⁽⁴⁾ See OECD (2017:1).

⁽⁵⁾ World Economic Forum (2016), p. 4.

⁽⁶⁾ This is true especially for jobs requiring high skills, see Cedefop (2015), p. 49.

⁽⁷⁾ See Chapter 2.

transformations. The most recent (2015) PISA survey ⁽⁸⁾ again revealed that too many young Europeans lack basic skills such as reading or maths. As for education, despite recent progress, more than one in ten still leaves school early, and 17% of those aged from 30 to 34 years did not progress beyond lower secondary education. Both in skills and education there are differences related to Member State, gender, age group, social background and other individual characteristics. Not least because people's labour market prospects depend heavily on their education and on having relevant skills, unequal opportunities leave their scars on the labour market.

Opportunities in life are strongly linked to social origin. The results of the 2015 PISA survey on students' competences provide fresh evidence that a person's parental background is a major predictor of their skills which are relevant for the labour market. ⁽⁹⁾ This problem affects not only people with a migrant background. ⁽¹⁰⁾ Further analyses show that those who inherit social disadvantage from their parents stand a high risk of lacking more than just core competences. They also achieve lower social and labour market outcomes. ⁽¹¹⁾

Along with inherited social disadvantage, gender inequality stands out, as it affects half of the EU's population. The EU has long been promoting greater gender equality in both education and the labour market through a series of initiatives and legislation. ⁽¹²⁾ But despite progress over the last two decades, ⁽¹³⁾ with the gap in formal education being reversed and employment rates increasing, women's labour market performance is still lower than men's. In the age group 20-64 there are 17 million fewer women than men in employment. Once in employment, women have lower pay (Chapter 4). Moreover, they are still under-represented and face various disadvantages in key occupations such as ICT and STEM (sciences, technology, engineering and mathematics) ⁽¹⁴⁾ where growth prospects are bright. Indeed, addressing the gender gap in these technical activities is often seen a necessity to broaden the pool of potential recruits in STEM occupations. ⁽¹⁵⁾ Intervention at early age has positive effects in creating an interest in these occupations and addressing stereotypes. ⁽¹⁶⁾

Section 2 of this chapter will examine how the existing skill level of Europeans is influenced by inherited social disadvantage (both when people are young and later as adults) and how it compares with the skills currently needed in the labour market. It then turns to the role of social background in formal education. Section 3's focus is the labour market. To what extent can individual success in education compensate for inherited social disadvantage? Section 4 analyses policy options for alleviating the consequences of social inequalities and increasing people's employability. Section 5 looks at gender equality in education and in the labour market. Conclusions are summarised in section 6.

⁽⁸⁾ The OECD's Programme for International Student Assessment (PISA) is a triennial international survey which aims to evaluate education systems worldwide by testing the skills and knowledge of 15-year-old students. See <http://www.oecd.org/pisa/aboutpisa/>. The OECD's Programme for the International Assessment of Adult Competencies (PIAAC) developed and conducts the Survey of Adult Skills. See <http://www.oecd.org/skills/piaac/>

⁽⁹⁾ European Commission (2017:1), Chapter 3, Section 5.3.

⁽¹⁰⁾ See OECD (2017:2) and OECD (2018:1) for the social disadvantage of children with a migrant background, especially second-generation migrants (born in the EU).

⁽¹¹⁾ European Commission (2017:2), p. 9. Indeed, inherited disadvantages go beyond education and the labour market. For example, the European Commission's Joint Research Centre (European Commission, 2017:3) finds that they stretch out to health-related problems.

⁽¹²⁾ See the Commission's website on Equal economic independence: https://ec.europa.eu/info/policies/justice-and-fundamental-rights/combating-discrimination/gender-equality/equal-economic-independence_en#what-is-the-eu-doing

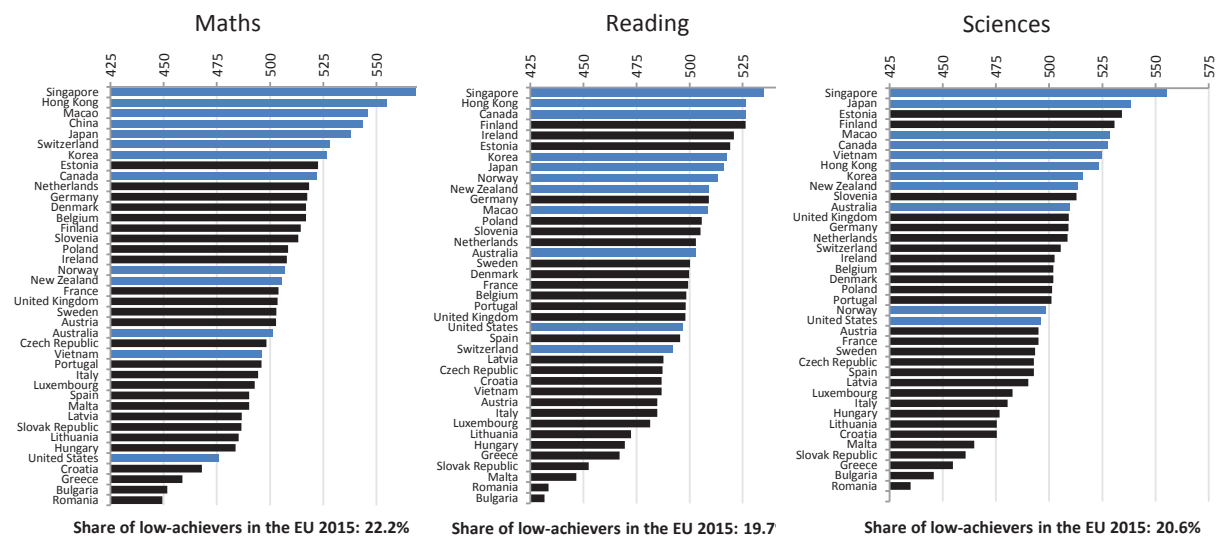
⁽¹³⁾ Eurofound (2016).

⁽¹⁴⁾ The employment rate of female STEM graduates is 76% (86% for men). "At tertiary level, only one third of women STEM graduates work in STEM occupations, compared to one in two men". European Commission (2018:1), p. 21.

⁽¹⁵⁾ EU Skills Panorama (2014), p. 5.

⁽¹⁶⁾ European Commission (2017:1).

Chart 3.1
Many young people lag behind their Asian peers
PISA scores in different disciplines, 2015, by country



Note: EU countries in dark bars

Source: OECD PISA

[Click here to download chart.](#)

2. SOCIAL DISADVANTAGES: HOW DO THEY PREDICT SKILLS AND FORMAL EDUCATION?

2.1. Social disadvantage and skills: lessons from PISA and PIAAC

Many people need to make an effort to keep pace with the new skill needs of the labour market.

Since the turn of the century, a series of surveys has been carried out by the OECD with the aim of assessing the core competences of both pupils (PISA survey) and adults (PIAAC) Most recently, the PISA survey of 2015, like its predecessors, sent alarming signals about the competence level of 15-year-old Europeans in the core disciplines of reading, science and maths. In all three disciplines, one in five is a low achiever, i.e. they achieve proficiency levels of less than 2 on a scale that goes up to 6. ⁽¹⁷⁾ The proportions of low achievers have increased since 2012. Looking at average score by country, 15-year-olds in most EU countries (dark bars in *Chart 3.1*) perform less well in all three disciplines than their peers in many of our fast-advancing Asian competitors.

Social background has a strong effect on skills performance everywhere in Europe. A person's skills performance cannot be entirely explained by their school system or other institutions. Individual factors play a major role, and people seem to inherit a certain social advantage or disadvantage from their parents. OECD's Economic, Social and Cultural Status index (ESCS) ⁽¹⁸⁾ is a measure of socio-economic advantage or disadvantage: in PISA 2015 the proportion of low-achieving students in the bottom, least advantaged quartile (33.8%) was more than four times the proportion in the top quartile (7.6%). ⁽¹⁹⁾

Parents' low education levels and low occupational skill levels have a negative influence on students' performance in PISA tests. The left column in *Chart 3.2* is the coefficient of a regression. It shows how much the maths score in PISA 2015 increased for every single step up the parental education ladder, on average in each country. According to the ISCED classification scale ⁽²⁰⁾ those steps range from ISCED 0 (pre-primary education) to 6 (advanced studies). The regression assumes no difference in other

⁽¹⁷⁾ Level 2 is associated with 'basic procedural knowledge' enabling students to 'draw on everyday content'. See <http://www.oecd.org/pisa/summary-description-seven-levels-of-proficiency-science-pisa-2015.htm>.

⁽¹⁸⁾ The OECD's Social and Cultural Status (ESCS) index is composed of 5 variables that reflect parents' occupational status, parents' education, the family's wealth, resources for home education and family culture'. See OECD under <http://stats.oecd.org/glossary/detail.asp?ID=5401>

⁽¹⁹⁾ European Commission (2016:1), p. 16.

