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Possibilities for low-skilled immigrants in the Norwegian labour market of tomorrow
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Preface

The Norwegian Ministry of Justice and Public Security commissioned Economics Norway to assess future immigration flows to Norway, focusing on low-skilled immigrants and their opportunities in a labour market undergoing significant changes, as well as the impact of low-skilled immigration on the Norwegian welfare state and the Norwegian model in general.

The work was undertaken in the period from August 2018 to February 2019 by a small team of economists at Economics Norway.

During our work, we have enjoyed interesting discussions with the Ministry of Justice and Public Security. Their feedback has been very valuable.

Economics Norway is responsible for the entire content of this report.

Oslo, 29. March 2019

Rolf Røtnes
Project manager
Economics Norway (SØA)
Executive summary

The Norwegian Ministry of Justice and Public Security commissioned Economics Norway to assess opportunities of low-skilled immigrants in the Norwegian labour market of tomorrow, and how future immigration of low-skilled may affect the Norwegian labour market and welfare state.

There is no definitive meaning of the term ‘low-skilled’. In this report, we consider immigrants with completed education equivalent to upper secondary level or below to be low-skilled, whether this education is completed in Norway or in their countries of origin.

Our report includes estimates of probable developments in the Norwegian labour market and immigration flows to Norway for the period 2018-2040. In order to estimate the number of low-skilled immigrants living in Norway and seeking employment in 2040, we construct projections by combining two existing sources; Statistics Norway’s projections of future immigration and the Wittgenstein Centre’s projections for education levels in 201 countries. For simplicity, we then assume that 71 per cent of immigrants aged 20–66 will be employed or actively looking for work, equivalent to today’s labour force participation rate for immigrants. This age group has been chosen because most of the labour force is currently found in this age group. Thus, the remaining 29 per cent of the age group are assumed to be dependent on welfare benefits or working family members.

With our methods and assumptions, we project that there will be 446 000 low-skilled and 156 000 high-skilled immigrants in the Norwegian labour force in 2040. However, the opportunities these 600 000 immigrants will have partly depend on the number of jobs available and the competition from Norwegian-born job seekers.

In order to project labour demand in 2040 we have used Economics Norway’s projection model for skill demand by education and occupation and compared a mechanical projection of skill demand with several scenario-based projections. Both our mechanical projection and the scenario-based projections estimate that the employment of workers with high skill levels in the Norwegian labour market will be higher in 2040 than today (2018). The demand for low-skilled workers will however be significantly lower. The demand is projected to be especially reduced in many of the industries where large portions of low-skilled immigrants are employed today, such as in the retail and transport industries.

The projection of a surplus supply of low-skilled labour does not mean that there will not be demand for low-skilled labour, but that competition for low-skilled jobs will increase. Our mechanical projection implies that 19 per cent of all low-skilled workers will be out of work by 2040, in addition to those not participating in the labour force. Among workers with only primary/lower secondary as their highest educational attainment level, the projected unemployment rate in 2040 equals 25 per cent.

In two of the three scenarios that we have compared with our mechanical projection, the surplus supply of workers with only primary/lower secondary education will be substantially larger. The faster the technological development in the forms of automation and digitalisation of routine tasks, the greater the imbalance between supply and demand for low-skilled workers.
In summary, we project greater competition for jobs among low-skilled workers. Most empirical findings support the view that immigrants, on average, are more likely to lose this competition. Thus, unemployment among low-skilled immigrants are likely to be even higher than 19 and 25 per cent respectively, given our mechanical projection.

Further, reduced demand for low-skilled labour, combined with increased low-skilled immigration, will put a greater strain on the Norwegian welfare system. Our projections imply that almost 50 per cent of the low-skilled immigrant population will be dependent on working family members or welfare benefits in 2040.

The Norwegian model for wage formation is one reason why it is challenging to integrate all low-skilled immigrants into the labour market. In order to participate in the labour market, a person’s productivity level must be equivalent to the wages offered. Job seekers without the relevant skills will normally be considered not productive enough to justify receiving the currently applied minimum wages in Norway.

A surplus of low-skilled labour in 2040 could threaten the sustainability of the Norwegian model for wage formation. Through low-wage competition, the unemployment among low-skilled may be reduced, but at the cost of reduced real wages among those already employed and increased inequality.

In order to secure the Norwegian model in the years to come, we point out three measures that seem salient:

1) Increased government efforts and incentives aimed at business and individuals to continuously invest in lifelong education and training. More formal training and development of skills, regardless of whether the workers are immigrants or Norwegian-born, will reduce a possible surplus supply of low-skilled labour.

2) There is a need to increase the efforts and incentives for immigrants to take part in formal education and training in order to participate in the Norwegian labour market, including learning Norwegian.

3) Continued and reinforced prioritising of younger men and women, as well as families when it comes to refugee quotas.

The alternative to the measures above is probably a significant increase in income inequality in Norway through lower real wages for low-skilled workers.
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1 Introduction

The Ministry of Justice and Public Security has pointed out that the importance of technological development as a force of change seems to have been partly ignored in sources that assess questions related to the population’s ageing and labour market participation, as well as the consequences of immigration.

Further immigration from countries where a large proportion of the population lacks skills and qualifications that are easily adapted to the highly productive labour market in Norway will challenge the effectiveness of the Norwegian labour market and the sustainability of the welfare state.

At the same time, reports and forecasts of more digitalisation and automation, as well as other technological trends indicate reduced demand for low-skilled labour in several activities and industries – many of which contain large portions of today’s employed immigrants living in Norway.

This highlights the need to understand the interrelationships between expected forces of labour market changes, including labour market demand and the potentially increased supply of low-skilled immigrant labour.

The issue is highly interesting, as these are important forces of change that will affect the future labour market and immigrants’ integration processes. Being able to see these changes in a common context has a significant value and can be essential for successful development in important social areas.

1.1 Our approach

We have structured our approach around the following research questions on the situation in 2040:

1. How many immigrants will be living and seeking employment in Norway, and what skills and qualifications will they have?
2. Which skills and qualifications will be in demand in the Norwegian labour market?
3. What will our answers mean for immigrants’ labour market participation in 2040?
4. What will our projections mean for the sustainability of the Norwegian welfare state in general, and the Norwegian model for wage formation in particular?
5. Additionally, we have considered possible policy actions to alleviate the challenges identified in our analysis of the questions above.

Thus, in addition to discussions on future immigration and labour market trends, this report contains projections for low-skilled immigration to Norway and the immigrants’ participation in the labour market. The projections are based on the population projection model of Statistics Norway, and supplemented by explicit assumptions about technological change, digitalisation, automation and other forces of change with consequences for the demand for low-skilled labour in 2040.

1.2 How the report defines ‘low-skill’

In this report, we focus on low-skilled immigrants. One broad definition of a low-skilled immigrant is an
immigrant who lacks the necessary skills\(^1\) and qualifications to perform anything but routine-based, mostly manual, elementary tasks.

It should be noted, however, that mastering the Norwegian language is required in many occupations. Immigrants who do not master Norwegian must therefore expect a period of language training before getting a job. In the labour market, lack of language or documented informal skills may lead to immigrants with a higher education being perceived as low-skilled.

However, because informal skills are hard to measure and document, and suitable indicators are hard to find, we refrain from reporting on, or making assumptions about migrants’ informal skills in this report.

Thus, we have defined low-skill immigrants as immigrants that have not completed a post-secondary education (recognised in Norway). This includes vocational education. Although vocational education is often thought of as belonging to the middle-skill levels, we are not able to separate vocational and secondary education in the data.

To keep our projections and calculations simple, this is also our definition of low-skilled labour in general.

### 1.3 ‘The Norwegian model’

A main feature of the Norwegian labour market today is the functioning of the so-called ‘Norwegian model’. Understanding the Norwegian model is important both when discussing possibilities for low-skilled immigrants in the future labour market, and when discussing how low-skilled immigration will impact on the economy.

The Norwegian model has several aspects and interpretations, depending on context. In this report, we refer to the Norwegian model as the structural organisation and functioning of the labour market, combining two critical pillars:

1. The ‘Nordic welfare state’, characterised as a tax-funded life insurance scheme, partly covering financial losses of the inhabitants due to illness, disability, unemployment or retirement. A generous welfare state that is financed by high – and progressive – taxes on income and wealth, and thus a low degree of inequality.

2. The ‘Norwegian model for wage formation’, reflecting both how the relationship between employee and employer is regulated through a system of tariff treaties, and the so called ‘Frontline-model’, where productivity growth in the manufacturing sector serves as a guide for real wage growth in the whole economy.

For further discussion on the Norwegian model, refer to Appendix 3.

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\(^1\) Skills can be defined as ‘knowledge, experience and abilities that can be used to perform work’ (Fivesdal, Nordhaug, & Bakka, 2004). Within this definition, a distinction can be made between formal and informal skills. Formal skills are skills that can be documented with diplomas or other written certificates typically acquired through educational institutions. Informal skills are skills that cannot necessarily be documented, typically skills acquired through experience from working life and on-the-job training.
In order to understand how immigration to Norway will affect the Norwegian labour market in the years to come, it may be useful to look at the past, and consider how the future will be different.

At the start of 2019, immigrants residing in Norway made up just over 14 per cent of the total population, which is more than double the share in 2000.\(^2\)

In Figure 2-1 we show developments in immigration, emigration and net immigration to Norway over the past 50 years. Before 1970, the registered emigration was generally greater than the registered immigration (not shown), but apart from single-year observations in 1971 and 1989, Norway has experienced positive net immigration since 1970.

Labour immigration, followed by family immigration, kept net immigration numbers stable at about 5 000 persons per year until the mid-1980s, when we started to see significant year-to-year fluctuations.

After opening up the EEA labour market to the new EU member states in 2004, net immigration levels soared. More than 150 000 work permits and almost 140 000 renewals of such permits were given to foreign workers from the new EU countries within five years.

In the 2000s, Norway also experienced a significant increase in the number of asylum applications. By 2002, the number of asylum seekers had reached 17 500 persons a year. A new high was reached in 2009, when Norway had the third highest share of asylum seekers per capita in Europe (NOU 2011:7).

