6

Key Skills and Economic and Social Well-Being

This chapter details how proficiency in literacy, numeracy and problem solving, as measured by the Survey of Adult Skills (PIAAC), is positively associated with other aspects of well-being, including labour market participation, employment, earnings, health, participation in associative or volunteer activities, and an individual's sense of having influence on the political process. It suggests that improvements in the teaching of literacy and numeracy in schools and in programmes for adults with poor literacy and numeracy skills and limited familiarity with information and communication technologies may provide considerable economic returns for both individuals and society.

To what extent does proficiency in literacy, numeracy and problem solving in technology-rich environments make a difference to the well-being of individuals and nations? Previous chapters of this report have examined the level and distribution of these skills among countries and different groups in the population as well as the relationship between proficiency and factors that are thought to help develop and maintain skills proficiency. This chapter examines the relationships between proficiency and the following aspects of individual and social well-being: participation in the labour market, employment, earnings, health, participation in associative or volunteer activities, and the sense of influence on the political process.

Among the main findings:

- Proficiency in literacy, numeracy and problem solving in technology-rich environments is positively and independently associated with the probability of participating in the labour market and of being employed and earning higher wages. After the effects of educational attainment are taken into account, an increase of one standard deviation in an individual's literacy proficiency (46 score points) is associated with a 20% increase in the probability of participating in the labour market and a 10% increase in the probability of being employed as opposed to being unemployed. An increase of one standard deviation in literacy proficiency is also associated with an 8% increase in hourly wages, on average across countries.
- The strength of the relationship between proficiency and labour market participation, employment and wages varies considerably among countries. This is likely to reflect differences in institutional arrangements (such as wage setting) as well as the relative weight given to educational qualifications and other factors in employers' hiring, promotion and wage-setting decisions.
- Educational qualifications and proficiency in literacy, numeracy and problem solving in technology-rich environments reflect different aspects of individuals' human capital that are separately identified and valued in the labour market.
- Proficiency in literacy, numeracy and problem solving in technology-rich environments is positively associated with other aspects of well-being. In all countries, individuals who score at lower levels of proficiency on the literacy scale are more likely than those with higher levels of proficiency to report poor health, believe that they have little impact on the political process, and not to participate in associative or volunteer activities. In most countries, individuals with lower proficiency are also more likely than those with higher proficiency to have low levels of trust in others.

The results suggest that, independent of policies designed to increase participation in education and training, improvements in the teaching of literacy and numeracy in schools and programmes for adults with poor literacy and numeracy skills and limited familiarity with ICTs may provide considerable economic and social returns for individuals and society a whole.[1]

SKILLS PROFICIENCY, LABOUR MARKET STATUS AND WAGES

To the extent that workers' productivity is related to the knowledge and skills they possess, and that wages reflect such productivity, albeit imperfectly, individuals with more skills should expect higher returns from labour market participation and would thus be more likely to participate. Most studies use educational qualifications attained in the past as a proxy for individuals' current productive potential when investigating the returns to investments in human capital; only a few recent studies examine the return on skills development (Leuven et al., 2004; Tyler, 2004). In contrast, the Survey of Adult Skills (PIAAC) measures key information-processing skills directly, and so can provide more precise information on how an individual's current proficiency in those skills influences their likelihood to work and their wages. [2]

While previous chapters described the distribution of proficiency in the domains of literacy, numeracy and problem solving in technology-rich environments for the entire population, this section reviews these data with reference to the labour market status of the survey respondents – i.e. whether they are employed, unemployed or inactive – as well as to their earnings.

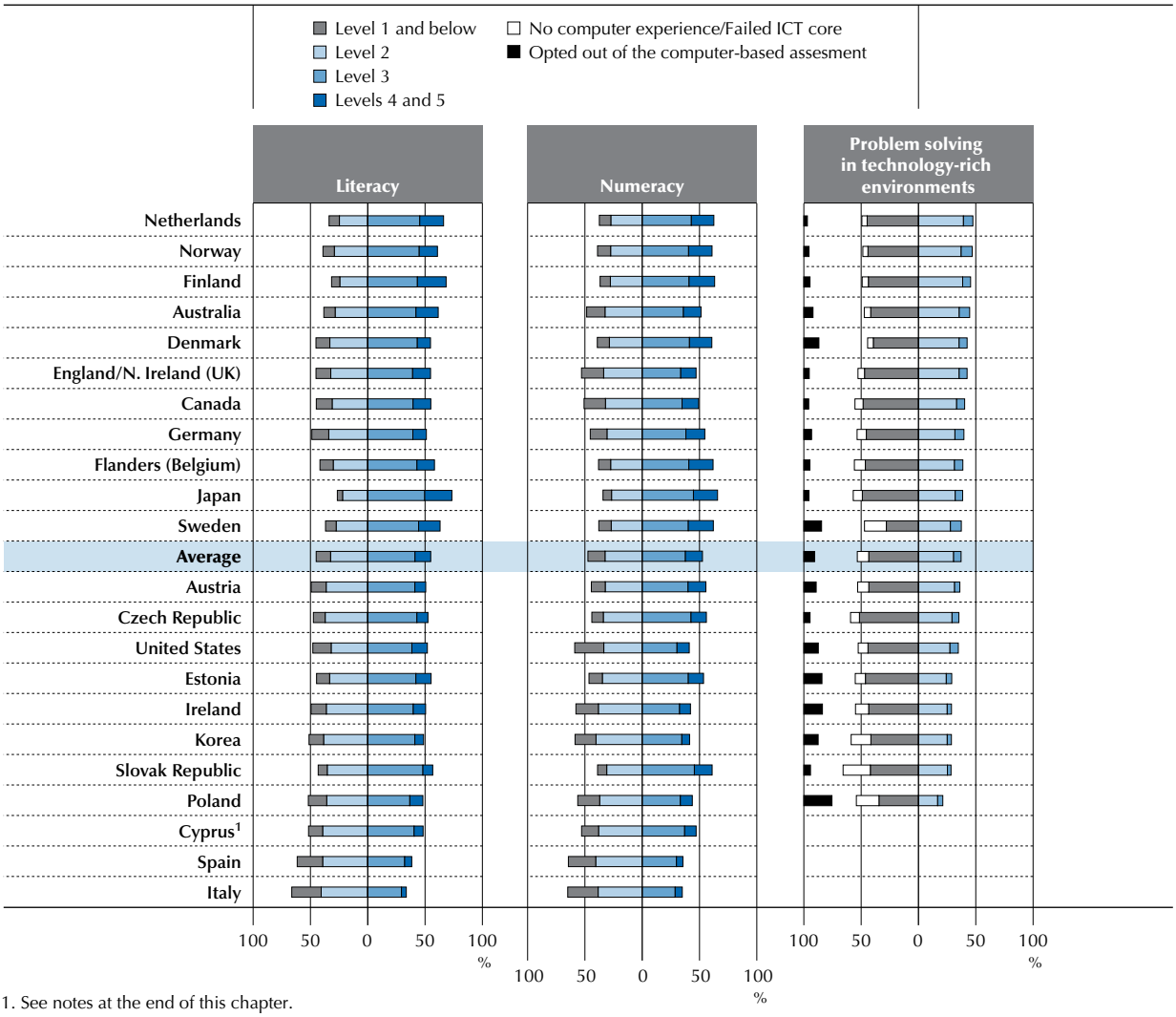
Proficiency and labour market status

Considering first the group of employed individuals (Figure 6.1), only a minority score in the top two levels (Level 4 or 5) in either literacy or numeracy (14%-15%, on average) and about the same proportion (13%-15%, on average) have the lowest level of proficiency. Differences across countries are marked: Italy and Spain have particularly large shares of workers at the bottom of the distribution and a smaller-than-average share at the top in both literacy and numeracy, whereas the opposite is true in Japan, Finland and the Slovak Republic. More generally, in all countries, including those with the highest levels of GDP per capita, such as Norway and the United States, a substantial proportion of workers score at low levels in both literacy and numeracy.

■ Figure 6.1 ■

Workers' proficiency levels

Percentage of workers at each level of proficiency, by skills domain



1. See notes at the end of this chapter.

Countries are ranked in descending order of the percentage of workers in Levels 2 and 3 of problem solving in technology-rich environments.

Source: Survey of Adults Skills (PIAAC) (2012), Tables A6.1 (L), A6.1 (N) and A6.1 (P).

StatLink http://dx.doi.org/10.1787/888932902436

Strikingly, a majority of employed individuals in all countries either do not display proficiency or score at or below Level 1 on the problem solving in technology-rich environments scale. In many cases, this majority is substantial (for example, about 66% in Korea and 59% in the Slovak Republic and the United States). Conversely, only about 6% of workers, on average, score at the highest level in problem solving in technology-rich environments (Level 3). However, caution is advised when interpreting the results for problem solving in technology-rich environments because not all of the employed respondents completed the problem-solving assessment module. Scores for problem solving are not available for around 10% of all employed respondents, on average, ranging from a low of less than 4% in Sweden and the Netherlands to a high of 24% in Korea. In Figure 6.1, this group is shown below the lowest-scoring group, with the assumption that the group's performance in the test would have been poorer than the lowest performers. In addition, an average of about 10% of workers refused to take the computer-based test altogether. They may have done so because of insufficient familiarity with ICTs, but there is no way to verify this. Thus, this group is classified separately in Figure 6.1.

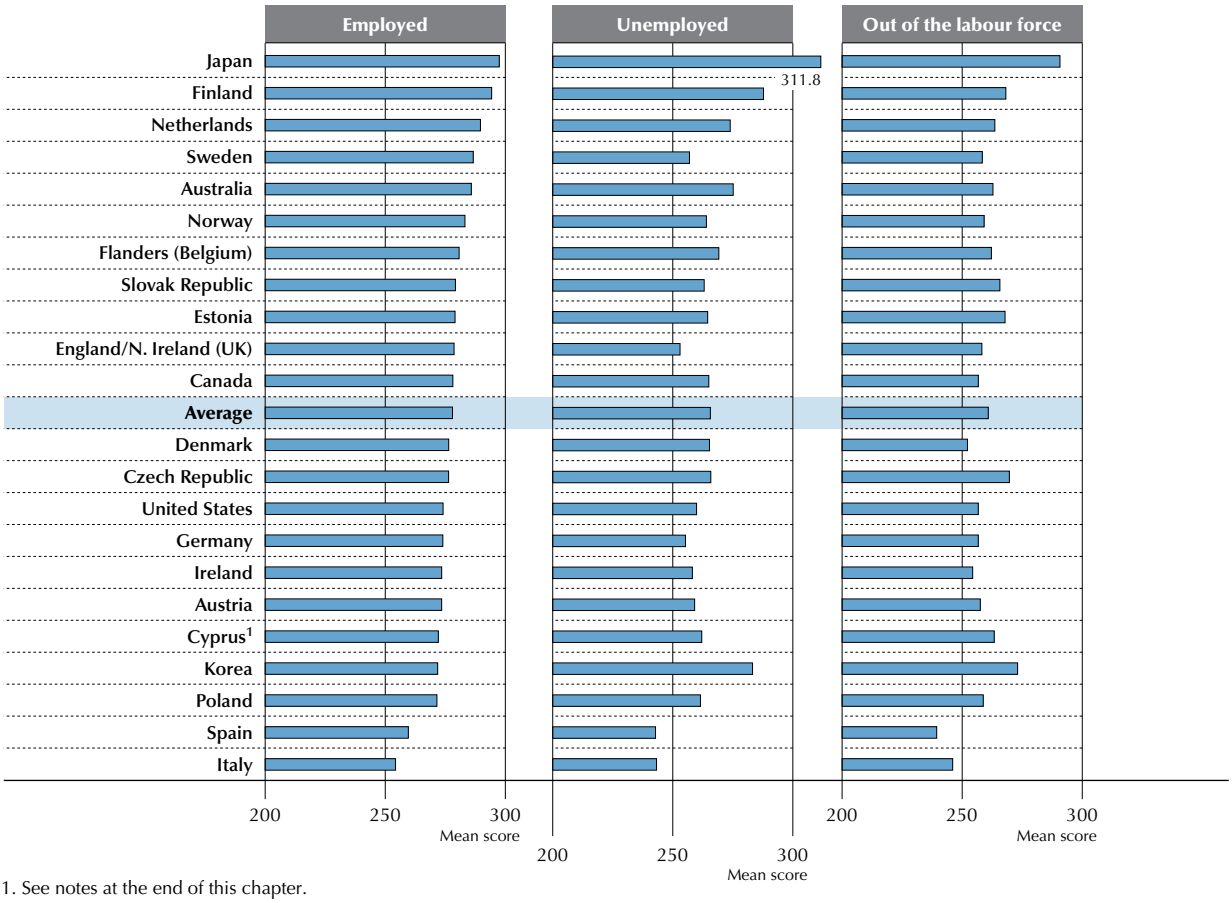
When the total population is divided into the three standard labour market groups – i.e. employed, unemployed and inactive – the average proficiency in literacy among the employed population is generally higher than that among unemployed and inactive individuals (Figure 6.2 [L]). However, the differences in proficiency are surprisingly small.[3]

Across all participating countries, the average literacy score of employed individuals is about 13 score points higher (about 5%) than the average score of unemployed adults, which, in turn, is almost identical to that of the inactive.

