Chapter 2. Measuring migrant's actual skills: Evidence from PIAAC

This chapter describes the literacy, numeracy and problem-solving skills of migrants based on results from the two first rounds of the Survey of Adult Skills (PIAAC). Migrants' skill proficiency is compared with natives' proficiency and across countries participating in PIAAC. Particular emphasis is placed on the low and high performers, as well as on migrant groups defined on the basis of their migration experience. The chapter also examines the influence of proficiency in the host-country language, and where a migrant's education was completed, on migrants' skills in literacy, numeracy and problem solving in technology-rich environments.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

The education level of migrants has risen sharply over the past decades, notably due to rising educational attainment across the world (Barro and Lee, 2013[1])and also to selective immigration policies introduced or further strengthened in OECD countries (OECD, 2017[2]). Attracting, selecting and retaining migrants with skills adapted to the host-country labour market have become a policy objective, not only for OECD countries, but also for emerging economies (OECD/EU, 2014[3]). However, despite having higher levels of education than in the past, migrants still have lower educational attainment than natives and face difficulties in the host-country labour market. Attracting migrants with high educational attainment might not be sufficient to ensure that they are successful in the labour market, which is often determined by other factors, notably language proficiency, soft skills such as adaptability, or even the degree to which the knowledge and skills acquired prior to migrating can be transferred (Chiswick B. and Miller P., 2009[4]).

Identifying and measuring these different factors is extremely difficult given the data sources currently available. Information-processing skills cannot be measured with traditional labour-force surveys; yet understanding migrants' proficiency in this domain, and the reasons behind a possible skills gap compared with native-born adults, is necessary for designing successful integration policies. The Survey of Adult Skills (PIAAC) allows for a precise measurement of information-processing skills, including literacy, numeracy and problem solving in technology-rich environments. The survey also makes it possible to compare the skills of migrants to those of natives and, most importantly, to compare differences in migrants' skills across countries whose immigration and integration policies, the composition of their migrant populations and labour market conditions differ.

Making the most of migrants' skills is not only an issue for migrants themselves but also for their origin and destination countries (OECD/EU, 2014[3]). Although migrants can make significant contributions to labour-force growth in destination countries, the role of this growth in counterbalancing the effects of population ageing will depend on the capacity of countries to match labour needs to migrants' skills and to integrate migrants. For migrants themselves, ensuring that their skills are fully used is crucial for their integration in the host country. Labour-market integration is indeed seen as the benchmark of integration in migrants' destination countries, and also allows them to support themselves and their families. For countries of origin, the promotion and development of migrants' skills is a resource for economic development: beyond remittances, migrants can develop networks outside the country of origin to help attract foreign investment. Through strong connections with their emigrants, countries of origin can benefit from the transfer of human capital by filling gaps in expertise and skills that handicap them. Mapping skills as a complement to more readily available information on educational attainment should help to mobilise the human capital migrants represent. The Survey of Adult Skills is thus particularly important for studying migrants, as the average skills corresponding to specific educational qualifications differ greatly across and within destination countries, and also across and within migrants' countries of origin.

This chapter highlights the large heterogeneity in skills proficiency observed among migrants related to their individual characteristics, and provides detailed information on the differences in skills sets between native-born and foreign-born adults by country and by individual characteristics. Cross-country differences reflect the heterogeneity of subgroups of migrants, identified by such characteristics as duration of stay, region of origin and education level. This heterogeneity of skills, reflecting migrants' characteristics and host-countries' policies, can have considerable consequences on

migrants' lives, on their labour-market outcomes and on other outcomes that affect integration into host countries.

The chapter draws a picture of migrants' literacy, numeracy and problem-solving skills. On average, migrants have lower skills proficiency than their native-born peers, although these skills vary more widely across the migrant population than among natives. Beyond educational attainment, the country in which migrants earned their qualifications and whether migrants speak the host-country language are highly correlated with migrants' skills. After providing a profile of the population of natives and migrants surveyed in PIAAC, the chapter examines differences in skills between migrants and natives and relates these differences to the language spoken by migrants and to the country where migrants acquired their highest qualification.

Migrants in the Survey of Adult Skills

The main challenge in comparing natives' and migrants' skills in destination countries is to find appropriate measures of skills. The most straightforward and broadly available measure of skills is educational attainment. However, this indicator remains an imperfect proxy for the set of skills adults actually bring to the labour market, especially migrants, who are often educated in their origin countries, where the quality of the education system might differ markedly from that in destination countries. Education systems also differ across countries in their degree of labour market orientation. Moreover, migrants might have acquired skills on the job, not least in the destination country, and this is not reflected in their formal educational attainment. Since educational attainment does not translate perfectly into the skills available to the labour market, another way to measure skills is by directly assessing them, such as through literacy tests that measure the ability to read or respond to questions about texts and documents encountered in daily life.

The Survey of Adult Skills (PIAAC) is a unique data source that provides a wealth of new information on the proficiency of adults, aged 16 to 65, in literacy, numeracy and problem solving in technology-rich environments across countries.[1] In the survey, respondents' individual literacy level is determined by the overall score they attained after completing the different tasks. To perform at Level 5, respondents typically need to gather information from several dense texts, evaluate different perspectives, and make high-level inferences. At Level 4, respondents are expected to retrieve relevant information in several steps from lengthy texts, on which they base complex inferences. Level 3 requires understanding a lengthy or dense text and applying various levels of inference. At Level 2, two or more pieces of information have to be integrated for low-level inference, while Level 1 requires the retrieval of a single piece of information from a relatively short text that uses basic vocabulary. Scoring below Level 1 means that the respondent can, at best, use the same word provided in the task to locate information in a brief text on a familiar topic [for more detail on the proficiency levels, see Table 2.2 in (OECD, 2013[5])].

In addition to the skills assessment, the Survey of Adult Skills contains many questions that elicit information on individual characteristics, including the highest education level attained and, most importantly, the migration history of foreign-born adults. The survey collects information on adults' country of birth, which forms the basis of the definition of migrants in this report. This is the definition adopted in several relevant surveys and databases, such as labour force surveys or the Database on Immigrants in OECD Countries (DIOC). Second-generation migrants can also be identified, although the specific country of birth of the parents is not known.

The respondents are also asked to report on when they migrated to their current country of residence, a piece of information that allows for measuring the length of stay in the host country and hence distinguish between more- and less-recent migrants, and to identify the age at which they arrived in the destination country. Respondents are also asked to state the year in which they acquired their highest educational qualification, which is used to identify whether the highest qualification was acquired in the host country or prior to migrating.[2] In addition, the survey provides information on migrants' native language, i.e. the language that they had learned during childhood, still speak and understand.

In this report, data on Indonesia, Japan, Korea Poland, the Slovak Republic and Turkey have been excluded from the analyses because in these countries, the share of migrants in the population is very small (less than 3%). Furthermore, not all migrant-related information is available in all countries participating in the survey. Table 2.1 shows the share of migrants with specific characteristics (age at migration, years since migration) and also displays the countries where these data are not available. More specifically, there is no detailed information on country of birth for migrants living in Germany and Australia, nor on the year of entry in Australia. Consequently, in Australia, it is not possible to distinguish between recent migrants (those who had arrived in the country no more than five years before the survey) and those who have been in the country for longer; nor is it possible to group migrants according to the age at which they migrated. The variable on foreign qualifications cannot be constructed for Australia either. In addition, the variable on whether migrants speak the host-country language (as a first language, second language or if this is the language most spoken at home) cannot be constructed for the Russian Federation.

In addition to the above, a number of data-related issues and challenges should be noted in order to ensure the correct interpretation of the results in this report concerning both the foreign-born and native-born populations. First, in Estonia, the assessment was conducted in two languages: Estonian and Russian, to account for the fact that Russian is the mother tongue for almost 30% of the Estonian population. Moreover, in Singapore, the assessment was conducted in English, which implied that about two thirds of native-born respondents took the assessment in a "foreign" language. Furthermore, in Cyprus[3], there is a higher than average share of persons who were unable to take the assessment (17.7%). Unfortunately, it is not possible to quantify the share of migrants among these persons, as the variable on country of birth is largely not informed for this group. Finally, it should be noted that the data for the Russian Federation exclude Moscow.

Migrants are over-represented at both ends of the education distribution

Compared to the native-born population, migrants are more frequently observed at both ends of the education distribution (Table 2.2).[4] Yet, the profile of the two subpopulations, in terms of educational attainment, varies across countries. In most countries, foreign-born adults tend to have lower educational attainment than native-born adults (low educational attainment refers to less than upper secondary education; high educational attainment refers to tertiary education). In European countries, migrants are more likely than natives to have a low level of education, reflecting the large share of low-qualified workers, coupled with a high incidence of low-qualified family migrants. In France, for instance, 45% of migrants have low educational attainment compared with only 25% of native-born adults. In Germany, migrants are almost twice as likely as natives to have a low level of education (30% versus 15%). In Spain, 21% of migrants and 30% of natives have high educational attainment.

By comparison, the selective immigration policies targeting highly skilled migrants are reflected in the large share of highly educated migrants in several other countries. Singapore has the largest share of migrants with a high level of education (63%, i.e. 22 percentage points larger than the corresponding share of native-born adults). In Canada, 58% of migrants are highly educated compared to 42% of natives. These disparities are also observed in Australia, Israel[5] and New Zealand.

Table 2.1. A statistical profile of migrants in the Survey of Adult Skills

	Number of foreign-born in PIAAC sample	Share of foreign-born (%)	Share of recent migrants (%)	Share of immigrants who arrived before age 6 (%)	Share of immigrants who speak the host country language (%)	Share of immigrants with foreign qualification (%)	Share of EU migrants (%)
Australia	1970	27.9	..	..	..	..	..
Austria	677	16.3	9.1	9.8	50.2	69.5	39.3
Canada	4963	25.7	14.3	12.6	54.1	53.4	21.6
Chile	128	3.8	45.2	9.8	99.7	60.3	6.1
Cyprus	487	12.2	18.4	20.4	72.4	55.3	56.6
Czech Republic	210	4.4	9.9	24.7	72.6	47.9	71.6
Denmark	1511	11.8	19.7	13.9	50.0	50.5	35.5
England/N. Ireland (UK)	948	15.0	22.5	13.5	66.4	47.4	32.0
Estonia	919	13.0	1.7	26.0	96.1	40.5	5.5
Finland	231	5.8	17.5	15.9	39.7	50.9	29.3
Flanders (Belgium)	395	7.7	11.7	15.4	61.1	59.7	46.5
France	800	12.8	5.7	17.7	71.7	41.9	24.2
Germany	659	13.9	6.8	13.4	..	50.3	..
Greece	427	9.7	1.7	32.9	88.4	37.9	28.8
Ireland	1193	21.0	18.4	14.5	69.0	63.3	74.2
Israel	1016	22.7	2.3	24.8	66.6	39.4	12.6
Italy	425	9.3	8.8	15.2	56.9	67.5	40.2
Lithuania	177	3.5	1.0	44.6	72.5	20.0	11.9
Netherlands	462	12.9	8.5	17.7	62.0	49.3	15.3
New Zealand	1542	28.8	20.7	12.5	65.6	57.1	28.5
Norway	635	13.5	24.9	9.4	38.9	58.3	46.0
Russia	237	5.7	4.5	26.9	..	38.5	5.6
Singapore	1253	23.2	5.0	10.7	34.4	62.4	1.5
Slovenia	534	12.4	5.7	12.4	54.8	62.0	8.0
Spain	786	13.3	13.3	6.9	74.6	72.5	24.5
Sweden	740	17.5	13.6	12.9	42.0	47.8	32.3
United States	636	14.7	9.5	12.5	41.5	53.7	9.5
Pooled	23961	14.0	11.9	16.6	60.5	53.9	26.2

Note: The sample includes persons aged 16-65. The share of recent migrants corresponds to the share of migrants who arrived in the destination country within the past five years. The share of migrants who speak the host-country language corresponds to migrants for whom the language of the test is the same as either their first language, second language or the language most spoken at home. The share of migrants with foreign qualifications corresponds to migrants who earned their highest qualifications outside the host country.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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Table 2.2. Education level of native-born and foreign-born adults

Percentages

	Native-born		Foreign-born					
			All		Highest qualification obtained in the host country		Highest qualification obtained elsewhere	
	At most upper secondary	Tertiary	At most upper secondary	Tertiary	At most upper secondary	Tertiary	At most upper secondary	Tertiary
Australia	30.0	27.7	21.2	46.8				
Austria	21.5	15.9	29.8	21.7	30.8	19.5	27.5	26.5
Canada	16.0	42.1	11.5	58.2	11.3	62.2	11.7	53.6
Chile	32.5	24.8	24.5	38.3	24.9	33.5	23.9	45.7
Cyprus [1,2]	23.1	29.7	11.0	46.6	13.0	43.7	8.5	50.1
Czech Republic	15.2	17.4	24.4	27.5	13.7	26.4	34.2	28.5
Denmark	25.7	33.6	31.1	38.0	27.6	38.8	34.8	37.3
England/N. Ireland (UK)	24.9	33.9	19.6	48.4	8.3	55.1	29.4	42.6
Estonia	19.6	35.6	8.3	43.5	9.4	43.1	7.6	43.9
Flanders (Belgium)	19.6	35.7	24.9	30.6	23.4	32.4	27.3	27.8
Finland	19.4	36.7	24.1	32.1	27.2	33.2	20.9	31.0
France	25.4	27.1	44.6	24.6	53.1	21.6	38.5	26.8
Germany	15.3	30.3	30.0	25.7	27.3	31.7	32.7	19.6
Greece	32.1	25.1	33.3	22.0	31.1	22.0	34.6	22.0
Ireland	31.5	29.2	17.0	41.2	15.5	42.6	19.6	38.7
Israel	20.2	37.5	9.8	54.1	6.6	60.0	11.9	50.2
Italy	53.8	12.7	53.6	7.5	53.7	5.6	53.3	11.5
Lithuania	12.2	26.1	3.9	26.8	10.5	16.5	2.2	29.4
Netherlands	30.0	30.8	37.6	29.4	37.2	29.5	38.0	29.3
New Zealand	26.1	36.8	14.0	59.8	12.7	66.6	15.8	50.4
Norway	27.7	33.7	25.5	41.0	21.9	42.4	30.5	39.1
Russia	7.3	61.3	2.3	59.1	3.5	59.1	1.5	59.1
Singapore	20.0	40.7	15.2	63.3	16.5	61.9	13.0	65.8
Slovenia	21.9	24.7	36.3	11.8	45.9	6.6	20.6	20.4
Spain	47.4	30.4	47.9	21.1	45.3	21.5	54.6	20.1
Sweden	21.7	27.5	33.6	31.1	34.5	34.2	32.8	28.3
United States	12.6	35.5	27.0	35.6	36.6	24.7	15.8	48.2

Note: The sample includes persons aged 16-65.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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Migrants have lower average levels of assessed skills than native-born persons

On average, migrants are less proficient in literacy, numeracy and problem solving than native-born adults in all countries participating in the Survey of Adult Skills, except for Chile. The average gap between natives and migrants is large, and similar for literacy and numeracy proficiency; it is much smaller for problem solving. The gaps in literacy (23 score points) and numeracy (22 score points) correspond broadly to half a level of skill proficiency or around three years of formal schooling. [6] However, the gap between natives and migrants in problem-solving proficiency is about half of that (12 points). This smaller gap in the problem-solving assessment is partly explained by the fact that not all adults who participated in PIAAC sat this assessment (only 68% of migrants sat the

problem-solving assessment versus 81% of natives). Those who did, and particularly migrants who did, showed higher literacy and numeracy proficiency than the average PIAAC respondent. Moreover, the problem-solving assessment could only be taken on a computer, and thus required a minimum level of skills. Migrants (28%) are 8 percentage points less likely than natives (36%) to reach Level 2 or 3 in problem solving in technology-rich environments.

