OECD Skills Studies

Skills on the Move

MIGRANTS IN THE SURVEY OF ADULT SKILLS

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BETTER POLICIES FOR BETTER LIVES

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Foreword

Migration has been at the centre of policy debate across the OECD in recent years, largely due to the refugee crisis. In many countries, responses to this crisis, in particular policies aimed at supporting and facilitating the integration of migrants, have been deeply polarising. The debate often considers migrants as a homogenous group, characterised by low skills, little chance of integrating and thus, a burden on the public purse and on society.

Contrary to this perception, data show that migrant populations are highly heterogeneous, both across and within countries. Immigrants come from very different backgrounds and the education and experience they bring with them can differ markedly. One third of foreign-born people in OECD countries hold a higher education degree, while less than a quarter attain only primary education or lower.

Most immigrants have jobs and, among low-educated migrants, employment rates are similar to those of their native-born peers. Paradoxically, the employment rates of highly-educated migrants are lower than those of their native-born counterparts, in spite of the increasing reliance of OECD economies on the skills of foreign-born workers. Even when they are employed, highly-educated migrants are almost 50% more likely than similarly-educated natives to be over-qualified for their job.

To ensure the successful integration of migrants into OECD economies and societies, several questions need to be addressed regarding migrants' skills and the perception of these skills among various segments of host countries' societies. For example, to what extent are OECD countries failing to utilise the skills of migrants? To what extent are employers uncertain about the skills migrants hold, making it difficult to offer jobs that match their skills, or prompting them simply to avoid hiring migrants entirely? To what extent unemployment and over-qualification among highly-educated migrants reflect differences in educational systems across countries?

Drawing on data from the OECD Survey of Adult Skills (PIAAC), this report aims to answer these questions by reviewing the differences in migrants' characteristics and considering how they relate to the actual skills migrants possess. It also examines the relationship between migrants' skills and their labour and non-labour market outcomes in host countries. Finally, it sheds new light on how migrants' skills are developed, used and valued in host country labour markets and societies.

The report represents an invaluable resource for policy makers wishing to design and implement strategies that can promote the long-term integration of migrants in the economic and social life of their countries. Evidence-based policymaking can strengthen the integration of new arrivals and ensure that receiving countries fully benefit from the opportunities that international migration brings. Moreover, results and lessons gleaned from the analysis highlight the way forward for future research on this topic.

Several factors affect the work and well-being outcomes of immigrants. These include the country in which they completed their highest level of education, the language(s) they speak, the age they had at the time of arrival and the overall time they have spent in the country. Literacy, numeracy and problem solving skills are needed by all adults to fully participate in modern societies and labour markets, but when immigrants face a language barrier, this can not only make it more difficult to find a job that matches their skills levels, but also to develop a sense of integration in the host country.

Across the OECD, labour market outcomes of migrants tend to lag behind those of the native-born. While migrants with low levels of education have employment rates similar to those of low-educated natives, highly-educated migrants display relatively lower employment rates, in spite of the increasing reliance on skills in OECD economies. Moreover, when highly-educated migrants are employed, they are almost 50% more likely than their native-born counterparts to be over-qualified for their job.

Migrants are concentrated in jobs that are associated with a lower socio-economic status. Part of the observed difference in occupational placement between migrants and natives can be explained by differences in the skills held by these two groups of workers. But differences persist even after taking language, literacy and numeracy proficiency into account.

Migrants express a high demand for participating in training programmes that could help them upgrade their skills, but they also face higher barriers to participation in such training programmes. These barriers are often of a financial nature, although family responsibilities also play an important role.

A clear conclusion emerging from the analysis is that an effective integration policy should not target migrants as a homogenous group, but should instead be carefully tailored to the needs and circumstances of the individual migrant. In particular, effective integration policies must build upon migrants' existing skills and experiences in order to help them recognise, develop, and use their skills in a tailored and individualised fashion.

Given the centrality of language skills in determining employment prospects and the ability to fully function in the host country society, the development of effective language tuition is of paramount importance. The education level, age, mother-tongue and existing language skills of individuals have a significant impact on the speed with which they are able to pick up new languages. Older learners, the low-educated, and those whose mother tongue is linguistically distant from the host-country language are likely to require more course hours than younger and more educated migrants, as well as those who have a smaller linguistic distance to traverse. As a result, it is very important that language courses are tailored – in terms of speed and teaching methods – to the characteristics of their students.

A key factor determining migrants' skills and labour market performance is the country in which migrants completed their education. Integration policy can play an important role in facilitating and streamlining the process for recognition of foreign qualifications. This is particularly important for access to regulated professions that require a formal certificate or license.

Beyond integration policy, the findings of this report also hold implications for the design of broader migration policies. For example, policies that rely on educational qualifications as a criterion to grant access into the country may be inefficient in selecting the most skilled migrants. Other characteristics – such as language proficiency and

information processing skills – should also be taken into consideration in the design of labour migration policy.

Migration is going to stay with us in the years to come and therefore, providing insights about the relationship between the migrants' skills and their work and life outcomes in host countries should inform policy responses that foster inclusive growth and promote greater social cohesion. This is equally important for both migrant and native populations, because we really are stronger together.

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Executive summary

Migration has been at the centre of the political debate across the OECD in recent years and debates over policies that aim to support and facilitate the integration of migrants have, at times, become deeply polarising. This is, in no small part, because of lack of solid evidence on the skills migrants bring to their host communities.

Analyses of data from the OECD Survey of Adult Skills (PIAAC) reveal that the literacy, numeracy and problem solving skills of foreign-born adults are, on average, lower than those of the native-born in virtually all countries participating in the survey, but also that skill gaps between migrants and natives vary greatly across countries and different migrant groups. For example, skills gaps are particularly pronounced in Sweden and Finland (where the difference in the mean literacy scores of native-born and foreign-born individuals is greater than 50 points), but much smaller in Australia, the Czech Republic, Ireland, New Zealand and Singapore (where differences are less than eight points). To a large extent, these large cross-country differences are due to migration policies and geopolitical factors determining the composition of the migrant populations and their characteristics across countries.

Crucially, analyses reveal an even larger degree of heterogeneity within countries. Migrants living in the same host country can greatly differ along various dimensions, including skills and educational qualifications. In fact, in most countries' migrants are a more heterogeneous group than natives. For example, migrants tend to have more variable performance in literacy and numeracy compared to natives, not only when considering the population overall, but also when comparing migrants and natives with similar educational qualifications. Migrants' skills proficiency varies greatly depending on their level of education, where they acquired this education, their age at arrival, and the duration of stay in the host country.

A large share of the difference in literacy, numeracy and problem solving skills observed between migrants and natives is due to the fact that many migrants are not native language speakers of the language in which the PIAAC assessment was administered, which is most often the official language of the country. For example, the average difference in literacy proficiency between foreign-born and native-born individuals of similar age, gender and education level was 26 points in OECD countries. However, this gap was only half as large, corresponding to 13 points, when considering individuals who completed the test in their native language.

Foreign-born individuals whose mother tongue is different from the language of the test tend to have lower literacy and numeracy proficiency and poorer labour market outcomes than individuals whose mother tongue matches the language of the test. However, the size of the language penalty varies considerably, both across and within countries, as it is related to the degree of proximity between the mother tongue spoken by migrants and the language in which the respondent sat the test.. The penalty is particularly pronounced for those migrants who arrived in the host country after the age of 12, and persists irrespective of length of stay.

Although many migrants have a high need for training, which could reduce language-related and skills-related barriers to participation in the labour market and society, financial and non-financial factors hinder the participation in training. In particular, migrants generally express a higher demand for training programmes than natives, but tend to have lower participation rates. Financial barriers and family responsibilities prevent the participation of many migrants in training activities they are interested in. In fact, the "unrealised demand" for training is higher among migrants than natives. Analyses reveal that once migrants are able to gain access to training , they tend to spend more time than natives in such activities.

Across the OECD, labour market outcomes of migrants tend to lag behind those of the native-born. Migrants are more often unemployed or inactive, and those who are in employment tend to have lower returns to education – in terms of earnings – than their native-born peers. These wage disparities are driven by a plethora of factors. A large part of the difference in the returns to education reflects different patterns in occupational placement, with migrants concentrated in jobs that are associated with a lower socio-economic status. Yet, migrants are often paid less than the native-born even when operating in similar roles. Part of the observed difference in occupational placement between migrants and natives can be explained by differences in the skills held and language spoken by these two groups of workers, although to a different extent in different countries.

Integration cannot be only measured by economic factors like employment and wages, though. The analyses generally show smaller differences between natives and migrants in non-economic outcomes, and this is especially true for self-reported health. While in many countries there are also no differences in generalised trust and political efficacy, in some countries migrants are considerably less likely to report high levels of generalised trust and political efficacy. For example, in Denmark, 46% of natives, but only 32% of migrants report that they disagree or strongly disagree that only few people can be trusted and 52% of natives but only 35% of foreign-born adults report that they disagree or strongly disagree that people like them do not have any say about what the government does. On average across OECD countries, native adults were more likely to report having participated in voluntary work, including unpaid work for a charity, political party, trade union or other non-profit organisation in the year before they participated in PIAAC. Some 35% of native adults, but 27% of migrant adults reported that they had volunteered in the previous year, a difference of eight percentage points. Overall, educational attainment and literacy proficiency are importantly associated with generalised trust and political efficacy among both migrants and natives.

Chapter 1. Overview

This report presents an in depth analysis of the skills of migrants based on the OECD Survey of Adult Skills (PIAAC). Offering a unique picture of the skills held by adult migrants in OECD countries, the report provides a rare insight into how migrants' skills are developed, used and valued in host-country labour markets and societies. This overview chapter outlines the main findings of the report and sets the ground for further research going forward.

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.

This report presents an in depth analysis of the skills of migrants based on the OECD Survey of Adult Skills (PIAAC). Offering a unique picture of the skills held by adult migrants in OECD countries, the report provides a rare insight into how migrants' skills are developed, used and valued in host-country labour markets and societies. This overview chapter outlines the main findings of the report and sets the ground for further research going forward.

There is a large degree of variation in numeracy and literacy across migrant groups

The literacy, numeracy and problem solving skills of foreign-born adults are, on average, lower than those of the native born in all participating countries except Chile, a result already highlighted in previous publications (OECD, 2013[1]; OECD/EU, 2014[2]). These skills gaps are particularly prominent in the Nordic countries, reaching up to more than 50 score points in Sweden and Finland. This report draws special attention to the shares of migrants with very low levels of literacy and numeracy proficiency. In a number of European countries such as France, Italy, Spain, Slovenia and Sweden, as well as in the United States, more than 40% of foreign-born residents score at Level 1 or below on the PIAAC literacy scale. Individuals at this level cannot extract information from long and complex texts but are only able to read brief texts on familiar topics and locate specific information in short texts. At the same time, migrants are less likely than natives to have high levels of literacy proficiency. On average, only about 7% of migrants are highly proficient in literacy (scoring at Level 4 or 5 on the PIAAC scale), compared with 13% of natives.

Most importantly, migrants cannot be treated as a single homogeneous group. They come from very different backgrounds, and, accordingly, the education and experience they bring with them can differ markedly. In particular, factors such as the of origin and the country in which they completed their highest level of education, their age at arrival, and the duration of their residence in the host country have a significant impact upon the assessed level of literacy and numeracy.

Language barriers play an important role

PIAAC assesses information-processing skills in a given language chosen by participating countries, which typically corresponds with the country's official language.[1] The results of the assessment are therefore influenced by the language proficiency of respondents, which cannot be disentangled from cognitive ability (i.e. it is not possible to know how much a respondent would have scored if the test had been administered in a different language).

On average around 12% of adults in PIAAC participating countries are not native speakers of the language in which the PIAAC assessment is administered. However, countries differ greatly in the language composition of their migrant populations. For example, non-native speakers in Canada represent over a fifth of the overall sample of respondents. On average across PIAAC participating countries, around 59% of the migrant population and around 5% of the native population reported not to be native speakers in the language of the assessment.

Foreign-born individuals whose mother tongue is different from the language of the test tend to have lower literacy and numeracy proficiency and poorer labour market outcomes than individuals whose mother tongue matches the language of the test. Across OECD countries, the difference in literacy between foreign-born and native-born individuals of

similar gender, age and educational attainment is 26 points, but it decreases to 13 points among individuals who are also both native speakers in the language of the assessment. However, language penalties vary considerably, both across countries and within countries across different migrant groups. The mother tongue of the migrant, in particular, has a profound impact on the magnitude of the language penalty, and while the difference in the PIAAC scores of migrants who are native speakers of the host country language and those of non-immigrant native speakers is 10 points, this difference is as large as 27 score points when the native born are compared to migrants whose mother tongue is different from the language in which the PIAAC test was conducted.

The size of the language penalty is related to the degree of proximity between the mother tongue spoken by migrants and the language in which the respondent sat the test. The penalty persists irrespective of length of stay in the host country, and is particularly pronounced for those migrants who arrived in the host country after the age of 12. Differences in the composition of migrant groups with respect to their mother-tongue language explain a large degree of the between-country variation in migrant gaps in information processing skills. Similarly, language proximity explains to a large extent why different migrant groups with similar characteristics display very different levels of information processing abilities. Interestingly, language proximity does not explain differences neither across nor within-countries in the labour market outcomes of migrant adults.

Lifelong learning is important

Lifelong learning is increasingly seen as a crucial ingredient of skills policies, in that it might facilitate re-skilling (in response to changing skills demands) and prevent age-related skills decline (in response to longer working careers). Migrants might have more incentives and a higher need to participate in adult training, but might also face higher financial or non-financial barriers to participation. Data from PIAAC reveal that migrants have lower participation rates than natives. The differences are however not very large, and become very close to zero once account is taken of differences in observable individual characteristics between migrants and natives. Moreover, the cross-country variability in participation rates is much higher than the within-country differences between migrants and natives, suggesting that policies should give priority to ameliorate the overall system of provision of adult training (to make participation more attractive for everyone), rather than focusing explicitly on targeting the provision of training to migrants.

Where more targeting is needed is not so much in the supply of appropriate training opportunities for migrants, but rather in the removal of barriers to participation. Migrants are in fact more likely to report not having been able to participate in training activities they were interested in, in large part because of financial barriers, but also because of family responsibilities. Migrants therefore appear to express a high demand for existing training opportunities, and indeed the data show that, once they are able to gain access to training opportunities, they tend to spend more time than natives in such activities. This finding is likely to be, at least partially, driven by the language training that is compulsory for new migrants in many OECD countries.

Poor labour market outcomes among migrants often reflect lower returns to their skills

Across the OECD, labour market outcomes of migrants tend to lag behind those of the native born. Migrants are more often unemployed or inactive, and those who are in employment tend to have lower returns to education – in terms of earnings – than their native-born peers. These wage disparities are driven by a plethora of factors. A large part of the difference in the returns to education reflects different patterns in occupational placement, with migrants concentrated in jobs that are associated with a lower socio-economic status. Yet, migrants are often paid less than the native born even when operating in similar roles.

Part of the observed difference in occupational placement between migrants and natives can be explained by differences in the skills held by these two groups of workers. However, while occupational differences between migrant and native workers are reduced when language, as well as literacy and numeracy proficiency, are accounted for, foreign-born workers are still more likely than the native born to be employed in low-skilled and less prestigious occupations in certain host-country labour markets – notably Italy, Norway and Sweden. Other important factors in explaining occupational placement are the migrants' country of origin (migrants from non-EU European countries show the greatest labour market gaps compared to natives) and the country in which they were educated (migrants with domestic qualifications perform better in the host labour markets than migrants with foreign degrees).

Labour market outcomes are important, but broader well-being matters too

Employment and wages are key for individual well-being. However, non-economic outcomes, such as health, civic participation and trust can also be used as important indicators of integration. On average across OECD countries, the share of adults who reported to be in excellent or very good health is similar across natives and foreign-born adults, at about 81%. However, migrants in Korea, New Zealand and Singapore were more likely to report being in excellent or very good health than comparable natives, while in Austria, Canada, Denmark, Estonia, Finland, France, Germany, Greece, Israel, the Netherlands and Sweden, the reverse was true. Both educational attainment and literacy levels are strongly and positively associated with adults' self-reported health status, but differences in these characteristics do not explain differences in reported health status between migrants and natives.

Natives tend to express higher levels of generalised trust than migrants in many countries, and in many countries the association between literacy skills and self-reported trust is lower among migrants than among natives. Similarly, with the exception of Flanders (Belgium) and New Zealand, migrants tend to express a more limited belief in their political efficacy, and, in the majority of countries participating in PIAAC, educational attainment and literacy proficiency are more strongly associated with political efficacy among natives.

On average across OECD countries, migrants are less likely than natives to report having participated in voluntary work, including unpaid work for a charity, political party, trade union or other non-profit organisation in the year before they participated in PIAAC: some 35% of native-born adults reported that they had volunteered in the previous year compared to 27% of foreign-born adults.

Implications for the design of integration policy

While migrants have typically lower literacy, numeracy and problem solving skills than natives, differences between migrant groups are sometimes even larger than those between migrants and natives. By unpacking the skills of the migrant population in OECD countries, the patterns they exhibit and their correlations with a broad spectrum of outcomes, this report can help orient the design of integration policy. A clear conclusion emerging from the analysis is that an effective integration policy should not target migrants as a homogenous group, but should, instead, be carefully tailored to the needs and circumstances of the individual migrant. In particular, effective integration policies must build upon migrants' existing skills and experiences in order to help them recognise, develop, and use their skills in a tailored and individualised fashion.

Given the centrality of language skills in determining employment prospects and the ability to fully function in the host country society, the development of effective language tuition is critical. The education level, age, mother tongue and existing language skills of individuals have a significant impact on the speed with which they are able to pick up new languages. Older learners, the low-educated, and those whose mother tongue is linguistically distant from the host-country language are likely to require more course hours than younger and more educated migrants, as well as those who have a smaller linguistic distance to traverse. As a result, it is very important that language courses are tailored – in terms of speed and teaching methods – to the characteristics of their students. The development of language, however, need not solely focus on formal language tuition. Indeed, migrants with little daily exposure to their host-country language also tend to be less efficient language learners. Effective language tuition, therefore, will also involve employers working with and supporting individuals whose language skills require further development, by combining work and on-the-job language courses, for instance.

A key factor determining both observable/assessed literacy and numeracy skills and labour market performance is the country in which migrants completed their education. Migrants whose education was undertaken in their host country are likely to have more opportunities to practice their skills. Migrants who obtained their qualifications outside their host country, on the other hand, can face difficulty putting their qualifications to use. In the first place, for migrants with qualifications in regulated professions, where a certificate or licence awarded is required, holding a foreign qualification constitutes a clear barrier. In these fields, migrants trained abroad must obtain a formal assessment and recognition of their qualification from the relevant licencing body, and may require further education to bridge any difference in skill requirements. Integration policy can play an important role in facilitating this process: establishing a right to the assessment of foreign qualifications; providing information and facilitating application through one-stop-shops; linking partial recognition to further bridging education, and ensuring that procedures are not excessively long, nor costs prohibitively high (OECD, 2017[3]).

In occupations that are not formally regulated, migrants may, nonetheless, struggle to access employment appropriate to their education. This is because employers, who are not familiar with the education and training system in the migrants home country, may be uncertain of the skills these qualifications imply. Where employer uncertainty regarding the skills of migrants impedes access to employment, informal assessment of qualifications can give prospective employers an important signal about the skills that foreign-born and foreign-trained adults hold.

Beyond integration policy, the findings of this report also hold implications for the design of migration policies. Indeed, the results of Chapter 2 suggest that policies which rely on educational qualification as a criterion to grant access to migrants may be inefficient in selecting the most skilled. Instead, other characteristics – such as language proficiency and information processing skills – should also be taken into consideration in the design of labour migration policy aimed at attracting and selecting the migrants with the greatest productive potential.

The way forward

How to get the most out of existing data

Data on the information processing skills of migrants, collected through the OECD Survey of Adult Skills, provide invaluable insights into the extent to which these skills support or impede the ability of migrants to live, learn and work successfully in their host countries. Through an examination of the role that information processing abilities plays in shaping labour and non-labour market outcomes, PIAAC constitutes a unique source of information on the different factors that determine the integration outcomes of the foreign born.

However, skills, as tested in the host country language are determined both by underlying cognitive ability, on the one hand, and by language skills on the other. It is not possible to disentangle these influences through analysis of the PIAAC scores and, as such, it is not possible to say with certainty and in all cases whether the skill disparities that we observe between the migrant and the native-born population are driven by poor underlying information-processing skills or whether they are driven by language deficiencies. Nonetheless, PIAAC does open new avenues for research which can help better understand these issues. This report shows that the skill disparities between migrants and natives are reduced when controlling for correlates of language skills – such as language spoken at home, most often spoken language, duration of residence, or country of origin – but differences are not entirely accounted for by these different proxies for language ability.

Disentangling the impact of language from underlying literacy, numeracy and problem-solving skills will be an important avenue for future data collection in PIAAC. A number of approaches could be envisaged in order to make progress in this direction. In the first place the influence of language could be isolated by including questions in a selection of languages in the PIAAC tests administered to the foreign born. This approach may be feasible in countries in which there is just one non-host-country language that dominates among the foreign-born population (e.g. in the United States), but it may be more complicated in other countries. A comparison of performance on questions in the migrants' native language with performance on questions in their host-country language could then shed some light on the role played by language on performance in the PIAAC assessment. This, however, would require significantly boosting the sample size, or requiring respondents to sit the test, or part of it, in both languages.

How to render the data more relevant to examining questions of migrant integration

Beyond the difficulties in disentangling the role language plays in determining assessed/observed literacy and numeracy skills, there are some further challenges in using the data collected in PIAAC to analyse the skills and outcomes of the foreign born.

Primary among these is the limited number of foreign-born individuals in the PIAAC sample. The small sample sizes in the majority of countries both render existing research vulnerable to concerns over the extent to which results are representative of the entire migrant population and also limit the depth of research, as further disaggregation leads to extremely limited samples and becomes highly problematic. Further efforts in future PIAAC data collections could open the door to more detailed investigation of the skills of migrants, and the role these skills play in determining the integration process, by oversampling the foreign-born population and ensuring that the sample is representative of the underlying migrant population.

Alongside the limited sample size, analysis of migrant skills using the OECD Survey of Adult Skills could be strengthened by the inclusion of some additional variables of primary importance for migrants, such as the reasons for migration and more detailed information on which languages are spoken and practised at home, in the work place and in everyday life. In addition, supplementary information on the parents of native-born youth with a migration background may help unpacking with more accuracy the extent and mechanisms through which intergenerational disadvantage is bequeathed.

Finally, an important contribution offered by the data collected as part of the OECD Survey of Adult Skills is its ability to match access to training with concomitant skills. Extending this contribution to language training, integration training and other forms of training particularly relevant to the foreign born could offer important insights into the role such training plays.

Note

[1] In Estonia the assessment was conducted in Estonian and Russian, to account for the fact that Russian is the mother tongue for almost 30% of the Estonian population. In Singapore the assessment was conducted in English, which is not the mother-tongue language of about two thirds of adults born in Singapore.

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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.

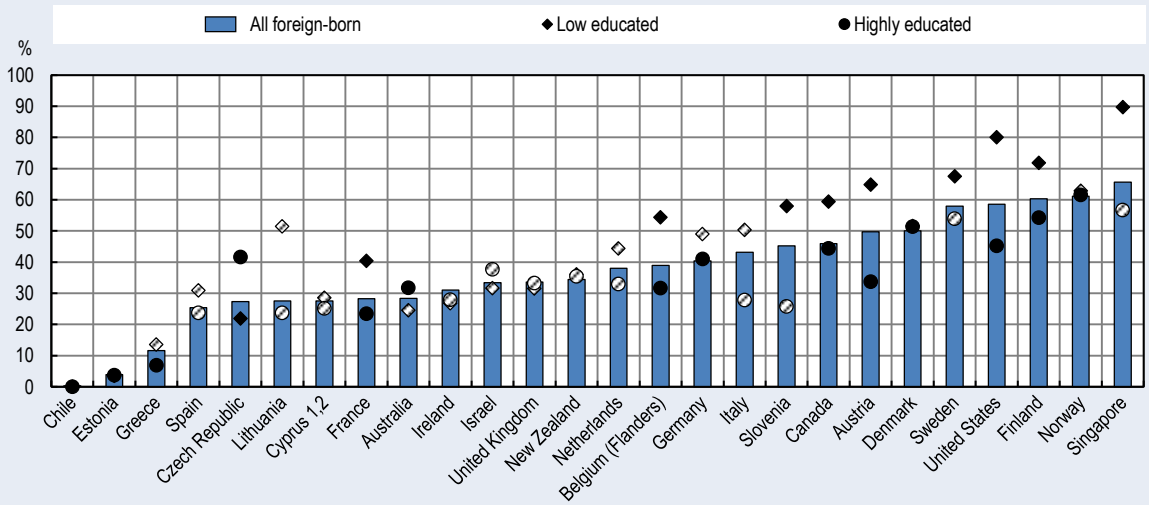
Box 2.1. Literacy skills and language

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).

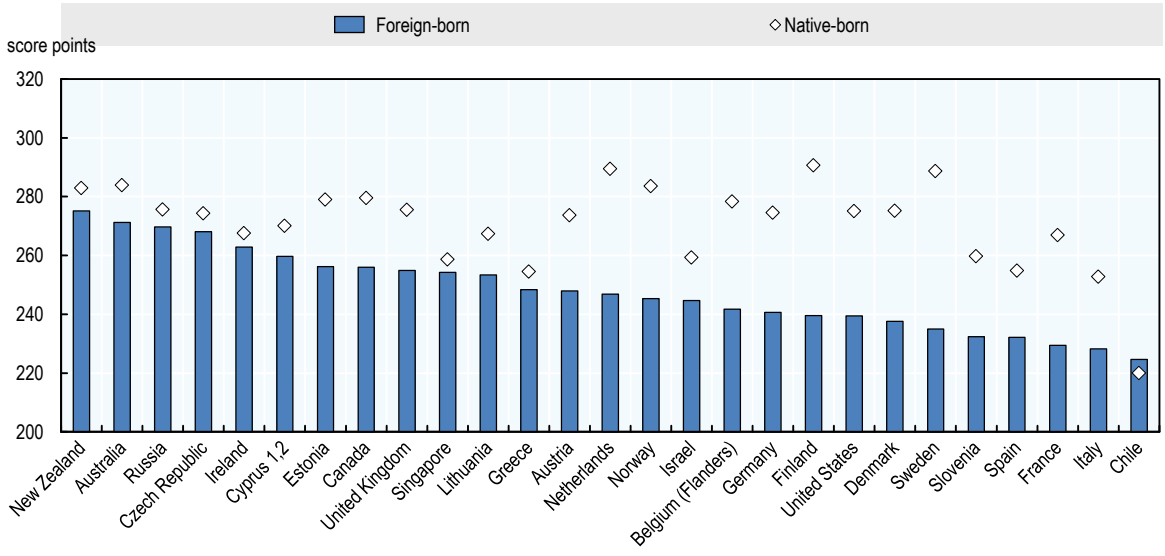
StatLink http://dx.doi.org/10.1787/888933846840

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).

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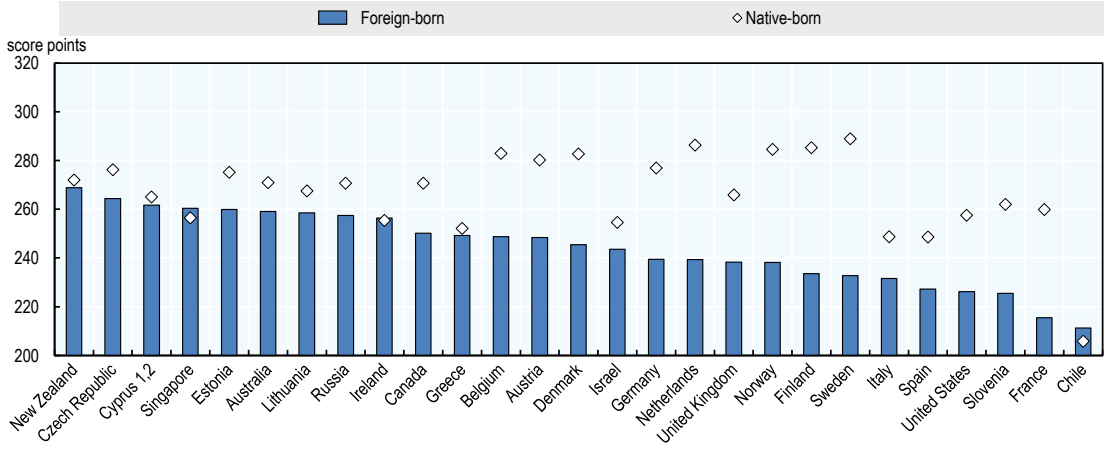
Figure 2.3. Numeracy proficiency, by place of birth



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).

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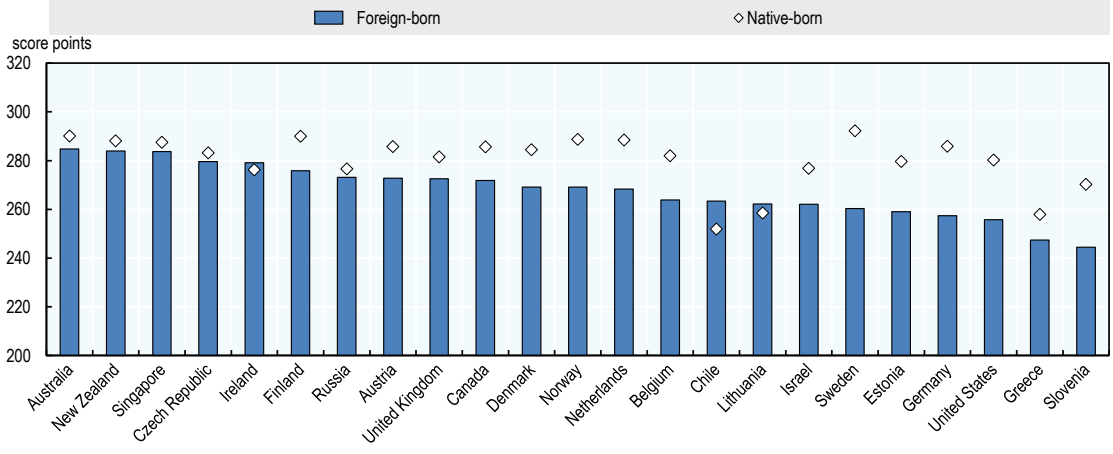
Figure 2.4. Proficiency in problem solving, by place of birth



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).

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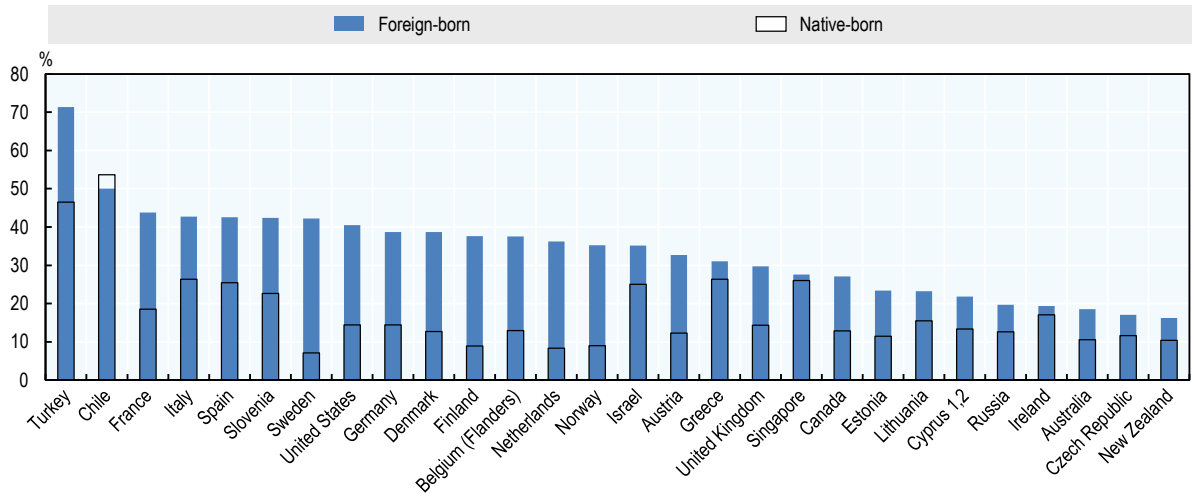
Low literacy proficiency is wide-spread among migrants

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).

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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.

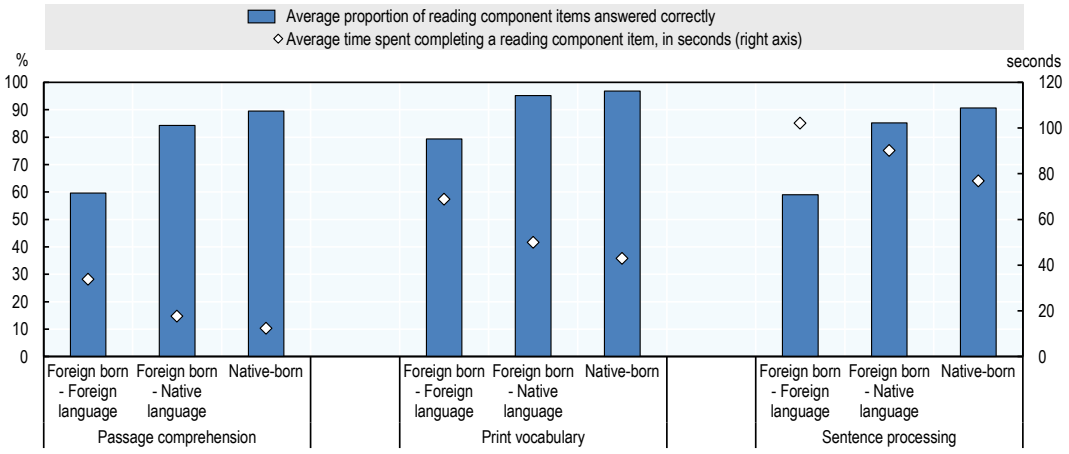
Only persons with very low levels of skills take the reading components assessment, and migrants are over-represented in this group. More than 29% of migrants took the reading assessment, in comparison with only 19% of natives. The differences in literacy proficiency between these two groups and persons 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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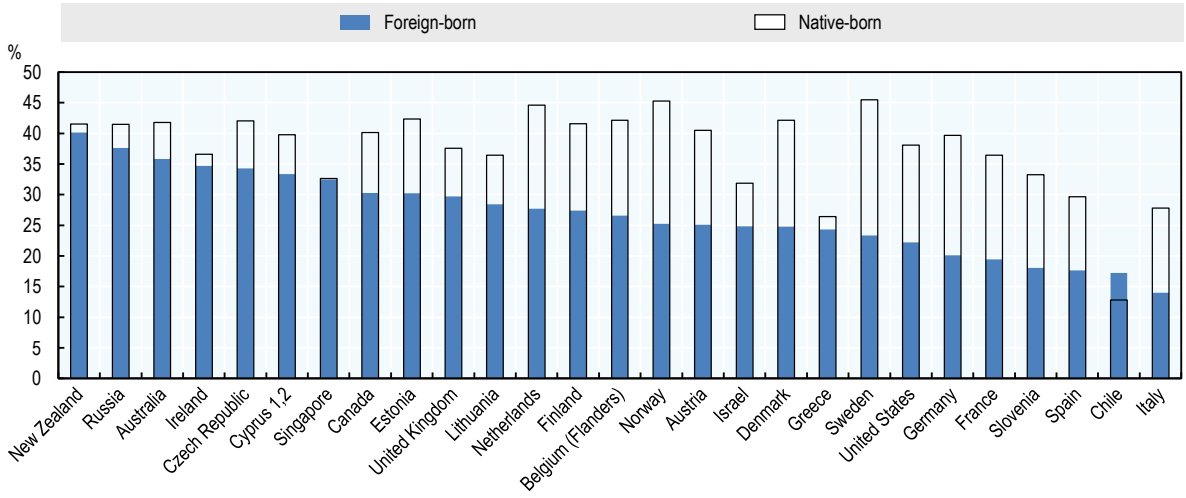
Migrants are under-represented at high levels of literacy proficiency

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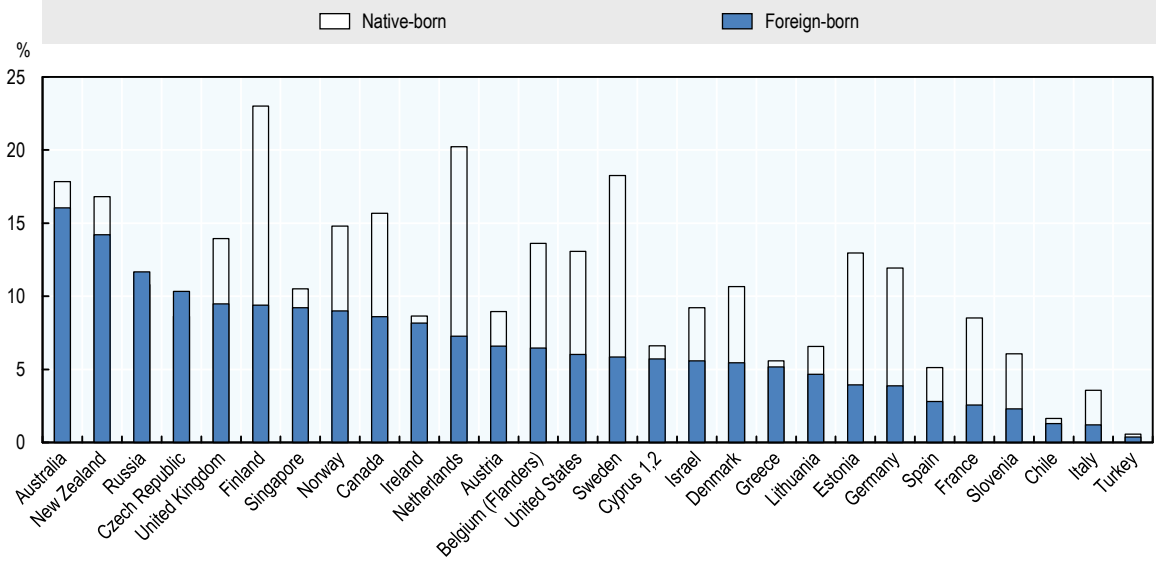
Figure 2.8. Shares of persons reaching levels 4 and 5 in literacy proficiency, by place of birth



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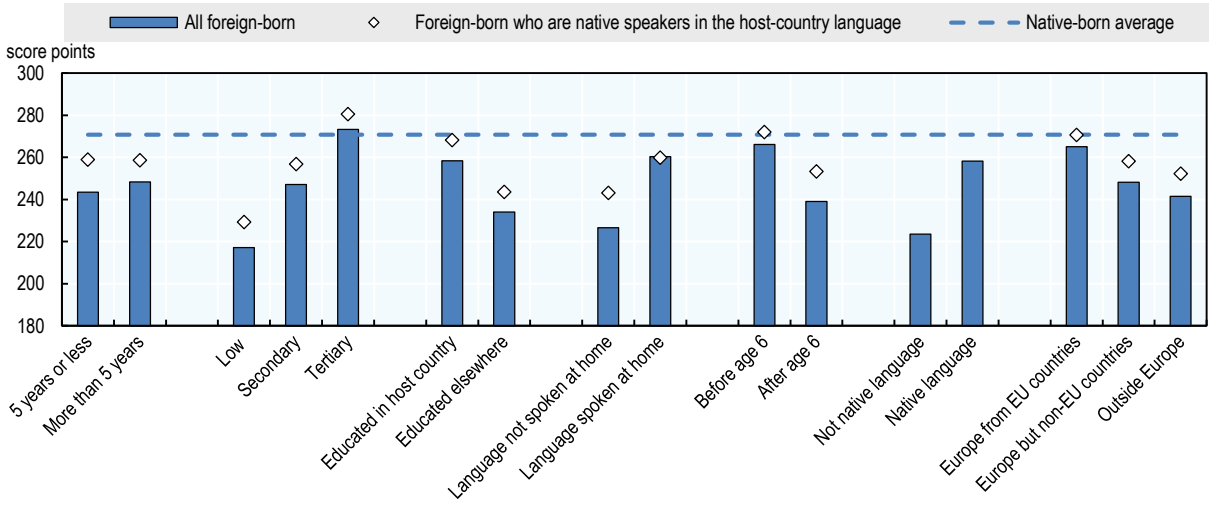
Differences in migration experience partly explain the heterogeneity within the migrant population

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).

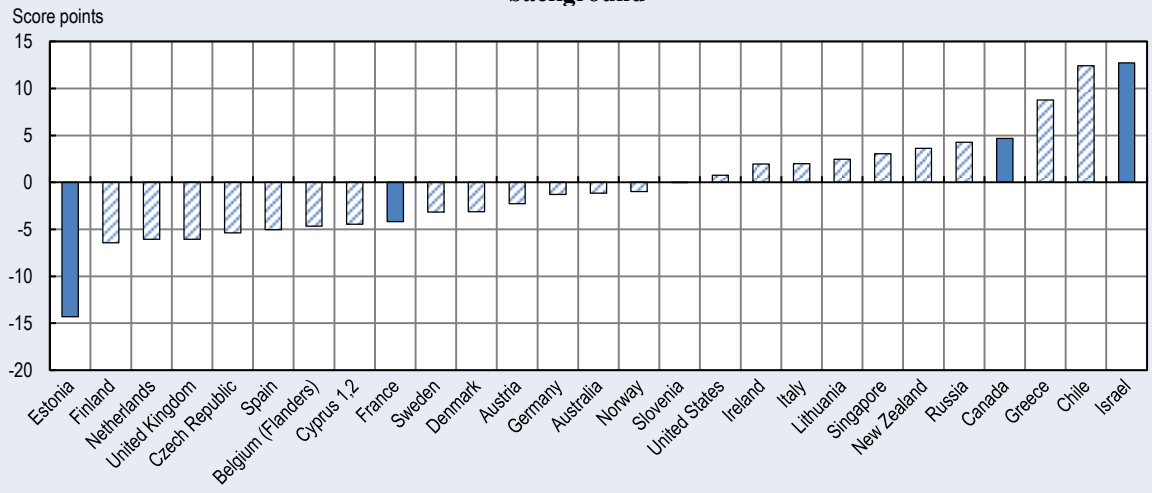
At the country level, the duration of stay matters for migrants' literacy proficiency, whether adjusting for migrants' age at arrival or not (Annex Figure 2.A.8). Recent migrants (migrants who have been in the host country for less than five years) have significantly lower literacy proficiency than natives, 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.

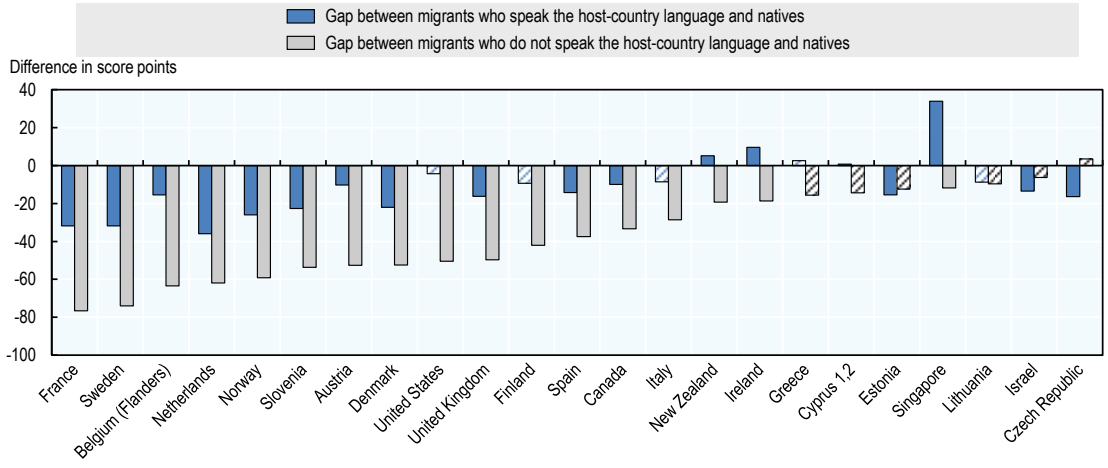
Factors explaining differences between migrants and natives in numeracy proficiency

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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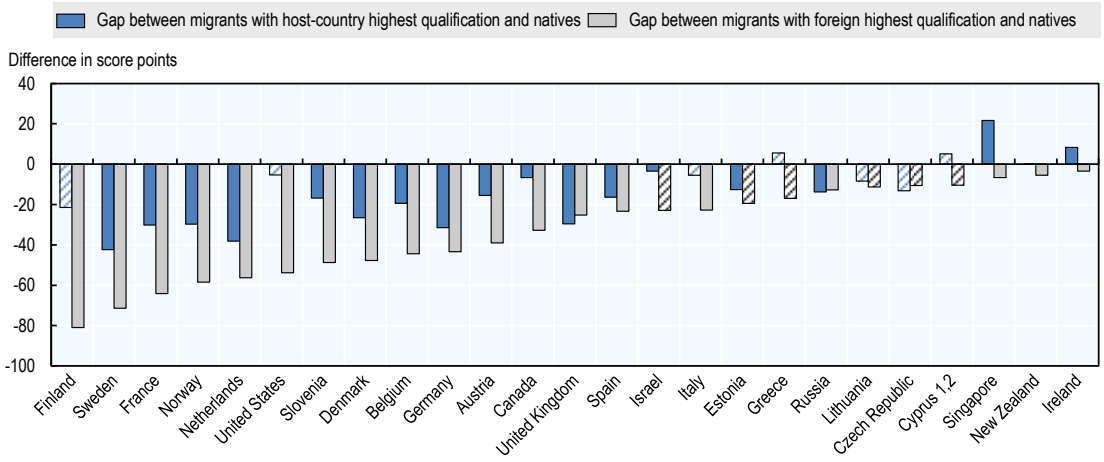
Numeracy proficiency also depends on where education was obtained

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.

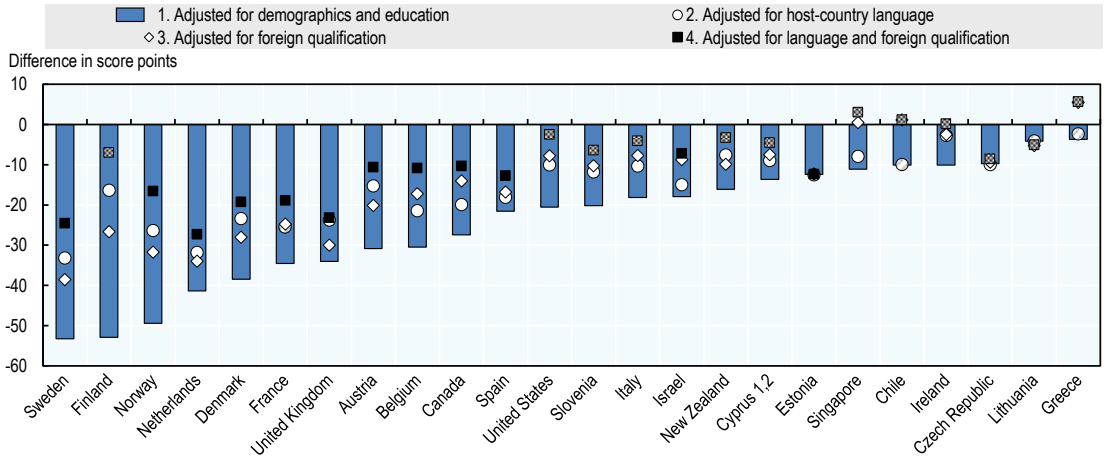
A skill gap remains, even for migrants who speak the host-country language and obtained their qualifications in the host country

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

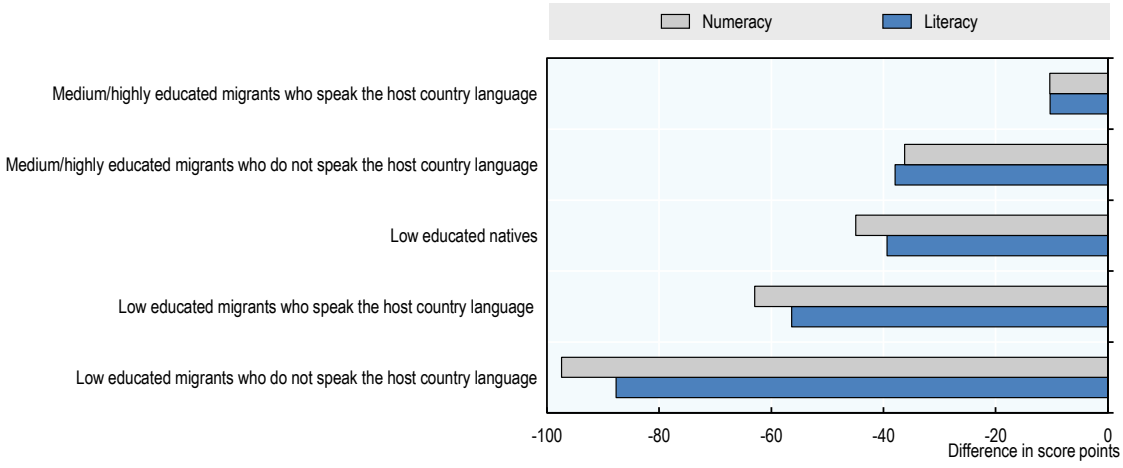
It has been demonstrated that speaking the host-country language is a key factor correlated with migrants' proficiency in literacy and numeracy as measured by PIAAC. But is this effect the same for all migrants, irrespective of their education level? Does it matter more or less for persons with higher 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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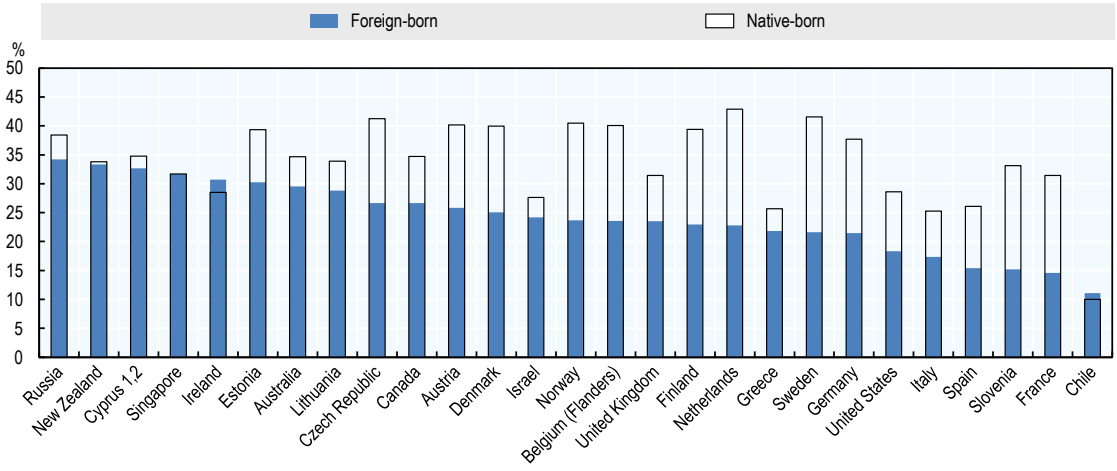
Annex Figure 2.A.1. Adults with high numeracy proficiency levels, by place of birth: shares of persons reaching level 3 in numeracy proficiency



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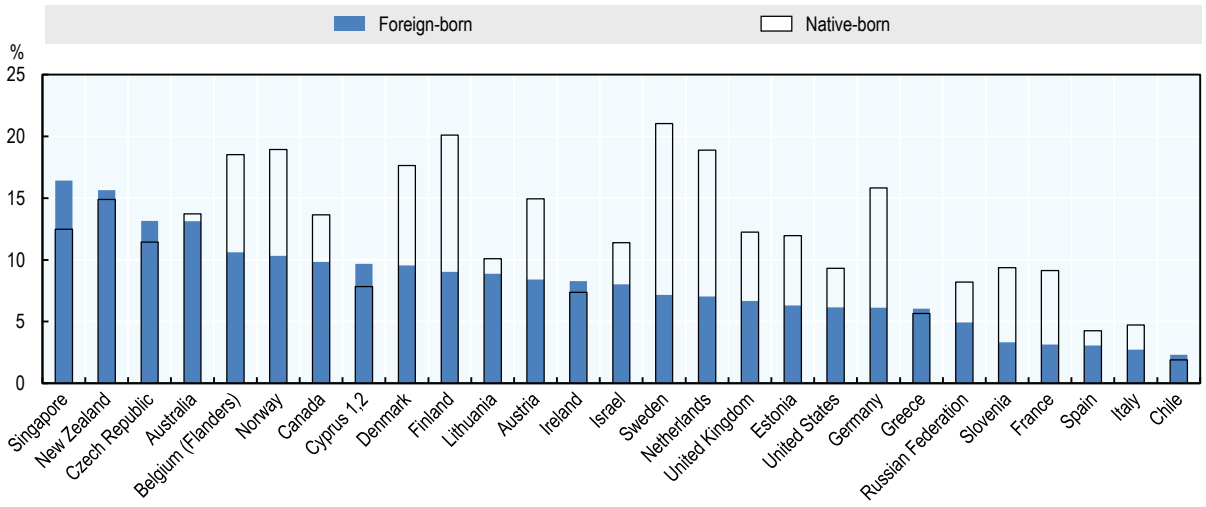
Annex Figure 2.A.2. Adults with high numeracy proficiency levels, by place of birth: shares of persons reaching levels 4 and 5 in literacy proficiency



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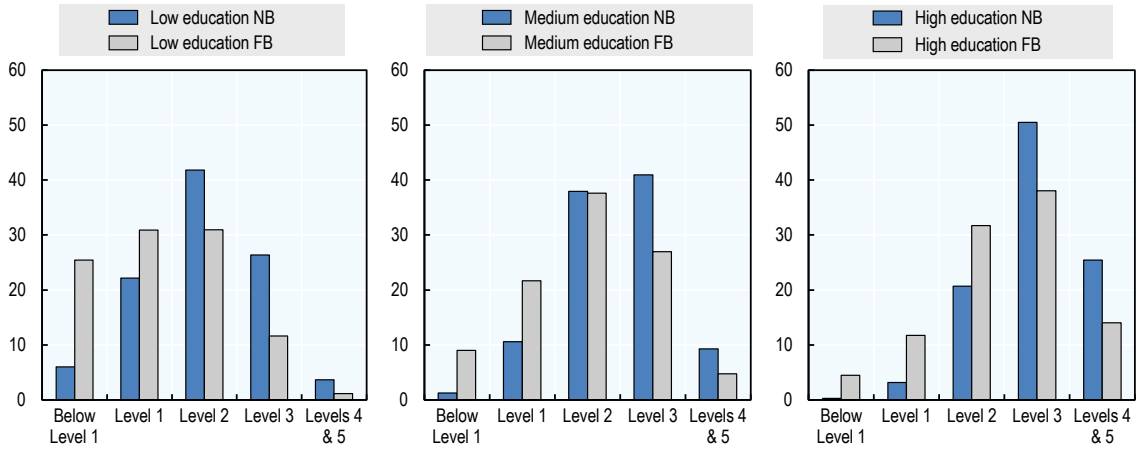
Annex Figure 2.A.3. Levels of literacy proficiency, by place of birth and education level



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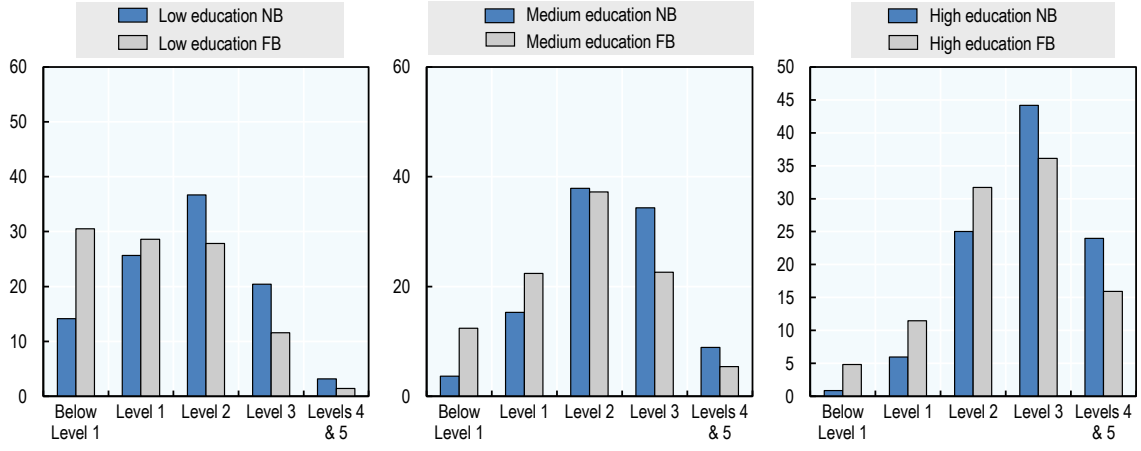
Annex Figure 2.A.4. Levels of numeracy proficiency, by place of birth and education level



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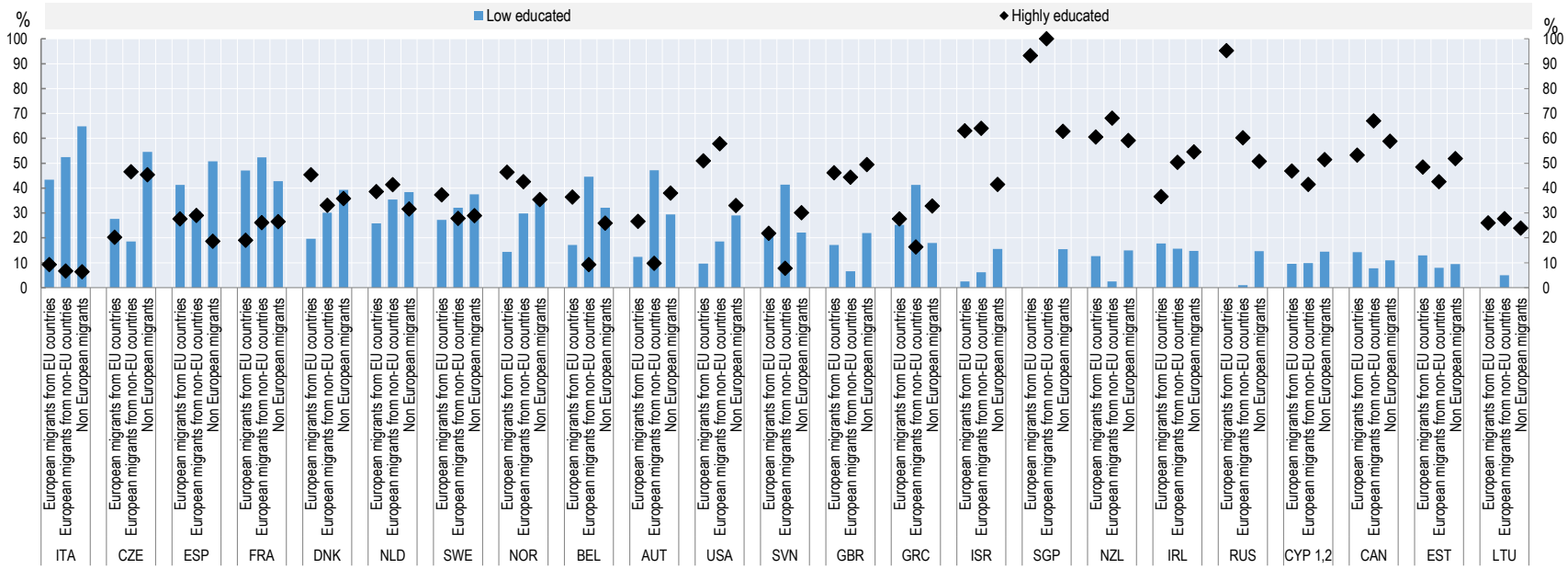
Annex Figure 2.A.5. Share of low- and highly educated migrants, by region of origin