This relatively small difference can be partly attributed to the high incidence of unemployment among young people, who are generally more proficient than their older counterparts. The difference in proficiency between the employed and the long-term unemployed – those who have been unemployed for 12 months or more – is larger. When only the long-term unemployed are used in the comparison, the difference in proficiency increases by 9 score points, from about 13 to 22 score points, on average.

■ Figure 6.2 (L) ■

Mean literacy score, by labour force status



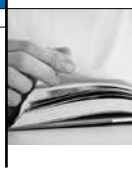
1. See notes at the end of this chapter.

Countries are ranked in descending order of workers' mean literacy score.

Source: Survey of Adults Skills (PIAAC) (2012), Table A6.2 (L).

StatLink http://dx.doi.org/10.1787/888932902455

Overall, while there is a relatively large pool of skilled individuals who are out of work, either unemployed or inactive, some caveats are in order. First, it is important to keep in mind that while some unemployed individuals may have scores in literacy, numeracy and problem solving in technology-rich environments that are similar to those of employed individuals, they may lack other key skills needed to get a job, for example, job-specific skills or generic skills frequently required at work, such as self-organising skills. Second, some inactivity might be voluntary and temporary, such as among young people who are still engaged in full-time education or skilled women who are caring for family members. At the same time, to the extent that literacy is a proxy for a more comprehensive set of competencies, the relatively high proficiency found among unemployed individuals is important for labour-market policy. Mismatches between people's skills and the skill requirements of jobs, in addition to various institutional constraints, are likely to be preventing skilled people from engaging in employment or looking for work.



Proficiency, employment and wages

Another way of looking at the link between labour market outcomes and proficiency is to determine how many individuals, at each proficiency level, are employed, unemployed or inactive (Figure 6.3 [L]). From this viewpoint, both unemployment and inactivity are more common among the least skilled (Level 1 or below). For example, on average, about 57% of those individuals who score at or below Level 1 are employed, 7% are unemployed, and the remaining 36% are inactive. Among the most proficient individuals, who score at Level 4 or 5, 79% are employed, about 4% are unemployed, and 17% are inactive.

This finding highlights the importance of taking stock of the skills held by unemployed individuals at the start of a period of unemployment, both in the domains assessed by the Survey of Adult Skills and in other key areas relevant to labour market needs, including job-specific and generic skills. This would help public employment services to identify the most appropriate course of action for each job-seeker.

Hourly wages are strongly associated with proficiency levels (Figure 6.4 [L]).[4] On average across countries, the median hourly wage of workers scoring at Level 4 or 5 on the literacy scale is 61% higher than that of workers scoring at or below Level 1. Differences in returns as proficiency increases vary across countries, more so than for employment status. In several countries, such as the Czech Republic, Estonia, Poland, the Slovak Republic and Sweden, the distribution of wages appears to be rather compressed; at the other extreme, returns to greater proficiency appear to be extremely large in the United States, Korea, Ireland, Canada and Germany.

However, the relationship between proficiency levels and hourly wages is not linear: there is significant overlap in the distribution of wages by proficiency level within and across countries. For instance, within countries, the top 25% best-paid Korean and Japanese workers scoring at Level 2 in literacy earn more than the median hourly wage of those scoring at Level 4 or 5 (Figure 6.4 [L]). Similarly across countries, workers scoring at Level 2 in the United States earn higher median hourly wages than workers scoring at Level 4 or 5 in the Czech Republic, Estonia, Poland and the Slovak Republic, raising interesting issues concerning work-related migration.

How these relationships are affected by other individual and job characteristics

The relationships between proficiency levels and employment chances and hourly wages presented above could be the result of simple compositional effects. Most important, proficiency could simply be the reflection of higher educational attainment, which, in turn, affects wages as well as the likelihood of labour force participation and employment. This section shows that this is not the case, and that proficiency plays an important and independent role as a determinant of success in the labour market, over and above the role played by formal education.

The relationship between labour market participation, employment and wages, on the one hand, and skills proficiency on the other is explored in more detail using simple linear regressions or logistic models and adjusting for several individual characteristics, including years of education.[5] To interpret the results correctly, it must be borne in mind that, although it may be intuitive that higher levels of proficiency facilitate employment or active participation in the labour market and raise wages, causation is not necessarily self-evident. For example, employment may itself favour the acquisition of skills.[6]

Literacy proficiency, education and labour force participation

An individual who scores one standard deviation higher than another on the literacy scale (around 46 score points) is 20% more likely to participate in the labour market – i.e. to work or be looking for work (the relative probability being 1.2, see Figure 6.5 [L]).[7] This effect is computed holding constant the level of education (as well as all the other variables in the control set) – in other words, by comparing the likelihood of labour force participation among individuals with different levels of literacy proficiency, but who have spent the same number of years in education. Such a calculation is possible because of the imperfect overlap of education and proficiency, as discussed in previous chapters. If such a comparison were conducted without holding education constant, one standard deviation increase in literacy proficiency would be associated with a 36% rise in the probability of participation, suggesting that education and proficiency have, for the most part, distinct and separate effects, a finding that is confirmed in all of the analyses presented later in this chapter.

The link between proficiency and labour force participation is strongest in Sweden and Finland, where an increase of 46 points on the literacy scale raises the probability of being employed or looking for work by 56% and 43%, respectively. On the other hand, it is weakest in Estonia and Poland, where the likelihood of labour force participation increases by 15% and 16%, respectively, following a 46-point rise in the literacy score.

■ Figure 6.3 (L) ■

Employment status, by literacy proficiency level

Percentage of adults in each labour market status

1. See notes at the end of this chapter.

Countries are listed in alphabetical order.

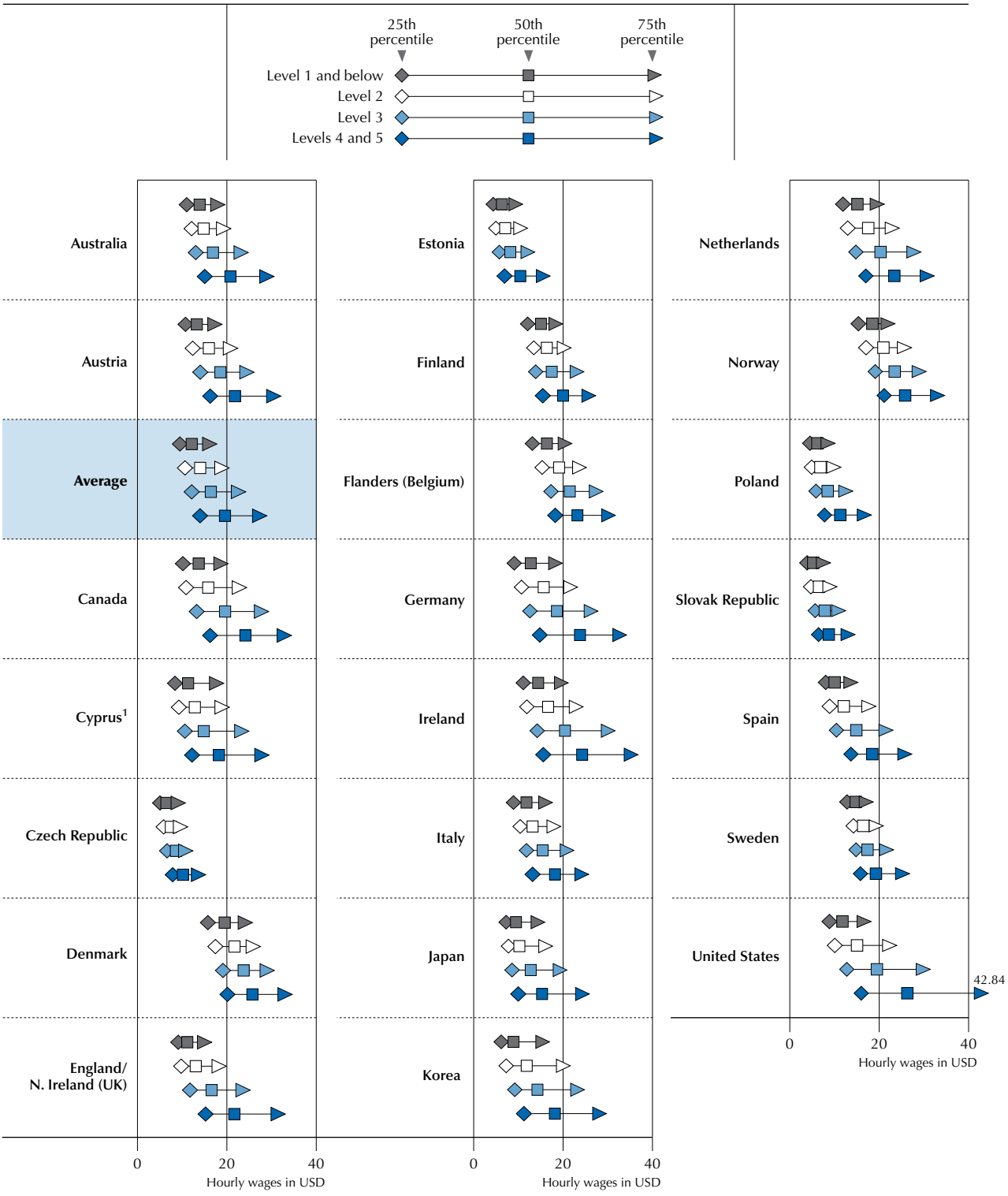
Source: Survey of Adult Skills (PIAAC) (2012), Table A6.3 (L).

StatLink http://dx.doi.org/10.1787/888932902474

■ Figure 6.4 (L) ■

Distribution of wages, by literacy proficiency level

25th, 50th and 75th percentiles of the wage distribution



1. See notes at the end of this chapter.

Note: Employees only. Hourly wages, including bonuses, in purchasing-power-parity-adjusted USD.
Countries are listed in alphabetical order.

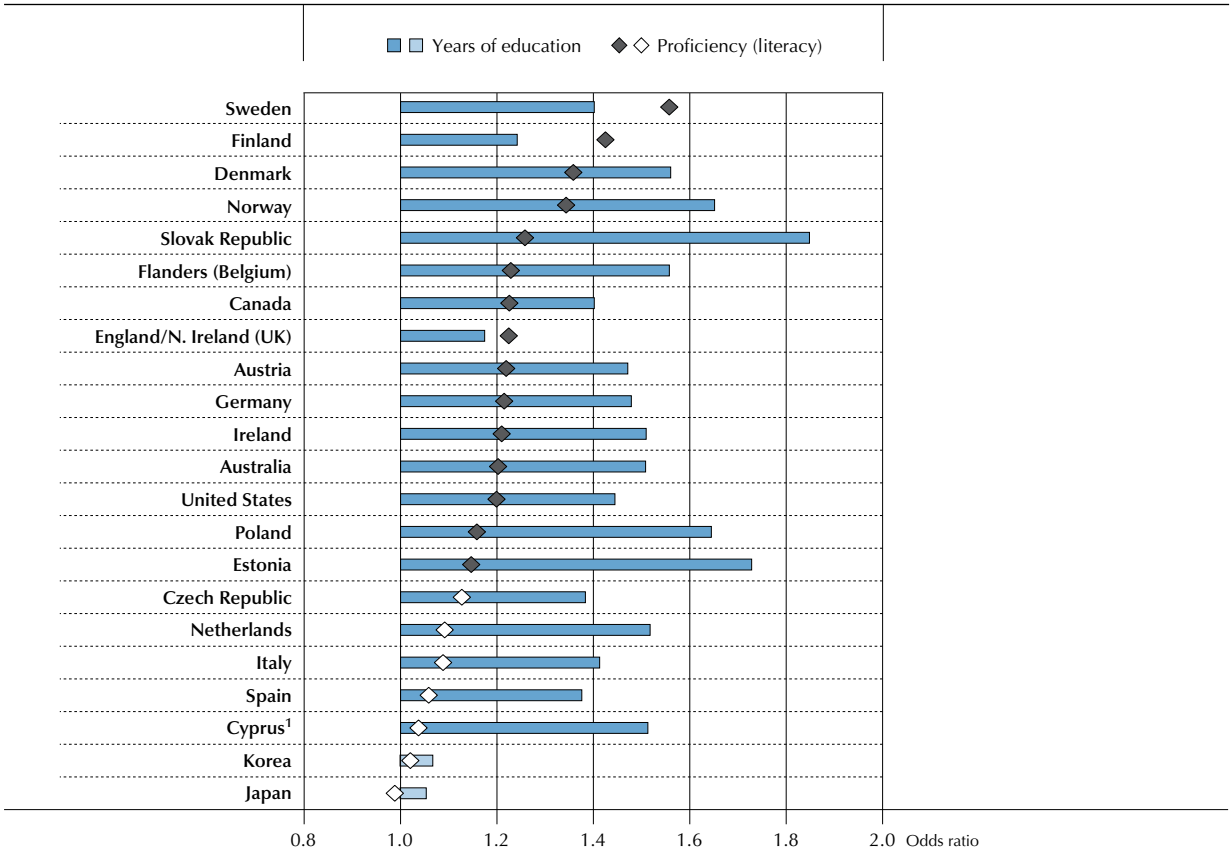
Source: Survey of Adult Skills (PIAAC) (2012), Table A6.4 (L).