Figure 2-1: Total migration to and from Norway. Total number of persons. 1968–2018.

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\(^2\) Norwegian-born to immigrant parents not included.
Net immigration has declined since early 2012, despite the peak in asylum seekers in 2015.

Despite a downward trend, net immigration was still significantly higher than pre-2004 levels. In 2017, more than 58,000 people immigrated, while less than 37,000 emigrated, yielding a net immigration of more than 21,000 persons. In 2018, net immigration fell to 18,000.\(^3\)

### 2.1 Reduced immigration, but a growing share from Asian and African countries

Most registered immigrants in recent years have come from countries in Asia (including Turkey) and Africa. In 2018, net immigration from Asian countries was 9,500 persons, down from almost 14,000 in 2017. The reduction in net immigration from Asia last year was due to reduced immigration (fewer refugees) from Syria. Net immigration from African countries was 2,800 persons in 2018 and 3,600 in 2017.

Immigrants from countries in Asia and Africa made up 68 per cent of total net immigration in 2018. Ten years earlier (2008), Asian and African countries accounted for 27 per cent of net immigration to Norway.

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\(^3\) If we exclude migration of Norwegian citizens, net immigration in 2017 and 2018 was approximately 23,000 and 20,000 persons respectively.
2.2 The immigrant population living in Norway today constitute 18 per cent of the total population

Immigrants from EU member states – mostly labour migrants and their family members – constituted 40 per cent of the total immigrant population 1 January 2019 and 7 per cent of the resident population in Norway.

Figure 2-3: Resident immigrants and their Norwegian-born children as share of total population. By region of origin. Per cent. 1 January. 2010-2019.

Source: Statistics Norway, processed by Economics Norway

Immigrants from Asian and African countries – including their immigrant family members and Norwegian-born children – constituted 47 per cent of the total immigrant population at the start of 2019 and 8.4 per cent of the Norwegian population, see Figure 2-3.

The refugees and their family members represented the largest immigrant group living in Norway in 2018. A total of 228 200 persons with a refugee background were living in Norway on 1 January 2018. This represented 31 per cent of all migrants, and 4.3 per cent of the total population.4

2.3 Substantial variation in education levels among immigrants living in Norway

Statistics Norway produces statistics on the educational attainment levels of the Norwegian population, including immigrants with residence in Norway and education attained or formally recognised in Norway. For many immigrants, the education attained abroad has not been registered.

We have grouped the statistics by country groups.5 Country group 1 consists of the Nordic countries, EU member states before 2004, North America, New Zealand and Australia. Country group 2 consists of the eastern European countries that became members of the EU in 2004. Country group 3 consists of countries in Africa, Asia and Latin America and Oceania excl. New Zealand and Australia, as well as non-EU countries in eastern Europe.

In Figure 2-4 we see that while immigrants from countries in group 1 are more educated on average

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4 Statistic Norway. Persons with refugee background. Refers to persons resident in Norway who have come to Norway for refuge (including family). Children born in Norway by persons with a refugee background are not included in the statistics, and neither are asylum seekers.

5 These country groups are also used by Statistics Norway in their population forecasts. Because we use them as a starting point in Chapter 3, we introduce them here.
than Norwegian-born, immigrants from group 2 countries have almost exactly the same educational attainment level as the Norwegian-born population. The educational distribution among immigrants from countries in group 3 is, however, significantly skewed towards shorter educational attainment levels than other immigrants.

We know that most immigrants from groups 1 and 2 have been labour migrants or have come for family-related reasons. Such self-selection effects partly explain their skill attainment levels, e.g., the high frequency of secondary education among immigrants from Europe mirrors the fact that many labour migrants from these countries came to work in industries where some type of vocational training is required.

Most immigrants from countries in group 3 with a refugee background originated from countries where the educational attainment level of the population is low in general. This is especially true for immigrants from countries in Asia and Africa.

Figure 2-4: Distribution of registered educational attainment levels amongst inhabitants in Norway. By birth region. 2017.

Labour migrants residing in Norway are relatively well educated on average, see Figure 2-5, although labour immigrants from countries in Africa stand out with lower levels of education.

Figure 2-5: Educational attainment among labour migrants in Norway, by region of origin. 2017.

Source: Statistics Norway, table 11291

2.4 Immigrants with refugee background have the lowest labour market participation rate in Norway

According to the available statistics on educational attainment among immigrants residing in Norway, refugees are the immigrant group in Norway with the lowest proportion of (recognised) high-skilled persons.

Labour market participation is seen as central to the integration of immigrants. However, the level of employment and self-sufficiency among immigrants living in Norway is lower on average than for the population in general. This is especially the case for refugees (Kornstad, Skjerpen, & Telle, 2016).

There is a strong link between educational attainment levels and the probability of being employed. The share of immigrants with a refugee background participating in the labour market increases in line with their education levels (ibid.).

However, registered educational attainment alone cannot be the only factor, as immigrants with a refugee background have a lower level of employment compared to Norwegian-born for any given registered education level (NOU 2016:15).

It seems that whether their education is taken in Norway or in their country of origin before immigrating does matter to some degree. Refugees that complete their education in Norway have a higher probability of being employed than refugees with solely a foreign education (Olsen, Flyktninger og arbeidsmarkedet, 4. kvartal 2012, 2014). The disparity is also linked to differences in time spent in Norway (NOU 2016:15).

In the publicly available statistics used here, being employed is defined as having carried out income-generating work of at least one hour’s duration in a
reference week. Persons who were temporarily absent from a job due to illness, holiday leave, paid leave, or who performed military or civilian service were also classified as ‘employed’ in the Norwegian Labour Force Survey (LFS).

There were important differences in labour market participation between immigrants from different country groups. On average, about 66 per cent of immigrants aged 20-66 were employed in 2018. Among Norwegian-born (including Norwegian-born children of immigrant parents), the participation rate was almost 79 per cent, see Figure 2-7.

Figure 2-7: Labour market participation rate, by region of origin. 2018 Q4.

Immigrants from countries in Africa and Asia did have particularly low participation rates, probably stemming from their reason for immigration as well as large differences in skills and educational attainment recognised as applicable to the Norwegian labour market.

Olsen (2017) shows that refugees (including family members) had a labour market participation rate of 48.5 per cent on average, significantly lower than other migrant groups.

There were also differences in actual working hours between immigrants and the rest of the population (among those in work), see Figure 2-8 below. On average, immigrants from countries in group 3 worked 30.7 hours per week in the fourth quarter of 2018, which was 96 per cent of the average working hours in the total population (32 hours).

Participation rates in the labour market and average weekly working hours increase with length of residence. Among refugees who had resided in Norway for 20 years or more, Olsen (2017) found that the employment rate was slightly above 60 per cent.

Age at the time of settlement is also an important determinant for labour market participation. Younger immigrants are more likely to partake in the Norwegian education system and acquire skills and qualifications that are more suited to the labour market. Refugees who came to Norway as children have employment rates between 70 and 74 per cent.

6 There are also differences among immigrants from different countries in country group 3. Immigrants from Syria (25.3), Eritrea (27.1), Somalia (27.9), Afghanistan (28.8), Thailand (28.8) and Brazil (28.8) had shortest working week.

7 For immigrants who have resided in Norway for less than 4 years, participation in the Introduction programme for newly settled refugees is an important explanatory factor.

8 Note that refugees who have resided in Norway for more than 20 years have a different country background (Chile and Vietnam) to those who arrived later. It may also be that refugees who came to Norway more than 20 years ago and did not find a meaningful job have emigrated.

Source: Statistics Norway. Processed by Economics Norway
POSSIBILITIES FOR LOW-SKILLED IMMIGRANTS IN THE NORWEGIAN LABOUR MARKET OF TOMORROW | ECONOMICSNORWAY.COM

20 years later, which is significantly higher than other, newer refugees.

Figure 2-8: Average working hours per week. Employed persons by region of origin, 15-74 years. 2018. Register-based (4th quarter).

In fact, we see that the employment rate for refugees who had completed an upper secondary or higher education in Norway was close to that of the whole population with the same educational attainment level (Olsen, 2017).

International research also indicates that characteristics of the labour market in the country of arrival are important factors for the unemployment rate among immigrants. Drinkwater (2017) found, for example, that immigrant populations are employed to a lesser degree in countries with well-regulated labour markets and stronger institutions than in other countries.

The Norwegian labour market has strong institutions and regulations and is in many ways a good example of the kind of labour market Drinkwater points to above.

For most OECD countries, there is also a form of trade-off between regulation of low-income work and economic productivity development.

Available statistics and earlier research lend support to the idea that it is particularly challenging to integrate many of the immigrants from Asia or Africa into the Norwegian labour market. They have a higher tendency to be refugees or family immigrants than immigrants from other country groups, and often originate from fragile states that lack the necessary institutions and stability to ensure satisfactory educational outcomes or work experience. In addition to being less educated on average, their education may not be readily prepared for the demands of the Norwegian labour market or accepted by Norwegian employers.

Employed persons from countries in group 3 made up 8.7 per cent of total employment in 2007, and those who were employed were clearly over-represented in industries with jobs that have low formal education requirements, although there are exceptions. In some industries, country group 3 labour dominates the employment, see Figure 2-9.

Source: Statistics Norway. Processed by Economics Norway
Figure 2-9: Country group 3 - share of industry employment in Norway and industry share of country group 3 employment. 2017. Industries with less than 20 000 employees are not shown.

Source: Statistics Norway. Processed by Economics Norway
2.5 Growth and fragility may increase the number of migrants worldwide

The OECD has developed a vulnerability barometer based on political, socio-economic and environmental indicators in order to provide a more nuanced impression of what it means to be a vulnerable state.

In 2016, the OECD defined 56 countries, inhabited by 22 per cent of the world’s population, as fragile. The majority of these countries are in sub-Saharan Africa (35); 7 in East Asia and the Pacific, 6 in the Middle East and North Africa, and the remainder are mostly found in South America and the Caribbean. Many of these states are currently the source of some of the largest migration flows in the world.