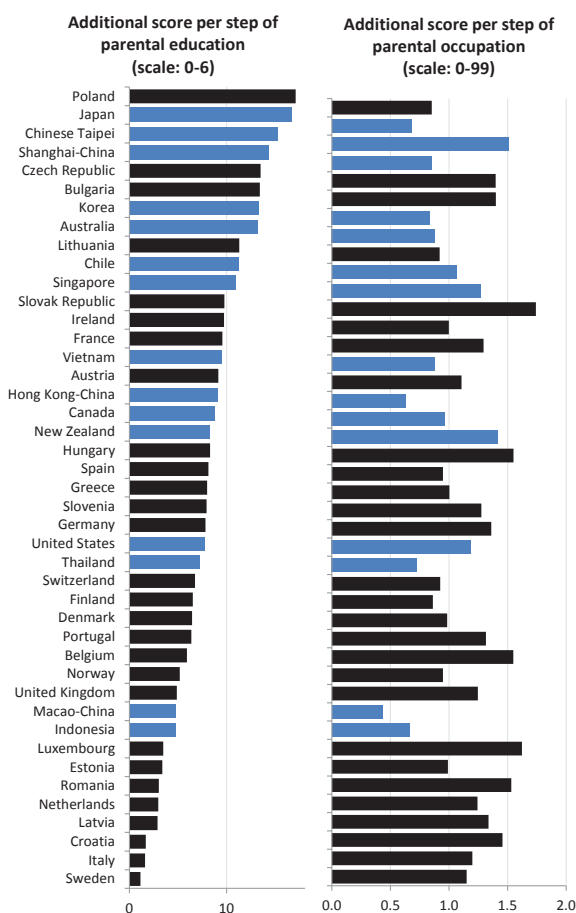
⁽²⁰⁾ See [http://ec.europa.eu/eurostat/statistics-explained/index.php/International_Standard_Classification_of_Education_\(ISCED\)](http://ec.europa.eu/eurostat/statistics-explained/index.php/International_Standard_Classification_of_Education_(ISCED))

relevant characteristics, such as gender and migration status. Under these “everything else being equal” conditions, climbing one step of parents' education level in Sweden would, on average, yield an 1.1-point increase in the score. This means that those at the bottom of the scale, i.e. the children of parents with very low levels of education (ISCED level 0), will be, on average, only 8 points below the children of very well educated parents (1.8% of the average score in Sweden). In Poland, the impact of parental education is a multiple of that. Each step up the parental education ladder yields 17 points and 120 points at most (30% of Poland's average score). Also in other, especially Eastern EU countries (and in a number of Asian countries) parental education tends strongly influence students' scores in maths. The picture does not change if, instead of the highest level of parental education, the focus moves to parental occupation status (on a scale from 0 to 99, see right-hand column of *Chart 3.2*). In all countries students perform better as their parents' occupational status increases. Control regressions have shown similar results for reading and science.

Chart 3.2

Social disadvantage has a decisive impact on people's basic skills at the age of 15

PISA 2015: additional maths score per step of parental education (left) and occupation (right)



Note: Education level ranges from 0 to 6; occupation level ranges from 0 to 99; controlled for gender, immigration status

Source: DG EMPL calculations based on OECD's PISA survey 2015

[Click here to download chart.](#)

Low achievement is not confined to the school years but persists into adult life. OECD's second big exercise in comparing achievement across countries, the PIAAC survey, aims to assess adult competences, covering the age range 16-65. In terms of the proportion of low achievers, the most recent (2012) PIAAC exercise produced results similar to PISA. In a considerable number of EU countries ⁽²¹⁾ about one fifth of adults aged 16-65 had only basic skills in literacy and numeracy. In addition, one in four adults lacked the digital skills needed to use ICT effectively. In other words, there is evidence that skills disadvantages sustained at a young age persist as youngsters become adults. Indeed, "these young people are likely to

⁽²¹⁾ 17 EU Member States have participated in the PIAAC wave of 2012. See http://europa.eu/rapid/press-release_IP-13-922_en.htm

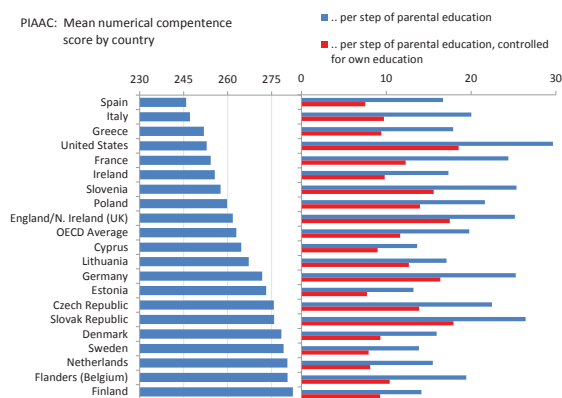
face significant, lifelong obstacles to social inclusion and employability." ⁽²²⁾ For example, unemployment and inactivity are more common among the low performers in PIAAC. ⁽²³⁾ There is, therefore, an employability threshold that many people do not manage to pass. What is more, the threshold is not static, but moves quickly as skill needs evolve in the digitalised environment.

The influence on young people's skill levels of inherited social disadvantage also tends to persist into later life. A regression analysis on PIAAC data confirms this finding. *Chart 3.3* (left-hand side) shows mean numeracy scores per country in the 2012 edition of PIAAC. As with PISA scores, PIAAC scores appear to indicate considerable cross-country differences in people's average competence levels. On the right side of the chart, blue bars show by how much the numeracy score increases, on average, for every step up the parental education scale. Low level parental education seems to hamper core competences not only at school, but also later in life. All countries' coefficients remain positive and highly significant. Parental educational attainment accounts for a substantial proportion of adults' average scores in the numeracy test.

Chart 3.3

A person's own education cannot fully compensate for the consequences of negative social heritage

Survey on adult competences (PIAAC 2012). Average numeracy scores by country (left) and the contribution of higher parental education (right)



Note: Controlled for age, employment status, sex

Source: DG EMPL calculations based on OECD's PIAAC data

[Click here to download chart.](#)

Hence, low performing teenagers stand a serious risk of remaining low performers when they become adults. OECD (2013) confirms this finding that social advantage and disadvantage persist into later life. The scores 15 year-olds achieved for proficiency in literacy and numeracy (reading and maths) in PISA 2000, 2003, 2006 and 2009 correlate with the scores young adults achieved in PIAAC 2012. The OECD finds that "the proficiency of an age cohort in reading and mathematics provides a reasonably good predictor of the subsequent performance of the same cohort as it moves through post-compulsory education and into the labour market." ⁽²⁴⁾

Special studies tested the same people in PISA and (later) PIAAC. They confirm the persistence of low performance. A sub-sample of Danish participants in the 2012 PIAAC literacy assessment had also undergone the PISA literacy test 12 years earlier. A strong positive correlation was found between how they performed as 15 year-old pupils and as 27 year-old adults (see *Table 3.2*). 62% of the lowest third of performers in PISA 2000 were also among the lowest third of performers in PIAAC 2012, while only 11% managed to climb to the level of the top third of performers as young adults. In addition, the study finds a strong link between the reading proficiency as a young student (in PISA 2000) and later receipt of transfer income (unemployment or sickness). This finding indicates the delayed yet highly probable economy-wide impact of early and persistent disadvantage in educational attainment. ⁽²⁵⁾

⁽²²⁾ European Commission, (2017:2), p. 86.

⁽²³⁾ OECD (2013), p. 227/8.

⁽²⁴⁾ OECD (2013), p. 205. European Commission (2014), p. 116.

⁽²⁵⁾ Note by The Danish Ministry of Education, Summary of the Danish PISA-PIAAC survey.

Table 3.1

Basic skill shortages persist in all Member States

OECD Skill Needs indicator (x 100), 2013, index points; positive values (red colour) indicate a shortage

	Basic content skills						Other skills	
	Reading	Writing	Speaking	Problem Solving	Maths	Science	Social Skills	Technical Skills
Finland	4.50	3.90	3.40	3.10	2.90	2.70	2.20	-0.10
Luxembourg	3.80	3.40	2.90	2.20	2.10	2.40	1.70	-0.30
Spain	3.40	3.20	2.90	1.80	1.60	0.80	1.80	-0.20
Estonia	2.70	2.70	2.40	1.70	0.80	1.10	1.50	-0.60
Germany	2.50	2.20	2.10	1.80	1.70	1.00	1.70	-0.20
Netherlands	2.50	2.50	2.10	2.30	1.10	2.20	1.80	-0.30
Ireland	2.40	2.70	2.90	2.00	0.90	1.30	2.40	-0.50
Belgium	2.30	2.20	2.10	1.40	0.70	1.80	1.30	0.00
Austria	2.20	2.00	1.40	1.30	1.10	1.00	0.60	-0.10
Sweden	2.20	1.90	1.60	1.40	1.10	0.90	1.00	-0.30
Bulgaria	2.20	1.80	1.70	1.30	1.20	1.20	1.10	0.00
Italy	2.10	1.80	1.30	1.10	1.30	0.90	0.40	0.40
United Kingdom	2.00	2.00	1.70	1.60	1.30	1.10	1.30	0.20
Slovak Republic	1.90	1.50	1.50	1.40	1.30	1.60	1.10	0.50
Poland	1.80	1.90	1.50	1.60	0.80	1.30	0.80	0.40
Latvia	1.60	1.40	1.30	0.80	0.70	0.50	1.00	-0.30
Greece	1.50	1.60	1.70	1.40	0.40	1.70	0.90	0.20
Cyprus	1.50	1.40	1.10	0.50	-0.50	1.00	0.30	-0.60
Romania	1.50	1.40	1.10	0.60	1.00	0.00	0.80	-0.70
Denmark	1.30	1.10	0.80	1.20	1.00	1.20	0.20	0.70
France	1.10	1.10	1.10	1.00	0.80	0.90	0.60	0.80
Portugal	1.00	1.30	1.10	0.80	-0.30	1.00	0.50	0.30
Slovenia	1.00	0.60	0.70	0.10	0.40	0.70	0.50	-0.40
Czech Republic	0.90	0.70	0.60	0.60	0.50	0.90	0.40	0.30
Hungary	0.60	0.80	0.90	0.20	-0.20	0.10	0.70	-0.50
Lithuania	0.40	0.20	-0.10	0.40	0.30	-0.10	-0.30	0.20

Note: Positive values indicate a shortage, negative values a surplus. The index is composed of five sub-indices that take into account how the long-term trend in wages, employment, hours worked, (the reverse of) unemployment and under-qualification deviate from economy-wide averages for each occupation. In a second step it looks at what skills are needed in the same occupation in order to derive the shortage index for these skills. See OECD,

Source: OECD Skills for Jobs database. See <http://stats.oecd.org/Index.aspx?QueryId=77642>. See OECD (2017:1), esp. p. 40 and chapter 3.