StatLink http://dx.doi.org/10.1787/888932902493

■ Figure 6.5 (L) ■

Effect of education and literacy proficiency on labour market participation

Odds ratios showing the effect of education and literacy proficiency on the likelihood of participating in the labour market among adults not in formal education



1. See notes at the end of this chapter.

Notes: Results are adjusted for gender, age, marital and foreign-born status. The odds ratios correspond to a one-standard-deviation increase in proficiency/years of education. Statistically significant values are shown in darker tones. Years of education have a standard deviation of 3.05, literacy has a standard deviation of 45.76.

Countries are ranked in descending order of the odds ratios of proficiency.

Source: Survey of Adult Skills (PIAAC) (2012), Table A6.5 (L).

StatLink http://dx.doi.org/10.1787/888932902512

Along with proficiency, more years spent in school increase the chances of labour force participation. More specifically, an additional three years in education, corresponding to one standard deviation of years of education across all countries in the sample, are associated with a 45% increase in the probability of labour force participation.[8]

On the basis of these results, it is possible to compare the likelihood of labour market participation for individuals with different combinations of education and proficiency. For example, moving up by three proficiency levels on the literacy scale – approximately three standard deviations on that scale – and keeping education constant would improve the likelihood of labour force participation by about 60%. An improvement of the same size would take an additional four years of education to achieve, keeping proficiency in literacy constant.

The most important result of this analysis, which is confirmed in almost all countries, albeit to different extents, is that proficiency, beyond that acquired through initial education, plays an independent and sizeable role in the likelihood that an adult will participate in the labour force. This highlights the importance of lifelong learning and the development of skills beyond school. The separate effects of proficiency and education on labour force participation may be due to a number of factors. First, literacy is one of many skills and bodies of knowledge developed in formal education, all of which are jointly captured by the estimated effect of educational attainment. In addition, as noted in Chapter 5, there is substantial

variation in literacy proficiency among individuals with similar levels of education. Second, employers can readily "see" a prospective employee's educational qualifications when hiring; skills, such as literacy, are only seen during work. As a result, the effects of skills on labour force participation are not as direct as those of educational qualifications.

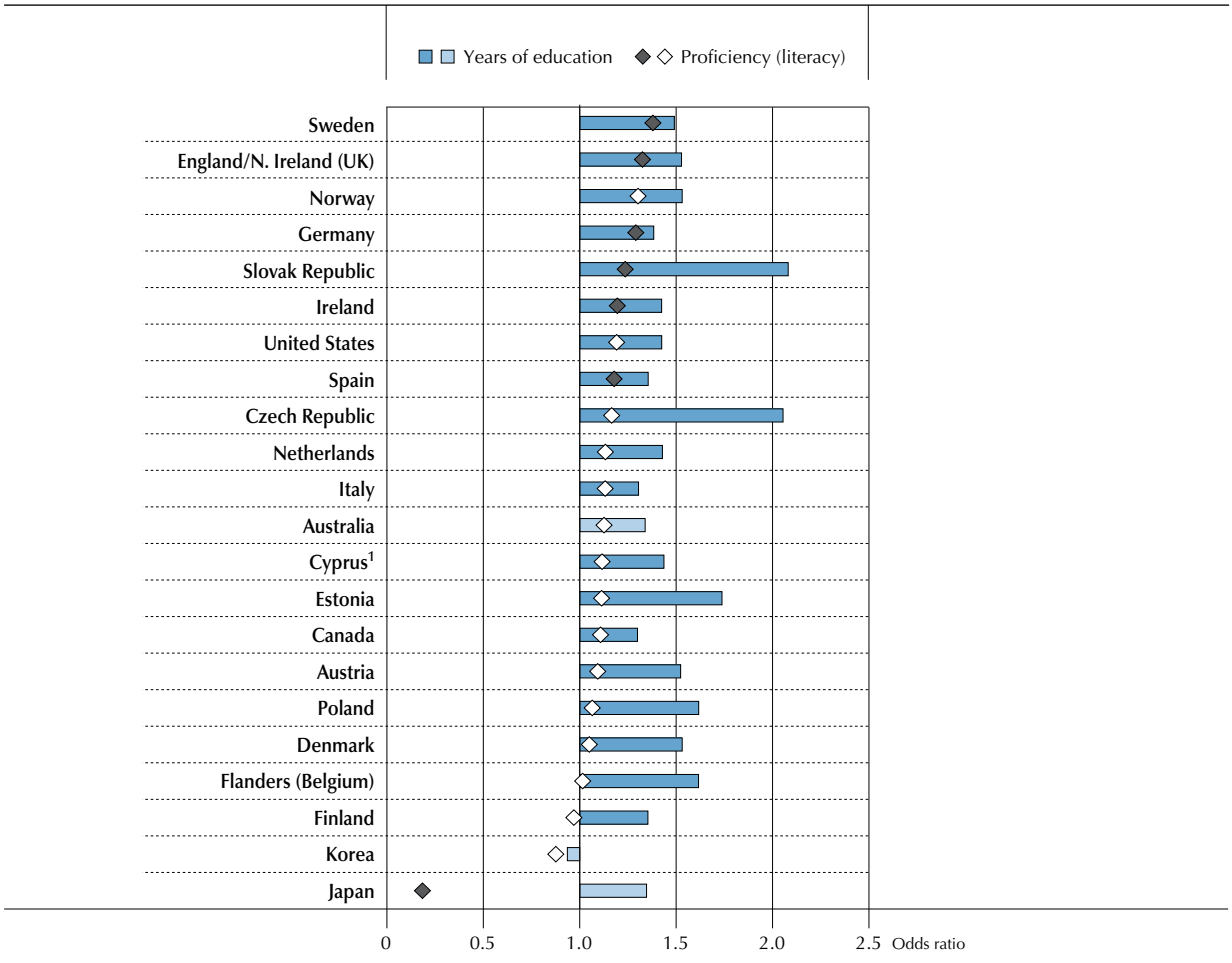
Literacy proficiency, education and employment

Active participants in the labour market include both individuals who are employed and those actively looking for work. Is, then, the positive association between literacy proficiency and labour market participation driven by a correlation with employment or with unemployment? An adult who scores 46 points higher on the literacy scale is 10% more likely to be employed, keeping education constant (see Figure 6.6 [L]). On the other hand, an adult with three additional years of schooling is 49% more likely to be employed. Given these results, it can be inferred that the effect of literacy proficiency on labour market participation (estimated at 20%) is largely the result of its association with a greater likelihood of employment.[9] The same holds for years of education, which has an effect of a similar magnitude on both participation and employment.[10]

■ Figure 6.6 (L) ■

Effect of education and literacy proficiency on the likelihood of being employed

Adjusted odds ratios showing the effect of education and literacy on the likelihood of being employed rather than unemployed among adults not in formal education



1. See notes at the end of this chapter.

Notes: Results are adjusted for gender, age, marital and foreign-born status. The odds ratios correspond to a one standard deviation increase in literacy/years of education. Statistically significant values are shown in darker tones. Years of education have a standard deviation of 3.05, literacy has a standard deviation of 45.76.

Countries are ranked in descending order of the odds ratios of proficiency.

Source: Survey of Adult Skills (PIAAC) (2012), Table A6.6 (L).

StatLink http://dx.doi.org/10.1787/888932902531

Analysis of survey results also finds that young people enjoy the highest returns to schooling, while the role of skills proficiency is similar across all age groups (young, prime-age and older workers). This is consistent with the notion that, when evaluating young job candidates with little work experience, employers attach high importance to educational qualifications in the absence of other information on the quality of potential employees. On the other hand, for older workers with longer labour market experience, educational attainment is just one of the many pieces of information available about their qualities as employees.

Overall, these findings suggest that improving literacy, numeracy and problem-solving skills would have a significant impact on the likelihood of labour force participation and employment, beyond encouraging participation in education and training. Improving the quality of instruction in reading and mathematics in schools, for example, could have long-term beneficial effects, as could improving the quality and broadening the availability of adult learning opportunities.

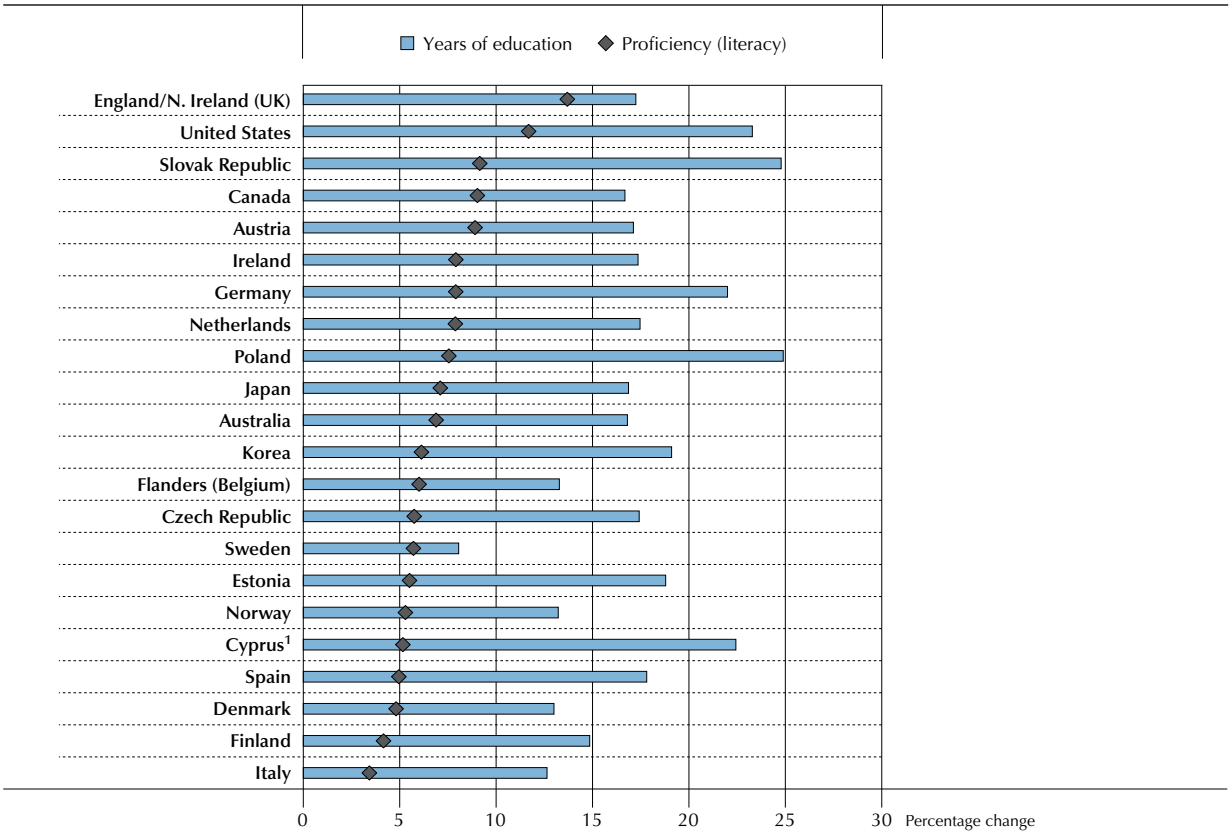
Wage returns to proficiency and schooling

Proficiency and schooling have significant and distinct effects on hourly wages.[11] The increase in wages associated with one standard deviation rise in literacy proficiency ranges from less than 5% in Denmark, Finland and Italy, to above 10% in the United States and England/Northern Ireland (UK) (Figure 6.7 [L]).[12] The effect of years of education on wages is larger, ranging from 7% in Sweden to more than 25% in Poland and the Slovak Republic.

■ Figure 6.7 (L) ■

Effect of education and literacy proficiency on wages

Percentage change in wages associated with a one standard deviation change in years of education and proficiency in literacy



1. See notes at the end of this chapter.

Notes: Coefficients from the OLS regression of log hourly wages on years of education and proficiency, directly interpreted as percentage effects on wages. Coefficients adjusted for age, gender, foreign-born status and tenure. The wage distribution was trimmed to eliminate the 1st and 99th percentiles. All values are statistically significant. The regression sample includes only employees. Years of education have a standard deviation of 3.05, literacy has a standard deviation of 45.76.