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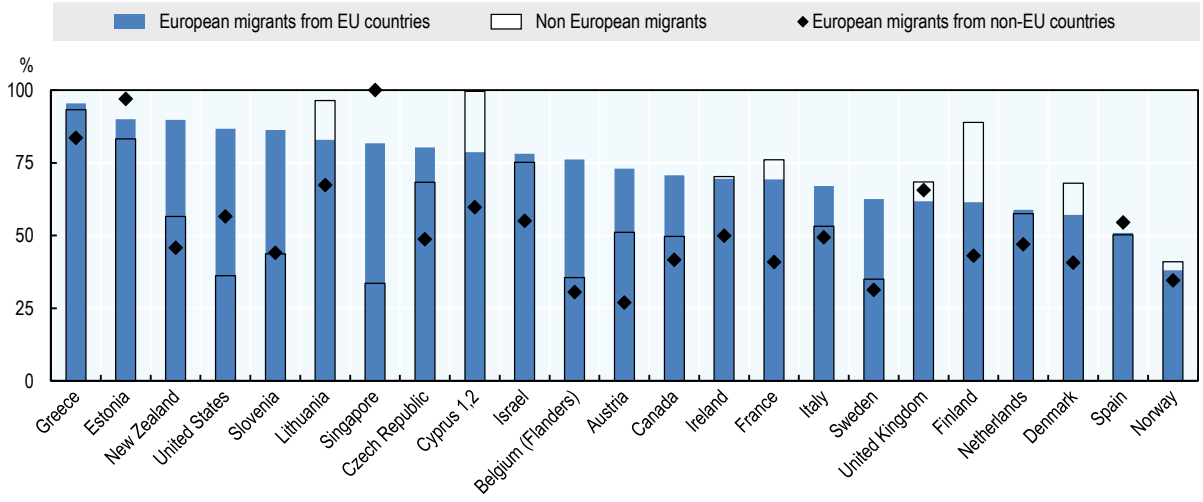
Annex Figure 2.A.6. Share of migrants who speak the host-country language, by region of origin

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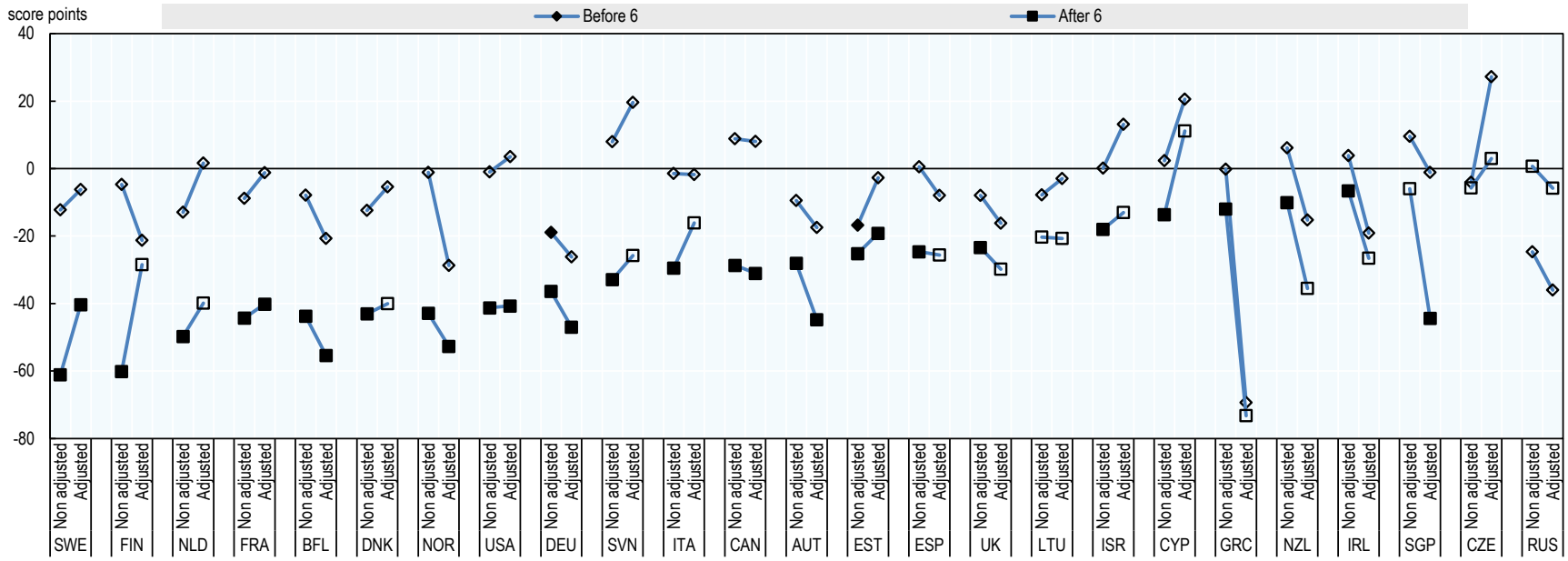
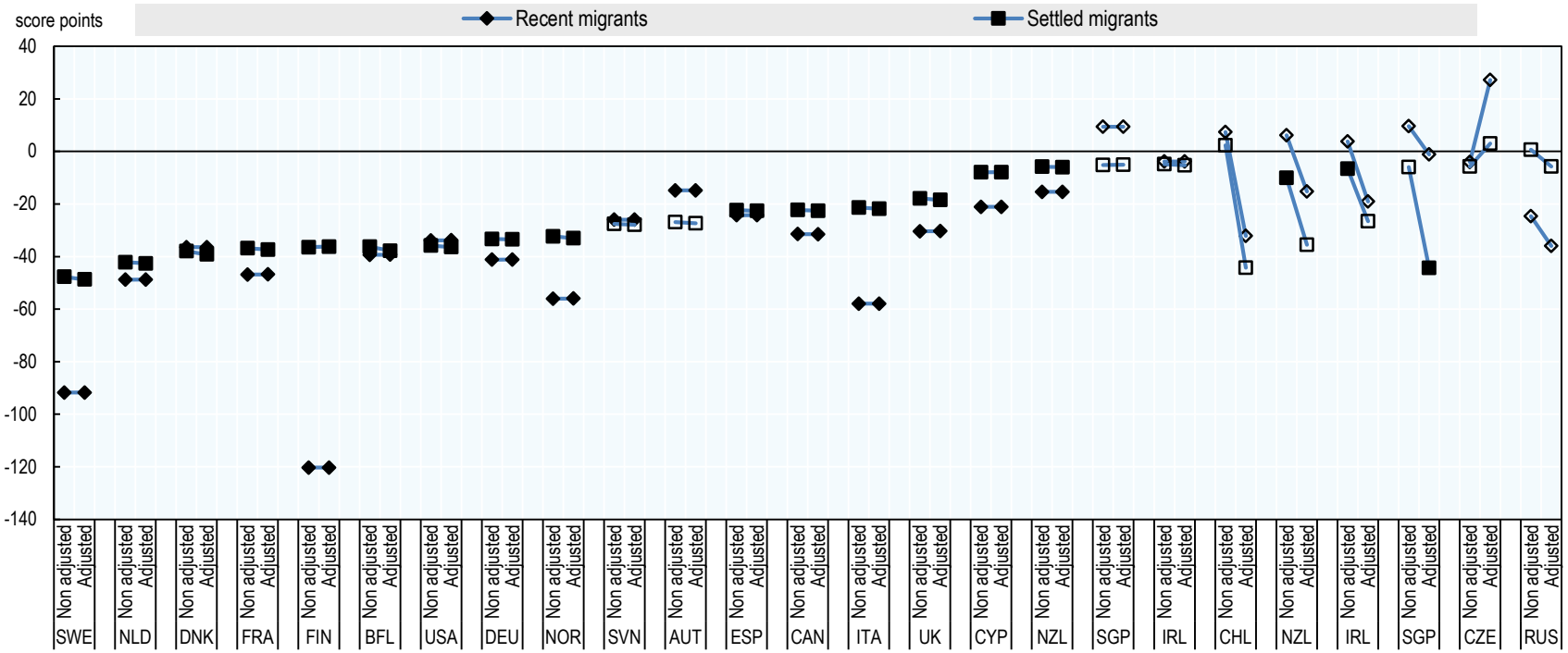
Annex Figure 2.A.7. Difference in literacy proficiency between natives and migrants who arrived in the host country before/after the age of six



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).

StatLink http://dx.doi.org/10.1787/888933847220

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

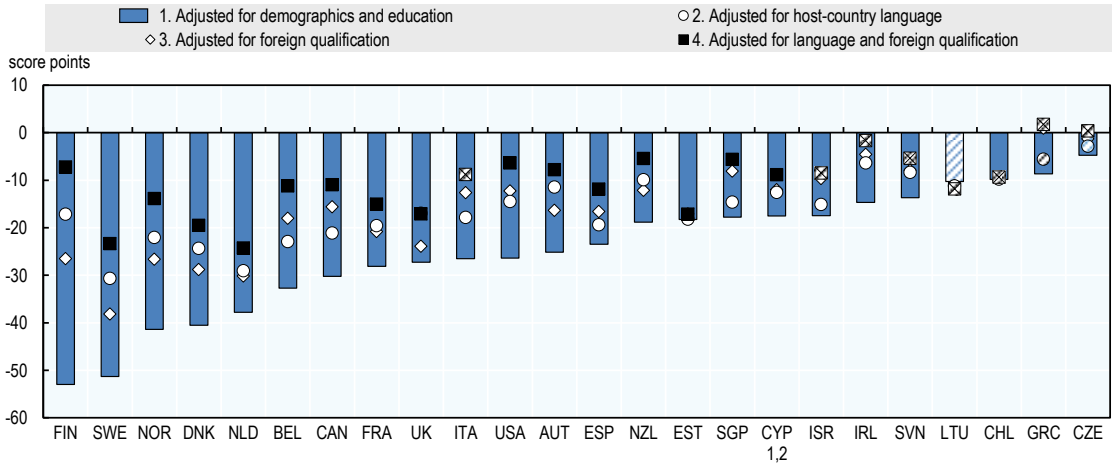


Note: The sample includes persons aged 16-65. The results in this figure are coefficients obtained from separate regressions with no controls in the "no adjusted" square or diamond and with controls for age at arrival in the host country in the "adjusted" square or diamond. The non-filled (white) diamonds 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

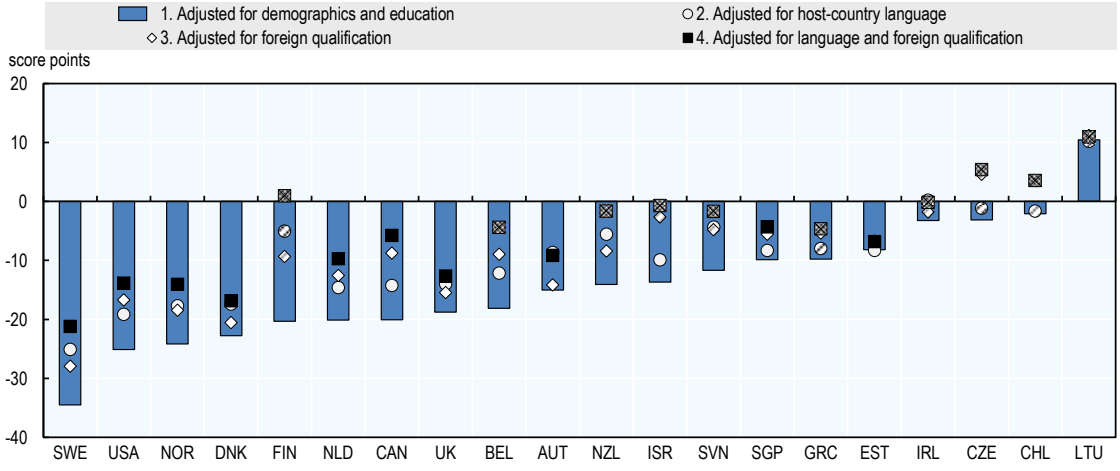


Note: The sample includes persons aged 16-65. The results in this figure are coefficients obtained from separate regressions with controls for level of education, age, gender and parents' background. Parents' educational background is defined as the highest education level attained between the mother 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

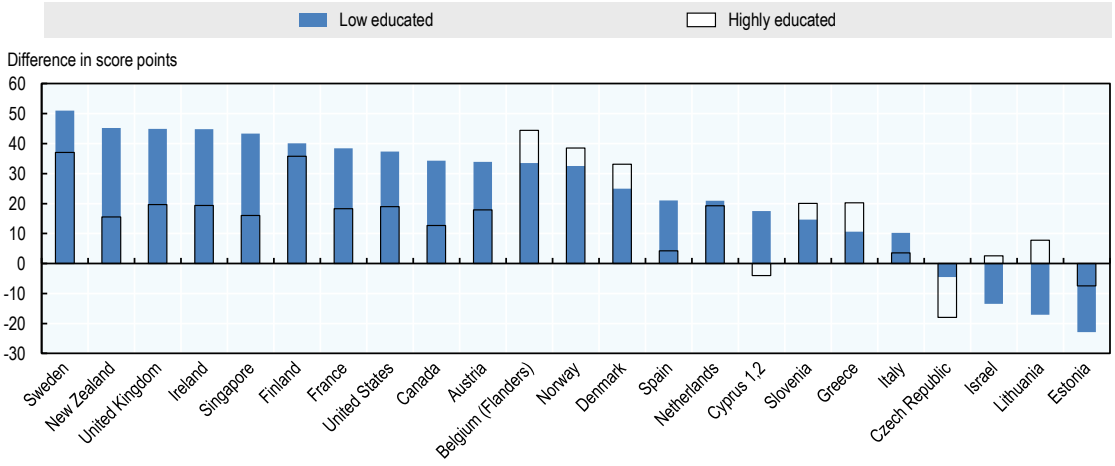


Note: The sample includes persons aged 16-65. The results in this figure are coefficients obtained from separate regressions with controls for level of education, age, gender and parents' background. Parents' educational background is defined as the highest education level attained between the mother 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

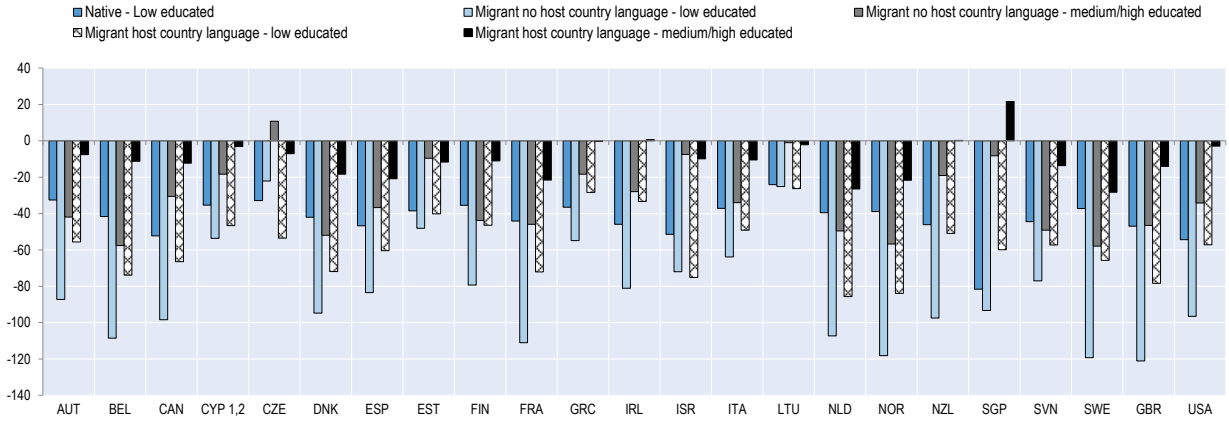


Note: The sample includes persons aged 16-65. Low educational attainment refers to less than upper secondary education; high educational attainment refers to tertiary education. Belgium only covers Flanders; the United Kingdom only covers England and Northern Ireland.
Source: Survey of Adult Skills (PIAAC)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

StatLink http://dx.doi.org/10.1787/888933847410

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).

StatLink http://dx.doi.org/10.1787/888933847429

Chapter 3. Language matters: language disadvantage and the outcomes of foreign-born adults in PIAAC

Chapter 3 illustrates that foreign-born individuals whose mother tongue is different from the language of the test tend to have lower literacy and numeracy proficiency (when these are assessed in the language of their country of residence) and poorer labour market outcomes than individuals whose mother tongue matches the language spoken in the country. However, language penalties in information processing skills and labour market outcomes vary considerably, both across countries and within countries across different migrant groups. This chapter illustrates that the depth of the language penalty in skills and labour market outcomes is related to the degree of proximity between the mother tongue spoken by migrants and the language spoken in the country of destination. Individuals whose mother tongue is very different from the language spoken in their country of residence have very low proficiency relative to the native born if they arrived in the host country after the age of 12, and the negative impact persists irrespective of length of stay. Furthermore, these individuals are less likely to have access to gainful employment, irrespective of their age, gender or educational level.

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 role of language in shaping the integration of migrants

Previous empirical investigations of some of the factors that explain differences in information processing skills and labour market outcomes between migrants and native populations identify language as a crucial element (Bonfanti and Xenogiani, 2014[1]; Isphording, 2014[2]);. On average individuals whose mother tongue is different from the language spoken in the host country have been shown to have lower levels of literacy and numeracy than individuals whose mother tongue matches the language spoken in the country. Moreover, language is important in explaining differences in labour market participation and wage levels (Isphording, 2014[2]; OECD/EU, 2014[3]).

One possible explanation for the observed differences in information processing skills (such as literacy and numeracy) between native language speakers and individuals whose mother tongue is not the same as the language of the assessment in which these skills are measured is that measurements of these skills capture both skills proficiency and language fluency. To the extent that migrants whose mother tongue is different from the language of the host-country are less fluent in the language of the host country than natives, they will tend to perform less well in standardised tests that require language proficiency given similar levels of underlying skills.

Language fluency has been considered in the literature as a key driver of immigrants' integration, because it facilitates individuals' access to job opportunities, job retention, and career progression. Individuals who are fluent in the host-country language are also more likely to participate in the social life of their communities, to be able to access public services and contribute to local activities (Dustmann and Van Soest, 2001[4]; Dustmann and Fabbri, 2003[5]; Bleakley and Chin, 2004[6]; Bleakley and Chin, 2010[7]). The labour market returns to language fluency are linked to the ability to access and use information on job opportunities, ability to perform during the hiring process, and higher productivity while on the job.

Several factors influence the process that leads to the acquisition of language fluency. In a seminal work, Chiswick and Miller (1995[8]) developed a theoretical framework that classifies the determinants of language skill acquisition into factors that affect the level of exposure migrants have to the language of the host country and factors that shape the ability and the efficiency migrants have of becoming fluent in a new language.

The level of exposure migrants have to the host-country language can be considered to be a function of the time spent in the host-country, the number of interactions that on average occur per unit of time, and the efficacy of such interactions. First and foremost, the level of exposure to the host-country language is associated with the number of years they spent in the host country: other things being equal, migrants who lived in their host country for longer will have been more exposed to the host country language. The relationship between the number of years spent in a country and language fluency does not, however, need to be linear. For example, the marginal returns to time spent in the country may be decreasing, such that each additional year may be associated with a smaller improvement in language fluency. Alternatively, the marginal returns to time spent in the country may be increasing, if a certain level of language proficiency is a precondition for individuals to be able to acquire new language skills and the more fluent an individual is, the faster the pace of additional improvements will be.

Fluency may be the result not only of the quantity of individuals' exposure to the foreign language, but also of the quality of exposure and the ease with which migrants acquire a new language. Irrespective of overall length spent in the host country, individuals who

arrived as young children may be able to acquire the host country language with much greater ease (Newport, 2002[9]). In fact, supporters of the Critical Period Hypothesis argue that the age of 12 marks an important threshold after which the efficiency with which individuals acquire language skills in a foreign language decreases markedly. Individuals who have high levels of education and who have high levels of literacy in their native language may also be better able to understand what is required to become proficient in a new language, how to seek and how to access support to do so and as a result may be better placed to be able to gain fluency. For example, Dustmann (1994[10]) and Isphording and Otten (2011[11]) illustrate that non-native German immigrants in Germany who had good writing abilities in the mother tongue acquired greater fluency in Germany than non-native German speakers who had poor writing abilities in their mother tongue.

Economic incentives have been shown to play an important role in motivating migrants to gain fluency in their host country language. For example, investments in language acquisition are positively associated with the expected duration of stay in the host country (Dustmann, 1999[12]; Isphording and Otten, 2014[13]). Migrants who expect or seek employment are likely to have a greater incentive to acquire language proficiency, as they will be required a higher degree of communication and interaction with others. For instance, in a study on female migrants in Germany, Dustmann (1994[10]) find that those that had not worked before had lower German-speaking fluency, irrespective of their level of education. Language requirements can differ markedly across occupations that are of equal social status or which command similar incomes.

Quality differences in levels of exposure not only depend on the characteristics of individuals, but also on the opportunities they have to interact with native speakers and the depth of such interactions. Migrants who live in neighbourhoods which are predominantly occupied by native speakers have greater and higher quality exposure to the host country language per unit of time spent in the host country when compared to migrants who live in neighbourhoods which are densely populated by non-native speakers. Evidence from Australia (Chiswick and Miller, 1995[8]) and the United Kingdom (Dustmann and Fabbri, 2003[5]) suggests that there is a negative relationship between levels of ethnic minority density in a given location and the language skills of migrant residents. Other studies have analysed the language skills of intermarried immigrants in Australia (Meng and Gregory, 2005[14]) and immigrant spouses in the U.S, suggesting a positive effect of depth of exposure to the host country language on language fluency.

The make-up of non-native language speakers in PIAAC participating countries

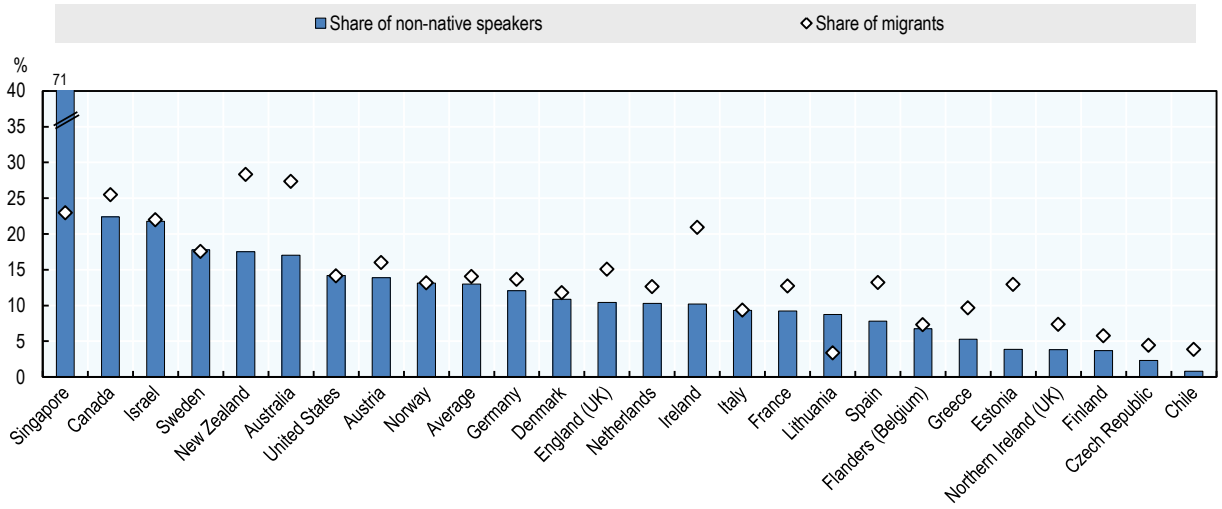
PIAAC reveals that, although on average around 12% of adults in PIAAC participating countries are not native speakers, countries differ greatly in the language composition of their adult populations (Figure 3.1). Not native speakers in PIAAC are defined as those individuals who reported to have spoken at birth (and still understand) a language that is different from the language of the test. For example, in Singapore over 71% of adults surveyed in PIAAC were not native speakers, because many sat the test in English but at birth they spoke Malaysian, Tamil, or Chinese or other languages. Apart from Singapore, non-native speakers represent over one in five of the adult population in Canada (22%) and Israel (22%).

While there is an association between the probability that migrants, defined in PIAAC as participants who were not born in the country in which they sat the PIAAC test and being a non-native speaker, the correspondence is far from perfect: on average across PIAAC

participating countries, around 59% of the migrant population are not native speakers and around 5% of the native population is as well not native speakers. This means that, in PIAAC-participating countries, 70% of not native speakers are also migrants. Figure 3.1 illustrates that countries differ in the composition of their resident adult populations: in some countries there are more individuals who are not native language speakers than there are migrants, while in others there are more migrants than not native language speakers. In Lithuania a higher percentage of the adult resident population is not a native language speaker than is foreign-born. These are countries with established language minorities. By contrast, in New Zealand, Australia, Ireland, Estonia, Spain, the United Kingdom and France a higher percentage of the adult resident population is foreign-born than is not a native language speaker. These are predominantly countries where migrant communities come from countries where the same language of the country of destination is spoken.

While Figure 3.1 indicates that there is no exact match between language status and migration status and that countries differ greatly in the extent to which they are home to not native speakers, it does not shed light on the extent to which migrants in PIAAC participating countries vary in the composition and mix of languages that are spoken. Figure 3.2 shows the different linguistic groups that co-exist in selected PIAAC participating countries. Some of the countries with the largest overall percentages of not native speakers, such as Singapore and Israel have a low level of language diversity, since they are home to a small group of well-defined language groups. In Singapore, for example, three large language groups coexist: individuals whose mother tongue is Chinese (representing 76% of the non-native speaker population), individuals whose mother tongue is Malay (representing 14% of the non-native speaker population), and finally individuals whose mother tongue is Tamil (4% of the non-native speaker population). In a second group of countries most language minority residents belong to one large language minority group, with the presence of a few small groups. This is the case of the United States, where Spanish is the language spoken at birth by the majority of the non-native speaker population (representing almost 60% of this group). Chinese is the second most spoken language representing around 6% of the adult resident population, followed by Vietnamese (0.31%), Tagalog (0.27%), Russian (0.25%), German (0.23%) and other languages. Similarly, in Estonia, Russian is the most prevalent language group, with around 58% of the non-native speaker population speaking Russian as their mother tongue. A third group of countries comprises countries where a large variety of language groups coexists: countries such as Canada and Italy are countries that differ greatly in their migration regimes and history as countries of destination for migrants but both are now home to a large variety of language minority populations.

Figure 3.1. Percentage of migrants and non-native speakers in PIAAC participating countries

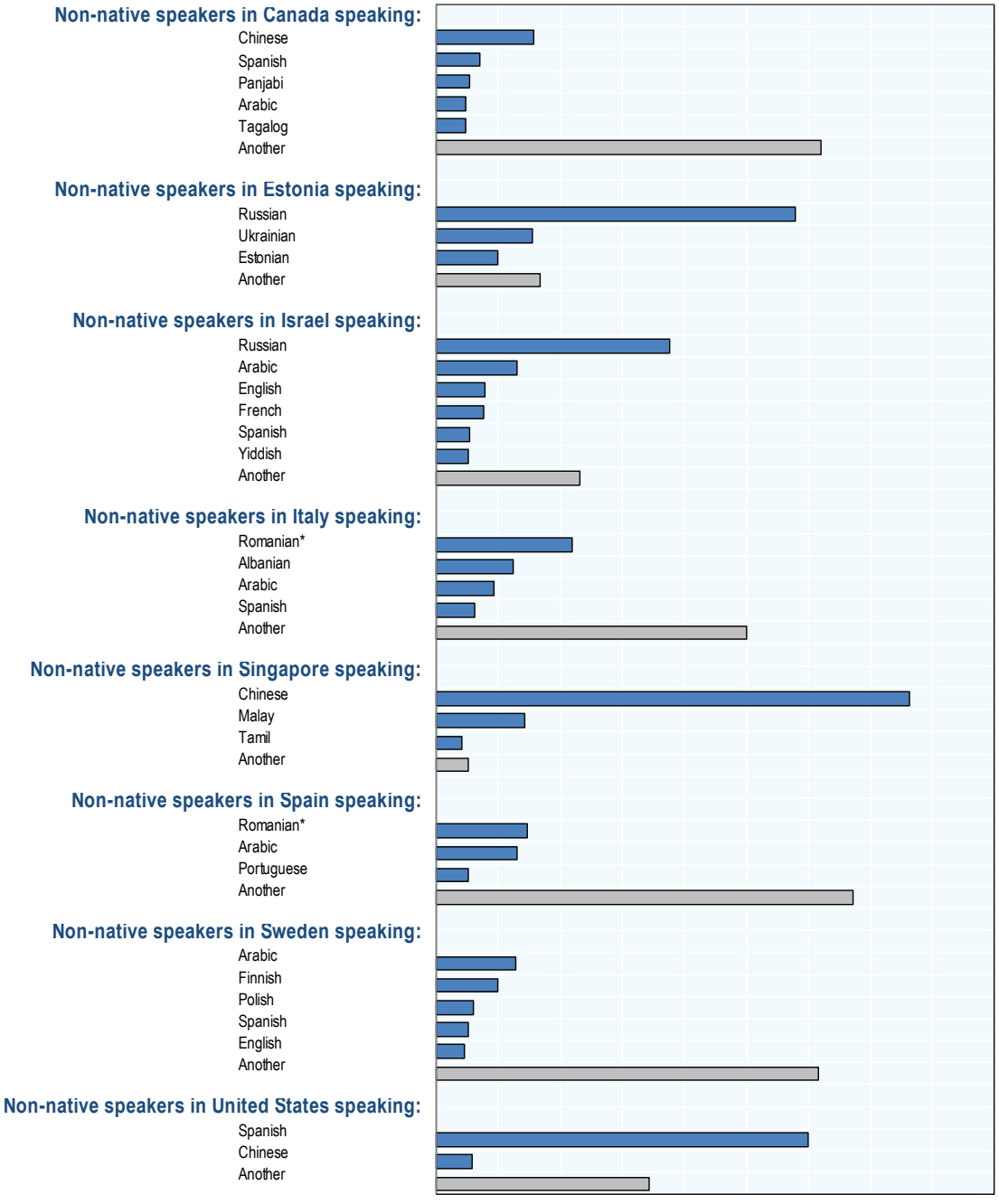


Note: Non-native speakers are defined as those participants who reported to have spoken at birth a language that is different from the language of the test. Migrants are defined as those participants whose country of birth is different that the country at which they are doing the test. Estimates for the Russian Federation are missing due to the lack of language variables.

Source: (OECD, 2015[15]) Survey of Adult Skills (PIAAC) (2012, 2015), Table 3.A.1, www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933845738

Figure 3.2. Percentage of non-native speakers, by first language spoken at home and understood in selected PIAAC participating countries

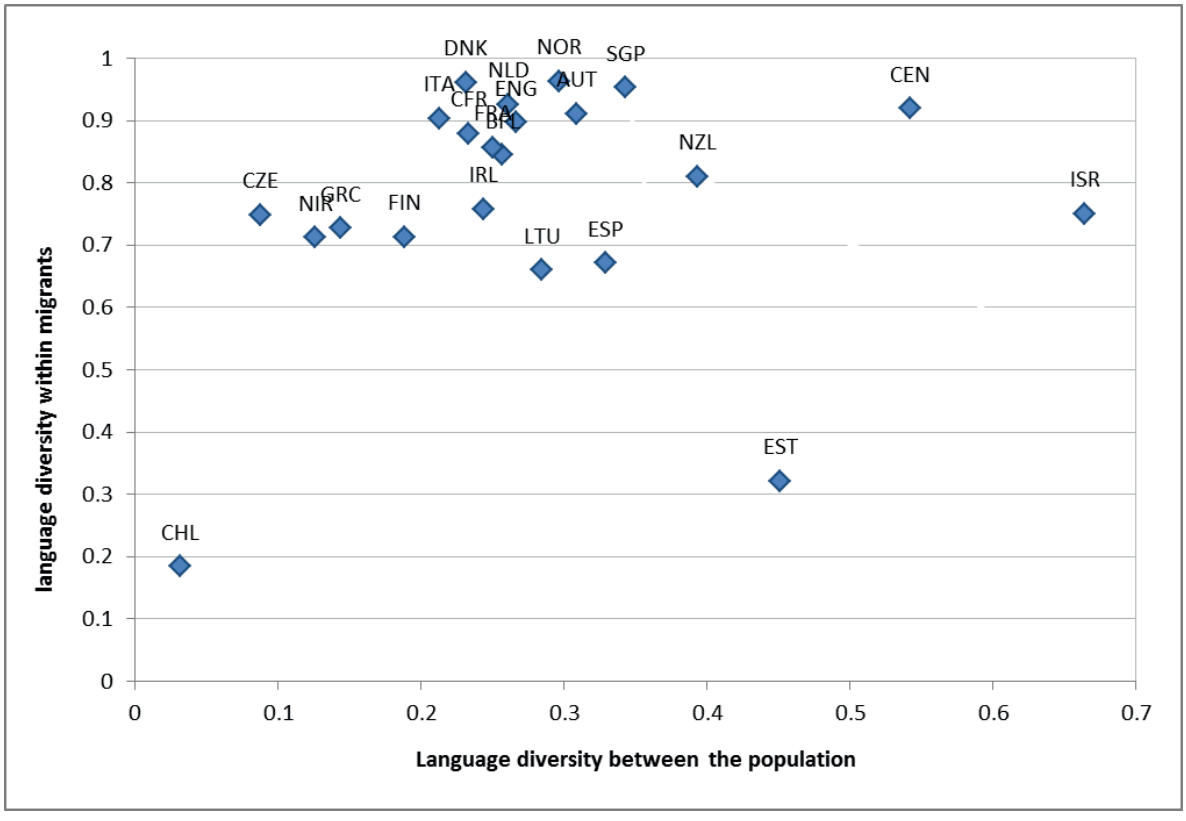


Note: Native speaker refers to whether the first or second language learned as a child is the same as the language of assessment, and not whether the language has official status.
* Romanian; Moldavian; Moldovan.
Source: (OECD, 2015[15]) Survey of Adult Skills (PIAAC) (2012, 2015), Table 3.A.2, www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933845757

Standard characterisations of the impact migration has on social diversity of host countries are based on statistics indicating the percentage of foreign-born individuals who live in the country or indices indicating birthplace or ethnic diversity through concentration/diversity indices (Easterly and Levine, 1997[16]; Collier, 2001[17]; Alesina, Harnoss and Rapoport, 2015[18]). Figure 3.3 illustrates the level of language diversity in PIAAC participating countries using information reported by individuals who participated in PIAAC on their native language. The figure illustrates two linguistic diversity indices: the within diversity index indicates the diversity of languages spoken by migrant communities, the between diversity index represents the overall share of population whose mother tongue is a language that is not the language in which they sat the PIAAC assessment. The two indices range between 1 and 0 with 1 representing higher diversity and 0 the case in which all individuals speak the same language.

Figure 3.3. Language diversity in PIAAC participating countries



Note: Estimates for Australia and Germany are missing due to the lack of language variables.
Source: (OECD, 2015[15]) Survey of Adult Skills (PIAAC) (2012, 2015), Table 3.A.3, www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933845776

Figure 3.3 indicates that countries differ greatly across the two components of the language diversity index. Chile is a country where few individuals do not speak Spanish both in the overall population and within the migrant population: the between linguistic diversity index is as low as 0.03 in the whole population and 0.18 when considering only foreign-born adults (within linguistic diversity index). At the other side of the spectrum lie the English speaking community of Canada and Israel, where diversity is high on both

dimensions: in Israel, between linguistic diversity at the population level is as high as 0.66 and within the foreign-born population it stands at 0.75. In English speaking Canada, the between level of diversity is 0.54 and within migrant communities it is as high as 0.92.

Language-related disadvantage

PIAAC reveals that the mother tongue language is an important determinant of differences in literacy proficiency. Figure 3.4 illustrates the average performance in literacy in PIAAC participating countries of natives, migrants whose mother tongue is the same as the language in which they sat the PIAAC test and migrants whose mother tongue is different from the language in which they sat the PIAAC test. The average difference between foreign-born and native-born individuals in PIAAC participating countries is 22 points. However, while the difference in the PIAAC scores of migrants who are native speakers and of non-immigrant native speakers is 10 points, this difference is as large as 27 score points between natives and migrants whose mother tongue is different from the language in which the PIAAC test was conducted.

However, Figures 3.4 reveals large differences across countries. In Lithuania, Estonia and the Czech Republic there are no significant differences in the literacy proficiency of migrants whose mother tongue is the same as the language of the PIAAC assessment and those whose mother tongue is different. In a second group of countries the migrant gap is largely explained by the fact that migrants speak a language that is different from the language in which the PIAAC assessment was conducted. For example, in Australia, Austria, Greece, Finland, the Netherlands and Singapore over 70% of the migrant gap in literacy scores can be explained by the language penalty, controlling for the influence of age, gender and the level of education attained. Similarly, Figure 3.5 shows that in Australia, Austria, Singapore and Finland over 75% of the migrant gap in numeracy scores can be explained by the fact that migrants often speak a language that is different from the language in which the PIAAC test was conducted.

In no country do migrants who are native or non-native speakers have higher literacy proficiency than natives. Israel is the only country in the PIAAC sample in which migrants who are non-native speakers have better results than migrants who are native speakers.

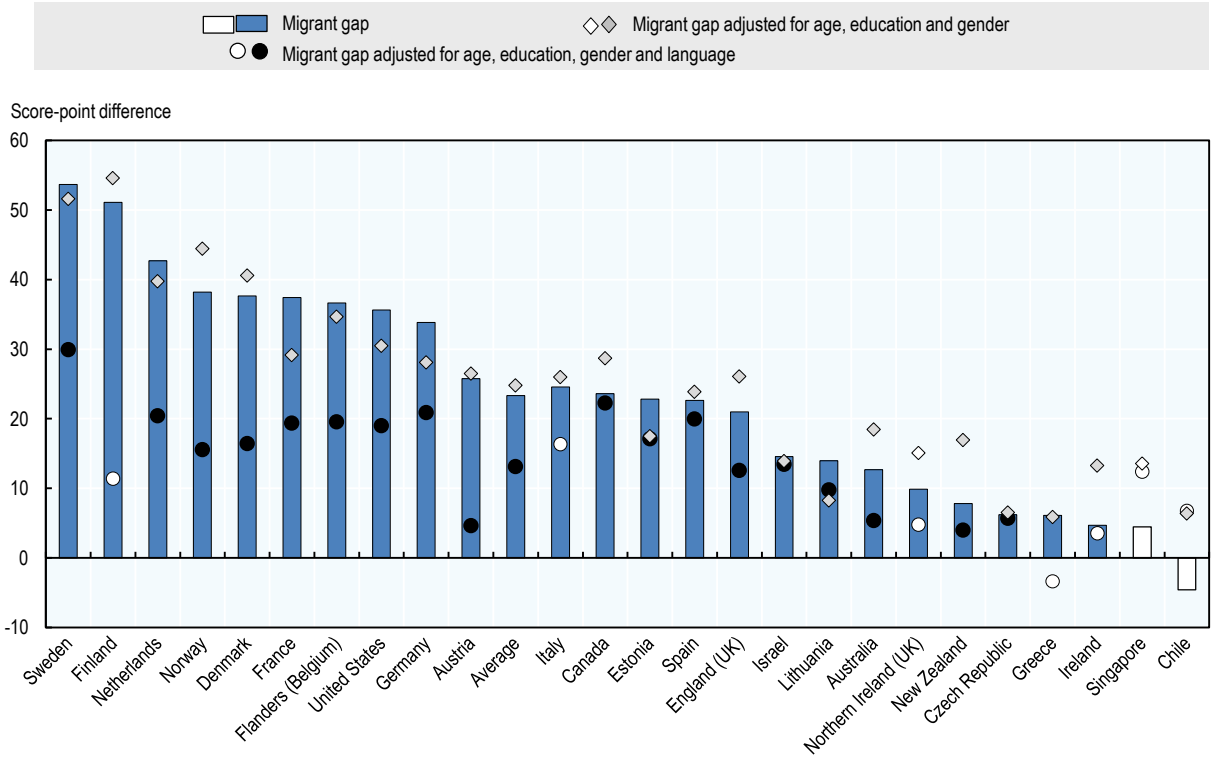
PIAAC reveals that being a non-native speaker is associated with lower literacy proficiency. However, individuals whose mother tongue is different from the language of the host country tend to have higher returns to skills than native language speakers. As shown in Figure 3.6, the returns to literacy skills for non-native speakers are generally similar or higher than for natives, controlling for factors such as educational attainment and years of experience. On average, and increase in 25 points in literacy proficiency is associated with a wage premium of 5.4% for non-native speakers, compared to 4% for natives or migrants whose mother tongue is the same as the host country language. Results are similar when considering the returns to numeracy skills in Figure 3.7. An increase in 25 points in numeracy proficiency is related to a 4.6% increase in wages for native speakers, and over 5.1% for non-native speakers.

Several explanations can lie behind the observed differences in returns. One possibility is that, because of language difficulties, given similar PIAAC test results among non-native speakers and native speakers, non-native speakers may have better unobserved characteristics and skills than native speakers (such as being proficient in another

language). The positive wage premium that is associated with literacy and numeracy skills among non-native speakers could also be due to differences in the sectors in which non-native speakers are employed.

Figure 3.4. Gap in literacy performance between natives and migrants, in PIAAC participating countries

Unadjusted and adjusted differences in literacy score between migrants and natives (Natives minus migrants)

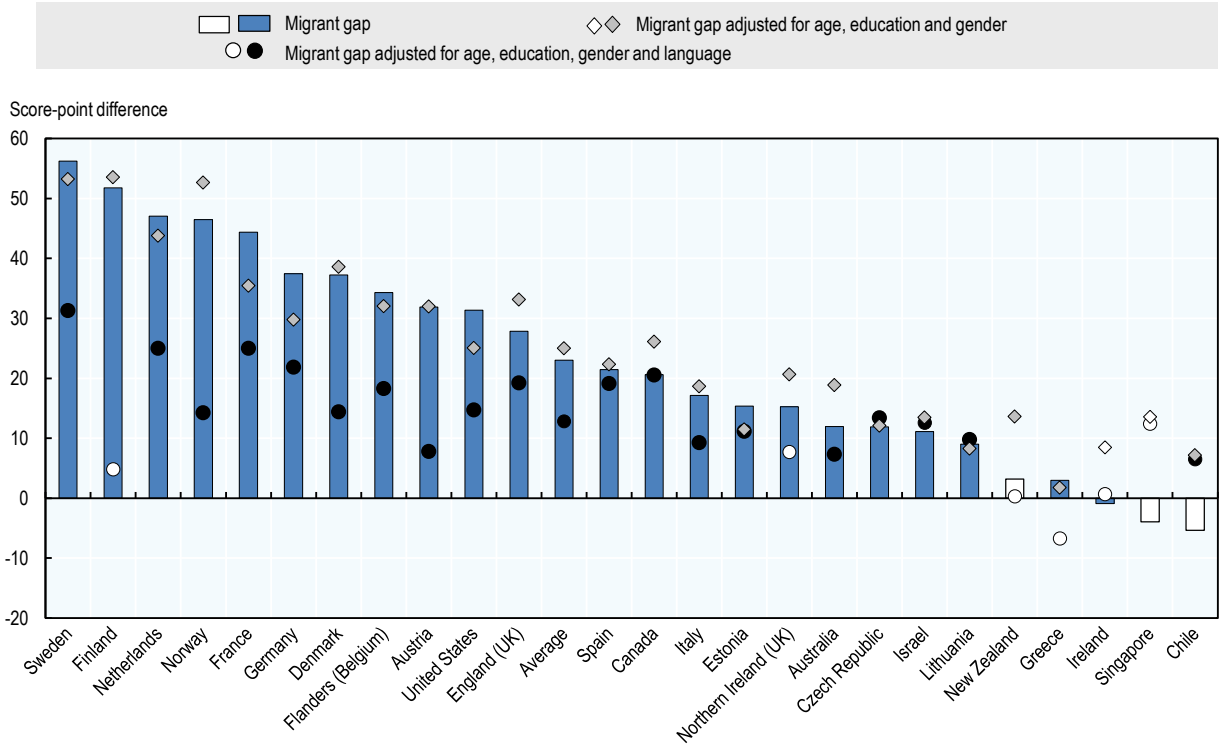


Note: Statistically significant differences are marked in a darker tone. Proficiency in literacy ranges between 0 and 500 score points. Adjusted differences are based on a regression model and take account of differences associated with all or some of the following variables: age, gender, education, and language background. Estimates based on a sample size less than 30 are not shown. Estimates for the Russian Federation are missing due to the lack of language variables.
Countries are ranked in descending order of the unadjusted migrant gap (natives minus migrants).
Source: (OECD, 2015[15]) Survey of Adult Skills (PIAAC) (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933845795

Figure 3.5. Gap in numeracy performance between natives and migrants, in PIAAC participating countries

Unadjusted and adjusted differences in numeracy score between migrants and natives (Natives minus migrants)

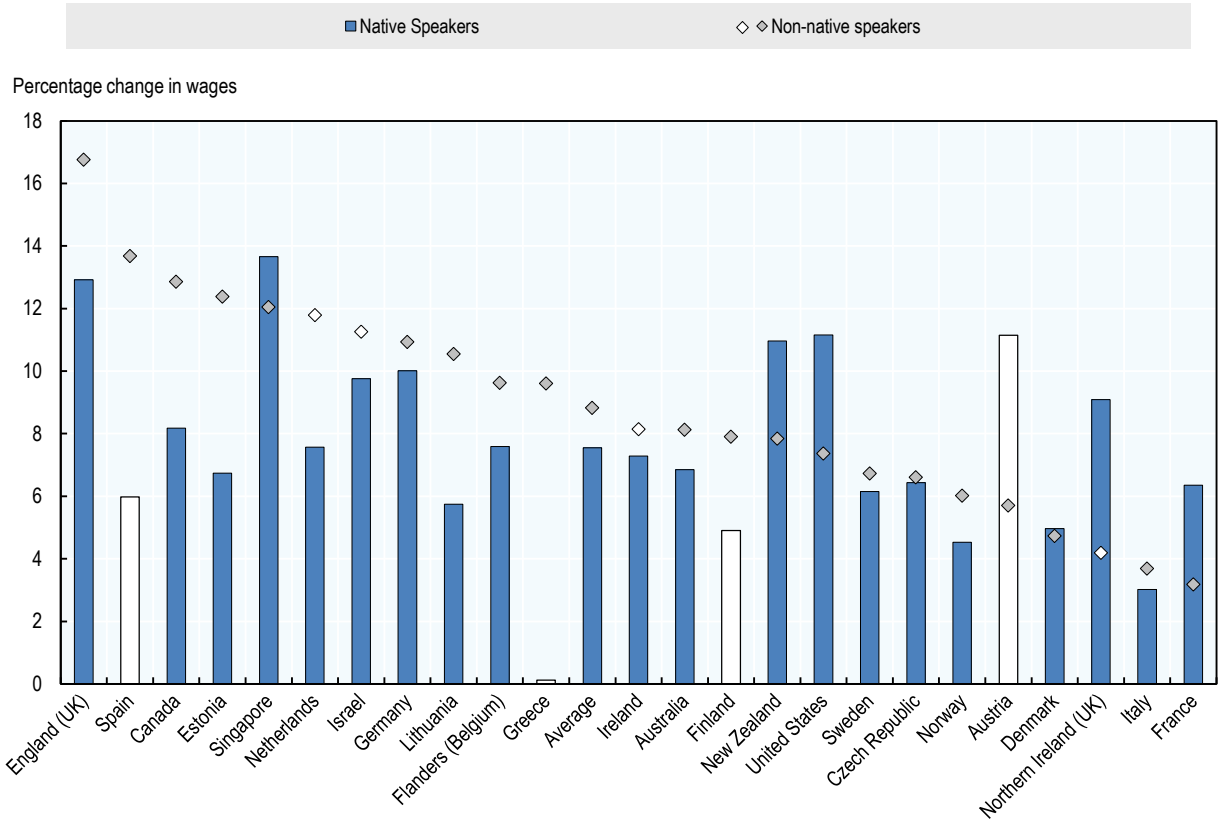


Note: Statistically significant differences are marked in a darker tone. Proficiency in numeracy ranges between 0 and 500 score points. Adjusted differences are based on a regression model and take account of differences associated with all or some of the following variables: age, gender, education and language background. Estimates based on a sample size less than 30 are not shown (Japan, Poland and Turkey). Estimates for the Russian Federation are missing due to the lack of language variables.
Countries are ranked in descending order of the unadjusted migrant gap (natives minus migrants).
Source: (OECD, 2015[15]) Survey of Adult Skills (PIAAC) (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933845814

Figure 3.6. Returns to literacy skill for individuals, by language background

Percentage change in wages associated with a one standard deviation increase in literacy proficiency for native and non-native speakers

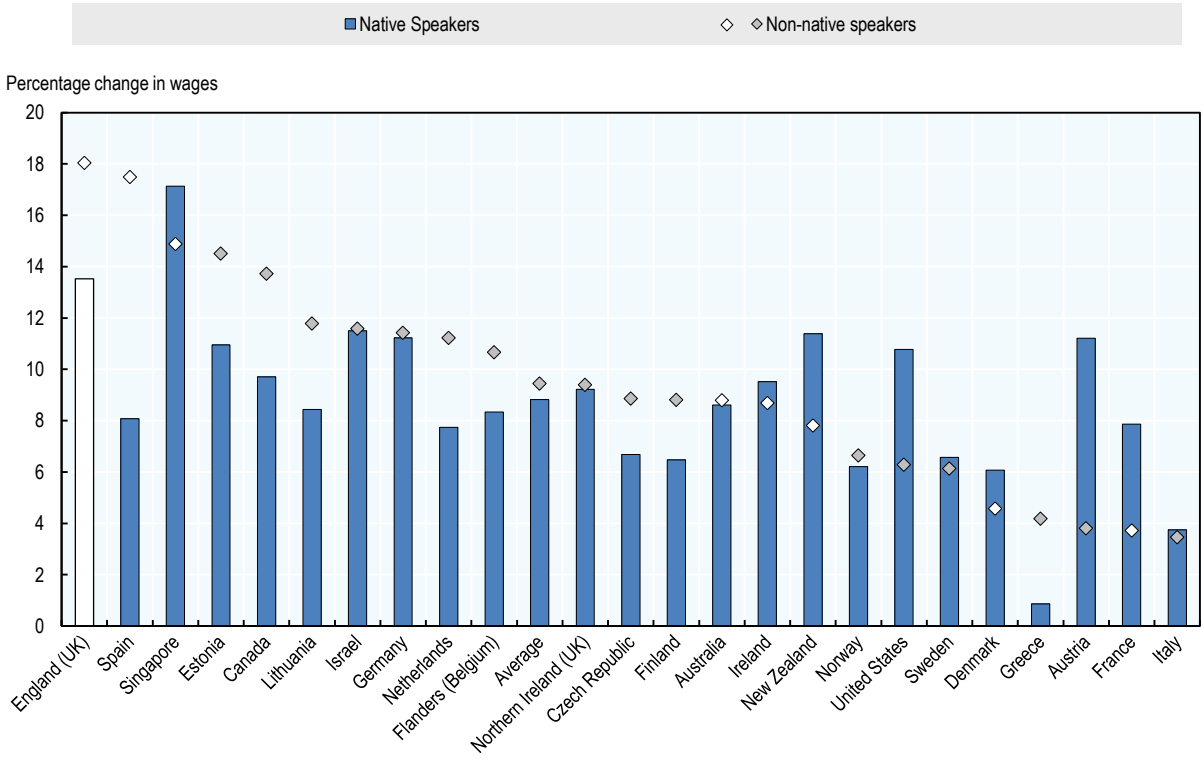


Note: Hourly wages, including bonuses, in PPP-adjusted USD (2012). The regressions are estimated with log wages as the dependent variable separately for language native and non-native workers and includes controls for years of education, years of experience and experience squared, part-time work and gender. The wage distribution was trimmed to eliminate the 1st and 99th percentiles. The estimated coefficients have been multiplied by 47 which corresponds to the standard deviation in literacy proficiency. Statistically significant coefficients are marked in a darker tone. Estimates based on a sample size less than 30 are not shown.
Countries are ranked in descending order of the percentage change in wages of the non-native speakers.
Source: (OECD, 2015[15]) Survey of Adult Skills (PIAAC) (2012, 2015), Table 3.A.4, www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933845833

Figure 3.7. Returns to numeracy literacy skills for individuals, by language group

Percentage change in wages associated with a one standard deviation increase in numeracy proficiency for native and non-native speakers



Note: Hourly wages, including bonuses, in PPP-adjusted USD (2012). The regressions are estimated with log wages as the dependent variable separately for language native and non-native workers and includes controls for years of education, years of experience and experience squared, part-time work and gender. The wage distribution was trimmed to eliminate the 1st and 99th percentiles. The estimated coefficients have been multiplied by 52 which corresponds to the standard deviation in numeracy proficiency. Statistically significant coefficients are marked in a darker tone. Estimates based on a sample size less than 30 are not shown.
Countries are ranked in descending order of the percentage change in wages of the non-native speakers.
Source: (OECD, 2015[15]) Survey of Adult Skills (PIAAC) (2012, 2015), Table 3.A.4., www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933845852

Language distance and migrant's outcomes

The analyses presented in previous sections clearly distinguish migrants into those whose native language is the same as the language in which the PIAAC test was conducted and those whose native language is different to conclude that in several countries speaking a language that is different from the language of the assessment is associated with lower literacy and numeracy scores. However, a dichotomous differentiation between same/different languages is inevitably simplistic and does not consider the rainbow of variability and degrees of similarity that exist between languages. For example, the language barrier that migrants from Spanish speaking countries face when settling in Italy is not the same that Spanish speaking migrants face when they settle in Finland. This section develops a more detailed analysis to capture the extent to which some of the

between-country variation in the language penalty gap that is observed in PIAAC is related to language composition of resident migrant populations. Furthermore, this section attempts to quantify the association between the degree of linguistic proximity between individuals' mother tongue and the language in which they sat the PIAAC assessment and their literacy, numeracy and wage levels.

This section builds on previous work on the issue based on data from IALS (Isphording, 2014[2]) and expands the analysis to include literacy, numeracy and wage levels but also considerably extends the generalisability of findings because of the wider spectrum of languages and countries covered in PIAAC compared to IALS. This section attempts to establish if the relative difficulty in learning a distal language explains differences in skill levels between migrants, especially among those who recently settled in the country, or arrived beyond the age of 12, a critical age for language proficiency acquisition.

To analyse the differences in literacy and numeracy proficiency between native and non-native speakers, and study the extent to which language dissimilarity explains part of the variability in the performance gap and labour market outcomes of individuals who are non-native speakers, this chapter uses a measure of linguistic proximity. The Automatic Similarity Judgement Program (ASJP), developed by the German Max Planck Institute for Evolutionary Anthropology, is based on the comparison of the pronunciation of words that have the same meaning in pairs of languages. Languages can differ along a number of dimensions: vocabulary, grammar, pronunciation, scripture and phonetic inventories. The overall distance between any two pairs of languages reflects the degree of dissimilarity across all key language dimensions and reflects the ease/difficulty with which individuals speaking one language can acquire proficiency and mastery in the other language. Box 3.1 includes an explanation of how this measure is computed as explained in Bakker et al., (2009[19]).

Box 3.1. Estimation of the Language Distance index: Levenshtein Distance and the ASJP programme

The Levenshtein distance is a metric developed to identify the difference between two sequences. When comparing words, the Levenshtein distance characterises the minimum number of single-character edits (insertions, deletions or substitutions) that one is required to perform in order to change one word into the other (Levenshtein, 1966[17]). This chapter is based on previous work exploiting the Levenshtein distance to compute the level of dissimilarity across combinations of languages (Bakker et al., 2009[15]). The Max Planck's ASJP programme developed a composite indicator based on the automatic comparison of the pronunciation of 40 words that have the same meaning from 4 664 languages. The indicator is built using the following procedure. First, each pair of words i with the same meaning is judged according to their similarity in pronunciation, by counting the number of insertions, deletions or substitutions of consonants and vowels that are necessary to transfer the phonetic transcription of one word (in language x) to the other correspondent word in language y, obtaining a measure of the distance between language x and y for the pair or words i, $D_i^n\ (x, y)$. For example, the English word person – expressed phonetically as pers3n – needs 2 insertions, deletions or substitutions to be transformed into the same word in Spanish, persona.

To aid interpretations, the table below displays some examples of the Levenshtein distance between words of different languages with the same meaning. This first value that we estimate, for each pair of words, is then normalised by the potential maximum distance between both words, obtaining $D_i^n\ (x, y)$. The average the normalised distances estimated for the 40 words in the list is then computed obtaining the normalised language distance between languages x and y, $LD_{(x,y)} = \sum_i D_i^n\ (x, y) \frac{1}{M}$. This estimate is normalised again by dividing it by the global distance $\mathrm{T}_{(x,y)} = \sum_{i \neq j} D\left(x_i, y_j\right) \frac{1}{M(M-1)}$, which is the average distance between any word in the list in language α with any word in the list for language β.

Finally, to obtain our definitive measure of language distance, we divide our previous value of normalised language distance $LD_{(x,y)}$ by the global distance $\mathrm{T}_{(x,y)}$ to obtain the normalized normalised and divided Levenshtein distance $LDND_{(x,y)} = \frac{LD_{(x,y)}}{\mathrm{T}_{(x,y)}}$.