The fragile countries mentioned above have among the fastest population growth rates in the world, see Figure 2-10. Population growth on the African continent and in some Asian countries has traditionally been high. Some large Asian countries, such as China and Japan, will probably see shrinking populations in the coming decades, while in some African countries, population growth is expected to remain high for many decades. If current projections for further growth become reality, more than 30 per cent of the global population will be living in fragile states by 2050, in which case the number of emigrants can also be expected to increase (OECD, 2016).

It has to be assumed that at least some of these migrants will arrive at the Norwegian border, either by themselves or through international agreements (UNHCR, 2018).

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9 Of these, 15 were defined as being extremely fragile: Somalia, South Sudan, the Central African Republic, the Democratic Republic of the Congo, Sudan, Eritrea, Chat, Ethiopia, Burundi and Mali in Africa, and Yemen, Afghanistan, the Syrian Arab Republic and Iraq in Asia. In addition, Haiti is considered an extremely fragile state.

10 An important precondition for this result is that fragile countries retain their fragility and continue producing refugees.
3 Future supply of immigrants in the labour market

Immigration to Norway is partly a function of global migration flows (labour and refugee migration), earlier migration to Norway, and family immigration. Labour migration is in turn a function of, amongst other things, the development in relative income between countries.

It is not clear whether economic development in Norway will continue to be stronger than in other countries. Coupled with better economic development in countries that have traditionally supplied labour to Norway, a reduction in labour migration may be seen in the coming years. Indications are that this trend has already (2018) begun, but there will of course also be great uncertainty related to the number of immigrants arriving as refugees and asylum seekers.

Norway is (at least to some degree) able to influence immigration from countries in group 3 through immigration legislation and regulation. Thus, immigration from these countries is subject to political choices, and may very well become both higher and lower than indicated in Statistics Norway’s forecasts for the years to come. Immigration from countries in groups 1 and 2 is not regulated to the same extent; citizens of EU member countries have free mobility within the EEA, and citizens of the other countries face, in practice, much easier visa and migration restrictions than the citizens of countries in group 3.

3.1.1 Statistics Norway’s projections

Statistics Norway makes projections for future demographic development based on a demographic model that considers economic development in Norway as well as in other countries, and demographic trends in Norway and other countries. For more info on Statistics Norway’s projections, see appendix 2.

Statistics Norway reports three alternative projections for future immigration: the main alternative (M), with medium immigration; a low alternative (L), with low immigration, and; a high alternative (H), with high immigration.

The three alternatives are based on three alternative scenarios for the economic situation in Norway and the three country groups, as well as three different alternatives for future population development in each of the country groups. The main alternative is based on assumptions that Statistics Norway considers to be the most reasonable.

In our discussion, our assumptions concerning other demographic key components are held constant, while the potential outcomes of L, M, H immigration are explored.

Statistics Norway’s alternative scenarios

In its main scenario, Statistics Norway projects that immigration is going to slow down by 2030. The primary reason for the anticipated slowdown is an expected reduction in immigration from the Eastern European EU member countries (i.e. country group 2). This expectation is based on the belief that income disparities between Eastern Europe and Norway will lessen, and that the population growth in Eastern Europe will slow down or even become negative.

Furthermore, Statistics Norway expects a slight growth in immigration again after 2030. This is mainly linked to positive expectations about worldwide population growth in general, and population growth in Africa and parts of Asia in particular. Population growth abroad will increase the stock of potential migrants.

On the other hand, Statistics Norway expects the gap between Norway’s economic conditions and economic conditions elsewhere to narrow as the century progresses, partly due to an expected decline in the oil and gas industry. Reduced income
disparities between Norway and the rest of the world may, everything else being equal, reduce immigration.

Net immigration is the number of immigrations minus the number of emigrations. In the main alternative (MMMM), Statistics Norway assumes that net immigration will fall from just over 21,000 in 2017 to a projected long-term level of between 17,000 and 20,000 annually.

With these assumptions, the number of immigrants residing in Norway will increase from 750,000 in 2019 to 1.1 million in 2040.

Figure 3-1: Immigrants from country group 3 living in Norway. Three alternatives. 2018–2040. All ages.

Worsened economic conditions in Norway and even slower population growth abroad results in a low net immigration scenario

In the low net immigration alternative, Statistics Norway assumed that the immigration will slow down throughout the projection period. Again, it is net migration from countries in group 2 that has the biggest impact on the outcome, as Statistics Norway projects negative net immigration from Eastern European EU member states towards the latter half of the projection period.

While Statistics Norway assumes that immigration from countries in group 2 will continue to slow down towards the latter half of the period in question, it assumes that immigration from countries in group 3 will continue at a steady, albeit somewhat slower rate than that of 2018.

With Statistics Norway's low immigration assumptions, the number of immigrants residing in Norway will increase to about 1 million in 2040 — about 100,000 less than in the medium growth scenario.

High population growth in countries in group 3 and no economic downturn in Norway leads to a high immigration scenario

Immigration from countries in all three country groups is expected to increase rapidly in Statistics Norway's high immigration scenario. While the growth in immigration from countries in group 2 will be somewhat slower than the growth in immigration from countries in the other two groups, it is markedly different from the low and medium scenarios.

The growth rate of immigration from countries in group 3 is assumed to be increasing throughout the latter half of the projection period, as can be seen in Figure 3-1. It is especially this growth that explains the divergence of the three scenarios in Figure 3-1.

In the high immigration scenario, Statistics Norway projects that there will be 1.3 million immigrants living in Norway by 2040. Thus, the difference between the low and high estimates is about 300,000 immigrant residents. This difference has potentially significant consequences for important factors such
as society’s capacity (and willingness) to employ and integrate immigrants into Norwegian society.

3.1.2 How many resident immigrants of working age will there be in 2040?

While the total number of new immigrants is an important matter for society, within the context of this project, it is mainly the number of working-age immigrants arriving from now up to 2040 that is of interest.

Table 1 shows the number of new immigrants by 2040 under the three assumptions, low, medium and high immigration. Of these, between 60 and 70 per cent are expected to be of working age in 2040. In these projections, the relationship between age and immigration implies that the share of working-age immigrants as a proportion of the total immigrant population will be higher, the higher the immigration assumptions.

Table 1 Net immigration 2018-2040 in three scenarios. All ages and aged 20-64.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>All ages</th>
<th>Working age</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMMM</td>
<td>363 743</td>
<td>239 850</td>
</tr>
<tr>
<td>MMML</td>
<td>275 859</td>
<td>165 834</td>
</tr>
<tr>
<td>MMMH</td>
<td>551 798</td>
<td>395 932</td>
</tr>
</tbody>
</table>

3.2 Projected skills and educational attainment

In order for us to be able to examine low-skilled immigrants in the Norwegian labour market of 2040, we must first decide what we believe about the level of education among future immigrants. How many will be what we call low-skilled? We will now present our methods and the results. Instead of assuming that the levels of educational attainment of tomorrow’s immigrants will be the same as for the immigrants of today, we choose to assume that immigrants’ formal skills depend on the skill levels of the population in their countries of origin. Our assumption is a simplification and we assume that there is a strong connection between the skill levels of a population and the skill levels of those who emigrate. This enables a quantification of future immigrants’ skill levels. Although there is no parity between the level of education of the emigrants and the population of the country they leave, we still consider the correlation to be strong enough to make it reasonable to use the countries’ skill composition to estimate the skill levels of the emigrants.

The Wittgenstein Centre for Demography and Global Human Capital, see Lutz, Butz & Samir (2017), produce worldwide statistics and forecasts of educational attainment levels. We use these forecasts as best knowledge of future skill levels of potential future immigrants to Norway.

The Wittgenstein Centre’s forecasts are based on assumptions about country-specific developments in educational attainment, dependent on the share of the current population that has completed education at different levels.

The Wittgenstein Centre forecasts present several scenarios for each country’s development path. We look closer at three of these scenarios:

1. Medium development
2. Rapid development
3. Stalled development

From all three scenarios, we have focused on the population share aged 20-64, as these are the least likely to adapt Norwegian educational attainment behaviour whilst simultaneously being most likely to find employment after arrival in Norway.
The three scenarios are further explained (by the Wittgenstein Centre in (Lutz, Butz, & Samir, World Population & Human Capital in the Twenty-First Century: An Overview, 2017)) below:

**Rapid Development**: This storyline assumes that educational and health investments accelerate the demographic transition leading to relatively low populations. This implies assumptions of lower mortality and higher educational attainment for all three country groups. With respect to fertility assumptions, the story is more complex. For rich OECD countries, the emphasis on quality of life is assumed to make it easy today for women to combine work and family, making further declines unlikely. For this reason, the medium fertility assumption was chosen for this group of countries. Low fertility assumptions were chosen for all other countries, consistent with the assumed rapid continuation of demographic transitions. Migration levels were assumed to be medium for all countries.

**Stalled development**: This is a world with a stalled demographic transition. Fertility is assumed to be low in the OECD countries and high in the other two country groups. Population growth is assumed to be high in developing countries and low in industrialized countries. Accordingly, this scenario assumes high mortality and low education for all three country groups. Due to the emphasis on security and barriers to international movements of persons, migration is assumed to be low for all countries (Lutz, Butz, & Samir, World Population & Human Capital in the Twenty-First Century: An Overview, 2017).

It is important to be aware of the uncertainty associated with the three scenarios above. Even if a scenario holds, we cannot say with certainty what formal skills immigrants coming to Norway will have. Different push and pull factors for migration can affect a nation’s population unequally and affect who does and who does not migrate.

For example, increased political instability or a shift in business structures may affect different population groups in different ways. A shift that may induce a 'brain drain' from one country could trigger a flow of low-skilled labourers seeking new ventures in another country. Civil war, climate changes or other dramatic events can result in a flood of low-skilled emigrants. Our assumption that immigrants from a country represent the educational distribution within that country represents another uncertainty in our forecasts.