Countries are ranked in descending order of the effect of proficiency.

Source: Survey of Adult Skills (PIAAC) (2012), Table A6.7 (L).

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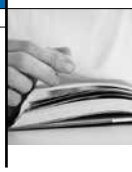


Part of the effect of proficiency on hourly wages may be based on the type of tasks and responsibilities workers are expected to carry out in their job. To check whether this is the case, one can also adjust the estimates by indicators of skills use at work. Unsurprisingly, the inclusion of skills-use variables weakens the effect of both education and proficiency on wages by about a third, on average.[13] In about half of the countries, co-operative skills, influence and task discretion, are positively and significantly correlated with wages, while dexterity is negatively and significantly correlated with wages. Also, in all countries but one, the use of physical skills is negatively and significantly correlated with wages. Similarly, the use of information-processing skills, such as writing, ICT and problem solving, is positively and significantly correlated with wages. The fact that skills use, over and above general proficiency and education, influences wages strengthens the findings on skills mismatch presented in Chapter 4.

Overall, the number of years of education tends to have a smaller impact on wages in countries with a more compressed wage distribution, such as the Nordic countries, Italy and Flanders (Belgium) (see OECD, 2013). By contrast, greater proficiency and educational attainment are associated with significantly higher wages in Korea, the Slovak Republic and the United States, all of which have relatively high earnings inequality. However, this only suggests a link between the earnings distribution and returns to education, as other factors affect the ranking of countries. For instance, Canada – a country with a rather dispersed earnings distribution – shows average returns to education, while Germany and Poland – where earnings inequality is relatively low – show relatively high returns to education.

Further analyses of the survey data show that these results are only marginally driven by compositional effects. Differences between age groups and gender in returns to education and proficiency are small.[14] The returns to education as seen in hourly wages are slightly higher for men than for women, but differences between the genders in returns to proficiency vary. Contrary to what was found for labour force participation, the number of years of education appears to have a stronger influence on wages among prime-age and older workers compared to young workers. While this result appears to be counterintuitive, the differences are small.

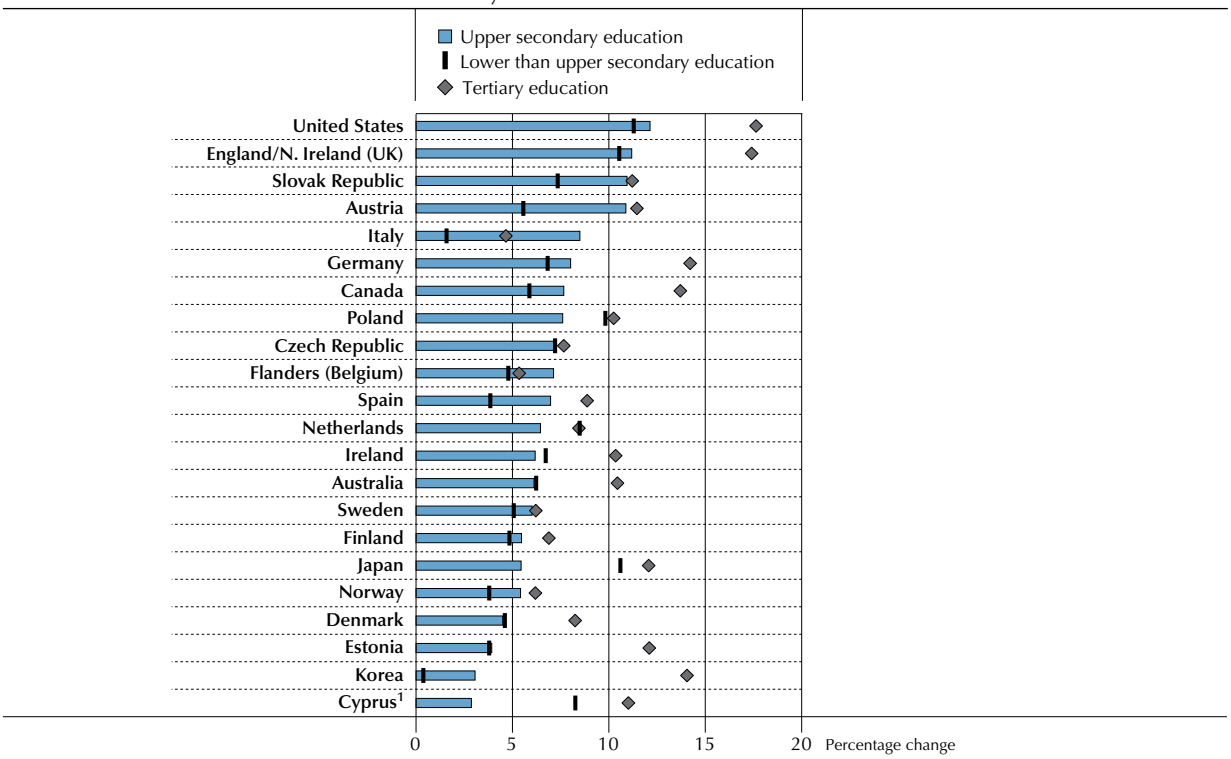
Finally, all of the above analyses assume that the effects of educational attainment and proficiency on wages are independent, while some recent research suggests that this may not be the case. Indeed, in the recent past, several OECD countries have reported a sharp increase in wage inequality at the very top of the earnings distribution (Lemieux, 2006; OECD, 2011). One popular explanation for this is that the returns to education are significantly larger for the most educated individuals. Analysis of results from the Survey of Adult Skills confirms this hypothesis. In over half of the countries, estimates of returns to proficiency increase with qualification levels (Figure 6.8 [L]), pointing to larger returns to training for those who are already highly proficient. But there are exceptions. In Poland, the Czech Republic, Australia, Ireland, the Netherlands, Japan, Denmark and Estonia, increasing proficiency among those with the least education has beneficial effects that are at least as great as those for upper secondary graduates. In Flanders (Belgium) and Italy, upper secondary graduates stand to gain the most from increases in proficiency. More generally, in line with earlier findings in this chapter, the distribution of returns to proficiency by qualification level tends to be more compressed in the Nordic countries, notably, Norway, Finland and Sweden. On the other hand, it is more dispersed in Germany, Canada, Estonia and Korea.

These results suggest that educational attainment and proficiency in literacy, numeracy and problem solving in technology-rich environments reflect different aspects of individuals' human capital, each of which has independent and statistically significant effects on wages. Educational attainment, either in itself or expressed as years of education, represents a wider set of knowledge and skills, including job- and domain-specific competencies, as well as personal attributes, than does proficiency in the three domains tested in the Survey of Adult Skills. Since it is more difficult for a prospective employer to assess skills than qualifications, the relative strength of the influence of years of education and proficiency on wages may also reflect the fact that wage negotiations that occur during hiring are based on the observable characteristics of individuals, i.e. qualifications, and have a lasting impact on wages. In the course of the employment relationship, employers learn more about the competencies of their employees, which is then translated into the effect of proficiency on wages (Pinkston, 2009). However, the fact that proficiency has an independent influence on wages, beyond that of educational attainment, confirms the importance of acquiring skills throughout a lifetime. Differences across countries in the magnitude of the effects are heavily influenced by how wages are distributed across occupations and, in turn, by the labour market institutions, such as minimum wages and unions, that affect that distribution.

■ Figure 6.8 (L) ■

Effect of literacy proficiency on wages, by educational attainment

Percentage change in wages associated with a one standard deviation change in proficiency in literacy, by educational attainment



1. See notes at the end of this chapter.

Notes: Coefficients from the OLS regression of log hourly wages on proficiency, directly interpreted as percentage effects on wages. Coefficients adjusted for age, gender, foreign-born status and tenure. The wage distribution was trimmed to eliminate the 1st and 99th percentiles. The regression sample includes only employees. Literacy has a standard deviation of 45.76.

Countries are ranked in descending order of the effect of literacy proficiency on wages for upper seconday-educated employees.

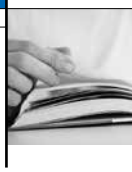
Source: Survey of Adult Skills (PIAAC) (2012), Table A6.8 (L).

StatLink http://dx.doi.org/10.1787/888932902569

SOCIAL OUTCOMES OF LITERACY, NUMERACY AND PROBLEM SOLVING IN TECHNOLOGY-RICH ENVIRONMENTS

The report by the Commission on the Measurement of Economic Performance and Social Progress (Stiglitz, Sen and Fitoussi, 2009) reflects a growing interest in the competencies needed to achieve social and personal well-being, understood in a broad way, in addition to those believed to be essential for economic success. It is widely accepted that skills affect people's lives and the well-being of countries in ways that go far beyond what can be measured by labour market earnings and economic growth; but less is known about the role of specific skills, such as literacy, numeracy and problem solving in technology-rich environments, on social and economic well-being.

The Survey of Adult Skills collected information on four dimensions of well-being: the level of trust in others; political efficacy or the sense of influence on the political process; participation in associative, religious, political or charity activities (volunteering); and self-assessed health status. Overall, literacy proficiency has a positive relationship with all four of the outcomes considered, net of the effects of education, socio-economic background, age, gender and immigrant background. Lower levels of literacy proficiency are associated with a lower sense of political efficacy and poor self-assessed health in nearly all participating countries. In most countries, low literacy proficiency is associated with lower levels of trust, and, in nearly all countries, it is associated with lower participation in voluntary and associative activities (Figure 6.9 [L]). The strength of the associations varies considerably between countries. Japan and Finland stand out as the countries in which the association of literacy proficiency and the outcomes concerned is weakest, and the United States, Germany, Canada, Australia, England/Northern Ireland (UK) and Sweden as among the countries or regions in which the associations are strongest. Although country-specific patterns can vary, the overall results and strength of the relationships are similar on both the numeracy and problem solving in technology-rich environments scales.



Box 6.1. The STEP Skills Measurement Study: A skills survey in low- and middle-income countries

The World Bank's STEP measurement study was launched in 2010 to gather more evidence on the level and distribution of skills – including socio-emotional skills – relevant to the labour market in the adult populations of developing countries. The study consisted of one survey for individuals and one for employers. The individual survey contained three modules focused on cognitive skills, job specific skills and socio-emotional skills. In addition to collecting self-reported information regarding reading, writing and numeracy, the cognitive module involved administering a direct assessment of reading literacy based on the Survey of Adult Skills instruments.

Eight countries participated in the first wave of data collection, which took place in 2011: Bolivia, Colombia, Ghana, Laos, Sri Lanka, Ukraine, Vietnam, and the Yunnan province of China. The second wave, which took place in 2012-13, involved five countries: Armenia, Azerbaijan, Georgia, Kenya and Macedonia.

Cognitive skills are defined as the "ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought". Literacy, numeracy, and the ability to solve abstract problems are all cognitive skills. The STEP Survey asked respondents to report on their use of such skills in daily life and at work (if they work).

The STEP direct assessment of reading literacy mentioned above involved two versions. The first used an extended version of the paper-based literacy assessment administered by the Survey of Adult Skills as well as the latter's reading components assessment. This was implemented in Armenia, Bolivia, Colombia, Georgia, Ghana, Kenya, Ukraine and Vietnam. The second used the literacy core test from the Survey of Adult Skills only, and was implemented in Laos, Macedonia, Sri Lanka and the Yunnan province of China. The STEP literacy assessment was designed with the objective of recording results on the literacy scale of the Survey of Adult Skills.

Socio-emotional skills relate to traits covering multiple domains (social, emotional, personality, behaviours, attitudes, etc.). Modules were specifically developed to gather information on respondents' personality, behaviour, and preferences. The survey built on the "Big Five" personality traits: openness, conscientiousness, extraversion, agreeableness, and neuroticism. Measures of grit and hostility bias were also included. The survey also included a module aimed at assessing respondents' time and risk preferences.

Job-specific skills are task-related and build on a combination of cognitive and non-cognitive skills. The STEP survey included a wide range of questions relating to such skills, e.g. computer use.

Results are available for five countries: Bolivia, Laos, Sri Lanka, Vietnam and the Yunnan province of China. Some of the initial findings from the individual survey module are presented below.

Self-reported cognitive skills

Most adults read regularly; however, the intensity of reading varies widely. In each of the five countries at least 85% of adults read regularly, whether at work or in daily life, with the exception of Sri Lanka, where this is true of about 77% of adults. However, across countries, there are stark contrasts in the intensity of reading activity.

Most adults use numeracy skills regularly. Numeracy skills are used regularly by over 90% of adults, with the exception of the Yunnan province of China, where 80% of adults report doing some math in the context of daily life or at work. As is the case with reading skills, there are sharp differences in the intensity of numeracy skills use across age groups. Younger adults (15-24 year-olds) are more likely to use numeracy more intensively than their older peers.