Table 3.1. Examples of measurement of language distance between words

Word	Spanish	English	Distance
You	Tu	Yu	1
Not	No	Nat	2
Person	Persona	Pers3n	2
Night	noCe	nEit	3
Mountain	Monta5a	Maunt3n	5

Source: (Brown et al., 2008[20])

In order to identify if the variability in the outcomes of migrants is associated with how similar/dissimilar their mother tongue is to the language of their host country, a linguistic proximity indicator was computed for all pairs of languages present in the PIAAC

respondent's sample. The Language Distance index is then used as a control in models that estimate gaps in literacy and numeracy.

A shortcoming of the diversity indices represented in Figure 3.3 is that while they capture quantitative differences in the size of the different language groups, they do not account for the degree to which languages differ from each other and, even more crucially, for the degree to which language minorities differ from the main language spoken in a country. In order to account for these qualitative differences, Figure 3.8 displays not only the level of language diversity that exists within migrant populations, but also the extent to which, on average, the languages that migrant communities speak are very similar or very different from the language in which they sat the PIAAC test which, for the large majority of countries, corresponds to the official language spoken either in the country as a whole or in the local community in which the respondent lives.

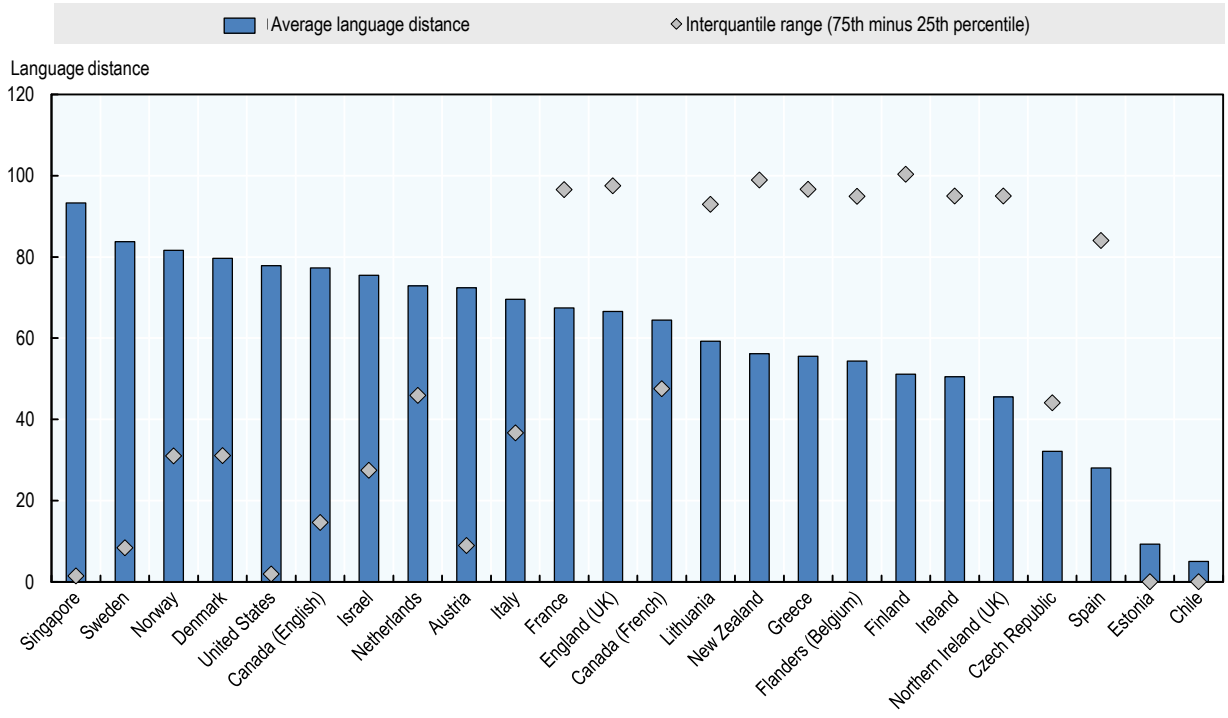
Figure 3.8 suggests that the two dimensions are correlated: countries with migrant populations that are non-homogeneous tend to be countries in which, on average, the distance between the languages spoken by migrants and the official language spoken in the country is largest and, conversely, countries with homogeneous migrant populations tend to be countries in which the average language distance is smallest. At the two extremes are Sweden and Chile. Sweden is home to a large number of migrants from several communities, most of which speak a language that is very different from Swedish. By contrast, most migrants in Chile speak the same language and this language is Spanish, therefore the language distance indicator in Chile is very low. The United States and English speaking parts of Canada, Slovenia and the Czech Republic have similar levels of language distance, but they differ importantly in the degree of diversity within language groups that are observed in the country. The level of diversity of languages spoken in Finland and the Slovak Republic is roughly the same, but the average language distance between Finnish and the languages spoken by migrants in Finland is considerably greater than the average language distance observed in the Slovak Republic.

Within countries there are important differences in the language distance that different groups of migrants face. For example, among migrants who live in Italy the language distance that Romanian migrants face is considerably lower than that faced by Albanians. The Language Distance index between Romanian and Italian is in fact 57 while it is 93 between Albanian and Italian.

The level of diversity of languages spoken by migrants and the degree to which on average such languages differ from the official language spoken in the country is an important consideration when assessing the potential language training needs of migrant communities. The greater the distance between the languages spoken by minorities and the official language spoken in the country is, the more intense and long term language training needs are likely to be and the more difficult obtaining language fluency will be for migrant communities. The greater the diversity of languages spoken by migrants, the more difficult it may be to find trainers who will be able to cater to a large variety of needs but, in the absence of large communities of migrants who speak the same language, the greater the incentive for migrants will be to learn the official language in the country, because opportunities for communication within the migrant community will be lower.

Figure 3.8. Language distance in PIAAC participating countries

Average language distance and interquartile range, by country



Note: Estimates for Australia, Germany and the Russian Federation are missing due to the lack of language variables.
Countries are ranked in descending order of the average language distance.
Source: (OECD, 2015[15])Survey of Adult Skills (PIAAC) (2012, 2015), Table 3.A.3., www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933845871

Despite being widely used in previous empirical work (Bakker et al., 2009[19]; Isphording and Otten, 2014[13]), a key limitation of the ASJP is that the resulting indicator only captures differences between languages in pronunciation. However, as previously mentioned, languages differ along a range of dimensions, such as grammatical structure, alphabet or the extension of its vocabulary. This is particularly relevant because the ASJP measures distance between languages only in their spoken form, while the PIAAC measures are based on a written text. However, the ASJP measure is a good approximation of broader similarity in other characteristics between two languages, and it is a strong predictor of family relations between languages. Compared to other measures of linguistic dissimilarity, the ASJP measure is easily and transparently computed for any pair of languages and thus, readily available for analyses. For this reason, it is the most widely used measure of linguistic distance in empirical work.

Linguistic gaps in literacy, numeracy and labour market outcomes

To identify the association between language distance and literacy scores, a series of models were estimated and results are reported in Tables 3.2 and 3.3. For each outcome of interest, literacy score, numeracy score, employment status and wages, analyses were

conducted on the pooled PIAAC sample, weighting each country for population size and weighting individual respondents to derive estimates representative at the population level. All models control for country of destination as well as for the level of economic development in the country of origin of foreign-born adults through an indicator of GDP per capita. Although this means that analyses account for confounders related to differences in host countries' migration selection processes (such as use of points-based systems that select migrants by ability) and economic incentives for migrating, because country of destination effects may also account for between-country differences in the quality of support and integration systems for migrants, estimates may be over-controlling for country policy choices.

For each outcome, four models were developed. In the first two models the entire PIAAC sample was considered to identify the additional hurdle immigrants face while in the last two models the foreign-born population was the focus of analyses to identify the extent to which language explains differences within the immigrant population. In the first model, each outcome of interest was considered to be a function of whether the respondent was a migrant, the linguistic distance between the mother tongue language of the individual and the language in which the PIAAC test was conducted, accounting for socio-economic and demographic differences such as age, gender, individuals' own educational attainment and parental educational attainment. In the second model the role of language distance is not considered to affect outcomes homogeneously and differences in the relationship between language distance and outcomes across genders and across individuals with poorly and highly educated parents are examined.

Following the theoretical framework set by Chiswick and Miller (1995[8]), the third model focuses on the migrant subsample and controls for the number of years since arrival into the host country, arguably the most important variable that affects the exposure of migrants to the host country language and well as age at arrival. Length of stay is included by deriving a categorical indicator discriminating between native-born individuals, individuals who lived in the country for more than 5 years, and individuals who have been in the country for 5 years or less. Age at arrival is considered through an indicator of whether immigrants reported having arrived in the country in which they sat the PIAAC test at age 12 or older, to test for the validity of the Critical Period Hypothesis (Newport, 2002[9]). Finally, the fourth identifies specificities in the extent to which language distance interacts with exposure and arrival during/after the critical period for language acquisition.

Results reported in Table 3.2 indicate that the greater the linguistic dissimilarity between the mother tongue of an individual and the language in which the individual sat the PIAAC test, the lower his or her proficiency in literacy and numeracy will be. Results presented in Models 1 and 2 in Table 3.2 indicates that, among PIAAC participating countries, migrants whose mother tongue is the same as the language in which the PIAAC test, and when they match natives on background characteristics (including the level of economic development of the country from which they migrated) they perform on a par in literacy and numeracy with native born individuals. However, when comparing foreign-born individuals whose mother tongue matches the language in which they sat the PIAAC test and foreign-born individuals whose mother tongue is different, the performance gap increases by around 7 points in literacy and 6 points in numeracy for each additional 50 points on the linguistic distance scale. This means, for example, that in Italy, Albanians can be expected to suffer an additional penalty of over 12 score points in literacy due to the fact that their language is very different from Italian (93.40) while Romanians can be expected to suffer an additional penalty of around 7.5 score points,

because the common roots between Italian and Romanian make the two languages rather similar (56.77). Interestingly, the penalty associated with language distance is very similar in numeracy.

The association between language distance and literacy and numeracy scores can be useful not only to interpret variation in scores across foreign-born individuals within the same country of destination, but also to better understand the role language composition plays in shaping between country differences in the literacy and numeracy gap between natives and foreign-born individuals. Figure 3.9 illustrates the additional average gap in literacy that can be expected in PIAAC participating countries given the average level of linguistic distance among migrant populations in the country, after controlling for individual characteristics.

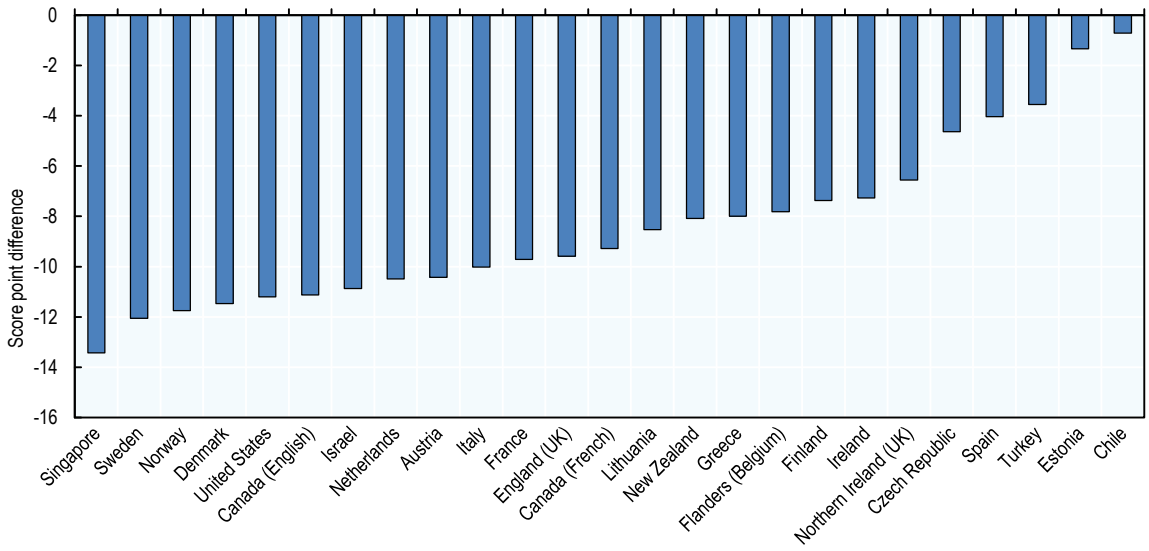
Table 3.2. Literacy and numeracy proficiency as a function of language distance

	Literacy Score				Numeracy Score			
	Overall Population		Foreign-born individuals subsample		Overall Population		Foreign-born individuals subsample	
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Woman	-2.370	-2.338	-2.866	-2.989	-13.635	-13.615	-14.374	-14.465
	(0.498)	(0.501)	(2.170)	(2.152)	(0.541)	(0.605)	(2.254)	(2.246)
Individual's educational attainment (base individual did not obtain an upper secondary degree):								
Upper secondary or post-secondary (non tertiary) degree	22.062	21.953	24.457	24.501	28.891	28.752	29.531	29.619
	(0.668)	(0.669)	(3.216)	(3.197)	(0.751)	(0.758)	(3.240)	(3.206)
Tertiary degree	47.246	47.114	55.079	55.238	58.131	57.964	66.568	66.778
	(0.855)	(0.854)	(3.305)	(3.328)	(0.909)	(0.912)	(3.644)	(3.653)
Parental educational attainment (base neither parent obtained an upper secondary degree):								
At least one parent obtained an upper secondary or post-secondary (non tertiary) degree	10.839	10.467	11.844	11.997	11.333	10.862	15.290	15.370
	(0.841)	(0.834)	(2.534)	(2.538)	(0.854)	(0.846)	(2.939)	(2.925)
At least one parent obtained a tertiary degree	21.425	19.887	28.391	29.081	23.123	21.175	33.292	33.774
	(0.950)	(0.891)	(3.005)	(2.961)	(1.095)	(0.994)	(3.709)	(3.660)
Age	-0.319	-0.322	-0.340	-0.515	-0.175	-0.178	0.116	-0.062
	(0.125)	(0.125)	(0.498)	(0.507)	(0.148)	(0.148)	(0.602)	(0.616)
Age squared term	-0.002	-0.002	-0.001	0.000	-0.002	-0.002	-0.006	-0.004
	(0.001)	(0.001)	(0.006)	(0.006)	(0.002)	(0.002)	(0.007)	(0.007)
Migrant	-1.452	-1.459			0.392	0.380		
	(1.407)	(1.404)			(1.576)	(1.566)		
Linguistic Distance	-0.133	-0.161	-0.144	-0.002	-0.127	-0.164	-0.111	0.001
	(0.020)	(0.025)	(0.025)	(0.083)	(0.021)	(0.028)	(0.027)	(0.089)
Woman* Linguistic Distance		-0.007				-0.006		
		(0.024)				(0.028)		
Parental educational attainment (tertiary)* Linguistic Distance		0.128				0.162		
		(0.023)				(0.026)		
Length of stay (over 5 years)				10.687				10.084
				(5.421)				(5.056)
Age at arrival >12			-16.706	-3.756			-14.390	-4.895
			(2.085)	(3.552)			(2.233)	(3.961)
Length of stay* Linguistic Distance				-0.023				-0.029
				(0.074)				(0.078)
Age at arrival * Linguistic Distance				-0.182				-0.128
				(0.051)				(0.055)
Constant	229.720	229.920	230.808	217.441	214.069	214.342	203.207	192.460
	(3.229)	(3.148)	(10.482)	(12.399)	(3.686)	(3.590)	(12.927)	(14.880)
GDP country of origin	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Country of Destination Fixed effects	YES	YES	YES	YES	YES	YES	YES	YES

Note: Estimates for Australia, Germany and the Russian Federation are missing due to the lack of language variables.
Source: (OECD, 2015[15]) Survey of Adult Skills (PIAAC) (2012, 2015), Table 3.A.3., www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933846346

Figure 3.9. Additional migrant gap in literacy due to the average linguistic distance among foreign-born populations, by country



Note: Estimates for Australia, Germany and the Russian Federation are missing due to the lack of language variables.
Note: Countries are ranked in descending order of the score point difference.
Source: (OECD, 2015[15]) Survey of Adult Skills (PIAAC) (2012, 2015), Table 3.A.3., www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/ 888933845890

When comparing individuals who have the same gender, age, own education and parental education, and come from countries with similar level, a gap of 10 points in the linguistic distance measure corresponds to 1.44 score points in literacy and 1.11 in numeracy. In order to aid the interpretation of the quantitative relevance of estimated effects in explaining both between country and within country variations, Figure 3.6 illustrates, for each country, the average level of language distance observed among migrant communities, as well as the interquartile range in the linguistic distance measure. The comparatively high level of language distance observed, on average, among foreign-born individuals resident in Sweden or Norway suggest that, in these countries, migrant gaps can be expected to be very large in international comparisons. However, differences in the language spoken by different migrant groups explain very little of the variations observed within the country across different migrant communities. On the other hand, in countries such as Spain, the average language distance is small, in comparative terms and therefore observed gaps in these countries in literacy and numeracy between native born individuals and foreign-born individuals are not attributable to language factors. However, the comparatively large interquartile range measure observed in these countries suggests that when evaluating variations in the migrant gap across individuals within the country, language may play a key role.

Table 3.1 supports the critical period hypothesis: individuals who arrived in the country of destination after the age of 12 have lower literacy and numeracy scores than individuals who arrived prior to age 12. On average, the late arrival penalty corresponds to almost 17 score points in literacy and 14 points in numeracy. Length of residency appears to be positively associated with proficiency in PIAAC. Other things being equal,

individuals who resided in the country for 5 years or more prior to siting the PIAAC test score, on average, 11 points in literacy and 10 points in numeracy above those who had been resident in the country for less than 5 years. Interestingly, although the negative association between language distance and performance in literacy and numeracy does not depend on whether individuals resided in the country for over 5 years, the negative association between language distance and both literacy and numeracy is stronger among individuals who arrived after the age of 12. A difference of 10 points in the language distance index is associated with a difference of an additional 1.8 score points in the PIAAC literacy assessment and an additional 1.3 points in the numeracy assessment, effectively indicating that the language distance disadvantage is twice as large among late arrivals.

Previous sections of this chapter revealed that countries differ considerably in the language make-up of their resident populations. Analyses presented in this section suggest that individuals whose mother tongue is very different from the language in which they sat the PIAAC test have, other things being equal, lower scores in literacy and numeracy. Table 3.3 identifies the relationship between the mother tongue of individuals and how different this is from the language spoken in the country in which they reside and their labour market outcomes, most notably, their probability of being in work and their wage level when employed.

Table 3.3 suggests that, other things being equal, individuals whose language is very different from the language in which they sat the PIAAC test are less likely to be employed, although the association is quantitatively small. For example, other things being similar, the difference in the probability that an Arabic speaking migrant in Italy (the maximum observed language distance observed in Italy) will be employed compared to a Romanian speaking migrant in Italy (the minimum observed language observed in Italy) is 2.7 percentage points. Results confirm that individuals who arrived after the age of 12 are more likely to be employed than individuals who arrived in the country before the age of 12. This result may be due to selection mechanisms: it is possible that when older individuals migrate or families with older children migrate, they do so because of employment prospects or because individuals who migrated to a country as older children or as adults tend to create fewer non-labour market bonds with their local communities and are more likely to resettle in their country of origin or to look for an alternative destination when they are out of work or reach retirement. Table 3.3 indicates that among individuals who are employed and receive a salary, wage levels are not associated with the distance between the mother tongue individuals speak and the language spoken in their country of residence. Unfortunately, a key limitation of analyses examining labour market outcomes is that PIAAC did not collect information on the language used in the labour market by the respondent and therefore the language distance index is calculated using the language in which the PIAAC test is taken as the reference. However, this may not reflect the language spoken by the respondent at work and how sought after proficiency in particular languages may be in local labour markets (for example English).

Table 3.3. Employment and wages as a function of language distance

	Likelihood of being employed				Log wages among individuals with wages			
	Overall Population		Foreign-born individuals subsample		Overall Population		Foreign-born individuals subsample	
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Woman	-0.166	-0.164	-0.180	-0.181	-0.222	-0.225	-0.209	-0.211
	(0.005)	(0.005)	(0.018)	(0.018)	(0.008)	(0.009)	(0.024)	(0.023)
Individual's educational attainment (base individual did not obtain an upper secondary degree):								
Upper secondary or post-secondary (non tertiary) degree	0.118	0.119	0.055	0.057	0.168	0.167	0.205	0.204
	(0.007)	(0.007)	(0.024)	(0.024)	(0.010)	(0.010)	(0.020)	(0.019)
Tertiary degree	0.210	0.210	0.143	0.144	0.518	0.517	0.548	0.551
	(0.008)	(0.008)	(0.026)	(0.027)	(0.013)	(0.013)	(0.044)	(0.046)
Parental educational attainment (base neither parent obtained an upper secondary degree):								
At least one parent obtained an upper secondary or post-secondary (non tertiary) degree	-0.006	-0.005	-0.063	-0.062	0.101	0.099	0.068	0.069
	(0.007)	(0.007)	(0.026)	(0.026)	(0.011)	(0.010)	(0.035)	(0.034)
At least one parent obtained a tertiary degree	-0.020	-0.016	-0.065	-0.062	0.140	0.133	0.150	0.152
	(0.009)	(0.009)	(0.022)	(0.022)	(0.012)	(0.012)	(0.048)	(0.048)
Age	0.058	0.058	0.047	0.045	0.058	0.058	0.041	0.039
	(0.001)	(0.001)	(0.006)	(0.006)	(0.002)	(0.002)	(0.010)	(0.010)
Age squared term	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Migrant	-0.027	-0.027			-0.053	-0.054		
	(0.014)	(0.014)			(0.027)	(0.028)		
Linguistic Distance	-0.001	0.000	-0.001	0.000	0.000	0.000	0.000	-0.001
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)
Woman* Linguistic Distance		0.000				0.000		
		(0.000)				(0.000)		
Parental educational attainment (tertiary)* Linguistic Distance		0.000				0.001		
		(0.000)				(0.000)		
Length of stay (over 5 years)				0.047				0.017
				(0.050)				(0.075)
Age at arrival >12			0.045	0.096			-0.080	-0.018
			(0.017)	(0.029)			(0.038)	(0.051)
Length of stay* Linguistic Distance				0.000				0.001
				(0.001)				(0.001)
Age at arrival * Linguistic Distance				-0.001				-0.001
				(0.000)				(0.001)
Constant	-0.331	-0.333	-0.067	-0.104	1.021	1.028	1.464	1.470
	(0.031)	(0.031)	(0.127)	(0.125)	(0.063)	(0.063)	(0.181)	(0.240)
GDP country of origin	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Country of Destination Fixed effects	YES	YES	YES	YES	YES	YES	YES	YES

Note: Estimates for Australia, Germany and the Russian Federation are missing due to the lack of language variables.

Source: (OECD, 2015[15]) Survey of Adult Skills (PIAAC) (2012, 2015), Table 3.A.3., www.oecd.org/skills/piaac/publicdataandanalysis

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Conclusions and Implications

This chapter indicates that the literacy and numeracy proficiency of non-native language speakers is, other things being equal, lower than that of native language speakers. As such, language proficiency can be a major hurdle for the social and economic integration of migrants into the labour market and social life of their receiving communities. The acquisition of literacy proficiency in the host country language is importantly related to the mother tongue of the migrant and the age at which migration took place. In particular, this chapter suggests that individuals with a linguistically distant background face a distinctively higher challenge to reach a sufficient level of literacy and numeracy proficiency in the host country language than individuals whose language background is more homogeneous, in particular when they migrate after the age of 12.

Results presented in the chapter suggest that differences in the linguistic make-up of migrant populations explain both between country differences in the migrant gaps in literacy and numeracy scores, as well as the within-country variability in literacy and numeracy across migrants. These results suggest that language training is crucial if migrant communities are to be able to be fully integrated in the labour markets and social lives of their communities but also that the time and intensity of language training provided to should be tailored to the specific language group migrants belong to. More intense and longer training should be devoted to individuals coming from linguistically distant groups and training should account for the specific communalities and differences across languages to be maximally effective.

The finding that the skills of non-native speaking migrants tend to be lower in particular when they migrate after the age of 12 and when their mother-tongue is very different from the language spoken in their host communities suggests that strong language support should be given in the context of pre-school and primary school to the extent possible, so that children are maximally supported in a crucial period for language acquisition but also that intense training should be given to those who arrive when they have missed such opportunities for language development. Finding new, creative ways to help individuals who arrive as teenagers or adults gain valuable language skills, should become a priority for educators and education scientists so that current barriers are eliminated or lowered. Even though the costs of providing adequate language support may be large, analyses presented in this report suggest that the cost of inaction is likely to be considerably larger than investments in adequate and effective training.

Traditional modes of instruction could be complemented, for example, by the use of technology, which has proven to be effective for supporting non-native language acquisition in some contexts. While technology cannot replace real classroom instruction, it can be used to complement and supplement the work of trained teachers and professional working with non-native language learners. Opportunities for language learning can be ubiquitous when learners use mobile technologies to access information and communicate with other learners or educators. Technology can change traditional teacher-centred instructional settings, which are ill suited to promote language acquisition, and open new possibilities for collaboration, social interaction and access to multiple resources to enhance non-native language learning (Eamer, 2013[21]).

Three examples of how technology can promote language acquisition are: “Digital communities of practice” where non-native speakers can engage with native speakers through online discussions. Non-native speakers can as or even more participative than native speakers, and gain a legitimate status through academic socialisation. Such

communities can promote learners' motivation by enabling social collaboration. (Kim, 2010[22]).; "Digital storytelling" where non-native language learners use compilations of photo, video, audio and text to produce a meaningful output in the language they need to learn (Rowinsky-Geurts, 2013[23]). Students may find this approach cognitively challenging (e.g., having difficulties with vocabulary and verb conjugation), but rewarding in terms of complex thinking and using complex strategies to complete in-depth artefacts; and "Computer-assisted language learning" (CALL) which uses computers to monitor students' progress and provide targeted feedback (Presson, Davy and MacWhinney, 2013[24]). CALL materials can be useful to aim the learning of specific vocabulary, grammatical forms, or pronunciation skills.

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Annex 3.A. Data tables

Annex Table 3.A.1. Percentage of adults, by immigrant and language background

	Native born		Foreign-born (Migrant)		Missing		Native speaker		Non-native speaker		Missing	
	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.
Australia	70.8	(0.7)	27.3	(0.7)	1.9	(0.2)	81.1	(0.7)	17.0	(0.6)	1.9	(0.2)
Austria	82.2	(0.4)	16.0	(0.4)	1.9	(0.2)	84.3	(0.5)	13.9	(0.4)	1.9	(0.2)
Canada	73.7	(0.2)	25.5	(0.2)	0.9	(0.1)	76.7	(0.3)	22.4	(0.3)	0.9	(0.1)
Chile	95.9	(1.5)	3.8	(1.5)	0.3	(0.1)	98.8	(0.2)	0.8	(0.2)	0.4	(0.1)
Czech Republic	95.0	(0.5)	4.4	(0.4)	0.6	(0.2)	96.6	(0.4)	2.3	(0.3)	1.1	(0.2)
Denmark	87.9	(0.2)	11.8	(0.2)	0.4	(0.1)	88.7	(0.2)	10.9	(0.2)	0.4	(0.1)
England (UK)	83.6	(0.6)	15.1	(0.6)	1.4	(0.2)	87.9	(0.7)	10.4	(0.7)	1.7	(0.2)
Estonia	86.6	(0.4)	12.9	(0.3)	0.5	(0.1)	95.7	(0.3)	3.8	(0.2)	0.5	(0.1)
Finland	94.2	(0.2)	5.7	(0.2)	0.1	(0.0)	93.8	(0.2)	3.7	(0.2)	2.6	(0.2)
Flanders (Belgium)	87.5	(0.4)	7.3	(0.3)	5.2	(0.2)	87.0	(0.4)	6.7	(0.4)	6.2	(0.3)
France	86.5	(0.1)	12.7	(0.0)	0.9	(0.1)	89.8	(0.3)	9.2	(0.3)	0.9	(0.1)
Germany	84.8	(0.7)	13.6	(0.6)	1.5	(0.2)	86.4	(0.6)	12.1	(0.5)	1.5	(0.2)
Greece	89.4	(0.6)	9.6	(0.6)	1.0	(0.2)	93.7	(0.5)	5.3	(0.4)	1.0	(0.2)
Ireland	78.7	(0.8)	20.9	(0.8)	0.4	(0.1)	89.4	(0.6)	10.2	(0.6)	0.4	(0.1)
Israel	74.9	(0.4)	22.0	(0.4)	3.2	(0.2)	75.1	(0.6)	21.8	(0.5)	3.1	(0.2)
Italy	90.0	(0.6)	9.3	(0.6)	0.7	(0.2)	90.0	(0.7)	9.3	(0.7)	0.7	(0.2)
Netherlands	85.2	(0.2)	12.6	(0.2)	2.3	(0.2)	87.4	(0.3)	10.3	(0.4)	2.3	(0.2)
New Zealand	69.8	(0.5)	28.3	(0.5)	1.9	(0.2)	80.6	(0.4)	17.5	(0.4)	1.9	(0.2)
Northern Ireland (UK)	90.4	(0.6)	7.4	(0.5)	2.2	(0.3)	93.9	(0.5)	3.8	(0.5)	2.3	(0.3)
Norway	84.6	(0.5)	13.1	(0.5)	2.3	(0.2)	84.5	(0.5)	13.1	(0.5)	2.4	(0.2)
Slovenia	87.1	(0.5)	12.3	(0.5)	0.6	(0.1)	87.6	(0.5)	11.8	(0.5)	0.6	(0.1)
Spain	86.0	(0.1)	13.2	(0.1)	0.8	(0.1)	91.3	(0.4)	7.8	(0.3)	0.9	(0.1)
Sweden	82.4	(0.1)	17.5	(0.1)	0.1	(0.0)	82.1	(0.3)	17.8	(0.3)	0.1	(0.0)
United States	81.6	(0.2)	14.1	(0.6)	4.3	(0.6)	81.6	(0.5)	14.2	(0.8)	4.3	(0.6)
Lithuania	92.2	(0.4)	3.3	(0.3)	4.5	(0.4)	86.8	(0.5)	8.8	(0.5)	4.5	(0.4)
Singapore	76.0	(0.6)	23.0	(0.5)	1.0	(0.1)	27.4	(0.6)	71.4	(0.6)	1.2	(0.1)
Average	84.5	(0.1)	13.9	(0.1)	1.6	(0.0)	85.3	(0.1)	12.9	(0.1)	1.8	(0.0)

Note: Native speaker refers to whether the first or second language learned as a child is the same as the language of assessment, and not whether the language has official status. Non-native speaker refers to whether the first or second language learned as a child is not the same as the language of assessment. Thus in some cases, foreign language might refer to minority languages in which the assessment was not administered. Estimates are missing for the Russian Federation due to the lack of language variables.
Source: Survey of Adult Skills (PIAAC) (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis

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Annex Table 3.A.2. Percentage of non-native speakers, by first language spoken at home and understood.

		First language learned at home in childhood and still understood		
		%	S.E.	n
Australia	m	m	m	m
Austria	Serbian	15.49	(1.5)	83
	Turkish	14.59	(1.5)	89
	Bosnian	9.75	(1.3)	62
	Romanian; Moldavian; Moldovan	6.65	(1.0)	38
	Croatian	6.42	(0.9)	39
	Polish	6.24	(1.1)	36
	Other	40.86	-	237
Canada	Chinese	15.81	(0.9)	644
	French	9.03	(0.5)	1398
	Spanish; Castilian	7.14	(0.6)	332
	Panjabi; Punjabi	5.47	(0.5)	235
	Arabic	4.83	(0.4)	234
	Tagalog	4.79	(0.5)	220
	Other	52.93	-	2714
Czech Republic	Slovak	62.77	(7.5)	73
	Other	35.00	-	35
Denmark	English	8.94	(0.9)	119
	Arabic	6.82	(0.7)	101
	Turkish	5.95	(0.7)	78
	Persian	5.25	(0.7)	73
	German	5.07	(0.6)	79
	Polish	4.35	(0.5)	70
	Bosnian	4.05	(0.5)	67
	Swedish	4.03	(0.7)	53
	Other	55.56	-	774
England (UK)	Polish	10.82	(1.7)	48
	Panjabi; Punjabi	9.34	(1.7)	37
	Other	79.84	-	362
Estonia	Russian	57.80	(3.0)	154
	Ukrainian	15.44	(2.3)	43
	Other	26.76	-	74
Finland	Russian	29.97	(3.5)	44
	Estonian	22.73	(3.4)	30
	Swedish	20.22	(2.7)	47
	Finnish	16.88	(2.7)	34
	Other	10.20	-	16
Flanders (Belgium)	French	33.29	(2.6)	112
	Arabic	11.66	(1.8)	45
	Turkish	10.24	(1.5)	39
	Other	44.81	-	161
France	Arabic	28.66	(1.8)	158
	Portuguese	14.00	(1.3)	81
	Spanish; Castilian	6.31	(0.8)	39
	Turkish	6.03	(0.8)	34
	Italian	5.00	(0.8)	31
	Other	40.01	-	238

		First language learned at home in childhood and still understood		
		%	S.E.	n
Germany	m	m	m	m
Greece	Albanian	46.00	(3.9)	84
	Russian	19.91	(3.7)	42
	Other	34.09	-	89
Ireland	Polish	28.66	(2.4)	143
	Irish	8.01	(2.0)	43
	Other	63.3269	-	344
Israel	Russian	37.74	(1.1)	363
	Arabic	13.06	(0.8)	194
	English	7.96	(0.8)	101
	French	7.64	(0.8)	81
	Spanish; Castilian	5.29	(0.7)	56
	Yiddish	5.14	(0.6)	78
	Amharic	4.73	(0.7)	48
	Other	18.44	-	154
Italy	Romanian; Moldavian; Moldovan	22.03	(2.9)	110
	Albanian	12.35	(2.6)	34
	Arabic	9.25	(1.8)	31
	Other	56.37	-	253
Lithuania	Russian	52.01	(2.9)	198
	Polish	42.53	(2.6)	151
	Other	5.46	-	16
Netherlands	Turkish	15.40	(1.9)	54
	Arabic	12.38	(1.8)	45
	English	8.07	(1.4)	30
	Other	64.14	-	240
New Zealand	Chinese	16.39	(1.2)	148
	Hindi	13.18	(1.4)	113
	Samoan	9.70	(0.8)	100
	Maori	5.97	(0.7)	78
	Other	54.77	-	512
Norway	Swedish	9.02	(1.3)	57
	English	7.90	(1.1)	52
	Polish	7.09	(1.0)	45
	German	6.53	(1.1)	42
	Other	69.46	-	434
Singapore	Chinese	76.40	(0.5)	2955
	Malay	14.37	(0.4)	560
	Tamil	4.11	(0.3)	180
	Other	5.13	-	191
Slovak Republic	Hungarian	54.53	(3.2)	223
	Romany	20.35	(2.9)	80
	Czech	16.93	(2.5)	56
	Other	8.18	-	28
Slovenia	Croatian	81.04	(1.5)	404
	Other	18.96	-	105
Spain	Romanian; Moldavian; Moldovan	14.67	(2.0)	78
	Arabic	13.04	(1.9)	91
	Catalan; Valencian	11.68	(2.1)	40

		First language learned at home in childhood and still understood		
		%	S.E.	n
Sweden	Spanish; Castilian	11.47	(1.9)	46
	Galician	6.93	(1.2)	34
	Portuguese	5.09	(1.0)	23
	Basque	4.64	(0.7)	25
	Other	32.48	-	126
	Arabic	12.87	(1.2)	97
	Finnish	10.00	(1.0)	74
	Polish	5.96	(0.7)	46
	Spanish; Castilian	5.10	(0.7)	41
	Bosnian	4.55	(0.7)	33
	English	4.52	(1.0)	37
	Other	56.99	-	423
Turkey	Kurdish	72.36	(8.6)	142
	Arabic	20.40	(12.0)	32
	Other	7.23	-	19
United States	Spanish; Castilian	59.89	(2.6)	341
	Chinese	5.78	(0.9)	46

Note: Non-native speaker refers to whether the first or second language learned as a child is not the same as the language of assessment. Thus in some cases, foreign language might refer to minority languages in which the assessment was not administered. Estimates are missing for Australia, Germany and the Russian Federation due to the lack of language variables. Estimates based on small sample size are not shown (Chile, Japan, Korea and Northern Ireland (UK)).
Source: Survey of Adult Skills (PIAAC) (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis

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Annex Table 3.A.3. Diversity of languages within and between migrants and distribution of the language distance among migrants

	Diversity within migrants	Diversity between migrants	Language distance among migrants						
			Average language distance		25th percentile		75th percentile		Interquartile range
	Mean	Mean	Mean	S.E.	Mean	S.E.	Mean	S.E.	
Australia	m	m	m	m	m	m	m	m	m
Austria	0.91	0.31	72.42	(1.6)	87.54	(82.0)	96.44	(0.2)	8.90
Canadian English Community	0.92	0.54	77.30	(0.9)	87.22	(0.0)	101.83	(0.0)	14.61
Canadian French Community	0.88	0.23	64.47	(1.8)	49.06	(0.0)	96.56	(0.0)	47.50
Chile	0.18	0.03	4.98	(2.7)	0.00	(0.0)	0.00	(0.0)	0.00
Czech Republic	0.75	0.09	32.16	(3.2)	0.00	(46.4)	44.05	(19.9)	44.05
Denmark	0.96	0.23	79.63	(1.0)	66.83	(1.2)	97.92	(2.2)	31.09
England (UK)	0.90	0.27	66.61	(2.0)	0.00	(0.0)	97.53	(0.0)	97.53
Estonia	0.32	0.45	9.27	(1.1)	0.00	(0.0)	0.00	(0.0)	0.00
Finland	0.71	0.19	51.16	(3.8)	0.00	(0.0)	100.35	(0.0)	100.35
Flanders (Belgium)	0.84	0.26	54.32	(2.5)	0.00	(0.0)	94.88	(0.0)	94.88
France	0.86	0.25	67.43	(1.3)	0.00	(0.0)	96.56	(0.0)	96.56
Germany	m	m	m	m	m	m	m	m	m
Greece	0.73	0.14	55.52	(3.2)	0.00	(0.0)	96.62	(0.0)	96.62
Ireland	0.76	0.24	50.47	(1.8)	0.00	(0.0)	95.02	(0.0)	95.02
Israel	0.75	0.66	75.50	(1.3)	73.88	(0.0)	101.31	(0.0)	27.43
Italy	0.90	0.21	69.60	(2.3)	56.77	(0.0)	93.40	(0.0)	36.62
Lithuania	0.66	0.28	59.22	(4.4)	0.00	(0.0)	92.91	(0.0)	92.91
Netherlands	0.93	0.26	72.87	(2.0)	53.32	(9.9)	99.20	(0.0)	45.88
New Zealand	0.81	0.39	56.17	(1.2)	0.00	(0.0)	98.96	(0.0)	98.96
Northern Ireland (UK)	0.71	0.13	45.50	(3.3)	0.00	(0.0)	95.02	(0.0)	95.02
Norway	0.96	0.30	81.64	(1.0)	67.27	(6.4)	98.23	(0.0)	30.97
Singapore	0.61	0.59	93.32	(0.9)	100.78	(0.0)	102.20	(0.0)	1.42
Slovenia	0.45	0.25	33.27	(1.0)	28.36	(0.0)	28.36	(0.0)	0.00
Spain	0.67	0.33	28.05	(2.2)	0.00	(0.0)	84.03	(0.0)	84.03
Sweden	0.95	0.34	83.74	(1.0)	89.94	(0.0)	98.32	(0.0)	8.38
United States	0.76	0.36	77.83	(2.1)	93.34	(3.6)	95.20	(0.4)	1.86
Average	0.76	0.29	58.50	(0.4)	34.17	(3.8)	84.19	(0.8)	50.02

Note: Estimates for Australia and Germany are missing due to the lack of language variables.
Source: Survey of Adult Skills (PIAAC) (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis

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Annex Table 3.A.4. Percentage change in wages associated with an increase of one standard deviation in proficiency for native and non-native speakers

	Returns to literacy skills						Returns to numeracy skills					
	Native speakers			Non-native speakers			Native speakers			Non-native speakers		
	Coefficient	S.E.	p-value	Coefficient	S.E.	p-value	Coefficient	S.E.	p-value	Coefficient	S.E.	p-value
Australia	6.8	(1.0)	0.0000	8.1	(2.1)	0.0002	8.6	(0.9)	0.0000	8.8	(2.0)	0.0000
Austria	11.1	(1.0)	0.0000	5.7	(2.3)	0.0164	11.2	(1.0)	0.0000	3.8	(2.4)	0.1168
Canada	8.2	(0.8)	0.0000	12.9	(1.2)	0.0000	9.7	(0.8)	0.0000	13.7	(1.4)	0.0000
Chile	c	c	c	c	c	c	c	c	c	c	c	c
Czech Republic	6.4	(1.5)	0.0001	6.6	(9.9)	0.5067	6.7	(1.7)	0.0002	8.9	(13.1)	0.4997
Denmark	5.0	(0.9)	0.0000	4.7	(1.3)	0.0003	6.1	(0.9)	0.0000	4.6	(1.4)	0.0014
England (UK)	12.9	(1.1)	0.0000	16.8	(3.1)	0.0000	13.5	(1.2)	0.0000	18.0	(3.2)	0.0000
Estonia	6.7	(1.2)	0.0000	12.4	(4.7)	0.0098	10.9	(1.3)	0.0000	14.5	(5.6)	0.0114
Finland	4.9	(0.7)	0.0000	7.9	(3.3)	0.0192	6.5	(0.8)	0.0000	8.8	(3.7)	0.0200
Flanders (Belgium)	7.6	(0.9)	0.0000	9.6	(1.9)	0.0000	8.3	(1.0)	0.0000	10.7	(1.9)	0.0000
France	6.4	(0.7)	0.0000	3.2	(2.5)	0.1991	7.9	(0.7)	0.0000	3.7	(2.6)	0.1534
Germany	10.0	(1.2)	0.0000	10.9	(3.8)	0.0050	11.2	(1.1)	0.0000	11.4	(3.6)	0.0020
Greece	0.1	(1.7)	0.9422	9.6	(4.7)	0.0452	0.9	(2.0)	0.6617	4.2	(6.2)	0.5035
Ireland	7.3	(1.7)	0.0001	8.1	(3.1)	0.0110	9.5	(1.5)	0.0000	8.7	(2.5)	0.0008
Israel	9.8	(1.5)	0.0000	11.3	(2.7)	0.0001	11.5	(1.4)	0.0000	11.6	(2.5)	0.0000
Italy	3.0	(1.7)	0.0868	3.7	(3.4)	0.2762	3.8	(1.7)	0.0292	3.5	(3.6)	0.3380
Lithuania	5.7	(1.6)	0.0006	10.5	(5.5)	0.0572	8.4	(1.7)	0.0000	11.8	(5.5)	0.0369
Netherlands	7.6	(0.9)	0.0000	11.8	(2.8)	0.0001	7.7	(1.0)	0.0000	11.2	(3.4)	0.0015
New Zealand	11.0	(0.8)	0.0000	7.8	(2.2)	0.0008	11.4	(0.9)	0.0000	7.8	(2.2)	0.0006
Northern Ireland (UK)	9.1	(1.5)	0.0000	4.2	(9.7)	0.6675	9.2	(1.6)	0.0000	9.4	(8.4)	0.2677
Norway	4.5	(0.9)	0.0000	6.0	(1.0)	0.0000	6.2	(0.8)	0.0000	6.6	(1.0)	0.0000
Singapore	13.7	(2.5)	0.0000	12.0	(1.2)	0.0000	17.1	(2.5)	0.0000	14.9	(1.2)	0.0000
Slovenia	7.3	(1.1)	0.0000	2.4	(2.4)	0.3103	8.6	(1.0)	0.0000	2.4	(2.3)	0.3037
Spain	6.0	(1.2)	0.0000	13.7	(4.8)	0.0056	8.1	(1.4)	0.0000	17.5	(4.9)	0.0006
Sweden	6.1	(0.7)	0.0000	6.7	(1.6)	0.0000	6.6	(0.8)	0.0000	6.1	(1.5)	0.0001
United States	11.2	(1.9)	0.0000	7.4	(3.0)	0.0156	10.8	(1.7)	0.0000	6.3	(3.2)	0.0546
Average	7.5	(0.3)	0.0412	8.6	(0.8)	0.0859	8.8	(0.3)	0.0276	9.2	(0.9)	0.0925

Note: Hourly wages, including bonuses, in PPP-adjusted USD (2012). The regressions are estimated with log wages as the dependent variable separately for language native and non-native workers and includes controls for years of education, years of experience and experience squared, part-time work and gender. The wage distribution was trimmed to eliminate the 1st and 99th percentiles. The estimated coefficients have been multiplied by 47 for literacy and 52 for numeracy which correspond to the standard deviation in the proficiency. Estimates based on a sample size less than 30 are not shown (Chile and Japan). Estimates for the Russian Federation are missing due to the lack of language variables.
Source: Survey of Adult Skills (PIAAC) (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis

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Annex Table 3.A.5. Language distance diversity in PIAAC participating countries

Minimum and maximum language distance between the language of the test and the language spoken at birth of the foreign-language migrants

Country	Maximum Language distance			Minimum Language distance			Difference
	Test language	Language spoken at birth	Value	Test language	Language spoken at birth	Value	
Austria	German	Turkish	99.1	German	Romanian	88.0	11.1
Canada	English	Vietnamese	102.6	English	Dutch	63.2	39.4
Canada	French	Arabic	96.6	French	Creoles and pidgins	49.1	47.5
Chile	Spanish	Mapudungun	103.4	Spanish	Mapudungun	103.4	0.0
Cyprus[1, 2]	Modern Greek	Russian	98.9	Modern Greek	Bulgarian	96.0	2.9
Czech Republic	Czech	Slovak	32.8	Czech	Slovak	32.8	0.0
Denmark	Danish	Turkish	101.8	Danish	Norwegian	53.5	48.3
England (UK)	English	Gujarati	97.5	English	Panjabi	94.9	2.7
Estonia	Estonian	Russian	100.0	Estonian	Russian	100.0	0.0
Finland	Finnish	Russian	100.3	Finnish	Estonian	47.6	52.8
Flanders (Belgium)	Dutch	Turkish	101.1	Dutch	French	94.4	6.7
French	French	Turkish	99.0	French	Italian	78.5	20.6
Greece	Modern Greek	Russian	98.9	Modern Greek	Albanian	96.6	2.2
Ireland	English	Latvian	96.8	English	Romanian	87.2	9.6
Israel	Hebrew	Russian	101.3	Hebrew	Arabic	73.9	27.4
Italy	Italian	Arabic	96.3	Italian	Romanian	56.8	39.5
Lithuania	Lithuanian	Russian	92.9	Lithuanian	Polish	91.0	1.9
Netherlands	Dutch	Turkish	101.1	Dutch	English	63.2	38.0
New Zealand	English	Chinese	102.2	English	Hindi	96.2	6.0
Northern Ireland (UK)	English	Polish	95.0	English	Polish	95.0	0.0
Norway	Norwegian	Polish	95.8	Norwegian	Swedish	54.0	41.8
Poland	Polish	German	96.5	Polish	English	95.0	1.5
Singapore	English	Chinese	102.2	English	Malay	99.7	2.5
Slovak Republic	Slovak	Hungarian	96.4	Slovak	Czech	32.8	63.6
Slovenia	Slovenian	Albanian	95.4	Slovenian	Croatian	28.4	67.1
Spain	Catalan	Spanish	69.6	Catalan	Spanish	69.6	0.0
Spain	Spanish	Basque	101.7	Spanish	Galician	54.8	46.9
Sweden	Swedish	Arabic	98.3	Swedish	English	64.8	33.6
Turkishkey	Turkish	Arabic	95.1	Turkish	Arabic	95.1	0.0
United States	English	Chinese	102.2	English	Spanish	93.3	8.9

Note: Only language couples with more than 30 observations in the country are taken into account to extract *the minimum and the maximum distance language.*

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

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

Source: Survey of Adult Skills (PIAAC) (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis

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Chapter 4. The Participation of adult migrants in lifelong learning activities

Lifelong learning is a crucial ingredient of skills policies, in that it might facilitate re-skilling (in response to changing skills demands) and prevent age-related skills decline (in response to longer working careers). Migrants might have more incentives and a higher need to participate in adult training, but might also face higher financial or non-financial barriers to participation. This Chapter shows that migrants participate less in lifelong learning than natives, but the differences are not very large, and are mostly accounted for by differences in observable individual characteristics. On the other hand, migrants are more likely to report not having been able to participate in training activities they were interested in, largely because of financial barriers and family responsibilities. Migrants therefore appear to express a high demand for existing training opportunities, and indeed the data show that, once they are able to gain access to training opportunities, migrants tend to spend more time than natives in such activities.

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.

Investing in initial formal education is crucial for everyone, as it improves the ability to learn, and thus to upgrade one's skills in response to a changing economic environment. Yet it is becoming increasingly evident that initial education is no longer sufficient. Adults need to continue developing their skills throughout their entire working career, and more effort should be devoted to improve the quality of adult education and training systems, particularly of programmes targeted to the most vulnerable segments of the population, such as displaced workers or unemployed adults.

Three main factors lie behind the increased importance attributed to continuous skills development during a lifetime. First, rapid and often disruptive technological change has created the need to train many workers in the use of new technologies, or in the new ways of organising work made possible by such technologies (OECD, 2017[1]). Second, the opening of markets to globalisation and the corresponding increased competition from lower-income countries has pushed many firms in developed countries to invest in innovation and in high value-added activities in order to maintain a competitive edge; but these strategies have often required the upskilling of the current workforce. Finally, longer working lives, related to increases in life expectancy and the corresponding need to reform pension systems to preserve financial sustainability, imply that workers are more likely to face technological, organisational or strategic changes in the course of their careers – and are thus more likely to need to update their skills to new environments.

In summary, adequate lifelong learning initiatives are needed because, in a more uncertain world, workers will likely find themselves at a higher risk of displacement if their skills no longer match the demand of the labour market. In this respect, the effectiveness of education and training systems would benefit from greater investments in exercises that aim to anticipate the demand for certain skills and from more effective diffusion of the available information about the skills that are more likely to be in high demand in the labour market (OECD, 2016[2]).

PIAAC allows examining issues related to lifelong learning because it contains information on education and training activities undertaken by adults participating in the Survey. This chapter takes a somewhat narrower definition of lifelong learning, which is best suited to the information contained in PIAAC. In particular, the focus is on adult training during working career, i.e. after the completion of formal education. For this reason, the analysis excludes 16-19 year old individuals enrolled in upper-secondary education, as well as 20-24 year old individuals enrolled in tertiary education.

It is beyond the scope of this chapter to provide a comprehensive review of the issues related to adult training (and of the vast literature that has investigated the topic). However, it is useful to provide a brief sketch of the basic economics principles behind adults' investment in education and training as a way to contextualise the thinking on this issue.[1]

The provision and impact of adult education and training

Somewhat contrary to initial education, which is mainly general in nature, adult education and training generally falls into one of two types: general or firm-specific training. The first helps workers acquire skills that are portable across different firms and jobs. For this reason, employers have generally little interest in financing this kind of training, as they might not be able to reap the returns on the investment if, for example, the worker moves to a different job or firm. At the other end of the spectrum, training in fully firm-specific skills is by definition not transferable. In this case, both the employer and the employee

have an interest in sharing the cost of training, as both will reap the returns as long as the worker stays in his or her current job.

The theoretical justification for policy interventions in providing adult training is tied to the presence of market imperfections. An obvious example is imperfections in the credit market, whereby credit-constrained individuals are not able to borrow to finance profitable investments in their human capital. Labour market imperfections are also relevant in the case of adult training. Firms might underinvest in training their employees if they cannot fully exploit the benefits of training (the so-called hold-up problems that arise when wage bargaining takes place after training has been completed, with the investment now being a sunk cost from the firm's point of view). When workers move from one firm to another, and the new firm is able to pay trained workers less than their productivity, the extra profits of the new firm are obviously not enjoyed by the former employers who invested in training their employees.

From a macroeconomic perspective, in models of endogenous growth, skills acquired on the job have positive externalities (e.g. in the learning-by-doing model of Romer, (1986[3]), that once again justify public intervention. Finally, if not on efficiency grounds, government intervention can be justified based on equity considerations. There is strong empirical evidence that training is disproportionately taken up by individuals who are already highly skilled or who have high education qualifications (OECD, 2012[4]). Equally, there is the possibility that certain categories of workers are discriminated against when it comes to accessing training opportunities (Milburn, 1996[5]; European Union Agency for Fundamental Rights, 2011[6]; Costello and Freedland, 2014[7]).

Public programmes aimed at subsidising or providing adult education or on-the-job training are an important part of the portfolio of "active" labour market policies (ALMP) that are supposed to help unemployed, displaced and other disadvantaged individuals to achieve better labour market outcomes. Skills upgrading and other interventions, such as job-search assistance, counselling and wage or employment subsidies aim to improve the employability and earnings of targeted individuals. In recent years, such programmes have been the object of a large research effort aimed at evaluating their effectiveness and their ability to achieve their stated objectives.

The *OECD Employment Outlook 2004* (OECD, 2004[8]) tried to evaluate the impact of training on subsequent labour market outcomes. Participation in training was found to be associated with a greater likelihood of actively participating in the labour market, and with a decrease in the risk of being unemployed. Positive impacts on wage growth were detected only for young or highly educated employees, while benefits in terms of subjective and objective measures of employment security extended to older and low-educated workers.

A more extensive meta-analysis of the literature on the evaluation of active labour market policies is provided in Card, Kluve and Weber (2010[9]; 2017[10]). They conclude that the benefits of these kinds of programmes tend to materialise only two to three years after the end of the programme, and that this is especially true for programmes that emphasise the accumulation of human capital, such as adult training programmes. This makes intuitive sense, as participants are typically not able to accept job opportunities while they are enrolled in training. However, investments in human capital do pay off in the medium term. Similar conclusions are reached in the *OECD Employment Outlook 2015* (OECD, 2015[11]), which also stresses how mixed programmes, combining job-search assistance or work experience with education and training have often the most consistent impact, and

that training programmes focusing on specific skills tend to offer larger returns in terms of earnings.

Impact of adult education and training on migrants

The impact of active labour market programmes are often found to be stronger for women and those who are long-term unemployed (Card, Kluve and Weber, 2017[10]). Unfortunately, there is less evidence on the effects of these programmes on migrants. Butschek and Walter (2014[12]) provide a meta-analysis of studies evaluating the impact of ALMPs specifically targeted to migrants, or for which separate estimates of the impact on migrant participants are provided. Unfortunately, only estimates of the short-run impact of ALMPs are provided. However, about one-third of the studies surveyed in the meta-analysis found positive short-term returns to training for migrants, while half of them failed to detect a statistically significant impact.

Adult education and lifelong learning are arguably even more important for individuals who emigrated from their home country. Education and training are, in fact, key to the economic and social integration of migrants. Integration can only occur when every person has acquired an adequate level of knowledge and skills and then uses those skills to contribute to his or her local community and wider society. Chapter 2 documented that skills gaps between foreign-born and native-born adults are substantial in a large number of countries and that migrants are largely over-represented at the bottom of the skills distribution. Differences in skills levels imply that the full integration of migrants into the labour markets of host countries, and into society as a whole, requires some form of training, as the set of skills migrants bring with them to the host country is typically different and unlikely to match the needs of the host country's labour market. While language is the most obvious skill for which migrants might need training, it is certainly not the only one.

The participation of migrants in adult education and training is not only important to ensure that they upgrade their skill set, but also as a way for them to certify the skills that they have already acquired but that may not be recognised in their host country. This might happen when formal education qualifications that migrants had earned in their home country are not officially recognised in the host country, and might be one reason for the presence of over qualification, which is well-documented in the literature (Battu and Sloane, 2002[13]; Lindley, 2009[14]; Aleksynska and Tritah, 2013[15]; Piracha, Tani and Vadean, 2012[16]; Joona, Datta Gupta and Wadensjö, 2014[17]; Visintin, Tijdens and van Klaveren, 2015[18]). A devaluation of previous school or labour market experience might mean that migrants have to start their career from scratch in the host country, and the lack of recognition of previously acquired qualifications or work experience can be a considerable barrier to accessing high-skilled jobs.

Previous research has clearly demonstrated that the skills content of one's occupation, as well as the characteristics of the firm one is employed at, strongly affect opportunities to participate in lifelong learning. In particular, adults employed by large and innovative firms and those working in skills-intensive occupations are much more likely to participate in training (Bassanini et al., 2007[19]). Similarly, a lack of opportunities to practice certain skills can cause skills atrophy, or accelerate the natural decline of information-processing skills over a lifetime (Reder, 1994[20]; Reder, 2009[21]; Paccagnella, 2016[22]). Migrants might therefore end up trapped in a situation in which they are employed in jobs that do not demand much of their skills – and, precisely because of that, they are not offered opportunities to develop the skills they already have.

On the other hand, qualifications (and the lack of recognition of those qualifications) alone are unlikely to be the only explanation behind differences in labour market outcomes of migrants, as recent surveys of adult skills have also shown that adults holding the same formal qualifications often have very diverse levels of proficiency in information-processing skills, especially when comparing qualifications earned in different countries (OECD, 2013[23]).

The participation of migrants in adult education and training

While migrants might have stronger incentives to participate in adult education and training, they might also face higher barriers to participation. Both native-born and foreign-born adults face financial and non-financial barriers to participation, although probably to a different extent. The former include the direct as well as the opportunity cost of participation. As migrants are generally less wealthy than native-born adults (Mathä, Porpiglia and Sierminska, 2011[24]) they might face stronger credit constraints, preventing them from investing in potentially rewarding training activities. Non-financial barriers might include a wide range of factors, such as lack of time due to family or work commitments, lack of information about training opportunities, discrimination or programmes' lack of adaptation to the specific needs of migrants (Milburn, 1996[5]; Zegers de Beijl, 2000[25]; Sheared et al., 2010[26]) or institutional barriers, such as those related to the design of welfare systems, to the rules governing access to training opportunities, or (more specifically in the case of migrants) to the laws governing the rights of foreigners to live in the host country (Costello and Freedland, 2014[7]).

Lower levels of proficiency can discourage migrants from practicing their skills, or prevent them from accessing jobs that require engagement in cognitively-demanding tasks. As already mentioned, skills use can be an important source of learning (learning-by-doing), leading to further skills development, or at least to a deceleration of the natural process of skills loss related to ageing. The role of workplaces (and of different types of work organisations) as learning environments has recently been highlighted by Boeren (2016[27]) and Lorenz et al. (2016[28]). The degree to which workplaces are conducive to employees' learning is typically thought to depend on the interaction between a variety of factors that can be internal or external to the firm. External factors can include sector-specific characteristics such as the degree of competition and the extent of technological change, which could provide different incentives to firms to increase productivity by increasing the skills of their workforce. Internal factors refer to the managerial and organisational choices undertaken by each firm. Other than policies directly related to training, they can include broader human resource policies that provide incentives to workers to invest in their human capital, such as the degree of autonomy given to workers, or the presence of performance-related pay. To the extent that skills partly determine whether workers are more or less likely to be employed by firms providing an environment more or less conducive to skills development, existing skills gaps between migrants and natives can themselves be seen as barriers to further skills development.