[Click here to download table.](#)

Moreover, higher education may not fully compensate for the burden of inherited disadvantage. As *Chart 3.3* (right column) illustrates, if a person whose parents had only a low level of education manages to attain higher education, this is not generally sufficient to overcome all the disadvantages caused by low parental education. The red bars show the number of points gained by higher level parental education, controlled for people's own education level.⁽²⁶⁾ It thus assumes no difference in education between respondents. By controlling for people's own education all countries' coefficients decline, but remain positive and highly significant. This is strong evidence that when building the core competences needed for the labour market, better education can to some extent, but not fully, neutralise the negative influence of low level parental education.

⁽²⁶⁾ People's level of education strongly correlates with the PIAAC numeracy score.

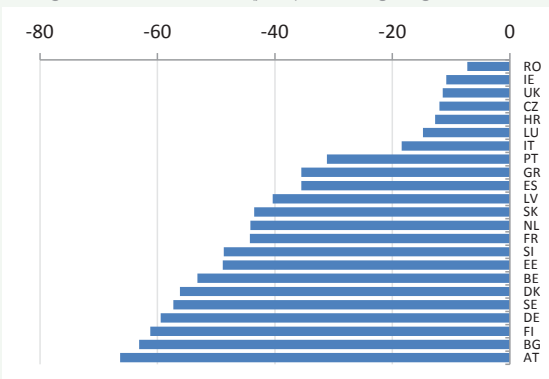
Box 3.1: Systematic skills disadvantage for migrants

A regression analysis on PISA 2015 micro data confirms the finding of systematically lower skill levels in the case of migrants (foreign-born people). The regression presented in *Chart 1* shows that young pupils of same gender and with the same parental background score systematically lower than their native-born peers. Even in overall well-performing countries like Germany, Denmark, or Sweden the difference is around 60 points, making 11-12% of the countries' average scores. Since 2003 there is no clear tendency of a reduction in that gap. Worryingly, the gap seems to be transferred to later stages in life as the PIAAC-assessment of adult competences confirms the skill gap between migrants and native-born people in all participating EU countries.

In other words: third-country migrants living in the EU face a massive educational disadvantage. These results still hold if one exchanges the country-of-birth variable in the regression by mother's country of birth. That is, second generation migrants who went through the same education system as did the native population, face similar, albeit somewhat lower education-related disadvantages as those who crossed EU borders themselves.

Chart 1
In some countries being a migrant reduces PISA 2015 scores substantially

Average loss of mathematics score (points) due to being foreign-born.



Note: Regression based on PISA 2015 micro data, controlled for sex, parental education, parental occupation.

Source: DG EMPL calculations based on OECD PISA 2015

Table 3.2

Evidence from Denmark: Low-performing pupils in reading tend to remain low-performing adults in reading

Danish sub-sample from PIAAC 2011/12 who also did PISA reading test in 2000: % of low, middle, high performers

Reading test in PISA 2000				
		Lowest third	Middle	Best third
Reading test in PIAAC 2011/12	Lowest third	61,5	27,4	10,7
	Middle	27,4	38,4	31,0
	Best third	11,4	34,2	58,3

Source: Danish Ministry of Education

[Click here to download table.](#)

The most disadvantaged group are migrants ⁽²⁷⁾. A regression analysis shown in *Box 3.1*, based on PISA data about individual mathematics scores, shows that foreign-born people score significantly worse than those who take the test in their EU country of birth. This finding holds even assuming the same socio-economic background, gender, education and parental social background. Second-generation migrant pupils (with their better language skills) still perform significantly lower. The OECD (2017) outlines the importance of schooling systems in this context. Those generally producing more resilient students also increase immigrants' chances to perform well despite unfavourable social heritage. ⁽²⁸⁾ However, there is evidence that the EU's school systems does often not succeed in supporting better education outcomes for migrants effectively. Even taking account of migrants' very different socio-economic background, there is still severe under-performance in most Member States. ⁽²⁹⁾ These disadvantages have been traced back to very specific problems within the school systems, such as class compositions favouring social segregation, but also persisting stereotypes in the school environment. ⁽³⁰⁾ Indeed, there is evidence that a 'certain sense of belonging at school' is less likely to be developed by students with a migrant background ⁽³¹⁾.

⁽²⁷⁾ Migrants in this chapter are people born in a country different from their current country of residence (foreign-born people).

⁽²⁸⁾ OECD (2017:2), p.11.

⁽²⁹⁾ European Commission (2017:4).

⁽³⁰⁾ De Paola and Brunello (2016), p. 2.

⁽³¹⁾ Willms (2003), p. 38, OECD (2018:2), p. 64.

Gender differences in likelihood of low performance are narrowing, but boys still lag behind in reading. PISA 2015 has shown that in all countries the difference between the proportion of low-performing girls and boys in reading is declining, but is still considerable. 24% of boys in the EU are low achievers, compared with 16% of girls.

Overall, Europeans lack the skills which are in high demand in EU labour markets. As a result of the economic transformations described in Chapter 2, the labour market is constantly evolving, and so are the tasks carried out by workers. To be able to adapt to rapid change, workers need to be equipped with a variety of basic skills, including literacy, numeracy and sciences. The OECD's Skills for Jobs Database first looks at occupations and identifies whether these occupations face labour market pressure, i.e., a shortage (or a surplus) situation. ⁽³²⁾ Then, given the skills that are used in every occupation, it derives an indicator for skills shortages or surpluses. The resulting Skill Needs indicator is presented in *Table 3.1* for a number of selected skills, red (green) cells signalling shortages (surpluses) in the respective country. The table shows that literally all basic content skills are in short supply in almost all Member States. This is because almost all occupations require workers to make use of basic skills such as reading or writing. On the other hand, maths, sciences and problem-solving skills are intensively applied in the science/engineering, teaching and ICT professions which - the OECD finds - have critical skill shortages.

There is strong demand in all Member States for cognitive and social skills. Shortages reported for problem solving or social skills are linked to the ongoing automation processes that make many routine tasks redundant ⁽³³⁾ and non-routine cognitive and social skills more important - a phenomenon. Chapter 2 refers to as 'routine-biased technological change'. In addition, there is a critical shortage in professions such as teaching or health, which use these soft skills at a high level of intensity. No skill shortage is reported in technical skills, which include operation and control or repairing skills with relatively high outsourcing and automation potential. ⁽³⁴⁾

2.2. Social background and equal opportunities in formal education

Many factors have an impact on people's educational achievements. There is excess demand for basic content skills in the EU while, on the supply side, many Europeans struggle to keep pace with the new skill needs. It is clear that social origin plays a major role in explaining the overall skills performance of young and adult Europeans. This section extends the analysis in that context, to explore the extent to which people's social origin predicts their chances of improving their formal education. The analysis uses the Labour Force Survey, which has detailed information on people's formal educational attainment level rather than their skills. ⁽³⁵⁾

The regression model in this section explains people's opportunities in terms of education. More concretely, it explains their statistical odds ⁽³⁶⁾ of improving their education. For people aged 25-64, the model calculates the average odds of moving from a low to a medium or from a medium to a high education level. ⁽³⁷⁾

Focussing on the black bars in *Chart 3.4*, an individual's odds of moving upwards depend on a number of factors. Everything else being equal:

⁽³²⁾ The Skill Needs indicator groups occupations on the basis of growth of variables, relative to the entire economy. Those are wages, employment, (the reverse of) unemployment, hours worked and the degree of under-qualification. The higher these indicators the more the occupation is considered in shortage. Next, given the skills used in the respective occupations, it assesses whether there are shortages or surpluses of different skills. See OECD (2017:1), esp. chapters 2 and 3.

⁽³³⁾ See Chapter 2.

⁽³⁴⁾ OECD (2017:1), p. 9 and p. 51.

⁽³⁵⁾ The OECD defines skills as a person's "capacities that facilitate learning or performance", OECD (2017:1), p. 43.

⁽³⁶⁾ The expressions 'odds' and 'chances' are used synonymously in this chapter. One must distinguish them from 'probabilities'. The odds of an event happening is the event's probability relative to the counter-probability. The concept 'ratio of odds' used in the analyses below relates the odds of a group to a reference group, for example: the odds of men, relative to women, of improving the education level.

⁽³⁷⁾ A low level of education means education to no more than lower secondary level. Being 'highly educated' means having a tertiary degree.

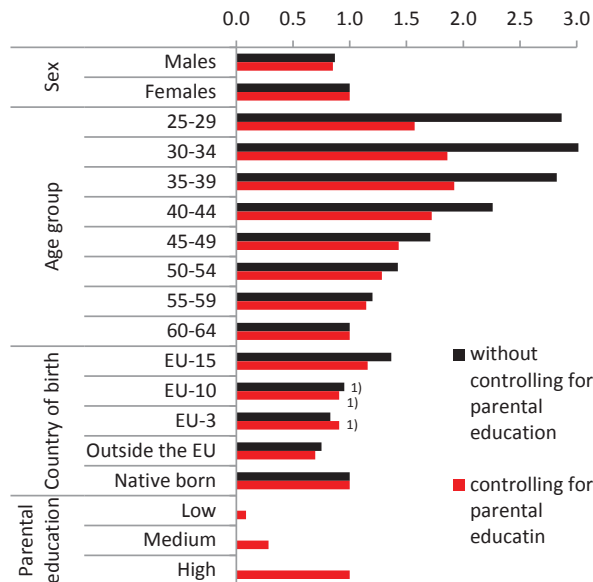
- There is a strong age component: the younger people are, the higher tend to be their odds of achieving higher education. The odds of people aged 30-34 doing so is three times higher than for those aged 60-64 years. This finding reflects the educational progress being achieved from one cohort to the next.
- Women tend to achieve higher education levels than men (see gender section below).
- Despite recent progress in educational achievements of third-country migrants⁽³⁸⁾, their odds of attaining higher education are 25% below those of native-born people. On the other hand, there is no (significant) gap between the latter and most mobile EU citizens (i.e. EU citizens living in an EU country other than their country of birth).⁽³⁹⁾

The red bars in *Chart 3.4* show the odds of increasing the education level, but taking into account one more control variable: the highest parental educational attainment level. Controlling for parental education captures people's social background to some extent.