### 3.3 Combining the forecasts

Based on our assumption presented above, we can project the educational attainment levels among future immigrants by combining the Wittgenstein Centre’s education forecasts with Statistics Norway’s immigration forecasts. While immigrants’ educational attainment levels converge towards those of Norwegians over time, especially when the immigrants are relatively young when they arrive, this method will yield results that can be considered a baseline from which further discussion is possible.\(^\text{11}\)

We have chosen to highlight combinations of the medium, rapid and stalled development scenarios from the Wittgenstein Centre and the middle-of-the-

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\(^{11}\) It can be argued that this method gives a better representation of average immigrants' skill levels when coming to Norway, i.e. at the time of integration, and is thus better suited to our purposes, i.e. highlighting potential consequences and difficulties faced by new immigrants in 2030.
road (MMM) immigration scenario from Statistics Norway. We will include in our discussion the high and low immigration alternatives, but we believe the middle-of-the-road scenario is the most probable scenario today.12

Thus, we have constructed three potential scenarios for the future number of immigrants living in Norway and their educational attainment. Below we present projected educational attainment levels of immigrants from country group 3. Forecasted educational attainment levels of immigrants from country groups 1 and 2 are presented in Appendix 1.

Projected educational attainment levels among immigrants from countries in group 3

Country group 3 consists not only of large economies with well-functioning labour markets and healthy industries, such as Japan and China, but also economies severely affected negatively by war, internal conflicts and nature-based stress factors, such as Syria and Somalia.

As a result, there is considerable variation in previous work experiences and other informal skills among new immigrants.

Comparing Figure 3-2 with the distribution of education levels among immigrants from countries in group 3 currently living in Norway (see Figure 2-9), we find few differences.

Looking at Table 2 below, which shows our projections for the immigrant population from countries in group 3 in 2040 by educational attainment, we see that based on the medium development, as well as Statistics Norway’s middle-of-the-road projection of future immigration, we can expect about 60 000 more immigrants with only a primary/secondary education and 90 000 more immigrants with only an upper secondary education, to be living in Norway by 2040. This is an increase of 45 and 115 per cent respectively. Our forecasts also show an increase of about 57 000 immigrants from countries in group 3 with post-secondary education.

When interpreting the projections above, it is important to keep in mind that immigration from countries in group 3 can be regulated through refugee quotas and rules for the approval of asylum applications, as well as other types of rules for immigration.

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12 In 2018, the net immigration to Norway was between Statistics Norway’s MMMM alternative and MMLM alternative, albeit somewhat closer to MMMM, both for total immigration and immigration from country group 3.
Table 2 Immigrants from countries in group 3 aged 20-64 in 2018 and 2040 in a medium/MMMM scenario by educational attainment.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Education</th>
<th>2018</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>No education</td>
<td>68 300</td>
<td>68 500</td>
</tr>
<tr>
<td></td>
<td>Primary</td>
<td>137 650</td>
<td>200 500</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>82 400</td>
<td>177 000</td>
</tr>
<tr>
<td></td>
<td>Post-secondary</td>
<td>39 400</td>
<td>96 500</td>
</tr>
</tbody>
</table>

3.4 Implications for the supply of low-skilled immigrant workers in Norway

Figure 3-3 below summarises our main alternative, with a middle-of-the-road scenario for both future immigration and global development. Given the projections shown in the figure, we can expect there to be about 850 000 immigrants aged 20-64 living in Norway in 2040.

Some immigrants will have lived here for many years, while others will have arrived more recently, and thus their employability may differ. Some, especially among the younger immigrants, may be enrolled at a university or a college, but the majority will be working or wanting to work.

In 2018, about 65 per cent of the immigrant population aged 20-64 were employed, while about 6 per cent were actively looking for work. The rest were receiving government transfers and/or being supported by their families. The employment rate of this age group of immigrants has not changed much over time and an estimate of the share of immigrants aged 20-64 that can be envisaged as being part of the labour force could be set to 71 per cent. If we assume that this rate stays constant throughout our projection period, we can calculate the projected supply of immigrant labour in 2040.

Figure 3-3: Immigrants living in Norway 2018-2040 aged 20-64 in a medium/MMMM scenario, by educational attainment and country group.

Source: Wittgenstein Centre and Statistics Norway, processed by Economics Norway.

However, the difference between the two methods are small (about 1.5 percentage points). For simplicity we disregard this aspect. However, we do note that lower participation rates than assumed here will, everything else equal, reduce the supply of workers and increase the need for income support.

14 It could be argued that we should have considered the fact that participation in the labour market vary across country groups. Our projections imply a larger share of immigrants from country group 3 in 2040 than today. As the labour market participation rate among immigrants in this group is lower than in the other groups, this would imply a lower participation rate among immigrants on average than today, if we keep the participation rate within each country group constant.
Changes in the Norwegian rules on public income transfers in the period up to 2040 may change in a way that also changes the incentives to work. In this event, it is possible that the labour supply from the immigrant population will differ somewhat from our figures. However, we disregard any such changes in our projections.

Of the total number of immigrants aged 20-64 in 2040, about 36 per cent are projected to have lower secondary education or less as their highest achieved formal education, 39 per cent will have completed at least parts of an upper secondary education (incl. vocational education) abroad and the remaining 25 per cent will have completed at least parts of a post-secondary education.

Table 3 Immigrants living in Norway aged 20-64 in 2018 and 2040 according to a medium/MMMM scenario, by educational attainment.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Education</th>
<th>2018</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>No education</td>
<td>72 600</td>
<td>70 000</td>
</tr>
<tr>
<td></td>
<td>Primary</td>
<td>206 200</td>
<td>252 000</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>202 000</td>
<td>306 500</td>
</tr>
<tr>
<td></td>
<td>Post-secondary</td>
<td>128 000</td>
<td>220 000</td>
</tr>
</tbody>
</table>

Adjusting the total number of immigrants aged 20-64 living in Norway to the 71 per cent share that we postulated above, we can calculate the supply of immigrant labour in 2040 by educational attainment, see Table 4 below.

Table 4 Assumed labour supply from the projected immigrant population aged 20-64 in the year 2040, by educational attainment.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Education</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>No education</td>
<td>49 700</td>
</tr>
<tr>
<td></td>
<td>Primary</td>
<td>178 900</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>217 600</td>
</tr>
<tr>
<td></td>
<td>Post-secondary</td>
<td>156 200</td>
</tr>
</tbody>
</table>
This chapter presents the projected demand for labour by educational attainment level. The projections are made using Economic Norway’s projection model for supply and demand for labour by educational attainment and occupation.15 We compare the results with previously published labour market projections and end the chapter by discussing the consequences of low-skilled immigration in various scenarios. However, we start with a brief discussion of important aspects of the Norwegian economy which may characterise the future labour market.

4.1 The Norwegian model enhances productivity and demand for high-skilled labour

The Norwegian model for wage formation favours demand for high-skilled labour, and thereby enhances productivity. The reason is that the wage level in Norway is compressed, with relatively high wages for low-skilled labour and relatively low wages for high-skilled labour. The high costs for low-skilled labour provide employers with an incentive to use technology and machines, rather than low-skilled labour.

Most projections for the future labour market indicate that employers will generally have a greater demand for high-skilled workers. This may indicate that new technology and more advanced forms of commodity and service production affect the needed skill compositions in a wide range of industries, and perhaps especially in industries where a relatively large proportion of immigrants are currently employed.

Such developments may be strengthened by how the Norwegian model for wage formation affects the relative cost of highly skilled labour. Because the model contributes to compressed wage levels, highly skilled workers appear to be cheaper than what would have been the case with a larger wage gap between high and low-skilled labour.

4.1.1 Technological changes decrease the demand for low-skilled workers

Over several years, Norway has experienced a declining demand for labour in the primary industries (agriculture, forestry and fisheries), a somewhat weaker decline in secondary industries (manufacture, oil extraction, power supply, mining) and strong growth among service industries (including the public sector).

Various studies conclude that technological changes, such as digitalisation and automation reduce the demand for labour, especially low-skilled labour (Eggen, Røtnes, Steen, & Tofteng, 2018; Nedelkoska & Quintini, 2018; Frey & Osborne, 2017; Ekeland, Rouvinen, & Pajarinen, 2015).

The impact on labour demand has been two-fold. On the one hand, the demand for labour to carry out routine and manual tasks, within for example retail trade, has been reduced. On the other hand, the demand for technical skills to operate distribution and logistics services has increased. However, as distribution and logistics centres are becoming more and more automated, the net effect on labour demand has been negative. Gradually reduced employment in physical retail outlets combined with increasingly automated distribution and logistics centres can be expected to further reduce the demand for manual labour in the retail and wholesale trade establishments. We see the same effects from automation in

15 See Appendix 2 for more details.
fiscal services, manufacturing industries and low-skill commercial office work.

Ekeland, Rouvinen and Pajarinen (2015) analyse how automation can affect different professions. They find that up to a third of the labour force, under certain assumptions, can be affected by automation over the next 20 years. The study finds that almost all jobs will be affected to a certain extent, but that it is jobs in lower-paid and lower-skilled professions that will be particularly affected. This can have significant consequences for low-skilled workers, including low-skilled immigrants.

Due to the relatively high wages for low-skilled labour and strong incentives for investment in technology, both the private and the public sectors in Norway have traditionally been quick to adopt new technology. This has led to a faster reduction in labour demand in several sectors than in many other countries (NOU 2016:3).

Although it is unlikely that tasks and occupational structures will not adapt to technological advancement, we must assume that a large part of the labour force will be affected. A robust assumption is that technological changes in themselves will increase the demand for workers with a higher education, while demand for low-skill labour will be reduced (NOU 2019:2). While low-skilled jobs can be automated more easily than tasks that are cognitively demanding, the ever-increasing technological complexity will require a similar evolution in the cognitive abilities of the labour force.

4.1.2 Demographic development might increase the demand for low-skilled labour

Changes in the composition of the population by age and educational attainment, also when holding immigration constant, affect the labour market through how society’s needs for services change and workplaces are created or destroyed.

Figure 4-1 Population projections 2018-2040 by age group (the left scale) and the share of working-age population relative to the population above 67 years (the right scale blue line).

Source: Statistics Norway
At the start of 2018, Norway had almost five persons of working age per person of retirement age. Statistics Norway’s latest projections indicate that this number will be closer to three by 2030 (Cappelen, Dapi, Gjefsen, Sparrman, & Stølen, 2018).