Research on the provision, take-up, barriers to participation, and costs and benefits of adult training among migrant populations is often made difficult by a lack of suitable and comparable data, particularly across countries. By its very nature, adult education is difficult to measure, particularly as a significant portion of training and learning is often informal, or provided on the job and by employers. This chapter takes advantage of data from the OECD Survey of Adult Skills (PIAAC). PIAAC was primarily conceived as a way to measure the information-processing skills of the adult population; but it also

includes a background questionnaire that elicits detailed information on the socio-demographic characteristics of the respondents, including their education and labour market career.

Data from PIAAC allow for a description of patterns of participation in formal and non-formal learning activities of migrant and native adults. They also allow for an investigation of the differences in individual dispositions to training and in the barriers that prevent participation in such activities. PIAAC also contains information on the actual tasks performed on the job and on the use of information-processing skills at work and at home. Together with actual measured proficiency, this allows for a rich characterisation of cross-country and within-country differences in skills proficiency, skills practices, and skills development among native and migrant adults.

While the Survey of Adult Skills has been conducted in 33 countries, the analysis described in this chapter is restricted to 27 of them, mainly due to insufficient sample sizes of the sub-population of migrants, which in some countries is extremely small. Twenty out of these 27 countries participated in the first round of the survey, conducted in 2011/12: Australia, Austria, Belgium (Flanders), Canada, Cyprus[2,3], the Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, the Russian Federation[4], Spain, Sweden, the United Kingdom (England and Northern Ireland) and the United States. Data for Chile, Greece, Israel[5], Lithuania, New Zealand, Singapore and Slovenia were collected in 2014.

Participation in adult education and training in OECD countries

Participation in lifelong learning activities refers to participation in formal adult education and training and/or non-formal education and training activities. This is also the definition used by the European Commission in the Education 2020 strategy, according to which at least 15% of the adult population (aged 25-64) should participate in at least one "lifelong learning" activity (Eurydice, 2011[29]).

PIAAC asked respondents whether they participated in formal and non-formal education and training activities in the 12 months prior to the interview. Formal education refers to courses leading to the award of a formal qualification by a recognised educational institution. As the PIAAC target population includes all individuals aged 16 to 65, some exclusions were put in place to avoid classifying young adults enrolled in the normal cycle of initial education as participants in formal adult education activities. As a consequence, 16-19 year-old respondents enrolled in a course leading to an ISCED 3 qualification (equivalent to upper secondary education), and 20-24 year-old respondents enrolled in a course leading to an ISCED 4 qualifications (equivalent to tertiary education), were excluded from the sample and not counted as participants in adult education.

Participation in non-formal education and training is more difficult to capture, as it is not always easy to define what constitutes informal learning. The binary variable indicating participation in non-formal education and training was constructed combining four separate items in the background questionnaire that asked whether the respondent participated in: open or distance education; on-the-job training or training by supervisors or co-workers; seminars or workshops; and courses or private lessons not otherwise reported.

Participation in lifelong learning activities varies substantially across countries (Desjardins, 2015[30]). In the sample of countries that is analysed in this chapter,

participation rates in any kind of adult education and training (whether formal or informal) range from 20% in Greece and the Russian Federation to 67% in New Zealand (the cross-country average is 50%). Formal adult education and training accounts for a small share of overall participation in lifelong learning: on average, only 11% of survey respondents participated in formal education in the 12 months prior to the interview, while 46% participated in at least some informal learning activity.

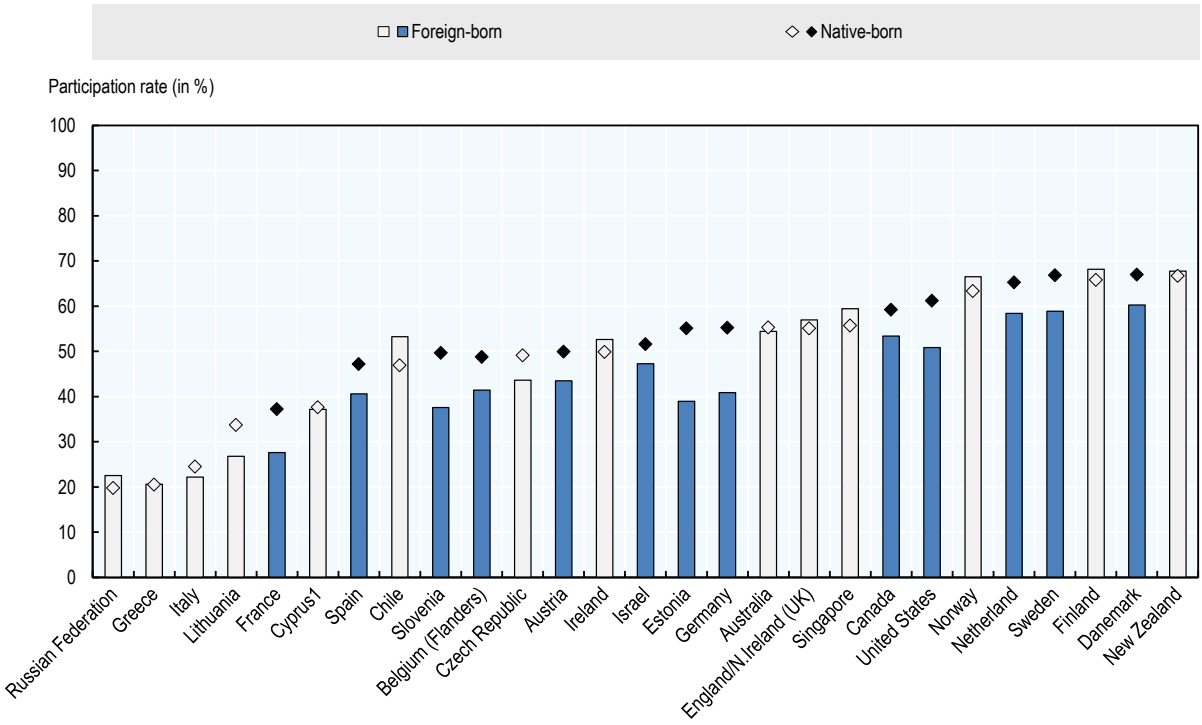
The vast majority of training activities were job-related: 83% on average across participating countries, ranging from 76% in Slovenia to 88% in Australia, Denmark, France, Norway and the United Kingdom (England and Northern Ireland). The relative incidence of non-job-related training was 20% among migrants and 16% among native-born adults. Among migrants, the incidence of training activities non-job-related was particularly high in Finland, the Netherlands, Spain and Sweden (between 26% and 29%) and particularly low in the Czech Republic (9%).

Organised on-the-job training sessions were the kind of learning activities most frequently reported, by 30% of respondents on average across participating countries. This share increases to 37% on the subsample of respondents that were either currently working at the time of the interview, or that reported to having been in paid employment in the 12 months prior to the interview.

The large cross-country differences in participation rates suggest that different institutional arrangements play a role in determining individuals' participation in adult training. The role of institutions and public policy frameworks has been discussed by Desjardins and Rubenson (2013[31]). Rubenson and Desjardins (2009[32]) suggest the possibility that different configurations of welfare states are related to participation in lifelong learning. Indeed, observed clusters of countries based on participation in lifelong learning can be directly mapped into clusters of welfare typologies identified in the sociological literature (Esping-Andersen, 1990[33]; Fenger, 2007[34]; Saar, Ure and Holford, 2013[35]; Blossfeld et al., 2014[36]; Busemeyer, 2014[37]). Participation rates are highest in Nordic countries and lowest in Southern European countries, while Anglo-Saxon and Central and Eastern European countries are clustered in the middle of the ranking.

Figure 4.1 shows participation rates for native and migrant adults. On average, the participation rates of migrants are four percentage points lower than those of natives. The gap is more pronounced in Estonia (16 percentage points), Germany (14 percentage points), Slovenia (12 percentage points), and France and the United States (10 percentage points). In about half of the countries in the sample the differences in participation rates are not statistically significant.

Figure 4.1. Participation rates in lifelong learning



Note: Countries are sorted in ascending order of overall participation rates. Countries for which the difference in participation rates between foreign-born and native-born adults is not statistically different from zero are marked in a lighter tone.

1. See notes 2 and 3 at the end of this Chapter.

Source: (OECD, 2015[38]) Survey of Adult Skills (PIAAC) (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933845909

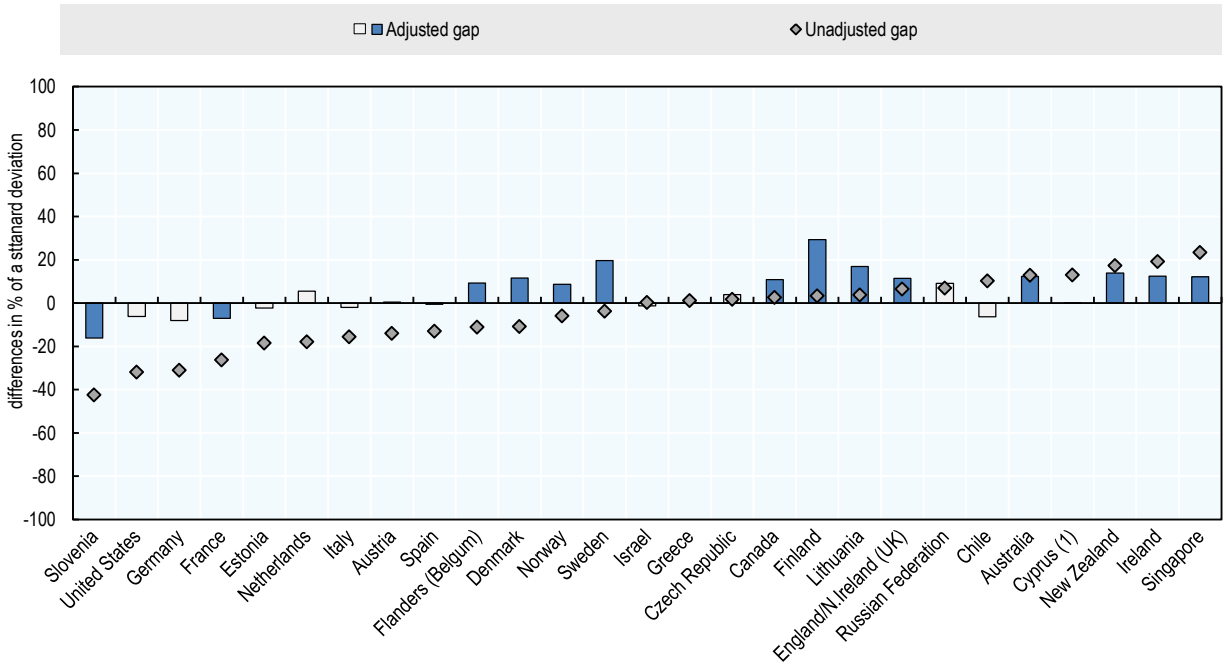
Restricting the sample to respondents holding a job (either at the time of the interview or in the 12 months prior to it), native-born adults were about 7 percentage points more likely than foreign-born adults to participate in on-the-job training (38% versus 31%), with a gap particularly pronounced in Germany (16 percentage points), Spain (15 percentage points), and Flanders (Belgium), Denmark and Estonia (13 percentage points). Singapore is the only country in which foreign-born adults were more likely to participate in on-the-job training than native-born adults (by 5 percentage points) (see Annex Table 4.A.2).

The cross-country correlation between migrants' and natives' participation rates is extremely high, at 91%, suggesting that countries' institutional characteristics matter much more than individuals' migrant background. This does not imply that institutions are the only determinant of participation in lifelong learning. Within countries, a central role is played by individual characteristics, such as age, gender, educational attainment and employment status.

Across the 24 countries that participated in the first round of PIAAC, the average participation rates in adult education and training were as high as 74% among adults who scored at Level 4/5 in the literacy assessment, and as low as 33% among adults who scored at Level 1 (OECD, 2013[23]). The relationship between literacy skills and participation in lifelong learning is strong in all participating countries. This relationship highlights the vicious cycle for low-skilled adults: if they do not benefit from adult learning, their skills remain weak or deteriorate over time, which makes it even harder for them to participate in learning activities. By contrast, high-skilled adults benefit from a virtuous cycle, as they tend to take advantage of opportunities to further develop or update their already-high skills.

Other individual characteristics that have been consistently found to be positively related to participation in adult learning include age (younger adults are more likely to invest in training), educational attainment, socio-economic status, being employed, and being in a white-collar occupation (Bassanini et al., 2007[19]; Desjardins, 2015[30]). Participation in lifelong learning is therefore best seen as the result of complex interactions between individual characteristics and the cultural, institutional and social environment (Boeren, Nicaise and Baert, 2010[39]; Boeren, 2016[27]).

Figure 4.2. Individual determinants of participation in lifelong learning



Note: The figure shows the average of selected coefficients from separate linear regressions (one for each country, on the subsample of foreign-born and native-born adults) of the probability of participation in lifelong learning on a set of age dummies, a set of educational qualifications dummies, literacy proficiency scores, an a dummy for being in paid employment. The coefficients have been multiplied by 100 to express the effect in percentage points. For age, the reference category is 25-34 years old. For educational attainment, the reference category is below upper secondary. The coefficients for literacy proficiency have been multiplied by the standard deviation of literacy proficiency scores across all the countries that have participated in PIAAC.

Source: (OECD, 2015[38]) Survey of Adult Skills (PIAAC) (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933845928

Figure 4.2 shows how various individual characteristics are related to the likelihood of participating in lifelong learning, on average across countries (see Annex Table 4.A.3 for country-specific results). The figure shows the average of estimated coefficients from linear regressions run separately for each country, on separate samples of native-born and foreign-born adults. The regressions estimate the effects of age, educational attainment, literacy proficiency, employment status and gender on participation in lifelong learning. The coefficients on gender are not reported, as none of them was statistically different from zero. The figure reports the coefficients associated with a one standard-deviation increase in literacy proficiency and with being 45 to 54 years old (the reference category is 25-34 years old), having a tertiary qualification (the reference category is below upper secondary), and not being in paid employed (the reference category is being in paid employment).

Across participating countries, being more educated, more proficient in literacy, and in paid employment increases the likelihood of participating in lifelong learning, while being older reduces the likelihood of participating. This is true for both native and migrant adults. However, within countries, natives and migrants differ in the strength of association between such personal characteristics and the likelihood of participation in adult education and training.

In a majority of countries, the negative effect of age on participation rates is larger for migrants than for natives. For example, in Greece and Denmark older migrants (aged 45-54) are about twenty percentage points less likely than younger migrants (aged 25-34) to participate in lifelong learning; for natives of the same age the difference is about twice as small.

In all countries, having a tertiary degree strongly increases the likelihood of participating in lifelong learning among both natives and migrants. In some countries, the estimated effect is stronger among native-born adults. In New Zealand, for instance, a tertiary degree is associated with a 21 percentage-point increase in the probability that native-born adults participate in lifelong learning, but only a 6 percentage point increase in the probability that foreign-born adults participate. However, in other countries, namely Australia, Austria, the Slovak Republic, Slovenia, Sweden and the United States, the size of the estimated coefficient does not differ greatly across the two groups. In a few countries, notably Chile, the Czech Republic, Greece and the United Kingdom, the estimated effect is stronger among foreign-born than among native-born adults.

Similarly, there is no clear pattern when considering the impact of literacy proficiency. In most countries, and across both groups, the increasing likelihood of participation related to a one standard-deviation higher score in literacy is between 5 and 10 percentage points, with no differences according to the migration background of respondents.

In all countries, not being in paid employment strongly reduces the likelihood of participation in lifelong learning, among both natives and migrants. However, in most countries this effect is much stronger among native-born adults (Greece is a notable exception in this regard). In Italy and Spain, for example, being in paid employment has no effect on the likelihood that migrants participate in adult education and training; but among native-born adults in Italy, not being employed is associated with a reduction of 11 percentage points in the probability of participating.

A more extensive analysis was conducted on the subsample of migrants, in order to assess the impact on the likelihood of participation in lifelong learning activities of the number of years spent in the country of destination and of whether the highest educational

qualification was acquired in the country of destination or abroad (see Table 4.1.). The analysis is restricted to a subset of countries for which the necessary information was available on a sufficient number of observations.

Table 4.1. Extended analysis on the subsample of foreign-born

	More than 5 years in the country				Foreign qualification			
	Model 1		Model 2		Model 3		Model 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Australia					-0.31	0.034	-0.06	0.042
Austria	-0.20	0.059	-0.04	0.066	-0.15	0.047	-0.06	0.047
Canada	-0.05	0.025	-0.03	0.024	-0.16	0.023	-0.08	0.021
Chile	0.27	0.115	0.09	0.080				
Cyprus (1)	0.11	0.055	0.12	0.057				
Denmark	-0.21	0.031	-0.10	0.037	-0.08	0.048	-0.07	0.045
England/N.Ireland (UK)	-0.04	0.050	0.00	0.062	-0.04	0.089	-0.05	0.097
Finland	-0.16	0.077	-0.37	0.094				
Flanders (Belgium)	-0.07	0.085	-0.08	0.079	0.13	0.069	0.14	0.065
France	-0.23	0.062	-0.18	0.066	0.04	0.062	-0.05	0.057
Germany	-0.14	0.084	0.00	0.085	-0.21	0.070	-0.17	0.061
Ireland	-0.01	0.036	0.03	0.036				
Israel	0.15	0.080	0.23	0.080				
Italy	0.16	0.037	0.20	0.038				
Netherlands	-0.22	0.077	-0.11	0.085				
New Zealand	0.03	0.035	0.04	0.038	-0.06	0.039	-0.03	0.036
Norway	-0.16	0.036	-0.13	0.043	0.14	0.075	0.12	0.069
Singapore	-0.08	0.050	-0.01	0.043				
Slovenia	-0.05	0.080	-0.02	0.085				
Spain	-0.02	0.052	-0.01	0.050				
Sweden	-0.11	0.055	-0.12	0.058	0.14	0.084	0.01	0.075
United States	-0.07	0.070	0.01	0.061				

Note: The table shows selected coefficients from separate linear regressions on the subsample of foreign-born adults in each country. Models 1 and 3 only control for a constant and the respective variable of interest (a dummy for having spent more than 5 years in the host country in the case of Model 1 and a dummy for having obtained the highest educational qualification abroad in the case of Model 3). Models 2 and 4 further control for gender, age, age squared, a set of educational attainment dummies, literacy scores and a dummy for being in paid employment.
1. See notes 2 and 3 at the end of this Chapter.
Source: (OECD, 2015[38]) Survey of Adult Skills (PIAAC) (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933846479

In the vast majority of countries, there is a negative association between length of stay in the host country and the likelihood of participating in lifelong training. Chile, Israel and Italy are the main exceptions to this pattern. On average, migrants who have been living in the host country for more than 5 years are about 5 percentage points less likely to have participated in training in the 12 months prior to the seurvey. This makes intuitive sense, as newly arrived migrants are more likely to participate in training to accelerate their integration into the host country's labour market. However, much of the difference is explained away after controlling for a range of observable characteristics such as age, gender, literacy proficiency and educational qualifications: the estimated coefficients

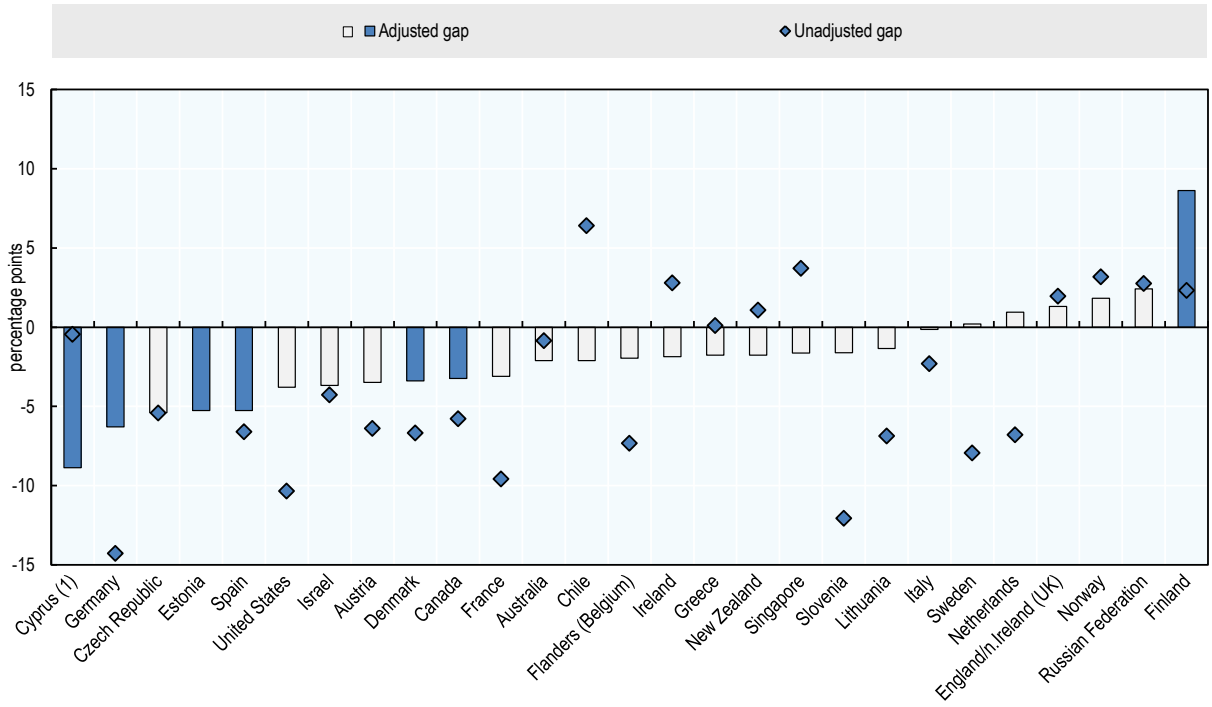
shrink in most countries (with the notable exception of Finland) and often becomes statistically not different from zero.

Having a foreign qualification is positively associated with participation in lifelong learning in Flanders (Belgium), Norway and Sweden, and negatively associated in Australia, Austria, Canada and Germany. However, after controlling for other observable characteristics, Germany is the only country in which such negative association remains statistically significant.

Probably unsurprisingly, individual characteristics have a strong impact, within each country, on the probability of participating in lifelong learning, over and above migration background *per se*. Moreover, the characteristics of the migrant population vary greatly across countries, as shown in Chapter 1. Countries have different histories of immigration, such that the age of the migrant population differs across countries. In addition, the rules governing the right of migrants to enter a country also differ, ultimately resulting in large disparities across countries in the education, proficiency and employability of the migrant population.

For this reason, any analysis of the differences in participation rates between migrants and natives should try to control as much as possible for differences in relevant individual characteristics. Figure 4.3 shows the results of a series of regression analyses, run separately for each country, that aimed to estimate differences in the participation rates between natives and migrants, controlling simultaneously for relevant individual characteristics such as age, education, literacy proficiency, gender and employment status.

Figure 4.3. Differences between migrants and natives in the probability of participating in lifelong learning



Note: The figure shows coefficients from separate linear regressions (one for each country) of the probability of participation in lifelong learning on a foreign-born dummy, controlling for age, age squared, a set of educational qualifications dummies, literacy proficiency scores, and a dummy for being in paid employment. The coefficients have been multiplied by 100 to express the effect in percentage points. Statistically significant differences are marked in a darker tone.

1. See notes 2 and 3 at the end of this Chapter.

Source: (OECD, 2015[38]) Survey of Adult Skills (PIAAC) (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933845947

In a large majority of countries, even after controlling for differences in observable individual characteristics, foreign-born adults are found to be less likely to participate in lifelong learning. However, in most countries, the estimated gap in participation is narrow (less than 4 percentage points) and not statistically different from zero. To put the magnitude of the estimated effects in perspective, the average baseline participation rates is around 50%, approaching 70% in the Nordic countries, the Netherlands and New Zealand.

Germany is the country where being foreign-born is most strongly associated with a reduction in the likelihood of participating in lifelong learning, with an estimated negative effect of 6.3 percentage points. The overall baseline participation rate in Germany is 53%. By contrast, in Finland, where the baseline participation rate is among the highest, at 66%, migrants are 8.6 percentage points more likely than natives to participate in lifelong learning (after controlling for other observable individual characteristics).

Figure 4.3 also highlights how the magnitude of the differences in participation rates between natives and migrants shrinks significantly after controlling for observable

characteristics (as seen by comparing adjusted and unadjusted gaps). This is likely because, in many countries, migrants are less educated and less proficient (and less likely to be employed) than native-born adults – and these are the characteristics that favour participation in lifelong learning activities. Once these differences between the two groups are taken into account, participation rates among migrants turn out to be similar to those of natives.

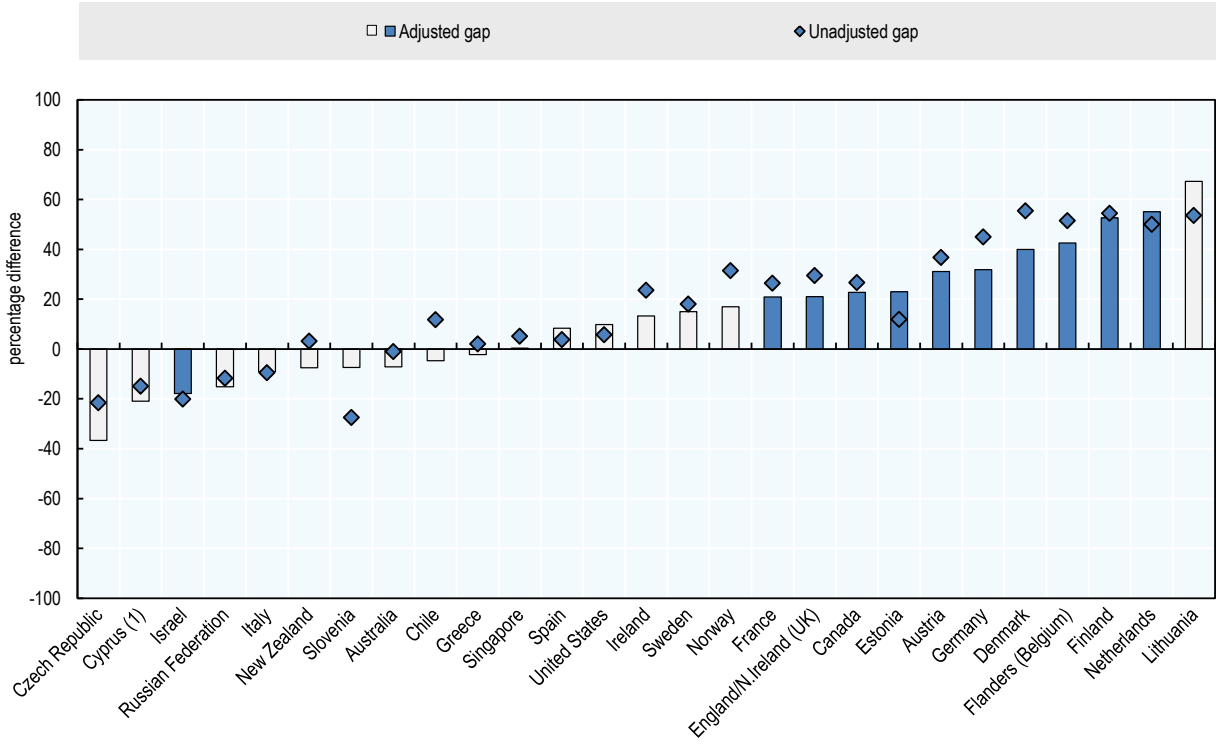
One possible implication of this finding is that foreign-born adults are not discriminated in their access to lifelong learning opportunities, as observable characteristics like education and skills largely explain the differences in participation rates. On the other hand, it could be argued that the direction of causality runs in the opposite direction and that promoting participation in adult training is key to improve the skills and the employability of migrants.

It could also be argued that the policy objective should not be limited to closing the participation gap between native-born and foreign-born adults. Migrants, especially the ones recently arrived in the host country, are likely to need more training than natives, for instance in order to improve their proficiency in the language of the host country. Unfortunately PIAAC does not allow measuring precisely language proficiency (and therefore the need for language training). An indirect measure of the need of language proficiency can be derived by looking at migrants who declared to be native speakers of the language of the PIAAC assessment (which generally coincided with the official language of the host country). However, it turns out that migrants who are native speakers in the language of the PIAAC assessment are, if anything, slightly more likely than other migrants to participate in lifelong learning.

An alternative, though always indirect, way to capture the need or the demand for adult training is to look at the actual time spent in lifelong learning activities by adults that had the opportunity to participate. PIAAC elicits information on the estimated amount of hours spent in non-formal learning activities during the 12 months prior to the interview. While this information is only available for non-formal activities, it is nonetheless informative, as formal adult education accounts for only 11%, on average, of overall participation in lifelong learning. Non-formal learning activities differ from formal learning activities in that they do not lead to a formal qualification. They include open or distance education (e.g. online courses), on-the-job training or training by supervisors or co-workers, seminars or workshops, and private courses/lessons.

On this metric there is evidence that foreign-born adults express a higher demand, meaning that they spend more time in learning activities than native-born adults do. Differences between foreign- and native-born adults in the amount of hours spent in non-formal learning activities are substantial in about half of the countries, as shown in Figure 4.4. In Denmark, Flanders (Belgium), Finland, the Netherlands and Lithuania foreign-born adults who participated in non-formal learning activities spent about 60 percent more hours than native-born adults. The gap does not change substantially after controlling for observable characteristics. With the exception of Israel, in all the countries where the gap is in favour of natives, the estimated difference is generally small and not statistically different from zero.

Figure 4.4. Differences in hours of participation in non-formal learning between migrants and natives



Note: The graph shows percentage differences in the amount of hours spent by foreign-born and native-born adults in non-formal learning activities. The bars show adjusted differences, controlling for age, age squared gender, educational attainment, literacy proficiency and employment status. Statistically significant adjusted differences are shown in a darker tone.

1. See notes 2 and 3 at the end of this Chapter.

Source: (OECD, 2015[38]) Survey of Adult Skills (PIAAC) (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933845966

Intentions to participate and barriers to participation

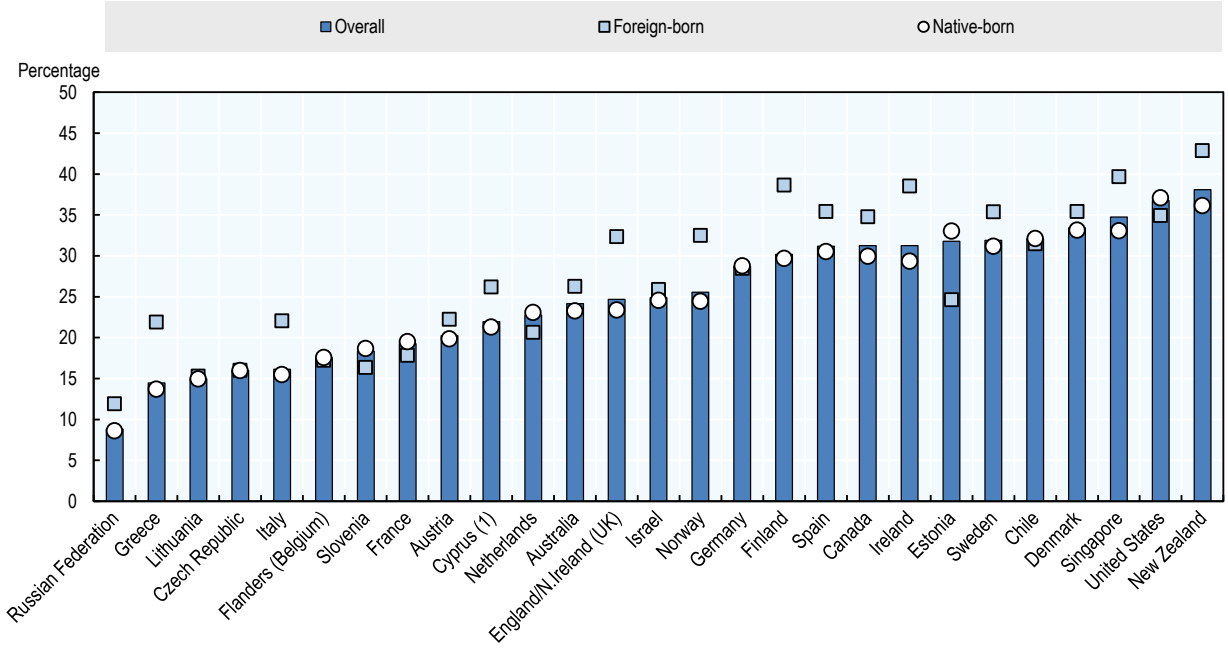
The literature on participation in lifelong learning has underlined the role played by the demand side, i.e. the intention to participate. Baert, De Rick and Van Valckenborgh (2006[40]) argue that a positive attitude towards lifelong learning is a precondition to express an intention to participate. Once such an intention has been formulated, an adult will search for an opportunity in the education and training market. Lack of participation might be due to either the lack of a suitable offer, or to some other barriers.

PIAAC collects information on whether respondents wanted to participate in an informal learning activity in the previous 12 months, but ended up not doing so. Respondents were also asked why they did not participate and were given eight reasons to choose from: did not have the prerequisites; excessive financial cost of the learning activity; lack of employer's support; too busy at work; inconvenient time or place of the activity; need to care for children or other family responsibilities; unexpected reasons; and other reasons.

Information on the share of adults who were prevented from participating in lifelong learning activities (meaning that they had formulated an intention to participate, but were somehow hindered from actually participating) can be useful for designing policies that help remove such constraints.

Figure 4.5 shows the incidence of "constrained" adults in each country, and among native- and foreign-born adults. Unmet demand for lifelong learning is highest in New Zealand, the United States, Singapore and Denmark (in descending order), while it is lowest in Greece, Lithuania and the Czech Republic (in ascending order). Countries with high participation rates tend also to be countries with high unmet demand (the correlation coefficient equals 0.76). Unmet demand is generally higher among foreign-born adults; however, in many countries, there are no significant differences between native- and foreign-born adults in the degree to which they reported unmet demand for adult training.

Figure 4.5. Constraints on participation in informal learning activities



Note: The figure shows the percentage of adults who reported being willing to participate in some informal learning activity in the 12 months prior to the interview but who, in the end, did not start that learning activity.

1. See notes 2 and 3 at the end of this Chapter.

Source: (OECD, 2015[38]) Survey of Adult Skills (PIAAC) (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis

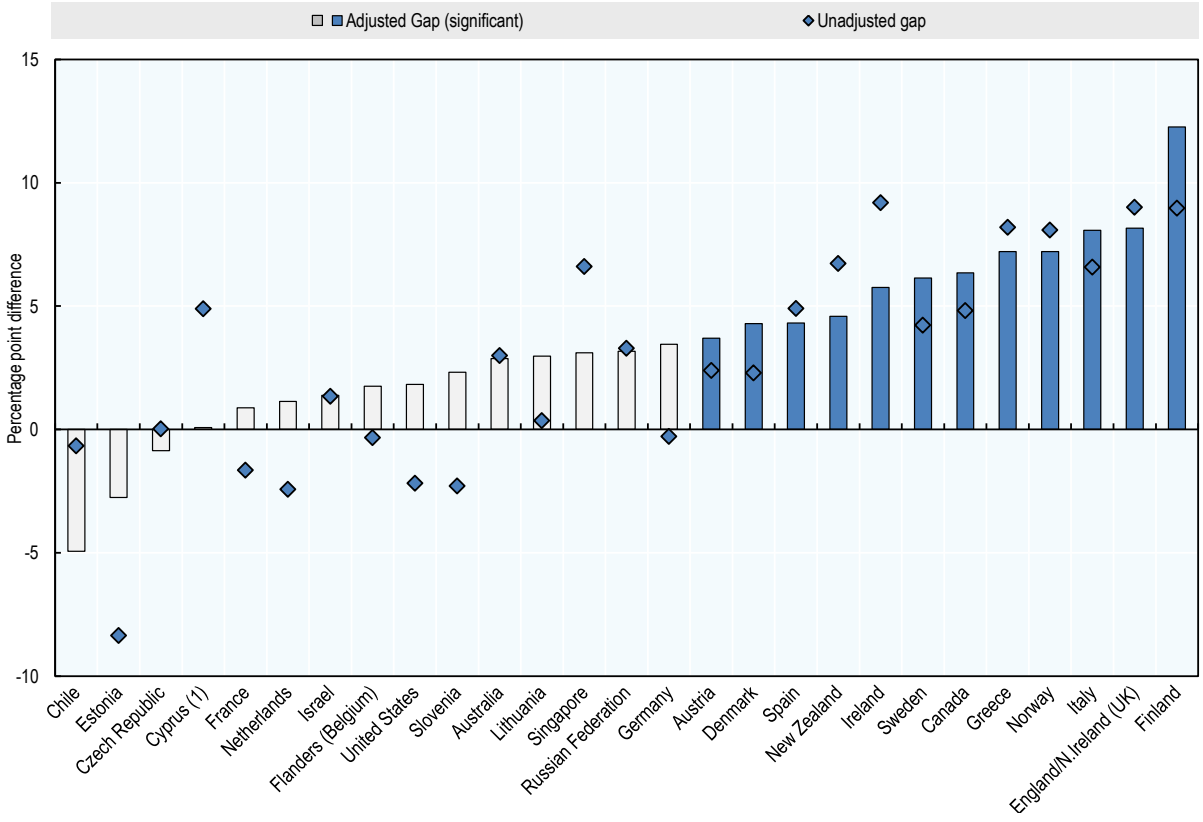
StatLink http://dx.doi.org/10.1787/888933845985

Figure 4.6 looks more closely at differences between native- and foreign-born adults by reporting both unadjusted differences between the two and adjusted differences, estimated after taking into account differences in the composition of the two groups according to age, gender, educational attainment, employment status and literacy skills.

In about half of the countries the adjusted gap is either not statistically significant or less than five percentage points. The gap is especially sizeable (at 12 percentage points) in

Finland. In Greece, Norway, Italy and England/Northern Ireland (UK) the gap is between 7 and 8 percentage points.

Figure 4.6. Differences between foreign- and native-born adults in constraints on participation in informal learning activities



Note: The bars report the estimated difference (after controlling for age, age squared, gender, educational attainment, literacy skills and employment status) between foreign- and native-born adults in the probability of reporting a constraint in participation in an informal lifelong learning activity (i.e. a willingness to participate in some informal learning activity in the 12 months prior to the interview that, in the end, did not materialise into actual participation). Statistically significant differences are shown in a darker tone. The diamonds represent the unadjusted differences. Estimated regression coefficients have been multiplied by 100 to express the gaps in percentage points.

1. See notes 2 and 3 at the end of this Chapter

Source: (OECD, 2015[38]) Survey of Adult Skills (PIAAC) (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933846004

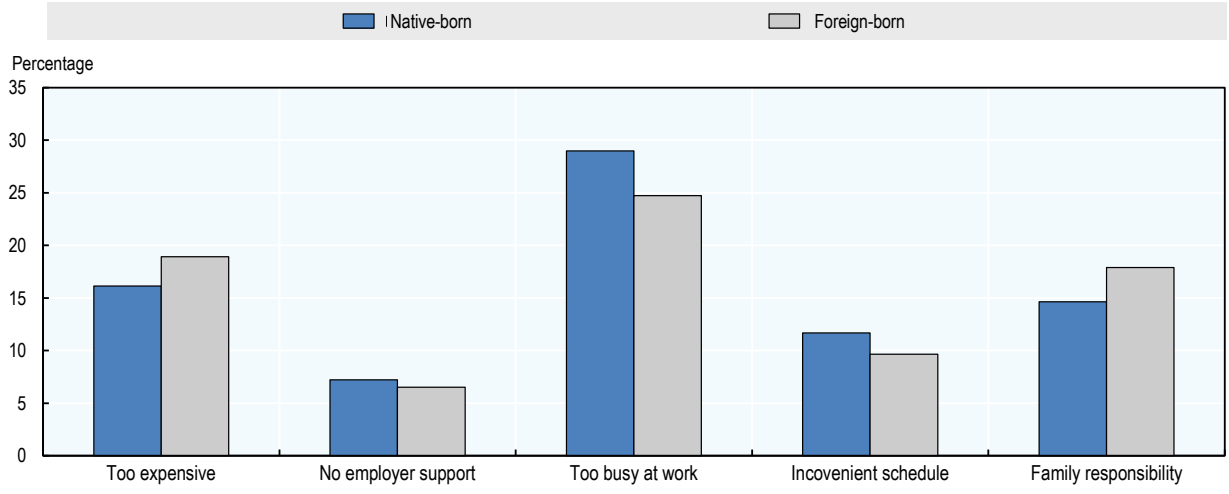
Barriers to participation

Importantly, PIAAC asks respondents about the reasons behind the inability to participate in training. The five most frequently reported reasons are: excessive cost of participation (reported by 17% of respondents, on average across countries), lack of employer's support (7%), excessive amount of things to be done at work ("too busy at work", 29%), inconvenience of time or place (11%), and child care or family responsibilities (15%). Some 14% of respondents reported a residual category ("Other reasons") and 4% reported "unexpected reasons. Only 3% of respondents reported that they were unable to

participate in training because they lacked the prerequisites (2.8% of native-born and 4.5% of foreign-born adults reported so). This might be because the focus is on non-formal learning activities, which are likely to require fewer (formal or non-formal) prerequisites than learning activities that lead to a formal qualification.

Figure 4.7 presents the average, across countries, of the shares of native-born and foreign-born respondents that have reported various reasons that prevented them from undertaking lifelong learning activities. Results for individual countries are provided in Annex Table 4.A.4.

Figure 4.7. Reasons for not participating in lifelong learning activities



Note: The graph shows the cross-country averages of the shares of respondents that have reported various reasons for not having being able to start a lifelong learning activity, despite their willingness to do so.
Source: (OECD, 2015[38]) Survey of Adult Skills (PIAAC) (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933846023

In the vast majority of countries, being busy at work is the most frequently cited reason for not participating in training, among both natives and migrants. Native-born adults were generally more likely than foreign-born adults to report so. A notable exception is the United States, where 37% of migrants reported that they were too busy at work to participate in non-formal learning activities, compared with 25% of natives. Also in Canada and New Zealand migrants were slightly more likely than natives to report being busy at work as a reason for not participating in training.

The second most frequently cited barrier is the excessive financial cost of the learning activity. In this case, foreign-born adults were more likely to report so than native-born adults. The share of migrants who cited financial considerations ranges from 8% in Finland to 40% in Greece. Only in the United States native-born adults were significantly more likely than foreign-born adults to report excessive financial costs as the reason that prevented them from participating.

Migrants were also more likely than natives to be constrained by child care or other family responsibilities. This could be due to a lack of access to a family network capable

of helping with childcare, or to other barriers (linguistic, financial or bureaucratic) to access formal childcare. The share is highest in Chile (27%) and lowest in Denmark (8%).

After taking into account differences in observable characteristics, the estimated differences between natives and migrants in the probability of citing the various types of barriers to participation become not statistically significant in most cases (see Table 4.2). But some consistent patterns across countries are observed. For example, foreign-born adults were generally more likely than native-born adults to cite financial constraints. This is especially the case in Austria, Estonia, Norway and Spain. In all of these countries, the difference between the two groups is around 8 percentage points. In the United States, by contrast, foreign-born adults were about 9 percentage points less likely to cite financial constraints.

Migrants were less likely than natives to report a lack of employer support as the reason for not participating in training. The differences between the two groups of adults are statistically significant in Germany, Greece, the Netherlands and Spain, ranging between 2 and 7 percentage points. Similarly, migrants in Australia, Canada, Estonia, Finland, France and Norway were less likely than natives to find the time or location of training inconvenient, with statistically significant differences ranging from 2 to 7 percentage points.

In most countries, there are no significant differences between migrants and natives in the likelihood of reporting being too busy at work as a reason for not participating in lifelong learning activities. Only in Chile, Greece and Norway were foreign-born adults less likely – by eight percentage points – to cite that reason. By contrast, migrants in Canada were 4 percentage points more likely, and those in the United States were 14 percentage points more likely than natives to report that they were too busy at work to participate in training.

A more mixed picture emerges when looking at the burden imposed by childcare or other family responsibilities. Foreign-born adults in Denmark, England and Northern Ireland (UK), Finland, Germany, Singapore, and the United States were more likely than native-born adults to report being constrained by family responsibilities. In Estonia, Flanders (Belgium) and Spain native-born adults were more likely to report so.

Table 4.2. Differences between migrants and natives in the reasons cited for not participating in lifelong learning

Country	Too expensive	No employer's support	Too busy at work	Inconvenient schedule	Family responsibility
Australia	0.03	-0.01	-0.02	-0.05	0.05
Austria	0.08	-0.01	0.00	0.02	-0.03
Canada	0.01	-0.02	0.04	-0.03	0.01
Chile	-0.04	0.09	-0.18	-0.01	0.14
Cyprus (1)	0.06	-0.00	0.059	-0.02	-0.10
Czech Republic	0.16	0.03	-0.13	-0.02	0.10
Denmark	-0.03	-0.03	0.03	0.01	0.03
England/N.Ireland (UK)	-0.01	-0.01	0.03	-0.03	0.07
Estonia	0.08	0.01	-0.04	-0.05	-0.04
Finland	0.00	-0.03	0.00	-0.07	0.06
Flanders (Belgium)	0.03	0.04	-0.04	0.09	-0.08
France	0.04	-0.02	-0.05	-0.02	0.03
Germany	0.02	-0.04	0.02	-0.03	0.07
Greece	0.11	-0.03	-0.08	-0.04	0.06
Ireland	0.04	0.01	-0.02	0.01	0.00
Israel	-0.05	0.03	-0.06	-0.03	0.04
Italy	0.03	-0.02	0.02	0.00	0.03
Lithuania	0.01	0.03	-0.01	-0.02	0.00
Netherlands	0.05	-0.07	-0.01	0.05	-0.02
New Zealand	0.00	0.01	0.02	0.02	-0.03
Norway	0.09	0.00	-0.08	-0.05	0.04
Russian Federation	-0.15	-0.02	-0.13	0.08	0.15
Singapore	-0.03	0.00	-0.01	-0.00	0.08
Slovenia	-0.05	-0.03	-0.01	0.04	0.05
Spain	0.07	-0.02	0.02	0.00	-0.05
Sweden	0.00	0.02	0.04	-0.04	0.02
United States	-0.09	-0.01	0.14	-0.02	0.05

Note: Estimated marginal effect of being foreign-born on the probability of reporting the indicated reason for not participating in a lifelong learning activity. Multinomial probit model that controls for age, gender, educational attainment, literacy skills and employment status. Multinomial logit model for Chile, Cyprus[1], Greece and Lithuania. Statistically significant marginal effects (at the 10% level) are shown in bold.

1. See Notes 2 and 3 at the end of this Chapter

Source: (OECD, 2015[38]) Survey of Adult Skills (PIAAC) (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933846498

Opportunities to practice

This section looks at the frequency with which native- and foreign-born adults engage in practices that require using information-processing skills. As discussed above, practicing is important not only as a way to develop skills, but as means of preventing (or at least slowing) the decline in proficiency over a lifetime (Reder, 1994[20]; Reder, 2009[21]; Paccagnella, 2016[22]). In addition, there is evidence that the skills content of the tasks performed at work varies within occupations, and that it is an important determinant of wages (Autor and Handel, 2013[41]; Quintini, 2014[42]).

PIAAC asked respondents about the frequency with which they perform a wide range of tasks, requiring the use of reading, writing, numeracy or ICT skills, both at work and at

home. The analysis in this chapter uses this information to construct an index of intensity of reading practices (at work and at home). The index is standardised across countries to have a mean of zero and a standard deviation of one to facilitate the interpretation of results.

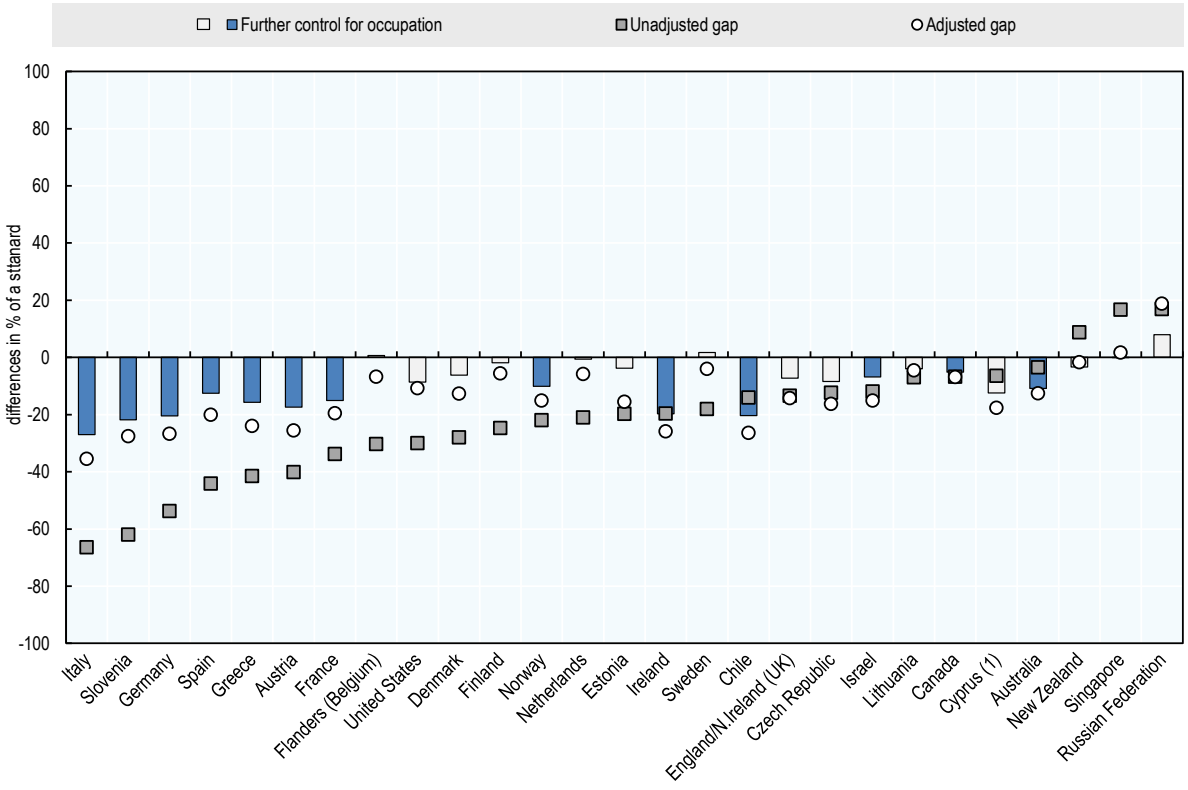
Previous work has shown that proficiency and education are generally positively related to the frequency of skills practice (OECD, 2013[23]; Quintini, 2014[42]). This makes intuitive sense, as more skilled individuals are more likely to work in occupations that require a more intense or more frequent use of their skills. Similarly, more skilled individuals might find it easier or more enjoyable to engage in reading, writing or numeracy practices outside work. As discussed regarding participation in lifelong learning more broadly, adults with more skills individuals are also more likely to have opportunities to practice their skills, which can exacerbate existing differences in proficiency.

Figure 4.8 confirms that migrants generally read less frequently at work than natives. Differences are especially large (more than half of a standard deviation) in Italy, Slovenia and Germany. This is likely because migrants are sorted into more manual or routine occupations, where they are required to perform tasks that do not require them to read intensely. The unadjusted gap is not statistically significant in Cyprus, the Czech Republic, Lithuania and Australia.

When accounting for differences in observable characteristics, such as age, gender, literacy proficiency and educational attainment, the gap shrinks considerably. However, it remains substantial – between 20% and 40% of a standard deviation – in a range of countries, namely Austria, France, Germany, Greece, Ireland, Italy, Slovenia and Spain.

Further controlling for occupation dummies reduces the magnitude of the effect in most (but not all) countries. The estimated gap remains large (above 15%) in Italy, Slovenia, Germany, Greece, Austria, France, Ireland, and Chile. This possibly suggests the existence of migrants' segregation in the characteristics of tasks they carry out at work, even within narrowly defined occupations.

Figure 4.8. Differences between foreign- and native-born adults in the use of reading skills at work



Note: The graph reports the estimated difference between foreign- and native-born adults in the index of use of reading skills at work. Adjusted gaps control for differences in age, age squared, gender, educational attainment, literacy skills and employment status. The bars further controls for occupation dummies at the 1-digit level (ISCO2008). Statistically significant differences are marked in a darker tone (in the bars).

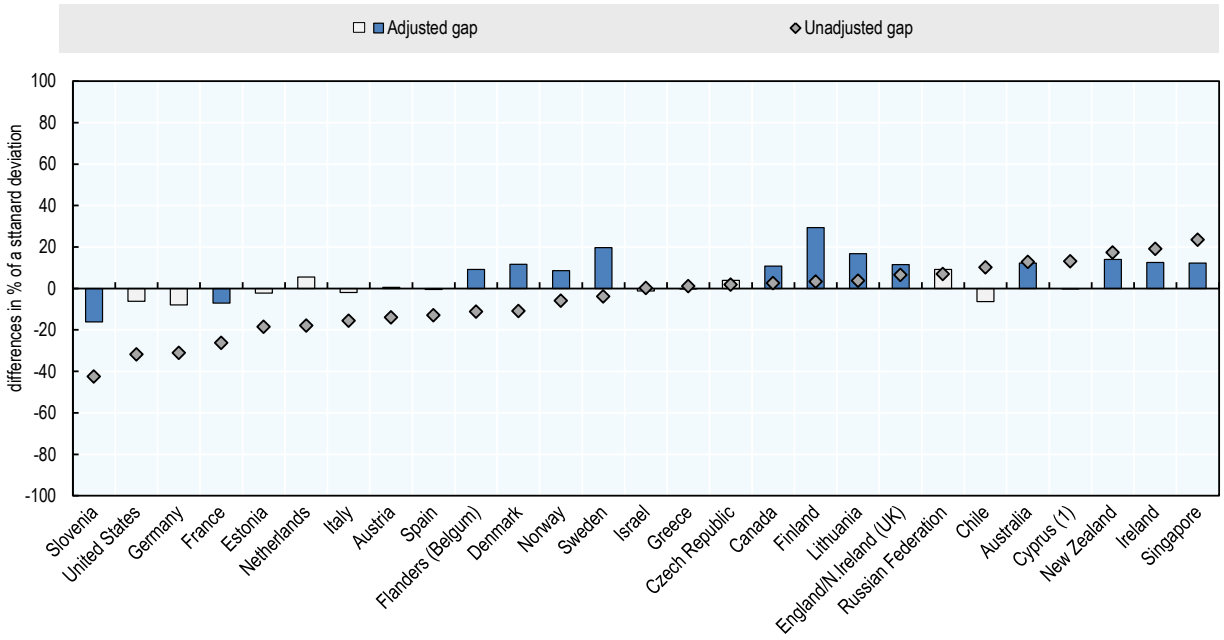
1. See notes 2 and 3 at the end of this Chapter.

Source: (OECD, 2015[38]) Survey of Adult Skills (PIAAC) (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933846042

A different picture emerges when examining the frequency of practice outside work (Figure 4.9). Differences between migrants and natives are generally smaller, and in some countries, migrants are more likely than natives to read outside of work, especially after controlling for observable characteristics. In Finland, Ireland, Lithuania, New Zealand, Sweden and Singapore foreign-born adults are significantly more likely than native-born adults to read outside of work, with differences between 10% and 25% of a standard deviation. Only in France, Germany and Slovenia are migrants found to be at a significant disadvantage when it comes to reading at home.

Figure 4.9. Differences between foreign- and native-born adults in the use of reading skills in everyday life



Note: The graph reports the estimated difference between foreign- and native-born adults in the index of use of reading skills in everyday life. Adjusted gaps control for differences in age, age squared, gender, educational attainment, literacy skills and employment status. Statistically significant differences are marked in a darker tone (in the bars). Countries are sorted according to the unadjusted gap.

1. See notes 2 and 3 at the end of this Chapter.

Source: (OECD, 2015[38]) Survey of Adult Skills (PIAAC) (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933846061

Interpreting the results on reading practices is complicated by the fact that PIAAC contains no information on the language that adults use in such reading activities. While it can be safely argued that most reading at work is done in the language of the host country (and therefore in the same language as the PIAAC literacy assessment), the same does not hold for reading at home. Indeed, migrants might read more at home because they can do so in their native language. An alternative explanation is possible, though: if they are less proficient in the host-country language, migrants might just need more time to read the same amount of material.

More insights into this issue can be gained with a regression analysis in which literacy proficiency is regressed on a full set of interaction terms between the foreign-born dummy and the frequency of reading at home. The regression also controls for the usual observable characteristics (age, age squared, gender, educational attainment, occupational status), as well as for whether the respondent took the cognitive assessment in his or her mother tongue. This exercise allows verifying if the relationship between the frequency of reading at home and literacy proficiency is different across the two groups of native-born and foreign-born adults. Indeed, if migrants mainly read in their native language at home, one would expect a smaller effect of reading practices on proficiency.

The opposite turns out to be true, though, as shown in Annex Table 4.A.5: the coefficients on the interaction terms are positive in the vast majority of countries (and they are not statistically significant in the few cases in which they are negative), which means that migrants benefit more than natives from reading at home (or, more precisely, that in the case of migrants reading at home is more strongly related to literacy proficiency than it is for natives). If this were the case, it would be unlikely that most reading at home is done in the migrants' native language, as it is hard to think of reasons why reading in a foreign language would help improve performance in a literacy assessment administered in a different language. Unfortunately, the design of PIAAC does not allow for disentangling whether it is reading practice that improves literacy proficiency or it is literacy proficiency that makes people more likely to engage in reading outside of work, so the arguments put forward in this paragraph should be taken as reasonable interpretations of the patterns observed in the data more than as a "proof" of some hypothesis about the benefits of practicing reading on literacy proficiency.

In sum, while it can be safely concluded that migrants face obstacles in the labour market, and are less likely to be offered the same opportunities for practicing and developing their skills, results concerning the frequency of reading outside of work are harder to interpret. Reading at home is likely to be beneficial, but it is hard to tell how much it compensates for less reading at work.

Conclusions

In a rapidly changing environment, participation in adult training and lifelong learning activities is crucial for adapting and upgrading skills to meet changing demand, especially as increases in life expectancy have been accompanied by a lengthening of the working life. This is even more important for migrants, who often face additional challenges and have to adapt their skills to the needs of the host country.