Chart 3.4

Decisive impact of parental education on own education

The odds of having attained higher education, 24 EU countries, age 25-64 years, 2014



Note: Significant at level below 1% except 1): at 5%.

Logistic regression with the odds of transit into higher education (from low to medium, from medium to high) as the dependant variable; controlled also for the individual family context and for country-specific effects. 24 EU countries are included (see Chart 3.5).

Source: DG EMPL calculation based on EU-LFS, 2014 ad hoc module

[Click here to download chart.](#)

Parents' education largely predicts an individual's own level of educational attainment. Other things being equal, people with highly-educated parents have 10-fold better odds of being highly-educated themselves than the offspring of parents with only low level education. In addition, there is strong evidence that disadvantage is transmitted from one generation to the next – this is illustrated by the difference between the black and the red bars on the 'age' variable. This difference captures the impact of parental education on someone's own education for each age group. It tends to be higher the younger people are.⁽⁴⁰⁾ This means that much of the better educational performance of today's young Europeans is explained by social capital they inherited from their parents. The younger people are, the higher is the likelihood that already their parents had progressed in terms of education, compared with the generations before them.

⁽³⁸⁾ For example: In 2016, 39% of those third-country migrants established since less than 10 years had tertiary education level, compared to 25% in 2008. (Eurostat LFS).

⁽³⁹⁾ EU-15: The 15 Member States that made up the EU before 2004. EU-10: Those 10 eastern Member States that joined in 2004. EU-3: Bulgaria, Romania, Croatia. The difference in the performance between non-EU-born people and mobile EU citizens

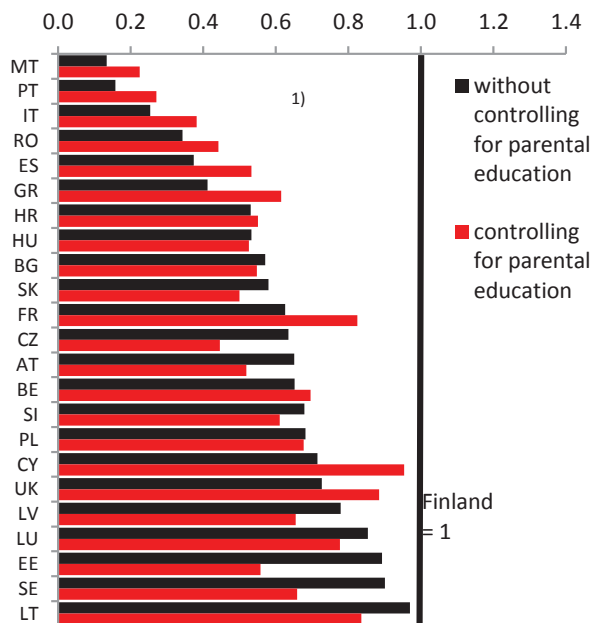
⁽⁴⁰⁾ The youngest age group considered is the exception. At the age of 25 not everyone has yet finished their education.

Social heritage is thus an inter-temporal multiplier of education policy. In a number of EU Member States the multiplier is positive as it carries educational progress from one generation to the next. *Chart 3.5* shows the country variable of the same regression. The black bars show the odds of attaining higher education in each country, relative to Finland, which is taken as a reference and normalised to one (vertical line). The red bars show the same odds but taking parental education into account as an additional explanatory variable. The difference between the two bars signifies the extent to which parental education contributes to higher education levels in each country. In those countries where the educational mix is relatively favourable, the inter-temporal multiplier tends to have a positive impact on the current level of education (the black exceeding the red bar). In other countries, relatively low parental education tends to also lower people's own educational performance.

Chart 3.5

Socio-economic background helps people in some countries to perform well in education

The odds of attaining higher education in a country, relative to Finland (=1), 24 EU Member States



Note: Logistic regression: the odds of having attained higher education, equalised to one for Finland. Country effects as further control variable to the regression shown in Chart 3.4.

Source: DG EMPL calculations based on EU LFS 2014 ad hoc module
[Click here to download chart.](#)

3. SOCIO-ECONOMIC BACKGROUND - HOW DOES IT AFFECT THE LABOUR MARKET?

Good formal education and the availability of core competences are not sufficient conditions for good labour market performance, especially as the additional supply of highly educated people has to be matched by the demand for them. ⁽⁴¹⁾ However, there is a consensus that they are necessary conditions, as "higher education offers the best employability." ⁽⁴²⁾ So it is not a surprise that negative (positive) social capital transmitted via low (high) parental qualification is a burden (advantage) on an individual's own position in the labour market.

The following regression exercise was carried out on data from the 2014 Labour Force Survey. It measures elementary indicators of individual labour market performance:

⁽⁴¹⁾ The Commission has devoted much research recently to qualification mismatches. See European Commission (2014), p. 124-126 and esp. European Commission (2016:2), p. 236-250.

⁽⁴²⁾ European Commission (2017:2), p. 65.

1. the odds of being in employment, as opposed to being unemployed or inactive;
2. the odds of moving from low-growth to high-growth sectors ⁽⁴³⁾;
3. the odds (risk) of becoming unemployed when working.

Those odds are shown in *Chart 3.6*, and depend on the level of parental education. People with highly educated parents are the reference group. Their odds are normalised to one, and depicted by the horizontal black line. Relative to the reference group, the black dots show the respective odds of people with parents educated to a low and to a medium level. Again, the analysis assumes that no differences in relevant variables other than parental education disturb these odds. In other words, it assumes that everything else is equal in terms of age, sex, migration background or being located in different countries.

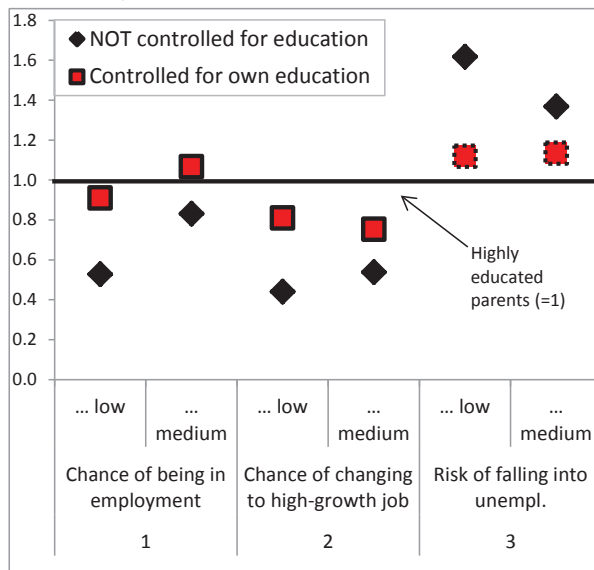
Parental education makes a significant difference. Indicators 1 and 2 above have a positive connotation, indicating either a favourable current labour market situation (1) or positive labour market dynamics and better self-fulfilment in the labour market (2). The black dots indicate that, compared with the offspring of highly educated parents, the performance of the children of parents with a low level of educational attainment is significantly lower on the first two indicators. For people whose parents have a low level of education, the odds of having a job are just 53%, and the odds of moving from a low-growth to a high-growth sector just 44%, relative to the odds of the offspring of highly-educated parents. The third indicator has a negative connotation. It reflects an employed worker's risk of losing job. The odds of being dismissed are 60% higher for the offspring of parents with a low level of education than it is for highly-educated parents' offspring, all else being equal.

⁽⁴³⁾ Sectors are grouped according to the NACE classification of economic activities according to Eurostat, see also Chapter 2. 'High growth' sectors of destination regroup the NACE activities J (ICT), K (Financial and insurance activities), M (Professional, scientific, technical activities) and P (Education). Though this regrouping is arbitrary it combines the activities that have seen the fastest growth EU-wide since the year 2000 and those that usually require higher qualification levels. The origin sector combines all remaining activities except public administration (O) and extraterritorial organisations (U).

Chart 3.6

All else being equal, parental education still has a strong impact on labour market performance

The odds of having employment, falling into unemployment and moving into a high-growth sector, by parental education (high = 1), 24 EU countries, 2014



Note: Dotted frame: significant at 5% level; all else: significant below 1%.
 How to read this chart: compared with the offspring of highly educated parents, having low-level educated parents reduces one's odds of being in employment by almost one half. Offspring of low-level educated parents working in lower-growth sectors stand 56% lower odds of moving to high-growth sectors than those with highly-educated parents. Likewise, the odds of people losing their job are more than 60% higher if their parents have low-level education, compared with highly-educated parents. Controlled for age, sex, migration background, country effects.

Source: DFG EMPL calculations based on EU LFS 2014 ad hoc module

[Click here to download chart.](#)

An unfavourable parental background can be offset to some extent by a better education. The red dots in *Chart 3.6* make the assumption of everything else being equal for one more variable: the individual's own education. This means that the red bars take into account a person's own efforts to attain higher education when assessing the impact parental education can have on their labour market performance. As expected, all dots move towards the 1-line. It means that the difference in the performance of those with low/medium level education and those with highly educated parents becomes smaller. In other words, it may be very difficult for an individual with parents educated to a low level to reach higher education, as shown in the previous section. But if they manage to climb the education ladder against the odds, then the impact of parental education on their labour market situation becomes less significant. To some extent, therefore, it is possible to break the vicious circle of low performance resulting from disadvantaged socio-economic backgrounds. However, as is the case with skills, the disadvantage in formal education does not fully disappear. As with the findings shown earlier for adult competence levels, the disadvantage remains significant, especially for the second variable - the odds of progressing to a job in a high-growth sector. An individual's scope for success in the labour market thus remains significantly influenced by their family background.