With an ever-older population, a larger proportion of the population will require health and social services while a smaller proportion will be working to produce such goods or services and paying tax to finance them.

Such changes in a population’s age structure will have consequences for the labour market and government revenue. With a falling proportion of the population in work and creating value in Norway, coupled with an increasing proportion that is dependent on state transfers and health and care services, the pressure on public finances to fund such services is growing. This is because the ageing of the population will lead to a need for more workers in occupations that provide services required by the elderly population. Population ageing will also increase the demand for labour to replace the workers who retire.

It is possible that low-skilled immigrants, all else being equal, will be able to meet the demand for labour within the healthcare sector to an even larger extent than today. However, this will depend on the technology development in the sector, the acceptance of new technology (e.g. healthcare robots and other kinds of welfare technologies) among the elderly and society’s willingness to accept the use of low-paid, low-skilled workers with limited Norwegian language skills.

Although automation and robotisation may substantially reduce the labour demand within healthcare, the use of such technology also relies on acceptance by society in general, but especially the elderly. As described in Broadbent, Stafford, & Macdonald (2009), this is both a question of adapting technology according to needs, but also adapting expectations.

The acceptance of technology such as healthcare robots may, as the authors explain, be correlated to cultural differences. A cross-cultural study of people’s assumptions about humanoid and animal type robots found several differences between Japan, Korea and the USA (Nomura, et al., 2008). In the study, Japanese respondents thought that humanoid robots were more capable of emotions, could be considered more like humans than tools, and believed more strongly that robots could fulfil a communication role in the home, compared to respondents from the other countries.

While Japan has embraced nursing-care robots in their handling of a rapidly ageing population (The Economist, 2017), such technology may not be accepted in the same way by Norwegian citizens. In this respect, low-skilled immigration may serve as an alternative measure in the face of an ageing population. Immigration can potentially help maintain a certain proportion of young people in the Norwegian population, and thus in the labour force, primarily because immigrants are often young on arrival. However, immigrants also age. Several economists have argued that continuous immigration as a solution to the ageing problem is not a real solution, but simply a way of delaying the inevitable.

### 4.1.3 Polarisation of the labour market

In the 1990s, the idea of a skill-biased technological change was used to understand the shift in employment towards more and more educated workers (Autor & Katz, 1999).
Several newer (American and British) studies have shown that there is in fact growth in both the number of highest-skilled and lowest-skilled jobs, while employment in the middle of the skill distribution is declining (Goos, Manning, & Salomons, 2009).

There are several theories about the reasons for this job polarisation.

One theory is that technological progress allows for the automation of routine cognitive tasks, and that these are typically found in the middle of the skill distribution, not in the lowest (where the jobs may require too much physical dexterity to be easily automated, e.g. trench-digging or hedge-trimming) or the highest (where the jobs are too cognitively demanding). We already see signs of this happening; there has been a reduction in the number of persons employed in some of the occupations that entail more demanding cognitive tasks, for example within banking and administrative professions.¹⁶

Another theory concerns globalisation, and the belief that the outsourcing of routine middle-skilled tasks leads to polarisation in richer countries (where the wage structure makes it profitable for enterprises to outsource certain tasks). However, the relevance of the outsourcing effect of globalisation could be contested. Indeed, some industries are now showing tendencies towards the in-sourcing of certain tasks.

A final theory is that a link exists between job polarisation and wage inequality. In countries such as the USA and UK, where job polarisation has been observed, a growing divide between rich and poor has enabled the richer population to increase its demand for services typically offered by the low-skilled, effectively increasing the demand for low-skilled labour.

Of these, the two first might apply to Norway, at least to some degree. However, so far there has been little scope for an increase in household-oriented services due to high wage costs. This may change if the supply of low-skilled labour becomes significantly larger than the demand. In such a situation, it may be reasonable to ask if increased low-skilled immigration will threaten the Norwegian wage formation model, thus increasing wage disparities and increasing polarisation. As the macroeconomic gains from the Norwegian model for wage formation are widely acknowledged across political parties, and as increasing inequality will be problematic on a sociocultural level, such a development will most likely be met with political resistance and legal restrictions, which have already been implemented in certain industries.¹⁷

4.2 A mechanical projection of future demand for low-skilled workers

Figure 4-2 presents the results from a mechanical projection of future demand for workers by educational attainment level.¹⁸ By design, recently observed trends will continue throughout the projection period.

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¹⁶ For instance, figures from Statistics Norway’s National Accounts show that the number of workers within finance and insurance has been steadily decreasing since the peak in the late 1980s, both in absolute terms and as a share of the total number of workers in the mainland economy.

¹⁷ The law on generalisation of tariff agreements currently prevents unskilled workers or companies in specified industries from using lower wages than those agreed between unions and employers in ordinary collective agreements.

¹⁸ The model projects the total labour force, distributed by both industry and educational attainment. A description of the projection model is given in Appendix 2.
The demand for workers with post-secondary education is on the rise. Meanwhile, the demand for workers with a primary and secondary (incl. vocational) education is dwindling. In short, society’s demand for labour is constantly shifting towards ever-higher formal skills.

4.2.1 Society demands higher skills

It is clear from Figure 4-2 that our projection supports the popular notion that the labour market of tomorrow demands higher skills on average than it does today, both in absolute and relative terms. In many ways, this is a continuation of a development that has been ongoing for a number of years and that several other forecasts have also intercepted.

This development indicates the continued growth of many of today’s high-skill industries, where very few low-skilled immigrants are currently employed. It probably also indicates that new technology and more advanced forms of commodity and service production affect the need for higher skills in a wide range of industries, maybe at the expense of the demand for low-skilled labour and perhaps especially so in industries where a disproportionate number of low-skilled immigrants work today.

4.2.2 A significant reduction in demand for low-skilled workers

We project a somewhat grim outlook for low-skilled workers, although we do not project total desolation. The trend towards a falling demand for low-skilled labour will continue with fervour. Nominal demand for low-skilled labour will be reduced by almost a third. This is a substantial amount, but more than 430 000 low-skilled workers will still be needed in 2040 according to our projections.

This may indicate that although Norwegian employers will demand relatively high levels of formal skills to a larger degree than today, there will still be a demand for some low-skilled labour. Together with our beliefs on technological development, digitalisation and the automation of tasks, this implies that many workers with low formal skills may be required to possess higher informal (real-world) skills than what is required today. What types of informal skills will be in demand and how such skills can be acquired and signalled to an employer are important but uncertain. It is however likely that service will be the most important task for workers with low formal education. In the future, the service industries will probably put even greater emphasis on cognitive skills and mastery of Norwegian.

The reduction in demand for low-skilled labour is projected to be particularly extensive in industries such as retail, transport and storage and the agricultural sector. However, the demand for low-skilled labour is expected to remain high in industries such as lodging and accommodation and food service activities, and to increase in health and social care. These are all important industries for the employment of immigrants in Norway today.

Since the projection continues recent trends, we implicitly assume invariance of any structural breaks. In particular, the Norwegian model for wage formation will continue to be an important premise in

19 An interesting example is the retail industry, where the automation of teller machines has freed labour resources and increased many retail outlets’ focus on offering better shopping experiences through increased customer service and guidance. This requires more social and cognitive skills than earlier (Walbaekken, Steen, Røtnes, Steen, & Steen Jensen, 2019).
wage settlements and wages will continue to be compressed. If this (implicit) assumption is lifted, a higher demand for low-skilled workers and possibly a reduced demand for mid-skilled workers could be envisaged.

Figure 4-2: A mechanical projection of future labour demand by educational attainment level

Source: Statistics Norway and Economics Norway
4.2.3 Increased demand for mid-level education (vocational and lower tertiary education)

The projection shows a clear increase in demand for workers with a short tertiary education. Persons with a short tertiary education have at least two years of post-secondary education at a university or college. Typically, these persons have completed a bachelor’s degree in an academic discipline and work in a wide range of professions and industries.

While we have projected a reduced demand for workers with an upper secondary education as their highest attained level, we must remember that within this group there are also those with a vocational education, see Section 1.2. Most projections of labour demand find an increased demand for labour with vocational education. We believe this to be a true consequence of industrial and economic development, and thus to hold true in our projection as well. However, we have not been able to isolate that education level here, neither for demand nor supply. It must, however, be noted, as it lends weight to the following argument:

When taking an education beyond the upper secondary level, both specialised professional and cognitive skills are developed and strengthened. Students learn to observe and to process knowledge, and communicate the said knowledge and use it for practical purposes. Education, therefore, does not only provide knowledge about individual disciplines, but also increases a person’s value as an employee in general. In a seemingly increasingly complex labour market, with an increased focus on cognitive and social skills, further education may become an even more sought-after characteristic in the labour market.

Relatively short educations, such as those offered by professional and vocational schools, as well as through short post-secondary education, may therefore become an even more important signal to employers in the future. Increased demand for these kinds of education may also signify an increased specialisation of work tasks, also among the middle-skill level. The skills necessary to solve these specialised tasks are often learned through such short post-secondary education.

4.3 Comparison with other labour market projections

Projections of the future supply and demand for expertise have been presented on several occasions. NOU 2018:2 and NOU 2019:2 present several projections from both Statistics Norway and Economics Norway.

Statistics Norway’s latest projections were presented in 2018 (Cappelen, Dapi, Gjøfesen, Sparrman, & Stølen, 2018). They were based on key macroeconomic and demographic developments and assumed that historical trends will be reflected in future developments. Cappelen et al. (2018) thus projected development paths for different educational attainment levels given historical trends.

Overall, Cappelen et al. (2018) projected a strong growth in the demand for workers with a vocational secondary education as their highest completed education level. In particular, demand was high for construction-related craftsmen as well as for workers within health and social care. At the same time, the need for people with upper secondary as their highest completed educational attainment, was shown to be falling.

In the case of workers with a tertiary education, the demand was projected to be increasing, but the supply of workers with this level of formal compe-
tence appeared to surpass the demand. For example, the need for workers with science degrees would decline because of an assumed decline in the petroleum industry especially and in mainland-based sectors, while developments in private services production would pull in the opposite direction. Overall, these educational groups would constitute a stable share of total employment in Cappelen et al. (2018).