Designing more effective systems of adult training and increasing participation in lifelong learning activities is a priority in many OECD countries, particularly in those where participation rates are low. Indeed, the cross-country variation in the design and effectiveness of systems of adult education and training is remarkable. OECD countries also differ substantially in their migration policies, and this often translates into large differences in the characteristics of the foreign-born population (see Chapter 2).

On average, migrants tend to participate less than natives in lifelong learning activities. However, patterns of participations seem to be much more influenced by country-level characteristics than by immigration background. Foreign-born adults living in countries with effective education and training systems and with traditionally high rates of participation tend to take part in lifelong learning activities much more than do native-born adults living in countries with less-developed training systems.

Differences in participation rates between native- and foreign-born adults vary across countries, but are generally not very large, especially after controlling for basic individual characteristics, such as age, education or literacy proficiency. In the majority of countries, differences in participation are small and not statistically different from zero; in Finland and the Slovak Republic, migrants are even significantly more likely than natives to participate in lifelong learning activities. The Survey of Adult Skills (PIAAC) also finds that, depending on participation, migrants generally spend more hours than natives in training activities.

However, significant differences remain, and data contained in the Survey of Adult Skills (PIAAC) allows for a more detailed picture of the issues surrounding participation in lifelong learning, which could help countries design more effective training policies for their foreign-born population.

Immigrants are more likely to report that they are not able to participate as much as they would like. They more often cite financial barriers and obstacles related to childcare and other family responsibilities as the reasons that prevent them from participating.

In many countries, migrants are more likely to be employed in occupations that do not require them to practice their literacy skills. While this is probably partly due to the fact that they tend to be less proficient to begin with, this lack of practice makes it harder for migrants to catch up with natives. On the other hand, migrants are more likely to engage in literacy-related practices outside of work. While this is a positive finding, it is unlikely to compensate for the lack of practice on-the-job, especially if reading at home is in the migrants' native language rather than in the host-country language.

Notes

[1] A more extensive review is provided in Bassanini et al. (2007[19])

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

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

[4] The data for the Russian Federation do not include the population of the Moscow municipal area.

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

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Annex 4.A. Additional Tables

Annex Table 4.A.1. Rates of participation in lifelong learning

	Native-born							
	Formal education		Formal and non-formal		Formal and non-formal, job-related		Formal and non-formal, non-job-related	
	%	S.E.	%	S.E.	%	S.E.	%	S.E.
Countries								
Australia	16.6	(0.01)	55.3	(0.01)	49.5	(0.01)	5.8	(0.00)
Austria	6.7	(0.00)	49.9	(0.01)	41.1	(0.01)	8.9	(0.00)
Canada	12.3	(0.00)	59.2	(0.01)	50.5	(0.01)	8.6	(0.00)
Chile	13.1	(0.01)	46.9	(0.02)	39.4	(0.01)	7.5	(0.01)
Cyprus (1,2)	5.6	(0.00)	37.6	(0.01)	31.4	(0.01)	6.2	(0.00)
Czech Republic	6.1	(0.00)	49.1	(0.01)	42.3	(0.01)	6.8	(0.01)
Denmark	15.3	(0.01)	66.9	(0.01)	59.0	(0.01)	8.0	(0.00)
England/N. Ireland (UK)	14.8	(0.01)	55.0	(0.01)	49.1	(0.01)	6.0	(0.00)
Estonia	10.6	(0.00)	55.0	(0.01)	43.6	(0.01)	11.5	(0.00)
Finland	16.1	(0.01)	65.8	(0.01)	55.8	(0.01)	10.0	(0.00)
Flanders (Belgium)	7.8	(0.00)	48.7	(0.01)	39.7	(0.01)	9.1	(0.00)
France	5.2	(0.00)	37.2	(0.01)	33.1	(0.01)	4.0	(0.00)
Germany	7.5	(0.00)	55.2	(0.01)	47.8	(0.01)	7.3	(0.01)
Greece	5.5	(0.00)	20.5	(0.01)	16.3	(0.01)	4.2	(0.00)
Ireland	13.5	(0.01)	49.8	(0.01)	42.7	(0.01)	7.2	(0.00)
Israel	17.0	(0.01)	51.6	(0.01)	39.7	(0.01)	11.9	(0.01)
Italy	5.3	(0.00)	24.5	(0.01)	20.5	(0.01)	4.0	(0.00)
Lithuania	6.1	(0.01)	33.7	(0.01)	27.7	(0.01)	6.0	(0.00)
Netherlands	15.0	(0.01)	65.2	(0.01)	54.5	(0.01)	10.7	(0.00)
Norway	15.6	(0.01)	63.3	(0.01)	56.3	(0.01)	7.0	(0.00)
New Zealand	17.1	(0.01)	66.7	(0.01)	57.1	(0.01)	9.6	(0.01)
Russian Federation	5.8	(0.00)	19.8	(0.02)	15.6	(0.01)	4.1	(0.01)
Singapore	10.0	(0.00)	55.7	(0.01)	46.9	(0.01)	8.7	(0.01)
Slovenia	11.6	(0.01)	49.7	(0.01)	37.3	(0.01)	12.4	(0.01)
Spain	13.3	(0.01)	47.2	(0.01)	36.3	(0.01)	10.9	(0.00)
Sweden	12.4	(0.00)	66.8	(0.01)	54.8	(0.01)	12.1	(0.01)
United States	13.9	(0.01)	61.2	(0.01)	52.3	(0.01)	8.9	(0.01)
	Foreign-born							
	Formal education		Formal and non-formal		Formal and non-formal, job-related		Formal and non-formal, non-job-related	
	%	S.E.	%	S.E.	%	S.E.	%	S.E.
Countries								
Australia	17.5	(0.01)	54.4	(0.01)	46.0	(0.01)	8.4	(0.01)
Austria	7.1	(0.01)	43.5	(0.02)	34.1	(0.02)	9.4	(0.01)
Canada	17.5	(0.01)	53.4	(0.01)	43.6	(0.01)	9.7	(0.01)
Chile	10.6	(0.05)	53.3	(0.07)	40.6	(0.05)	12.7	(0.06)
Cyprus (1,2)	6.0	(0.01)	37.1	(0.02)	32.2	(0.02)	4.9	(0.01)

Czech Republic	10.4	(0.04)	43.6	(0.07)	39.9	(0.07)	3.7	(0.01)
Denmark	24.1	(0.01)	60.2	(0.01)	50.8	(0.01)	9.5	(0.01)
England/N. Ireland (UK)	20.5	(0.02)	57.0	(0.02)	46.7	(0.02)	10.2	(0.01)
Estonia	4.2	(0.01)	38.9	(0.01)	30.7	(0.01)	8.3	(0.01)
Finland	19.6	(0.03)	68.1	(0.04)	48.2	(0.04)	19.9	(0.02)
Flanders (Belgium)	9.6	(0.02)	41.4	(0.03)	31.5	(0.02)	9.9	(0.02)
France	6.5	(0.01)	27.6	(0.02)	22.3	(0.01)	5.3	(0.01)
Germany	11.3	(0.01)	40.9	(0.02)	33.6	(0.02)	7.3	(0.01)
Greece	5.5	(0.01)	20.6	(0.02)	16.1	(0.02)	4.5	(0.01)
Ireland	18.1	(0.01)	52.6	(0.02)	44.3	(0.02)	8.3	(0.01)
Israel	11.5	(0.01)	47.3	(0.02)	36.4	(0.02)	10.9	(0.01)
Italy	8.3	(0.02)	22.2	(0.02)	17.0	(0.02)	5.2	(0.01)
Lithuania	4.7	(0.02)	26.8	(0.04)	22.5	(0.04)	4.3	(0.03)
Netherlands	17.8	(0.02)	58.4	(0.03)	43.1	(0.03)	15.3	(0.02)
Norway	21.1	(0.02)	66.5	(0.02)	54.2	(0.02)	12.3	(0.01)
New Zealand	17.5	(0.01)	67.7	(0.01)	58.5	(0.01)	9.2	(0.01)
Russian Federation	8.9	(0.02)	22.5	(0.03)	17.6	(0.03)	5.0	(0.01)
Singapore	11.2	(0.01)	59.4	(0.02)	50.4	(0.02)	9.0	(0.01)
Slovenia	6.6	(0.01)	37.6	(0.02)	31.3	(0.02)	6.3	(0.01)
Spain	11.7	(0.01)	40.6	(0.02)	29.4	(0.02)	11.2	(0.01)
Sweden	21.1	(0.02)	58.9	(0.02)	42.2	(0.02)	16.7	(0.02)
United States	13.0	(0.01)	50.8	(0.02)	41.3	(0.02)	9.6	(0.01)

Note: The table reports the percentage of respondents that have participated in different forms of lifelong learning.

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 recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".
2. *Note by all the European Union Member States of the OECD and the European Union*: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Source: Survey of Adult Skills (PIAAC) (2012, 2015)

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Annex Table 4.A.2. Participation in on-the-job training, employed adults

	On the job training, employed						
	Native-born		Foreign-born		Difference		
	%	S.E.	%	S.E.	%	S.E.	p-value
Countries							
Australia	42.7	(1.11)	39.3	(1.84)	-3.4	(2.19)	0.1
Austria	27.9	(0.88)	20.3	(1.80)	-7.6	(1.99)	0.0
Canada	44.7	(0.67)	33.9	(1.29)	-10.8	(1.47)	0.0
Chile	36.2	(1.43)	40.5	(6.32)	4.3	(5.77)	0.5
Cyprus (1,2)	21.5	(0.90)	24.5	(2.66)	3.0	(2.98)	0.3
Czech Republic	49.5	(1.46)	41.5	(8.09)	-8.0	(8.00)	0.3
Denmark	47.4	(0.79)	34.6	(1.70)	-12.7	(1.89)	0.0
England/N. Ireland (UK)	47.0	(1.22)	38.7	(2.59)	-8.3	(2.89)	0.0
Estonia	45.8	(0.83)	32.7	(1.82)	-13.1	(1.86)	0.0
Finland	54.9	(0.88)	46.6	(3.85)	-8.3	(3.95)	0.0
Flanders (Belgium)	38.3	(0.89)	25.1	(2.82)	-13.2	(2.95)	0.0
France	24.1	(0.66)	14.2	(1.51)	-9.9	(1.65)	0.0
Germany	44.6	(1.16)	29.0	(2.62)	-15.6	(2.78)	0.0
Greece	12.3	(0.91)	7.9	(2.04)	-4.4	(2.15)	0.0
Ireland	42.6	(1.17)	37.8	(2.13)	-4.7	(2.52)	0.1
Israel	34.1	(1.04)	32.7	(1.73)	-1.4	(1.89)	0.5
Italy	20.4	(1.11)	13.7	(2.88)	-6.7	(2.81)	0.0
Lithuania	30.7	(1.14)	28.0	(5.56)	-2.7	(5.66)	0.6
Netherlands	51.8	(0.91)	45.8	(3.05)	-6.0	(3.08)	0.1
Norway	37.8	(0.79)	37.6	(2.32)	-0.2	(2.27)	0.9
New Zealand	50.3	(1.04)	49.5	(1.73)	-0.8	(1.99)	0.7
Russian Federation	14.0	(1.22)	15.3	(4.11)	1.3	(4.01)	0.7
Singapore	38.4	(0.83)	43.1	(1.77)	4.7	(1.81)	0.0
Slovenia	37.7	(1.03)	26.4	(2.44)	-11.3	(2.68)	0.0
Spain	37.6	(0.95)	22.7	(2.11)	-14.9	(2.37)	0.0
Sweden	38.9	(1.06)	27.1	(2.02)	-11.8	(2.31)	0.0
United States	49.8	(1.17)	38.0	(2.90)	-11.7	(2.92)	0.0

Note: The table reports the percentage of employed respondents that have participated in on-the-job training.
1. See Note 1, 2 in Table 4.A.1
Source: Survey of Adult Skills (PIAAC) (2012, 2015)

StatLink http://dx.doi.org/10.1787/888933846536

Annex Table 4.A.3. Individual correlates of participation in lifetime learning

	45-54				Tertiary education				Literacy (1 SD)				Not employed			
	Native-born		Foreign-born		Native-born		Foreign-born		Native-born		Foreign-born		Native-born		Foreign-born	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Countries																
Australia	-0.02	(0.03)	-0.05	(0.04)	0.26	(0.03)	0.29	(0.04)	0.09	(0.01)	0.08	(0.01)	-0.25	(0.02)	-0.16	(0.03)
Austria	-0.08	(0.03)	-0.17	(0.05)	0.27	(0.03)	0.24	(0.06)	0.09	(0.01)	0.08	(0.02)	-0.14	(0.02)	-0.05	(0.04)
Canada	-0.08	(0.02)	-0.10	(0.04)	0.21	(0.02)	0.18	(0.04)	0.08	(0.01)	0.10	(0.01)	-0.22	(0.01)	-0.14	(0.02)
Chile	-0.16	(0.02)	-0.15	(0.13)	0.32	(0.03)	0.69	(0.17)	0.05	(0.02)	0.09	(0.06)	-0.11	(0.02)	-0.03	(0.10)
Cyprus (1,2)	-0.07	(0.03)	-0.21	(0.08)	0.33	(0.03)	0.34	(0.07)	0.01	(0.01)	0.02	(0.03)	-0.15	(0.02)	-0.12	(0.06)
Czech Republic	0.03	(0.04)	-0.20	(0.08)	0.23	(0.04)	0.36	(0.11)	0.05	(0.02)	0.09	(0.04)	-0.29	(0.03)	-0.31	(0.09)
Denmark	-0.09	(0.02)	-0.21	(0.04)	0.21	(0.03)	0.18	(0.05)	0.07	(0.01)	0.06	(0.01)	-0.22	(0.01)	-0.08	(0.03)
England/N.Ireland (UK)	0.01	(0.02)	0.01	(0.06)	0.25	(0.02)	0.35	(0.07)	0.07	(0.01)	0.03	(0.02)	-0.25	(0.02)	-0.11	(0.06)
Estonia	-0.13	(0.02)	-0.14	(0.06)	0.26	(0.02)	0.24	(0.05)	0.07	(0.01)	0.03	(0.02)	-0.19	(0.02)	-0.26	(0.03)
Finland	-0.09	(0.02)	-0.11	(0.10)	0.26	(0.03)	0.15	(0.10)	0.06	(0.01)	0.04	(0.03)	-0.23	(0.02)	-0.09	(0.07)
Flanders (Belgium)	-0.05	(0.03)	-0.11	(0.08)	0.35	(0.03)	0.17	(0.08)	0.04	(0.01)	0.07	(0.02)	-0.16	(0.02)	-0.06	(0.06)
France	0.01	(0.02)	-0.10	(0.04)	0.24	(0.02)	0.19	(0.04)	0.05	(0.01)	0.04	(0.01)	-0.14	(0.01)	-0.07	(0.03)
Germany	-0.05	(0.02)	-0.15	(0.06)	0.22	(0.04)	0.25	(0.06)	0.10	(0.01)	0.09	(0.03)	-0.16	(0.02)	-0.02	(0.04)
Greece	-0.13	(0.03)	-0.20	(0.06)	0.24	(0.02)	0.36	(0.07)	0.04	(0.01)	0.06	(0.03)	-0.08	(0.02)	-0.16	(0.05)
Ireland	-0.04	(0.02)	-0.03	(0.05)	0.32	(0.03)	0.19	(0.06)	0.04	(0.01)	0.06	(0.02)	-0.20	(0.02)	-0.11	(0.04)
Israel	-0.13	(0.03)	-0.10	(0.05)	0.24	(0.03)	0.16	(0.07)	0.10	(0.01)	0.08	(0.02)	-0.11	(0.02)	-0.17	(0.04)
Italy	-0.04	(0.03)	-0.12	(0.06)	0.36	(0.03)	0.26	(0.10)	0.06	(0.01)	0.03	(0.03)	-0.12	(0.02)	0.00	(0.07)
Lithuania	-0.05	(0.03)	-0.16	(0.17)	0.31	(0.03)	0.38	(0.11)	0.07	(0.01)	0.05	(0.06)	-0.17	(0.02)	-0.29	(0.08)
Netherlands	-0.06	(0.02)	-0.10	(0.07)	0.25	(0.02)	0.18	(0.07)	0.04	(0.01)	0.03	(0.03)	-0.26	(0.02)	-0.17	(0.06)
New Zealand	-0.09	(0.03)	-0.02	(0.04)	0.21	(0.03)	0.06	(0.05)	0.05	(0.01)	0.10	(0.02)	-0.18	(0.02)	-0.22	(0.04)
Norway	-0.10	(0.02)	-0.11	(0.06)	0.23	(0.02)	0.09	(0.06)	0.04	(0.01)	0.03	(0.02)	-0.23	(0.02)	-0.10	(0.05)
Russian Federation	-0.14	(0.02)	-0.25	(0.07)	-0.01	(0.04)	0.38	(0.11)	0.01	(0.01)	0.06	(0.03)	-0.05	(0.02)	-0.06	(0.09)
Singapore	-0.17	(0.02)	-0.11	(0.04)	0.26	(0.03)	0.18	(0.06)	0.08	(0.01)	0.08	(0.01)	-0.18	(0.02)	-0.26	(0.03)
Slovenia	-0.09	(0.02)	-0.03	(0.07)	0.37	(0.03)	0.37	(0.07)	0.06	(0.01)	0.07	(0.03)	-0.12	(0.02)	-0.13	(0.05)
Spain	-0.10	(0.02)	0.04	(0.06)	0.30	(0.02)	0.16	(0.05)	0.06	(0.01)	0.07	(0.02)	-0.12	(0.02)	0.04	(0.04)

	45-54				Tertiary education				Literacy (1 SD)				Not employed			
	Native-born		Foreign-born		Native-born		Foreign-born		Native-born		Foreign-born		Native-born		Foreign-born	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Sweden	-0.07	(0.02)	-0.12	(0.06)	0.22	(0.03)	0.22	(0.06)	0.07	(0.01)	0.06	(0.02)	-0.19	(0.02)	-0.07	(0.05)
United States	-0.11	(0.03)	-0.04	(0.05)	0.31	(0.03)	0.32	(0.07)	0.06	(0.01)	0.06	(0.03)	-0.25	(0.02)	-0.17	(0.05)

Note: The table shows selected coefficients from separate linear regressions (on the sample of native- and foreign-born) of the probability of participation in lifelong learning on a set of age dummies, a set of educational attainment dummies, literacy scores, a gender dummy, and a dummy for being in paid employment. For age, the reference category is 25-34 years old, and for educational attainment the reference category is below upper-secondary.
1. See Note 1, 2 in Table 4.A.1
Source: Survey of Adult Skills (PIAAC) (2012, 2015)

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Annex Table 4.A.4. Reasons for not participating in lifelong learning activities

	Native-born									
	Too expensive		No employer support		Too busy at work		Inconvenient time or place		Family responsibility	
Countries	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.
Australia	17.60	(1.79)	6.54	(1.06)	27.25	(1.52)	12.42	(1.33)	19.29	(1.47)
Austria	10.08	(1.25)	3.00	(0.59)	34.66	(1.72)	14.38	(1.41)	14.84	(1.25)
Canada	18.80	(0.99)	6.16	(0.61)	28.59	(1.02)	12.94	(0.86)	15.32	(1.01)
Chile	15.75	(1.39)	7.51	(0.98)	26.56	(2.33)	12.05	(0.99)	16.10	(1.34)
Cyprus (1,2)	11.03	(1.30)	2.76	(0.59)	29.39	(1.77)	11.44	(1.22)	30.75	(1.67)
Czech Republic	13.72	(1.70)	9.84	(1.81)	36.28	(3.29)	6.98	(1.41)	11.79	(1.79)
Denmark	13.88	(0.93)	15.09	(1.00)	26.43	(1.27)	9.85	(0.84)	5.01	(0.64)
England/N. Ireland (UK)	20.05	(1.49)	8.23	(1.01)	29.09	(1.77)	9.33	(0.89)	12.21	(1.01)
Estonia	17.45	(0.91)	7.06	(0.64)	29.91	(0.97)	16.24	(0.83)	10.49	(0.69)
Finland	6.46	(0.64)	9.45	(0.82)	28.72	(1.45)	21.69	(1.24)	8.63	(0.76)
Flanders (Belgium)	4.92	(0.79)	5.73	(0.89)	32.48	(1.81)	17.63	(1.57)	20.00	(1.38)
France	17.23	(1.02)	17.82	(1.00)	22.13	(1.14)	3.90	(0.47)	7.54	(0.67)
Germany	9.05	(0.83)	10.49	(1.16)	32.48	(1.43)	14.50	(1.07)	13.51	(1.23)
Greece	28.59	(2.44)	2.74	(0.99)	18.70	(2.36)	11.46	(1.50)	18.05	(1.58)
Ireland	19.46	(1.21)	4.56	(0.68)	22.40	(1.17)	10.02	(0.98)	18.11	(1.08)
Israel	25.00	(1.66)	3.65	(0.74)	30.04	(1.79)	12.18	(1.19)	16.79	(1.15)
Italy	14.52	(1.51)	3.47	(0.82)	38.79	(2.27)	5.23	(1.02)	18.66	(1.80)
Lithuania	24.81	(1.61)	7.59	(1.05)	31.61	(2.04)	12.64	(1.60)	8.71	(1.27)
Netherland	13.31	(1.21)	10.21	(0.98)	30.11	(1.74)	8.14	(0.90)	11.01	(1.05)
Norway	8.25	(0.98)	11.86	(1.00)	33.78	(1.40)	10.17	(1.07)	10.08	(1.13)
New Zealand	13.90	(1.06)	6.44	(0.68)	29.05	(1.25)	10.34	(0.91)	19.80	(1.27)
Russian Federation	25.42	(2.83)	4.64	(1.11)	27.78	(2.78)	14.83	(2.77)	12.23	(2.37)
Singapore	14.62	(1.17)	6.39	(0.77)	40.22	(1.72)	10.52	(0.96)	13.48	(1.08)
Slovenia	26.04	(1.87)	8.51	(0.99)	16.25	(1.32)	13.43	(1.31)	12.41	(1.14)
Spain	8.86	(0.86)	3.09	(0.48)	28.83	(1.40)	8.40	(0.83)	22.26	(1.07)
Sweden	11.51	(0.98)	7.81	(0.77)	25.48	(1.32)	13.08	(1.05)	12.10	(1.06)
United States	25.12	(1.41)	3.97	(0.52)	25.34	(1.50)	11.67	(0.91)	15.95	(1.24)
	Foreign-born									
	Too expensive		No employer support		Too busy at work		Inconvenient time or place		Family responsibility	
Countries	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.
Australia	19.86	(2.24)	5.34	(1.17)	27.45	(2.85)	7.74	(1.29)	22.23	(2.39)
Austria	17.71	(3.31)	1.89	(1.09)	30.45	(3.61)	13.24	(3.11)	15.80	(2.84)
Canada	20.51	(1.59)	4.38	(0.83)	31.38	(1.72)	9.63	(1.06)	18.60	(1.36)
Chile	13.26	(2.40)	18.58	(5.02)	10.14	(2.68)	12.81	(6.34)	27.18	(5.79)
Cyprus (1,2)	18.37	(4.69)	3.02	(1.37)	31.83	(5.45)	9.01	(2.16)	20.15	(3.45)
Czech Republic	33.28	(12.69)	10.70	(10.81)	18.78	(8.58)	4.41	(2.92)	21.64	(11.20)
Denmark	14.08	(2.05)	11.29	(1.71)	24.84	(2.07)	9.24	(1.41)	7.84	(1.43)
England/N. Ireland (UK)	19.81	(3.11)	7.02	(1.74)	29.46	(3.19)	5.11	(1.63)	19.89	(3.08)
Estonia	27.80	(2.89)	8.24	(1.99)	22.77	(2.50)	9.05	(1.79)	4.82	(1.51)
Finland	8.14	(3.29)	7.35	(3.00)	21.23	(4.31)	11.96	(3.19)	17.00	(4.58)
Flanders (Belgium)	9.75	(3.33)	8.09	(3.48)	24.37	(6.24)	21.65	(5.74)	15.74	(4.59)
France	24.68	(3.20)	13.36	(2.32)	14.18	(2.94)	1.27	(0.76)	9.80	(2.10)
Germany	12.88	(2.98)	6.11	(1.76)	28.39	(4.24)	9.47	(2.30)	21.10	(3.90)
Greece	40.81	(7.01)	0.00	(0.00)	9.84	(3.78)	7.86	(3.10)	23.27	(5.30)
Ireland	24.40	(2.44)	5.39	(1.25)	19.33	(2.25)	9.76	(1.73)	20.40	(2.36)
Israel	21.02	(2.69)	6.82	(1.73)	23.54	(2.34)	8.72	(1.78)	20.02	(2.89)
Italy	18.34	(4.87)	2.79	(1.62)	37.74	(7.30)	5.83	(4.00)	18.77	(5.42)
Lithuania	20.77	(8.50)	8.63	(4.56)	32.77	(10.33)	9.77	(8.44)	9.45	(9.80)

Netherland	19.39	(4.64)	3.08	(1.83)	26.96	(5.12)	11.42	(3.46)	12.32	(3.83)
Norway	16.41	(2.80)	9.86	(2.11)	20.86	(2.94)	4.44	(1.50)	18.66	(2.50)
New Zealand	15.21	(1.84)	7.69	(1.51)	31.22	(2.23)	11.86	(1.50)	16.76	(2.10)
Russian Federation	10.27	(5.35)	2.70	(1.57)	9.74	(4.18)	18.39	(6.31)	27.80	(12.92)
Singapore	11.73	(1.64)	7.09	(1.04)	38.91	(2.27)	7.89	(1.51)	24.15	(2.16)
Slovenia	22.20	(4.55)	4.80	(2.46)	13.78	(4.12)	16.82	(4.33)	17.17	(4.33)
Spain	18.41	(2.91)	0.71	(0.43)	26.40	(3.18)	7.08	(1.69)	17.43	(2.34)
Sweden	16.18	(2.60)	7.68	(1.53)	24.69	(3.00)	7.28	(2.07)	13.11	(2.22)
United States	15.46	(3.26)	3.18	(1.10)	36.88	(3.98)	9.20	(2.20)	21.95	(3.25)

Note: The table reports the share of respondents that have reported various reasons for not having being able to start a lifelong learning activity, despite their willingness to do so.
1. See Note 1, 2 in Table 4.A.1
Source: Source: Survey of Adult Skills (PIAAC) (2012, 2015)

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Annex Table 4.A.5. The relationship between literacy proficiency and reading at home

	Index of reading at home		Reading at home x Foreign-born		Foreign-born dummy	
Countries	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Australia	14.20	(1.07)	4.90	(2.15)	-8.36	(2.65)
Austria	10.32	(0.94)	8.18	(2.29)	-6.40	(3.20)
Canada	14.67	(0.71)	1.26	(1.41)	-22.98	(1.63)
Chile	10.35	(1.11)	0.92	(3.56)	-6.73	(5.13)
Cyprus (1,2)	1.64	(0.99)	5.85	(2.21)	-8.29	(3.43)
Czech Republic	11.17	(1.38)	5.57	(5.51)	-3.93	(8.91)
Denmark	14.85	(1.11)	4.68	(2.07)	-19.91	(4.62)
England/N. Ireland (UK)	13.91	(1.16)	5.17	(3.01)	-13.34	(3.69)
Estonia	10.71	(0.91)	-2.68	(1.90)	-16.09	(1.66)
Finland	16.39	(1.06)	-12.42	(12.14)	-8.25	(8.62)
Flanders (Belgium)	10.91	(0.91)	4.97	(3.32)	-20.95	(3.82)
France	11.59	(0.77)	4.21	(2.03)	-16.92	(1.90)
Germany	15.53	(1.12)	-4.72	(2.84)	-10.32	(3.88)
Greece	7.27	(1.22)	3.12	(3.95)	7.35	(4.21)
Ireland	12.20	(1.06)	2.42	(2.29)	-6.18	(2.49)
Israel	14.74	(0.98)	-1.36	(2.24)	-10.92	(2.64)
Italy	10.10	(1.03)	3.40	(3.48)	-13.32	(4.31)
Lithuania	11.31	(1.29)	-1.18	(6.81)	-12.38	(6.60)
Netherland	12.13	(0.90)	5.84	(3.23)	-22.66	(4.11)
Norway	12.84	(0.99)	6.46	(3.19)	-14.59	(5.38)
New Zealand	12.89	(1.03)	0.36	(2.36)	-6.37	(2.81)
Singapore	13.34	(0.97)	-0.06	(1.71)	-15.98	(1.77)
Slovenia	9.79	(1.03)	2.48	(2.31)	-5.14	(3.87)
Spain	11.26	(0.81)	2.74	(2.28)	-18.86	(2.31)
Sweden	14.40	(1.18)	1.16	(2.88)	-29.14	(3.58)
United States	8.82	(0.89)	1.62	(1.86)	-16.53	(3.18)

Note: The table shows coefficients from country-specific regressions of literacy proficiency on the index of reading at home, on a dummy for foreign-born, and on the interaction between the two. The regressions also control for a quadratic polynomial in age, a set of educational attainment dummies, a gender dummy, a dummy for being in paid employment, and a dummy for being native speaker in the language of the assessment.

1. See Note 1, 2 in Table 4.A.1

Source: Survey of Adult Skills (PIAAC) (2012, 2015).

StatLink http://dx.doi.org/10.1787/888933846593

Chapter 5. Foreign-born workers and their labour market outcomes

This chapter focuses on how foreign-born workers fare in the host-country labour market. It focuses on earnings, occupational status and the extent to which foreign-born workers' skills are used in the workplace. It also discusses the factors that could affect these outcomes, including immigrants' proficiency in literacy, numeracy and the host-country language, their country of origin, and where they acquired their education.

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 capacity to gauge and exploit written material (literacy), and the ability to process and treat mathematical information (numeracy), is essential in order to take part in today's knowledge-based societies. While people's competencies must be considered when examining how workers perform in the labour market, the lack of reliable data on workers' skills has made it impossible to do so directly. Until recently, educational attainment was almost the sole measure of human capital.

But measuring human capital by educational attainment only can be misleading. This is especially true for foreign-born workers who, because they have probably been exposed to disparate education systems in their home countries, offer a different set of skills than their native-born peers for a given level of education. In fact, not all education systems are equal: there are significant differences across countries in the quality of education provided. Obtaining a primary education in one region does not necessarily imply holding the same set of literacy and numeracy skills as someone who obtained a primary education in another region. Indeed, spending the same numbers of years in education does not imply the same human capital or skills across countries.

In contrast to much of the previous economic literature on the subject, this chapter includes detailed individual-level information on language, literacy and numeracy proficiency in its analyses. Moreover, the chapter measures the labour market performance of workers not only in terms of earnings, but also regarding workers' occupation. The socio-economic status of workers' occupation is an important aspect of analysing the labour market performance of foreign-born workers. Given the global concern about the correct allocation of human capital, it is crucial to know the kind of jobs immigrant workers obtain in their destination country. Indeed, the jobs workers do have considerable consequences for workers' well-being, work-life balance and job satisfaction (Rose, 2003[1]).

The Survey of Adult Skills (PIAAC) allows for determining not only whether foreign-born workers are paid salaries commensurate with their human capital, but also in which occupation they work in their host country and to what extent their skills are used in their jobs. This analysis is particularly important as it aims to identify the obstacles that impede foreign-born adults from obtaining better jobs.

This chapter shows that the different returns to education on earnings between foreign-born and native-born adults are not directly due to the poor quality of foreign-born workers' education or the non-transferability of the skills they learned back home, but rather to differences in their occupations in the destination country. In turn, the kinds of jobs foreign-born workers obtain partially reflect their skills: accounting for workers' literacy and numeracy proficiency reduces the observed differences in status in the occupations of foreign-born and native-born adults. Yet, even after accounting for such skills, foreign-born workers with foreign qualifications still show somewhat lower occupational status than native-born workers. In some countries, foreign-born workers reported that they feel that their skills are underutilised.

Description of the data

Reliable cross-country surveys capturing skills heterogeneity among adult workers are scarce, particularly those covering foreign-born workers.[1] Given its clear advantages compared with other datasets, the Survey of Adult Skills (PIAAC) is attracting increasing attention from labour economists (Levels, Van der Velden and Allen, 2014[2]; Nieto and Ramos Lobo, 2014[3]; Hanushek et al., 2015[4]; Montt, 2017[5]).

But the survey does have its limitations, especially with respect to research on immigrant workers (see Bonfanti and Xenogiani (2014[6]), for more details). For example, once the immigrant population is decomposed by its own characteristics – for example, region of origin or educational attainment – the samples could be small. Hence, in order to reduce measurement error, in this report all econometric results based on less than 30 observations are reported as missing (see Perry et al. (2014[7]) for a similar approach). Also, following Bonfanti and Xenogiani (2014[6]), countries where the immigrant population is less than 2.5% of the total population – namely Japan, Korea, Poland the Russian Federation and the Slovak Republic – are excluded from the analysis. Chile and the Czech Republic must also be excluded as the disaggregation of their immigrant population by country of education or by region of origin leads to very small samples. Information on country of birth and spoken languages is missing for Australia and Germany, which are therefore dropped from consideration, as such variables are central for the analysis. Thus the results discussed in this chapter cover the following 22 countries: Austria, Belgium, Canada, Cyprus[2,3], Denmark, Estonia, Finland, France, Greece, Ireland, Israel, Italy, Lithuania, the Netherlands, New Zealand, Norway, Singapore, Slovenia, Spain, Sweden, the United Kingdom and the United States.[4]

The returns to education on earnings of foreign-born and native-born adults

A long history of debate

The relative position of foreign-born workers in the earnings distribution of a country defines the extent to which those workers contribute to the host-country economy. If foreign-born adults earn higher wages, they contribute more to tax and benefit systems, thereby raising overall aggregate income (Dustmann and Glitz, 2011[8]). In addition, the earnings of foreign-born workers are an important indicator of their integration in the host economies, and they could have considerable impact on their compatriots' decisions on whether or not to emigrate themselves.

The seminal works by Chiswick (1978[9]), Borjas (1985[10]), and LaLonde and Topel (1991[11]) fuelled the debate on the earning patterns of foreign-born workers and their "quality" – i.e. schooling. In addition to educational attainment, researchers have shown that the earnings differential between native-born and foreign-born adults is linked to a variety of factors. For instance, due to credit constraints, foreign-born workers are likely to accept any available job at the beginning of their stay in the host country, thereby earning lower wages than what their educational attainment would predict (Eckstein and Weiss, 2004[12]). And not only are foreign-born workers less likely to use all of their skills upon arrival, but the skills acquired by native-born adults are likely more easily adaptable to technological changes in their own country (Lam and Liu, 2002[13]).

Overall, the existing evidence suggests that education and experience obtained in countries of origin are not fully valued in destination countries, thereby resulting in apparently well-qualified foreign-born adults holding low-paying and low-quality jobs. There is also the possibility that firms in destination countries discriminate against foreign-born workers, so that they pay these workers less than they pay native-born workers with similar skills.[5] In order to disentangle the two factors, direct measures of skills are needed.[6]

Few studies have looked at the skills of foreign-born adults and these workers' labour market performance across countries. A notable example is Clarke and Skuterud (2016[14]), who exploit the Adult Literacy and Lifeskills (ALL) dataset to compare

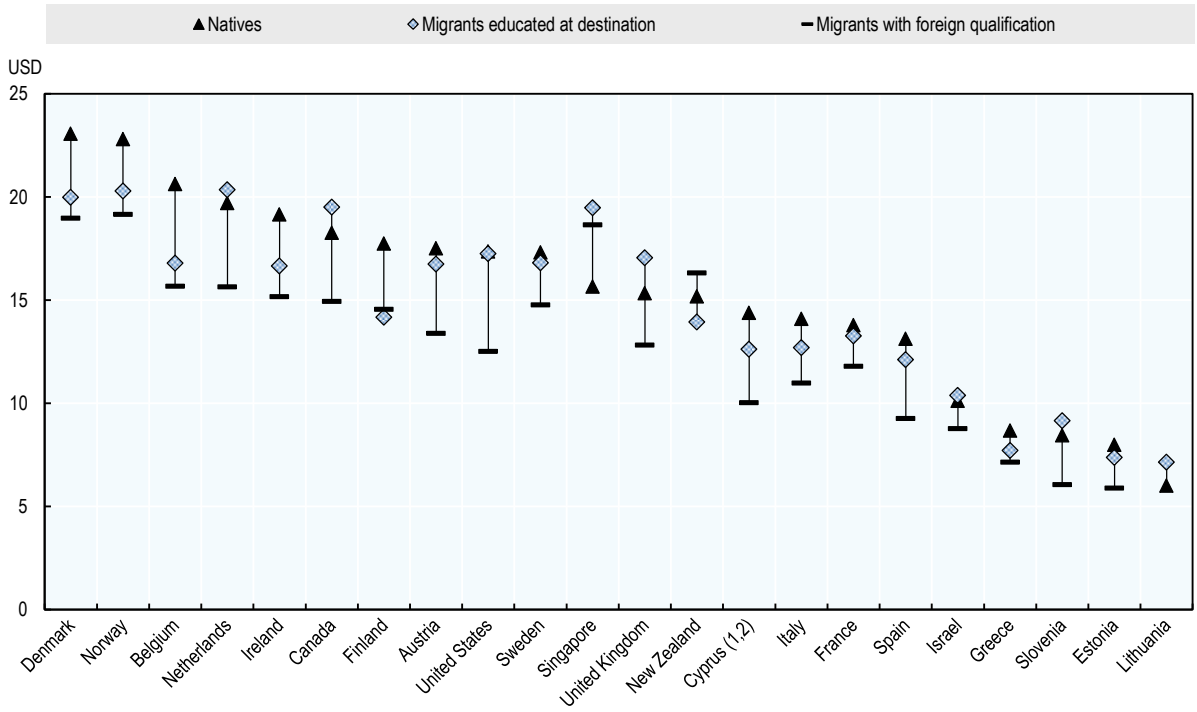
literacy test scores and their impact on wages and employment of foreign-born workers in Australia, Canada and the United States. Overall, they find no convincing evidence that the labour market returns to literacy skills of migrant workers with a foreign mother tongue in Australia and Canada are statistically different from those of their native-born counterparts. In contrast, they find greater returns to literacy for foreign-born workers in the United States whose mother tongue is different from English and Spanish. This result reflects complementarities between language and skills. Jerrim (2015[15]) uses PIAAC information on British nationals working abroad to study their labour market outcomes, including prolonged periods out of work, earnings and overqualification. He finds that British emigrants earn more than workers who stay in the United Kingdom. But this is largely due to longer working hours abroad compared to that in Britain, rather than to a different skills set and educational attainment.

This chapter uses PIAAC data to examine the returns to education among foreign-born and native-born adults in 22 countries, and how those returns are related to language, literacy and numeracy skills. This analysis considers the country in which foreign-born adults earned their highest qualification, as those who completed their studies in the host country might realise returns that are more similar to native-born adults than foreign-born workers who earned their highest degree in their home countries (Schaafsma and Sweetman, 2001[16]; Bratsberg and Ragan Jr, 2002[17]). A qualification earned in the host country is more likely to be valued by local employers. In addition, foreign-born adults educated in the host country might have stronger social networks that can help them find better jobs, and might have greater proficiency in the local language and better knowledge of the social norms pervasive in the socio-economic landscape of the country. Thus the analysis uses the age at arrival in the host country along with the age at which the highest educational qualification was earned to distinguish between those foreign-born workers who were educated in the host country and those who were educated elsewhere.

A snapshot of foreign-born workers' earnings

In spite of their overall high educational attainment (see Chapter 2), foreign-born adults earn significantly less than their native-born peers. Figure 5.1 looks at median hourly earnings, including bonuses (in PPP-corrected USD). Across almost all countries, native-born workers earn more than foreign-born workers. In the sample studied, the hourly wage earned by native-born adults is 5% higher, on average, than that earned by foreign-born workers who were educated in the host country, and 16% higher than the hourly wage earned by foreign-born workers who were educated elsewhere. For instance, in the United States, foreign-born adults who were educated elsewhere earn only 72% of the hourly wage of native-born adults (a finding consistent with the previous literature; see (OECD, 2008[18])). In Spain, workers in the former group earn 71%, and in Lithuania they earn 65% of the hourly wages of native-born adults in the respective countries.

Figure 5.1. Median hourly earnings



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 recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".
2. *Note by all the European Union Member States of the OECD and the European Union*: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.
Source: (OECD, 2015[19]) Survey of Adult Skills (PIAAC) (2012, 2015), Table A6.1, www.oecd.org/skills/piaac/publicdataandanalysis

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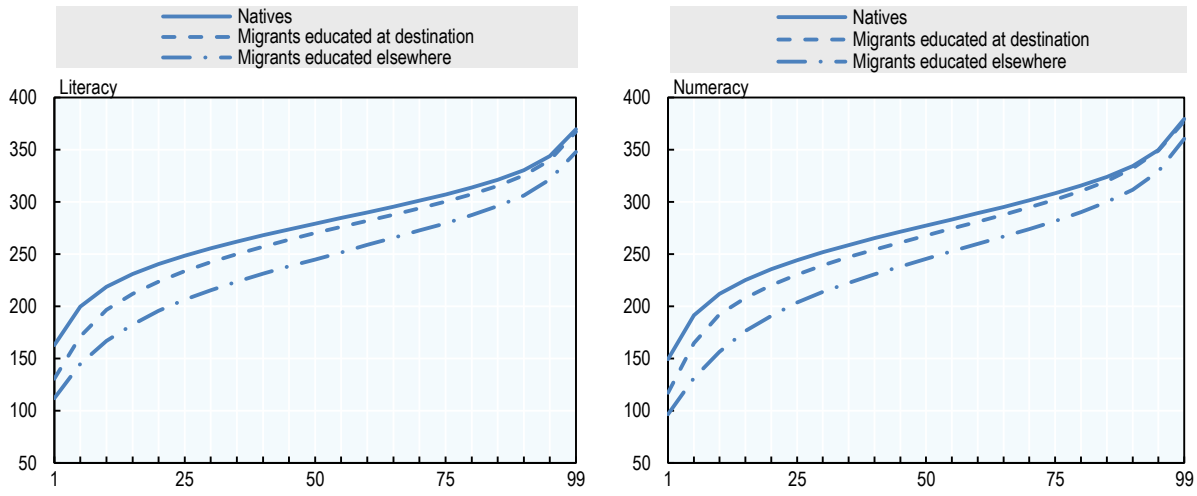
Why do foreign-born adults earn less than their native-born peers? As mentioned above, an important factor that has been overlooked in earlier studies is the heterogeneity of the skills set held by workers, especially foreign-born workers. This chapter analyses measures of workers' numeracy and literacy proficiency.[7] Respondents' skills levels are measured on a scale of 0 to 500. The left (right) panel of Figure 5.2 presents different percentiles of the distribution of literacy (numeracy) test scores by country of origin. In contrast with foreign-born adults' educational attainment, their proficiency in literacy and numeracy is lower than that of natives across the entire distribution.

Figure 5.2. Distribution of literacy and numeracy test scores, by percentile



Source: (OECD, 2015[19]) Survey of Adult Skills (PIAAC) (2012, 2015), Table A6.1, www.oecd.org/skills/piaac/publicdataandanalysis

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Differences in returns to education

Looking only at the correlation between hourly earnings, educational attainment and assessed skills is insufficient. Differences in age patterns of the foreign-born and native-born populations, as well as language fluency and other individual characteristics might also explain disparities in returns to education. This chapter considers the interactions between the migration variable (which can take three values: native-born, foreign-born educated in the host country, and foreign-born educated elsewhere) and the educational level (which can also take three values: primary, secondary and post-secondary schooling).

Table 5.A.1 (see Annex A) presents the estimation of these interactions for each PIAAC-participating country with available information.[8] Language and skills are not included in this analysis. Controls include both immigration background (native-born, foreign-born educated in the host country, and foreign-born educated elsewhere) and education (primary, secondary and post-secondary schooling) variables, age, gender, marital status, number of children, and dummies for having two or more jobs, for public employment, for having an indefinite job contract, and for industries.[9]

In most countries, the returns to education are not statistically different between native-born and foreign-born adults. However, the returns to upper secondary education among foreign-born workers educated in the host country are lower in Cyprus[10], Greece and New Zealand, while those of foreign-born workers who were educated elsewhere are lower in Singapore and Spain. The results are similar when considering tertiary education. In Belgium, Cyprus[11], the Netherlands and New Zealand, these results are associated with significantly lower wages for foreign-born workers educated in the host country and, in France and Spain, for foreign-born workers educated elsewhere.[12]

So which factors are associated with foreign-born workers earning smaller returns to education than natives? If schooling in the country of origin provided foreign-born workers with fewer or poorer-quality skills, then the returns to their educational attainment in the host country might be lower. This is not only the case among foreign-born adults who were educated entirely elsewhere, but also for those foreign-born workers who earned their highest qualification in the host country. In order to disentangle these factors, the analysis in Table 5.A.2 (see Annex A) includes controls for workers' proficiency in numeracy and literacy.[13] These variables at least partially represent the quality of the education provided. If relevant, they should reduce the difference in the returns to education between native-born and foreign-born workers, particularly those who were educated outside the host country. In addition, as language skills have been proved to be important determinants of the labour market performance of foreign-born workers (McManus, Gould and Welch, 1983[20]; Dustmann, 1994[21]; Bleakley and Chin, 2004[22]), Table 5.A.2 also includes a dummy variable for whether the language of the survey is the same as the respondent's first, second or most often spoken language.[14]

Results in Table 5.A.2 suggest that skills and proficiency in the host-country language do not fully explain the lower returns to education among foreign-born workers compared to native-born workers.[15] In fact, the returns to education for foreign-born adults remain approximately the same – both in magnitude and statistical significance – as those shown in Table 5.A.1. Therefore, the hypothesis that the different returns to schooling between native and foreign-born adults are wholly due to the quality of the education provided or to differences in language proficiency can be at least partially rejected.

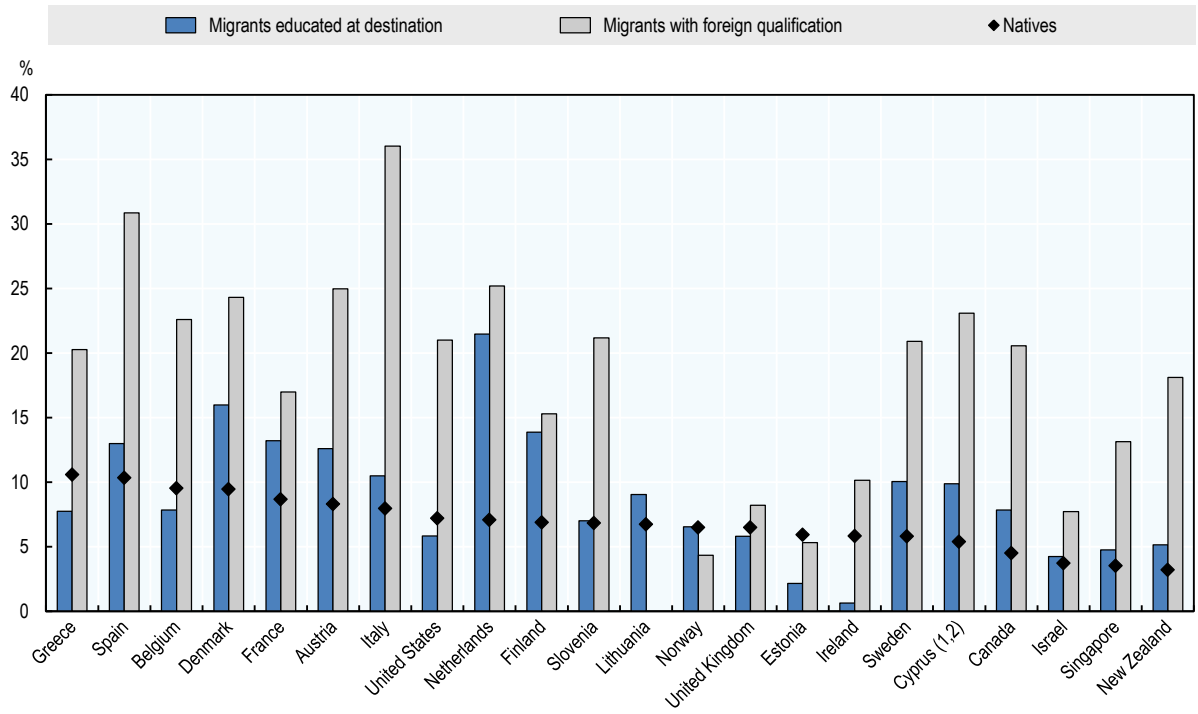
An alternative explanation of the disparities in the impact of education on earnings lies in workers' occupations. In some countries, foreign-born workers might be segregated into occupations where the returns to education are particularly low, while native-born adults may be working in more rewarding jobs at the opposite end of the salary spectrum.[16] Results shown in Table 5.A.3 (see Annex A) confirm that, in most countries, controlling for occupation eliminates the statistical difference between the returns to education among natives and the returns to education among foreign-born workers, implying that foreign-born adults are indeed more likely to work in occupations with lower returns. This is particularly the case in Austria, France, Greece, Singapore and the United States. In contrast, two countries still show lower returns to both upper secondary- and tertiary-educated foreign-born workers: New Zealand, among foreign-born workers educated in New Zealand, and in Spain, among foreign-born workers educated elsewhere. These results might reflect discrimination in the labour market (as suggested by Solé and Parella (2003[23]), for Spain, and Harris et al. (2006[24]) for New Zealand), or other factors, such as lack of established social networks, migrants' lack of self-confidence during the hiring process, or non-recognition of foreign education qualifications.

Workers' skills and occupation

Occupations held by foreign-born workers

A look at the distribution of foreign-born workers across occupations shows that they are over-represented in low-skilled jobs (Figure 5.3). In spite of their educational attainment, foreign-born adults who were educated outside the host country are more than twice as likely as native-born adults to be employed in low-skilled occupations. In several countries, namely Belgium, Estonia and Finland, this pattern is also seen among foreign-born workers who were educated in the host country.

Figure 5.3. Share of workers in low-skilled occupations



Note: Low-skilled occupations are defined as those occupations under the ISCO code category 9, i.e. "elementary occupations".
1. See notes 1, 2 in Figure 5.1
Source: (OECD, 2015[19]) Survey of Adult Skills (PIAAC) (2012, 2015), Table A6.1, www.oecd.org/skills/piaac/publicdataandanalysis

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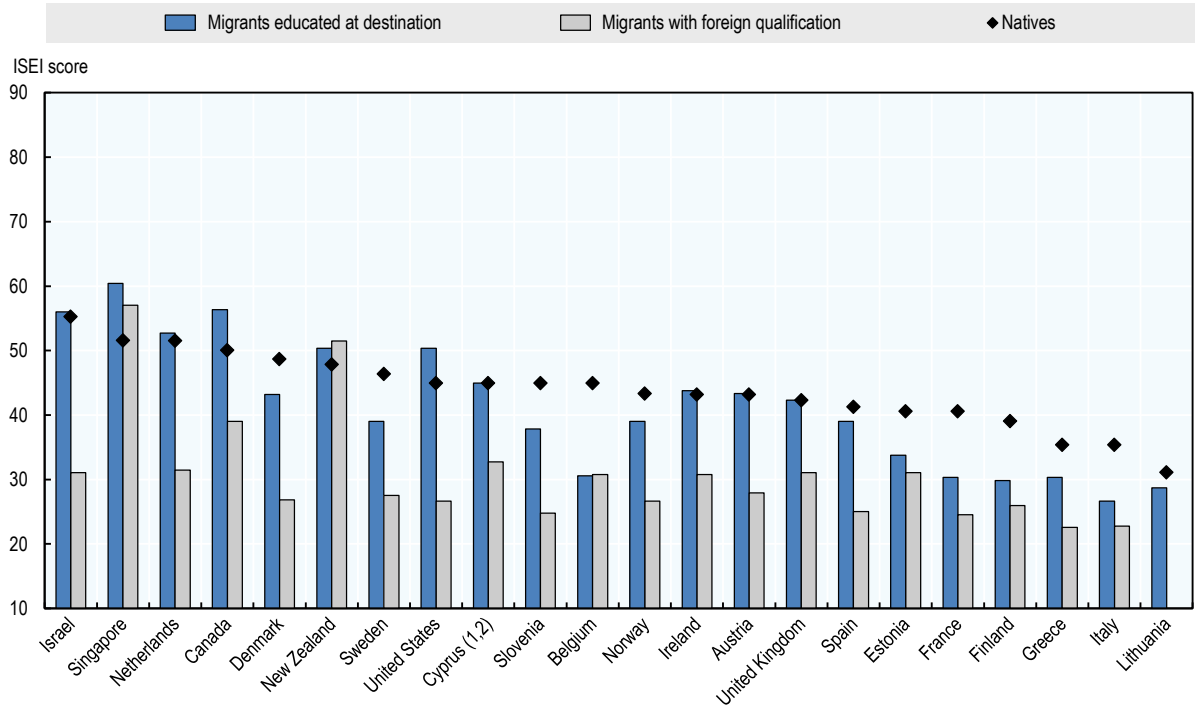
This chapter uses the International Socio-Economic Index (ISEI) of occupational status developed by Ganzeboom et al. (1992[25]), recently updated by Ganzeboom (2010[26]), when considering the socio-economic status of occupations. The ISEI index is based on the idea that occupation is the activity that links education and income. As such, the index is constructed to maximise the indirect influence of education and skills on income. The index has been widely used not only in the sociological literature, but also in migration economics research (Euwals et al., 2010[27]; Dustmann and Frattini, 2013[28]; Zorlu, 2013[29]; Postepska and Vella, 2017[30]).[17]

Figure 5.4 shows the median ISEI score by worker's background for each of the PIAAC-participating countries. Overall, native-born adults are employed in jobs ranked higher on the occupational status scale than those in which foreign-born adults are employed. This difference is particularly large for foreign-born workers with foreign education qualifications. On average, their ISEI score is 32 – a score representing such occupations as domestic housekeeper or stock clerk – compared to the average score of native workers (44), and the score of foreign-born workers educated in the host country (41) – scores that generally represent such occupations as office clerk. A notable exception is observed in North America, where foreign-born adults educated in the host country are employed in

slightly better-ranked jobs than natives, and in New Zealand and Singapore, where the median score among natives is lower than that among foreign-born adults.

Figure 5.4. Median occupational status score



Note: The ISEI is a continuous index expressed in a 10-90 metric.
1. See notes 1, 2 in Figure 5.1
Source: (OECD, 2015[19]) Survey of Adult Skills (PIAAC) (2012, 2015), Table A6.1, www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933846137

The relationship among migrant background, occupation and skills

In order to determine whether the occupations of foreign-born adults in the host labour market are of lower status than those of native-born adults, even after taking into consideration differences in individual characteristics, the analysis estimates, for each PIAAC-participating country, the relationship between the ISEI index and the regions of origin and education of those workers. Seven different categories of origin are created: (1) natives; (2) immigrants from EU countries educated in the host country; (3) immigrants from EU countries educated elsewhere; (4) immigrants from European non-EU countries educated in the host country; (5) immigrants from European non-EU countries educated elsewhere; (6) immigrants from outside Europe educated in the host country; and (7) immigrants from outside Europe educated elsewhere.

While the results in Table 5.A.4 (see Annex A) indicate that each country has its own pattern, common trends can be observed. For instance, immigrants from European countries (whether those countries are part of the European Union or not) educated in the host country mostly hold jobs of the same status as natives. This is also observed among

immigrants coming from other continents and educated in the host countries, although Denmark, France, Israel, Sweden and the United Kingdom are noteworthy exceptions.

The situation is reversed when looking at immigrants with foreign education qualifications. Regardless of their region of origin, members of this group hold jobs with significantly lower occupational status than natives. However, in Spain, neither region of origin nor country of education has an impact on the status of foreign-born workers' occupation. In both Austria and Ireland, immigrants (in Austria, those from non-EU countries; in Ireland, those from EU countries) with foreign education qualifications are employed in jobs with lower status than their native-born peers.

Table 5.A.5 (see Annex A) shows results after accounting for language and skills. These results not only confirm that immigrants educated in the host country tend to work in occupations whose status is similar to those in which native-born adults work, they also show that in certain countries, namely Canada, Spain and the United States, immigrants hold jobs with higher status. Once immigrants' proficiency in literacy and numeracy are taken into account, differences between immigrants and natives in the status of their occupations shrink. For instance, in the Netherlands, New Zealand, Slovenia and the United Kingdom, these differences are fully explained by workers' skills.

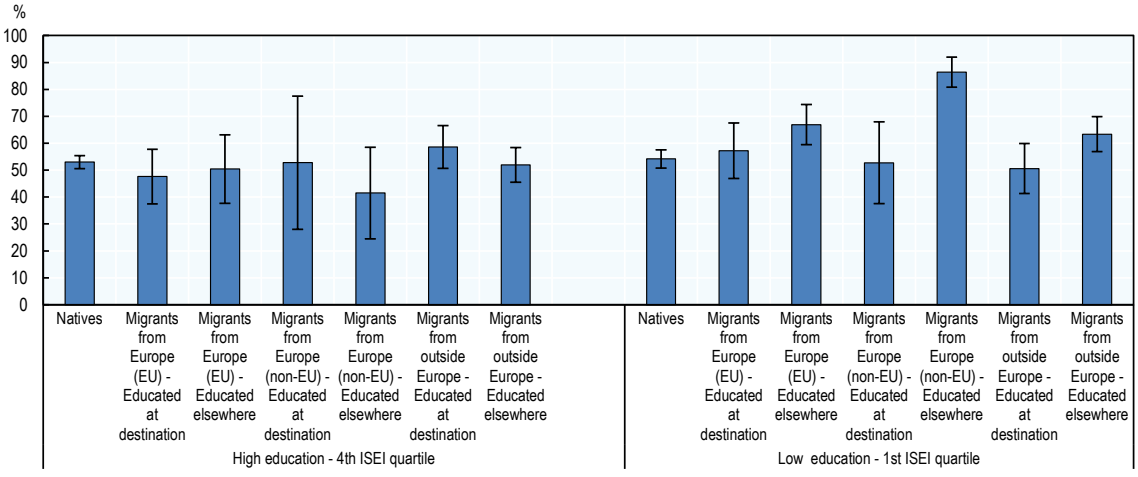
Nonetheless, there are still factors that can disadvantage foreign-born workers, especially those who were not educated in the host country. One commonly cited is that immigrants' education and work experience in their country of origin are not recognised in the host country (Dustmann and Frattini, 2013[28]). However, in Denmark, Ireland, Italy and Sweden, immigrants from other EU countries who have foreign qualifications are still found in lower-status occupations – even though EU regulations mandate the recognition of diplomas across member states. Other factors, such as attitudes towards immigrants or the lack of social networks among immigrants, lie at the heart of such findings.