Table 3.3

Socio-economic background also impacts on the skills level of one's job

Odds of attaining higher occupation level, relative to a reference group (=1), age 25-64 years, EU countries, 2014

		The chances of improving the job's skill-level of...			
		...everybody			... native-borns
		Model 1	Model 2	Model 3	Model 4
Own education	Low	0.04	0.04	<i>not</i>	0.03
	Medium	0.10	0.10	<i>controlled</i>	0.09
	High (reference)	1	1	<i>for</i>	1
Parents' EDUC	Low	0.42	0.41	0.14	0.41
	Medium	0.61	0.61	0.34	0.61
	High (reference)	1	1	1	1
Country of birth	EU15	1.20	(0.94)	(1.02)	-
	EU10	0.33	0.19	0.21	-
	EU3	0.34	0.21	0.21	-
	Extra_EU	0.56	0.39	0.39	-
	Native born (reference)	1	1	1	-
Sex	Males	1.31	1.30	(0.99)	1.24
	Females (reference)	1	1	1	1
Also controlled for ..	Age	yes	yes	yes	yes
	Family context	yes	yes	yes	yes
	Language skills	yes	no	no	no
	Country effects	yes	yes	yes	yes

Note: Numbers in brackets are not significant. All else is significant at a level below 1%.

Occupations are grouped according to the International Standard Classification of Occupations (ISCO-08). ISCO level ranging from 1 (elementary occupations) to 4 (managers, professionals etc.). See the Annex 1 below. The table shows the odds to move, for example, from occupation level 1 to 2, from at least 2 to 3, or from at least 3 to 4).

How to read this table: It shows the odds for a worker aged 25 to 64 years of increasing the skill-level of one's job. A number of relevant variables are included in the analysis. Three of them are shown in the first three rows: one's own education, one's parents' education, and one's country of birth (migrant status). Other variables complement the list of control variables and are summarised in the last row. The columns show people's odds for the respective variables in four alternative models.

Those differ with respect to the control variables they take on board.

Source: DG EMPL calculations based on Eurostat EU LFS

[Click here to download table.](#)

Inherited social advantage is important for successful labour market outcomes. This important finding will be explored more in depth in *Table 3.3* which looks at one core indicator for a person's job-related opportunities, i.e. the skill level their job requires from them (see the Annex 1 below for the classification of occupations by of skill-levels). The table shows the statistical odds of increasing the skill-level of one's job for workers aged 25 to 64. What are the chances for a person currently working in a lower-profile job of proceeding to higher skill levels? ⁽⁴⁴⁾ Relative to offspring of highly-educated parents, low parental qualification reduces someone's odds of improving the jobs' skill-level to 14% (i.e. by 86%), see second row of Model 3 in *Table 3.3*. Again, controlling for someone's own education reduces the difference, but is far from eliminating it (Model 2): compared with highly educated parents, low-level educated parents still reduce an individual's odds of improving their job status considerably (by around 60%).

Foreign-born people from Central and Eastern European Member States and third countries are particularly disadvantaged. The coefficients for the impact of parental education remain virtually unchanged if the regression is restricted to native-born people (Model 4 as opposed to Model 2). This implies that social disadvantage which reduces someone's job prospects is by no means a problem only for migrants. However, in the case of migrants it becomes very significant, as shown in coefficients for the 'country-of-birth' variable in Models 1 to 3. Model 1 takes account of the fact that foreign-born people may have language problems, that they are more likely to have parents with low levels of education, and that their own educational profile is different from that of native populations in the EU. Yet their chances of obtaining a higher-profile job are very much lower than that of native-born people. This affects people from outside the EU but, even more, mobile EU citizens from Eastern EU countries (EU-10, EU-3). By contrast, people from the 'western' EU countries that entered the EU before 2004 (EU-15) tend to have even better chances, everything else being equal, confirming earlier analysis. ⁽⁴⁵⁾

Training helps to overcome the influence of a disadvantaged socio-economic background. The findings outlined above strengthen the need to break the vicious circle of low social mobility in the labour market. Evidence is strong that, apart from improving someone's education, undergoing training helps

⁽⁴⁴⁾ See Annex 1 on the classification of occupations with respect to the level of skills they require. There are four skill-level groups: low skilled, lower medium, higher medium, and high-skilled jobs. The odds reflect the chance to move from a lower to the next higher job-skill level.

⁽⁴⁵⁾ European Commission (2016:2), Chapter 2.2, deals with mobility and migration in the EU.

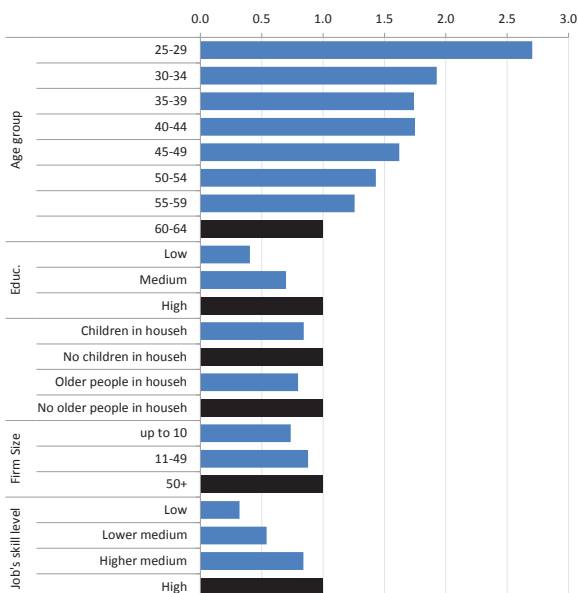
workers significantly to improve their chances of finding employment in high-growth sectors (see *Chart 3.6*) and their chances of having a job with higher skills content (see *Table 3.3*).

But people with low level education and those working in low-skilled jobs undertake training less frequently. A separate regression explored levels of participation in lifelong learning, using evidence on whether people had recently undertaken a training or education programme. The regression indicates that among workers with only low level education, the take-up of lifelong learning is limited. Everything else being equal, their highly educated colleagues have odds twice as high of undertaking training. In addition, workers' odds of undertaking training increases steeply as the job's skill level increases. In other words, those who need the training the most stand a lower chance of actually receiving it, a paradox which may lead to further skills polarisation. Furthermore, confirming recent findings of Biagi et al (2018) ⁽⁴⁶⁾, the prospect of lifelong learning for workers in firms with fewer than 11 employees is 25% lower than for workers in firms with at least 50 employees. It is another paradox that opportunities for upskilling are particularly restricted in those firms which are most hurt by skills shortages, i.e. small and medium-sized companies. ⁽⁴⁷⁾ However, the importance of lifelong learning seems to increase over time. Compared with older cohorts, youngsters participate much more frequently in lifelong learning measures. ⁽⁴⁸⁾

Chart 3.7

Workers' recourse to training depends on many factors.

Odds of recently having attended lifelong learning, 2016



Note: All odds rates are significant at a level below 1%.
Controlled for country differences, sex, type of contract

Source: DG EMPL calculations based on Eurostat EU LFS

[Click here to download chart.](#)

4. POLICIES PROMOTING EQUAL OPPORTUNITIES

A person's social origin is his or her starting position in life. The role of policy intervention is to smooth out the consequences of different starting positions, to improve educational outcomes and to invest in people's employability, enabling them to escape a vicious circle of low skills, low level education, low labour market performance and the transmission of an unfavourable socio-economic background to following generations.

⁽⁴⁶⁾ They find a strongly significant positive link between workers' likelihood of undergoing training and the size of the organisation they work in (Biagi et al (2018), esp. Table 4).

⁽⁴⁷⁾ European Commission (2018:2), p. 12.

⁽⁴⁸⁾ ESDE 2017 attributes this finding to young people's continued participation in initial education (European Commission, 2017:1, p. 103).

Schools play a key role in promoting equality through inclusive education. Inequalities in schooling outcomes are reflected in unequal opportunities throughout society. However, schools “can work to reduce the impact of these inequalities on students’ lives by creating a school environment that is welcoming, stimulating and inclusive for all teachers, staff members and students.” ⁽⁴⁹⁾

Inclusive education favours better outcomes. Northern European Member States could serve as benchmarks. The average PISA scores in Northern European Member States are relatively favourable. Sources attribute this finding to specific features of their schooling systems. For example, Nordic ⁽⁵⁰⁾ education systems favour a certain ‘collective spirit’, rather than promoting competition amongst students. ⁽⁵¹⁾ This may be an explanation for their pupils’ above-average performance in solving problems by collaboration. ⁽⁵²⁾ Lundahl (2016) finds that despite recent tendencies towards stronger marketisation and privatisation within their education systems, Nordic students still show comparably low degrees of social and academic division. Social justice, equality and inclusiveness are strongly emphasised as education systems make an effort to reach everyone at as early an age as possible. Indeed, the principle of free-of-charge education and the emphasis on early schooling are major common characteristics of Nordic countries’ education. ⁽⁵³⁾ Another key to educational success seems to be greater autonomy of educational institutions and greater flexibility of students when choosing study programmes and changing between them. The latter is a key feature which Nordic education tends to have in common with Singapore, the best-performing country in PISA in all major disciplines. Greater flexibility may “encourage [pupils] to take greater ownership of their learning” ⁽⁵⁴⁾ and best enable them to develop their talents.

Measures targeted at promoting equity and inclusiveness in education are strong success factors for a country’s educational performance. Estonia, like most Nordic EU Member States, combines a below-average proportion of low-performers in PISA with a low influence of social background on performance. ⁽⁵⁵⁾ Measures include “counselling and personalised support for weaker students. [In addition], tracking into different educational pathways takes place later than on average in the OECD.” ⁽⁵⁶⁾ A special focus of teachers’ education is collaborative work as well as “career-long professional development for dealing with diversity in the classroom”, ⁽⁵⁷⁾ a feature they have in common with other Northern EU countries.