Performance in the three skills assessments (literacy, numeracy and problem solving) is influenced by language proficiency (see Box 2.1 for a detailed discussion about what functional literacy is expected to capture in the PIAAC assessment). In particular, the content of numeracy and problem-solving questions in the Survey of Adult Skills requires a good level of language fluency (OECD, 2013[5]). As shown in Figure 2.1, 40% of all foreign-born adults sat the assessments in a language that they had not learned as children and that they do not speak at home. But there are countries in which the majority of migrants took the test in a language they have known since childhood or speak at home. In Chile, for example, all migrants taking the tests are native Spanish speakers. The share of those who took the test in the language that they had learned in childhood or speak at home is also high (over 70%) in France, Spain and Greece, reflecting the profile of migrants in these countries by country of origin or historical ties, for example, in the case of Greece.

At the other extreme, more than 55% of all migrants in Finland, Norway, Singapore, Sweden and the United States took the test in a language they neither learned in childhood nor speak most frequently at home. Highly educated migrants seem to be more likely to take the test in a foreign language compared to low-educated migrants, with a few exceptions in some countries (Figure 2.1). Since speaking the host-country language matters for acquiring and developing skills, low-educated migrants might face cumulative disadvantages because they are less likely to speak the host-country language.

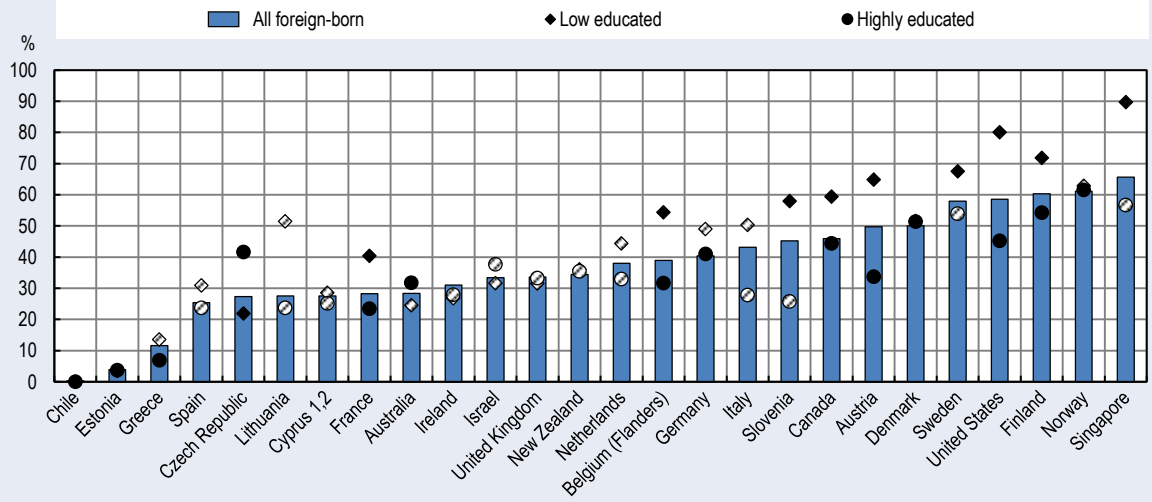
Box 2.1. Literacy skills and language

Literacy skills comprise a large set of skills (phonics, decoding, fluency, vocabulary knowledge and comprehension) and practices (using all of these skills to accomplish tasks with text). In the 1960s, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) started to emphasise the teaching of literacy as a functional skill; the outcome of that instruction was referred to as functional literacy. This approach stresses the acquisition of pertinent verbal, cognitive and computational skills to use in culturally specific contexts.

Literacy skills, as measured by PIAAC, capture this kind of functional literacy – that is, the ability to use literacy skills to accomplish practical tasks. Literacy skills therefore reflect both language and literacy competencies. This is an important consideration when examining the literacy proficiency of migrants, since in many countries they are less likely to take the assessment in their native language than are their native peers. Although the development of literacy skills in a foreign language is said to be partly a function of literacy skills in the native language (Cummins, 1991[6]), the remaining differences suggest that proficiency in one's native language can play a role in determining migrants' skills in literacy.

The PIAAC survey helps identify whether the language of the test is the same as the respondent's native language, which already provides useful information; but another important issue is the linguistic distance between the respondent's native language and the host-country language. As shown by Isphording (Isphording, 2014[7]), this distance can complicate proficiency in the host-country language (see Chapter 3 for a detailed analysis on linguistic distance).

Figure 2.1. Share of migrants taking the test in a foreign language, by education level



Note: The sample includes persons aged 16-65. Low educational attainment refers to less than upper secondary education; high educational attainment refers to tertiary education. Migrants who take the test in a foreign language are those who had neither learned this language as children nor speak it at home. Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland. The shaded circles and diamonds indicate coefficients that are not statistically significant at the 10% level.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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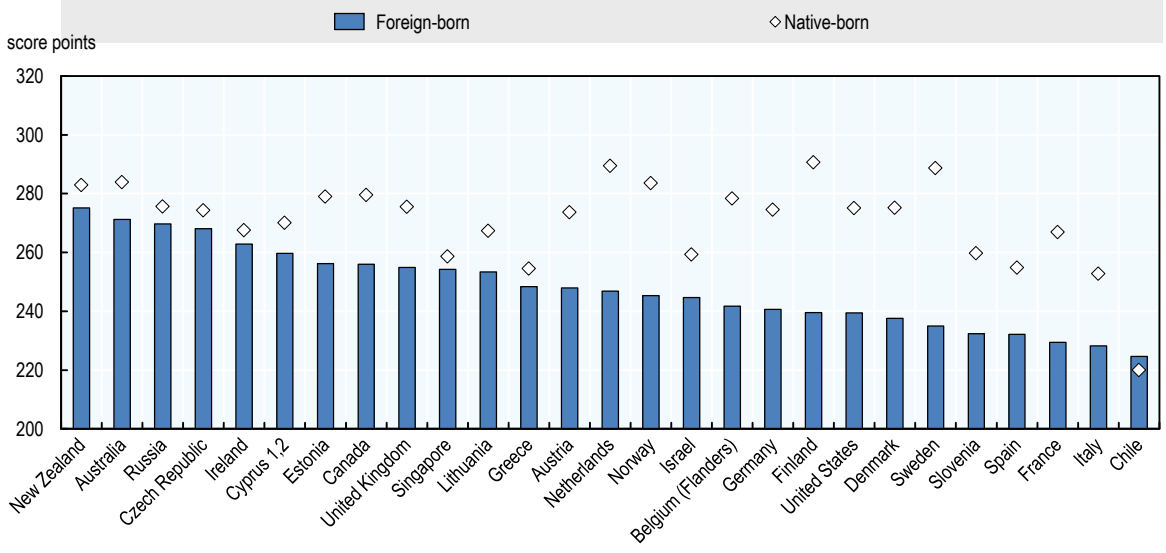
Migrants' skills vary greatly across countries

The skill gaps between migrants and natives vary greatly across countries (Figure 2.2, Figure 2.3, and Figure 2.4). In the Nordic countries, the gaps are particularly wide in all three skills assessed in PIAAC, possibly because only a small fraction of the world's population speaks the languages of these countries or due to the particularly high levels of skills observed in Nordic countries, but likely also because of the relatively large shares of humanitarian migrants in these countries. In Sweden, the gap in literacy proficiency between migrants and natives is 54 points, which corresponds to around one proficiency level or seven years of formal schooling; in Finland the gap is 51 points and in Norway it is 38 points. It is worth noting that this wide gap in literacy proficiency among these countries is also associated to high shares of migrants taking the PIAAC-survey in a foreign language (Figure 2.2) and a large part of non-European migrants in Sweden and in Norway do not speak the host-country language (Annex Figure 2.A.6). In some countries, namely Australia, the Czech Republic, Ireland, New Zealand, the Russian Federation and Singapore the gaps between natives and migrants are fairly narrow. The literacy gap between migrants and natives is less than eight points, or about one year of formal schooling in those countries.

By contrast, in a small number of countries, including Ireland and Chile, migrants have higher proficiency in both numeracy and problem solving than natives, and in Chile that gap is particularly wide. Migrants in Singapore are more proficient in numeracy than natives, while in Lithuania, they are more proficient than natives in problem solving.

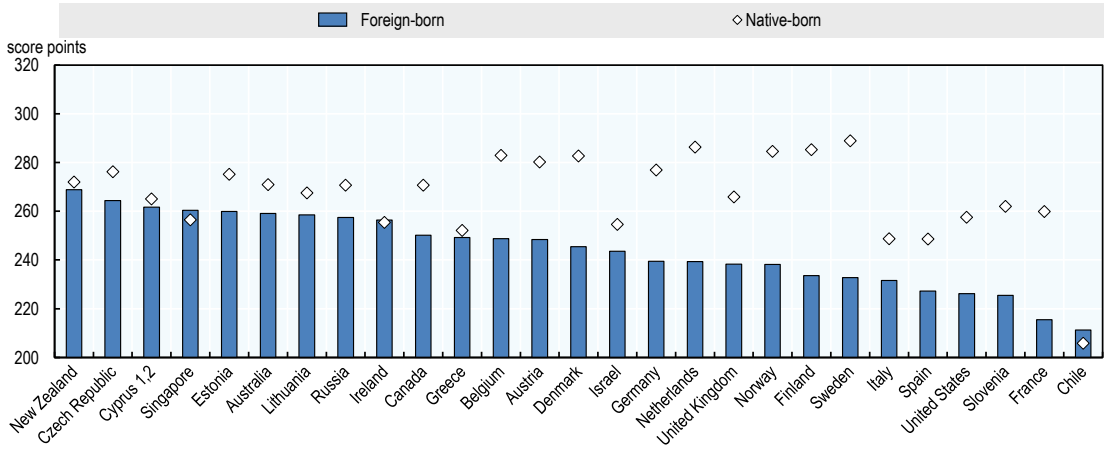
Figure 2.2. Literacy proficiency, by place of birth



Note: The sample includes persons aged 16-65. Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

StatLink http://dx.doi.org/10.1787/888933846859

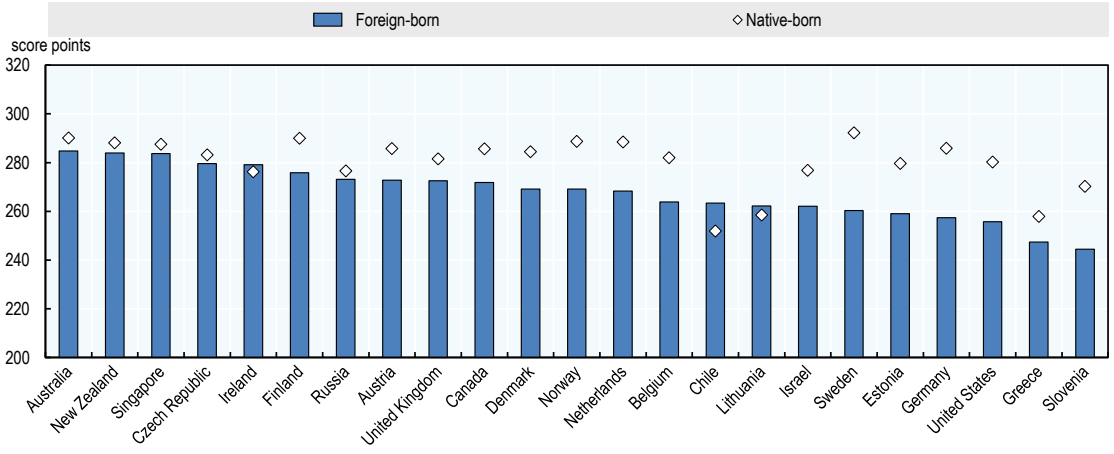
Figure 2.3. Numeracy proficiency, by place of birth



Note: The sample includes persons aged 16-65. Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

StatLink http://dx.doi.org/10.1787/888933846878

Figure 2.4. Proficiency in problem solving, by place of birth



Note: The sample includes persons aged 16-65. Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland. As the assessment of problem solving in technology-rich environments was optional, only countries that participated in this optional component are shown in the graph.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

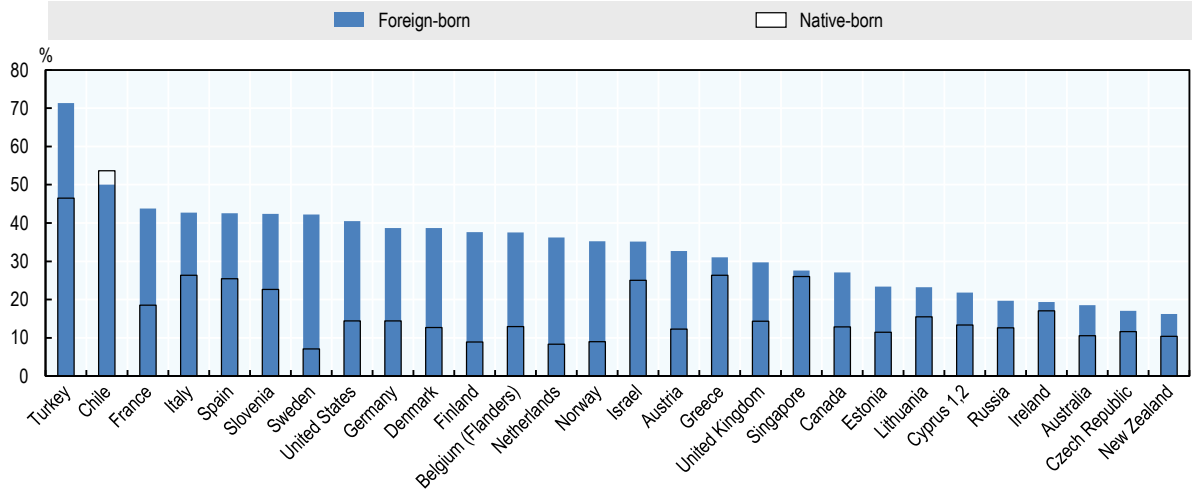
StatLink http://dx.doi.org/10.1787/888933846897

Low literacy proficiency is wide-spread among migrants

Migrants' lower average levels of literacy and numeracy proficiency compared with those of natives mask differences in the distribution of proficiency between the two groups. Indeed, there are marked differences between migrants and natives at the two ends of the distribution, i.e. the share of adults with very low and high levels of literacy proficiency. More than three out of four migrants attain at most Level 2 in literacy while this share is just 50% among natives. By contrast, the share of adults with a medium level of literacy skills (Level 2) is similar for the two groups. At proficiency Level 2, adults can integrate two or more pieces of information based on criteria, compare and contrast or reason about information, and make low-level inferences.