The main difference between the mechanical projection above and the projection in Cappelen et al. (2018) is the impact of rapid technological development. A possible criticism of Statistics Norway’s projections is that they may fail to sufficiently account for the magnitude of digitalisation and automation that already seems to be taking place. Thus, they may underestimate the effect of these factors on the future demand for low-skilled workers.

In addition to the three publications cited in NOU 2018:2, Economics Norway recently presented projections of the future labour market supply and demand by occupation and educational attainment level in four scenarios in a study financed by the Official Committee on Skill Needs (NOU 2019:2; Eggen F. W., Røtnes, Steen, & Tofteng, 2018). The scenarios are intended to capture different assumptions about key driving forces determining the labour market of tomorrow:

- Policies for stimulating growth in tech industries
- Degree of acceptance for new technology
- Protectionism
- Extent of environmental-friendly policy
- Preferences for leisure relative to consumption

Under various assumptions about these driving forces, three scenarios are constructed with the help of interviews and a workshop:

- Digital Norway (‘Digitale Norge’)
- Tech Norway (‘Teknologilandet’)
- Enjoy Norway (‘Nyt Norge’)

The scenarios are further described in Appendix 2. Here, we will restrict our focus to the projections of employed workers with a primary/lower secondary education as their highest attained education level. These projections based on the scenarios above are illustrated in Figure 4-3 alongside the mechanical projection and the projection cited by Statistics Norway. Note that we have restricted the employment rate to being equal across projections, thus isolating the variance in educational attainment.

The various alternatives show that the mechanical approach projects higher employment of low-skilled workers than two out of three scenarios. However, while the scenarios and the mechanical approach all outline a significant reduction in the employment of low-skilled workers, the projection from Statistics Norway tells another story. Although the level of the projection is not comparable with the others (as this projection is based on the Labour Force Survey, and not registered employment), the projection outlines a fairly stable level of workers with a primary/lower secondary education as their highest attained education level.

If we compare the number of employed low-skilled workers in 2040 in the three scenarios and the mechanical approach, the numbers range from 310 000 to more than 480 000. The four alternatives thus all imply a significant reduction in the employment of low-skilled workers compared to today.
Figure 4-3: Comparison of various projections of future employment of workers with a primary/lower secondary education as highest attained education level

Note: The projections deviate from their respective sources, as we have restricted aggregated employment to be the same in all cases, thus isolating the differences in educational attainment. Furthermore, it should be noted that the projection from Statistics Norway is not directly comparable with the other projections, as their projection is based on the Labour Force Survey (‘AKU’) and not registered employment. Consequently, the level (i.e. the number of employed workers) is not comparable to the other projections.

Source: Statistics Norway and Economics Norway

4.4 Surplus supply of low-skilled labour in 2040 increases competition for jobs

In Table 5, we show the estimated labour supply in 2040 by education level, broken down into immigrants and Norwegian-born workers. Combined with the projections using the mechanical approach above, we can summarise the estimated supply and demand for labour by educational attainment in Table 6.

To facilitate comparisons, we have combined the supplied labour with no education and primary/secondary education as ‘Primary’ in Table 6.

---

20 Supply from Norwegian-born workers is projected using an identical approach to the projection of labour supply from immigrants, see Chapter 3.
while, short and long tertiary education, being equivalent to the broader category of post-secondary education, are now merged in the column for demand.

Table 5: Estimated labour supply by educational attainment from the forecasted immigrant population and the rest of the Norwegian population aged 20-64 in the year 2040. Share of labour force in parentheses.

<table>
<thead>
<tr>
<th>Education</th>
<th>Immigrants</th>
<th>Norwegian-born</th>
</tr>
</thead>
<tbody>
<tr>
<td>No education</td>
<td>49 700 (2%)</td>
<td>850 (0%)</td>
</tr>
<tr>
<td>Primary</td>
<td>178 900 (7%)</td>
<td>350 500 (14%)</td>
</tr>
<tr>
<td>Secondary</td>
<td>217 600 (8%)</td>
<td>649 500 (25%)</td>
</tr>
<tr>
<td>Post-secondary</td>
<td>156 200 (6%)</td>
<td>971 900 (38%)</td>
</tr>
</tbody>
</table>

Table 6: Labour demand and supply in 2040 by educational attainment, mechanical approach.

<table>
<thead>
<tr>
<th>Education</th>
<th>Demand</th>
<th>Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>435 739</td>
<td>579 950</td>
</tr>
<tr>
<td>Secondary</td>
<td>738 406</td>
<td>867 100</td>
</tr>
<tr>
<td>Post-secondary</td>
<td>1 690 197</td>
<td>1 128 100</td>
</tr>
</tbody>
</table>

Thus, our projections show a surplus supply of workers with a primary/lower secondary and upper secondary education as their highest attained education level, and a surplus demand for workers with a post-secondary education as their highest attained education level. Following our definitions of low and high-skilled labour, we can say that we project a surplus supply of low-skilled labour and a surplus demand of high-skilled labour.

The surplus supply implies that competition for low-skilled jobs will be fierce. If no low-skilled workers are able to fill high-skill vacancies, the mechanical projection implies that about 19 per cent of all low-skilled workers will be out of work by 2040 (in addition to those not participating in the labour force), see Table 7. The surplus supply will be slightly higher in one of the three scenarios outlined above, but lower in the other ones.

Table 7: Surplus supply and unemployment of low-skilled workers (workers with secondary or lower as their highest educational attainment level) in the four projection alternatives.

<table>
<thead>
<tr>
<th>Education</th>
<th>Surplus supply</th>
<th>Unemployment 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical</td>
<td>272 905</td>
<td>19 %</td>
</tr>
<tr>
<td>Digital Norway</td>
<td>290 231</td>
<td>20 %</td>
</tr>
<tr>
<td>Tech Norway</td>
<td>220 224</td>
<td>15 %</td>
</tr>
<tr>
<td>Enjoy Norway</td>
<td>12 912</td>
<td>1 %</td>
</tr>
</tbody>
</table>

1 Unemployment rate among low-skilled workers if no low-skilled workers are able to fill high-skill vacancies

The surplus supply of low-skilled workers will be higher when only considering workers with primary/lower secondary as highest educational attainment level. The mechanical projection implies that about 25 per cent of the workers in this group will be out of work by 2040. In two of the three scenarios outlined above, the surplus supply of workers in this group will be substantially larger, see Table 8.
Table 8: Surplus supply and unemployment of workers with primary/secondary as highest educational attainment level in the four projection alternatives.

<table>
<thead>
<tr>
<th>Education</th>
<th>Surplus supply</th>
<th>Unemployment ¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical</td>
<td>144 211</td>
<td>25%</td>
</tr>
<tr>
<td>Digital Norway</td>
<td>269 596</td>
<td>46%</td>
</tr>
<tr>
<td>Tech Norway</td>
<td>222 952</td>
<td>38%</td>
</tr>
<tr>
<td>Enjoy Norway</td>
<td>99 389</td>
<td>17%</td>
</tr>
</tbody>
</table>

¹Unemployment rate if no workers with primary/secondary as highest educational attainment level are able to fill high-skill vacancies.

Empirical findings support both the argument that low-skilled immigrant labour will replace low-skilled native labour, and the argument that native low-skilled labour will effectively deny low-skilled immigrants’ access to the labour market.

There are several reasons why the latter could be the case. Language skills, ability to signal informal skills, prejudice against education attained abroad, etc. all play a role in complicating immigrants’ participation in the labour market. Today, Norwegian-born have a higher labour market participation rate than immigrants, for any given education level.

However, one recent study found that immigration from low-income countries (many of which are typically low-skilled) has reduced social mobility and labour market participation among low-skilled Norwegian-born (Hoen, Markussen, & Røed, 2018). This supports the argument that low-skilled immigrant labour to a certain degree does replace low-skilled native labour.

At the same time, low-skilled immigrants are often found involuntarily working part time or on short time contracts (Olsen, 2017). This may indicate both how immigrant labour may be discriminated against, and how immigrant labour may compete against native labour.

In addition, immigrants are more often found to be formally overqualified for their job than the Norwegian-born population. A study of overqualification among immigrants between 2007 and 2012 showed that among immigrants from non-western countries with a higher education, 43 per cent were employed in jobs that did not require a post-secondary education. The corresponding proportion among the general population with a higher education was 11 per cent. In a survey from 2016, one quarter of all immigrants reported being overqualified for their jobs (Wold & Håland, 2016).

Thus, future competition for low-skilled jobs is likely to be harder than what the tables above would suggest, and low-skilled immigrants on average are likely to lose this competition.

There is reason to believe that highly educated immigrant workers have qualities that make them more sought after than low-skilled immigrants, due to education’s role in signalling informal, cognitive skills – even in jobs that do not require a higher education (Hyman, Wright, & Reed, 1975). ⁲¹ If this is true, it will further enhance the competition for low-skilled jobs.

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²¹ Given the same reservation pay, at least.
4.4.1 Informal skills may have to meet higher standards – a challenge for low-skilled immigrants or an opportunity?

Our projections indicated that although there will be a shift towards higher levels of formal skills by 2040, there would still be a need for low-skilled labour. However, if it is assumed that technological progress will lead to the automation of all tasks that can be automated, the remaining number of low-skilled workers must, to a larger degree than today, work with other tasks for which informal skills will become more important (like social and cognitive soft skills).

If informal skills become more important in earlier low-skilled jobs, opportunities arise. If businesses demand labour with social skills and the correct attitude, there is no real reason why most low-skilled immigrants should not be able to meet these demands after learning a basic level of Norwegian. Interviews conducted in the Norwegian retail sector revealed that the automation of manual routine tasks in practice shifts the focus of recruitment departments towards social and cognitive skills. One interviewee stated that when filling a position, his company actively seeks out service-minded and conscientious candidates, and ranks them above otherwise more formally skilled applicants, regardless of other characteristics, including country background (Walbækken, Steen, Røtnes, Steen, & Steen Jensen, forthcoming).