Early intervention yields the highest returns. Earlier analyses have illustrated that early childhood education and care (ECEC) has a strong positive gender dimension because it facilitates women’s labour market participation. It also helps to improve child development considerably, especially for children from socially disadvantaged groups. It prevents early school leaving and improves the child’s skills and education outcomes. ⁽⁵⁸⁾ The latest evidence has found strong positive links between the quality and duration of ECEC measures and important outcome variables such as literacy at school entry, school performance and social behaviour. ⁽⁵⁹⁾

A model-based illustration of the effects of early intervention

More generally, policy interventions have a higher return the earlier they occur in a person’s life. ⁽⁶⁰⁾ This finding will be illustrated from a macro perspective, i.e. that of the whole economy, using the Labour

⁽⁴⁹⁾ OECD (2018:3), p. 18.

⁽⁵⁰⁾ Denmark, Finland, Iceland, Norway and Sweden are considered ‘Nordic countries’ here.

⁽⁵¹⁾ Bishop (2010).

⁽⁵²⁾ Denmark, Sweden and Finland perform significantly above the OECD average here. OECD (2018:3), p. 25.

⁽⁵³⁾ Equality, inclusion and marketisation of Nordic education: Introductory notes, Lundahl (2016), with reference to Nordic countries.

⁽⁵⁴⁾ Singapore Government, Ministry of Education, see www.moe.gov.sg/education/education-system

⁽⁵⁵⁾ European Commission (2016:1), p. 17.

⁽⁵⁶⁾ European Commission (2017:2a), Country Report on Estonia, p. 7.

⁽⁵⁷⁾ European Commission (2017:2), p. 93.

⁽⁵⁸⁾ European Commission (2014), p. 111, 112.

⁽⁵⁹⁾ European Commission (2018), Proposal for a Council Recommendation on High Quality Early Childhood Education Systems (draft).

⁽⁶⁰⁾ Heckman Equation (2013).

Market Model (LMM) of the Directorate General for Employment, Social Affairs and Inclusion (DG EMPL).⁽⁶¹⁾

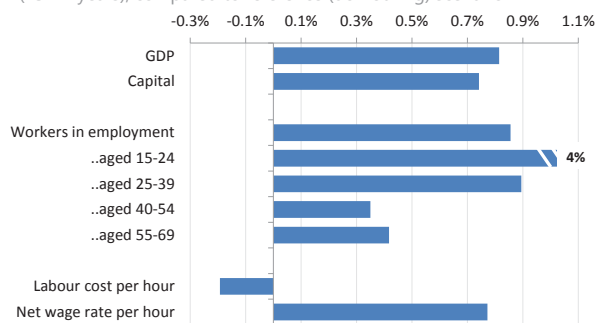
Sharpening young people's skill profiles improves their chances of finding a match on the labour market. Chart 3.8 illustrates an intervention designed to improve young people's employability, applied to unemployed young people aged from 15 to 24. The model assumes that the training will improve young people's skill profiles and thereby enhance their chances of achieving a successful match in the labour market. The model further assumes that the investment made at a young age has a positive (albeit somewhat lower) impact on the likelihood of successful matching at older ages.

It is assumed that the match-enhancing training measure will be implemented for an unlimited period.⁽⁶²⁾ The cost of the measure is set at 0.5% of GDP.⁽⁶³⁾ In France, this corresponds to EUR 11 billion per year, or EUR 16 400 per year per unemployed youngster aged between 15 and 24. Annex 2 explains the technical details and the reasoning behind the assumptions made for the simulation.

Chart 3.8

Helping young people to improve their employability pays.

Long-term impact of training given to young unemployed workers (15-24 years), compared to reference (do nothing) scenario



Source: DG EMPL calculations based on LMM

[Click here to download chart.](#)

The simulation shows strong employment gains across all ages. Although the impact of such investment depends on a number of technical assumptions,⁽⁶⁴⁾ the results demonstrate significant long-term effectiveness of early intervention for disadvantaged young people. More of them find a job thanks to the early investment in skills. Employment at a young age increases strongly, by 4%, compared with the 'do nothing' scenario. As early intervention is assumed to have a sustainable impact on a person's employability throughout their life, employment will increase across all age groups. Higher employment pulls up wages, and both trigger tax revenue for the government and for social insurance which, in turn, allows labour tax rates to be lower. The initial cost of the measure has thus been more than offset, given the improvement in people's labour market performance. As a result of lower wage taxes, workers' take-home pay will rise, further increasing labour supply. Labour costs will decline (despite increasing gross wages), further fuelling labour demand. Higher employment triggers investment as new workers need to be equipped with capital. Finally, GDP will be higher by 0.8%, relative to the 'do nothing' scenario.

The European Pillar of Social Rights promotes equality of opportunities. The Pillar, in its first chapter, promotes the principle of equal opportunities and access to the labour market. In its very first principle the Pillar calls for everyone to have "the right to quality and inclusive education, training and lifelong learning in order to maintain and acquire skills that enable them to participate fully in society and manage successfully transitions in the labour market." In addition, in order to ensure that everyone has access to education and training and receives support to improve their labour market performance, it calls for equal

⁽⁶¹⁾ LMM is a general equilibrium model with a particular focus on labour market institutions (Berger et al, 2009, Part II). It covers 15 EU countries but for the current illustration the case of France is used. However, the results are very similar across countries.

⁽⁶²⁾ In the model, which focuses on long-term change, a policy measure implemented for only a limited period of time will necessarily have a zero long run impact.

⁽⁶³⁾ This is modelled here as a corresponding increase of government consumption, funded by an increase of income taxes.

⁽⁶⁴⁾ These include, most importantly, the assumption about the depreciation over time of skills acquired at a young age. A degressive depreciation rate is assumed here: half of the additional human capital will be depreciated at age 25-39, 67% at age 40-54, 75% at age 55-69.

treatment, "regardless of gender, racial or ethnic origin, religion or belief, disability, age or sexual orientation." ⁽⁶⁵⁾

The Skills Agenda for Europe: Action at EU Level will improve the quality and relevance of training.

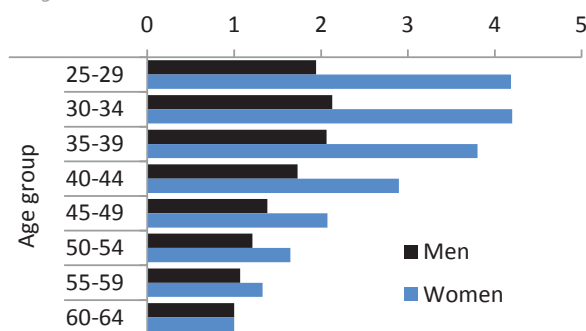
The recommended action includes, inter alia, upskilling pathways for adults (especially those with low skills), promoting digital skills, improving the sectoral cooperation in addressing skill shortages and promoting vocational education and training (VET). ⁽⁶⁶⁾

5. EQUAL OPPORTUNITIES FROM THE GENDER PERSPECTIVE

The regression analyses above indicate that there is no genuine gender dimension to the impact of socio-economic background on the level of skills, qualifications and labour market performance: a disadvantaged background seems to affect women and men alike. ⁽⁶⁷⁾ The gender perspective in equal opportunities is therefore a separate dimension, and deserves a separate analysis.

Women are better educated than men. There are fewer early leavers from education and training ⁽⁶⁸⁾ among women (9.2% in 2016 for the EU-28) than among men (12.2%). This pattern is remarkably consistent across Member States and results in better formal education outcomes for women. Indeed, regression analysis in *Chart 3.4* above shows that women of the same age, country of origin and parental education tend to attain a better education than men. This finding has therefore already taken into account that migrant women often have only low education levels. The gender difference in *Chart 3.4*, while statistically significant, seems relatively small. However, this is only because part of the gender effect is captured by the "age" variable.

Chart 3.9
Women have made more progress than men in education
Odds of increasing one's educational attainment level, by gender
(regression), 2016



Note: Odds ratio relative to the age group 60-64 (=1),
Controlled for socio-demographic characteristics and country effect.
All odds ratios are significant at a level below 1%.

Source: DG EMPL calculations based on EU LFS 2016

[Click here to download chart.](#)

Women have been the driver of educational progress. *Chart 3.9* shows the age variable by gender. Relative to men aged 60-64, the odds for those 30 years younger are double as high of having attained a higher education. ⁽⁶⁹⁾ For women the odds is four times greater and hence they have been the main drivers of educational progress. ⁽⁷⁰⁾

⁽⁶⁵⁾ The Pillar's third principle (Equal Opportunities).

⁽⁶⁶⁾ See <http://ec.europa.eu/social/main.jsp?catId=1223>.

⁽⁶⁷⁾ Odds rates calculated for *Chart 3.4* are largely the same if the analysis is restricted for men and for women. Other regressions based on PIAAC data confirm this finding.

⁽⁶⁸⁾ Source: Eurostat Labour Force Survey. Early school leavers are aged 18-24, having completed at most a lower secondary education and are not in further education or training during the four weeks preceding the survey.

⁽⁶⁹⁾ Having a better education means progressing either from a low to a medium or from a medium to a high level of educational attainment.

⁽⁷⁰⁾ One has to take into consideration that women had started from a lower level. The share of those with at least upper secondary education within the birth cohort 1953-57 is 64% of women, but 71% of men (EU-28). Amongst the 1983-87 cohort these

Box 3.2: Statistical chances and employment rates: Explaining the concept

The analysis about equal opportunities largely relies on the concept of odds rates. Those are statistical chances that a person fulfils a certain criterion, relative to a reference group. Consider the variable 'sex' in Chart 3.11. It says that men's chance of being employed is more than double the chance of women, all other variables being equal. That is, women are the reference category, normalised to 1 (100%). How do those statistical chances relate to standard employment rates (the share of men and women in employment)?