Large differences also exist between migrants and natives and across countries in the share of persons with very low literacy levels. In all countries except Chile, migrants are over-represented among persons who reach at most a level 1 in literacy proficiency (Figure 2.5). At this level, persons can read brief texts on familiar topics and locate specific information in short texts, but are not able to extract information from longer and more complex texts. The situation differs sharply between countries. The share of migrants with a very low level of literacy proficiency is highest in Turkey (70%). In a number of European countries (France, Italy, Spain, Slovenia and Sweden) as well as in the United States, 40% or more of the foreign-born have a very low literacy proficiency level. In contrast, less than 20% of migrants in Australia, the Czech Republic, New Zealand Ireland and the Russian Federation, and have a very low literacy proficiency level. Migrants are six times as likely as natives to have a very low literacy proficiency level in Sweden, four times in Finland and Norway, close to three times in Austria, Denmark, Belgium (Flanders), Germany and the United States, and are twice as likely in Canada, Estonia, France, Slovenia and the United Kingdom (England and Northern Ireland).

Figure 2.5. Adults with very low literacy proficiency (Level 1 or below), by place of birth



Note: The sample includes persons aged 16-65. Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland. Level 1 or below corresponds to a score below 226 points.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

StatLink http://dx.doi.org/10.1787/888933846916

Yet low-skilled migrants are doing better in some components of literacy than in others

The previous section demonstrated that immigrants fall behind their native-born peers in terms of all skills assessed by the Adult Survey of Skills. This section explores the information available in the reading components assessment in PIAAC. This module, designed for individuals with low levels of reading proficiency, is particularly relevant for immigrants, who do not speak the language of their host country or do not speak it well. Most countries participating in PIAAC implemented the reading components assessment, with the exception of Finland, France, Japan and the Russian Federation.

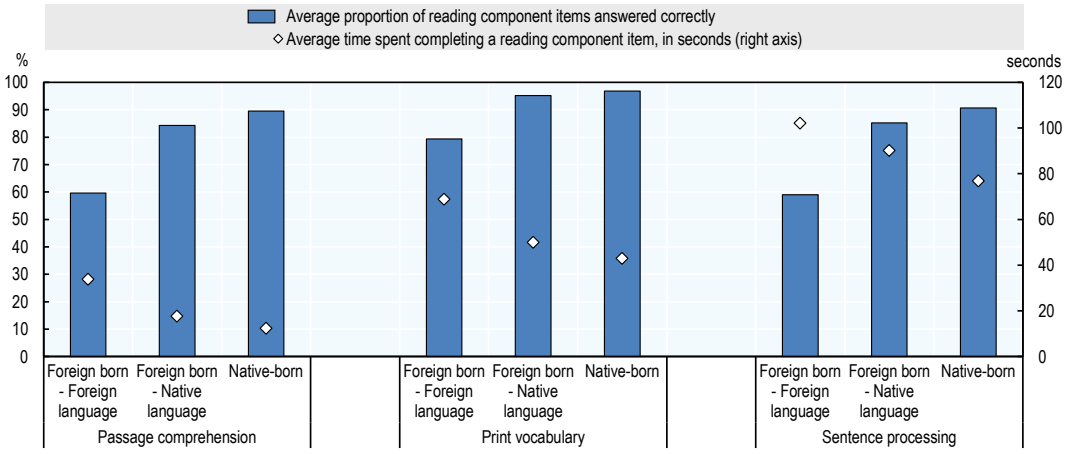
Only persons with very low levels of skills take the reading components assessment, and migrants are over-represented in this group. More than 29% of migrants took the reading assessment, in comparison with only 19% of natives. The differences in literacy proficiency between these two groups and persons who do not take the reading components assessment are substantial, on average about 28 score points both for migrants and natives. Likewise, the level of education is significantly lower among those who took the reading components assessment than for those who did not. Migrants who took this reading assessment are three times less likely to be highly educated than those who did not take it. Half of the migrants who took the reading components test have a low level of education (compared with 18% in the migrant population who did not take this assessment). However, this difference is even greater for natives.

Reading components include three essential reading features: "print vocabulary, sentence processing and passage comprehension" (OECD, 2013[5]). The print vocabulary exercises require individuals to name the object presented on the picture from a selection of four different words. The sentence processing exercises require individuals to determine whether the meaning of a sentence is logical vis-à-vis reality. Finally, the passage comprehension exercises involve reading a prose text. The task is to choose the word out of two which makes the most sense in the context of the excerpt. In addition, the time taken by individuals to complete the test is recorded for all exercises.

Among these different components of literacy, immigrants do better in print vocabulary than in passage comprehension or sentence processing (Figure 2.6). Moreover, there is a large gap among immigrants, depending on whether they are native speakers of the test language.[7] On average, immigrants who are not native speakers of the test language completed 79% of the print vocabulary assessment, while immigrants who are native speakers of the host-country language completed more than 95%, which is only slightly lower than natives' performance. The performance of immigrants in the other two components is somewhat worse than in print vocabulary. On average, immigrants who are not native-speakers of the test language correctly answered less than 60% of the items in both passage comprehension and sentence processing. By comparison, immigrants who are native speakers of the test language have higher results, as they correctly completed 85% of both assessments. For natives, the respective scores are around 90% for both components. The relative performance of immigrants compared to native-born persons is somewhat worse in sentence processing. In all items, migrants take a longer time than natives to complete the assessment but differences between natives and migrants who are native speakers of the test language are rather small.

Figure 2.6. Results of reading component items, by place of birth and language

In percentage (left axis) and in seconds (right axis)



Note: The sample includes persons aged 16-65. This pooled analysis does not include Finland, France, Japan and Russia, as the reading components assessment was not implemented in these countries.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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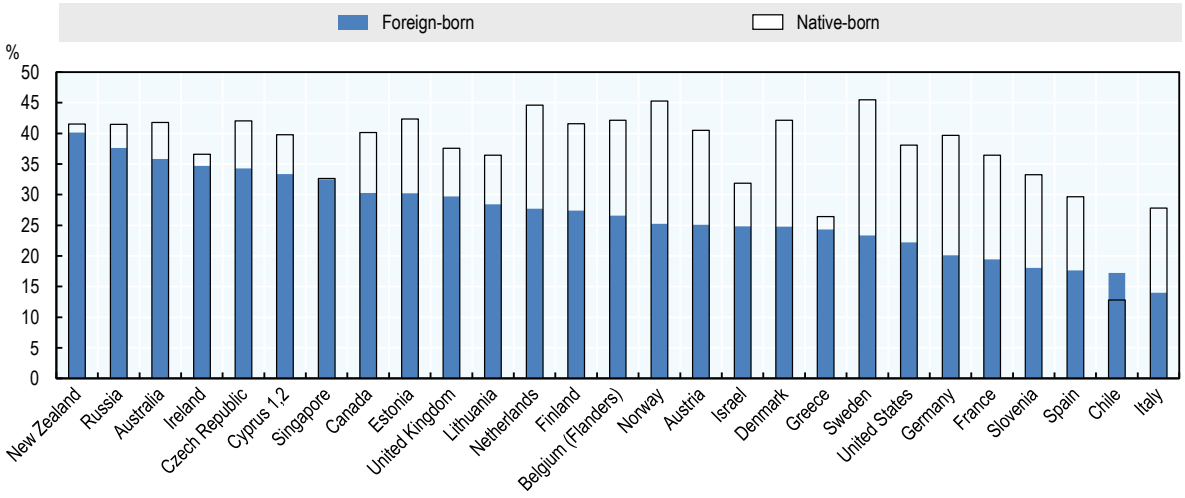
Migrants are under-represented at high levels of literacy proficiency

At higher levels of literacy performance (level 3 and above), migrants are under-represented in all countries except Chile; the same holds for numeracy proficiency in the majority of countries. Although more than half of all natives reach at least level 3 in literary proficiency, the corresponding share among migrants is 33%. More specifically, one quarter of all migrants reach level 3 in literacy proficiency, whereas this share is 40% among natives (Figure 2.7). The difference is particularly pronounced in Sweden (22 percentage points), Germany and Norway (20 percentage points). Sharp differences between migrants and natives also exist in the shares of persons reaching the very top literacy levels (Figure 2.8). Only 7% of migrants reach levels 4 and 5 in literacy proficiency, versus 13% for natives (8% and 15% respectively in numeracy proficiency, see Annex Figure 2.A.2). Differences between migrants and natives in the shares of persons reaching levels 4 or 5 in literacy proficiency are largest in Finland, the Netherlands and Sweden (a difference of 12 to 14 percentage points). By contrast, in some countries (Australia, Chile, Cyprus[3], Greece, Ireland, Lithuania, Singapore and Turkey), these differences between migrants and natives are small or close to zero. In the Russian Federation and the Czech Republic migrants are slightly over-represented in top levels of literacy proficiency.

Figure 2.7. Shares of persons reaching level 3 in literacy proficiency, by place of birth



Note: The sample includes persons aged 16-65. Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland. Level 3 corresponds to a score between 276 to less than 326.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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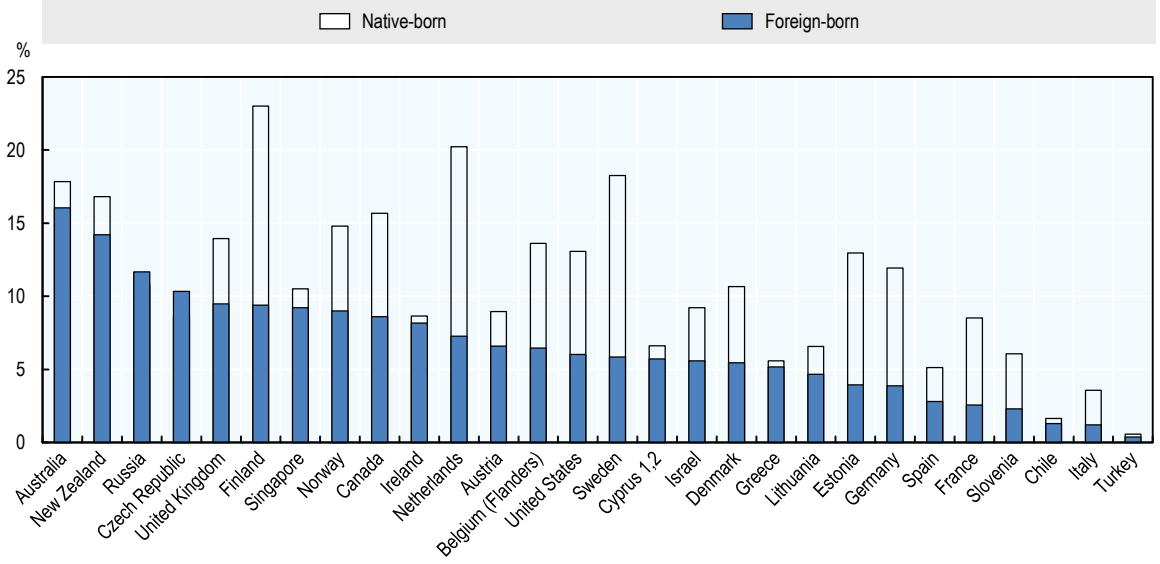
Figure 2.8. Shares of persons reaching levels 4 and 5 in literacy proficiency, by place of birth



Note: The sample includes persons aged 16-65. Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland. Level 4 and 5 correspond to a score equal or higher than 326 points.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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While education is correlated with literacy and numeracy performance, being highly educated does not ensure a high performance in literacy and numeracy. Indeed, 16% of migrants with a university degree have a very low literacy proficiency level (at most 1), while this share is just 3% for native-born persons with the same education level (Annex Figure 2.A.3 for literacy proficiency, Annex Figure 2.A.4 for numeracy proficiency). Moreover, close to half of the immigrants with university education have at most a level 2 in literacy proficiency. In the same vein, individuals with a low education level do not systematically depict low levels of performance in literacy and numeracy. While 28% of low-educated natives have very low literacy proficiency (at most level 1), more than half of low-educated migrants and 31% of medium-educated migrants also only reach a low level of literacy proficiency. In sum, migrants are over-represented among low performers and under-represented among high performers in literacy proficiency, even within the groups with the same education level.

The variance in literacy proficiency among migrants is high

Migrants tend to have more variable performance in literacy and numeracy compared to natives in the vast majority of countries, not only when considering the population overall but also when comparing migrants and natives of similar educational qualifications (Table 2.3). For example, Table 2.3 indicates that in literacy the variance ratio is above 1.3 in Austria, Denmark, Finland, Flanders, Korea, the Netherlands and Norway, Sweden, suggesting that the literacy performance of migrants is considerably more variable than the performance of natives. Only in Chile, Estonia and the Slovak Republic the variance ratio is below 1 and in all three countries the value is very close to unity. Crucially, Table 2.3 indicates that the greater variability in literacy scores of migrants is not due to greater dispersion in their educational qualifications: the variance ratio is stable when comparing the variance ratio in literacy of migrants and natives who obtained at least upper secondary qualifications and similarly for those who did not obtain upper secondary qualifications.

Among individuals who obtained at least upper secondary qualifications, literacy proficiency is considerably more variable among migrants than among natives (variance ratio>1.3) in Denmark, Finland, Flanders, Korea, the Netherlands, Norway and Sweden. By contrast, migrants with upper secondary qualifications have a less variable literacy performance than natives or similar levels of variability in the Estonia, Greece, Israel[5], Northern Ireland, New Zealand and Slovak Republic. Among those with below upper secondary qualifications literacy performance is considerably more variable among migrants than among natives (variance ratio>1.3) in Australia, Denmark, Finland, Flanders, Norway and Sweden. . By contrast, migrants have a less variable literacy performance than natives or similar levels of variability in Estonia, Germany, Greece, Israel[5], Korea, the Slovak Republic, Slovenia and the United States.