To gain better insights into how immigrants are welcomed – or not – into the labour market, this analysis also seeks to determine whether the status of the occupations in which immigrants are employed is related to the immigrants' country of origin. Occupations are divided into four groups according to their ISEI score. The first quartile includes jobs of the lowest occupational quality; the fourth quartile contains the most prestigious jobs. The comparisons involve the same seven categories of immigrant background listed above. By looking at workers with average skills and average individual characteristics (age, gender, education, etc.), it is possible to compute the probability that each of the seven hypothetical individuals gets a job in an ISEI quartile.

For the sake of simplicity, results are presented for the two extreme cases: the probability of low-educated workers landing in occupations within the first (low quality) ISEI quartile and the probability of highly educated workers having a job in the fourth (high quality) ISEI quartile. Figure 5.5 presents results for the pooled sample of PIAAC countries. As expected, workers with lower secondary as their highest level of educational attainment are mostly employed in jobs in the first ISEI quartile. And in line with the previous findings, immigrants educated in the host country have a probability similar to that of native-born adults of working in a certain occupation. But compared to a 54% chance that native-born adults are employed in an occupation in the lowest ISEI quartile, the likelihood for immigrants with a foreign education to be so employed is 67% for those from EU countries, 86% for those from non-EU European countries, and 63% for those from elsewhere. The only statistically significant differences are those between native-born adults and immigrants from European (whether EU or non-EU) countries with foreign education qualifications.

The case of tertiary graduates is particularly interesting, since both the media and previous academic literature have often focused on the so-called "brain waste" of highly educated immigrants. Looking at the probabilities of working in an occupation within the fourth (highest) ISEI quartile, there is no statistically significant difference between native-born and foreign-born adults. This implies that skills matter: all else being equal, if tertiary-educated workers all have the same levels of language, literacy and numeracy proficiency, then the country of origin of immigrant workers would not significantly affect the likelihood of their working in the best jobs.

Figure 5.5. Probability of working in a particular occupation



Note: Specifications control for language, numeracy and proficiency, literacy skills proficiency, country of interview dummies, age, age squared, age cubed, gender, marital status, number of children, number of jobs, a dummy for public-sector workers, a dummy for indefinite contract, industry dummies.
Source: (OECD, 2015[19]) Survey of Adult Skills (PIAAC) (2012, 2015), Table A6.1, www.oecd.org/skills/piaac/publicdataandanalysis

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Subjective skills mismatch and foreign-born workers

Do immigrants, themselves, perceive that their full potential is not exploited in host labour markets? Examining this question can shed additional light on the obstacles that foreign-born workers face in their host countries. There are several reasons why an analysis of skills mismatch is relevant. At the individual level, skills mismatch affects workers' earnings and job satisfaction; at the firm level, it hinders productivity and increases turnover; at the macroeconomic level, it reduces income growth due to the drop in productivity and the loss of human capital (Quintini, 2011[31]). Skills mismatch should not be confused with qualifications mismatch. In fact, it is perfectly possible that the two do not coincide. For example, a tertiary-educated worker might hold a job requiring only secondary education, but might lack some of the skills required to be hired in a graduate position: the person is overqualified but not overskilled for his job.[18]

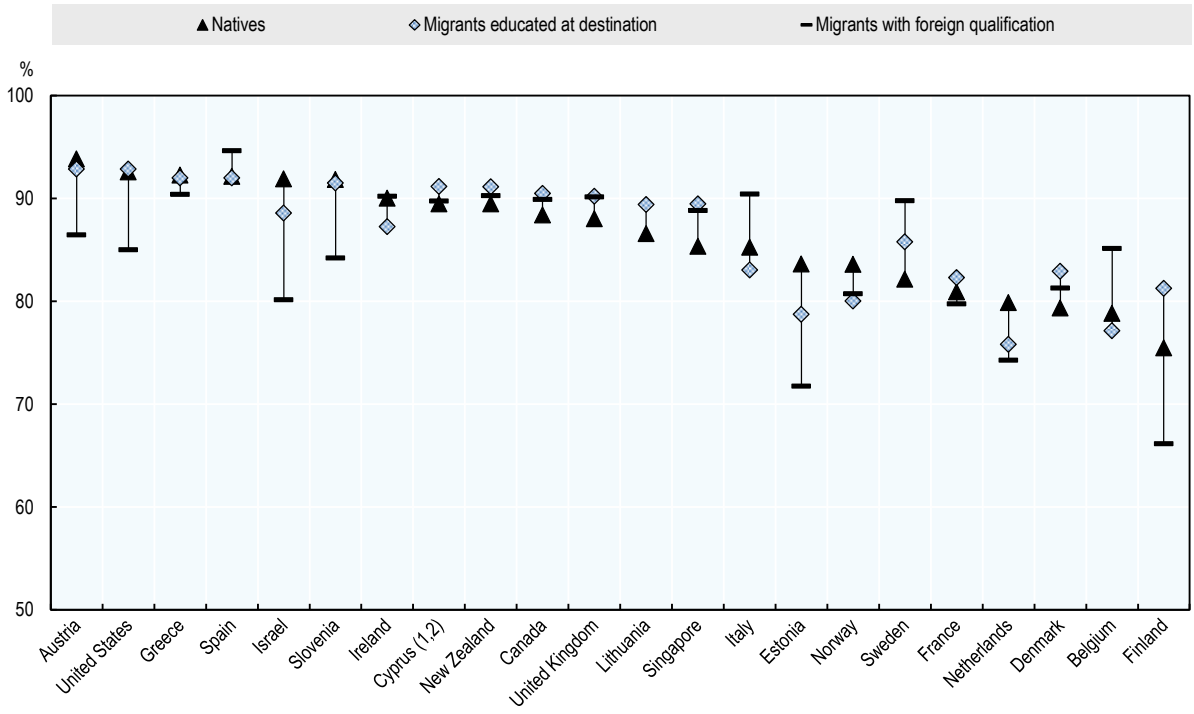
The Survey of Adult Skills (PIAAC) contains two questions that can be exploited to measure self-assessed skills mismatch: "Do you feel that you have the skills to cope with more demanding duties than those you are required to perform in your current job?" and

"Do you feel that you need further training in order to cope well with your present duties?". The first question assesses skills underutilisation; the second measures skills deficits.[19] If the results discussed above hold, it is expected that foreign-born workers will have higher rates of skills underuse and lower rates of skills deficits.

The share of respondents who perceive their skills to be underutilised is presented in Figure 5.6. The picture is mixed. In certain countries, immigrants are more likely than native-born adults to believe that they have the skills to cope with more challenging tasks. For instance, in Sweden, immigrants educated in that country are 4 percentage points more likely, and immigrants with foreign qualifications are 8 percentage points more likely than native-born adults to feel overskilled. Such patterns might be due to the composition of the Swedish immigrant population, which includes numerous refugees. There is a similar situation in Denmark; and in Singapore, immigrants are 4 percentage points more likely to feel overskilled, regardless of their country of education.

Nonetheless, there are still cases where immigrants are much less likely to report that their skills are underutilised, namely in Estonia, Israel and the Netherlands (although Israel is an outlier in most of the analysis, due to its singular immigrant composition). There are also cases where immigrants educated in the host country show a similar pattern as natives, while immigrants with a foreign education are less likely to perceive that their skills are underutilised – e.g. Austria, Slovenia and the United States. Finally, in Canada, New Zealand and the United Kingdom, there appears to be no significant difference in the proportion of self-perceived skill underutilisation between the native- and the foreign-born.

Figure 5.6. Share of workers who feel that their skills are underutilised



Note: See notes 1, 2 in Figure 5.1
Source: (OECD, 2015[19]) Survey of Adult Skills (PIAAC) (2012, 2015), Table A6.1, www.oecd.org/skills/piaac/publicdataandanalysis

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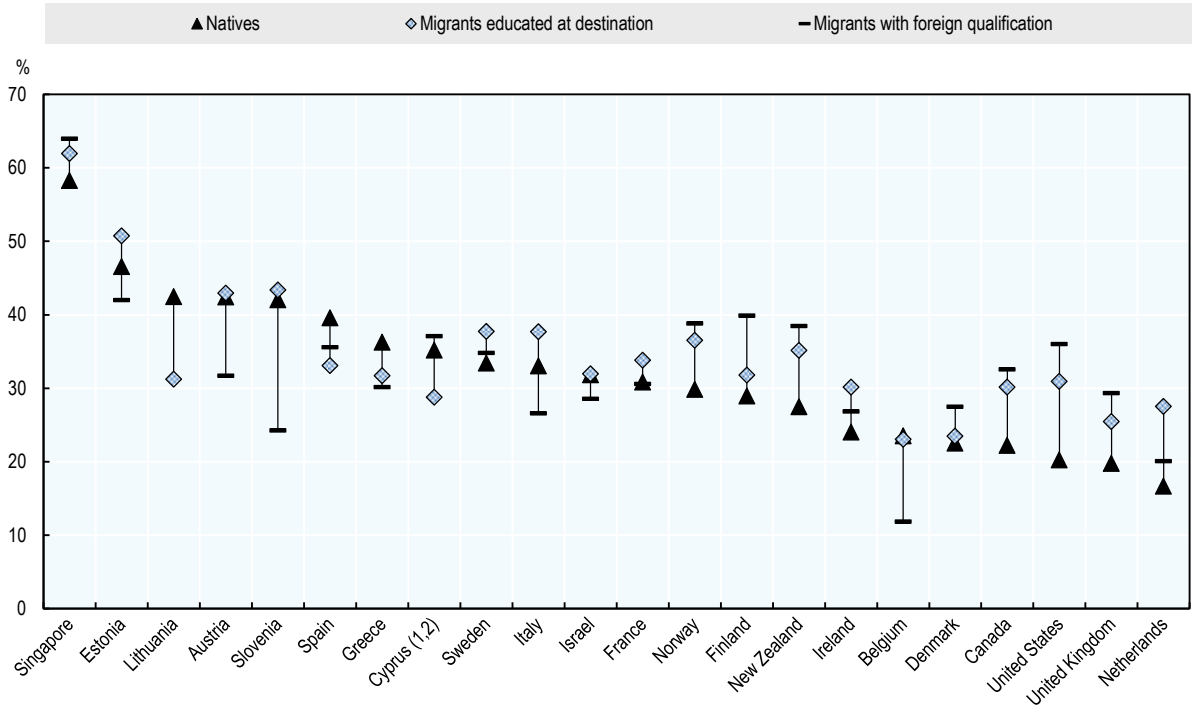
Figure 5.7 shows the share of workers who feel the need for further training in order to cope well with the duties of their current job. In Greece, Lithuania and Spain, foreign-born workers are less likely than their native-born peers to report skills deficits, regardless of the country in which they completed their education. In Austria, Belgium, Israel and Slovenia, immigrants educated in the host country and native-born workers reported similarly, while foreign-born workers who were educated elsewhere were less likely to report that they need additional training. For the remaining countries, the relationship is more mixed, and may well hide large differences across countries of origin. A rigorous regression analysis is thus needed in order to understand whether immigrants' perception of skills mismatch is really greater than that of their native peers once individual characteristics have been accounted for.

Figure 5.7. Share of workers who feel they need further training



Note: See notes 1, 2 in Figure 5.1
Source: (OECD, 2015[19]) Survey of Adult Skills (PIAAC) (2012, 2015), Table A6.1, www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933846194

Table 5.A.6 (see Annex A) illustrates the correlation between immigrant background by region of origin and country of education, and self-assessed skills underuse. After accounting for language, numeracy and literacy skills (as well as for the usual set of individual characteristics, such as age, education and gender), immigrants and natives show no statistical difference in their responses. Only in a few countries, and particularly among immigrants who arrived from outside the European Union, the likelihood of perceiving that they have the skills to cope with more demanding duties is greater for immigrants. This is especially the case in Canada, Denmark, Italy, New Zealand and Sweden. The results are similar if the analysis does not control for language, literacy and numeracy proficiency.

Self-perceived skills deficits are examined in Table 5.A.7 (see Annex A). Results are presented after accounting for language, numeracy and literacy proficiency.[20] Again, one out of two countries in the sample, namely Austria, Estonia, Finland, France, Greece, Italy, Lithuania, the Netherlands, Norway, Singapore and Slovenia, shows no statistically significant difference between native-born and foreign-born workers. By contrast, in Belgium, Denmark, Israel and Spain, immigrants are less likely than natives to believe that they need additional training, confirming that foreign-born workers have still-untapped potential. In the remaining countries, namely Canada, New Zealand, Sweden, the United Kingdom and the United States, immigrants, especially those from outside

Europe, were more likely than native-born workers to report that they require further training.

Policy implications

The results of this chapter stress the key role played by language proficiency and literacy and numeracy skills as drivers of the labour market performance of foreign-born adults. The findings also suggest that being educated in the host country can go a long way towards helping foreign-born adults gain access to jobs of similar status as those held by their native-born peers. Hence, policies that attract students should be adopted or strengthened, as should programmes that allow international students to remain in the host country for longer after graduation. For those immigrants who arrive as adults (either through labour of family migration programmes), participation in language training and some form of short-cycle qualification programme can give prospective employers a signal about the skills that these adults can offer to the labour market.

Moreover, the findings of the chapter challenge the notion of immigrants' brain waste. The lower earnings and lower-status occupations of foreign-born workers are largely explained by these workers' actual set of skills, although other factors, such as discriminatory practices in the labour market and a lack of information, still work against certain categories of immigrants in some host countries. Further research is needed in order to better understand the forces behind immigrants' poor labour market performance.

Notes

[1] Notable exceptions are the International Adult Literacy Survey (IALS) and the Adult Literacy and Life Skills Survey (ALL), produced during the 1990s and 2000s, respectively (see OECD/Statistics Canada (2000[35]); McIntosh and Vignoles (2001[36]); and Clarke and Skuterud, (2016[14]), among others). Compared to such skills datasets, however, the Survey of Adult Skills (PIAAC) is better suited to capturing the different skills that occupations (particularly complex occupations) require of workers. For example, PIAAC contains much more information on numeracy skills, and a more granular definition of literacy, which also includes an assessment of the ability to read digital texts.

[2] Note by Turkey:

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

[3] Note by all the European Union Member States of the OECD and the European Union:

The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey.

[4] Data for United Kingdom were collected only in England and Northern Ireland, while data for Belgium refers to Flanders only.

[5] For example, as shown by Toomet (2011[34]), even a command of the official destination language is not enough to eliminate the wage differential. As for African-Americans in the United States or Latin American immigrants in Spain, the members of a minority still suffer from the glass-ceiling effect.

[6] Despite its important policy implications, only few works have exploited direct skills measures to study immigrants' labour market performance. Ferrer et al. (2006[33]) use the Ontario Immigrant Literacy Survey to reject the hypothesis that immigrants receive different returns to literacy skills than natives, suggesting that natives' earnings premium cannot be explained by discrimination against foreigners, but rather by different skills endowments between the two groups. Canada is again at the centre of the analysis by Coulombe and Tremblay (2009[32]), which adopts information from the 2003 International Adult Literacy and Skills Survey (IALSS) to show that, while using education data suggests a brain drain that benefits the Canadian economy, results are reversed if using skills data: international migrants have overall lower skills levels than similarly educated natives.

[7] Note that respondents of the Survey of Adult Skills (PIAAC) were also assessed in their ability to solve problems in technology-rich environments. However, not all countries included this exercise in their questionnaires (France, Italy and Spain, for example, are excluded). Moreover, the share of respondents to this section is as low as 24% in certain countries, such as Estonia. As analysing problem solving in technology-rich environments would imply focusing only on a selected sub-sample of workers, it is not considered in the analysis.

[8] Note that empty cells represent missing data or estimations with fewer than 30 observations.

[9] Some of the controls included in the analysis may be endogenous to the outcome of interest, that is, they may be correlated with unobservable characteristics also affecting wages, thereby biasing the parameters of interest. Thus, as a check of robustness, regressions have also been estimated without such controls – namely marital status, number of children, dummies for having two or more jobs, for public employment, for indefinite job contract, and for industries. Results are robust to this test. In addition, findings remain both quantitatively and qualitatively similar also after including a dummy for being a recent immigrant (less than five years since arrival at the destination country).

[10] See notes 2 and 3.

[11] See notes 2 and 3.

[12] A notable exception is Israel, where returns to education are overall greater for immigrants than for natives. This is likely to be due to the singular composition of its foreign-born workforce in the PIAAC survey. For instance, the country has experienced a large influx of skilled immigrants, and almost one in two immigrants comes from the former Soviet Union. Likewise, in the United States, immigrants educated there seem to have slightly higher returns to tertiary education than natives. A similar result has also been found by Bonfanti and Xenogiani (2014[6]), who explain it as possibly linked to the fact that the model presupposes constant, rather than decreasing, returns to schooling.

[13] Throughout the chapter, controls for language and numeracy proficiency are included simultaneously in the specification. Importantly, results remain qualitatively similar if language and numeracy skills are included separately.

[14] There are several reasons why host-language proficiency is an important factor behind immigrants' assimilation in destination labour markets. From an economic perspective, weak linguistic abilities decrease immigrants' productivity and hence earnings, and reduce the range and quality of jobs available to foreigners. From a social perspective, a lack of proficiency in the host-country language may foster discrimination and isolation.

[15] Literacy and numeracy skills in PIAAC are measured in the host-country language. Although the analysis of this chapter controls for whether the individual speaks the language of the survey, a fluency effect may remain.

[16] There are several explanations for a possible over-representation of immigrants in less-prestigious occupations. Employers might consider foreign qualifications of a lesser quality and hence offer the foreign-born adults who hold them low-prestige jobs. Credit constraints might force immigrants to accept the first available job offer and thus they end up with potentially poorer matches.

[17] The literature on the approaches to occupational stratification is vast. This analysis relies on the ISEI measure as it is practical, and it has been widely exploited in the socio-economic literature (see for instance Marks (2005[37]), and Raitano and Vona (2015[38]), among others). This does not imply that a similar analysis would not have been possible using different indices, both categorical and continuous.

[18] Extensive reviews of the literature on overqualification and skills mismatch can be found in Quintini (2011[31]), Prokic-Breuer and McManus (2016[39]), and Pellizzari and Fichen (2017[40]).

[19] Clearly, as noticed by Pellizzari and Fichen (2017[40]), subjective measures of mismatch do not come without caveats, the most obvious being that individuals might misreport their true skills due to overconfidence. In response to this potential drawback, the OECD has developed a more complex measure of skills mismatch, which classifies workers as well-matched in literacy or numeracy if their proficiency score in that domain is between the minimum and maximum score observed among workers who answered "no" to both questions in the same occupation and country (OECD, 2013[41]). A detailed analysis for this measure of skills mismatch – as well as other measures – for foreign-born workers is presented in Bonfanti and Xenogiani (2014[6]).

[20] Findings remain similar without controls for language and skills.

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Annex 5.A. Tables

Annex Table 5.A.1. The impact of educational attainment and migration on hourly wages (without language and skills controls)

	Medium education						High education					
	Migrants educated at destination			Migrants educated elsewhere			Migrants educated at destination			Migrants educated elsewhere		
	Coef.	S.E.		Coef.	S.E.		Coef.	S.E.		Coef.	S.E.	
Austria	-0.124	0.088		0.007	0.062		-0.281	0.122	*	0.028	0.095	
Belgium	0.043	0.081		0.040	0.088					0.037	0.106	
Canada	-0.062	0.084		-0.022	0.060		-0.030	0.078		-0.076	0.055	
Cyprus (1,2)	-0.615	0.218	**	-0.050	0.154		-0.559	0.210	**	-0.259	0.163	
Denmark	0.069	0.153		0.011	0.063		-0.085	0.107		0.009	0.061	
Estonia	0.122	0.131		0.082	0.112		-0.142	0.120		-0.077	0.117	
Finland	0.059	0.077										
France	0.105	0.063		-0.027	0.094		0.079	0.063		-0.175	0.079	*
Greece	-0.300	0.111	**									
Ireland	0.020	0.126		0.045	0.140		0.157	0.127		0.133	0.151	
Israel	0.281	0.101	**	0.468	0.211	*	0.334	0.096	***	0.122	0.178	
Italy				-0.148	0.083							
Lithuania	-0.014	0.219										
Netherlands	-0.132	0.114		-0.046	0.162		-0.215	0.099	*			
New Zealand	-0.222	0.087	*	-0.092	0.107		-0.258	0.065	***	-0.155	0.097	
Norway	0.181	0.095		-0.034	0.062		0.164	0.089		-0.065	0.114	
Singapore	-0.064	0.138		-0.215	0.103	*	-0.106	0.109		-0.120	0.083	
Slovenia	0.142	0.170		-0.098	0.065							
Spain				-0.227	0.092	*				-0.251	0.118	*
Sweden	-0.060	0.090		-0.013	0.058		-0.046	0.082		0.093	0.071	
United Kingdom	0.025	0.135		0.036	0.107		-0.037	0.132		-0.083	0.114	
United States	0.247	0.136		-0.213	0.343		0.292	0.140	*	-0.181	0.323	

Notes: (1) ***, **, and * represent 1%, 5% and 10% significance levels, respectively. (2) The dependent variable is the logarithm of hourly wages, including bonuses, in PPP-corrected USD. Specifications control for age, age squared, age cubic, gender, marital status, number of children, education, migrant status, number of jobs, a dummy for public-sector workers, a dummy for indefinite contract, industry dummies. (3) All specifications are weighted by the sampling weights provided in the dataset.
Note: See notes 1, 2 in Figure 5.1
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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Annex Table 5.A.2. The impact of educational attainment and migration on hourly wages (with language and skills controls)

	Medium Education						High Education					
	Migrants educated at destination			Migrants educated elsewhere			Migrants educated at destination			Migrants educated elsewhere		
	Coef.	S.E.		Coef.	S.E.		Coef.	S.E.		Coef.	S.E.	
Austria	-0.145	0.089		-0.023	0.065		-0.291	0.120	*	-0.054	0.093	
Belgium	0.048	0.094		-0.045	0.089					-0.044	0.108	
Canada	-0.084	0.084		-0.023	0.065		-0.057	0.082		-0.101	0.063	
Cyprus (1,2)	-0.614	0.225	**	-0.060	0.152		-0.569	0.213	**	-0.248	0.167	
Denmark	0.055	0.154		-0.002	0.066		-0.105	0.109		-0.003	0.064	
Estonia	0.152	0.142		0.092	0.119		-0.096	0.132		-0.088	0.119	
Finland	-0.071	0.081										
France	0.073	0.057		-0.028	0.107		0.050	0.058		-0.177	0.080	*
Greece	-0.270	0.137	*									
Ireland	0.049	0.122		0.066	0.147		0.181	0.121		0.130	0.157	
Israel	0.266	0.100	**	0.429	0.209	*	0.313	0.095	**	0.095	0.178	
Italy				-0.147	0.086							
Lithuania	0.045	0.205										
Netherlands	-0.155	0.117		-0.112	0.158		-0.254	0.099	*			
New Zealand	-0.202	0.090	*	-0.132	0.107		-0.218	0.063	***	-0.201	0.096	*
Norway	0.143	0.094		-0.063	0.062		0.111	0.089		-0.090	0.110	
Singapore	-0.156	0.130		-0.200	0.097	*	-0.197	0.107		-0.144	0.083	
Slovenia	0.140	0.174		-0.067	0.070							
Spain				-0.218	0.092	*				-0.238	0.115	*
Sweden	-0.078	0.092		-0.022	0.060		-0.066	0.085		0.084	0.069	
United Kingdom	-0.087	0.147		-0.089	0.087		-0.131	0.140		-0.196	0.097	*
United States	0.225	0.135		-0.216	0.345		0.252	0.133		-0.218	0.310	

Notes: (1) ***, **, and * represent 1%, 5% and 10% significance levels, respectively. (2) The dependent variable is the logarithm of hourly wages, including bonuses, in PPP-corrected USD. Specifications control for language, numeracy and literacy skills, age, age squared, age cubic, gender, marital status, number of children, education, migrant status, number of jobs, a dummy for public-sector workers, a dummy for indefinite contract, industry dummies. (3) All specifications are weighted by the sampling weights provided in the dataset.
Note: See notes 1, 2 in Figure 5.1
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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Annex Table 5.A.3. The impact of educational attainment and migration on hourly wages (with language and skills controls and occupation fixed effects)

	Medium Education					High Education				
	Migrants educated at destination			Migrants educated elsewhere		Migrants educated at destination			Migrants educated elsewhere	
	Coef.	S.E.		Coef.	S.E.	Coef.	S.E.		Coef.	S.E.
Austria	-0.066	0.089		-0.020	0.061	-0.226	0.116		-0.042	0.082
Belgium	0.034	0.089		-0.037	0.092				-0.076	0.090
Canada	-0.075	0.079		-0.019	0.065	-0.048	0.077		-0.063	0.061
Cyprus (1,2)	-0.428	0.216	*	-0.013	0.150	-0.333	0.201		-0.181	0.159
Denmark	0.056	0.153		0.029	0.065	-0.103	0.107		0.034	0.061
Estonia	0.122	0.140		0.062	0.115	-0.135	0.124		-0.082	0.113
Finland	-0.034	0.071								
France	0.086	0.055		-0.058	0.106	0.044	0.055		-0.121	0.076
Greece	-0.188	0.164								
Ireland	0.128	0.129		0.123	0.137	0.222	0.123		0.185	0.152
Israel	0.130	0.086		0.313	0.206	0.253	0.090	**	0.084	0.173
Italy				-0.081	0.085					
Lithuania	0.063	0.190								
Netherlands	-0.176	0.114		-0.072	0.162	-0.283	0.096	**		
New Zealand	-0.213	0.088	*	-0.168	0.101	-0.188	0.068	**	-0.179	0.094
Norway	0.056	0.078		-0.079	0.067	0.042	0.078		-0.083	0.119
Singapore	-0.115	0.135		-0.097	0.089	-0.165	0.105		-0.087	0.078
Slovenia	0.137	0.168		-0.050	0.068					
Spain				-0.219	0.091 *				-0.224	0.110 *
Sweden	-0.022	0.088		0.012	0.053	-0.021	0.082		0.171	0.066 *
United Kingdom	-0.060	0.137		-0.122	0.087	-0.111	0.133		-0.200	0.107
United States	0.229	0.131		-0.200	0.334	0.235	0.127		-0.204	0.287

Notes: (1) ***, **, and * represent 1%, 5% and 10% significance levels, respectively. (2) The dependent variable is the logarithm of hourly wages, including bonuses, in PPP-corrected USD. Specifications control for occupation dummies, language, numeracy and literacy skills, age, age squared, age cubic, gender, marital status, number of children, education, migrant status, number of jobs, a dummy for public-sector workers, a dummy for indefinite contract, industry dummies. (3) All specifications are weighted by the sampling weights provided in the dataset.
Note: See notes 1, 2 in Figure 5.1
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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Annex Table 5.A.4. The impact of migration by origin on occupational placement (without language and skills controls)

	Migrants - Europe (EU)						Migrants - Europe (non-EU)						Migrants - Outside Europe					
	Educated at destination			Educated elsewhere			Educated at destination			Educated elsewhere			Educated at destination			Educated elsewhere		
	Coef.	S.E.		Coef.	S.E.		Coef.	S.E.		Coef.	S.E.		Coef.	S.E.		Coef.	S.E.	
Austria	-0.131	2.117		-1.141	1.512		-3.743	1.972		-11.010	1.266	***						
Belgium	-3.930	3.243		0.118	1.503													
Canada	2.522	1.259	*	-3.592	1.713	*	-0.011	2.584		-8.300	2.997	**	1.092	0.763		-6.800	0.693	***
Cyprus (1,2)	-2.709	1.883		-3.384	1.939					-6.447	3.012	*	2.388	1.777				
Denmark	1.240	1.781		-7.477	1.639	***	0.861	1.848		-8.606	1.746	***	-3.474	1.552	*	-13.680	1.598	***
Estonia							-2.947	1.058	**	-5.993	1.463	***						
Finland	-1.950	2.829																
France	-2.446	1.334		-3.130	1.695								-3.255	1.044	**	-9.072	1.331	***
Greece	-2.587	1.459					-4.409	2.124	*	-13.090	2.772	***						
Ireland	-1.230	1.624		-5.627	1.102	***							0.976	2.392		0.024	3.148	
Israel	1.548	2.112					0.358	1.339		-14.890	1.532	***	-3.454	1.139	**	-7.527	2.067	***
Italy				-6.990	1.417	***				-7.027	1.529	***				-5.154	1.341	***
Lithuania							1.314	2.136										
Netherlands													0.273	2.351		-10.110	3.600	**
New Zealand	1.704	1.478		-0.959	1.439								-0.193	1.153		-4.395	1.030	***
Norway	-2.706	1.915		-6.723	1.533	***							-2.686	1.739		-16.160	2.557	***
Singapore													1.151	0.625		-0.878	0.572	
Slovenia	0.226	2.546					-1.574	1.990		-5.090	1.281	***						
Spain				-4.241	2.315								3.231	1.732		-2.072	1.384	
Sweden	1.644	1.725		-7.037	2.194	**				-15.670	2.954	***	-4.727	1.566	**	-12.400	1.780	***
United Kingdom	0.599	2.287		-8.028	1.771	***							-3.204	1.608	*	-5.959	1.869	**
United States													1.187	1.266		-5.642	1.186	***

Notes: (1) ***, **, and * represent 1%, 5% and 10% significance levels, respectively. (2) The dependent variable is the ISEI index. Specifications control for age, age squared, age cubic, gender, marital status, number of children, education, migrant status, number of jobs, a dummy for public-sector workers, a dummy for indefinite contract, industry dummies. (3) All specifications are weighted by the sampling weights provided in the dataset.
Note: See notes 1, 2 in Figure 5.1
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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Annex Table 5.A.5. The impact of migration by origin on occupational placement (with language and skills controls)

	Migrants – Europe (EU)					Migrants – Europe (non-EU)					Migrants – Outside Europe				
	Educated at destination		Educated elsewhere			Educated at destination		Educated elsewhere			Educated at destination		Educated elsewhere		
	Coef.	S.E.	Coef.	S.E.		Coef.	S.E.	Coef.	S.E.		Coef.	S.E.	Coef.	S.E.	
Austria	0.572	2.086	0.629	1.544		-0.465	2.141	-4.193	1.800	*					
Belgium	-3.449	3.043	1.539	1.509											
Canada	3.157	1.269	* -0.601	1.540		1.082	2.536	-2.600	2.761		3.345	0.841	*** -1.963	0.840	*
Cyprus (1,2)	-3.020	1.774	-3.635	1.902				-7.586	2.875	**	1.814	1.851			
Denmark	0.942	1.788	-6.825	1.869	***	1.953	1.931	-7.063	1.890	***	-2.090	1.763	-10.039	1.965	***
Estonia						-2.502	1.098	* -4.839	1.497	**					
Finland	-1.955	2.577													
France	-1.504	1.384	-0.063	2.013							-0.586	1.018	-5.078	1.288	***
Greece	-2.634	1.693													
Ireland	-1.363	1.626	-4.034	1.306	**						1.806	2.399	1.868	3.160	
Israel	1.115	2.104				-0.641	1.433	-14.188	1.535	***	-2.527	1.089	* -6.610	2.074	**
Italy			-5.167	1.690	**			-5.570	1.864	**			-2.444	1.974	
Lithuania						1.145	2.189								
Netherlands											2.253	2.599	-5.136	3.868	
New Zealand	1.532	1.512	-0.785	1.357							1.238	1.180	-1.634	1.178	
Norway	-2.011	2.063	-2.274	1.744							1.060	2.018	-9.131	3.076	**
Singapore											1.189	0.621	0.444	0.563	
Slovenia	0.304	2.539				-1.070	1.904	-3.062	1.589						
Spain			-2.471	2.552							3.877	1.742	* -0.863	1.387	
Sweden	1.760	1.809	-4.962	2.229	*			-13.065	3.079	***	-2.097	1.670	-7.990	2.151	***
United Kingdom	2.399	2.390	-3.172	2.284							0.059	1.460	-1.423	1.724	
United States											2.656	1.317	* -1.666	1.245	

Notes: (1) ***, **, and * represent 1%, 5% and 10% significance levels, respectively. (2) The dependent variable is the ISEI index. Specifications control for language, numeracy and literacy skills, age, age squared, age cubic, gender, marital status, number of children, education, migrant status, number of jobs, a dummy for public-sector workers, a dummy for indefinite contract, industry dummies. (3) All specifications are weighted by the sampling weights provided in the dataset.
Note: See notes 1, 2 in Figure 5.1
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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Annex Table 5.A.6. The impact of migration by origin on self-assessed skill underutilisation

	Migrants - Europe (EU)					Migrants - Europe (non-EU)					Migrants - Outside Europe				
	Educated at destination		Educated elsewhere			Educated at destination		Educated elsewhere			Educated at destination		Educated elsewhere		
	Coef.	S.E.	Coef.	S.E.		Coef.	S.E.	Coef.	S.E.		Coef.	S.E.	Coef.	S.E.	
Austria	-0.025	0.041	0.033	0.020		-0.003	0.040	-0.085	0.056						
Belgium	0.021	0.063	0.063	0.043											
Canada	0.038	0.021	0.019	0.033		0.091	0.019	*** 0.033	0.052		0.021	0.017	0.063	0.017	***
Cyprus (1,2)	-0.067	0.048	0.049	0.031				-0.119	0.069		0.068	0.031	*		
Denmark	0.024	0.038	-0.022	0.041		0.143	0.029	*** 0.072	0.046		0.022	0.042	0.019	0.042	
Estonia						-0.011	0.028	-0.023	0.036						
Finland	0.050	0.071													
France	0.038	0.048	0.012	0.056							0.008	0.032	0.000	0.041	
Greece	-0.021	0.040													
Ireland	-0.039	0.034	0.001	0.023							-0.050	0.062	0.017	0.041	
Israel	-0.037	0.045				-0.014	0.024	-0.051	0.034		0.006	0.021	-0.063	0.044	
Italy			0.042	0.050				-0.032	0.077				0.142	0.044	**
Lithuania						0.033	0.038								
Netherlands											-0.002	0.066	-0.060	0.092	
New Zealand	-0.009	0.030	-0.008	0.028							0.021	0.019	0.052	0.025	*
Norway	-0.047	0.054	-0.017	0.051							-0.023	0.046	-0.076	0.073	
Singapore											0.018	0.019	0.030	0.019	
Slovenia	0.040	0.029				0.007	0.037	0.013	0.033						
Spain			0.049	0.038							-0.026	0.045	0.028	0.019	
Sweden	0.065	0.037	0.071	0.042				0.162	0.045	***	0.065	0.035	0.092	0.048	
United Kingdom	-0.014	0.045	0.019	0.046							0.030	0.025	-0.012	0.046	
United States											0.014	0.023	-0.060	0.043	

Notes: (1) ***, **, and * represent 1%, 5% and 10% significance levels, respectively. (2) The dependent variable is a dummy being one if the respondent feels that he/she has the skills to cope with more demanding duties than those he/she is required to perform in his/her current job. Specifications control for language, numeracy and literacy skills, age, age squared, age cubic, gender, marital status, number of children, education, migrant status, number of jobs, a dummy for public-sector workers, a dummy for indefinite contract, industry dummies. (3) All specifications are weighted by the sampling weights provided in the dataset.
Note: See notes 1, 2 in Figure 5.1
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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Annex Table 5.A.7. The impact of migration by origin on self-assessed skill deficit

	Migrants - Europe (EU)					Migrants - Europe (non-EU)					Migrants - Outside Europe					
	Educated at destination			Educated elsewhere		Educated at destination		Educated elsewhere			Educated at destination			Educated elsewhere		
	Coef.	S.E.		Coef.	S.E.	Coef.	S.E.	Coef.	S.E.		Coef.	S.E.		Coef.	S.E.	
Austria	0.018	0.078		0.039	0.050	0.047	0.073	-0.031	0.060							
Belgium	-0.004	0.068		-0.107	0.042	*										
Canada	-0.009	0.033		0.019	0.042	0.109	0.093	0.083	0.066		0.108	0.032	***	0.111	0.026	***
Cyprus (1,2)	-0.169	0.065	**	0.010	0.066			-0.098	0.074		-0.067	0.100				
Denmark	-0.083	0.032	**	-0.028	0.034	0.019	0.059	-0.084	0.054		0.014	0.044		0.004	0.043	
Estonia						0.027	0.035	-0.040	0.042							
Finland	-0.068	0.070														
France	-0.028	0.045		-0.029	0.053						0.030	0.034		0.033	0.041	
Greece	-0.054	0.075														
Ireland	0.083	0.038	*	0.036	0.032						0.048	0.076		0.085	0.062	
Israel	0.074	0.063				-0.049	0.038	-0.115	0.039	**	0.005	0.039		0.043	0.059	
Italy				-0.081	0.073			-0.037	0.102					-0.101	0.108	
Lithuania						0.007	0.082									
Netherlands											0.014	0.062		-0.009	0.083	
New Zealand	0.037	0.042		-0.004	0.045						0.068	0.034	*	0.081	0.038	*
Norway	-0.047	0.06		-0.062	0.050						-0.029	0.062		0.056	0.070	
Singapore											0.014	0.028		0.018	0.026	
Slovenia	0.095	0.073				0.033	0.068	-0.076	0.063							
Spain				-0.145	0.063	*					0.006	0.072		0.020	0.042	
Sweden	0.081	0.055		-0.023	0.059			-0.036	0.084		0.115	0.047	*	0.112	0.072	
United Kingdom	-0.040	0.057		0.189	0.075	*					0.081	0.044		0.036	0.066	
United States											0.085	0.037	*	0.117	0.053	*

Notes: (1) ***, **, and * represent 1%, 5% and 10% significance levels, respectively. (2) The dependent variable is a dummy being one if the respondent feels that he/she needs further training in order to cope well with his/her present duties. Specifications control for language, numeracy and literacy skills, age, age squared, age cubic, gender, marital status, number of children, education, migrant status, number of jobs, a dummy for public-sector workers, a dummy for indefinite contract, industry dummies. (3) All specifications are weighted by the sampling weights provided in the dataset.
Note: See notes 1, 2 in Figure 5.1
Source: Survey of Adult Skills (PIAAC) (2012, 2015).

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Chapter 6. Non-labour market outcomes among migrants

This chapter analyses the non-labour market outcomes of migrants, examining whether and to what extent these differ from the outcomes of the native-born population. The analyses focus on self-reported health, political efficacy, interpersonal trust and volunteering. Previous analyses of data from the Survey of Adult Skills (PIAAC) have shown that literacy and numeracy skills are positively associated with many aspects of individual well-being, like health, active participation in the political process, levels of interpersonal trust, and involvement in volunteer or associative activities. This chapter examines if the association between skills and these non-labour market outcomes differs between migrants and natives, and how this connection is intertwined with education, age, gender and other individual characteristics.

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 importance of non-labour market outcomes

While employment and wages are important for individual well-being, non-economic factors also contribute to well-being and to the smooth functioning of societies as a whole. These factors are becoming increasingly important in the policy discourse. The report by the Commission on the Measurement of Economic Performance and Social Progress (Stiglitz, Sen and Fitoussi, 2009[1]) is one example of the interest in developing broader measure of well-being, going beyond traditional measures of economic success, like wages (at the individual level) and GDP (at the country level). The OECD with its How's Life initiative has been adopting the recommendations of the Commission and developed a new way to measure and benchmark countries' performance using composite indicators reflecting well-being in a broad spectrum of economic and social dimensions.

The Survey of Adult Skills (PIAAC) collects information on four non-labour market outcomes: self-assessed health (health); the level of trust adults have in others (trust); the sense of being able to influence the political process (political efficacy); and participation in associative, religious, political or charity activities (volunteering). This chapter identifies disparities in such outcomes across native-born and foreign-born adults and examines how differences across the two groups are shaped by the socio-economic status of respondents and, crucially, by their proficiency in information-processing skills.

Examining the broad well-being of migrants is useful in identifying alternative benchmarks of integration. Labour market integration is important for migrants because it enables them to acquire economic resources, gives them a sense of purpose and provides opportunities for social bonding. It is important for host communities because it ensures that migrants contribute to the economic and social well-being of the country. However, in order to understand how and why people develop a sense of the belonging to a community it is also important to consider migrants' broader life experiences. Measures of non-labour market outcomes are increasingly being recognised as important benchmarks in the evaluation of policy initiatives (OECD, 2013[2]).

Previous research has shown that education is one of the factors that is most strongly associated with subjective well-being, together with health status, social connectedness, being in a stable relationship with a partner, and being employed (Dolan, Peasgood and White, 2008[3]; Winkelmann and Winkelmann, 1998[4]; Kahneman and Krueger, 2006[5]; Blanchflower and Oswald, 2011[6]; Helliwell, 2008[7]). So far, however, studies have failed to capture the inter-relationship between different explanatory factors and the mechanisms that lead adults, in general (and migrants, in particular), with more education to express greater well-being. The information available from PIAAC – on participation in education and attainment, employment status and wages and on proficiency in literacy and numeracy – can elucidate some of these mechanisms.

There is a large body of empirical literature documenting the relationship between economic and non-labour market outcomes. Previous work using PIAAC data has found that proficiency in information-processing skills is positively associated with trust, volunteering, political efficacy and self-assessed good health among the general population. These relationships hold even after accounting for socio-demographic characteristics, like education, parents' educational attainment, age and gender. The mechanisms linking economic and non-labour market outcomes, and the individual determinants of non-labour market outcomes (and, ultimately, of well-being) have been much less investigated, partly because of a lack of data, and partly because of the inherent difficulty in determining causal relationships. Non-labour market outcomes can be seen

as being of inherent value and an expression of well-being, or, in light of the vast literature on the relationship between social capital and economic growth, as mediating variables in studying the relationship between skills proficiency and economic outcomes.

This chapter aims to investigate whether migrants and natives differ in non-labour market outcomes and, if so, if this can be explained by differences in observable characteristics across the two groups. The chapter also aims to identify whether education and skills play similar roles among migrants and natives in determining non-labour market outcomes.

Health

Disparities in self-reported health

Poor health is a major burden for the affected person, but also for governments. Recent estimates suggest that health expenditures account for as much as 9% of GDP across OECD countries; and in the United States, they represent as much as 18% of GDP (OECD, 2014[8]). There is a large body of evidence highlighting considerable disparities in health across population subgroups, with socio-economically disadvantaged and low-educated people disproportionately more likely to be in ill health (Grossman, 2000[9]; Grossman, 2005[10]; Schütte et al., 2013[11]; van der Kooi et al., 2013[12]; OECD/EU, 2015[13]).

Health is an important outcome in itself, but it is also a key potential determinant of differences in labour market participation and performance, and in engagement in lifelong learning activities, across adults. Adults who are highly proficient in information-processing skills might be better able to manage their health and, as a result, might be in a better position to use their skills in the labour market.

Figure 6.1 shows the percentage of native-born and migrant adults in PIAAC-participating countries who reported being in excellent or in very good health. On average across participating countries, the share of adults who reported to be in excellent or very good health is similar across the two groups,. However, in Chile, England, Ireland, Italy, New Zealand, Northern Ireland, Spain and Singapore, migrants were more likely than natives to report being in good health. By contrast, in France, Germany, Israel, the Netherlands and Sweden, they were less likely to report being in good health. In Chile, migrants were particularly more likely than natives to report being in excellent or in very good health (67% of natives but 81% of migrants reported excellent or very good health, a difference of 13 percentage points). Natives, on the other hand, were more likely to report being in excellent or very good health in Estonia (where 68% of natives but only 44% of migrants reported excellent or very good health, a difference of 25 percentage points), Israel (where 89% of natives but 75% of migrants reported excellent or very good health, a difference of 13 percentage points) and the Netherlands (where 83% of natives but 70% of migrants reported excellent or very good health, a difference of 13 percentage points).

Differences in the health status of migrants and natives could be due to differences in the background characteristics of the two populations, particularly their age and labour market status. Institutional factors, such as immigration policy and access to welfare institutions (as well as personal choice) can determine health differences between the two groups. Previous chapters in this report have indicated that migrants have poorer labour market outcomes than natives, and that their skills are underused in the labour market. Labour market penalties might lead to poorer health because migrants might have fewer

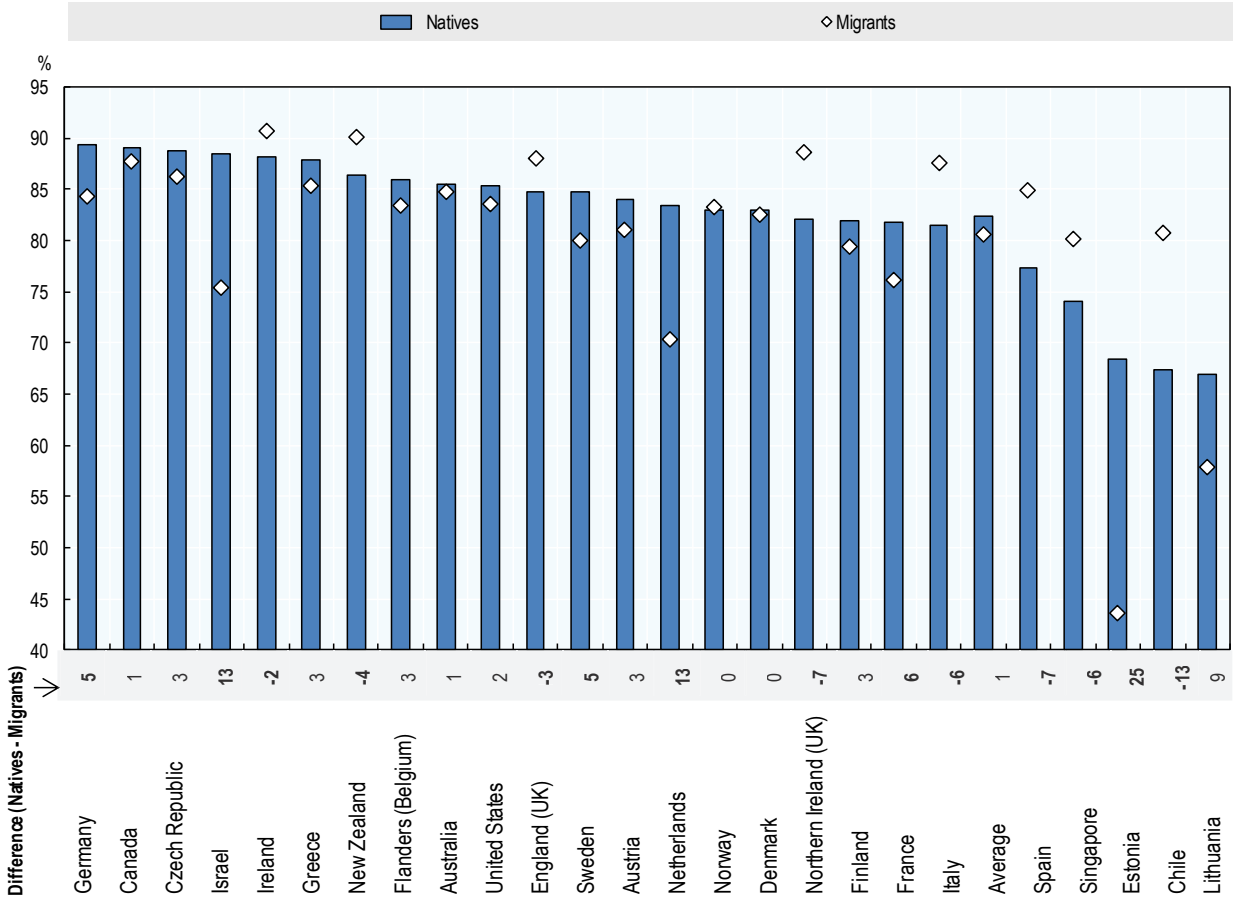
economic and social resources that enable them to engage in the behaviours and to make the choices that maintain good health.

Moreover, to the extent that migrants have a lower social status than they would have had, given their background, had they not migrated, they might be more likely than natives to suffer from "status syndrome" (Marmot, 2005[14]). Status syndrome refers to the poorer health and higher mortality rates that are observed among people of lower social status compared with people of higher social status. The syndrome was first observed and described by Michael Marmot, who tracked the mortality rates and the incidence of certain health conditions among British civil servants in a Whitehall study.

Psychological factors, social support from extended family networks and welfare regimes might all contribute to differences in health across migrant populations. Differences in health status between migrants and natives might also be a "statistical artefact", derived from the fact that, in some countries, migrants who are in poor health and who cannot work or have difficulty finding employment, might leave the host country, with the result that only migrants in good health remain. In other countries, generous welfare systems and a labour market that is less based on manual labour might attract people in poor physical health to enter and remain in the country. This selection effect might arise because legislation or personal preferences might lead migrants to return to their home country if and when they are unable to be economically active or suffer from poor health. In other host countries, comprehensive healthcare and welfare arrangements and good-quality care might eliminate this selection effect because migrants will have no reason to leave the country for health-related reasons.

Figure 6.1. Reported health by immigrant status

Percentage of migrants and natives who report being in excellent or very good health



Note: Migrants are defined as those participants whose country of birth is different that the country at which they are doing the test. Statistically significant differences are marked in bold. Estimates based on a sample size less than 30 are not shown (Japan, Poland and Turkey).
Countries are ranked in descending order of the percentage of migrants who report being in excellent or very good health
Source: (OECD, 2015[15]) Survey of Adult Skills (PIAAC) (2012, 2015), Table A6.1, www.oecd.org/skills/piaac/publicdataandanalysis

StatLink https://doi.org/10.1787/888933846213

Table 6.A.1 indicates that in some countries, differences in the socio-demographic profile of migrants and natives lie behind the observed differences in the percentage of adults in the two groups who reported being in excellent or very good health. For example, when comparing natives and migrants of similar age, parents' educational attainment and gender, and who speak the main language of the Survey of Adult Skills (PIAAC), only migrants in New Zealand and Singapore were more likely to report being in excellent or very good health. In Austria, Canada, Denmark, Estonia, Finland, France, Germany, Greece, Israel, the Netherlands and Sweden, migrants were less likely to report being in good health than natives, with gaps between the two groups as large as 6 percentage points in Estonia, Finland, Greece and the Netherlands.

The role of education and skills in promoting health

Changes in the nature of work, in infrastructures and healthcare have meant that non-communicable diseases that arise from people's lifestyle choices play an increasingly important role in determining the health of individuals and disparities in health outcomes across people and communities. Prevention programmes that promote healthy lifestyles are increasingly important but present new challenges for health practitioners and policy makers. While the need for treatment in the presence of illness and disease is evident for patients, prevention programmes de facto require lifestyle changes among groups of healthy people who have to understand issues related to the risks, health benefits and psychological costs incurred at different points in time, often decades apart. As a result, and more than ever, education and proficiency in information-processing skills might be key to explaining differences in health outcomes. The expectation that individuals will become partners in the management of their health and bear responsibility for adopting healthy behaviours has increased in parallel with the growth in chronic conditions due to increases in life expectancy (Bauer et al., 2014[16]). In order to effectively manage chronic conditions individuals have to constantly communicate with health care providers and understand complex probabilistic concepts such as risk factors, learn to self-monitor parameters such as blood pressure, comply with long-term courses of drug regimens for multiple morbidities, navigate digital texts, interpret information on food and drug labels, and connect with support networks of friends and peer patients through social media. With rapidly evolving health-promoting technology products, individuals need to adapt to become perennial learners (Kakarmath et al., 2018[17]). As such, strong general literacy and numeracy proficiency have become pre-conditions for the development of health literacy (Berkman et al., 2011[18]).

Several studies have investigated the relationship between education and health outcomes and behaviours, finding a positive association between the two. The education-health link is partly explained by the higher income that more educated people earn. But it is increasingly clear that this association also stems from a direct, causal impact of education and learning on health (Lleras-Muney, 2005[19]; Lundborg, 2008[20]; Oreopoulos, 2006[21]; Silles, 2009[22]). Educated people might be more efficient at maintaining good health and, as a result, enjoy better health with the same amount of resources, all else being equal. Education might prompt adults to make better health choices, such as adopting a healthier diet, exercising and avoiding tobacco. More education generally translates into greater access to better information and greater ability to act on such information. Education might also alter the perception of risk and, by doing so, might render adults more likely to invest in their health. In addition, since it is associated with the potential for high income throughout a lifetime, education is likely to shape what individuals are willing to do to insure themselves against the risk of being in poor health and the potential associated loss of income.

Health literacy has been linked to the use of emergency health services, hospitalisation, interpretation of health communication, appropriate taking of medications and mortality in the elderly (Berkman et al., 2011[18]). The expectation that individuals will become partners in the management of their own health and bear a major responsibility for adopting health promoting behaviours has increased in parallel with the growth in life expectancy and associated chronic health conditions (Bauer et al., 2014[16]). Treatment of a chronic condition often requires that individuals communicate with health care providers and understand complex probabilistic concepts such as risk factors, learn to self-monitor parameters such as blood pressure, comply meticulously with long-term courses of drug regimens for multiple morbidities, navigate digital texts, interpret

information on food and drug labels, and connect with support networks of friends and peer patients through social media. With rapidly evolving health-promoting technology products, individuals need to adapt to become perennial learners. As such, strong general literacy and numeracy proficiency have become pre-conditions for the development of health literacy.

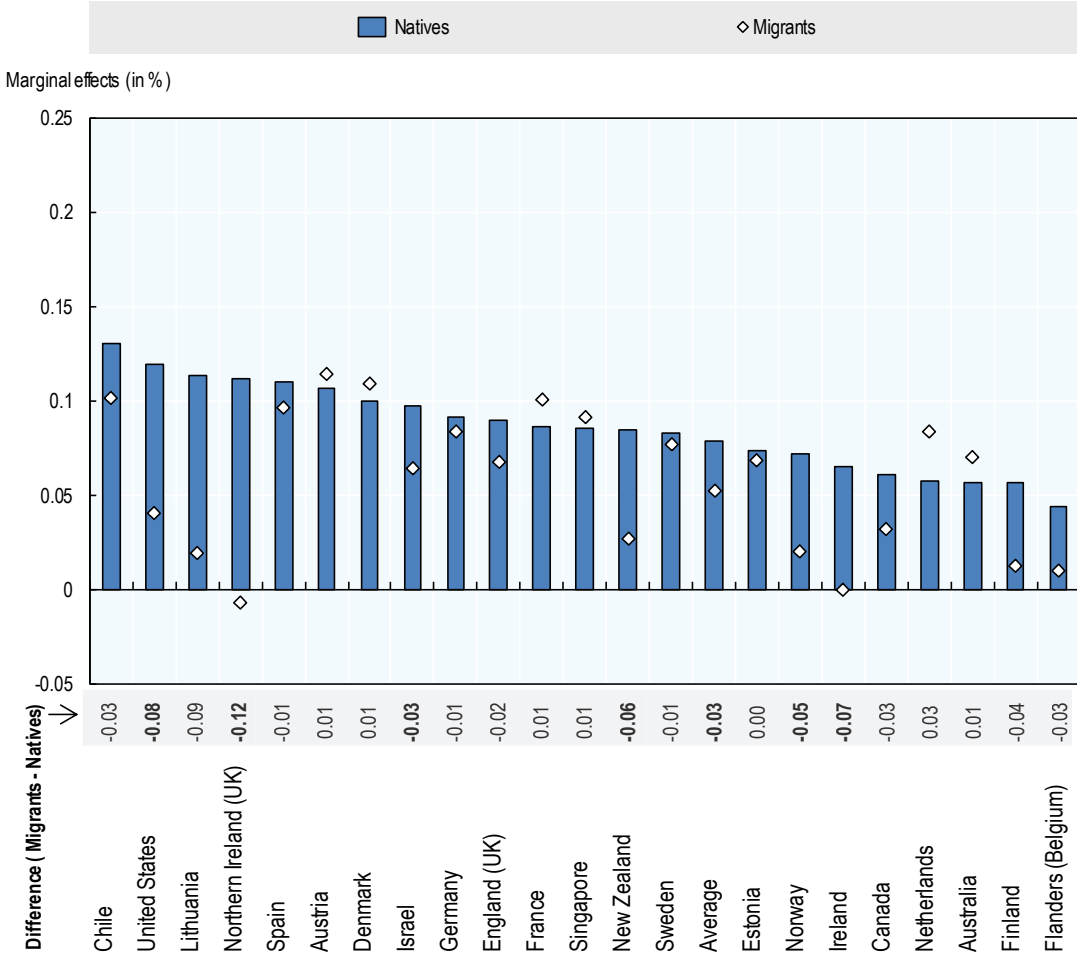
Previous analyses of PIAAC data have indicated that information-processing skills play a key role in explaining within-country variations in self-reported health (Borgonovi and Pokropek, 2016[23]). However, little is known about the extent to which differences in the proficiency in these skills explain variations in self-reported health across natives and migrants, or the degree to which migrants and natives are likely to report that they enjoy good health if they attain similar levels of proficiency in information-processing skills.

Table 6.A.1 shows the degree to which differences in educational attainment and literacy skills explain disparities between natives and migrants in the probability of reporting that they are in excellent or very good health. Results are in line with previous work suggesting that both educational attainment and literacy levels are strongly and positively associated with adults' self-reported health status. All else being equal, adults with a tertiary degree are more likely to report being in excellent or very good health than those who do not have an upper secondary degree, and those who have greater proficiency in literacy are more likely to report being in excellent or very good health than those who are less proficient. However, differences in the educational attainment or literacy levels between migrants and natives do not explain the disparities between migrants and natives in self-reported health status.

Figure 6.2 indicates that in the majority of participating countries, the association between self-reported health and literacy are similar among migrants and natives; but in Ireland, Israel, New Zealand, Northern Ireland, Norway, and the United States, proficiency in literacy appears to be less associated with health status among migrants than among natives. For example, in Ireland, all else being equal, a difference of 50 points in literacy proficiency is associated with a difference of around 3 percentage points in the probability that a native adult will report being in excellent or very good health; but among migrants, there is no such advantage. In the United States, a difference of 50 points in literacy proficiency is associated with a difference of around 6 percentage points in the probability that a native adult will report being in excellent or very good health; but among migrants, this difference is only 3 percentage points. Similarly, in Canada, Lithuania, Northern Ireland and the United States, the relationship between earning a tertiary degree and reporting good-to-excellent is weaker among migrants and among natives (see Table 6.A.1).