Thus, increased focus on informal social and cognitive skills may mean that the low-skilled immigrant worker who succeeds in signalling his or her informal skills will not be at a disadvantage after learning basic Norwegian, compared to the Norwegian-born.

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22 It is possible that part of the shift towards demanding higher formal skills is in fact a shift towards a higher demand for the informal skills typically developed as a by-product of education: increased cognitive capacity in general, the ability to process and communicate new knowledge, etc.
5 To what extent is the ‘Norwegian model’ threatened by low-skilled immigration?

A surplus supply of labour, be it high or low-skilled, will tend to affect wage formation and welfare in Norwegian society. In this chapter, we ask whether the Norwegian model is threatened by low-skilled immigration and supply shocks in the labour market, and if there are possible policy actions that can be taken to alleviate threats and challenges.

5.1 Labour migration following the EU expansion in 2004 slowed down Norwegian wage growth

Norway could experience higher unemployment, more instability, impaired competitiveness, greater pay differentials and lower productive growth if the Norwegian model collapses (Bjørnstad & Nymoen, 2015). The model is indeed facing threats from several sources. One of the main threats is how low-skilled immigrants may create a large surplus of labour for low-paid jobs in parts of the Norwegian labour market.

All else being equal, low-skilled immigration represents a supply side shock in the labour market. Immigration increases the supply of low-skilled labour in a market where the demand for such workers is already declining. In addition, most immigrants – and especially those without a higher education – will have a lower reservation wage than others (i.e. willing to accept lower wages for the same work).

Instead of hiring workers who are entitled to ‘Norwegian wages’, i.e. according to tariff agreements, many companies may be tempted to employ labour at wages and working conditions that represent ‘social dumping’.

Gjelsvik, Nymoen & Sparrman (2015) investigate the degree of invariance in wage formation in Norway with respect to, among other things, the unprecedented surge in labour supply due to higher immigration rates after 2004.

Overall, the authors find that immigration from 2004 to 2014 clearly slowed down the development in wages in both the construction and the cleaning industries. The effects have been found to be statistically significant.

The interpretation of these results is that immigration has not only led to an increase in the wage differences between different industries but has also contributed to a deterioration in the overall functional income distribution – i.e. the distribution of income between labour and capital. Furthermore, the results show that immigration has contributed to a reduction in both prices and productivity in the sectors employing many immigrants.

5.2 Further immigration of low-skilled labour may increase public transfers

Two important differences between migration in general and labour migration should be mentioned:

1. Labour migrants are by definition searching for jobs (or already employed). When considering low-skilled migration in general, and from Asia and Africa in particular, we need to consider that among those granted residence in Norway many are refugees

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23 See Chapter 1 for a definition and Appendix 3 for further elaboration of the characteristics of the model.

The challenges posed by migration for the Norwegian wage formation model will most likely be less severe than recent experiences from labour migration. This is pointed out in NOU 2016:15. As the authors argue, many refugees lack the formal skills and qualifications required in the Norwegian labour market. Labour migrants on the contrary, possess skills that better correspond to the demand for labour.

Following the view above, refugee influxes pose less of a threat to key features in the Norwegian model for wage formation than the supply shock of labour migrants did following the EU expansion in 2004.

However, the sustainability of the Nordic welfare state, and in particular the generous welfare benefit coverage, may be more threatened by large flows of refugees than by labour migration. In a situation with high unemployment rates among immigrants due to lack of proper skills, the burden on the welfare state through public transfers will increase. If a growing proportion of the labour force becomes dependent on public transfers, either the tax level must increase, or the provision of public services must be reduced.

Increased transfers to people of working age may coincide with a period in which Norway (as many other western countries) will have to make room for growing transfers for pensions and public expenditure due to an ageing population. The total burden of the welfare state may become too high, which may lead to possible major reforms or changes in the Norwegian welfare systems.

In other words, by defending the Norwegian model for wage formation and by not allowing inequality and poverty to rise, migration in general puts greater pressure on the welfare state than labour migration does.

5.3 Trade-off between the Norwegian model and more low-income work

As previously discussed, the benefits resulting from the Norwegian model for wage formation are many. Incentives for productivity growth and compressed wage levels are among them, as is a lower unemployment rate in addition to low and stable inflation.

As pointed out by Bjørnstad & Nymoen (2015), the Norwegian model may become a victim of its own success. Ensuring a high productivity level in the manufacturing sector through small and rigid pay differentials, alongside high labour force participation, has stimulated technological growth. This reduces the demand for low-skilled labour, while increasing the demand for highly skilled labour.

This process has increased the advantage of being highly skilled in the labour market, or almost the equivalent; it has increased the gains from education and formal training, as the consequence of having no education or formal training more and more often is to be left outside the labour force.

Unless a sufficiently large share of the population attains a higher education or formal training, enhancing technological development — and thereby productivity growth — may produce more inequality in the long run. This is a paradox, as one of the main features of the model is less inequality. Once again, this highlights the importance of combining the
model with the free provision of higher education and formal training.

Faced with a situation of growing unemployment arising from a combination of technological growth and low-skilled immigration, the Norwegian model of wage formation may appear less appealing in the future. But what are the alternatives?

5.3.1 Allowing severely reduced wages will endanger the Nordic model for wage formation

One alternative is to allow low wage competition through impairing tariff treaties, or allowing social dumping within reasonable boundaries, by not using the legislation on generalisation of collective agreements. This will push down the relative cost of labour in sectors hiring workers with no or little education, thereby increasing the demand for such workers.

Higher demand for low-skilled labour due to lower pay may reduce the rate of people of working age outside the labour force, increase the quality of life of those who are now finding employment (instead of living on public income support) and increase competitiveness in the internationally exposed export and import industries. However, the pay and quality of life of those already employed in these jobs would be worse.

Additionally, in the long run, capital-intensive firms may become less competitive if cheap labour reduces investment in capital and technology. In an extreme case, this process could represent a transition from capital to labour-intensive industries. Furthermore, although such an alternative may succeed in lowering unemployment, inequality will probably increase as the low-wage competition affects not only those initially unemployed, but all low-skilled employees.

Another alternative is to allow low-wage competition, but only limited to specific groups in the labour market, e.g., refugees. This could potentially save the model for wage formation but would create an ethnic segregation in the labour market, which would violate basic human rights.

Over time, reduced wages could also reduce the advantage of being employed versus receiving welfare benefits, thus weakening the incentives to work. Additionally, and as discussed in NOU 2016:15, the distance between low-skilled immigrants’ skills and the skills demanded in most parts of the Norwegian labour market is so large that lowering wages might not be enough to ensure profitable employment for the truly low-skilled, thus creating a class of ‘working poor’ needing more than one job.

In conclusion, significant wage-reductive schemes are not appealing due to the potentially harmful effects on the model for wage formation, welfare systems and the low-skilled workers themselves.

5.3.2 Increased standards of unemployment benefits will put great stress on our welfare systems and reduce labour market participation

A third option could be to increase the non-employment benefits, e.g., by offering a universal basic income. We will not discuss details of such options, but it must be noted that while the standards of non-employment benefits could be increased in order to secure an acceptable standard of living for the non-employed without altering the model for wage formation at all, such actions would constitute a drastic change to the welfare model, with a large number of potential drawbacks threatening its viability in general.
5.3.3 Increase immigrants’ incentives for education and formal training – or employers’ incentives for hiring immigrants

A fourth option could be to enact new or strengthen existing schemes intended to provide incentives for further education and formal training, e.g. by increasing the number of scholarships, apprentice wages etc., see NOU 2017:2 for a detailed discussion.\(^{25}\)

Such schemes may become more important as the labour market becomes more complex, with a growing focus on cognitive skills developed through education. In our analysis, we have found some support for exploring the possibility of strengthening the public provision of relatively short, professional and vocational training, as well as post-secondary education. In addition, short professional and vocational training programmes may be easier to tailor to employers’ changing demands and immigrants’ specific needs. Thus, schemes aimed at securing such training for immigrants may be particularly effective.

Another example would be schemes that combine work with education, e.g. schemes allowing immigrants to gain work experience while undergoing formal training, resembling apprenticeships where employers would be reimbursed for parts of the labour costs. Such schemes have already been proposed by the Cappelen committee as a tool to help immigrants seeking employment without altering collective wage agreements and labour market standards (NOU 2016:15).

5.3.4 Greater emphasis on age may reduce challenges related to low-skilled immigration

A fifth option concerns the inflow of immigrants directly. Immigration regulations may be modified to give more opportunities, e.g. to place greater emphasis on age in the processing of applications and in the selection of resettlement refugees.

We know that age at the time of settlement is an important explanatory factor in labour market participation. Younger immigrants are more likely to partake in educational activities and in the labour market. Differences between immigrants grouped by age when arriving are especially significant among refugees. While refugees coming to Norway as children have educational attainment levels and employment rates close to the Norwegian-born average, refugees arriving as adults have, on average, very low levels of education and rates of labour market participation.

It seems that the older the refugee, the harder they find it to adapt to the Norwegian education system and labour market requirements. In addition, the older an immigrant is at the time of settlement, the fewer remaining years they have to use their skills and qualifications in the labour market. Younger refugees have more time to adapt to and partake in the Norwegian education system and labour markets.

Following this argument, placing greater emphasis on age – when and where this is possible when considering an immigration application – should be a priority, as it will reduce the stress placed on both the Norwegian model for wage formation and the welfare system alike.

\(^{25}\) NOU 2017: Integration and trust — Long-term consequences of high immigration
In practice, this option would entail giving a higher priority to younger men and women, as well as families with young children, than is given today.

Age is not a relevant criterion in asylum approvals (as only protection needs are relevant). However, for refugee quotas, families with children are already given priority in Norwegian policy. The characteristics of the Norwegian labour market indicate that this priority should continue or be reinforced when it comes to refugee quotas.

5.4 Concluding remarks

Continuing and relatively high immigration of low-skilled labour will challenge the Norwegian model, either by pushing down wages for low-skilled workers or by increasing public spending.

The projections presented in Chapter 4 illustrate how the immigration estimates from Statistics Norway (in their middle alternative, 'MMMM') may provide a large surplus of low-skilled labour in the years to come. The faster the technological development in the form of automation and the digitalisation of routine tasks, the greater the imbalance will be between the supply and demand for low-skilled workers.