Table 2.3. Variance ratio in literacy between migrants and natives, by educational attainment

	Total population			Adults who obtained at least upper secondary education			Adults who obtained less than upper secondary education		
	Natives	Migrants	Variance ratio	Natives	Migrants	Variance ratio	Natives	Migrants	Variance ratio
Australia	46.4	58.6	1.26	41.7	51.6	1.24	46.7	65.9	1.41
Austria	40.3	54.3	1.35	38.7	49.6	1.28	40.0	50.1	1.25
Canada	46.9	55.7	1.19	43.1	51.5	1.20	47.9	58.1	1.21
Chile	52.7	50.6	0.96	46.7	43.4	0.93	47.7	47.3	0.99
Czech Republic	40.5	46.3	1.14	39.0	43.2	1.11	44.2	42.4	0.96
Denmark	43.5	62.4	1.44	40.0	58.7	1.47	44.9	59.5	1.32
England (UK)	46.7	57.4	1.23	42.6	51.4	1.21	43.6	53.0	1.21
Estonia	43.7	42.7	0.98	41.7	42.4	1.01	45.6	43.1	0.94
Finland	47.2	73.1	1.55	44.7	68.4	1.53	48.5	72.6	1.50
Flanders (Belgium)	44.6	60.9	1.37	41.2	54.1	1.31	44.5	57.7	1.30
France	45.8	57.0	1.24	41.5	48.2	1.16	47.3	54.1	1.14
Germany	45.4	49.0	1.08	43.6	46.8	1.07	49.3	43.8	0.89
Greece	46.2	50.1	1.08	44.5	47.1	1.06	45.0	51.1	1.14
Ireland	46.1	50.8	1.10	39.0	48.0	1.23	46.0	54.8	1.19
Israel[5]	54.1	56.1	1.04	49.6	52.7	1.06	60.1	62.1	1.03
Italy	43.5	49.7	1.14	38.5	44.6	1.16	41.5	48.7	1.17
Netherlands	44.2	58.3	1.32	38.8	50.4	1.30	42.7	54.4	1.27
New Zealand	45.5	51.3	1.13	40.9	46.2	1.13	44.0	56.9	1.29
Northern Ireland (UK)	45.5	47.7	1.05	40.6	45.4	1.12	39.8	45.6	1.15
Norway	42.0	61.8	1.47	39.5	58.9	1.49	40.9	55.7	1.36
Slovak Republic	40.1	38.0	0.95	35.6	31.0	0.87	45.5	38.7	0.85
Slovenia	46.7	51.6	1.11	43.2	49.5	1.14	49.9	50.0	1.00
Spain	47.6	53.4	1.12	38.9	47.3	1.21	44.7	51.6	1.15
Sweden	41.6	63.8	1.53	39.9	58.7	1.47	37.4	55.8	1.49
United States	45.8	56.5	1.23	43.8	52.4	1.20	44.9	46.2	1.03
Lithuania	41.0	47.8	1.16	40.8	48.2	1.18	41.7	28.7	0.69
Singapore	58.4	61.4	1.05	46.3	52.5	1.13	54.0	58.2	1.08
Australia	46.4	58.6	1.26	41.7	51.6	1.24	46.7	65.9	1.41

Note: The variance ratio represents the ratio of the standard deviation in literacy scores between migrants and natives. A variance ratio of 1 indicates that migrants and natives have similar variability in literacy performance. A variance ratio larger than 1 indicates that migrants' literacy performance is more variable and a variance ratio smaller than 1 indicates that migrants' literacy performance is less variable than natives.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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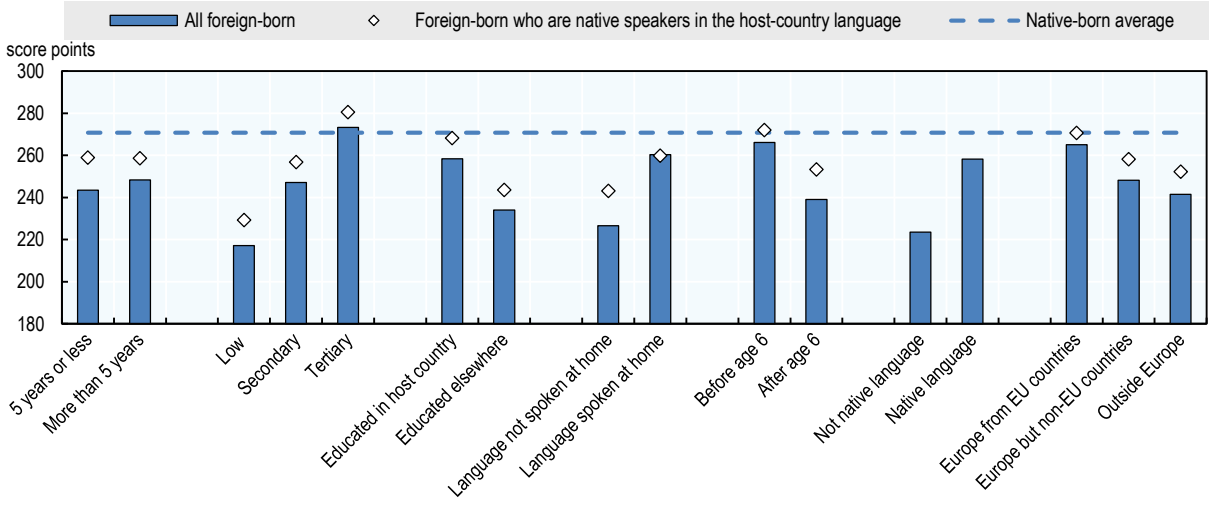
Differences in migration experience partly explain the heterogeneity within the migrant population

Migrants' skills proficiency varies across countries, but also between different groups of migrants defined on the basis of their personal characteristics, such as level of education, their age at arrival, and duration of stay in the host country (Figure 2.9). Education plays a key role. Low-educated migrants are significantly less proficient in literacy, on average, than those with a higher level of education (Figure 2.9). While this positive correlation between education level and literacy proficiency holds for both native and migrant adults,

the raw gaps in literacy proficiency by education level are wider among migrants. The country in which a person completed his or her higher education also matters. There is a substantial and statistically significant difference – 24 score points – between migrants who had acquired their highest qualification in the host country and those who had earned it elsewhere. The place where the highest qualification is acquired is important for skills, since the quality of education systems varies significantly across countries and regions of the world (Friedman et al., 2016[8]). Accounting for differences in the shares of migrants who speak the host-country language does not reduce this difference, which suggests that the disparities are not entirely based on language skills, but also reflects differences in the quality of education received.

There are also large differences in literacy proficiency related to migrants' region of birth. Migrants from EU countries have higher literacy proficiency than other migrants, followed by those from European countries outside the European Union and by migrants from outside Europe. These wide differences related to country of origin partly reflect European migrants' higher level of education, particularly among migrants from EU countries [Annex Figure 2.A.5 and (OECD/EU, 2014[3])]. In most countries, the share of low-educated adults is significantly larger among migrants from non-European countries. In Denmark, for instance, 39% of migrants from non-European countries are low educated whereas only 30% of European migrants from non-EU countries and 20% of migrants from EU countries are low educated. Migrants from European countries are also more likely to speak the host-country language than those from countries outside Europe (Annex Figure 2.A.6).

Figure 2.9. Literacy proficiency of migrants, by personal characteristics



Note: The sample includes persons aged 16-65. "5 years or less" and "More than 5 years" corresponds to the length of migrant's stay in their host country. "Educated in host country" or "…elsewhere" corresponds to the place where migrants acquired their highest qualification. "Language spoken/not spoken at home" refers to whether the respondent speaks the host-country language at home. "Before/After age 6" corresponds to migrants' age when they had arrived in the host country. "Native language" refers to whether the respondent had learned the host-country language as a child and still speaks and understands it, or speaks it at home. The last three bars on the right (Europe from EU countries, Europe from non-EU countries and Outside Europe) refer to migrants' region of origin.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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Foreign-born adults who arrived in the host country before the age of six have higher proficiency in literacy than those who had arrived at a later age. In a number of countries, the gap in literacy proficiency between natives and migrants almost shrinks to zero for migrants who arrived before the age of six (Annex Figure 2.A.7 and Box 2.2 describe the special case of the native-born children of foreign-born persons).

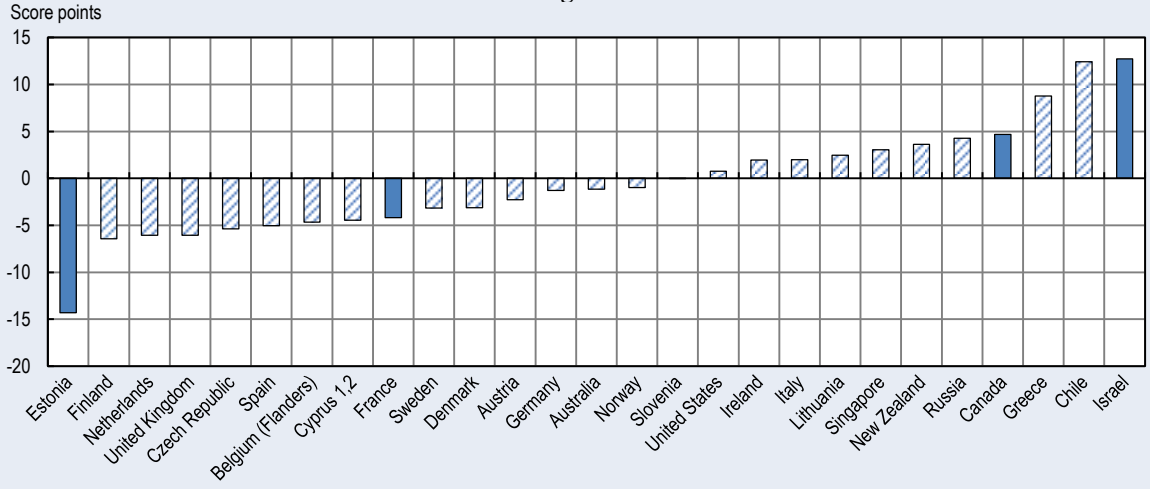
At the country level, the duration of stay matters for migrants' literacy proficiency, whether adjusting for migrants' age at arrival or not (Annex Figure 2.A.8). Recent migrants (migrants who have been in the host country for less than five years) have significantly lower literacy proficiency than natives, while the difference in proficiency between natives and migrants who have been in the host country for five years or more (settled migrants) is often smaller. By contrast, in Germany and the United States, duration of stay does not seem to matter much in explaining proficiency differences among migrants. The results from these two countries with large populations might be behind the small difference shown in Figure 2.9above. In general, while the duration of stay and the age at arrival are closely related, the duration of stay appears to be more important for literacy proficiency than migrants' age at arrival.

The age at arrival and the duration of stay are significantly related to skills, but they are also closely related to the propensity of migrants to speak the host-country language and to have acquired their highest qualification in the country of origin or destination. The older migrants are when they migrate, the less likely they are to speak the host-country language and the more likely they are to have a foreign qualification. In contrast, migrants arriving in the host country before the age of 6 are more likely to be close to native speakers of the host-country language since they have learned it at school. As will be seen in the next section (Figure 2.13), once language and foreign qualifications are accounted for (in addition to demographics and educational attainment), the impact of age at arrival in the host country and the duration of stay on skills are rarely significant. In other words, the effect of these latter two variables is transmitted through their correlation with the likelihood of speaking the host-country language and with the place where the highest qualification was acquired.

Box 2.2. Native-born with migration background

Another potential group of interest is the native-born people with a migration background (i.e. native-born persons with at least one foreign-born parent). Native-born persons with migration background indeed face difficulties at school compared to the other native-born persons (OECD/EU, 2015[9]). Yet, once adult, native-born persons with at least one foreign-born parent have on average very similar literacy and numeracy proficiency as natives without migration background, all other things being equal (Figure 2.10). A significant gap exists in only few countries. Specifically, in Estonia and France native-born with migration background have both lower literacy and numeracy proficiency than the other native-born (respectively -14 and -11 score points for Estonia, and -4 and -7 score points for France). In the United Kingdom and Belgium as well there is a substantial numeracy gap between native-born with and without migration background. By contrast, in few countries native-born with at least one foreign-born parent exhibit greater skill proficiency: this is the case in Israel[5] (+13 and +16 in literacy and numeracy score points compared to native-born without migration background), Canada (+5 literacy score points) and Singapore (+6 numeracy score points).

Figure 2.10. Adjusted differences in literacy proficiency among native-born, by migration background



Note: The sample includes persons aged 16-65. The results in this figure are the adjusted differences between the group considered and the reference group of female migrant. The regressions control for age, age squared, gender, education and a dummy for whether the individual's mother tongue is the same of the language of the test. The shaded bars indicate coefficients which are not statistically significant (at 10% level). Belgium only covers Flanders and the United Kingdom only covers England and Northern Ireland.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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Importantly, further calculations by the authors suggest that a migration background does not alter the relationship between parental education and children's skills, after accounting for other factors. In other words, once controlling for the level of education of the parents, native-born with at least one migrant parent are as skill proficient as native-born without migration background. Moreover, there appear to be no difference in the likelihood of speaking the language of the test by migration background.

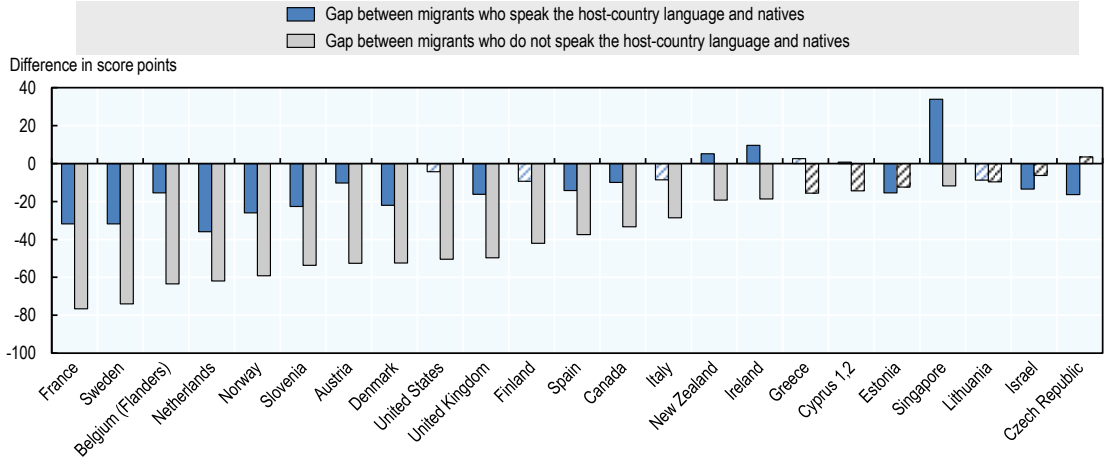
Factors explaining differences between migrants and natives in numeracy proficiency

Existing analyses of the PIAAC survey results from Denmark, Estonia, Finland, Norway and Sweden show that numeracy skills matter more for labour-market success in these countries than literacy skills (Fridberg et al., 2015[10]). For that reason, this section focuses mainly on numeracy skills, even though the results are similar to those reported for literacy proficiency.