There is a high correlation between the use of skills and educational attainment. The proportion of adults who reported reading regularly rises with level of educational attainment. Reading intensity is also correlated with educational attainment. In all countries, adults who have completed lower secondary education or higher display a greater intensity of reading (medium and high intensity).

Assessed cognitive skills

Over 80% of adults pass the literacy threshold in most countries. In four of the five countries, more than 80% of adults pass the core test (i.e. get at least three out of eight items correct); in Laos, only 67% of adults reached the literacy threshold.

...

There are differences between self-reported and direct assessment of reading literacy. In the case of Laos and Bolivia, the percentage of adults who reported that they read regularly is higher than the percentage of adults who passed the literacy core module. The opposite was found in Sri Lanka, Vietnam and the Yunnan province of China, where the percentage of adults who reported regular reading was lower than the percentage of adults who passed the core module.

The relationship between reading literacy and gender varies by country. In Sri Lanka, Vietnam and the Yunnan province of China, the proportion of men and women who passed the core module is similar. However, in the case of Laos and Bolivia, men had higher pass rates than women.

There is a correlation between age and performance in most countries. With the exception of the Yunnan province of China, where all age cohorts perform similarly, 15-24 year-olds outperform 25-49 year-olds and 50-64 year-olds. Laos has the largest gap in performance between the youngest and the oldest cohorts.

Educational attainment is positively related to performance. In all countries except the Yunnan province of China, adults with primary education or less are more likely to get fewer than three responses correct. Interestingly, there is little difference in performance between adults with completed secondary and post-secondary education, probably because the core assessment is designed to screen adults with low literacy.

Respondents have better skills in recognising print vocabulary than in sentence processing or passage comprehension. Respondents demonstrate the ability to recognise words that represent everyday objects but have greater difficulty processing sentences and passages.

Socio-emotional skills

As respondents' age increases, there is an increase in conscientiousness and stability, a decrease in openness, and no change in agreeableness and extraversion. A correlation was found between personality traits and age. In three of the five countries, conscientiousness and stability increase with age, while in Bolivia and the Yunnan province of China, these two traits remain stable across all age groups.

Within countries, there are differences in personality related to gender. In all five countries, men are more emotionally stable than women. Also, men are more open to experiences than women, except in Bolivia and the Yunnan province of China. No differences in agreeableness and extraversion related to gender are found in the five STEP countries.

Socio-emotional skills are correlated with educational attainment. In all STEP countries, greater openness and higher levels of conscientiousness are correlated with a higher level of education; neuroticism seems negatively correlated. Extraversion and agreeableness are not significantly correlated with education.

Outcomes

ICT and generic skills are associated with higher earnings. Greater use of cognitive skills (reading and numeracy) is associated with higher earnings for both wage earners and self-employed workers. In most countries, more frequent reading and using mathematics at an advanced level are associated with higher earnings. Interestingly, the basic reading literacy assessment score is positively correlated with employees' wages in all five countries, but is statistically significant only in Laos and Sri Lanka.

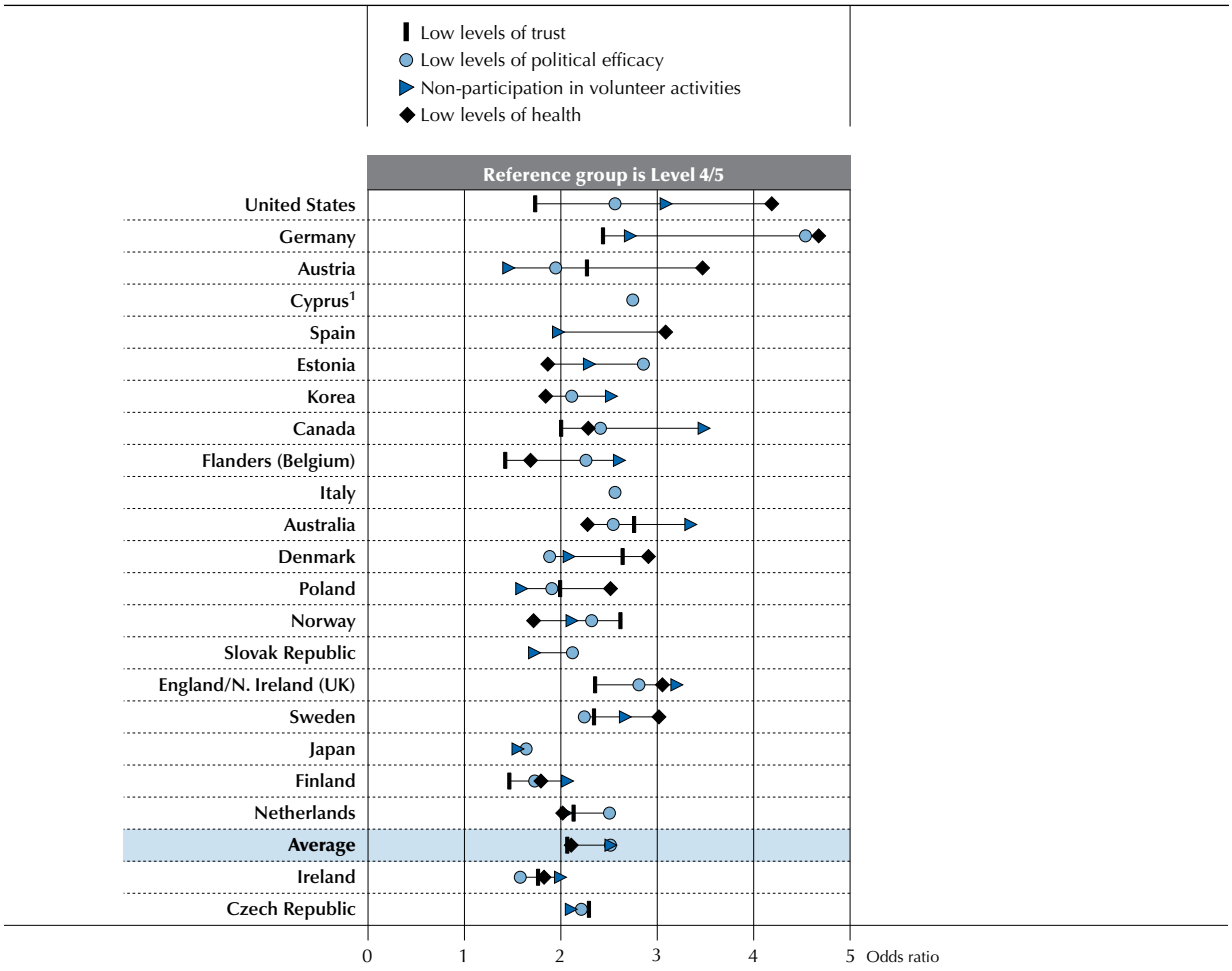
Job-specific skills matter in most countries, both for wage earners and self-employed workers. In most countries, computer use and intensity of use is associated with higher earnings. Greater use of skills, such as cognitive challenge (thinking and learning new things), and the degree of freedom in a job are all associated with greater earnings. In most countries, operating heavy machinery does not seem to be related to earnings.

Higher scores on socio-emotional skills scales are correlated with greater earnings, but no particular skill can be singled out as being important in all countries. Openness to experience is associated with greater earnings for wage earners in Bolivia and Laos and for self-employed workers in Sri Lanka and Vietnam. Better grit is associated with higher wages in Bolivia, Vietnam and the Yunnan province of China, but not at all for the earnings of self-employed workers. Conscientiousness is significantly associated with earnings for self-employed workers in Bolivia and the Yunnan province of China, but not with the earnings of wage earners.

■ Figure 6.9 (L) ■

Low literacy proficiency and negative social outcomes

Odds ratio showing the likelihood of adults scoring at or below Level 1 in literacy reporting low levels of trust and political efficacy, fair or poor health, or of not participating in volunteer activities (adjusted)



1. See notes at the end of this chapter.

Notes: Estimates that are not statistically different from the reference group are not shown. Odds ratios are adjusted for age, gender, educational attainment and immigrant and language background.

Countries are ranked in descending order of the difference between the maximum and the minimum odds ratios for the four social outcomes.

Source: Survey of Adult Skills (PIAAC) (2012), Table A6.9 (L).

StatLink http://dx.doi.org/10.1787/888932902588

The relationship between information-processing skills and indicators of social well-being is complex (see Box 6.2). Given the importance of text-based information found in newspapers, websites, books and magazines as a source of knowledge and information about the world, higher levels of proficiency in accessing, interpreting and analysing this information may be associated with a greater understanding of society and how its institutions operate, and of the beliefs, motivations and behaviour of others. Knowledge may also be associated with a greater sense of control over one's life. For example, the concept of health literacy (Rudd, Kirsch and Yamamoto, 2004) links health outcomes with the ability to understand and process information relating to health, from basic information on appropriate dosages found on medicine bottles to the contents of materials distributed as part of public-health campaigns.

Trust

Trust is the bedrock of democracy. Without trust in others and in the rule of law, all relationships, whether business, political or social, function less efficiently. The foundations of trust are established on three complementary levels: trust as an individual trait, trust as a relationship, and trust as a cultural rule (Sztompka, 1999). For an individual, certain

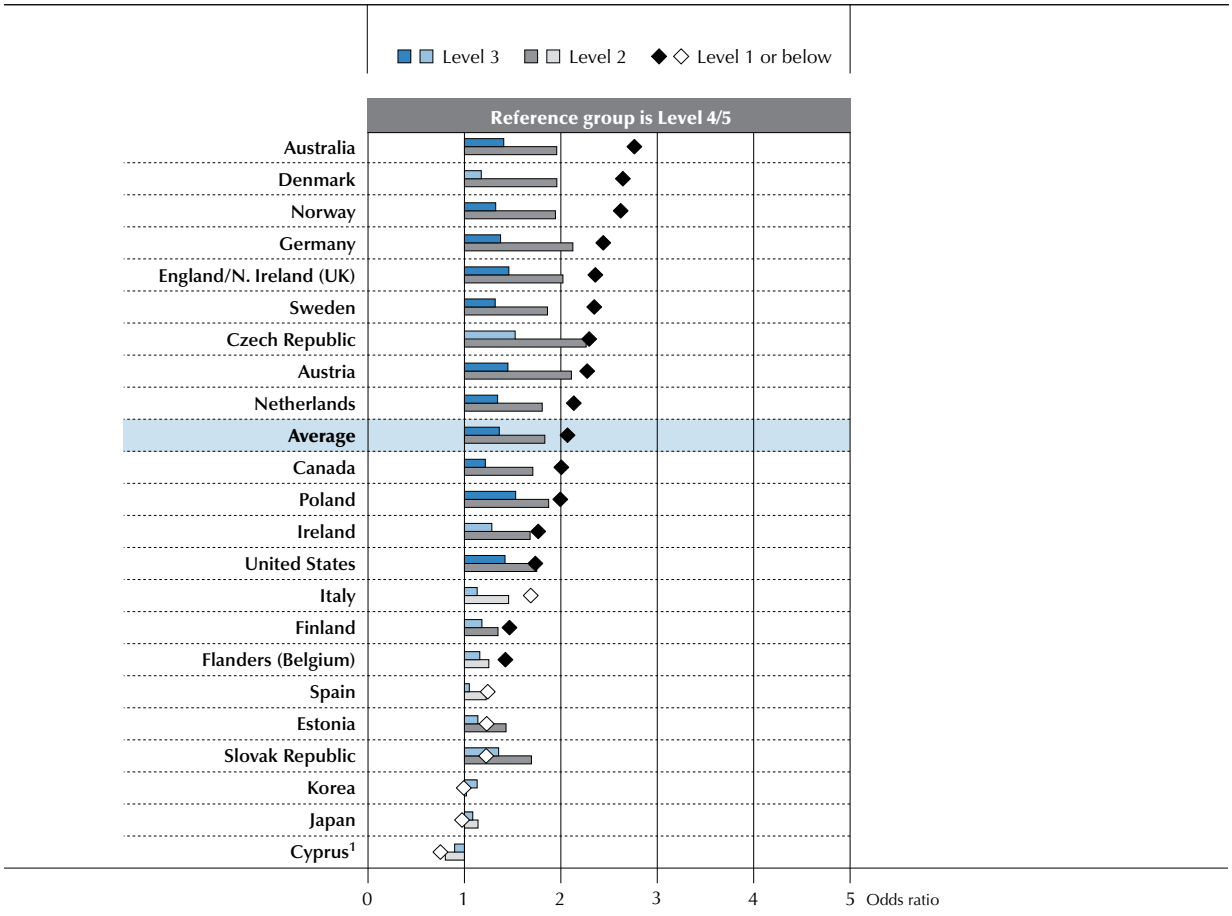
skills may lead to trust in others. For example, key information-processing skills may enable people to understand better the motives and aspirations of others and the conditions under which these may be shown. Skills may also enable people to forge trust by fostering lasting relationships with the aim of accomplishing mutually rewarding outcomes. Key information-processing skills might be particularly helpful for fostering understanding and mutually rewarding social action through text-based communication, such as through newspapers, pamphlets and blogs.