In the age group 25 to 64 years, men's employment rate is 77.6%, for women it is women: 65.3% (EU-28). The odds (chance) of being employed are then:

Men: 3.5 to 1, that is: $\frac{77.6\%}{100\% - 77.6\%}$, Women: 1.9 to 1, that is: $\frac{65.3\%}{100\% - 65.3\%}$.

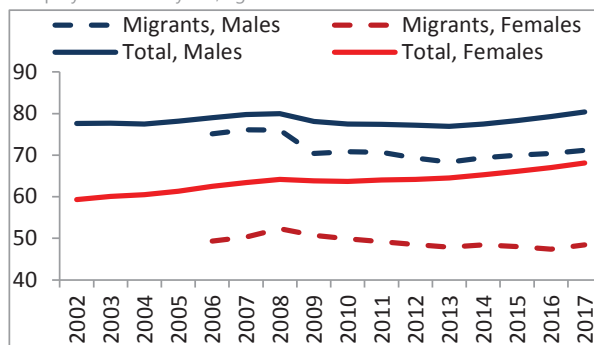
Thus, odds-ratio men/women is $3.5/1.9=1.84$ in the completely uncontrolled model (which reflects exactly the employment rate difference). The odds rate climbs to 2.13 if, as in the chart, the impact of all other variables are taken into account. This is mainly because women are better educated, which in itself would push their employment rate.

However, women's better education does not translate into better labour market performance overall. There is a persistent employment gap between men and women. Since the turn of the century, the gap has narrowed by one third, as shown in *Chart 3.10*. But convergence seems to have come to a halt more recently, at a point where the gap is still 12 pps or the age group 25 to 64. Various well-documented factors explain the difference. Family and household circumstances, policy regimes and institutions, macroeconomic conditions and also cultural attitudes and gender stereotypes cause the gender employment gap to persist. ⁽⁷¹⁾ According to the OECD these findings hold also for second-generation migrants (born in the respective EU country) and sees non-EU born mothers' low educational performance as one explanation. ⁽⁷²⁾

Chart 3.10

The gender employment gap persists

Employment rate by sex, age 25-64



Note: "Migrants" refer to nationals from third countries.

Source: Eurostat EU LFS

[Click here to download chart.](#)

Everything else being equal, men's odds of being employed are more than double those of women.

Chart 3.11 shows that women's odds of being in employment are less than half those of men (see explanatory *Box 3.2*). This finding holds not only for women's chances of having a job (as shown in the *Box*), but also for their chances of finding a job when unemployed or inactive. Here again, after allowing for numerous relevant characteristics, women's job-finding odds are only half those of men.

The family context plays a role. If there are children below the age of 15 in the household, the probability of someone aged 15-64 being in employment (and of moving into employment from being unemployed or inactive) falls significantly, by more than 10% (*Chart 3.11*). If there are elderly people (65+) living in the same household women again have significantly lower odds of being in employment (26%

shares have strongly increased. What is more, the gap has reversed in favour of women. The shares are 85% and 81%, resp. (Source: EU LFS for 2017).

⁽⁷¹⁾ Eurofound (2016).

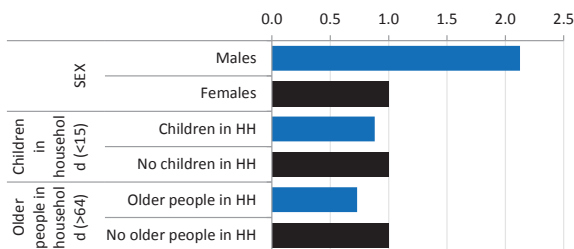
⁽⁷²⁾ OECD (2017:2), p. 12.

lower).⁽⁷³⁾ This survey question was posed to men and women alike, and both tended to answer positively if children or elderly people were in the household. However, as women are much more affected by informal care activities, there is a strong gender component to this finding. Among those not working or only working part-time because of a lack of care facilities (for children, sick people or the elderly), 93% are women.⁽⁷⁴⁾

Chart 3.11

Significant employment gap between men and women

Odds of being in employment, relative to reference category (dark, =1)



Note: Logistic regression controlling for age, country differences, education, country of birth.

Source: DG EMPL calculations based on EU LFS

[Click here to download chart.](#)

However, there is a significant gender difference as a result of factors other than socio-demographic characteristics. The finding of less favourable female labour market performance already takes account of highly relevant gender differences such as care obligations. It also factors in cultural employment obstacles, where those are due to differences in the surveyed countries or to being a migrant (captured by the 'country' and 'country of birth' variables in the regression). In fact, neither socio-demographic characteristics nor cross-country differences can fully explain the gender employment gap. Thus, as is the case with earnings differences (Chapter 4), a big part of the gender employment gap remains unexplained by the usual set of observable explanatory variables used in the analysis underlying *Chart 3.11*.

National institutions and culture explain much of the gender employment gap. After controlling for all the observable factors, the following potential explanations are likely to describe the remaining gender employment gap:⁽⁷⁵⁾

- Cultural attitudes which are not fully explained by country differences or migrant status, for example stereotypes such as the 'breadwinner' mentality that affect women's labour market participation.
- Institutional conditions that may favour in all (or most) EU countries the employment of men rather than women. This may include the design of the tax-benefit system creating high marginal effective tax rates for second earners (the majority of whom are female) when moving from inactivity to work, or increasing working hours.⁽⁷⁶⁾

Moreover, while analyses of the odds of being in employment cover all types of employment, they give no information about the types of jobs people have or about their quality.

Women are overrepresented in jobs requiring a lower level of skills and responsibility. One third of managers are women (*Chart 3.12*), but women are overrepresented in clerical support jobs (68%) and in elementary occupations that require no specific skills (57%). Likewise, women are often forced to organise their work differently from how they would prefer. For example, in the industrial cleaning sector and in

⁽⁷³⁾ These findings are not age biased as the quoted odds are controlled, inter alia, by the person's own age.

⁽⁷⁴⁾ Eurostat EU LFS, variable NEEDCARE, 2016., EU-28.

⁽⁷⁵⁾ Eurofound (2016).

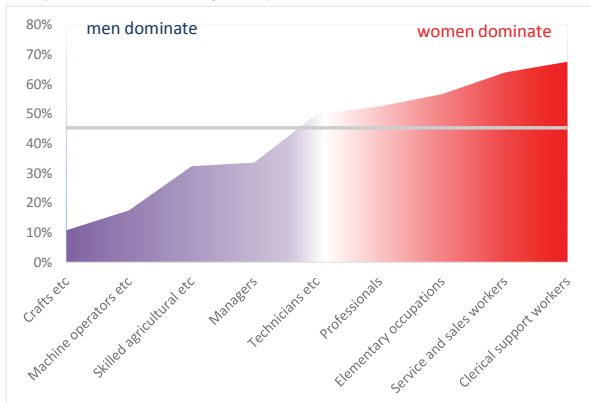
⁽⁷⁶⁾ The problem is usually referred to as "implicit taxation of labour" which creates an employment barrier. It usually happens in taxation systems where married partners are taxed jointly.

house care the majority of workers are women (60% and 90% respectively). About one in three workers in these sectors work part-time and would like to extend their working hours. ⁽⁷⁷⁾

Chart 3.12

Fewer women in managerial positions, more in low-skilled jobs

Proportion of women, by occupation, 2016 (%), EU-28



Source: Eurostat EU LFS

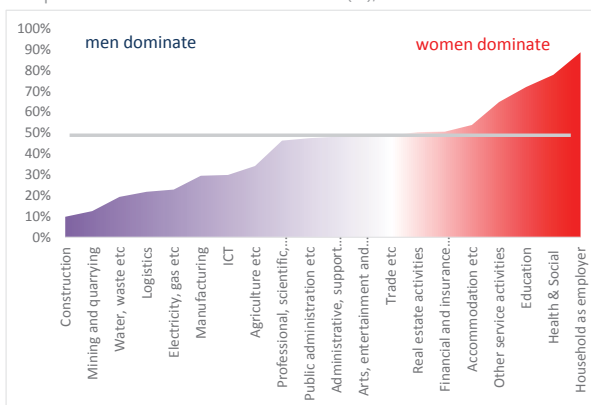
[Click here to download chart.](#)

Women face a disadvantage when it comes to make progress towards higher-profile jobs. Women face more problems when it comes to attaining jobs that require higher skills or imply taking more responsibilities. The regression analysis shown in *Table 3.3* above explained an adult person's chances of progressing to a job which requires higher level skills. Numerous individual characteristics have a strong impact on a person's chance of attaining a higher-profile job, including age, education, a migrant background, the household context (care obligations) and parental education. Taking the gender-differences in all these variables into account, the analysis finds that men's odds of progressing to jobs requiring higher skill levels are 30% greater than those of women. This significant gender difference disappears if one does *not* control for a person's education ⁽⁷⁸⁾. In other words, women are better educated than men. It is only for that reason why their odds of improving the skill-level of their job is not lower than men's. Women thus face a systematic disadvantage in achieving individual fulfilment in the labour market. Assuming equal education makes the disadvantage visible.

Chart 3.13

Fewer women in science and ICT, more in health and social work, in education and working in households

Proportion of women in sectors in 2016 (%), EU-28



Source: Eurostat EU LFS

[Click here to download chart.](#)

⁽⁷⁷⁾ One explanation is clients' preference for having cleaning done outside office hours, leading to relatively small part-time jobs either before or after office hours. See Eurofound (2014).