Language is crucial for migrants' numeracy proficiency

Figure 2.11 below shows the gap in numeracy proficiency between migrants and natives, distinguishing between migrants who speak the host-country language and those who do not. In all countries except the Czech Republic, Estonia, Israel[5] and Lithuania, the gap between natives and migrants is smaller for migrants who speak the host-country language. For example, in Austria, the gap between migrants and natives is one-fifth as large for migrants who speak the host-country language as that between natives and migrants who do not speak the host-country language. This is similarly observed in Belgium (Flanders), Canada, Finland, France, the United Kingdom (England and Northern Ireland) and the United States. In Chile, Greece, Ireland, New Zealand and Singapore, migrants who speak the host-country language are more proficient in numeracy than natives, although in most of these countries the differences between the two groups are small.

Figure 2.11. Gaps in numeracy proficiency between natives and migrants, by host-country language proficiency



Note: The sample includes persons aged 16-65. Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland. The shaded bars indicate coefficients which are not statistically significant (at 10% level).
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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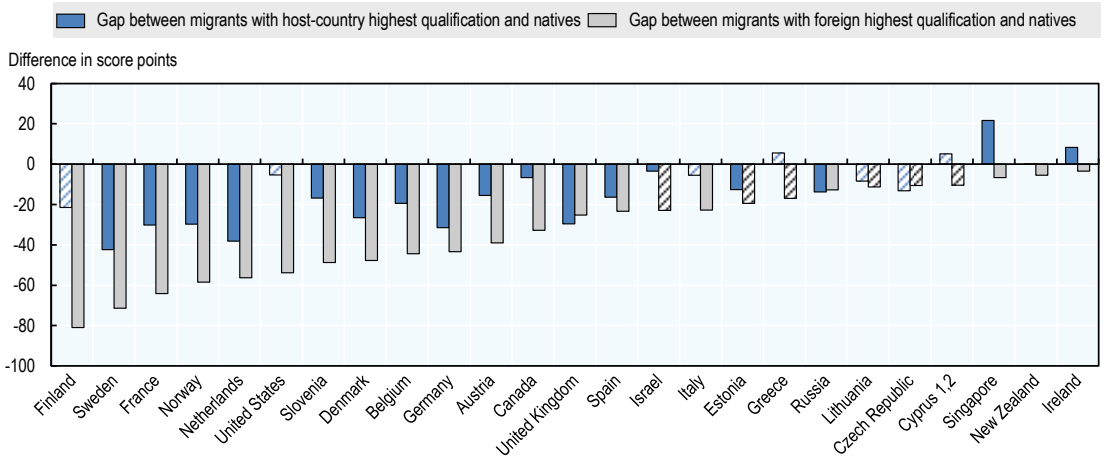
Numeracy proficiency also depends on where education was obtained

In most countries, the gap in numeracy proficiency between natives and migrants is wider for migrants who acquired their highest qualification abroad (Figure 2.12). In Austria, the gap in numeracy proficiency between migrants and natives is three times as large for migrants educated abroad as for those who earned their highest qualification in Austria. This result is even more marked in Finland, Israel[5] and Italy. By contrast, in the United Kingdom (England and Northern Ireland), migrants educated abroad have higher numeracy proficiency than migrants educated in the host country.

Figure 2.12. Gap in numeracy proficiency between natives and migrants, by where highest qualification was earned



Note: The sample includes persons aged 16-65. Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland. The shaded bars indicate coefficients which are not statistically significant (at 10% level).
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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Overall, both host-country language proficiency and qualifications earned abroad seem to be key in explaining migrants' skills proficiency. However, the two are closely related, so it is particularly important for policy purposes to disentangle the role of each of them or try to understand how they are linked. A foreign qualification can affect numeracy and other skills through two main channels. First, migrants with foreign qualifications may be less likely to speak the language of the host-country and hence the language in which the PIAAC assessment is conducted. Second, the quality of foreign qualifications may be different from that of domestic qualifications; and the effect of that difference on numeracy proficiency is in addition to any impact on proficiency a foreign qualification might have because it implies a weaker knowledge of the host-country language. Therefore, it is essential to distinguish between the role of language and that of the quality of education in determining skills proficiency as assessed by PIAAC, as these two different factors would have different policy implications.

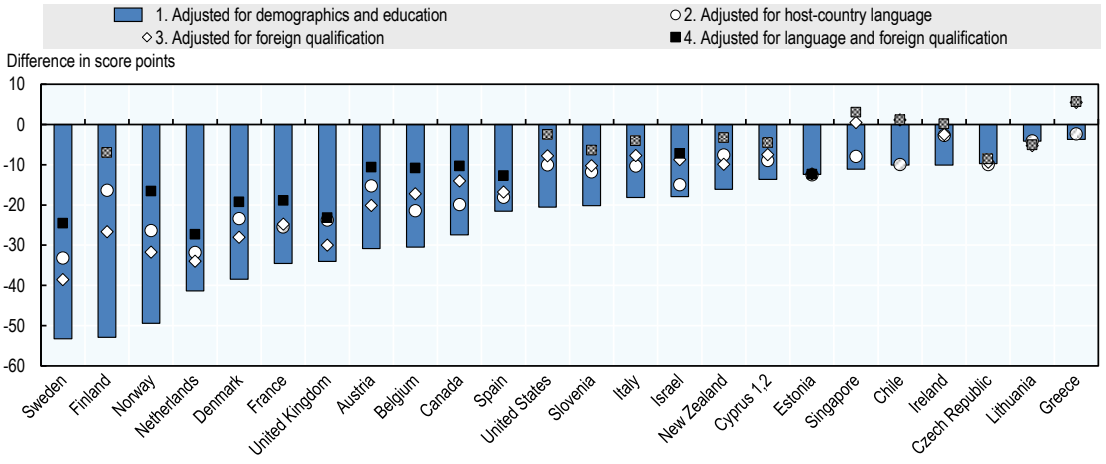
A skill gap remains, even for migrants who speak the host-country language and obtained their qualifications in the host country

A skills assessment designed to test skills in a specific setting measures individuals' functional proficiency and their ability to thrive in the country in which they reside. For migrants who were enrolled in a completely different education system and whose skills are not easily transferable, this assessment might not provide a full picture of their deep specialist skills. If this is an issue with the PIAAC skills assessment, then one should expect to find a skills gap between migrants and natives even after accounting for language proficiency and the country in which the highest qualification was acquired.

Indeed, the results presented in Figure 2.13 show that accounting for demographic characteristics, educational attainment, language and foreign qualification significantly reduces – but does not eliminate – the gap in numeracy proficiency between migrants and natives. Similar trends are observable for literacy and problem-solving proficiency (respectively Annex Figure 2.A.9 and Annex Figure 2.A.10). In half of the countries, the gap between migrants and natives becomes zero or statistically insignificant when language and foreign qualification are taken into account in addition to respondents' demographic characteristics and educational attainment. Nonetheless, a statistically significant gap in numeracy proficiency remains in 12 countries and is relatively large in Denmark, France, the Netherlands, Sweden and the United Kingdom (England and Northern Ireland).

In most countries, part of the remaining negative effect can be related to cultural differences, as migrants from different countries might interpret the assessment questions differently. Although PIAAC is designed[8] to minimise any cultural bias in the way the assessment is conducted and perceived by participants (OECD, 2011[11]), it is likely that some cultural bias remains, especially for migrants from culturally different backgrounds. This should be kept in mind when interpreting the results on migrants' skills obtained through PIAAC.

Figure 2.13. Adjusted differences between migrants and natives in numeracy proficiency



Note: The sample includes persons aged 16-65. The results in this figure are coefficients obtained from separate regressions with controls for level of education, age, gender and parents' background. Parents' educational background is defined as the highest education level attained between the two parents. Regression 1 contains only these controls, while regression 2 also includes a dummy variable that takes the value one if the migrant speaks the language of the test, and zero otherwise. Regression 3 contains the basic controls and a dummy variable that takes the value one if the respondent has received his/her qualification abroad. Regression 4 contains both the dummy for host-country language and that for foreign qualification. The shaded circles, diamonds and squares indicate coefficients that are not statistically significant (at 10% level). Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland.
Source: Survey of Adult Skills (PIAAC) 2012 and 2015.

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There are major differences by education level and the role of language seems more important for low educated migrants

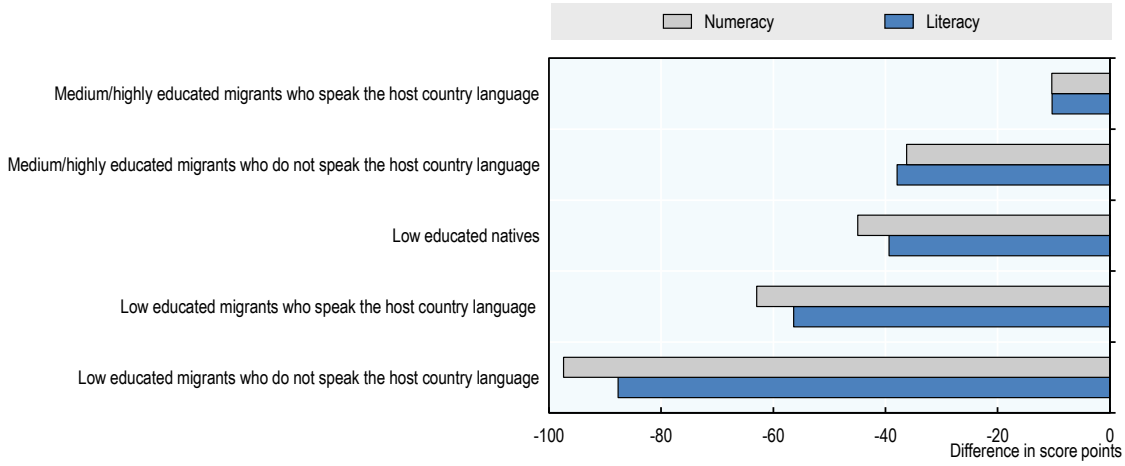
It has been demonstrated that speaking the host-country language is a key factor correlated with migrants' proficiency in literacy and numeracy as measured by PIAAC. But is this effect the same for all migrants, irrespective of their education level? Does it matter more or less for persons with higher or lower educational attainment? The analysis in the Annex (see Annex Figure 2.A.11) shows that, in most countries, the gap in numeracy proficiency between migrants who speak the host-country language and those who do not is often larger among low-educated migrants than among highly educated migrants.

Educational attainment and language skills might be related through a number of channels. It could be more difficult for highly educated migrants than low-educated migrants to have their real skills reflected in skills proficiency as assessed by PIAAC if they do not speak the host-country language because their skills might be more refined, and harder to capture in such kinds of surveys. By contrast, it could also be that highly educated migrants are more likely than low-educated migrants to speak the host-country language, not only because they may have learned the language as a child, but also because they are more likely to have learned the language during their studies or later on in their lives. If this is true, then the variable used to capture knowledge of the host-country language among migrants (which is based on the languages learned as children and still spoken/understood or the language spoken at home), would be less useful in the case of highly educated migrants. Under the latter hypothesis, the skills gap between natives and migrants should be larger for low-educated persons.

Figure 2.14 shows the gap in numeracy and literacy proficiency between different groups of migrants, defined on the basis of their educational attainment and whether they speak the host-country language (for migrants), relative to natives with a medium or high level of education. The "penalty" faced by low-educated migrants who do not speak the host-country language is close to 100 score points in numeracy and more than 80 points in literacy. These are large gaps, considering that the average score-point difference in numeracy proficiency between migrants and natives is one-fourth of that (22 points). In addition, migrants with a medium or high level of education who do not speak the host-country language are similarly penalised in numeracy and literacy proficiency, relative to comparable natives (Figure 2.14). This result is observed in Austria, Belgium (Flanders), France, the Netherlands and Slovenia (Annex Figure 2.A.12). The relative penalty migrants with a medium or high level of education who do not speak the host-country language is even larger in the Nordic countries (Finland, Norway and Sweden).

Figure 2.14. Differences between groups of migrants and natives in literacy and numeracy proficiency, by language and education level

Adjusted differences between migrants and highly and medium-educated natives



Note: The sample includes persons aged 16-65. The results in this figure are the adjusted differences between the group considered and the reference group, which includes highly and medium-educated natives. The regressions control for age, gender and parents' educational attainment (the highest education level attained between the two parents). The bars correspond to the sum of coefficients of level of education, language (whether the language of the test is the respondent's first, second or language spoken at home or not) and interactive variables between the level of education and language. The respective regression coefficients are significant at the 10% confidence threshold at least. Low educated are persons with less than upper secondary education, while medium/highly educated persons are those with at least upper education.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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The analysis in the Annex (Annex Table 2.A.2 for literacy and Annex Table 2.A.3 for numeracy) focuses on migrants and shows that in the countries for which this analysis is possible, the overall effect of language varies by migrants' education level and is stronger among low-educated migrants. At the country level, this is observed in Canada, New Zealand and the United Kingdom (England and Northern Ireland), where the difference in the effect of language for the different education levels is statistically significant. Another possible explanation for this finding is that more highly educated migrants who speak the host-country language might also be more likely than low-educated migrants to master the cultural values and norms of their host country.

Conclusions and policy implications

This chapter has highlighted the large skill heterogeneity among migrants, which goes beyond differences in education level, which are nevertheless substantial. When all countries are pooled together, migrants who arrived in the host country before the age of 6, those who speak the host-country language and those who completed their education in the host-country have on average higher literacy and numeracy proficiency than other groups of migrants. In addition, skills are higher for migrants who have been in the country for longer and for those coming from member states of the European Union. Differences between migrant groups are sometimes larger than those between migrants and natives.

These findings demonstrate the need for countries to develop a tailor-made approach in terms of skills, training and integration programmes with the objective to address the very different needs of migrants. Migrants with very low education level and poor literacy and numeracy skills need intensive support and upskilling as early as possible in order to be able to access the labour market and improve their labour market outcomes in the medium and longer term. Integration support for the very poorly educated must be seen as a long-term investment, which, in addition, can have high returns also for their children. At the other end of the skills spectrum, highly educated migrants require faster-paced, more challenging integration programmes which equip them rapidly with the advanced language and job-specific skills required for high-skilled jobs, while ensuring their qualifications and skills are fully recognised.

Furthermore, this chapter has demonstrated how the importance of language skills is reflected in the assessment of migrants' skills proficiency in PIAAC. The results of the analysis suggest that language skills are particularly important for low-educated migrants. Accounting for whether migrants with a low education level speak the host country language, explains more of the gap between them and low-educated natives than between highly-educated migrants and natives. Hence, language courses are even more necessary for the group of low-educated migrants. Moreover, providing these courses as early as possible after arrival in the destination country matters a lot.