People might be more inclined to trust others who are more like them or share some similar values. Thus, proficiency in skills may have an indirect role in building trust in others through its effects on social inequality or on the geographical and social sorting of people according to the opportunities and outcomes related to key information-processing skills. In other words, a highly skilled person may be more likely to trust another highly skilled person, but not necessarily a low-skilled person, and vice-versa. When this happens, intra-community trust is high, but inter-community trust is low (Desjardins, 2008; OECD 2007). By extension, a high degree of inequality between low- and high-skilled people may breed distrust. These two scenarios are not mutually exclusive, and indicate different forms of social exclusion and poor social cohesion. However, without community-level data, it is not possible to distinguish more precisely between the causes of lack of trust.

■ Figure 6.10 (L) ■

Trust and literacy proficiency

Odds ratio showing the likelihood of adults reporting low levels of trust, by level of proficiency in literacy (adjusted)



1. See notes at the end of this chapter.

Notes: Statistically significant differences are marked in a darker tone. Odds ratios are adjusted for age, gender, educational attainment and immigrant and language background. The survey question asks respondents to what extent they agree or disagree with the following statement: there are only a few people you can trust completely.

Countries are ranked in descending order of the odds ratios of reporting low levels of trust for adults who scored at or below Level 1.

Source: Survey of Adult Skills (PIAAC) (2012), Table A6.10 (L).

StatLink http://dx.doi.org/10.1787/888932902607

Trust in others declines with proficiency levels (Figure 6.10 [L]). On average, adults who score at or below Level 1 in literacy have about two times the odds of reporting that they trust others very little compared to adults who score at Level 4 or 5. The patterns are similar in most countries, but the relationship is stronger in some countries than in others. The relationship between literacy and trust in others is particularly strong in Australia, Denmark and Norway, while it is weak in the Slovak Republic, Estonia, Spain, Korea and Japan. As mentioned above, different mechanisms may be at play in different countries, depending on the socio-cultural and socio-political context.

Volunteering

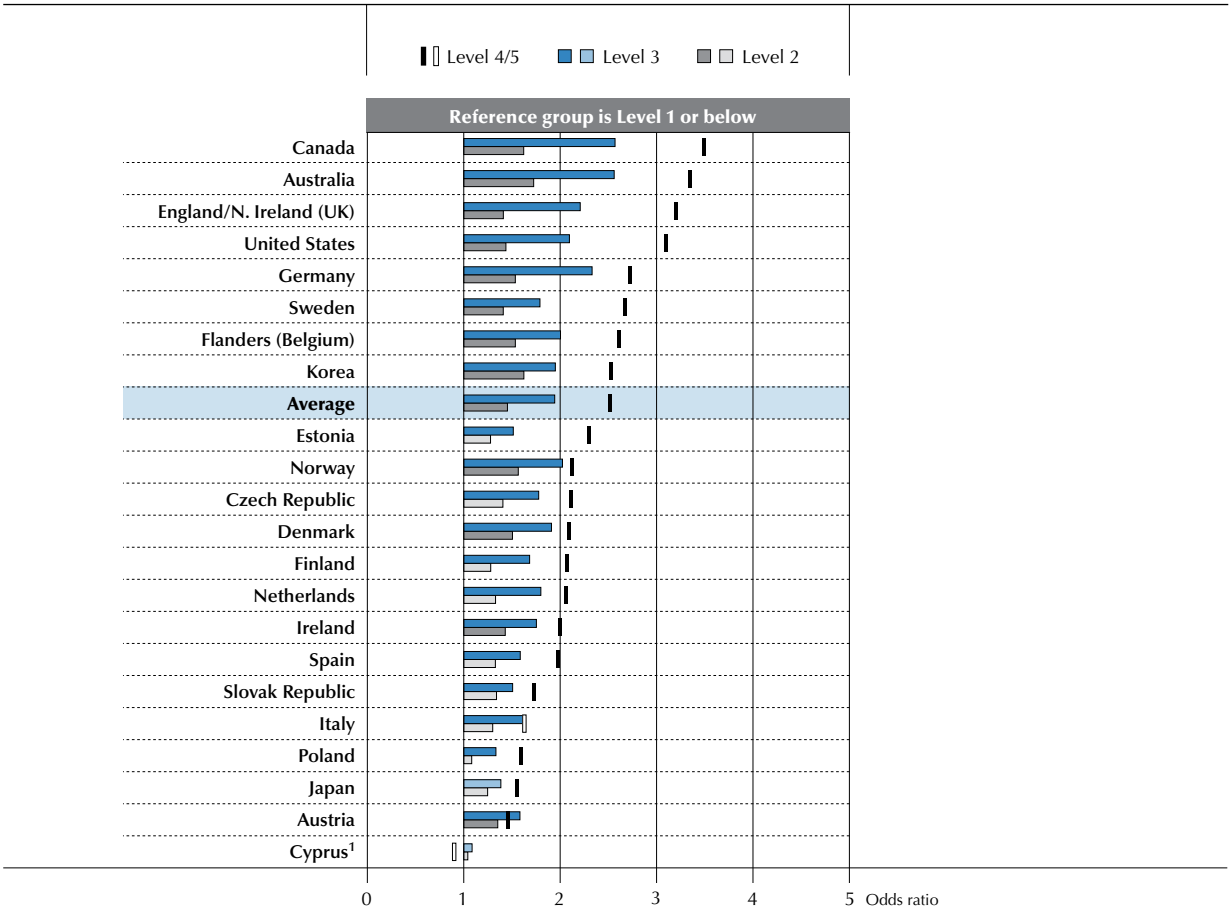
It is still unclear how key information-processing skills are linked to volunteering. One possibility is that such skills motivate people to volunteer by instilling a sense that they have something to offer. Another is that these kinds of skills may help people to be aware of others around them and of the complex processes involved in society (Pring, 1999), creating an interest in participating in the processes of social change.

The Survey of Adult Skills results reveal that adults with higher levels of skills are more likely to report that they engage in volunteer activities (Figure 6.11 [L]). On average across countries, adults who score at Level 4 or 5 have over two times the odds of reporting that they engage in volunteer activities compared to adults who score at or below Level 1.

■ Figure 6.11 (L) ■

Volunteering and literacy proficiency

Odds ratio showing the likelihood of adults participating in volunteer activities, by level of proficiency in literacy (adjusted)



1. See notes at the end of this chapter.

Notes: Statistically significant differences are marked in a darker tone. Odds ratios are adjusted for age, gender, educational attainment and immigrant and language background.

Countries are ranked in descending order of the odds ratios of volunteering for adults who scored at Level 4/5.

Source: Survey of Adult Skills (PIAAC) (2012), Table A6.11a (L).

StatLink http://dx.doi.org/10.1787/888932902626

The patterns are similar in most countries, but the relationship is much stronger in some than in others. The relationship between literacy and volunteering is strong in Canada, Australia, England/Northern Ireland (UK), the United States and Germany, while it is weakest in Japan and Austria.

Political efficacy

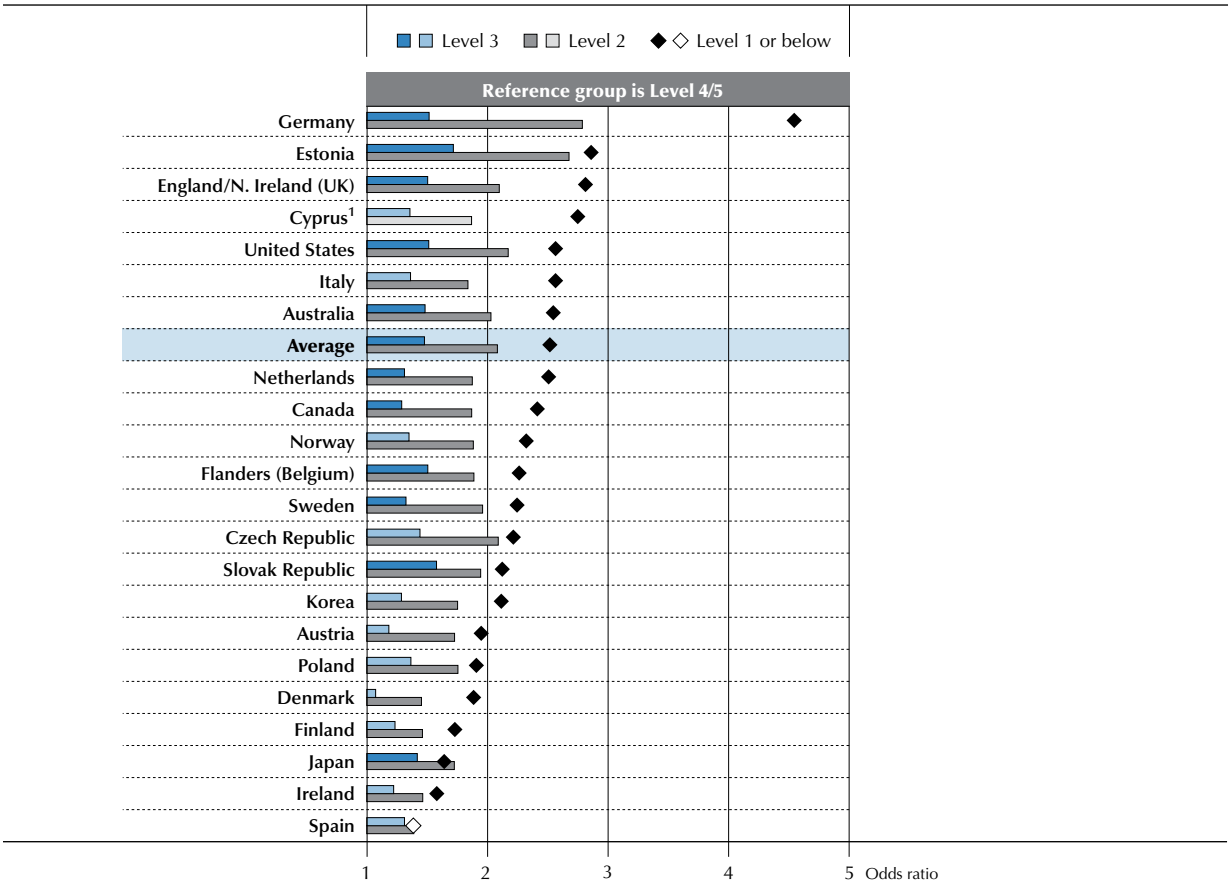
The link between key information-processing skills and political efficacy might be similar to that for volunteering. Certain skills may make people feel more powerful by instilling a sense of control and making people feel that they can make a difference. In addition, skills are needed to understand the political issues facing a country (Campbell, 2006). For example, literacy skills are essential for keeping up with current affairs through text-based sources of information. Information-processing skills, in general, also allow for a broader range of learning experiences through which individuals can develop a better understanding of the complexities of society.

Results reveal that adults with lower levels of skills are more likely to report feeling a low level of political efficacy (Figure 6.12 [L]). On average across countries, adults who score at or below Level 1 have more than two times the odds of reporting that they don't think that people like them have any say about what the government does compared to adults who score at Level 4 or 5. Again, the patterns are similar in most countries, but the relationship is much stronger in some than others. The relationship between literacy and political efficacy is strongest in Germany and Estonia, while it is weakest in Spain and Ireland.

■ Figure 6.12 (L) ■

Political efficacy and literacy proficiency

Odds ratio showing the likelihood of adults reporting low levels of political efficacy, by level of proficiency in literacy (adjusted)



1. See notes at the end of this chapter.

Notes: Statistically significant differences are marked in a darker tone. Odds ratios are adjusted for age, gender, educational attainment and immigrant and language background. Low levels of political efficacy are defined as having agreed with the statement that "People like me don't have any say about what the government does."

Countries are ranked in descending order of the odds ratios of having low levels of political efficacy for adults who scored at or below Level 1.

Source: Survey of Adult Skills (PIAAC) (2012), Table A6.12 (L).