Figure 6.2. Differences between natives and migrants in the relationship between literacy and health, by migrant background

Marginal effects of literacy on the probability to report being in excellent or very good health by immigrant status



Note: The returns to literacy is not statistically significant in Czech Republic, Greece and Italy and are therefore not presented on this chart. Migrants are defined as those participants whose country of birth is different that the country at which they are doing the test. Returns to literacy are based on a regression model and take account of differences associated with the following variables: age, gender, education, immigration background and parents' educational attainment (See model 4 in the source table). Statistically significant differences are maked in bold. Estimates based on a sample size less than 30 are not shown.
Countries are ranked in descending order of the returns to literacy for natives
Source: (OECD, 2015[15]) Survey of Adult Skills (PIAAC) (2012, 2015), Table 6.A.1, www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933846232

Generalised trust

Generalised trust is a feeling of goodwill towards anonymous others. It allows for smooth social and economic interactions in complex societies, where people engage frequently with others whom they do not know and from whom they differ in many ways. The wealth of research on generalised trust in sociology, political science, economics and

public health reflects the importance of trust in unfamiliar others in increasingly complex societies (Nannestad, 2008[24]; Newton, 2007[25]) and the social and economic benefits of generalised trust. In these contexts, the absence of trust can have negative consequences for economic activity.

Interpersonal trust, especially generalised trust, is a strong predictor of economic prosperity (Fukuyama, 1995[26]; Knack and Keefer, 1997[27]; Putnam, Leonardi and Nanetti, 1993[28]) and individual well-being (Helliwell and Wang, 2010[29]). The literature has identified a number of channels through which trust can affect economic performance (Algan and Cahuc, 2014[30]): trust is thought to be essential for the smooth functioning of financial markets; it is likely to play an important role in economic activities that involve a high degree of uncertainty (like investments in research and development, which are the sources of technological innovations) or in which contracts are difficult to enforce; and by promoting co-operation, trust can improve the organisation of firms and the quality of labour relations.

While institutions, such as judicial systems, are crucial in sustaining trust, education and skills policies are also likely to play an important role. Higher information-processing skills can help people better understand the motives underlying others' behaviours, and the negative consequences of lack of co-operation. Education and cognitive skills help build the socio-emotional skills needed to engage in fruitful social relationships (Borgonovi and Burns, 2015[31]). Indirectly, societies with larger shares of skilled individuals might function more efficiently, thus helping to sustain trust.

The Survey of Adult Skills (PIAAC) allows for the creation of measures of interpersonal trust through responses to the statements: "Only few people can be trusted" and "If you are not careful, other people will take advantage of you", to which respondents could report that they strongly disagreed, disagreed, neither agreed nor disagreed, agreed or strongly agreed. For the purpose of the analysis carried out in this section, adults who disagreed or strongly disagreed with these statements were classified as having high levels of trust.

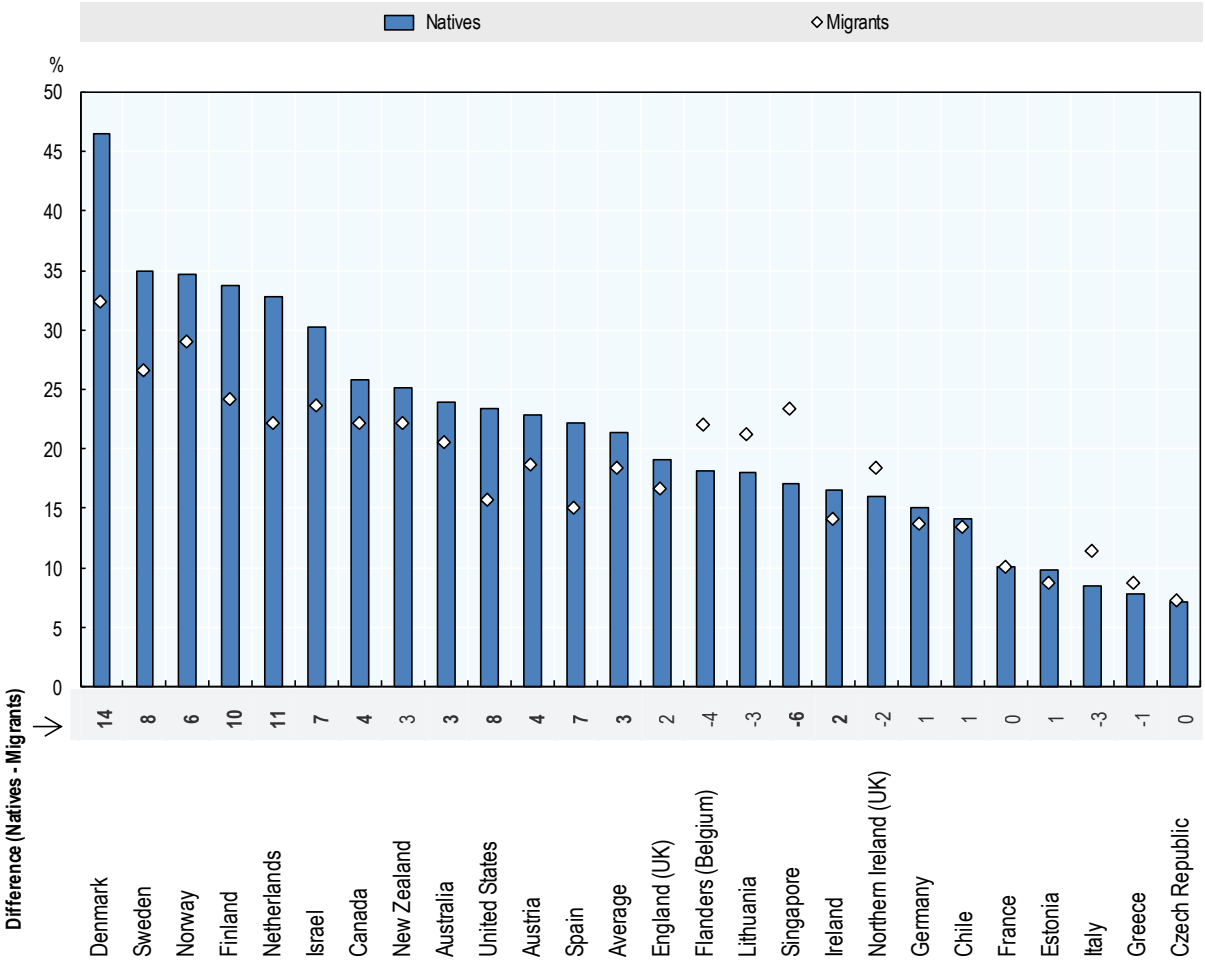
In many countries, migration flows have increased the level of ethnic, social and religious diversity in local communities. Research on migration and generalised trust has attempted to identify the extent to which greater diversity is associated with less trust among native populations (Alesina and La Ferrara, 2002[32]; Borgonovi, 2012[33]). However, monitoring the level of generalised trust expressed by migrant communities is also a good way to identify their well-being: whether they feel safe and welcome in their communities.

Figures 6.3 and 6.4 show the percentage of migrants and natives who reported that they disagree or strongly disagree that only few people can be trusted. In 12 OECD countries, natives were more likely than migrants to report that they strongly disagree or disagree that only few people can be trusted; in Denmark and the Netherlands the differences between the two groups are particularly large. For example, in Denmark, 46% of natives, but only 32% of migrants reported that they disagree or strongly disagree that only few people can be trusted, a difference of 14 percentage points. In the Netherlands, 33% of natives but only 22% of migrants reported the same, a difference of 11 percentage points. Similarly, in 9 OECD countries, natives were more likely than migrants to report that they strongly disagree or disagree that if you are not careful, other people will take advantage of you. In Denmark, Finland, Norway and Sweden, differences between the two groups amount to at least 10 percentage points. Tables 6.A.2 and 6.A.3 suggest that differences in the profiles of migrants and natives by gender, age, language spoken at

home and parents' education do not explain differences in the levels of trust expressed by the two groups.

Figure 6.3. Percentage of adults who believe that most people can be trusted, by migrant background

Percentage of migrants and natives who report disagreeing or strong disagreeing that only few people can be trusted

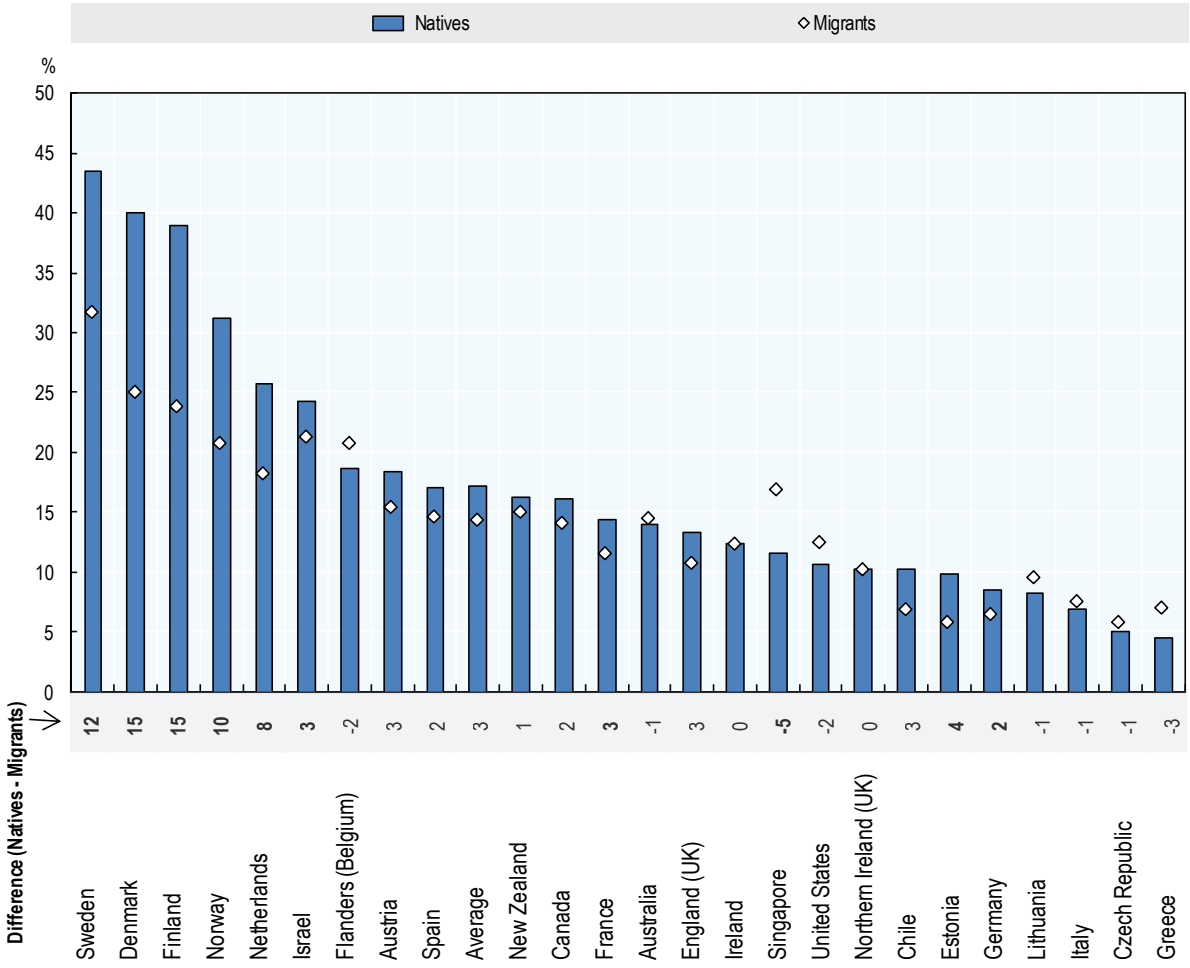


Note: Migrants are defined as those participants whose country of birth is different that the country at which they are doing the test. Statistically significant differences are marked in bold. Estimates based on a sample size less than 30 are not shown (Japan, Poland and Turkey).
Countries are ranked in descending order of the percentage of migrants who report disagreeing or strong disagreeing that only few people can be trusted. Statistically significant differences are marked in bold.
Source: (OECD, 2015[15]) Survey of Adult Skills (PIAAC) (2012, 2015), Table 6.A.2, www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933846251

Figure 6.4. Percentage of adults who believe that others will not take advantage of them, by migrant background

Percentage of migrants and natives who report disagreeing or strong disagreeing that if you are not careful other people will take advantage of you



Note: Migrants are defined as those participants whose country of birth is different that the country at which they are doing the test. Statistically significant differences are marked in bold. Estimates based on a sample size less than 30 are not shown (Japan, Poland and Turkey).
Countries are ranked in descending order of the percentage of migrants who report disagreeing or strong disagreeing that if you are not careful other people will take advantage of you. Statistically significant differences are marked in bold.
Source: (OECD, 2015[15]) Survey of Adult Skills (PIAAC) (2012, 2015), Table 6.A.3, www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933846270

The role of education and skills in promoting generalised trust

The literature has identified large differences between people in levels of generalised trust, and educational attainment is one of the factors that is strongly associated with people's propensity to trust anonymous others (Borgonovi, 2012[33]; Putnam, 2000[34]; Paxton, 2007[35]; Alesina and La Ferrara, 2002[32]; Brehm and Rahn, 1997[36]; Nannestad,

2008[24]; Merolla et al., 2013[37]);. Education could be a factor because of social sorting and cognitive processes (Nie, Junn and Stehlik-Barry, 1996[38]; Hooghe, Marien and de Vroome, 2012[39]). Better-educated adults are more likely to be active in the labour market and to command higher wages than adults with less education. As a result, better-educated adults have stronger safety nets to protect them from the negative consequences of misplacing trust. The cognitive mechanism recognises that, over time, only individuals who are not penalised for engaging in co-operative behaviours can afford to trust others. Being able to appreciate the trustworthiness of specific people in given situations is a prerequisite for people to be able to hold a general expectation about the trustworthiness of others in general (Yamagashi, 2001[40]; Sturgis, Read and Allum, 2010[41]).

Tables 6.A.2 and 6.A.3 confirm that, in the majority of PIAAC-participating countries, educational attainment and literacy proficiency are positively associated with the likelihood that individuals will trust others. For example, adults with a tertiary qualification are, on average across participating countries, 13% more likely to disagree or strongly disagree that there are only a few people that they can trust completely and, all else being equal, a difference of 50 score points in literacy proficiency is associated with a 3% greater likelihood that adults will disagree or strongly disagree that there are only a few people that can be trusted completely.

In the majority of countries, the association between educational attainment and literacy proficiency is the same among migrants and natives, but in some it is weaker among migrants. For example, in Canada, Denmark, Lithuania, New Zealand and the United States, the difference in the extent to which tertiary-educated migrants and migrants who have less than an upper secondary degree disagreed or strongly disagreed that there are only a few people you can trust completely is considerably smaller than the difference observed between natives who have a tertiary degree and those who have an upper secondary degree. Similarly, in Australia, Austria, Denmark, New Zealand and the United States, the difference in the extent to which tertiary-educated migrants and migrants who have less than an upper secondary degree disagreed or strongly disagreed that if you are not careful, other people will take advantage of you is considerably smaller than the difference observed between natives who have a tertiary degree and those who have an upper secondary degree.

In many countries, differences in self-reported trust associated with literacy skills are smaller among migrants than among natives. For example, in Australia, Austria, Canada, Denmark, Germany, New Zealand and the United States, among OECD countries, and in Singapore, adults' reports on the extent to which they disagree or strongly disagree that there are only a few people that can be trusted completely are less associated with literacy among migrants than among natives (Table 6.A.2). Similarly, in Canada, Denmark, Estonia, Finland, Israel, the Netherlands, New Zealand and the United States, adults' reports on the extent to which they disagree or strongly disagree that if they are not careful other people will take advantage of them are less associated with literacy among migrants than among natives (Table 6.A.3).

Political efficacy

Political efficacy helps sustain and develop successful democratic systems (Almond and Verba, 1963[42]; Macpherson, 1977[43]; Pateman, 1970[44]). It is defined as "the feeling that individual political action does have, or can have, an impact on the political process, i.e. that it is worthwhile to perform one's civic duties" (Campbell, Gurin and Miller, 1954[45]). Political efficacy has two components that highlight different aspects of the

relationship between individuals and the public sphere: internal political efficacy, which refers to feelings of personal competence "to understand and to participate effectively in politics" (Craig, Niemi and Silver, 1990[46]), and external political efficacy, which refers to people's belief "in the responsiveness of political bodies and actors to citizens' demands" (Balch, 1974[47]; Converse, 1972[48]).

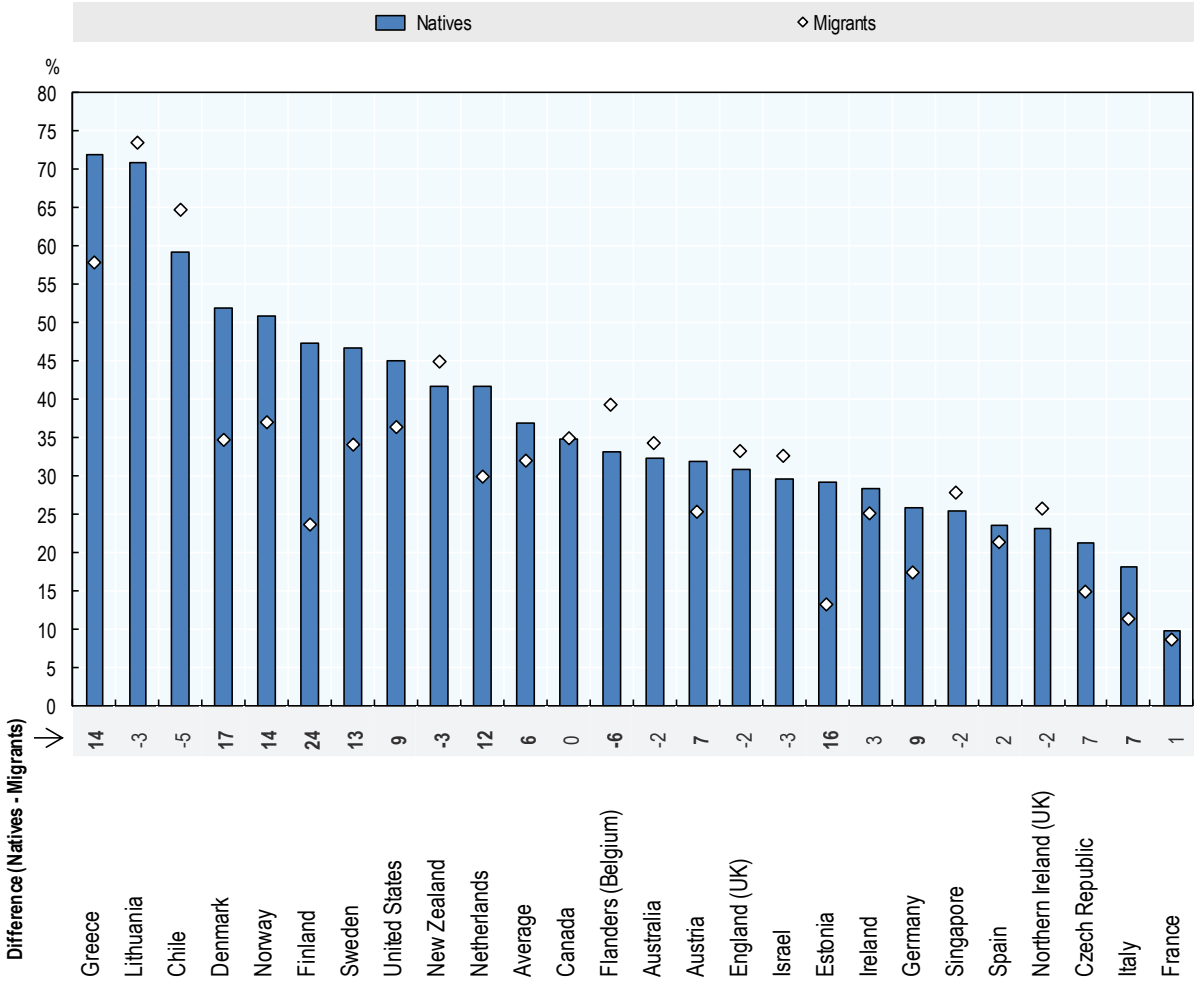
Countries differ widely in how migrants come to acquire political rights and duties, in the range of opportunities they have to engage in the political sphere, and in the extent to which migrant communities are a primary concern for politicians at the national, regional or local level. Because political participation and representation are closely tied to citizenship and to the degree to which people feel that they belong to a community and a social system, migrants might express less political efficacy than natives. It is more difficult for migrants to acquire political rights; and developing feelings of belonging and of identification with their host country requires that migrants internalise their host community's social mores and that their community recognises their contributions.

PIAAC respondents were presented with the following statement aimed at measuring their level of external political efficacy: "People like me do not have a say in what the government does" to which respondents could answer on a five-point Likert scale ranging from "strongly agree", "agree", "neither agree nor disagree", "disagree" to "strongly disagree". Lower values indicate less external political efficacy. The external political efficacy question has a long tradition in studies of political efficacy, dating back to the first National Election Studies in the United States in the 1950s (Lane, 1959[49]). Given the strong link between migrant background and political rights and representation, the question might lead foreign-born adults to consider their background as particularly salient when answering this question.

Figure 6.5 shows that in as many as 12 OECD countries native-born adults were more likely than foreign-born adults to report that they disagree or strongly disagree that people like them do not have any say about what the government does. In Finland the difference is particularly wide: 47% of native born but only 24% of foreign-born adults so reported, a difference of 24 percentage points. In Denmark, 52% of natives but only 35% of foreign-born adults reported that they disagree or strongly disagree that people like them do not have any say about what the government does, a difference of over 17 percentage points. Among OECD countries, differences between the two groups are wider than 10 percentage points in Denmark, Estonia, Finland, Greece, the Netherlands, Norway and Sweden. Interestingly, in Flanders (Belgium) and New Zealand, foreign-born adults were more likely than their native-born counterparts to report high levels of political efficacy. Results presented in Table A6.4 suggest that length of stay in the country is not a significant factor shaping differences in political efficacy among migrant groups.

Figure 6.5. Percentage of adults who reported high levels of political efficacy, by migrant background

Percentage of migrants and natives who report disagreeing or strong disagreeing that people like them don't have any say about what government does



Note: Migrants are defined as those participants whose country of birth is different that the country at which they are doing the test. Statistically significant differences are marked in bold. Estimates based on a sample size less than 30 are not shown.
Countries are ranked in descending order of the percentage of migrants who report disagreeing or strong disagreeing that people like them don't have any say about what government does. Statistically significant differences are marked in bold.
Source: (OECD, 2015[15]) Survey of Adult Skills (PIAAC) (2012, 2015), Table A6.4, www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933846289

Cultural and social reproduction theorists consider levels of political efficacy to be determined primarily by the experiences and interactions children have with important reference figures and by their experiences as they grow up. They stress the importance of socialisation processes in shaping political outcomes and civic participation (Prior, 2010[50]). During childhood, people internalise what society expects of them, but also the extent to which societal norms, and political institutions and actors will allow them to

lead the lives they want and strive to achieve (Johnson and Dawes, 2016[51]; Putnam, Leonardi and Nanetti, 1993[28]; Stolle and Hooghe, 2004[52]; Uslaner, 2002[53]). To the extent that foreign-born adults might have lived under authoritarian regimes and have come to view political institutions as not responsive to local communities, they might find it difficult to develop the level of trust in institutions that will allow them to play an active and engaged role in their communities.

The policy-feedback literature has hypothesised that policies shape citizenship. Some research has examined the extent to which different types of welfare programmes, and their design, can shape people's sense of agency, and level of civic and political engagement (Bruch, Ferree and Soss, 2016[54]; Kumlin, 2004[55]; Kumlin and Rothstein, 2005[56]). Cultural and social reproduction theories suggest that the acquisition of external political efficacy crucially depends on the experiences people have as they become adults and on the level of their parents' political efficacy. The experientialist approach views external political efficacy as the result of positive interactions and experiences with institutions, including the government.

Political efficacy can be built and destroyed over time as individuals change, and political institutions act in ways that do (or do not) foster the well-being of the communities they serve, lack transparency or are not open to citizens' involvement (Hardin, 2002[57]). More specifically, when communities provide few opportunities to consult with migrants, even though the migrants might not be citizens or have passive political rights, and when there are large differences in social and economic outcomes between native and migrant populations, migrants might perceive political institutions and actors as distant and unresponsive. Both the policy-feedback literature and experientialist theories suggest that the gap between migrants and natives in external political efficacy might vary greatly across countries, depending on the opportunities afforded to migrants to influence government action, and on the structure of the immigration and welfare policies that affect them.

The role of education and skills in promoting political efficacy

Educational attainment is one of the factors that is most strongly associated with political participation and involvement. Within countries and at any given time, adults who have more qualifications and who have attended school for longer are more likely to be politically active (Borgonovi, d'Hombres and Hoskins, 2010[58]; Lipset, 1959[59]; Putnam, 2001[60]; Wolfinger and Rosenstone, 1980[61]). The role of education in promoting political efficacy could stem from knowledge about political institutions, an understanding of economic and social affairs, and also from the greater information-processing skills that better-educated adults have developed. In fact, feelings of efficacy depend on people's ability to make use of the information in their environment to hold political institutions accountable for respecting the mandate given to them by the electorate. While voting is a key form of political participation, people have other means to ensure that they play an active role in making local, regional and national governments respond to their needs, protect their rights and promote their well-being.

Table 6.A.4 indicates that, in most PIAAC-participating countries, educational attainment and literacy proficiency are strongly and positively associated with external political efficacy. On average across participating countries, tertiary-educated graduates were 16% more likely than adults without an upper secondary degree to report disagreeing or strongly disagreeing that people like them do not have any say about what the government does. In Austria, Chile, Finland, Ireland, the Netherlands, Norway and the

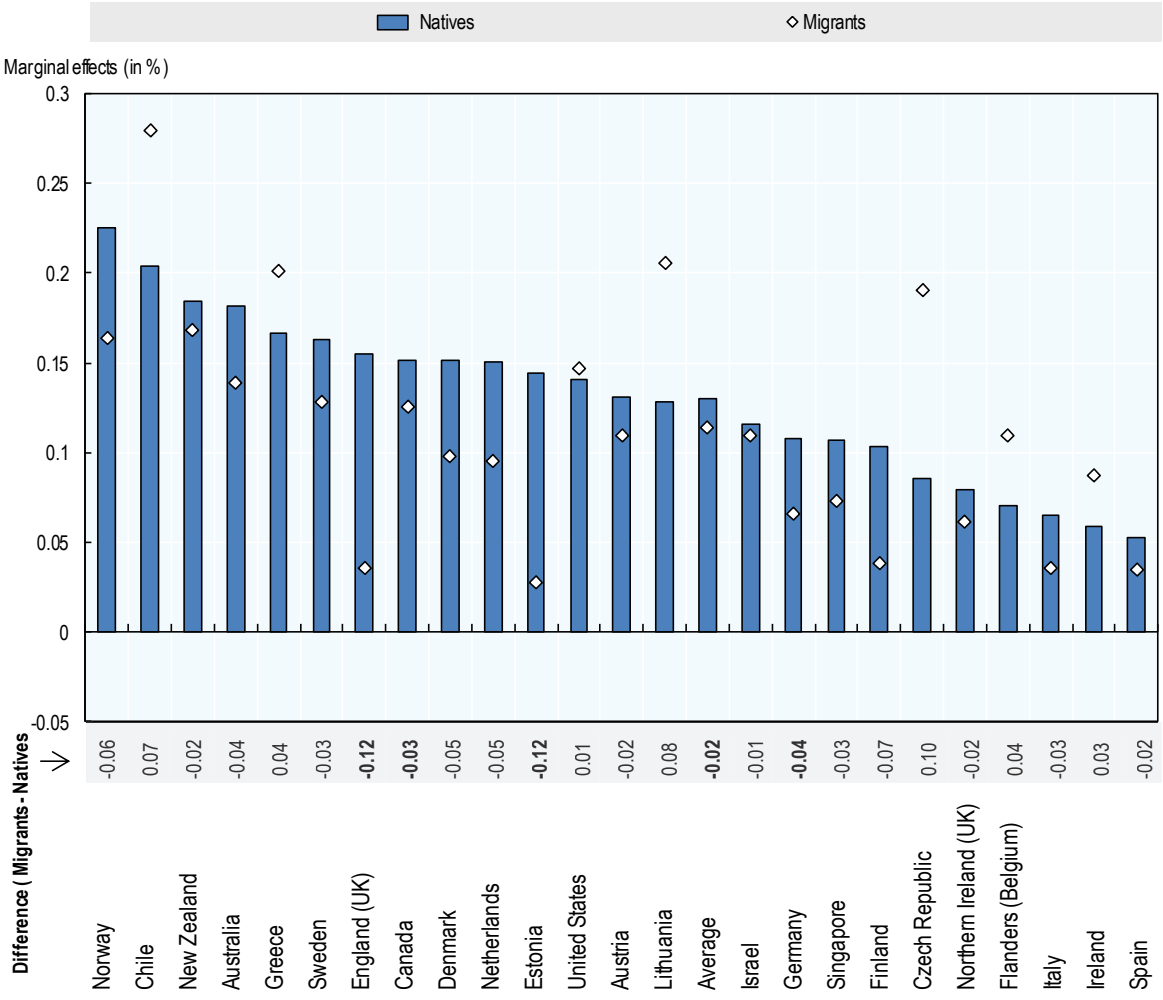
United States, the difference between tertiary-educated adults and adults without an upper secondary degree is at least 20 percentage points. Similarly, a difference of 50 score points in literacy proficiency is associated with a higher likelihood that adults will report disagreeing or strongly disagreeing that people like them do not have any say about what the government does. Among OECD countries, the change in political efficacy that is associated with literacy is particularly steep in Australia, Canada, Chile, Denmark, Greece, New Zealand, Norway, Sweden and the United States.

Figure 6.6 and Table 6.A.4 suggest that in a few countries educational attainment and literacy proficiency moderate disparities in political efficacy related to migrant background. For example, in Canada, England (UK), Estonia, and Germany, literacy proficiency is less strongly associated with political efficacy among migrants than among natives. In Denmark, Flanders (Belgium), Ireland, the Netherlands, New Zealand, Norway and the United States, educational attainment is less strongly associated with political efficacy among migrants than among natives. In the majority of countries, estimated differences between the two groups suggest a weaker relationship among migrants, although small sample sizes lead to imprecise estimates and therefore it is not possible to reject the null hypothesis of similarity in effects across the two groups at conventional levels ($p<5\%$).

These results could indicate that while access to and ability to use information are key to explaining disparities in political efficacy among native-born adults, other factors might be at play for migrants. For example, structural impediments to political participation and involvement, and feeling that their voices, needs and concerns are of secondary importance to politicians might better explain why migrants report less political efficacy. Most research on the effects of migration flows on political participation and involvement focuses on the impact that a large population of migrants has on the political views, perceptions and feelings of efficacy among natives. But if political systems are to represent the interests and needs of local communities and promote social cohesion in among diverse populations, then they must ensure that foreign-born individuals feel that institutions are responsive to their needs and that their voices are heard and respected.

Figure 6.6. Differences in the effect of literacy proficiency on political efficacy, by migrant background

Marginal effects of literacy on the probability to report disagreeing or strong disagreeing that people like them don't have any say about what government does



Note: The returns to literacy are not statistically significant in France and are therefore not presented on this chart. Migrants are defined as those participants whose country of birth is different that the country at which they are doing the test. Returns to literacy are based on a regression model and take account of differences associated with the following variables: age, gender, education, immigration background and parents' educational attainment (See model 4 in the source table). Statistically significant differences are marked in bold. Estimates based on a sample size less than 30 are not shown.

Countries are ranked in descending order of the returns to literacy for natives. Statistically significant differences are marked in bold.

Source: (OECD, 2015[15]) Survey of Adult Skills (PIAAC) (2012, 2015), Table A6.4, www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933846308

Volunteering

Volunteering is the donation of time, and sometimes expertise, by an individual to benefit a group or a cause (Wilson, 2000[62]). Although it shares several common features with other helping behaviours, volunteering is proactive and organised rather than reactive and spontaneous. Volunteering directly benefits those who engage in the activity: people who volunteer enjoy higher levels of mental and physical well-being than those who do not volunteer (Li and Ferraro, 2005[63]; Post, 2005[64]; Whiteley, 2014[65]). In addition, volunteering indicates social integration and community spirit.

Participation in volunteer activities is a strong indicator of the extent to which people are part of formal social networks and activities (Putnam, 2001[60]). Volunteering can be a way for migrants to form strong connections both with other migrants and with the wider community. As such, volunteering can be a way for migrants to mediate some of the adverse consequences that are typically linked with relocation, such as loss of social and cultural capital. Volunteering can also be an effective way for migrants to upgrade and practice language skills without having to sustain some of the costs that are typically associated with participation in language courses – essentially exchanging work for the possibility of practicing the language of the host country (Dudley, 2007[66]).

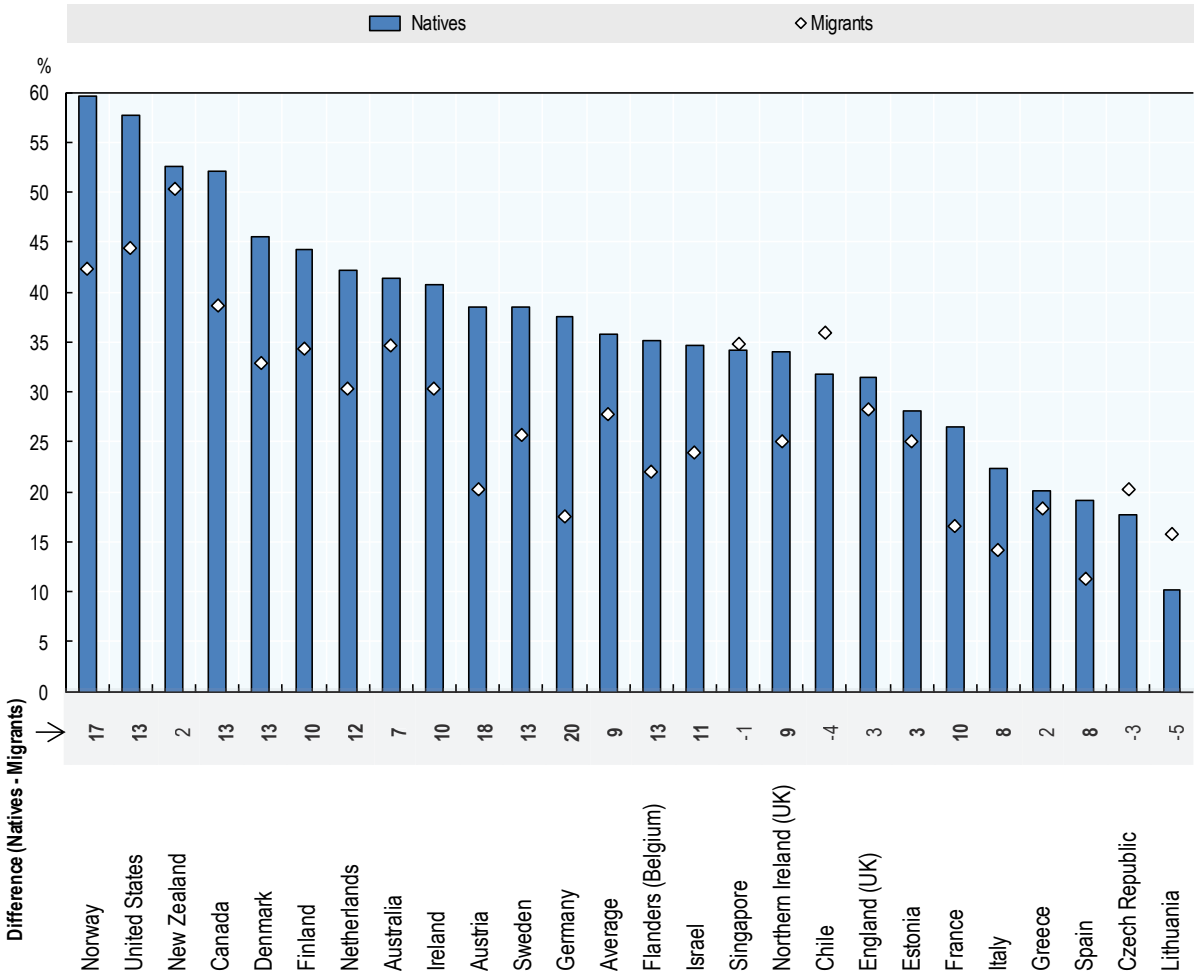
Volunteering can also be a way for migrants to improve their employment opportunities and improve their likelihood of integrating into the labour market because it can act as a proxy for work experience (Aycan and Berry, 1996[67]; Couton, 2002[68]; Dudley, 2007[66]). Employers can regard volunteering as a productive activity that gives them relevant information on the job-relevant skills and attitudes of migrants who lack work experience in their host country and whose education qualifications might be a poor indicator of human capital. As a result, participation in volunteer activities can help improve migrants' psychological well-being (because of the positive social network effect) and can result in better jobs or higher wages (Dicken and Blomberg, 1988[69]; Hackl, Halla and Pruckner, 2007[70]; Prouteau and Wolff, 2006[71]). Those migrants who volunteer in religious organisations, social welfare organisations or for groups that support migrants might also benefit psychologically from knowing that these organisations can assist them, too.

At the same time, migrants might volunteer less because they have fewer bonds in the host community, and many migrants, either out of necessity or choice, devote all of their efforts and energy to being productive members of the labour force. In addition, while the perception of discrimination against and local attitudes towards migrants might encourage migrants to volunteer for organisations that support migrant communities, they might also discourage migrants from volunteering for broader causes, which might help them forge strong links with the local community.

Few studies examine patterns of volunteering among migrant populations and whether they differ from those of native-born populations. Studies generally find that migrants are less likely to volunteer than natives but that, when they do volunteer, they tend to contribute a similar amount of time. Migrants appear to be more involved in volunteering for religious organisations and for community groups that provide programmes and services for migrants (Dechief, 2005[72]). This finding is consistent with the notion that migrants attempt to build an informal social welfare system that will insulate them from adversity.

Figure 6.7. Percentage of adults who reported that they had volunteered, by migrant background

Percentage of migrants and natives who report participating in voluntary work for charity or non-profit organisations at least once a month



Note: Migrants are defined as those participants whose country of birth is different that the country at which they are doing the test. Statistically significant differences are marked in bold. Estimates based on a sample size less than 30 are not shown.
Countries are ranked in descending order of the percentage of migrants who report participating in voluntary work for charity or non-profit organisations at least once a month. Statistically significant differences are marked in bold.
Source: (OECD, 2015[15]) Survey of Adult Skills (PIAAC) (2012, 2015), Table A6.5, www.oecd.org/skills/piaac/publicdataandanalysis

StatLink http://dx.doi.org/10.1787/888933846327

The Survey of Adult Skills (PIAAC) asked respondents the following question: "In the last 12 months, how often, if at all, did you do voluntary work, including unpaid work for a charity, political party, trade union or other non-profit organisation?" Respondents could answer: "never", "less than once a month", "less than once a week but at least once a month", "at least once a week but not every day", or "every day".

On average across participating countries, native adults were more likely to report having participated in voluntary work, including unpaid work for a charity, political party, trade union or other non-profit organisation in the year before they participated in PIAAC. Some 36% of native adults, but 27% of migrant adults reported that they had volunteered in the previous year, a difference of eight percentage points. Differences between the two groups are particularly pronounced in Germany, where 38% of natives but only around 18% of migrants reported volunteering, and in Austria, where 38% of natives but only 20% of migrants so reported. Gaps between the two groups are observed in 20 of the 25 OECD countries with available data. Among OECD countries, no such difference is observed in Chile the Czech Republic, England (UK), Greece and New Zealand.

Differences in the socio-demographic profile of natives and migrants are unrelated to both the observed differences in volunteering rates and the propensity to volunteer. In Norway and the United States, volunteering is most prevalent among natives; as many as 60% of natives (compared with 42% of migrants) in Norway and 58% of natives (compared with 45%) of migrants) in the United States reported having volunteered at least once in the year prior to the PIAAC survey. In Spain, only around 19% of natives reported having volunteered –a share 8 percentage points larger than the share of migrants who so reported.

The role of education and skills in promoting volunteering

In all countries, higher proficiency in literacy is associated with a greater likelihood of engaging in voluntary work for non-profit organisations (e.g. political, charity or religious organisations). Participation in this kind of activity is likely to be a good proxy for altruism and civic engagement, whose link with skills has been attributed to civic education. Like trust, altruism can also be beneficial for economic performance, in that it may foster co-operation (Bowles and Polania-Reyes, 2012[73]). Literacy proficiency is not equally associated with the probability that native-born and foreign-born individuals will engage in volunteering activities. In some countries, including Australia, Chile, England (UK), Flanders (Belgium), Germany, Lithuania, New Zealand, Slovenia and the United States the increase in the probability of volunteering associated with higher literacy proficiency is lower among migrants than natives (see Table 6.A.5). In the remaining countries the opposite is true. Table 6.A.5 does not reveal differences across migrants and natives in how the probability of volunteering differs depending on educational attainment.

Conclusions and policy implications

The aim of this chapter was to present a picture of the broader well-being outcomes of migrants. International comparisons of migrants' well-being present numerous challenges, as the size and characteristics of the migrant population can differ in important ways across countries (OECD, 2017[74]). This means that cross-country comparisons of migrants' well-being outcomes need to be interpreted with caution and with an awareness of both the differences in the composition of migrant populations as well as the differences in the historical impact of migration policies across countries.

Results suggest that in some countries migrants report lower levels of health than natives. Migrants (especially undocumented migrants and asylum seekers) often face legal restrictions on entitlements to health care. Other barriers include user fees, language, lack of familiarity with rights, entitlements and the overall health system, underdeveloped health literacy, administrative obstacles, social exclusion, and direct and indirect

discrimination. Health services should consider the specific challenges and needs of migrant populations to promote their health (OECD, 2017[74]). Furthermore, since stress is a major risk factor for a variety of diseases, migrants may be particularly exposed to a number of stressors, including pre-migration stressors such as refugee camp internment and catastrophic experiences, as well as post-migration stressors such as separation from family, unemployment, poverty, homesickness, acculturation stress, guilt, isolation, marginality and discrimination (Fenta, Hyman and Noh, 2004[75]; Prilleltensky, 2008[76]). Factors reducing the stress of adapting to a new country include strong social support networks within family and community, coping skills and knowledge of the new language and culture (Bhugra et al., 2011[77]; Hovey, 2000[78]; Hovey and King, 1997[79]; OECD, 2017[74]).

This chapter also identified that in some countries, migrants report lower levels of generalised trust, political efficacy and volunteering. Understanding migrants' experiences of civic and political engagement is particularly important as they may often be excluded from certain forms of civic expression or from certain public services depending on their legal status (e.g. citizenship, type of residence permit) and their ability to navigate government bureaucracy and procedures. Developing ways to ensure that migrants are able to fully feel part of their communities, that there are ways for them to feel represented by national and local governments and that they are empowered to contribute their time and energy to promote the well-being of their communities is crucial to promote social cohesion.

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Annex 6.A. Tables

Annex Table 6.A.1. Differences in self-reported health, by migrant status and individual characteristics

	% in Excellent or very good health							Model 1 - Migrant gap controlling for age, gender and parents' educational attainment		Model 2- Migrant gap controlling for age, gender, parents' educational attainment and educational attainment			
	Natives		Migrants		Diff. (Natives-migrants)					Migrant gap		Education (Tertiary minus lower than upper secondary)	
	%	S.E.	%	S.E.	% dif.	S.E.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Australia	85.6	(0.5)	84.8	(0.9)	0.8	(0.0)	0.477	0.09	0.924	0.99	0.307	10.32	0.000
Austria	84.0	(0.5)	81.1	(1.6)	2.9	(0.0)	0.095	3.69	0.020	3.19	0.036	15.46	0.000
Canada	89.1	(0.4)	87.7	(0.7)	1.5	(0.0)	0.112	1.65	0.028	2.24	0.002	9.87	0.000
Chile	67.3	(1.4)	80.8	(6.9)	-13.5	(0.1)	0.039	-6.19	0.362	-4.76	0.496	28.13	0.000
Czech Republic	88.8	(0.6)	86.2	(3.5)	2.6	(0.0)	0.454	1.55	0.525	0.48	0.853	16.92	0.000
Denmark	82.9	(0.5)	82.5	(1.0)	0.4	(0.0)	0.667	2.44	0.026	1.59	0.138	18.66	0.000
England (UK)	84.8	(0.6)	88.1	(1.4)	-3.3	(0.0)	0.029	-1.40	0.408	-1.22	0.669	11.05	0.000
Estonia	68.4	(0.4)	43.6	(1.6)	24.8	(0.0)	0.000	6.34	0.000	6.88	0.000	22.11	0.000
Finland	82.0	(0.5)	79.4	(2.6)	2.6	(0.0)	0.664	6.03	0.013	4.99	0.032	14.64	0.000
Flanders (Belgium)	85.9	(0.5)	83.4	(2.0)	2.6	(0.0)	0.292	1.65	0.181	1.29	0.280	9.62	0.000
France	81.9	(0.4)	76.1	(1.4)	5.8	(0.0)	0.000	2.93	0.011	2.02	0.058	13.02	0.000
Germany	89.3	(0.5)	84.4	(1.6)	5.0	(0.0)	0.007	3.53	0.005	2.62	0.054	10.37	0.000
Greece	87.9	(0.6)	85.3	(2.1)	2.7	(0.0)	0.236	6.30	0.001	6.07	0.001	11.54	0.000
Ireland	88.2	(0.5)	90.6	(1.0)	-2.5	(0.0)	0.033	0.20	0.881	1.06	0.441	10.27	0.000

	% in Excellent or very good health							Model 1 - Migrant gap controlling for age, gender and parents' educational attainment		Model 2- Migrant gap controlling for age, gender, parents' educational attainment and educational attainment			
	Natives		Migrants		Diff. (Natives-migrants)					Migrant gap		Education (Tertiary minus lower than upper secondary)	
	%	S.E.	%	S.E.	% dif.	S.E.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Israel	88.5	(0.5)	75.4	(1.2)	13.1	(0.0)	0.000	5.57	0.000	6.49	0.000	14.51	0.000
Italy	81.5	(0.8)	87.6	(1.6)	-6.2	(0.0)	0.001	-1.33	0.526	-1.54	0.469	10.22	0.000
Lithuania	67.0	(0.7)	57.8	(4.6)	9.1	(0.0)	0.054	-4.45	0.287	-4.27	0.336	20.50	0.000
Netherlands	83.4	(0.5)	70.3	(2.1)	13.1	(0.0)	0.000	10.30	0.000	9.78	0.000	13.41	0.000
New Zealand	86.4	(0.7)	90.1	(0.9)	-3.7	(0.0)	0.001	-2.95	0.015	-1.78	0.161	8.59	0.000
Northern Ireland (UK)	82.0	(0.8)	88.6	(2.3)	-6.6	(0.0)	0.008	-5.31	0.118	-4.64	0.212	15.47	0.000
Norway	82.9	(0.7)	83.3	(1.7)	-0.4	(0.0)	0.875	1.62	0.372	2.04	0.252	16.39	0.000
Singapore	74.0	(0.7)	80.1	(1.1)	-6.1	(0.0)	0.000	-4.49	0.004	-3.91	0.013	14.40	0.000
Slovenia	82.6	(0.6)	79.8	(1.6)	2.8	(0.0)	0.091	-1.73	0.213	-3.08	0.030	15.87	0.000
Spain	77.4	(0.8)	84.9	(1.3)	-7.5	(0.0)	0.000	-2.86	0.165	-3.70	0.060	10.47	0.000
Sweden	84.7	(0.7)	80.0	(1.5)	4.7	(0.0)	0.006	4.61	0.002	3.22	0.024	15.59	0.000
United States	85.4	(0.7)	83.6	(1.2)	1.8	(0.0)	0.294	-1.34	0.430	-2.40	0.105	19.29	0.000
Average	82.4	(0.1)	80.6	(0.5)	1.8	(0.0)	0.171	15.47	0.212	15.47	0.193	15.47	0.000

	Model 3 - Migrant gap controlling for age, gender, parents' educational attainment, educational attainment and literacy proficiency						Model 4 - Moderating role of literacy							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Literacy	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Australia	-0.43	0.664	7.42	0.000	0.06	0.000	3.08	0.599	7.45	0.000	0.06	0.000	0.01	0.546
Austria	0.12	0.936	10.72	0.000	0.11	0.000	1.96	0.783	10.69	0.000	0.11	0.000	0.01	0.792
Canada	0.78	0.274	6.93	0.000	0.05	0.000	-6.04	0.101	6.93	0.000	0.06	0.000	-0.03	0.059
Chile	-6.08	0.368	20.47	0.000	0.13	0.000	-12.18	0.752	20.47	0.000	0.13	0.000	-0.03	0.857
Czech Republic	0.38	0.887	15.79	0.000	0.02	0.258	-5.30	0.741	15.81	0.000	0.02	0.226	-0.02	0.737
Denmark	-3.17	0.013	13.80	0.000	0.10	0.000	-1.03	0.883	13.84	0.000	0.10	0.000	0.01	0.620
England (UK)	-3.76	0.061	7.14	0.000	0.09	0.000	-9.16	0.354	7.10	0.000	0.09	0.000	-0.02	0.600
Estonia	5.50	0.000	19.23	0.000	0.07	0.000	4.29	0.553	19.21	0.000	0.07	0.000	0.00	0.981
Finland	2.08	0.413	12.31	0.000	0.05	0.002	-8.29	0.336	12.15	0.000	0.06	0.002	-0.04	0.184
Flanders (Belgium)	0.07	0.777	7.53	0.000	0.04	0.005	-7.47	0.334	7.47	0.000	0.04	0.004	-0.03	0.264
France	-0.79	0.593	8.15	0.000	0.09	0.000	2.30	0.563	8.17	0.000	0.09	0.000	0.01	0.462
Germany	0.67	0.574	5.48	0.002	0.09	0.000	-0.94	0.880	5.49	0.002	0.09	0.000	-0.01	0.971
Greece	5.87	0.002	10.73	0.000	0.03	0.119	9.78	0.366	10.71	0.000	0.02	0.191	0.02	0.708
Ireland	0.34	0.823	7.69	0.000	0.05	0.000	-16.20	0.020	7.44	0.000	0.07	0.000	-0.07	0.012
Israel	5.00	0.000	9.40	0.000	0.09	0.000	-1.55	0.225	9.38	0.000	0.10	0.000	-0.03	0.011
Italy	-2.08	0.339	9.38	0.000	0.02	0.229	-12.92	0.362	9.35	0.000	0.03	0.161	-0.05	0.437
Lithuania	-5.36	0.246	17.22	0.000	0.11	0.000	-29.00	0.468	17.10	0.000	0.11	0.000	-0.09	0.525
Netherlands	7.15	0.000	10.18	0.000	0.07	0.000	13.69	0.075	10.26	0.000	0.06	0.000	0.03	0.376
New Zealand	-3.17	0.014	5.50	0.000	0.07	0.000	-18.44	0.004	5.33	0.001	0.08	0.000	-0.06	0.014
Northern Ireland (UK)	-6.05	0.091	10.60	0.000	0.10	0.000	-35.58	0.036	10.40	0.000	0.11	0.000	-0.12	0.045
Norway	-0.64	0.753	14.01	0.000	0.06	0.000	-13.19	0.036	13.82	0.000	0.07	0.000	-0.05	0.045
Singapore	-5.51	0.001	6.76	0.002	0.09	0.000	-4.13	0.497	6.77	0.002	0.09	0.000	0.01	0.804
Slovenia	-3.94	0.007	12.59	0.000	0.06	0.000	-19.36	0.006	12.37	0.000	0.08	0.000	-0.07	0.018
Spain	-6.54	0.001	5.27	0.005	0.11	0.000	-9.41	0.253	5.22	0.005	0.11	0.000	-0.01	0.719
Sweden	-1.29	0.474	11.53	0.000	0.08	0.000	-2.59	0.875	11.49	0.000	0.08	0.000	-0.01	0.989

	Model 3 - Migrant gap controlling for age, gender, parents' educational attainment, educational attainment and literacy proficiency						Model 4 - Moderating role of literacy							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Literacy	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
United States	-5.30	0.000	12.88	0.000	0.10	0.000	-22.91	0.000	13.09	0.000	0.12	0.000	-0.08	0.001
Average	15.47	0.320	15.47	0.000	15.47	0.024	15.47	0.388	15.47	0.000	15.47	0.022	15.47	0.453

	Model 5 - Moderating role of education								Model 6 - Migrant gap controlling for individual background characteristics as well as length of stay in the country							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Tertiary education		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Length of stay	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Australia	-0.57	0.652	7.58	0.000	0.06	0.000	-0.48	0.853	m	m	m	m	m	m	m	m
Austria	-0.51	0.775	11.63	0.000	0.11	0.000	-4.26	0.294	-5.34	0.110	10.39	0.000	0.11	0.000	-0.25	0.039
Canada	-1.19	0.313	8.49	0.000	0.05	0.000	-4.86	0.001	-1.34	0.274	6.77	0.000	0.05	0.000	-0.10	0.036
Chile	-10.39	0.394	21.10	0.000	0.13	0.000	-13.77	0.421	-19.06	0.264	20.80	0.000	0.13	0.000	-1.18	0.211
Czech Republic	0.79	0.761	15.50	0.000	0.02	0.256	7.31	0.269	-6.06	0.252	15.55	0.000	0.02	0.258	-0.18	0.178
Denmark	-3.86	0.009	14.16	0.000	0.10	0.000	-2.57	0.264	-9.50	0.000	13.53	0.000	0.11	0.000	-0.31	0.000
England (UK)	-3.69	0.152	7.12	0.000	0.09	0.000	0.20	0.739	-9.97	0.002	6.86	0.000	0.09	0.000	-0.29	0.007
Estonia	5.21	0.004	19.34	0.000	0.07	0.000	-0.66	0.801	2.92	0.461	19.25	0.000	0.07	0.000	-0.07	0.511
Finland	2.40	0.382	12.24	0.000	0.05	0.002	1.40	0.797	-9.62	0.042	12.05	0.000	0.06	0.000	-0.74	0.000
Flanders (Belgium)	-0.43	0.971	7.73	0.000	0.04	0.005	-2.40	0.621	-3.85	0.214	7.49	0.000	0.04	0.003	-0.20	0.063
France	-1.79	0.241	9.08	0.000	0.09	0.000	-5.36	0.090	0.96	0.555	8.16	0.000	0.09	0.000	0.06	0.279
Germany	0.02	0.924	6.15	0.002	0.09	0.000	-3.23	0.333	-0.31	0.901	5.38	0.003	0.09	0.000	-0.05	0.591
Greece	5.17	0.010	11.21	0.000	0.03	0.116	-3.41	0.406	2.28	0.537	10.72	0.000	0.03	0.104	-0.13	0.220
Ireland	-0.18	0.886	8.17	0.000	0.05	0.000	-1.92	0.382	-3.07	0.112	7.55	0.000	0.05	0.000	-0.18	0.015
Israel	3.65	0.001	10.84	0.000	0.09	0.000	-3.80	0.248	13.08	0.000	10.06	0.000	0.08	0.000	0.24	0.000
Italy	-1.42	0.528	8.80	0.001	0.02	0.236	13.38	0.124	0.56	0.880	9.39	0.000	0.02	0.255	0.14	0.450
Lithuania	-8.74	0.094	17.82	0.000	0.11	0.000	-14.41	0.027	-10.73	0.486	17.19	0.000	0.11	0.000	-0.13	0.712
Netherlands	8.35	0.000	9.24	0.000	0.06	0.000	5.23	0.222	7.85	0.009	10.20	0.000	0.06	0.000	0.03	0.757
New Zealand	-4.33	0.012	6.29	0.000	0.07	0.000	-2.81	0.265	-7.58	0.000	4.98	0.001	0.07	0.000	-0.24	0.000
Northern Ireland (UK)	-15.46	0.001	12.60	0.000	0.10	0.000	-24.94	0.001	-5.80	0.364	10.61	0.000	0.10	0.000	0.01	0.912
Norway	-1.64	0.430	14.53	0.000	0.06	0.000	-3.32	0.232	-6.68	0.009	13.73	0.000	0.06	0.000	-0.35	0.001
Singapore	-3.46	0.086	5.84	0.010	0.09	0.000	4.16	0.151	-9.22	0.001	6.58	0.003	0.09	0.000	-0.17	0.067
Slovenia	-4.51	0.010	13.14	0.000	0.06	0.000	-7.28	0.225	-10.68	0.002	12.66	0.000	0.07	0.000	-0.22	0.048

	Model 5 - Moderating role of education								Model 6 - Migrant gap controlling for individual background characteristics as well as length of stay in the country							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Tertiary education		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Length of stay	
Spain	-7.08	0.001	5.53	0.004	0.11	0.000	-3.13	0.471	-8.05	0.004	5.27	0.005	0.11	0.000	-0.11	0.425
Sweden	-2.53	0.189	12.85	0.000	0.08	0.000	-5.55	0.089	-7.00	0.046	11.11	0.000	0.09	0.000	-0.25	0.014
United States	-6.73	0.000	14.12	0.000	0.10	0.000	-7.00	0.026	-11.01	0.006	12.73	0.000	0.11	0.000	-0.24	0.069
Average	15.47	0.301	15.47	0.001	15.47	0.024	15.47	0.321	15.47	0.221	15.47	0.000	15.47	0.025	15.47	0.224

Note: Marginal probabilities are multiplied by 100. Differences are based on a regression model and take account of differences associated with the following variables: age, gender, education, immigration background and parents' educational attainment. Only the score-point differences between two contrast categories are shown, which is useful for showing the relative significance of each socio-demographic variable vis-a-vis observed score-point differences. Estimates based on a sample size less than 30 are not shown.
Source: Survey of Adult Skills (PIAAC) (2012, 2015)

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Annex Table 6.A.2. Differences in the percentage of individuals who report disagreeing or strongly disagreeing that there are only a few people they can trust completely, by migrant status and individual characteristics