Another important determining factor of skills is the country where migrants acquired their highest qualification. This is correlated with the knowledge of the host country language and is also negatively and significantly correlated with migrants' level of literacy and numeracy proficiency as well as labour market outcomes (see chapter 5 of this report for such an analysis). In addition to formal recognition of foreign qualifications as an absolutely necessary tool for migrants to improve their integration in the labour market, additional training especially for migrants who do not have qualifications in the host country can contribute substantially to improving their level of skills.

Notes

[1] See "About The Survey of Adult Skills", at the beginning of this report, for more details.

[2] The variable identifying foreign qualifications is constructed with the year of arrival in the host country and the year of acquisition for the highest diploma. The information on year of arrival is not available for Australia. Some countries face data quality issues for the direct measure of qualifications obtained overseas. In particular, some respondents with highest qualifications obtained abroad did not choose the foreign qualification option in the questions regarding the level of qualification, but tried to report the country-equivalent level. As a result, the variable collected directly in PIAAC on foreign qualifications is only relevant for those persons with foreign qualifications who reported having a foreign qualification and can thus be misleading. This is the reason why this chapter uses a derived measure of whether a migrant has a foreign qualification, by determining if the year he/she acquired his/her highest qualification is prior to the year he/she first migrated to the host country. Although this measure provides a more accurate vision of having foreign qualifications, it is still unlikely to include all the migrants who obtained their qualification overseas after their first arrival in the host country. Moreover, some of the respondents can have had a spell in the host country, obtained a qualification in their country of birth, and then returned to the host country. While these cases might generate some bias in findings, the shares of individuals concerned are overall relatively small.

[3] Note on Cyprus:

1. *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 recognizes the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

2. *Note by all the European Union Member States of the OECD and the European Union:* The Republic of Cyprus is recognized 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.

[4] Foreign-born persons who are able to participate in the assessments of the Adult Survey differ in some respects from the average immigrant surveyed by the Labour Force Surveys. Annex Table 2.A.1 shows the educational attainment for the population aged 15 to 64, as recorded by the Labour Force surveys of a number of European countries vis a vis that as recorded in the Adult Survey. Immigrants in the Adult Survey tend to be overrepresented in both ends of the educational distribution, and in particular at the lower end. In Estonia for instance, immigrants are 4 percentage points more likely to be low educated (and 3 percentage points for natives) but also 2 percentage points more likely to be highly educated in PIAAC (and 3 percentage points for natives). In a number of countries, compared to foreign-born persons in the Labour Force Surveys, immigrants in the Adult Survey are only more represented among low educated, and less among high educated. In Italy, low educated immigrants are 6 percentage points more represented in the Adult Survey than in the Labour Force Surveys. Similar trends are also noticeable in Austria, Ireland, France or Slovenia for example. This sampling particularity may have consequences on immigrants' level of skills assessed in the Adult Survey. Yet, inferring further conclusions on the skill gap with natives appears ambitious, as the differences in the educational distribution of natives in the Adult Survey and in the Labour Force Surveys are relatively similar to immigrants'.

[5] The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

[6] To interpret differences in scores between groups or countries, a reference point can help illustrate what score-point differences of different magnitudes mean. A possible reference point is provided by the differences in the proficiency scores of individuals similar in all respects other than their level of completed education. The average score-point difference associated with an additional year of completed education or training (i.e. between a person who has completed n years of education and one who has completed n+1 years) is approximately 7 score points, on average, on both the literacy and numeracy scales. One standard deviation on the literacy scale (47.7 score points) and the numeracy scale (52.6 score points) is thus the approximate equivalent of the average difference in score points associated with a difference of seven years of education (OECD, 2013a).

[7] In this chapter, native speakers are considered those who take the test in their first or second language, or those for whom the language of the test is the same as their language most spoken at home. The test is administered in the national official language (and can be administered in two languages when the country has two different official languages, as in Canada for instance). For the purpose of this study, the definition adopted through this chapter focuses on the language of the test but will be referred to as the host country language.

[8] PIAAC also has field trials to check to what extent assessment items work in the same way across and within countries and languages.

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Annex 2.A. Tables and Figures

Annex Table 2.A.1. Education levels in Labour Force Surveys and in the Survey of Adult Skills (PIAAC)

Percentage; selected European countries

		Natives		Migrants	
		Low	High	Low	High
Austria	PIAAC	21.5	15.9	29.8	21.7
	LFS	17.3	28.0	28.2	28.7
Belgium	PIAAC	19.6	35.7	24.9	30.6
	LFS	26.5	33.4	38.9	29.3
Czech Republic	PIAAC	15.2	17.4	24.4	27.5
	LFS	12.8	19.1	14.8	27.8
Germany	PIAAC	15.3	30.3	30.0	25.7
	LFS	14.7	25.9	34.9	21.6
Denmark	PIAAC	25.7	33.6	31.1	38.0
	LFS	27.5	29.5	25.9	38.6
Spain	PIAAC	47.4	30.4	47.9	21.1
	LFS	42.3	34.4	43.0	26.2
Estonia	PIAAC	19.6	35.6	8.3	43.5
	LFS	16.5	32.1	4.2	41.5
Finland	PIAAC	19.4	36.7	24.1	32.1
	LFS	18.4	35.8	38.3	28.9
France	PIAAC	25.4	27.1	44.6	24.6
	LFS	24.0	30.7	41.5	27.5
Greece	PIAAC	32.1	25.1	33.3	22.0
	LFS	30.4	26.4	43.5	14.9
Ireland	PIAAC	31.5	29.2	17.0	41.2
	LFS	27.6	34.8	14.3	47.7
Italy	PIAAC	53.8	12.7	53.6	7.5
	LFS	41.1	16.0	47.2	12.1
Netherlands	PIAAC	30.0	30.8	37.6	29.4
	LFS	26.8	31.9	33.2	25.9
Norway	PIAAC	27.7	33.7	25.5	41.0
	LFS	24.0	35.6	28.5	37.3
Slovenia	PIAAC	21.9	24.7	36.3	11.8
	LFS	16.1	28.2	29.6	12.4
Sweden	PIAAC	21.7	27.5	33.6	31.1
	LFS	18.3	33.5	34.5	36.0
United Kingdom	PIAAC	24.9	33.9	19.6	48.4
	LFS	23.0	34.6	18.9	46.8

Note: These percentages concern individuals aged 16 to 65 in PIAAC and 15 to 65 in the Labour Force Surveys. In PIAAC, Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland.
Source: Survey of Adult Skills (PIAAC) (2012, 2015), Labour Force Surveys (2015).

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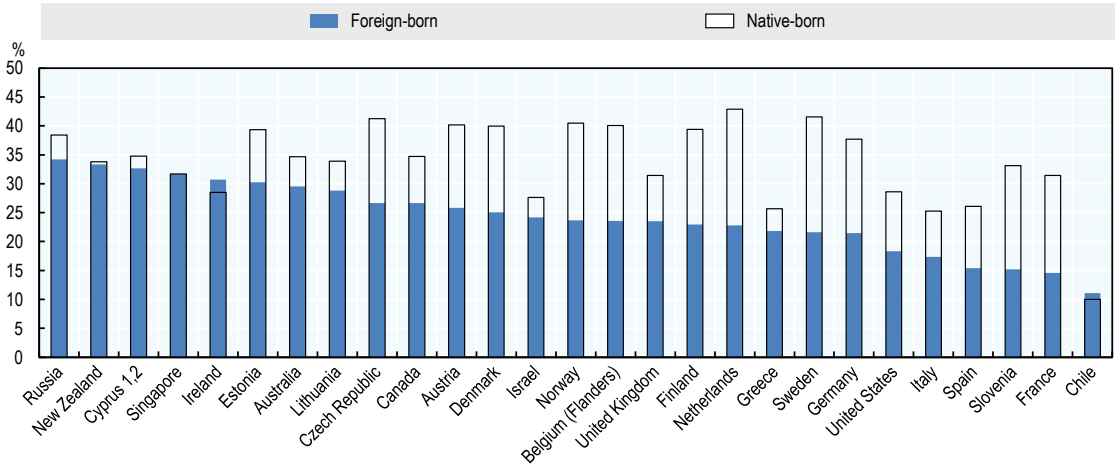
Annex Figure 2.A.1. Adults with high numeracy proficiency levels, by place of birth: shares of persons reaching level 3 in numeracy proficiency



Note: The sample includes persons aged 16-65.Level 3 in numeracy proficiency means that adults can successfully complete tasks that require an understanding of mathematical information that may be less explicit, embedded in contexts that are not always familiar, and represented in more complex ways. They can perform tasks requiring several steps and that may involve a choice of problem-solving strategies and relevant processes. They have a good sense of number and space; can recognise and work with mathematical relationships, patterns, and proportions expressed in verbal or numerical form; and can interpret and perform basic analyses of data and statistics in texts, tables and graphs (OECD, 2013a).
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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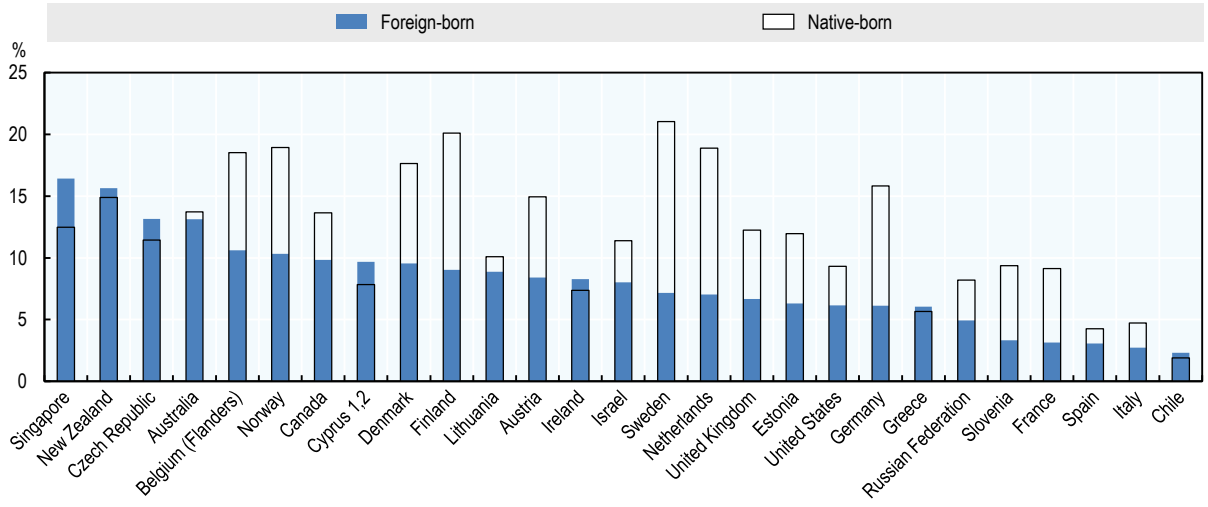
Annex Figure 2.A.2. Adults with high numeracy proficiency levels, by place of birth: shares of persons reaching levels 4 and 5 in literacy proficiency



Note: The sample includes persons aged 16-65. Persons who reach level 4 in numeracy proficiency are able to understand a broad range of mathematical information that may be complex, abstract or embedded in unfamiliar contexts. The tasks in level 4 involve undertaking multiple steps and choosing relevant problem solving strategies and processes. Tasks tend to require analysis and more complex reasoning about quantities and data; statistics and chance; spatial relationships; and change, proportions and formulas. Tasks at this level may also require understanding arguments or communicating well-reasoned explanations for answers or choices. Persons who achieve level 5 in numeracy proficiency are able to understand complex representations and abstract and formal mathematical and statistical ideas, possibly embedded in complex texts. Respondents may have to integrate multiple types of mathematical information where considerable translation or interpretation is required; draw inferences; develop or work with mathematical arguments or models; and justify, evaluate and critically reflect upon solutions or choices (OECD, 2013a).
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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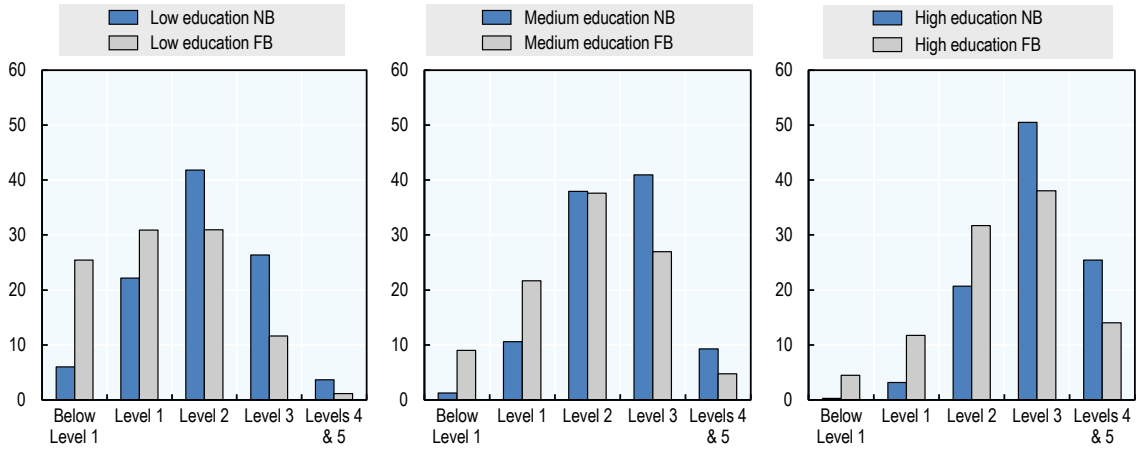
Annex Figure 2.A.3. Levels of literacy proficiency, by place of birth and education level



Note: The sample includes persons aged 16-65. Low educational attainment refers to less than upper secondary education; high educational attainment refers to tertiary education.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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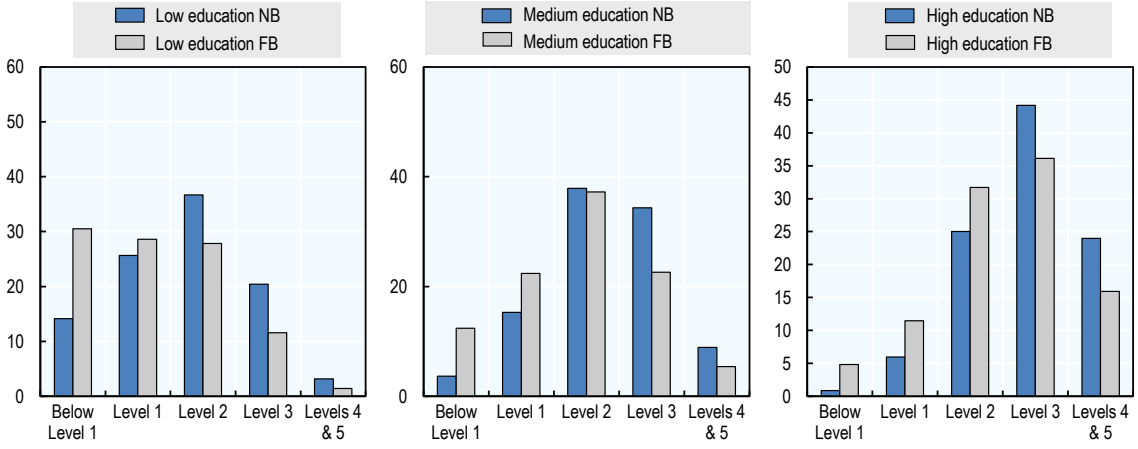
Annex Figure 2.A.4. Levels of numeracy proficiency, by place of birth and education level