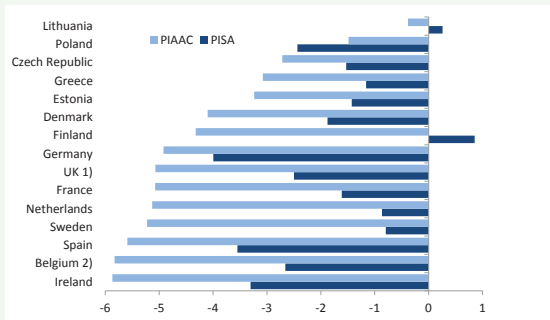
⁽⁷⁸⁾ See difference in the "sex" coefficients between Models 1 and 2 in Table 3.3..

Box 3.3: Girls lag behind in maths

Chart 1

Girl's disadvantage persists later on

Score difference in maths between girls and boys (% of average score in country)
- controlled for socio-demographic characteristics



Note: 1) PIAAC "UK" includes Northern Ireland and England only

2) PIAAC "Belgium" includes Flanders only.

Source: DG EMPL calculations based on OECD PISA 2015, PIAAC 2012

Women lag behind in maths, and the disadvantage persists at older ages. The Chart's black bars display, for selected countries, the result of a regression analysis based on the 2015 PISA study. It shows the score gap between girls' PISA results in maths and those of boys, by country, taking into account socio-demographic characteristics ⁽¹⁾. In most countries girls lag behind. The lighter bars show the corresponding difference in the 2012 PIAAC numeracy test for adults. Though there are limits to the comparability of PISA and PIAAC, in almost every country the school girls' competency gap in maths seems to increase rather than to disappear at higher age.

⁽¹⁾ The regression is controlled for sex, age, employment status, education, and parental education.

This finding is relevant to future skill needs in technical occupations. Cedefop finds that "the supply of ICT and STEM ⁽⁷⁹⁾ graduates from upper secondary and higher education is insufficient to meet demand. Too few young people are studying STEM subjects." ⁽⁸⁰⁾ Indeed, notwithstanding the fact that the health sector is one of the fastest growing occupations for which skill bottlenecks are foreseen in the future, ⁽⁸¹⁾ it is the projected shortage of ICT and STEM ⁽⁸²⁾ graduates which creates the most urgent need for more female students. ⁽⁸³⁾ Especially the ICT sector is largely dominated by men (see *Chart 3.13*). Cedefop suggests that too few people now have the right skills to engage in these studies. ⁽⁸⁴⁾ It is therefore very important for secondary schools to impart knowledge which is relevant to these occupations (*Box 3.3*).

More women than men work part-time. Part-time work is a female phenomenon (*Chart 3.14*). Nearly one third of working women work part-time (31.9% in 2016 for the EU28), while for men part-time work remains marginal (8.8%). The decision whether to work full- or part-time is very different for men and for women. Men tend to work part-time because they cannot find a full-time job or because they are in education and training. For women, the main reason is to look after children or adults.

⁽⁷⁹⁾ STEM subjects include sciences, technology, engineering and mathematics.

⁽⁸⁰⁾ Cedefop (2016) and Chapter 2 above.

⁽⁸¹⁾ Cedefop (2016).

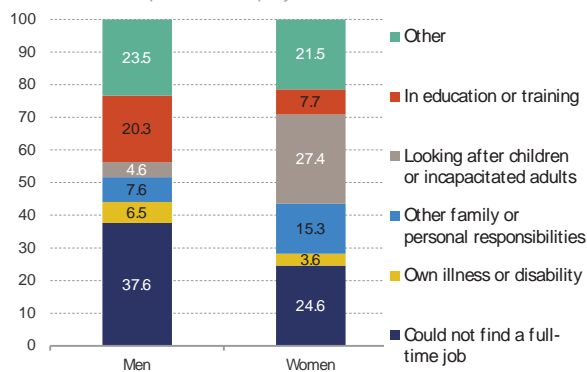
⁽⁸²⁾ STEM subjects include sciences, technology, engineering and mathematics.

⁽⁸³⁾ Cedefop (2016).

⁽⁸⁴⁾ Ibidem

Chart 3.14
 Women mainly work part-time to combine with care, men because they could not find full-time work or are in education or training

Main reasons for part-time employment, EU-28, 2016



Source: Eurostat EU LFS

[Click here to download chart.](#)

Women are more likely to work on fixed term contracts. Almost 15% of female workers work on fixed term contracts, 1 pp more than men. ⁽⁸⁵⁾ Temporary agency work is slightly more common among men (2%) than among women (1.3%). Sectors relying on temporary agency workers such as the construction and manufacturing sectors employ a relatively large proportion of male workers.

While men are more likely to be self-employed, women are more likely to have a second job (17.8% of employment of which 10.0% is done by women; EU28, 2016). ⁽⁸⁶⁾ Among the female self-employed, 24% have employees. For men the rate is significantly higher (30%). This may be to some extent because women face more difficulties in gaining access to finance in order to start a business. ⁽⁸⁷⁾ 4.3% of employed women aged 15-64 have a second job, compared with 3.6% of men. This rate has increased among women, but has remained stable among men.

6. CONCLUSION

Improving the supply of skills is necessary for growth. As discussed in Chapter 2 in the context of technological change, globalisation and demographic developments, it is important to upgrade the education and skills levels of the European population and to ensure that the best use can be made of the complementarity between qualifications and physical capital. Reaping the benefits of a larger and better-skilled workforce, combined with more capital investment, will allow for higher GDP growth as opposed to a situation where potential growth and future welfare are limited by a large scale substitution of capital for labour.

Many Europeans risk being left behind as rapid economic transformation creates new needs in terms of workers' adaptability. Good, up to date skills are needed more than ever. Indeed, firms struggle to find workers with the right skills. Almost all EU Member States face serious shortages in skills as basic as reading and writing and as necessary as maths, sciences and cognitive skills. One in five young Europeans are low achievers, according to the latest PISA assessments, and evidence is strong that low-performing students often become low-performing adults. Inadequate skills performance, in turn, has a strong negative impact on the labour market. There is a dynamic employability threshold that many Europeans do not manage to pass. It is dynamic because it is expected to change rapidly, in line with fast-evolving skill needs of digitalised economies.

Social disadvantage weighs on the supply of skills and the chances of attaining higher education. Already the 2017 edition of this review found that the impact of parental background on education and

⁽⁸⁵⁾ Eurostat EU LFS, series [lfsa_etpgacob] among employees aged 15-74.

⁽⁸⁶⁾ Eurostat EU LFS, series [lfsa_egaps] of those aged 20-64, to ensure consistency.

⁽⁸⁷⁾ OECD (2016:2).

skills outcomes is a major concern from the perspective of equal opportunities.⁽⁸⁸⁾ This chapter has focused in particular on social mobility. A large proportion of potentially qualified human capital is currently unavailable to firms because part of the workforce is de facto excluded as a consequence of their disadvantaged socio-economic background. The chances of attaining higher education, or being equipped with the skills most relevant for the labour market, are significantly greater for those with highly educated parents than for those whose parents have only a low level of education. While lifelong learning helps to upgrade people's skills, its take-up by people with only a low level of education and by those in low-skilled jobs is poor. In other words, those who need training most are least likely to make use of it.

In the labour market better education alone cannot fully compensate for inherited social disadvantage. Even socially disadvantaged young people who manage to succeed in the education system against the odds do not, on average, achieve the same success in the labour market as those not burdened with similar disadvantage. Thus, they face a double challenge: they need to overcome disadvantages both in the education system and in the labour market.

Social disadvantage is transmitted to subsequent generations. The close link between people's parental background and their own education is reflected in "the correlation of activities and attitudes of parents that improve their children's educational achievements with the parents' own education."⁽⁸⁹⁾ Thus, educational achievements are transmitted across generations and values and attitudes to education and work are passed on to their children by parents. This chapter has demonstrated that socially inherited disadvantages in skills performance as well as educational or labour market attainment function as inter-temporal multipliers of under-achievement.

However, the inter-temporal multiplier of achievement can work positively if the necessary policy action is taken. This finding has important implications insofar as it suggests broad margins for policy action. Reversing the impact of social disadvantage on education and labour market situations may help many more people to pass the employability threshold. It will yield benefits not only for individuals but also for their children and following generations. The earlier in life action is taken, the better it works.

Early intervention is key for breaking the vicious circle of low performance. The positive long-term impact of early childhood education and care (ECEC) on people's school and labour market performance is already well documented. A model simulation shows that improving young workers' employability yields high returns from the macro-economic perspective. Helping young unemployed through targeted training sharpens their skill profile, so that they are more likely to match the skill requirements of the labour market. As a result, employment increases (at older ages as well), as do wages, productivity, investment, and GDP.

Women's unequal opportunities in the labour market are all too evident. A good education is not enough. Despite being better educated, women's odds of being in employment are less than half those of men. Confirming earlier evidence, this finding demonstrates that good education is a necessary, but not sufficient, condition for performing well in the labour market.⁽⁹⁰⁾ Once in employment, there is a distinctive female job profile. Women stand less chance of working in jobs that require higher level skills and responsibility. In addition, at the same age, with the same or better education and with the same family and other circumstances, women still have 25% lower odds than men of progressing to higher-profile jobs.

The institutional setup and cultural factors keep women's employment rate low. Apart from education, there are other observable socio-economic characteristics that have a strong impact on performance in the labour market, such as age or care responsibilities. But they fail fully to explain the female employment gap. Other factors which keep female employment below the average include cultural habits, and the design of the tax-benefit system creating high marginal effective tax rates for second earners. In addition, the legal framework may often provide limited incentives for men to assume

⁽⁸⁸⁾ European Commission (2017:1), Chapter 3.

⁽⁸⁹⁾ Ermisch and Pronzato (2010)

⁽⁹⁰⁾ This had already been found true for migrants in ESDE 2015 and 2016, see European Commission (2016:2) and European Commission (2017:1).

an equal share of caring responsibilities (family-related leaves). A lack of affordable childcare and long-term care services may force women rather than men to not participate in the labour market.