StatLink http://dx.doi.org/10.1787/888932902645

Health

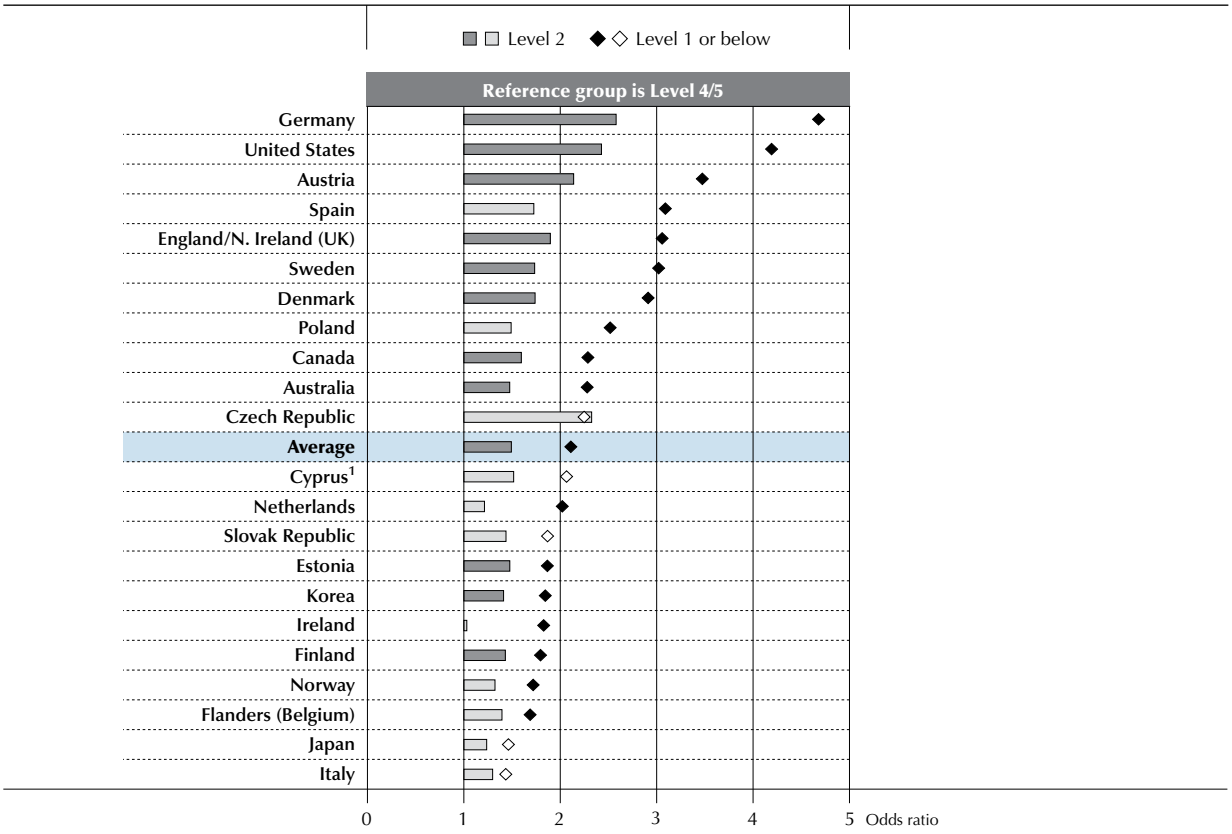
The health benefits of being skilled are potentially large (OECD 2010; 2007). There is a clear incentive for governments to contain healthcare costs and to understand how skills may play a role in achieving this end. People need information-processing skills to cope with modern healthcare systems, which are becoming increasingly complex and sophisticated (Bernhardt, Brownfield and Parker, 2005). In addition, individuals are increasingly being expected to assume more responsibility for managing their health and well-being, including by processing large quantities of health-related information.

Adults with lower levels of skills in literacy are more likely to report having a fair to poor health (Figure 6.13 [L]) than those with higher proficiency, even when account is taken of education attainment and other background characteristics. However, the relationship between health status and skills is likely to be complex. Individuals with better health may be more likely to engage in activities that maintain their proficiency in literacy than those with poor health. They may also be more likely to engage in activities that maintain their proficiency in literacy than those with poor health. They may also be more likely to be employed in occupations that minimise exposure to health risks (e.g. work accidents or toxic materials).

■ Figure 6.13 (L) ■

Reported health and literacy proficiency

Odds ratio showing the likelihood of adults reporting fair or poor health, by level of proficiency in literacy (adjusted)



1. See notes at the end of this chapter.

Notes: Statistically significant differences are marked in a darker tone. Level 3 is insignificant for all countries and is not shown. Odds ratios are adjusted for age, gender, educational attainment and immigrant and language background.

Countries are ranked in descending order of the odds ratios of having fair or poor health for adults who scored at or below Level 1.

Source: Survey of Adult Skills (PIAAC) (2012), Table A6.13 (L).

StatLink http://dx.doi.org/10.1787/888932902664

On average across countries, adults who score at or below Level 1 on the literacy scale have over two times the odds of reporting fair to poor health than those who score at Level 4 or 5. Adults scoring at Level 2 are also markedly more likely, on average, to report fair to poor health even when other factors are taken into account. Across countries, the chances of adults who score at Level 3 reporting poor health are not significantly different from those of their peers at Level 4 or 5,

suggesting a threshold near Level 3 or higher on the literacy scale. However, the relationship between literacy and self-reported health status is strongest in Germany, the United States and Austria, while it is weakest in Japan and Italy.

The role of education in developing skills and fostering positive outcomes

While the OECD has examined the relationship between education and a wide range of social outcomes, such as volunteering, voting, trust and health (see OECD, 2007; 2010), the relationship between education and skills and, in turn, between skills and social outcomes, has been largely left unexplored. The Survey of Adult Skills changes this by making data available for direct measures of skills and the social outcomes defined above.

Education and key information-processing skills are both found to have an independent relationship with a range of outcomes (Tables A6.10 [L] to A6.13 [L] in Annex A). The two, however, are not independent of one another, nor are they expected to be. Although key information-processing skills may be the result of learning in various contexts over a lifetime, education is thought to be particularly important in forming key information-processing skills, as discussed in Chapter 5. To the extent that the relationships between education and different social outcomes operate through key information-processing skills, it would be beneficial if education systems were more effective at imparting those skills.

Box 6.2. Alternative mechanisms linking skills and well-being

Education and a range of social outcomes are strongly related, but the pathways linking them are complex and poorly understood. At least three distinct mechanisms have been identified (for further details, see Desjardins, 2008; OECD, 2007; Campbell, 2006):

- The **absolute mechanism** suggests that education has a direct effect, by developing the resources and capabilities, including key information-processing skills, that can influence outcomes. This implies that what happens in school, including the content of curricula, pedagogical methods, and the ethos and organisation of a school, has an impact on the outcome in question. It presumes that formal education helps people to cultivate the knowledge, competencies, values, attitudes, beliefs and motivations that are relevant to outcomes.
- The **relative mechanism** involves a sorting effect, where social outcomes depend on an individual's level of education relative to others. In essence, education has an impact by influencing the relative position of individuals in society. This implies that education is relevant not for developing resources and capabilities, but for sorting individuals into a hierarchy of social relations, or social status.
- The **cumulative mechanism** suggests that education can have an absolute effect, but the outcome is conditional on the average level of education of the individuals' peers and/or surrounding groups. This means that certain effects of education are only likely to materialise among groups with similar levels of educational attainment, and that the prevalence of the outcome increases with the average level of attainment. This implies that there may be a cumulative pay-off to education, and that high levels of inequality in attainment may have adverse effects on particular outcomes, as is discussed above concerning trust.

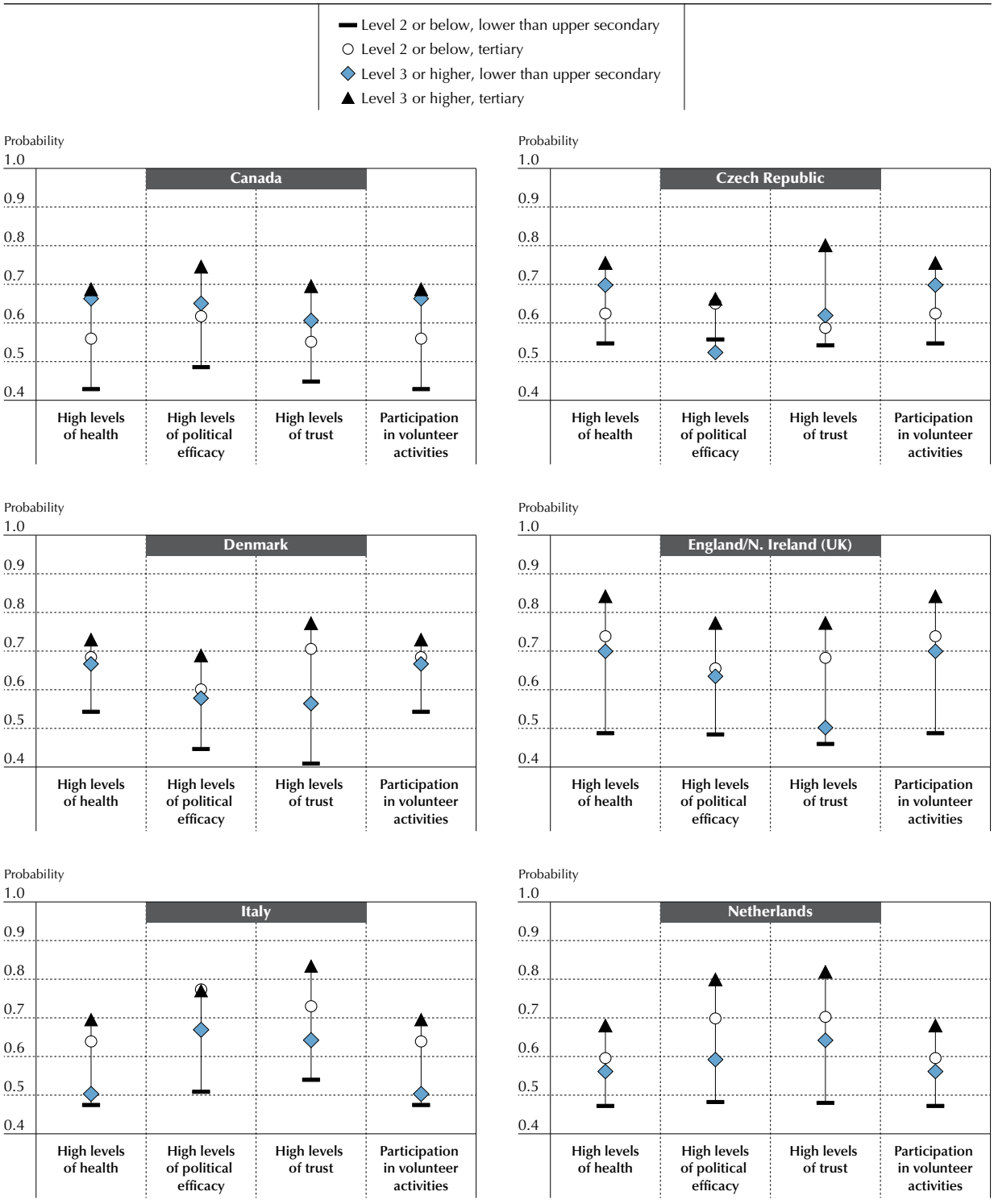
How do education and key information-processing skills interact in their relationship to social outcomes? Results of the survey were analysed comparing adults with different education and skills profiles and the probability that they would realise positive social outcomes (Figure 6.14a [L]). The four groups compared are defined as follows:

- Literacy proficiency at or below Level 2, educational attainment lower than upper secondary.
- Literacy proficiency at or below Level 2, educational attainment at tertiary level.
- Literacy proficiency at or higher than Level 3, educational attainment lower than upper secondary.
- Literacy proficiency at or higher than Level 3, educational attainment at tertiary level.

■ Figure 6.14a (L) ■

Educational attainment, literacy proficiency and positive social outcomes

Adjusted marginal probability showing the likelihood of adults reporting positive social outcomes, by level of education and proficiency in literacy



Notes: Marginal probabilities are adjusted for age, gender and immigrant and language background.
Only a random sample of countries are shown as an example. For full set of countries, consult Figures 6.14b (L) and 6.14c (L) in the web package.
Source: Survey of Adult Skills (PIAAC) (2012), Table A6.14 (L).
StatLink http://dx.doi.org/10.1787/888932902683

The analysis shows that, in nearly all countries, adults with low proficiency and low levels of education show the lowest probability of reporting positive outcomes for all the social outcomes considered. Conversely, adults with higher proficiency and high levels of education have the highest probability of reporting positive social outcomes. Another important finding is that, in some cases, being proficient in literacy at Level 3 or higher seems to be more important than having a high level of education. This depends on the specific outcome and country, however. For example, in Canada, literacy proficiency seems to be more important than education, in that adults with low levels of education but higher proficiency are more likely to report positive social outcomes than adult with high levels of education but lower proficiency. This is particularly true for the health and volunteering outcomes in Canada. The reverse is true in Italy, where educational attainment rather than literacy skills seems to be more important for the outcomes considered. The strength of the sorting effect of education in a given society may play a role in creating such different patterns.

Perhaps the most important finding is that adults with high levels of both proficiency and education are the most likely to report positive outcomes. Education that is not effective in imparting information-processing skills, therefore, is not likely to be as effective in fostering positive outcomes in society.