Note: The sample includes persons aged 16-65. Low educational attainment refers to less than upper secondary education; high educational attainment refers to tertiary education.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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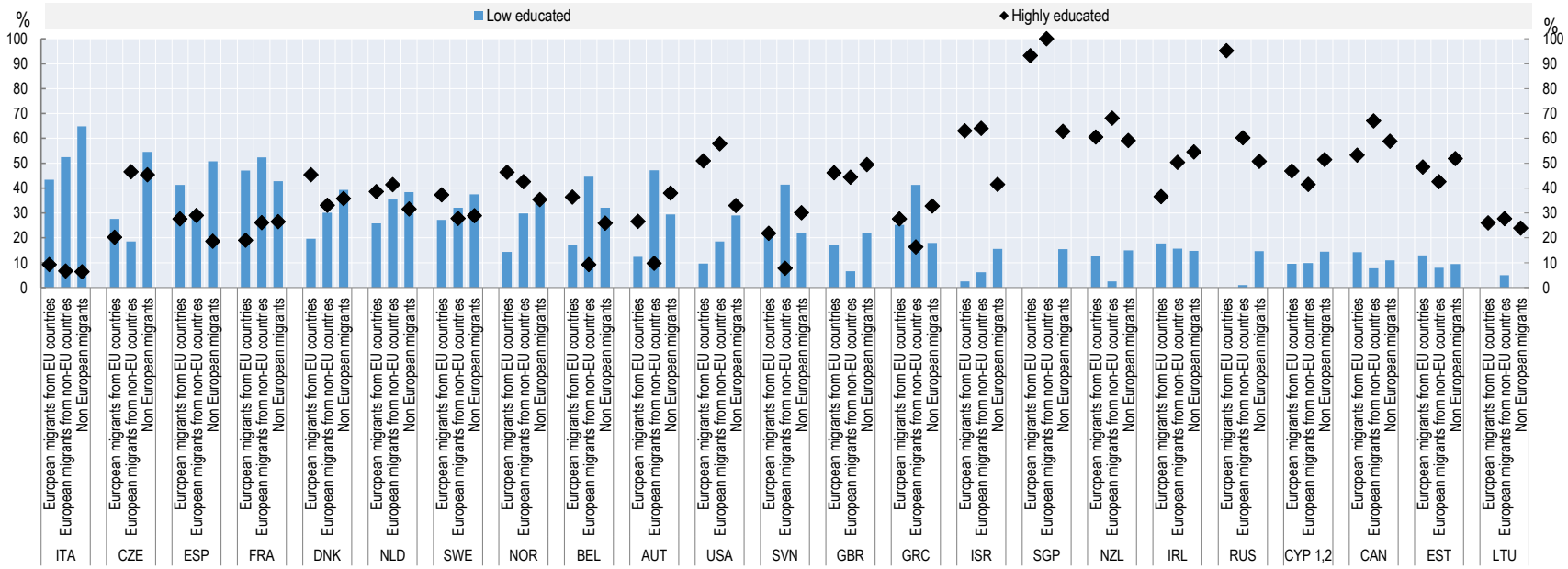
Annex Figure 2.A.5. Share of low- and highly educated migrants, by region of origin

Percentages



Note: The sample includes persons aged 16-65. Low educational attainment refers to less than upper secondary education; high educational attainment refers to tertiary education. The first bar refers to European migrants from EU countries, the second refers to European migrants from non-EU countries, and the third refers to non-European migrants. Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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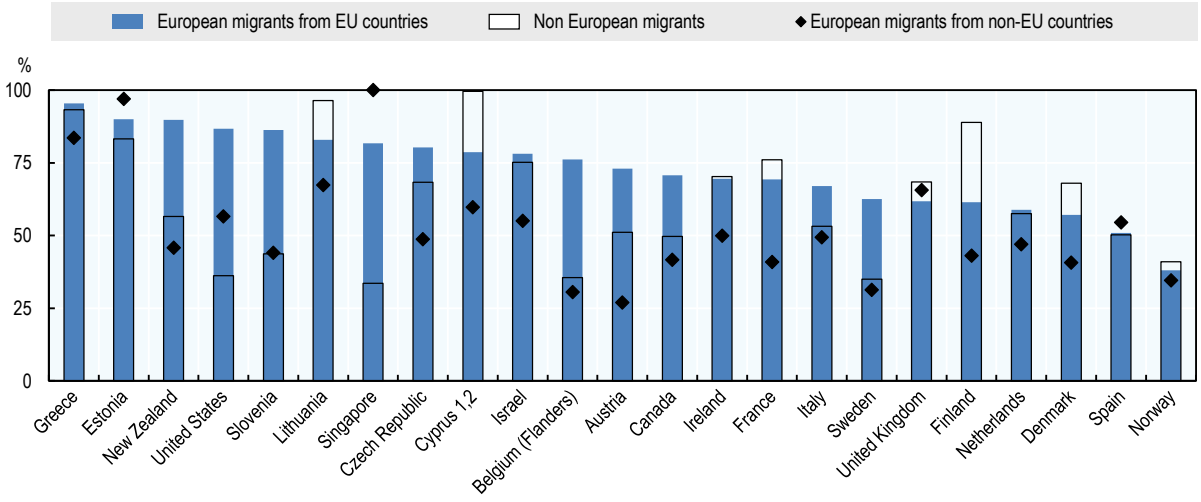
Annex Figure 2.A.6. Share of migrants who speak the host-country language, by region of origin

Percentages



Note: The sample includes persons aged 16-65. The blue bar refers to European migrants from EU countries, the unfilled bar refers to non-European migrants, and the black diamond refers to European migrants from non-EU countries. Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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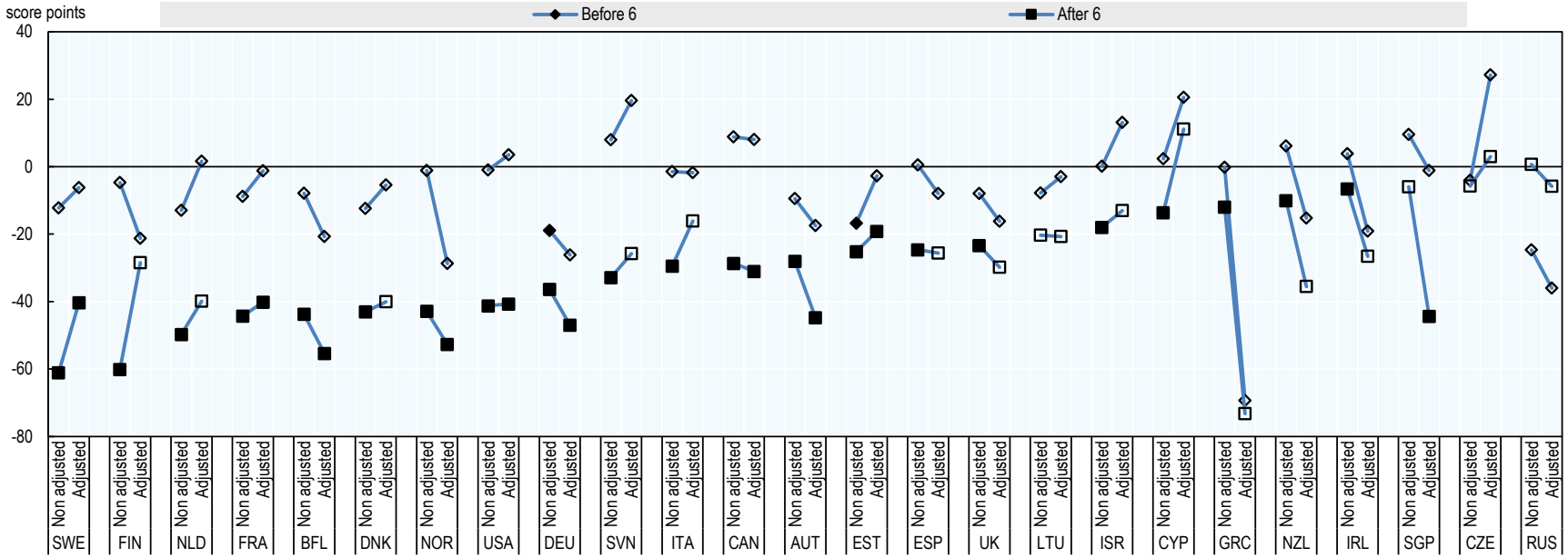
Annex Figure 2.A.7. Difference in literacy proficiency between natives and migrants who arrived in the host country before/after the age of six



Note: The sample includes persons aged 16-65. The results in this figure are coefficients obtained from separate regressions with no controls in the "no adjusted" square or diamond and with controls for duration of stay in the host country in the "adjusted" square or diamond. The non-filled (white) diamonds and squares indicate coefficients that are not statistically significant (at 10% level). Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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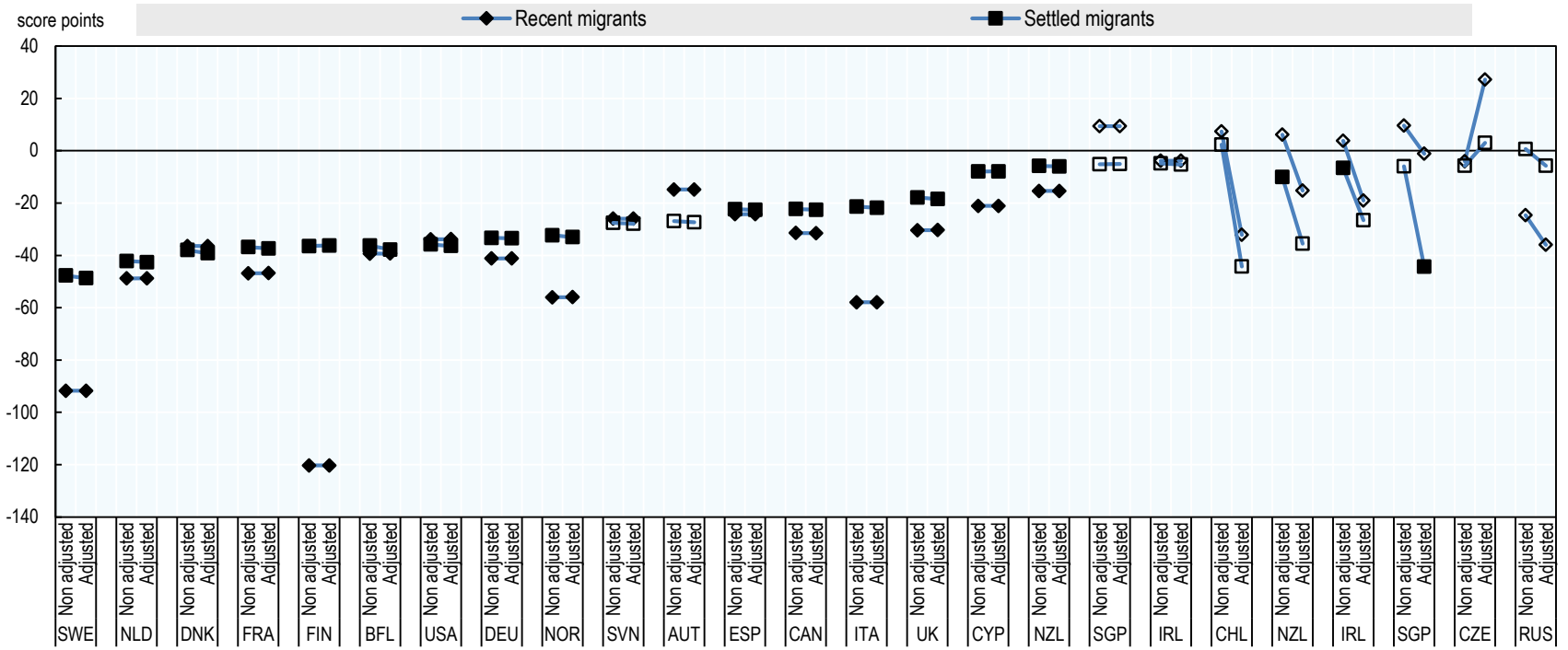
Annex Figure 2.A.8. Difference in literacy proficiency between natives and recent/settled migrants

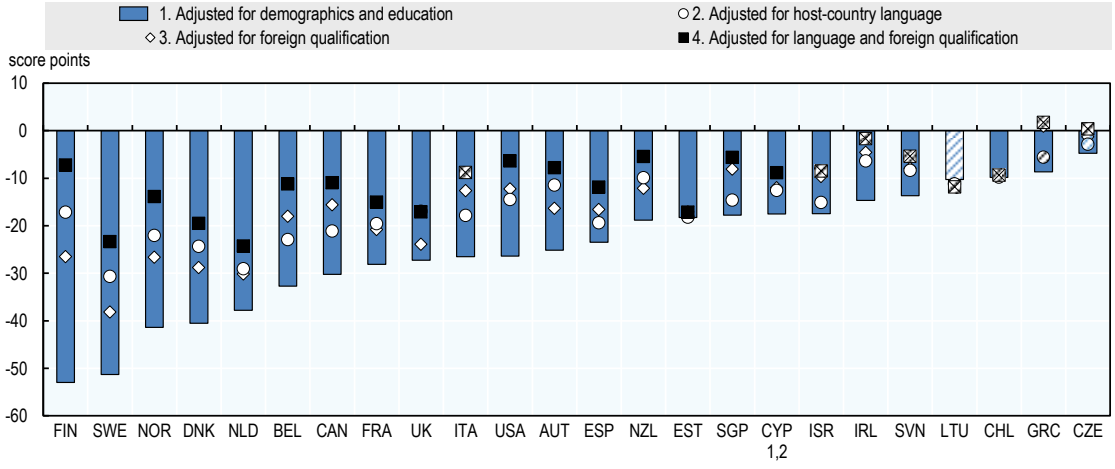


Note: The sample includes persons aged 16-65. The results in this figure are coefficients obtained from separate regressions with no controls in the "no adjusted" square or diamond and with controls for age at arrival in the host country in the "adjusted" square or diamond. The non-filled (white) diamonds and squares indicate coefficients that are not statistically significant (at 10% level). Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