	% with high trust (disagree or strongly disagree that there are only a few people you can trust completely)							Model 1 - Migrant gap controlling for age, gender and parents' educational attainment		Model 2- Migrant gap controlling for age, gender, parents' educational attainment and educational attainment			
	Natives		Migrants		Diff. (Natives-migrants)					Migrant gap		Education (Tertiary minus lower than upper secondary)	
	%	S.E.	%	S.E.	% dif.	S.E.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Australia	23.9	(0.9)	20.5	(1.0)	3.4	(0.0)	0.011	5.44	0.000	7.10	0.000	15.01	0.000
Austria	22.9	(0.7)	18.7	(1.4)	4.2	(0.0)	0.009	4.14	0.021	4.31	0.014	13.64	0.000
Canada	25.8	(0.5)	22.2	(0.9)	3.6	(0.0)	0.005	3.99	0.000	4.98	0.000	9.89	0.000
Chile	14.1	(0.8)	13.4	(4.1)	0.7	(0.0)	0.871	1.40	0.770	1.65	0.739	3.16	0.162
Czech Republic	7.1	(0.5)	7.2	(2.7)	-0.1	(0.0)	0.958	-0.03	0.993	0.94	0.746	4.71	0.008
Denmark	46.5	(0.6)	32.4	(1.2)	14.1	(0.0)	0.000	14.62	0.000	14.37	0.000	28.15	0.000
England (UK)	19.1	(0.8)	16.7	(1.4)	2.4	(0.0)	0.153	3.15	0.064	3.74	0.025	13.65	0.000
Estonia	9.9	(0.4)	8.8	(1.0)	1.0	(0.0)	0.387	1.10	0.381	1.04	0.417	3.70	0.001
Finland	33.7	(0.6)	24.2	(2.8)	9.5	(0.0)	0.014	10.10	0.005	8.30	0.019	21.49	0.000
Flanders (Belgium)	18.2	(0.6)	22.0	(2.4)	-3.8	(0.0)	0.196	-3.64	0.044	-4.19	0.027	18.61	0.000
France	10.1	(0.3)	10.1	(1.0)	0.0	(0.0)	0.558	-0.72	0.754	-0.99	0.634	7.79	0.000
Germany	15.0	(0.6)	13.7	(1.5)	1.4	(0.0)	0.397	0.64	0.733	0.54	0.802	9.68	0.000
Greece	7.8	(0.5)	8.7	(1.8)	-0.9	(0.0)	0.625	0.26	0.882	-0.09	0.959	3.85	0.017
Ireland	16.5	(0.6)	14.2	(1.0)	2.3	(0.0)	0.037	3.59	0.004	3.97	0.001	9.54	0.000
Israel	30.2	(0.9)	23.6	(1.3)	6.6	(0.0)	0.000	8.92	0.000	9.66	0.000	16.19	0.000
Italy	8.5	(0.5)	11.4	(1.9)	-3.0	(0.0)	0.127	-2.93	0.072	-3.50	0.031	8.18	0.000
Lithuania	18.0	(0.7)	21.3	(4.6)	-3.2	(0.0)	0.491	-3.48	0.416	-3.42	0.434	10.33	0.000
Netherlands	32.7	(0.7)	22.1	(1.7)	10.6	(0.0)	0.000	10.73	0.000	10.00	0.000	22.11	0.000
New Zealand	25.2	(0.8)	22.1	(1.3)	3.1	(0.0)	0.051	5.03	0.002	6.47	0.000	11.58	0.000
Northern Ireland (UK)	16.0	(0.8)	18.5	(2.4)	-2.4	(0.0)	0.343	-2.00	0.401	-1.71	0.510	14.89	0.000
Norway	34.7	(0.7)	29.0	(2.1)	5.7	(0.0)	0.022	4.89	0.038	5.80	0.013	21.74	0.000

	% with high trust (disagree or strongly disagree that there are only a few people you can trust completely)							Model 1 - Migrant gap controlling for age, gender and parents' educational attainment		Model 2- Migrant gap controlling for age, gender, parents' educational attainment and educational attainment			
	Natives		Migrants		Diff. (Natives-migrants)					Migrant gap		Education (Tertiary minus lower than upper secondary)	
	%	S.E.	%	S.E.	% dif.	S.E.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Singapore	17.1	(0.6)	23.4	(1.1)	-6.3	(0.0)	0.000	-5.28	0.000	-4.94	0.000	3.38	0.075
Slovenia	12.1	(0.5)	11.5	(1.6)	0.6	(0.0)	0.755	-1.10	0.504	-2.49	0.137	13.70	0.000
Spain	22.2	(0.6)	15.1	(1.4)	7.1	(0.0)	0.000	9.33	0.000	7.57	0.000	11.94	0.000
Sweden	35.0	(0.8)	26.6	(1.6)	8.4	(0.0)	0.000	8.39	0.000	8.07	0.000	19.95	0.000
United States	23.4	(0.8)	15.7	(1.6)	7.7	(0.0)	0.000	7.20	0.001	7.63	0.000	12.63	0.001
Average	21.0	(0.1)	18.2	(0.4)	2.8	(0.0)	0.231	3.22	0.234	3.26	0.212	12.67	0.010

	Model 3 - Migrant gap controlling for age, gender, parents' educational attainment, educational attainment and literacy proficiency						Model 4 - Moderating role of literacy							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Literacy	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Australia	4.77	0.000	9.72	0.000	0.13	0.000	-12.03	0.153	9.43	0.000	0.15	0.000	-0.06	0.039
Austria	1.34	0.455	7.84	0.001	0.14	0.000	-27.30	0.023	7.92	0.001	0.16	0.000	-0.11	0.015
Canada	2.20	0.020	4.43	0.004	0.10	0.000	-15.27	0.015	4.38	0.008	0.12	0.000	-0.07	0.004
Chile	1.51	0.761	2.29	0.261	0.02	0.421	-12.27	0.495	2.27	0.267	0.02	0.397	-0.06	0.381
Czech Republic	0.70	0.802	3.37	0.077	0.03	0.066	17.45	0.381	3.35	0.078	0.03	0.119	0.06	0.412
Denmark	8.90	0.000	21.86	0.000	0.14	0.000	-7.83	0.320	21.68	0.000	0.15	0.000	-0.07	0.027
England (UK)	1.78	0.255	9.97	0.000	0.08	0.000	-13.99	0.231	9.79	0.000	0.09	0.000	-0.06	0.167
Estonia	0.87	0.505	3.37	0.005	0.01	0.468	-5.88	0.430	3.31	0.006	0.01	0.362	-0.03	0.342
Finland	6.34	0.076	19.64	0.000	0.04	0.062	-6.90	0.703	19.53	0.000	0.05	0.040	-0.05	0.435
Flanders (Belgium)	-4.86	0.012	17.27	0.000	0.03	0.057	1.50	0.752	17.27	0.000	0.02	0.114	0.03	0.772
France	-1.52	0.343	6.58	0.000	0.02	0.014	-2.54	0.603	6.58	0.000	0.03	0.045	0.00	0.481
Germany	-1.89	0.180	5.03	0.007	0.10	0.000	-11.52	0.001	5.09	0.004	0.10	0.000	-0.04	0.002
Greece	-0.15	0.933	3.66	0.023	0.01	0.633	-8.22	0.346	3.67	0.022	0.01	0.474	-0.03	0.343
Ireland	3.49	0.003	8.12	0.000	0.03	0.108	-4.80	0.673	7.92	0.000	0.04	0.048	-0.03	0.452
Israel	7.96	0.000	12.21	0.000	0.09	0.000	-1.90	0.297	12.15	0.000	0.10	0.000	-0.04	0.051
Italy	-4.46	0.010	6.69	0.000	0.04	0.008	-15.24	0.105	6.64	0.000	0.05	0.004	-0.04	0.223
Lithuania	-3.95	0.365	8.54	0.003	0.06	0.009	19.56	0.626	8.61	0.003	0.06	0.013	0.09	0.538
Netherlands	5.36	0.035	15.84	0.000	0.13	0.000	-20.07	0.135	15.58	0.000	0.15	0.000	-0.10	0.053
New Zealand	4.38	0.009	6.27	0.003	0.12	0.000	-13.90	0.107	5.90	0.004	0.14	0.000	-0.06	0.039
Northern Ireland (UK)	-2.74	0.276	12.07	0.000	0.06	0.008	-21.95	0.104	11.84	0.000	0.07	0.005	-0.07	0.130
Norway	0.76	0.757	16.51	0.000	0.13	0.000	-14.83	0.184	16.24	0.000	0.14	0.000	-0.06	0.150
Singapore	-5.60	0.000	-0.07	0.955	0.04	0.005	-18.14	0.002	-0.32	0.862	0.06	0.001	-0.05	0.025
Slovenia	-3.03	0.077	11.82	0.000	0.04	0.014	-19.10	0.018	11.79	0.000	0.05	0.004	-0.06	0.045
Spain	6.57	0.001	9.98	0.000	0.04	0.017	11.99	0.256	10.04	0.000	0.04	0.037	0.02	0.618

	Model 3 - Migrant gap controlling for age, gender, parents' educational attainment, educational attainment and literacy proficiency						Model 4 - Moderating role of literacy							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Literacy	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Sweden	2.19	0.348	13.63	0.000	0.13	0.000	5.26	0.640	13.65	0.000	0.12	0.000	0.01	0.765
United States	6.01	0.004	8.98	0.001	0.07	0.000	-6.23	0.071	9.13	0.000	0.07	0.000	-0.05	0.015
Average	1.42	0.240	9.45	0.052	0.07	0.073	-7.85	0.295	9.36	0.048	0.08	0.064	-0.04	0.251

	Model 5 - Moderating role of education								Model 6 - Migrant gap controlling for individual background characteristics as well as length of stay in the country							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Tertiary education		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Length of stay	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Australia	2.36	0.214	10.92	0.000	0.13	0.000	-4.69	0.079	m	m	m	m	m	m	m	m
Austria	0.04	0.985	8.64	0.000	0.14	0.000	-4.69	0.195	2.16	0.524	3.26	0.001	0.14	0.000	0.04	0.761
Canada	-1.49	0.700	5.85	0.001	0.10	0.000	-6.24	0.003	5.72	0.002	5.16	0.003	0.10	0.000	0.15	0.028
Chile	-0.48	0.957	2.51	0.212	0.02	0.427	-4.51	0.644	2.77	0.523	4.66	0.274	0.02	0.421	0.12	0.726
Czech Republic	5.10	0.083	2.98	0.096	0.03	0.063	7.21	0.149	3.86	0.343	5.02	0.077	0.03	0.069	0.14	0.308
Denmark	6.21	0.004	22.61	0.000	0.14	0.000	-6.05	0.044	3.35	0.254	2.22	0.000	0.14	0.000	-0.31	0.008
England (UK)	-0.18	0.906	10.44	0.000	0.08	0.000	-3.44	0.426	2.23	0.325	6.86	0.000	0.08	0.000	0.03	0.731
Estonia	-0.33	0.867	3.59	0.004	0.01	0.484	-2.07	0.387	2.44	0.476	5.00	0.005	0.01	0.470	0.05	0.581
Finland	3.72	0.410	19.96	0.000	0.04	0.063	-6.58	0.322	10.30	0.204	4.85	0.000	0.04	0.079	0.24	0.526
Flanders (Belgium)	-5.96	0.005	17.54	0.000	0.03	0.053	-3.02	0.185	-2.77	0.440	3.24	0.000	0.03	0.069	0.16	0.264
France	-1.68	0.532	6.65	0.000	0.02	0.014	-0.44	0.917	-1.62	0.494	3.52	0.000	0.02	0.014	-0.02	0.906
Germany	-1.81	0.319	4.99	0.006	0.10	0.000	0.22	0.964	-5.55	0.035	2.61	0.011	0.10	0.000	-0.18	0.145
Greece	1.01	0.688	3.30	0.044	0.01	0.653	3.34	0.338	3.15	0.394	5.55	0.024	0.01	0.683	0.13	0.287
Ireland	1.10	0.513	8.98	0.000	0.03	0.109	-4.90	0.073	5.37	0.001	4.21	0.000	0.03	0.135	0.13	0.165
Israel	4.98	0.011	13.22	0.000	0.09	0.000	-5.42	0.374	22.62	0.000	11.91	0.000	0.09	0.000	0.50	0.000
Italy	-4.83	0.014	6.91	0.000	0.04	0.008	-2.85	0.456	-2.74	0.329	2.60	0.000	0.04	0.009	0.09	0.458
Lithuania	-8.39	0.114	8.97	0.002	0.06	0.008	-15.41	0.038	-13.34	0.632	2.78	0.004	0.06	0.009	-0.24	0.708
Netherlands	1.40	0.639	16.94	0.000	0.13	0.000	-10.23	0.061	11.32	0.014	5.47	0.000	0.13	0.000	0.25	0.135
New Zealand	-0.99	0.536	8.48	0.000	0.12	0.000	-9.02	0.002	3.08	0.199	6.93	0.003	0.12	0.000	-0.08	0.364
Northern Ireland (UK)	-2.10	0.515	11.94	0.000	0.06	0.007	1.42	0.706	0.10	0.936	1.14	0.000	0.06	0.009	0.17	0.235
Norway	-0.45	0.884	16.82	0.000	0.13	0.000	-2.51	0.544	1.18	0.765	5.86	0.000	0.13	0.000	0.03	0.895
Singapore	-6.97	0.000	0.54	0.823	0.04	0.004	-2.32	0.302	-7.45	0.001	0.99	0.916	0.04	0.004	-0.09	0.265
Slovenia	-4.46	0.019	12.39	0.000	0.04	0.012	-6.27	0.087	-3.01	0.414	3.22	0.000	0.04	0.014	0.00	0.997

	Model 5 - Moderating role of education								Model 6 - Migrant gap controlling for individual background characteristics as well as length of stay in the country							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Tertiary education		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Length of stay	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Spain	6.30	0.012	10.05	0.000	0.04	0.017	-0.86	0.827	2.90	0.409	5.73	0.000	0.04	0.013	-0.29	0.165
Sweden	-0.16	0.970	14.75	0.000	0.13	0.000	-6.09	0.104	0.52	0.873	5.20	0.000	0.13	0.000	-0.08	0.596
United States	-0.64	0.718	11.12	0.000	0.07	0.000	-14.79	0.002	2.23	0.439	4.02	0.001	0.07	0.000	-0.18	0.110
Average	-0.33	0.447	10.04	0.046	0.07	0.074	-4.24	0.316	1.95	0.361	4.48	0.053	0.07	0.080	0.03	0.415

Note: Marginal probabilities are multiplied by 100. Differences are based on a regression model and take account of differences associated with the following variables: age, gender, education, immigration background and parents' educational attainment. Only the score-point differences between two contrast categories are shown, which is useful for showing the relative significance of each socio-demographic variable vis-a-vis observed score-point differences. Estimates based on a sample size less than 30 are not shown.
Source: Survey of Adult Skills (PIAAC) (2012, 2015)

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Annex Table 6.A.3. Differences in the percentage of individuals who report disagreeing or strongly disagreeing that if they are not careful other people will take advantage of them, by migrant status and individual characteristics

	% who disagree or strongly disagree that if you are not careful, other people will take advantage of you							Model 1 - Migrant gap controlling for age, gender and parents' educational attainment		Model 2- Migrant gap controlling for age, gender, parents' educational attainment and educational attainment			
	Natives		Migrants		Diff. (Natives-migrants)					Migrant gap		Education (Tertiary minus lower than upper secondary)	
	%	S.E.	%	S.E.	% dif.	S.E.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Australia	14.0	(0.6)	14.5	(1.0)	-0.6	(0.0)	0.573	1.15	0.260	2.23	0.032	11.14	0.000
Austria	18.3	(0.7)	15.5	(1.3)	2.9	(0.0)	0.052	2.95	0.064	3.26	0.038	13.50	0.000
Canada	16.1	(0.4)	14.1	(0.7)	1.9	(0.0)	0.126	1.95	0.008	2.65	0.001	5.81	0.000
Chile	10.2	(0.6)	6.8	(3.7)	3.4	(0.0)	0.345	3.94	0.544	4.05	0.530	0.10	0.955
Czech Republic	5.0	(0.5)	5.8	(2.7)	-0.8	(0.0)	0.766	-0.80	0.748	-0.23	0.925	3.56	0.003
Denmark	40.0	(0.6)	25.1	(1.2)	15.0	(0.0)	0.000	16.15	0.000	15.88	0.000	30.24	0.000
England (UK)	13.3	(0.6)	10.8	(1.4)	2.5	(0.0)	0.123	2.68	0.149	3.12	0.073	9.30	0.000
Estonia	9.9	(0.3)	5.9	(0.7)	4.0	(0.0)	0.000	5.08	0.000	5.03	0.000	2.85	0.021
Finland	38.9	(0.6)	23.9	(2.8)	15.0	(0.0)	0.003	13.29	0.001	12.27	0.002	15.70	0.000
Flanders (Belgium)	18.6	(0.6)	20.8	(1.9)	-2.1	(0.0)	0.172	-3.60	0.129	-4.15	0.056	16.73	0.000
France	14.4	(0.4)	11.6	(1.0)	2.8	(0.0)	0.017	2.10	0.120	1.99	0.128	8.75	0.000
Germany	8.5	(0.5)	6.5	(0.9)	2.1	(0.0)	0.035	1.70	0.150	1.62	0.175	7.39	0.000
Greece	4.5	(0.4)	7.0	(1.6)	-2.5	(0.0)	0.126	-1.76	0.141	-1.97	0.100	2.65	0.035
Ireland	12.4	(0.5)	12.4	(1.1)	0.1	(0.0)	0.967	0.69	0.583	1.01	0.415	7.17	0.000
Israel	24.2	(0.6)	21.3	(1.2)	2.9	(0.0)	0.033	5.99	0.000	6.59	0.000	14.80	0.000
Italy	6.9	(0.5)	7.6	(1.4)	-0.7	(0.0)	0.645	-0.57	0.693	-1.29	0.365	8.88	0.000
Lithuania	8.3	(0.5)	9.6	(2.7)	-1.3	(0.0)	0.638	-0.88	0.744	-0.86	0.751	2.39	0.239
Netherlands	25.7	(0.6)	18.2	(1.8)	7.5	(0.0)	0.000	7.60	0.002	7.12	0.003	19.39	0.000
New Zealand	16.2	(0.6)	15.0	(1.0)	1.1	(0.0)	0.358	1.93	0.127	3.07	0.026	8.79	0.000
Northern Ireland (UK)	10.3	(0.7)	10.2	(2.1)	0.1	(0.0)	0.967	0.33	0.884	0.70	0.782	7.19	0.000
Norway	31.2	(0.7)	20.8	(1.6)	10.4	(0.0)	0.000	10.94	0.000	11.68	0.000	22.43	0.000
Singapore	11.6	(0.5)	16.9	(1.2)	-5.3	(0.0)	0.000	-4.94	0.000	-4.95	0.000	-5.98	0.000

	% who disagree or strongly disagree that if you are not careful, other people will take advantage of you							Model 1 - Migrant gap controlling for age, gender and parents' educational attainment		Model 2- Migrant gap controlling for age, gender, parents' educational attainment and educational attainment			
	Natives		Migrants		Diff. (Natives-migrants)					Migrant gap		Education (Tertiary minus lower than upper secondary)	
	%	S.E.	%	S.E.	% dif.	S.E.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Slovenia	5.4	(0.3)	4.2	(0.9)	1.2	(0.0)	0.236	0.81	0.481	0.27	0.813	4.98	0.000
Spain	17.1	(0.6)	14.7	(1.3)	2.4	(0.0)	0.050	3.03	0.058	1.84	0.290	10.84	0.000
Sweden	43.5	(0.8)	31.7	(1.9)	11.8	(0.0)	0.000	11.65	0.000	11.78	0.000	14.36	0.000
United States	10.6	(0.5)	12.5	(1.3)	-1.9	(0.0)	0.141	-2.42	0.019	-2.45	0.018	8.13	0.000
Average	16.7	(0.1)	14.0	(0.3)	2.8	(0.0)	0.245	15.47	0.227	15.47	0.212	15.47	0.048

	Model 3 - Migrant gap controlling for age, gender, parents' educational attainment, educational attainment and literacy proficiency						Model 4 - Moderating role of literacy							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Literacy	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Australia	1.61	0.121	9.77	0.000	0.03	0.005	-2.69	0.716	9.69	0.000	0.04	0.010	-0.02	0.555
Austria	0.94	0.535	8.91	0.000	0.11	0.000	-20.85	0.073	8.95	0.000	0.13	0.000	-0.08	0.061
Canada	2.05	0.006	4.68	0.001	0.02	0.047	-10.30	0.107	4.72	0.001	0.04	0.002	-0.05	0.044
Chile	4.18	0.522	0.86	0.574	-0.01	0.525	16.88	0.620	0.89	0.562	-0.01	0.459	0.05	0.735
Czech Republic	-0.43	0.855	2.19	0.070	0.03	0.031	24.22	0.065	2.16	0.072	0.03	0.068	0.08	0.056
Denmark	10.49	0.000	23.88	0.000	0.14	0.000	-15.67	0.080	23.61	0.000	0.16	0.000	-0.10	0.004
England (UK)	2.33	0.156	7.88	0.000	0.03	0.033	-17.90	0.127	7.67	0.000	0.05	0.006	-0.08	0.070
Estonia	4.23	0.000	1.32	0.256	0.04	0.002	-21.21	0.008	1.14	0.319	0.05	0.000	-0.10	0.002
Finland	12.17	0.003	15.64	0.000	0.00	0.965	-28.42	0.136	15.30	0.000	0.02	0.367	-0.16	0.028
Flanders (Belgium)	-5.39	0.008	14.24	0.000	0.05	0.010	-10.84	0.031	14.25	0.000	0.05	0.004	-0.03	0.095
France	0.80	0.548	6.44	0.000	0.05	0.000	0.21	0.722	6.44	0.000	0.05	0.000	0.00	0.634
Germany	0.07	0.986	4.52	0.005	0.06	0.000	-2.30	0.201	4.54	0.004	0.06	0.000	-0.01	0.194
Greece	-1.82	0.130	3.21	0.013	-0.02	0.120	2.54	0.702	3.19	0.013	-0.02	0.082	0.02	0.513
Ireland	0.41	0.745	5.22	0.001	0.04	0.007	-8.45	0.276	5.00	0.001	0.05	0.004	-0.03	0.243
Israel	5.15	0.000	11.40	0.000	0.08	0.000	-2.12	0.012	11.37	0.000	0.09	0.000	-0.03	0.001
Italy	-1.67	0.233	8.26	0.000	0.02	0.187	-4.29	0.691	8.25	0.000	0.02	0.171	-0.01	0.801
Lithuania	-1.22	0.650	1.19	0.592	0.04	0.005	37.21	0.157	1.25	0.571	0.04	0.014	0.14	0.118
Netherlands	3.21	0.172	14.12	0.000	0.11	0.000	-28.72	0.020	13.80	0.000	0.14	0.000	-0.12	0.012
New Zealand	1.76	0.212	5.48	0.007	0.08	0.000	-16.65	0.045	5.11	0.014	0.10	0.000	-0.06	0.026
Northern Ireland (UK)	0.43	0.878	6.53	0.001	0.01	0.411	-3.21	0.811	6.49	0.001	0.02	0.391	-0.01	0.770
Norway	5.70	0.007	15.82	0.000	0.16	0.000	-14.26	0.182	15.53	0.000	0.18	0.000	-0.07	0.063
Singapore	-4.56	0.000	-4.02	0.010	-0.02	0.063	-9.37	0.033	-4.10	0.008	-0.02	0.223	-0.02	0.277
Slovenia	-0.23	0.840	2.78	0.008	0.05	0.000	-11.86	0.065	2.80	0.008	0.06	0.000	-0.05	0.069
Spain	1.51	0.427	10.17	0.000	0.01	0.358	-2.85	0.083	10.09	0.000	0.02	0.143	-0.02	0.056
Sweden	5.71	0.038	7.95	0.002	0.13	0.000	7.58	0.538	7.96	0.003	0.13	0.000	0.01	0.886

	Model 3 - Migrant gap controlling for age, gender, parents' educational attainment, educational attainment and literacy proficiency						Model 4 - Moderating role of literacy							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Literacy	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
United States	-2.13	0.044	8.89	0.000	-0.01	0.198	-7.43	0.001	9.00	0.000	-0.01	0.605	-0.02	0.002
Average	15.47	0.312	15.47	0.059	15.47	0.114	15.47	0.250	15.47	0.061	15.47	0.098	15.47	0.243

	Model 5 - Moderating role of education								Model 6 - Migrant gap controlling for individual background characteristics as well as length of stay in the country							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Tertiary education		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Length of stay	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Australia	-0.98	0.546	11.08	0.000	0.03	0.004	-4.88	0.037	m	m	m	m	m	m	m	m
Austria	-1.06	0.549	10.03	0.000	0.11	0.000	-6.71	0.045	3.54	0.229	9.01	0.000	0.11	0.000	0.14	0.290
Canada	-0.87	0.915	5.78	0.000	0.02	0.046	-4.84	0.056	1.47	0.251	4.85	0.001	0.02	0.036	-0.05	0.349
Chile	0.97	0.882	1.17	0.441	-0.01	0.514	-8.62	0.126	6.52	0.422	0.81	0.605	-0.01	0.525	0.22	0.405
Czech Republic	1.79	0.495	1.94	0.095	0.03	0.030	3.96	0.361	-4.70	0.108	1.97	0.096	0.03	0.030	-0.25	0.021
Denmark	4.56	0.075	25.17	0.000	0.14	0.000	-12.31	0.000	7.44	0.009	23.82	0.000	0.14	0.000	-0.17	0.139
England (UK)	-0.31	0.968	8.47	0.000	0.03	0.034	-4.71	0.232	1.30	0.553	7.84	0.000	0.03	0.030	-0.06	0.592
Estonia	3.85	0.027	1.36	0.246	0.04	0.002	-0.66	0.772	12.13	0.018	1.35	0.244	0.04	0.002	0.22	0.081
Finland	12.14	0.047	15.67	0.000	0.00	0.965	-0.24	0.983	4.41	0.589	15.53	0.000	0.00	0.821	-0.49	0.249
Flanders (Belgium)	-6.51	0.013	14.52	0.000	0.05	0.009	-3.16	0.512	-7.78	0.020	14.24	0.000	0.05	0.010	-0.15	0.315
France	0.68	0.668	6.48	0.000	0.05	0.000	-0.31	0.900	1.06	0.611	6.44	0.000	0.05	0.000	0.01	0.795
Germany	-1.28	0.373	4.98	0.003	0.06	0.000	-3.23	0.206	-1.71	0.502	4.42	0.008	0.06	0.000	-0.09	0.474
Greece	-1.27	0.415	2.98	0.018	-0.02	0.116	1.63	0.472	3.86	0.212	3.13	0.016	-0.02	0.079	0.22	0.030
Ireland	-2.17	0.227	6.24	0.000	0.04	0.007	-5.22	0.058	-1.07	0.562	5.15	0.001	0.04	0.006	-0.10	0.266
Israel	2.62	0.236	12.26	0.000	0.08	0.000	-4.57	0.172	15.54	0.000	11.72	0.000	0.07	0.000	0.38	0.000
Italy	-2.39	0.114	8.56	0.000	0.02	0.176	-5.07	0.105	-1.01	0.697	8.25	0.000	0.02	0.196	0.04	0.728
Lithuania	-1.68	0.653	1.25	0.573	0.04	0.005	-1.33	0.792	-13.10	0.075	1.16	0.600	0.04	0.005	-0.31	0.102
Netherlands	0.19	0.962	14.87	0.000	0.11	0.000	-7.17	0.168	0.29	0.954	14.06	0.000	0.11	0.000	-0.13	0.386
New Zealand	-3.02	0.130	7.43	0.000	0.07	0.000	-7.83	0.005	0.64	0.798	5.38	0.009	0.08	0.000	-0.07	0.438
Northern Ireland (UK)	1.43	0.702	6.39	0.001	0.01	0.398	1.93	0.708	-2.40	0.486	6.43	0.001	0.02	0.348	-0.19	0.205
Norway	5.43	0.064	15.87	0.000	0.16	0.000	-0.52	0.902	-0.25	0.933	15.61	0.000	0.17	0.000	-0.38	0.015
Singapore	-6.50	0.000	-2.86	0.081	-0.02	0.064	-3.82	0.065	-7.98	0.000	-4.25	0.006	-0.02	0.080	-0.16	0.023
Slovenia	-0.33	0.822	2.80	0.008	0.05	0.000	-0.31	0.906	-1.11	0.675	2.79	0.008	0.05	0.000	-0.03	0.701

	Model 5 - Moderating role of education								Model 6 - Migrant gap controlling for individual background characteristics as well as length of stay in the country							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Tertiary education		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Length of stay	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Spain	-0.01	0.825	10.71	0.000	0.01	0.352	-5.66	0.094	-3.76	0.100	10.19	0.000	0.02	0.279	-0.41	0.023
Sweden	4.89	0.141	8.39	0.002	0.13	0.000	-2.33	0.572	2.56	0.558	7.77	0.004	0.13	0.000	-0.15	0.291
United States	-4.82	0.005	10.23	0.000	-0.01	0.235	-6.34	0.018	-5.47	0.010	8.77	0.000	-0.01	0.237	-0.15	0.135
Average	15.47	0.417	15.47	0.057	15.47	0.114	15.47	0.356	15.47	0.375	15.47	0.064	15.47	0.107	15.47	0.282

Note: Marginal probabilities are multiplied by 100. Differences are based on a regression model and take account of differences associated with the following variables: age, gender, education, immigration background and parents' educational attainment. Only the score-point differences between two contrast categories are shown, which is useful for showing the relative significance of each socio-demographic variable vis-a-vis observed score-point differences. Estimates based on a sample size less than 30 are not shown.
Source: Survey of Adult Skills (PIAAC) (2012, 2015)

StatLink http://dx.doi.org/10.1787/888933846783

Annex Table 6.A.4. Differences in self-reported political efficacy, by migrant status and individual characteristics

	% who disagree or strongly disagree that people like me don't have any say about what the government does							Model 1 - Migrant gap controlling for age, gender and parents' educational attainment		Model 2- Migrant gap controlling for age, gender, parents' educational attainment and educational attainment			
	Natives		Migrants		Diff. (Natives-migrants)					Migrant gap		Education (Tertiary minus lower than upper secondary)	
	%	S.E.	%	S.E.	% dif.	S.E.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Australia	32.4	(0.6)	34.3	(1.2)	-1.8	(0.0)	0.136	0.89	0.536	2.79	0.056	19.02	0.000
Austria	32.0	(0.7)	25.3	(1.6)	6.7	(0.0)	0.000	6.00	0.002	5.96	0.003	20.03	0.000
Canada	34.9	(0.5)	34.8	(0.9)	0.2	(0.0)	0.943	0.98	0.450	2.07	0.069	14.34	0.000
Chile	59.2	(1.4)	64.6	(7.1)	-5.4	(0.1)	0.466	0.74	0.899	0.93	0.878	21.85	0.000
Czech Republic	21.4	(0.9)	14.8	(3.1)	6.6	(0.0)	0.063	7.42	0.078	8.02	0.059	6.42	0.040
Denmark	51.9	(0.8)	34.7	(1.2)	17.2	(0.0)	0.000	17.23	0.000	17.06	0.000	17.32	0.000
England (UK)	30.8	(0.9)	33.2	(2.0)	-2.4	(0.0)	0.093	-3.23	0.157	-2.45	0.248	16.75	0.000
Estonia	29.2	(0.6)	13.1	(0.9)	16.1	(0.0)	0.000	14.18	0.000	14.38	0.000	12.57	0.000
Finland	47.5	(0.7)	23.5	(2.7)	23.9	(0.0)	0.000	23.08	0.000	21.21	0.000	24.76	0.000
Flanders (Belgium)	33.2	(0.7)	39.3	(2.1)	-6.0	(0.0)	0.018	-6.12	0.000	-6.64	0.000	16.42	0.000
France	9.8	(0.4)	8.6	(0.9)	1.2	(0.0)	0.660	0.25	0.848	0.18	0.926	3.97	0.000
Germany	25.8	(0.6)	17.3	(1.8)	8.6	(0.0)	0.000	7.55	0.004	6.78	0.011	14.42	0.000
Greece	72.0	(1.0)	57.8	(3.2)	14.2	(0.0)	0.000	13.52	0.000	12.59	0.000	11.46	0.000
Ireland	28.3	(0.8)	25.1	(1.6)	3.2	(0.0)	0.107	5.05	0.015	6.06	0.004	20.33	0.000
Israel	29.5	(0.8)	32.5	(1.7)	-3.0	(0.0)	0.094	-1.18	0.553	-0.36	0.879	17.01	0.000
Italy	18.1	(0.9)	11.3	(1.9)	6.8	(0.0)	0.001	8.12	0.005	7.11	0.015	13.06	0.000
Lithuania	71.0	(0.9)	73.5	(5.1)	-2.5	(0.1)	0.644	3.98	0.493	3.98	0.485	16.18	0.000
Netherlands	41.7	(0.7)	29.7	(2.4)	11.9	(0.0)	0.000	11.80	0.000	10.97	0.000	24.35	0.000
New Zealand	41.7	(0.8)	44.8	(1.4)	-3.1	(0.0)	0.042	-1.98	0.254	0.06	0.860	17.03	0.000
Northern	23.2	(0.8)	25.6	(2.9)	-2.4	(0.0)	0.457	-2.17	0.487	-1.66	0.661	18.15	0.000

	% who disagree or strongly disagree that people like me don't have any say about what the government does							Model 1 - Migrant gap controlling for age, gender and parents' educational attainment		Model 2- Migrant gap controlling for age, gender, parents' educational attainment and educational attainment			
	Natives		Migrants		Diff. (Natives-migrants)					Migrant gap		Education (Tertiary minus lower than upper secondary)	
	%	S.E.	%	S.E.	% dif.	S.E.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Ireland (UK)													
Norway	50.9	(0.8)	37.0	(2.0)	14.0	(0.0)	0.000	13.60	0.000	14.54	0.000	26.56	0.000
Singapore	25.5	(0.6)	27.8	(1.2)	-2.3	(0.0)	0.099	-1.12	0.430	-0.49	0.734	13.53	0.000
Slovenia	13.2	(0.5)	9.4	(1.1)	3.8	(0.0)	0.004	1.97	0.191	1.37	0.370	6.57	0.000
Spain	23.6	(0.6)	21.2	(1.6)	2.4	(0.0)	0.434	1.82	0.172	0.62	0.482	10.47	0.000
Sweden	46.8	(0.9)	34.0	(2.0)	12.8	(0.0)	0.000	11.06	0.000	10.61	0.000	16.28	0.000
United States	45.0	(0.9)	36.3	(1.9)	8.7	(0.0)	0.000	7.63	0.001	7.13	0.002	20.44	0.000
Average	36.1	(0.2)	31.1	(0.5)	5.0	(0.0)	0.164	5.43	0.215	5.49	0.259	16.13	0.002

	Model 3 - Migrant gap controlling for age, gender, parents' educational attainment, educational attainment and literacy proficiency						Model 4 - Moderating role of literacy							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Literacy	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Australia	-0.26	0.849	12.14	0.000	0.17	0.000	-12.38	0.194	11.95	0.000	0.18	0.000	-0.04	0.195
Austria	3.06	0.131	14.54	0.000	0.13	0.000	-2.46	0.846	14.55	0.000	0.13	0.000	-0.02	0.664
Canada	-1.81	0.084	6.58	0.002	0.14	0.000	-8.64	0.013	6.57	0.003	0.15	0.000	-0.03	0.022
Chile	-0.96	0.878	10.32	0.008	0.21	0.000	15.25	0.545	10.31	0.008	0.20	0.000	0.07	0.509
Czech Republic	7.46	0.072	2.63	0.406	0.09	0.008	37.09	0.256	2.57	0.416	0.09	0.011	0.10	0.368
Denmark	11.65	0.000	11.01	0.000	0.14	0.000	-1.86	0.833	10.86	0.000	0.15	0.000	-0.05	0.105
England (UK)	-5.52	0.017	11.18	0.000	0.13	0.000	-37.67	0.001	10.80	0.000	0.15	0.000	-0.12	0.003
Estonia	11.75	0.000	7.53	0.000	0.13	0.000	-19.50	0.104	7.36	0.000	0.14	0.000	-0.12	0.011
Finland	17.28	0.000	20.44	0.000	0.10	0.000	-0.08	0.997	20.31	0.000	0.10	0.000	-0.07	0.413
Flanders (Belgium)	-8.74	0.000	12.65	0.000	0.07	0.001	-0.14	0.171	12.66	0.000	0.07	0.001	0.04	0.681
France	0.01	0.949	3.65	0.002	0.01	0.506	-2.49	0.169	3.65	0.002	0.01	0.308	-0.01	0.198
Germany	4.17	0.122	9.41	0.000	0.10	0.000	-5.99	0.069	9.46	0.000	0.11	0.000	-0.04	0.031
Greece	11.10	0.000	6.56	0.011	0.17	0.000	19.80	0.180	6.53	0.012	0.17	0.000	0.04	0.540
Ireland	5.18	0.016	17.16	0.000	0.07	0.007	13.02	0.192	17.33	0.000	0.06	0.017	0.03	0.437
Israel	-2.22	0.218	12.19	0.000	0.11	0.000	-3.56	0.145	12.18	0.000	0.12	0.000	-0.01	0.228
Italy	5.53	0.067	10.81	0.000	0.06	0.006	-1.55	0.925	10.78	0.000	0.06	0.006	-0.03	0.621
Lithuania	2.70	0.625	12.39	0.000	0.13	0.000	21.93	0.592	12.46	0.000	0.13	0.000	0.08	0.624
Netherlands	5.93	0.034	17.65	0.000	0.14	0.000	-8.58	0.504	17.49	0.000	0.15	0.000	-0.05	0.253
New Zealand	-3.19	0.072	9.12	0.000	0.18	0.000	-7.72	0.555	9.02	0.000	0.18	0.000	-0.02	0.753
Northern Ireland (UK)	-2.97	0.388	14.52	0.000	0.08	0.004	-7.79	0.662	14.48	0.000	0.08	0.005	-0.02	0.761
Norway	6.23	0.007	17.92	0.000	0.21	0.000	-10.08	0.409	17.67	0.000	0.23	0.000	-0.06	0.170
Singapore	-2.03	0.163	5.41	0.013	0.10	0.000	-10.97	0.132	5.25	0.016	0.11	0.000	-0.03	0.216
Slovenia	0.99	0.525	5.27	0.001	0.03	0.065	-19.94	0.044	5.22	0.001	0.04	0.016	-0.09	0.031
Spain	-0.49	0.939	8.19	0.000	0.05	0.014	-4.37	0.976	8.11	0.000	0.05	0.023	-0.02	0.988
Sweden	3.61	0.198	8.61	0.002	0.15	0.000	-5.41	0.643	8.53	0.002	0.16	0.000	-0.03	0.428

	Model 3 - Migrant gap controlling for age, gender, parents' educational attainment, educational attainment and literacy proficiency						Model 4 - Moderating role of literacy							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Literacy	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
United States	3.62	0.155	12.35	0.000	0.14	0.000	5.12	0.961	12.32	0.000	0.14	0.000	0.01	0.711
Average	2.77	0.250	10.78	0.017	0.12	0.024	-2.27	0.428	10.71	0.02	0.12	0.015	-0.02	0.383

	Model 5 - Moderating role of education								Model 6 - Migrant gap controlling for individual background characteristics as well as length of stay in the country							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Tertiary education		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Length of stay	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Australia	-3.17	0.130	14.01	0.000	0.16	0.000	-6.33	0.054	m	m	m	m	m	m	m	m
Austria	1.27	0.559	15.74	0.000	0.13	0.000	-6.86	0.202	4.70	0.284	14.61	0.000	0.13	0.000	0.09	0.621
Canada	-2.96	0.065	7.07	0.001	0.14	0.000	-2.02	0.315	-0.24	0.885	6.61	0.001	0.14	0.000	0.09	0.181
Chile	4.32	0.368	9.46	0.014	0.21	0.000	17.96	0.120	8.69	0.142	10.03	0.008	0.21	0.000	1.11	0.097
Czech Republic	7.63	0.115	2.60	0.400	0.09	0.008	0.48	0.959	11.65	0.173	2.80	0.377	0.09	0.008	0.18	0.503
Denmark	7.20	0.002	12.36	0.000	0.14	0.000	-11.02	0.002	19.81	0.000	11.32	0.000	0.14	0.000	0.45	0.001
England (UK)	-8.96	0.009	12.28	0.000	0.13	0.000	-6.92	0.120	-6.48	0.032	11.14	0.000	0.13	0.000	-0.05	0.671
Estonia	9.65	0.001	7.87	0.000	0.13	0.000	-4.27	0.317	19.67	0.003	7.57	0.000	0.13	0.000	0.23	0.201
Finland	17.69	0.001	20.40	0.000	0.10	0.000	0.97	0.884	18.53	0.013	20.45	0.000	0.10	0.000	0.07	0.819
Flanders (Belgium)	-12.53	0.000	13.58	0.000	0.07	0.001	-12.08	0.005	-16.01	0.000	12.53	0.000	0.08	0.001	-0.27	0.095
France	-0.45	0.659	3.84	0.002	0.01	0.504	-1.41	0.504	-2.97	0.150	3.66	0.002	0.01	0.429	-0.12	0.079
Germany	3.23	0.305	9.78	0.000	0.10	0.000	-2.84	0.498	3.62	0.476	9.39	0.000	0.10	0.000	-0.02	0.887
Greece	10.74	0.001	6.75	0.013	0.17	0.000	-1.77	0.771	29.06	0.000	6.29	0.015	0.16	0.000	0.78	0.001
Ireland	2.23	0.408	18.36	0.000	0.07	0.008	-6.33	0.021	5.53	0.072	17.14	0.000	0.07	0.008	0.03	0.832
Israel	-1.50	0.613	11.83	0.000	0.12	0.000	1.54	0.668	5.30	0.111	12.49	0.000	0.11	0.000	0.29	0.004
Italy	4.70	0.161	11.11	0.000	0.06	0.006	-6.94	0.328	5.68	0.244	10.80	0.000	0.06	0.006	0.01	0.955
Lithuania	4.53	0.475	12.12	0.000	0.13	0.000	9.94	0.378	30.55	0.142	12.37	0.000	0.13	0.000	0.72	0.138
Netherlands	0.80	0.817	19.37	0.000	0.14	0.000	-14.39	0.014	11.46	0.045	17.70	0.000	0.14	0.000	0.24	0.236
New Zealand	-8.34	0.004	11.83	0.000	0.18	0.000	-9.53	0.018	-4.93	0.057	8.92	0.000	0.18	0.000	-0.11	0.302

	Model 5 - Moderating role of education								Model 6 - Migrant gap controlling for individual background characteristics as well as length of stay in the country							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Tertiary education		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Length of stay	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Northern Ireland (UK)	-4.69	0.337	14.88	0.000	0.08	0.004	-3.97	0.562	-2.41	0.662	14.58	0.000	0.08	0.004	0.03	0.807
Norway	1.08	0.740	19.43	0.000	0.21	0.000	-11.68	0.009	10.18	0.005	18.09	0.000	0.21	0.000	0.25	0.160
Singapore	-3.40	0.156	5.93	0.010	0.10	0.000	-2.21	0.474	-1.87	0.479	5.42	0.014	0.10	0.000	0.01	0.924
Slovenia	0.74	0.674	5.37	0.001	0.03	0.064	-1.25	0.790	7.02	0.064	5.17	0.001	0.03	0.077	0.22	0.066
Spain	0.54	0.484	7.76	0.000	0.05	0.014	3.98	0.197	0.11	0.968	8.17	0.000	0.05	0.014	0.00	0.996
Sweden	4.87	0.150	7.92	0.006	0.15	0.000	3.73	0.443	8.41	0.051	8.86	0.002	0.15	0.000	0.23	0.130
United States	-0.14	0.790	14.02	0.000	0.14	0.000	-9.70	0.021	4.34	0.346	12.50	0.000	0.14	0.000	0.04	0.787
Average	1.35	0.308	11.37	0.02	0.12	0.023	-3.19	0.334	6.78	0.216	10.74	0.017	0.11	0.022	0.18	0.420

Note: Marginal probabilities are multiplied by 100. Differences are based on a regression model and take account of differences associated with the following variables: age, gender, education, immigration background and parents' educational attainment. Only the score-point differences between two contrast categories are shown, which is useful for showing the relative significance of each socio-demographic variable vis-a-vis observed score-point differences. Estimates based on a sample size less than 30 are not shown.
Source: Survey of Adult Skills (PIAAC) (2012, 2015)

StatLink http://dx.doi.org/10.1787/888933846802

Annex Table 6.A.5. Differences in self-reported volunteering, by migrant status and individual characteristics

	% who reported participating in the last 12 months, how often, if at all, did you do voluntary work, including unpaid work for a charity, volonteer party, trade union or other non-profit organisation							Model 1 - Migrant gap controlling for age, gender and parents' educational attainment		Model 2- Migrant gap controlling for age, gender, parents' educational attainment and educational attainment			
	Natives		Migrants		Diff. (Natives-migrants)					Migrant gap		Education (Tertiary minus lower than upper secondary)	
	%	S.E.	%	S.E.	% dif.	S.E.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Australia	41.4	(1.1)	34.6	(1.3)	6.7	(0.0)	0.000	8.96	0.000	10.54	0.000	16.80	0.000
Austria	38.4	(0.7)	20.3	(1.4)	18.1	(0.0)	0.000	19.89	0.000	19.69	0.000	16.59	0.000
Canada	52.1	(0.6)	38.7	(1.1)	13.4	(0.0)	0.000	14.00	0.000	15.42	0.000	12.69	0.000
Chile	31.8	(1.6)	35.9	(4.5)	-4.1	(0.0)	0.386	-1.44	0.756	-1.26	0.780	10.53	0.000
Czech Republic	17.6	(0.8)	20.2	(4.8)	-2.6	(0.0)	0.590	-2.14	0.632	-1.84	0.677	6.91	0.012
Denmark	45.6	(0.7)	32.8	(1.5)	12.7	(0.0)	0.000	12.54	0.000	12.17	0.000	13.85	0.000
England (UK)	31.5	(0.9)	28.2	(1.7)	3.3	(0.0)	0.094	4.32	0.037	4.89	0.013	20.35	0.000
Estonia	28.1	(0.5)	25.0	(1.5)	3.1	(0.0)	0.046	1.03	0.540	1.38	0.416	16.75	0.000
Finland	44.2	(0.7)	34.4	(3.1)	9.8	(0.0)	0.009	10.19	0.006	8.99	0.015	14.08	0.000
Flanders (Belgium)	35.2	(0.9)	22.1	(2.0)	13.1	(0.0)	0.000	11.55	0.000	10.93	0.000	17.87	0.000
France	26.5	(0.5)	16.5	(1.3)	9.9	(0.0)	0.000	11.50	0.000	9.93	0.000	18.88	0.000
Germany	37.6	(0.9)	17.6	(1.7)	20.0	(0.0)	0.000	21.19	0.000	19.99	0.000	18.07	0.000
Greece	20.1	(0.8)	18.3	(2.4)	1.7	(0.0)	0.487	3.94	0.129	2.78	0.276	14.03	0.000
Ireland	40.8	(0.9)	30.4	(1.5)	10.4	(0.0)	0.000	11.54	0.000	12.53	0.000	17.79	0.000
Israel	34.7	(0.7)	24.0	(1.3)	10.7	(0.0)	0.000	11.71	0.000	11.85	0.000	4.67	0.033
Italy	22.3	(0.8)	14.1	(1.8)	8.2	(0.0)	0.000	9.43	0.001	8.60	0.002	11.46	0.000
Lithuania	10.3	(0.6)	15.7	(4.2)	-5.5	(0.0)	0.209	-6.73	0.030	-6.75	0.033	0.80	0.690
Netherlands	42.3	(0.7)	30.4	(2.0)	11.9	(0.0)	0.000	11.96	0.000	11.42	0.000	13.44	0.000
New Zealand	52.7	(0.9)	50.3	(1.4)	2.4	(0.0)	0.162	3.37	0.062	5.52	0.003	15.78	0.000
Northern Ireland (UK)	34.0	(1.1)	25.1	(3.2)	9.0	(0.0)	0.015	9.75	0.024	10.40	0.008	27.56	0.000
Norway	59.6	(0.7)	42.4	(2.0)	17.2	(0.0)	0.000	17.70	0.000	17.85	0.000	12.08	0.000

	% who reported participating in the last 12 months, how often, if at all, did you do voluntary work, including unpaid work for a charity, volonteer party, trade union or other non-profit organisation							Model 1 - Migrant gap controlling for age, gender and parents' educational attainment		Model 2- Migrant gap controlling for age, gender, parents' educational attainment and educational attainment			
	Natives		Migrants		Diff. (Natives-migrants)					Migrant gap		Education (Tertiary minus lower than upper secondary)	
	%	S.E.	%	S.E.	% dif.	S.E.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Singapore	34.1	(0.7)	34.8	(1.3)	-0.6	(0.0)	0.703	0.86	0.602	2.18	0.175	23.78	0.000
Slovenia	35.1	(0.9)	19.1	(1.5)	16.1	(0.0)	0.000	13.63	0.000	12.06	0.000	16.84	0.000
Spain	19.1	(0.6)	11.3	(1.1)	7.8	(0.0)	0.000	9.83	0.000	8.43	0.000	13.63	0.000
Sweden	38.4	(0.8)	25.7	(1.6)	12.8	(0.0)	0.000	13.63	0.000	12.68	0.000	12.65	0.000
United States	57.7	(0.9)	44.4	(2.3)	13.3	(0.0)	0.000	8.94	0.000	8.73	0.001	25.96	0.000
Average	35.8	(0.2)	27.4	(0.5)	8.4	(0.0)	0.104	15.47	0.108	8.81	0.092	15.15	0.028

	Model 3 - Migrant gap controlling for age, gender, parents' educational attainment, educational attainment and literacy proficiency						Model 4 - Moderating role of literacy							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Literacy	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Australia	7.29	0.000	9.71	0.000	0.17	0.000	-0.86	0.366	9.60	0.042	0.18	0.443	-0.03	0.000
Austria	17.69	0.000	13.01	0.000	0.08	0.000	43.85	0.001	12.95	0.000	0.07	0.031	0.10	0.000
Canada	10.29	0.000	2.59	0.090	0.18	0.000	8.25	0.170	2.56	0.000	0.19	0.616	-0.01	0.000
Chile	-1.88	0.666	6.75	0.008	0.07	0.005	-10.64	0.176	6.74	0.728	0.07	0.757	-0.04	0.000
Czech Republic	-2.30	0.594	3.82	0.191	0.07	0.002	2.64	0.192	3.81	0.103	0.07	0.805	0.02	0.000
Denmark	7.17	0.000	7.98	0.000	0.13	0.000	16.67	0.064	8.07	0.004	0.12	0.308	0.04	0.000
England (UK)	1.36	0.498	13.93	0.000	0.15	0.000	-10.37	0.022	13.77	0.317	0.15	0.391	-0.04	0.000
Estonia	-0.41	0.814	13.32	0.000	0.09	0.000	-11.48	0.546	13.22	0.000	0.10	0.362	-0.04	0.000
Finland	2.99	0.406	8.60	0.000	0.12	0.000	10.09	0.432	8.66	0.000	0.12	0.723	0.03	0.000
Flanders (Belgium)	6.97	0.003	10.91	0.000	0.14	0.000	1.21	0.001	10.91	0.029	0.14	0.446	-0.02	0.000
France	6.69	0.000	12.55	0.000	0.13	0.000	21.84	0.015	12.53	0.000	0.12	0.107	0.06	0.000
Germany	15.92	0.000	10.24	0.000	0.16	0.000	12.14	0.160	10.27	0.919	0.16	0.800	-0.01	0.000
Greece	2.43	0.337	12.76	0.000	0.04	0.038	26.37	0.386	12.71	0.985	0.04	0.117	0.09	0.000
Ireland	11.00	0.000	13.12	0.000	0.10	0.000	14.10	0.193	13.15	0.480	0.10	0.798	0.01	0.000
Israel	10.17	0.000	0.65	0.795	0.09	0.000	9.59	0.494	0.68	0.449	0.09	0.225	0.00	0.000
Italy	6.71	0.015	8.63	0.000	0.08	0.002	8.33	0.171	8.61	0.276	0.08	0.916	0.01	0.000
Lithuania	-7.17	0.026	-0.92	0.600	0.07	0.001	-23.63	0.319	-0.99	0.036	0.07	0.369	-0.06	0.000
Netherlands	6.98	0.004	7.67	0.001	0.12	0.000	17.15	0.302	7.77	0.056	0.11	0.390	0.04	0.000
New Zealand	3.32	0.063	10.49	0.000	0.12	0.000	-3.86	0.172	10.38	0.462	0.13	0.473	-0.03	0.000
Northern Ireland (UK)	8.40	0.025	22.07	0.000	0.12	0.000	49.91	0.382	22.41	0.011	0.11	0.073	0.15	0.000
Norway	12.43	0.000	6.72	0.004	0.13	0.000	20.59	0.951	6.84	0.053	0.12	0.499	0.03	0.000
Singapore	-0.16	0.925	11.85	0.000	0.15	0.000	10.20	0.886	12.04	0.060	0.14	0.229	0.04	0.000
Slovenia	11.47	0.000	14.88	0.000	0.04	0.028	2.78	0.577	14.83	0.000	0.05	0.070	-0.04	0.000
Spain	7.02	0.000	10.80	0.000	0.06	0.000	20.73	0.491	10.93	0.987	0.05	0.168	0.05	0.000
Sweden	5.98	0.015	5.53	0.051	0.14	0.000	4.86	0.111	5.52	0.005	0.14	0.880	0.00	0.000

	Model 3 - Migrant gap controlling for age, gender, parents' educational attainment, educational attainment and literacy proficiency						Model 4 - Moderating role of literacy							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Literacy	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
United States	4.67	0.081	16.56	0.000	0.16	0.000	0.24	0.224	16.63	0.382	0.17	0.175	-0.02	0.000
Average	5.96	0.172	9.78	0.067	0.11	0.003	9.26	0.300	9.79	0.246	0.11	0.430	0.01	0.000

	Model 5 - Moderating role of education								Model 6 - Migrant gap controlling for individual background characteristics as well as length of stay in the country							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Tertiary education		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Length of stay	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Australia	4.94	0.052	11.23	0.000	0.17	0.000	-5.30	0.068	m	m	m	m	m	m	m	m
Austria	20.15	0.000	11.58	0.000	0.08	0.000	8.96	0.082	21.50	0.00	13.13	0.00	0.08	0.00	0.20	0.23
Canada	7.90	0.000	3.59	0.016	0.18	0.000	-4.25	0.102	13.30	0.00	2.78	0.07	0.18	0.00	0.15	0.02
Chile	2.49	0.695	6.18	0.013	0.07	0.006	10.34	0.127	-0.58	0.93	6.71	0.01	0.07	0.01	0.13	0.76
Czech Republic	-4.00	0.368	4.20	0.133	0.07	0.002	-5.43	0.554	3.67	0.60	4.18	0.13	0.07	0.00	0.25	0.24
Denmark	9.22	0.001	7.38	0.000	0.13	0.000	5.00	0.177	13.58	0.00	8.22	0.00	0.13	0.00	0.35	0.00
England (UK)	4.60	0.163	13.05	0.000	0.15	0.000	6.06	0.159	4.39	0.11	14.10	0.00	0.14	0.00	0.17	0.15
Estonia	-0.18	0.937	13.27	0.000	0.09	0.000	0.45	0.895	-8.49	0.09	13.21	0.00	0.09	0.00	-0.24	0.06
Finland	-0.80	0.858	9.15	0.000	0.12	0.000	-11.06	0.108	9.15	0.25	8.55	0.00	0.12	0.00	0.35	0.38
Flanders (Belgium)	6.16	0.024	11.05	0.000	0.14	0.000	-2.16	0.983	23.45	0.00	11.07	0.00	0.13	0.00	0.71	0.00
France	9.03	0.000	11.80	0.000	0.13	0.000	6.31	0.071	4.85	0.16	12.56	0.00	0.13	0.00	-0.07	0.44
Germany	17.30	0.000	9.81	0.000	0.16	0.000	3.95	0.408	19.24	0.00	10.42	0.00	0.16	0.00	0.16	0.37
Greece	1.94	0.524	12.89	0.000	0.04	0.037	-1.58	0.780	10.78	0.05	12.64	0.00	0.04	0.05	0.34	0.07
Ireland	11.91	0.000	12.73	0.000	0.10	0.000	2.10	0.577	17.05	0.00	13.22	0.00	0.09	0.00	0.40	0.00
Israel	9.57	0.000	0.85	0.813	0.09	0.000	-1.11	0.942	22.82	0.00	1.04	0.67	0.09	0.00	0.45	0.00
Italy	6.64	0.019	8.70	0.000	0.08	0.002	-1.03	0.898	16.67	0.00	8.53	0.00	0.07	0.00	0.53	0.01
Lithuania	-9.14	0.051	-0.70	0.684	0.07	0.001	-5.55	0.360	-9.73	0.75	-0.93	0.60	0.07	0.00	-0.06	0.92
Netherlands	8.91	0.005	7.01	0.002	0.12	0.000	5.60	0.279	5.97	0.22	7.68	0.00	0.12	0.00	-0.04	0.80
New Zealand	-1.48	0.435	13.25	0.000	0.12	0.000	-9.27	0.005	10.14	0.00	11.37	0.00	0.11	0.00	0.43	0.00
Northern Ireland (UK)	7.75	0.167	22.17	0.000	0.12	0.000	-1.51	0.949	17.57	0.00	22.31	0.00	0.11	0.00	0.54	0.01
Norway	14.54	0.000	5.98	0.013	0.13	0.000	5.12	0.224	16.52	0.00	6.90	0.00	0.12	0.00	0.27	0.08

	Model 5 - Moderating role of education								Model 6 - Migrant gap controlling for individual background characteristics as well as length of stay in the country							
	Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Migrant*Tertiary education		Migrant gap		Education (Tertiary minus lower than upper secondary)		Literacy		Length of stay	
	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value	Marg. Prob.	p-value
Singapore	0.71	0.782	11.53	0.000	0.15	0.000	1.33	0.689	1.00	0.66	11.88	0.00	0.15	0.00	0.06	0.51
Slovenia	12.90	0.000	14.33	0.000	0.04	0.030	8.01	0.090	25.85	0.00	14.64	0.00	0.04	0.04	0.47	0.00
Spain	8.02	0.001	10.56	0.000	0.06	0.000	2.96	0.443	5.37	0.09	10.81	0.00	0.06	0.00	-0.12	0.45
Sweden	8.66	0.016	4.23	0.150	0.14	0.000	7.28	0.162	4.34	0.33	5.43	0.06	0.14	0.00	-0.08	0.61
United States	1.87	0.689	17.95	0.000	0.16	0.000	-7.58	0.069	8.31	0.05	16.63	0.00	0.16	0.00	0.19	0.22
Average	6.14	0.223	9.76	0.070	0.11	0.003	0.68	0.392	10.27	0.172	9.88	0.062	0.11	0.004	0.22	0.254

Note: Marginal probabilities are multiplied by 100. Differences are based on a regression model and take account of differences associated with the following variables: age, gender, education, immigration background and parents' educational attainment. Only the score-point differences between two contrast categories are shown, which is useful for showing the relative significance of each socio-demographic variable vis-a-vis observed score-point differences. Estimates based on a sample size less than 30 are not shown.
Source: Survey of Adult Skills (PIAAC) (2012, 2015)

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Migration has been at the centre of political debate across the OECD in recent years. Drawing on data from the OECD Survey of Adult Skills (PIAAC), this report provides new evidence on differences in migrants' characteristics and contexts and considers how these relate to the skills migrants possess. It also examines the relationship between migrants' skills and their labour and non-labour market outcomes in host countries. Finally, it sheds new light on how migrants' skills are developed, used and valued in host country labour markets and societies. Results and lessons gleaned from analysis highlight the way forward for future research on this topic.

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