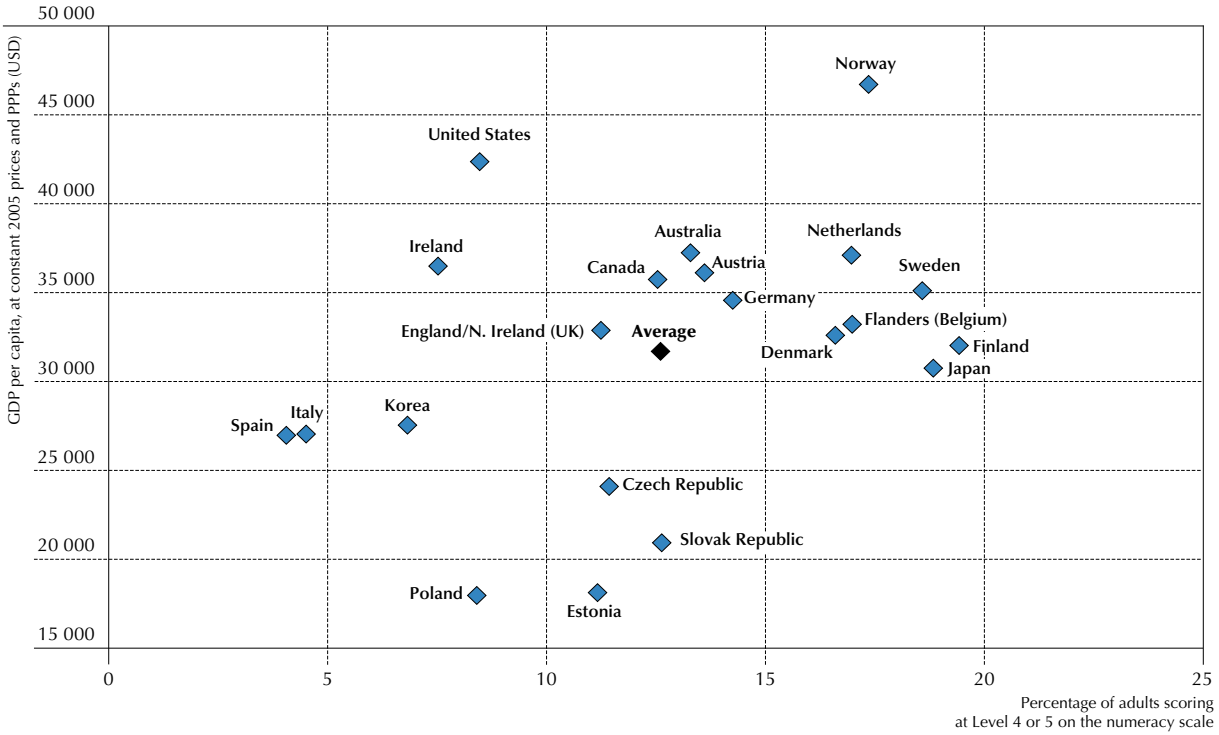
Country-level socio-economic outcomes and key information-processing skills

There is a weak positive relationship between the overall standard of living of the countries participating in the Survey of Adult Skills, as measured by GDP per capita, and the proportion of 16-65 year-olds scoring at Levels 4 or 5 in literacy and numeracy (Figure 6.15 [N]). The relative weakness of the relationship observed is likely to be related to the comparatively small variation in adults' proficiency in these skills across the countries and similarities in the countries' level of economic development, and to the relatively small number of countries that participated in the survey.

■ Figure 6.15 (N) ■

GDP per capita and numeracy

Relationship between GDP per capita and percentage of adults aged 16-65 at Level 4 or 5 in numeracy profiency



Source: OECD.Stat (National Accounts) and Survey of Adult Skills (PIAAC) (2012), Table A6.15 (N).

StatLink http://dx.doi.org/10.1787/888932902702

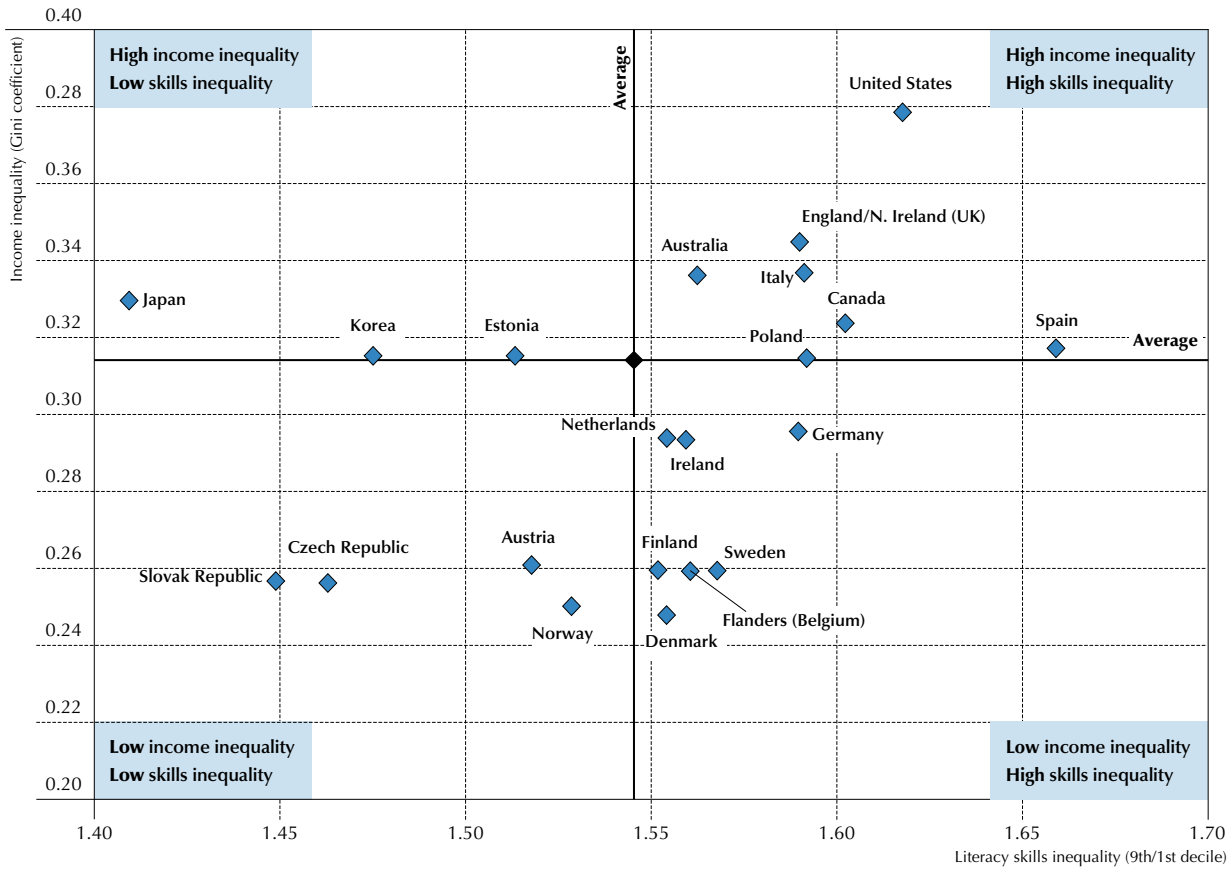
The relationship between income distribution and the distribution of information-processing skills should be further explored. On the one hand, greater income inequality may result in unequal investments in education and key information-processing skills. For example, research has suggested that the distribution of income can affect political, educational and economic institutions, which can have an indirect effect on economic growth (e.g. Benabou, 1996; Alesina and Rodrik, 1992). On the other hand, greater inequality in the distribution of key information-processing skills can also contribute to a more unequal distribution of both economic and social benefits. Other factors that have been linked to economic inequality include education policies, social and labour market policies, and the structure of the labour force (see Osberg, 2000; Devroye and Freeman, 2000; Green et al., 2006). Nevertheless, information-processing skills undoubtedly play a key role in both economic and social well-being, at least to the extent that human capital is an important factor in securing employment and generating income.

The relationship between the distribution of income and literacy skills varies across countries participating in the survey (Figure 6.16 [L]). There is a group of countries (including most of the English-speaking countries in the survey) that displays high levels of inequality in the distribution of both income and literacy skills. At the same time, countries such as Flanders (Belgium), Germany, Ireland and Sweden have low income equality and relatively high inequality in literacy skills. Interestingly, there are few countries in which income equality is relatively high and inequality in the distribution of literacy skills is low. This relationship merits further attention, since developing an inclusive approach to growth and prosperity is crucial for developing and maintaining good standards of living for all.

■ Figure 6.16 (L) ■

Inequality in the distribution of income and literacy skills

Relationship between the Gini coefficient of income and the 9th/1st decile of literacy proficiency



Source: Survey of Adult Skills (PIAAC) (2012), Table A6.16 (L) and OECD.Stat "Country statistical profiles".

StatLink http://dx.doi.org/10.1787/888932902721

SUMMARY

This chapter began with a question: To what extent does proficiency in literacy, numeracy and problem solving in technology-rich environments make a difference to the well-being of individuals and nations? The answer that emerges is clear: proficiency is positively linked to a number of important economic and other outcomes.

Proficiency in literacy, numeracy and problem solving in technology-rich environments is positively and independently associated with the probability of participating in the labour market and being employed, and with higher wages. On average, as an individual's proficiency increases, his chances of being in the labour force and being employed increase, as do his wages. Proficiency in literacy, numeracy and problem solving in technology-rich environments reflects aspects of individuals' human capital that are identified and valued in the labour market separately from other aspects related to education or personal attributes and characteristics.

Proficiency in these information-processing skills is also positively associated with other important aspects of well-being, notably health, beliefs about one's impact on the political process, trust in others, and participation in volunteer or associative activities. There is a clear interaction between proficiency and educational attainment in relation to these outcomes. In nearly all countries, adults with low proficiency and low levels of education show the lowest probability of reporting positively on all the social outcomes considered. Conversely, adults with higher proficiency and high levels of education have the highest probability of reporting positive social outcomes.

Overall, the results suggest that investments in improving adults' proficiency in literacy, numeracy and problem solving in technology-rich environments may have significant benefits. Independent of policies designed to increase participation in education and training, improvements in the teaching of literacy and numeracy in schools and programmes for adults with poor literacy and numeracy skills and limited familiarity with ICTs may result in considerable economic and social returns for individuals and for society a whole.

Notes

1. This is line with findings from the British Birth Cohort Studies (Bynner, 2010), American Longitudinal Study of Adult Learning (Reder, 2010), Canadian Youth in Transition Survey (HRSDC, 2011).

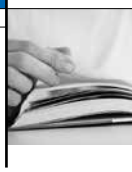
2. Although, literacy, numeracy and problem-solving competencies – the skill domains that are explicitly tested in the PIAAC assessment exercise – are important elements of people's productive capacity, it should be kept in mind that they only imperfectly proxy workers' overall set of skills.

3. In some countries, particularly Japan and Korea, results might be driven by the relatively few cases of unemployed individuals in the survey.

4. The measure of hourly wages includes bonuses.

5. The set of control variables includes years of education, gender, age, marital status and immigrant background. In the wage analysis, the control set is augmented with tenure.

6. The literature on the identification and estimation of the returns on schooling may provide further guidance about the correct interpretation of the results in this section (Heckman et al., 2006).



7. To interpret the magnitude of these effects, consider that literacy proficiency levels normally span 50 points and that in the pooled sample of all survey respondents in all countries one additional year of schooling is associated with an increase of approximately 7 score points on the literacy scale.

8. Once again, this effect is computed comparing individuals who are equally proficient in literacy; otherwise, if the comparison were carried out across proficiency levels, the result would be 56%, confirming the idea that the two effects overlap only partially.

9. More precisely, about two-thirds of the estimated effect on participation is due to proficiency increasing the likelihood of employment.

10. The results for Japan are somewhat surprising and might be due to the relatively few cases of unemployed individuals in the survey (68 cases).

11. The set of control variables used to produce the estimates presented in this section is more limited than those commonly used in the literature. The reason for this is twofold. First, the results are meant to be as comparable as possible with those on participation and employment (Figures 6.5 and 6.6). Second, the estimated effects are meant to capture a broad notion of the association between wages and proficiency or education. For example, since the control set does not include occupation or industry, some of the effects might be due to the fact that more educated or more proficient individuals are employed in higher-paying sectors or occupations. However, such individuals might obtain these jobs precisely because they are more educated or more proficient, so it is unclear whether it would be more interesting to broaden the control set.

12. The wage distribution is much more compressed – i.e. the differences in wages among individuals are limited – in Nordic countries than in the United States.

13. This consists in adding the skills-use indicators (see Chapter 4) to the control set of the linear regressions. For brevity's sake, results are not reported.

14. For brevity's sake, these results are not reported.

Notes regarding Cyprus

Note by Turkey: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

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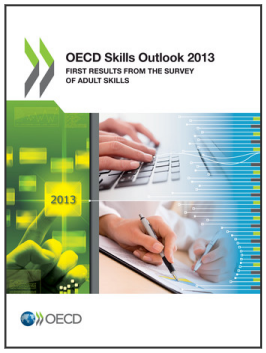

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