StatLink http://dx.doi.org/10.1787/888933847239

Annex Figure 2.A.9. Adjusted difference in literacy between migrants and natives

Literacy

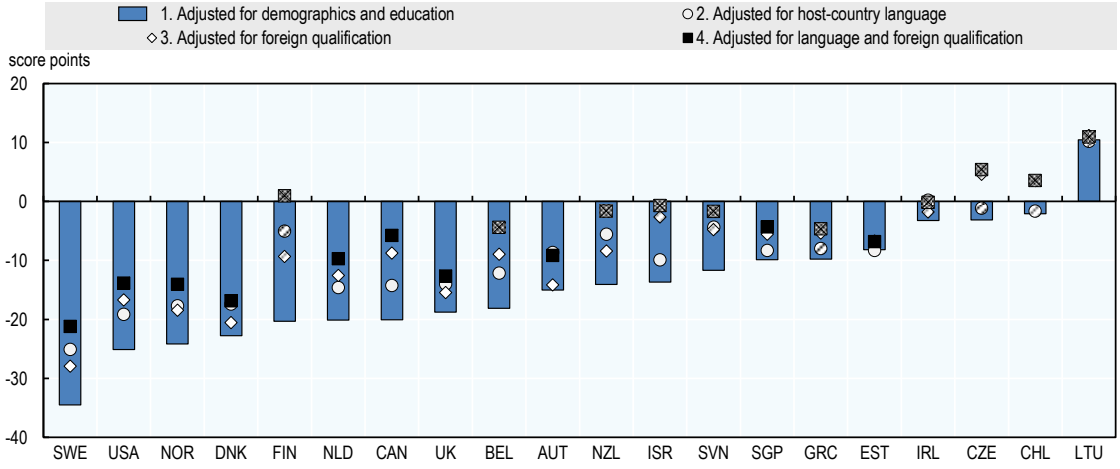


Note: The sample includes persons aged 16-65. The results in this figure are coefficients obtained from separate regressions with controls for level of education, age, gender and parents' background. Parents' educational background is defined as the highest education level attained between the mother and the father. Regression 1 only contains these controls, while regression 2 also includes a dummy variable that takes the value one if the migrant speaks the language of the test and zero otherwise. Regression 3 contains the basic controls and a dummy variable that takes the value one if the respondent received his/her qualification abroad. Regression 4 contains both the dummy for host-country language and that for foreign qualification. The shaded bars, diamonds and squares indicate coefficients that are not statistically significant (at 10% level). Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

StatLink http://dx.doi.org/10.1787/888933847258

Annex Figure 2.A.10. Adjusted difference in problem solving between migrants and natives

Problem solving

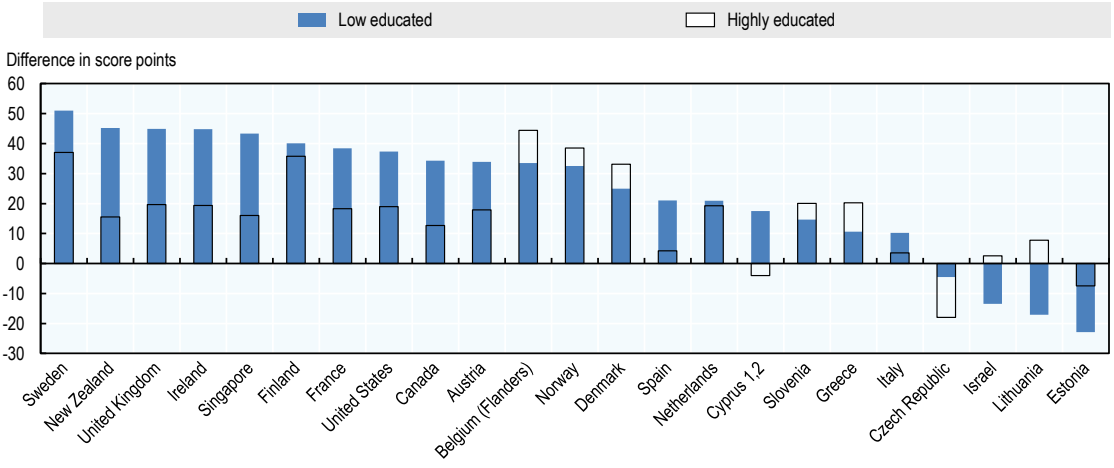


Note: The sample includes persons aged 16-65. The results in this figure are coefficients obtained from separate regressions with controls for level of education, age, gender and parents' background. Parents' educational background is defined as the highest education level attained between the mother and the father. Regression 1 only contains these controls, while regression 2 also includes a dummy variable that takes the value one if the migrant speaks the language of the test and zero otherwise. Regression 3 contains the basic controls and a dummy variable that takes the value one if the respondent received his/her qualification abroad. Regression 4 contains both the dummy for host-country language and that for foreign qualification. The shaded bars, diamonds and squares indicate coefficients that are not statistically significant (at 10% level). Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

StatLink http://dx.doi.org/10.1787/888933847277

Annex Figure 2.A.11. Gap in numeracy proficiency related to language spoken, by migrants' education level

Difference in numeracy proficiency between migrants who completed the PIAAC survey in a language they speak at home and migrants who do not speak the survey language at home

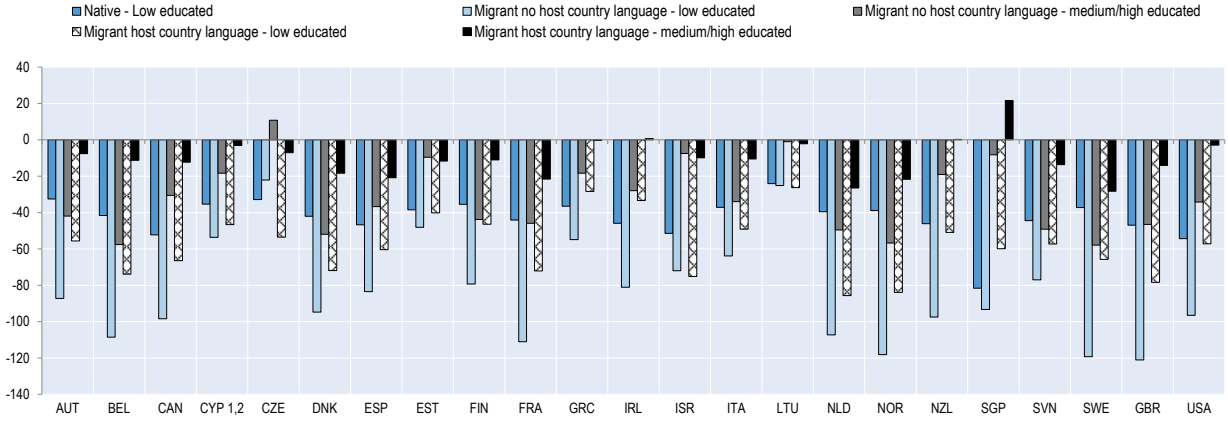


Note: The sample includes persons aged 16-65. Low educational attainment refers to less than upper secondary education; high educational attainment refers to tertiary education. Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

StatLink http://dx.doi.org/10.1787/888933847296

Annex Figure 2.A.12. Adjusted difference between natives and migrants in numeracy proficiency, by language spoken and education level

In score points; Reference group: medium- and highly educated natives



Note: The sample includes persons aged 16-65. The results in this figure are the adjusted differences between the group considered and the reference group, which includes highly and medium-educated natives. The regressions control for age, gender and parents' educational attainment (the highest education level attained between the mother and the father). The bars correspond to the sum of coefficients of level of education, language (whether the language of the test is the individual's first, second or language spoken at home, or not) and interactive variables between the level of education and language. The respective regression coefficients are significant at the 10% confidence threshold, at least. Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

StatLink http://dx.doi.org/10.1787/888933847315

Annex Table 2.A.2. Role of host country language on migrants' literacy proficiency by education level

	Medium level of education	High level of education	Host country language	Medium level of education * host country language	High level of education * host country language
Austria	25.809 ***	53.612 ***	28.268 ***	-0.111	-8.694
	6.894	8.649	7.189	8.783	10.438
Canada	32.594 ***	64.926 ***	32.584 ***	-0.729	-14.390 *
	6.396	5.443	8.088	9.677	8.576
Cyprus[1,2]	1.605	29.626 *	14.174	10.122	-1.827
	18.423	17.700	17.620	20.315	19.039
Czech Republic	42.733 *	61.327 ***	21.789	-19.003	-20.295
	24.035	22.863	20.926	24.440	26.837
Denmark	20.623 ***	38.139 ***	24.774 ***	8.312	13.004
	6.437	5.972	5.931	7.785	7.943
Spain	26.565 ***	61.205 ***	30.674 ***	-5.612	-23.417 *
	9.092	12.149	6.582	11.266	12.660
England/N. Ireland (UK)	55.531 ***	76.294 ***	54.444 ***	-12.094	-29.877 **
	15.355	12.752	14.312	17.528	15.048
Estonia	-7.597	-5.190	-25.261	19.528	30.252
	23.478	25.786	21.282	24.242	26.930
Finland	40.101 **	69.202 ***	79.747 ***	-3.423	-30.648
	17.215	17.414	20.754	23.385	24.951
Flanders (Belgium)	33.506 ***	68.992 ***	33.691 ***	12.556	-1.074
	11.209	12.882	12.733	16.780	17.381
France	23.869 *	66.116 ***	35.576 ***	3.962	-16.338 *
	12.728	7.882	5.524	12.871	8.610
Greece	19.896	32.992	32.674 **	-10.948	-1.816
	18.058	22.352	14.061	19.437	24.438
Ireland	24.948 *	52.442 ***	42.476 ***	-13.241	-20.012
	14.122	12.636	11.919	13.765	13.509
Israel	35.772 ***	54.976 ***	5.165	-3.546	-1.321
	13.328	12.572	14.442	15.357	15.631
Italy	21.894 **	56.212 ***	18.829	7.160	-6.437
	10.220	17.332	11.948	14.144	21.419
Lithuania	-33.782	-9.706	-30.055	26.550	28.224
	72.940	71.006	70.974	75.511	72.078
Netherlands	36.578 ***	53.385 ***	21.133 **	-3.588	-0.023
	9.381	11.460	8.963	12.137	12.858
Norway	30.483 ***	46.375 ***	27.659 ***	-8.261	11.354
	8.640	8.406	10.330	12.856	12.261
New Zealand	35.202 ***	61.277 ***	38.390 ***	-8.242	-19.531
	11.150	10.190	11.403	13.220	12.296
Singapore	36.129 ***	77.633 ***	35.562 **	-5.689	-16.795
	6.357	5.842	15.522	16.641	15.936
Slovenia	11.625	43.298 ***	15.482 **	0.984	2.750
	7.856	14.311	7.779	11.722	14.027
Sweden	38.778 ***	57.119 ***	44.126 ***	-15.698	-11.286
	7.545	6.782	10.130	12.229	11.675
United States	16.353 **	56.248 ***	26.259 **	6.206	-4.683
	6.798	8.455	12.560	14.281	14.232

Note: The sample includes persons aged 16-65. The coefficients are derived from linear probability models, where the dependent variable is literacy proficiency. The regression controls for age, gender and parents' educational attainment (the highest education level attained between the mother and the father). Standard errors are below the coefficients. *** p<1%; ** p<5%; * p<10%. Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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Annex Table 2.A.3. Role of host country language on migrants' numeracy proficiency by education level

	Medium level of education	High level of education	Host country language	Medium level of education * host country	High level of education * host country
Austria	31.153 ***	57.154 ***	31.725 ***	-1.248	-7.000
	7.940	11.315	8.360	10.036	12.773
Canada	32.969 ***	71.433 ***	29.578 ***	-3.291	-16.198 *
	7.219	5.638	8.587	10.647	9.109
Cyprus[1,2]	5.281	44.223 **	6.519	22.406	1.386
	22.950	21.143	20.037	23.757	21.781
Czech Republic	58.217 **	95.967 ***	21.936	-23.564	-34.576
	24.467	24.691	24.472	27.568	27.020
Denmark	22.012 ***	38.872 ***	19.841 ***	10.080	15.574 *
	6.907	7.015	5.916	7.921	8.306
Spain	20.639 **	66.166 ***	25.866 ***	3.887	-21.945
	10.014	13.241	6.987	11.371	13.501
England/N. Ireland (UK)	58.747 ***	87.126 ***	59.674 ***	-12.701	-38.758 **
	18.508	16.539	18.232	21.422	18.869
Estonia	-7.261	10.925	-27.504	25.328	27.454
	21.403	23.103	20.047	22.320	24.698
Finland	32.511 *	56.149 ***	68.438 ***	6.469	-9.846
	17.277	18.220	23.218	25.398	27.819
Flanders (Belgium)	39.120 ***	68.639 ***	31.693 **	9.357	4.628
	12.421	13.077	14.754	18.422	18.193
France	22.959 *	78.255 ***	34.179 ***	13.114	-12.263
	12.841	9.137	5.639	13.231	9.704
Greece	20.183	48.391 **	16.181	-3.976	0.903
	17.742	23.514	13.666	19.437	25.481
Ireland	25.189	61.062 ***	41.632 ***	-14.482	-24.109
	16.508	15.089	14.207	16.320	15.719
Israel	46.228 ***	68.389 ***	12.724	-10.614	-3.499
	17.542	17.300	19.062	19.771	20.711
Italy	22.042 **	63.072 ***	15.248	10.278	-10.425
	10.492	17.059	13.261	15.219	20.469
Lithuania	-30.585	-3.527	-59.588	54.257	65.624
	58.315	55.561	53.640	59.562	54.852
Netherlands	38.327 ***	60.483 ***	22.471 **	0.128	1.879
	10.320	12.296	10.346	12.772	14.416
Norway	40.334 ***	60.282 ***	37.139 ***	-15.392	4.371
	10.272	10.765	11.880	14.743	14.972
New Zealand	44.786 ***	75.841 ***	40.212 ***	-10.919	-23.855 *
	11.681	10.326	12.108	13.863	12.872
Singapore	46.080 ***	96.253 ***	37.546 **	-2.305	-21.576
	6.530	5.841	18.896	20.516	19.458
Slovenia	15.865 *	54.530 ***	16.773 **	10.422	9.681
	9.092	15.719	8.149	11.910	15.837
Sweden	42.612 ***	59.918 ***	45.690 ***	-23.508	-7.777
	8.642	7.384	10.307	13.531	12.798
United States	25.601 ***	74.081 ***	23.734 *	3.175	-5.086
	7.006	8.606	13.751	15.040	16.213

Note: The sample includes persons aged 16-65. The coefficients are derived from linear probability models, where the dependent variable is numeracy proficiency. The regression controls for age, gender and parents' educational attainment (the highest education level attained between the mother and the father). Standard errors are below the coefficients. *** p<1%; ** p<5%; * p<10%. Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland.
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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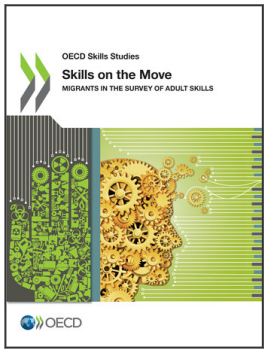

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