In order to secure the Norwegian model in the years to come, we point out three measures that seem salient:

1) Increased government efforts and incentives aimed at business and individuals to continuously invest in lifelong education and training. More formal training and development of skills, regardless of whether the workers are immigrants or Norwegian-born, will reduce a possible surplus supply of low-skilled labour.

2) There is a particular need to increase the efforts and incentives for immigrants to take part in formal education and training in order to participate in the Norwegian labour market, including learning Norwegian.

3) Continued and reinforced prioritising of younger men and women, as well as families when it comes to refugee quotas.

The alternative to the measures above is probably a significant increase in income inequality in Norway through lower real wages for low-skilled workers.
References


Appendix 1 - Forecasted education levels among immigrants from country groups 1 and 2

Forecasted education levels among immigrants from country group 1

Immigrants from group 1 come from countries with well-developed labour markets and varied well-functioning industries. We can assume that the informal skills of immigrants from these regions probably mirror informal skills in Norway on average. As we saw in Chapter 2, the education distribution of immigrants from group 1 is more top-heavy than for Norwegian natives. In addition to reflecting the relatively high education levels in these countries, this difference can also partly be explained by migrant-related selection effects, e.g. highly qualified labour migration and the absence of immigrants with refugee status.

Figure A1-1 illustrates how different assumptions about future economic, political and demographic developments in country group 1 may change the distribution of education among the population of country group 1.

In all three scenarios there is a change towards a further increase in average length of education, especially from a reduced ratio of individuals with no upper secondary or post-secondary education. The population share with an upper secondary education is nearly constant, except in the rapid scenario, and the future distribution seems to be affected mostly by a movement of the median, where there are fewer people with no education or a primary/secondary education and more people with a tertiary post-secondary education.

Given these assumptions, the number of immigrants from country group 1 with a post-secondary education will increase by between 33 and 70 per cent by 2040, depending on what scenario is applied. The number of immigrants with an education that is equivalent to upper secondary (incl. vocational training) will increase by between 8 and 21 per cent, while the number of immigrants with no education or only a primary/secondary education will decrease by between 20 and 29 per cent in the medium and rapid scenarios, while a stalled development will entail a small increase.

Table A1-1 shows the forecasted number of immigrants from group 1 aged 20-64 in 2018 and 2040 in the medium scenario by educational attainment.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Education</th>
<th>2018</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>No education</td>
<td>1 840</td>
<td>820</td>
</tr>
<tr>
<td></td>
<td>Primary</td>
<td>28 820</td>
<td>23 750</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>50 300</td>
<td>59 730</td>
</tr>
<tr>
<td></td>
<td>Post-secondary</td>
<td>37 250</td>
<td>56 960</td>
</tr>
</tbody>
</table>

Source: Statistics Norway and the Wittgenstein Centre
Forecasted education levels among immigrants from country group 2

While labour markets and industries are mostly well-functioning in the eastern European EU member states, the wage levels are comparably low and unemployment rates are relatively high on average. The variation in both informal and formal skills is greater here than within, for example, country group 1 or Norway.

In Chapter 2 we saw that the Norwegian migrant population from country group 2 mainly consisted of individuals with upper secondary as their highest achieved education. Figure A1-2 shows that this is even more so the case within the countries themselves. In all scenarios, upper secondary continues to be the largest educational category by far. As in country group 1, the largest differences between scenarios are the sizes of the population share with a primary/lower secondary and a post-secondary education respectively.

If the medium scenario turns out to be true, we can expect the number of medium-skilled migrants with an upper secondary education (incl. vocational training) to be constant throughout our forecast period. However, we can expect a substantial reduction in the number of low-skilled (no or primary/lower secondary education only) migrants (about 30 per cent). This reduction would be mirrored by a substantial increase in the number of migrants with a post-secondary education.

Given the nature of the current immigration from this country group, we might overestimate the number of high-skilled migrants in our forecasts somewhat. Most current immigration from these countries has links to the same, low to medium-skilled industries in Norway.

In addition, there is a link between the development in these countries and the number of people who would like to become labour migrants in Norway. Rapid development, or a continuation of observed development as in the medium scenario, will probably continue to decrease the magnitude of labour migration from these countries.

At the same time, it is possible that development will enable a shift towards more educated labour migrants who will seek employment in other sectors than has traditionally been the norm, thus fulfilling our forecasts.

Table A1-2: Immigrants from country group 2 aged 20-64 in 2018 and 2040 in medium/MMMM scenario, by educational attainment.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Education</th>
<th>2018</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>No education</td>
<td>2,540</td>
<td>950</td>
</tr>
<tr>
<td></td>
<td>Primary</td>
<td>39,700</td>
<td>27,720</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>69,300</td>
<td>69,730</td>
</tr>
<tr>
<td></td>
<td>Post-secondary</td>
<td>51,330</td>
<td>66,500</td>
</tr>
</tbody>
</table>

The scenarios differ mostly in the two distribution tails, i.e. among the least and most educated. The more positive the development is, the more highly skilled the population will be. Under our assumptions, this will also apply to immigrants from this country group.
Our projection model used in Chapter 4 is based on Statistics Norway’s estimates of demographic trends and assumptions about the future rate of employment. Maintaining an overall framework for the economy as a function of the population means that we avoid the demand for employment growing beyond what is possible. Statistics Norway’s population projections are used to control the size of our available workforce while forecasting.

The projections give an estimate of the distribution of employed persons across different education levels. The number of employees was derived from information on the projected population until 2040. Furthermore, we assumed a constant employment rate (equal to the mean 2017 rate) and multiplied by the proportion of employed persons per education level.

The mechanical approach

The mechanical projection of employed persons by education level is based on the history of the distribution between different education levels in the period between 2003 and 2017.

The projections are a moving 14-year average, which means that the longer-term trends will continue in the projections for future employment. For example, the projected proportion of employees per education level in 2018 will be based on the average 14-year change between 2003 and 2017. Similarly, the proportion in 2019 is extrapolated by the average change between 2004 and 2018. We ensure that the distribution adds up to 100 per cent.

Using a 14-year moving average enables us to avoid several cyclical changes (including the financial crisis, the oil price drop and recent strong growth in demand-driven industries such as the construction industry) that will affect the forecasts.

The scenarios

Scenario thinking is a method within long-term thinking and strategic planning that is used to analyse future uncertainties in a structured way. The scenario methodology combines knowledge of facts, known trends and uncertainties to create systematic scenarios about several possible futures. The goal of a scenario analysis is not to predict the future, but to create systematic scenarios about several possible futures.

In Chapter 4 we present projections of future employment using three different scenarios created in a previous study financed by the Ministry of Education and Research through the Official Committee on Skill Needs (Eggen F. W., Røtnes, Steen, & Tofteng, 2018). The scenarios were constructed in a thorough process with input from 55 representatives from Norwegian working life.

About 55 representatives from Norwegian working life have provided input on the driving forces that will affect the Norwegian labour market in the future. Economics Norway has processed and structured the inputs as five independent and different forces that are genuinely uncertain and at the same time relevant to determining the characteristics of the labour market of tomorrow. Different combinations of the five uncertainties have indicated three different futures: Tech Norway, Digital Norway and Enjoy Norway, see Figure A2-1.

The story of Tech Norway is about a country in which the business sector has undergone major restructuring. The scenario was a broad fear of falling revenues from the petroleum sector, as well as a concern that the country was unable to keep up with the technological race. Norway has gone from being a supplier of raw material to a technology supplier. Tech Norway is the story of a Norway with a relatively high level of income, high employment and
clear preferences for choosing climate-friendly solutions. Globalisation has increased and there is a growing acceptance for using new technology. There is also a strong belief that the climate crisis can be solved using technology.

The story of *Digital Norway* is about a country in which there is great acceptance for using new technological solutions in both the private and public sectors. Norway is part of the global future, and many international players are established in Norway. There is great pride in the technological solutions we export, but Norway is first and foremost known for its eagerness to use new digital solutions in the private and public sectors. Digitalisation provides great efficiency gains and many transform the growth in prosperity into increased leisure time. Income growth is moderate in an international context.

The story of *Enjoy Norway* is about a country that is characterised by a population that has strong preferences for sustainability and what is perceived as ‘the good life’. Digitalisation of routine tasks continues, but new technology is also met with scepticism. The population has strong preferences for leisure. The majority consider moderation and a sustainable lifestyle to be the solution to the climate challenges. Income growth is low in an international context.

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**Figure A2-1: Comparison of driving forces in the scenarios**

![Comparison of driving forces in the scenarios](image-url)

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Source: Economics Norway
Projections by Statistics Norway

Statistics Norway prepares population projections every two years. A population projection presents the future size and composition of the Norwegian population based on the current population situation and trends.

Statistics Norway’s projections are based on assumptions about four demographic key components; future fertility, mortality, national migration and cross-border migration. For our purposes, Statistics Norway’s assumptions concerning future cross-border migration are of key interest.

To calculate future immigration to Norway, Statistics Norway uses a model in which immigration is mainly determined by the following factors:

- Projected income in Norway relative to other parts of the world, measured in purchasing power-adjusted GDP in nominal value per capita
- The unemployment rate in Norway and in other parts of the world
- The number of immigrants (from the same country group) residing in Norway
- Projected population developments in the three country groups
Appendix 3 - The Norwegian model

In this report, we refer to the Norwegian model as the structural organisation and functioning of the labour market, combining two critical pillars:

1. The ‘Nordic welfare state’
2. The ‘Norwegian model for wage formation’

The Nordic welfare model

The Nordic, sometimes referred to as ‘the Scandinavian’, welfare model is often characterised as a tax-funded life insurance scheme, partly covering financial losses of the inhabitants due to illness, disability, unemployment or retirement. A generous welfare state that is financed by high – and progressive – taxes on income and wealth, and thus a low degree of inequality.

This is shown in Figure A3-1, where all OECD countries are ranked from low to high by degree of income inequality, as measured by the Gini coefficient. Norway (in red) and the other Nordic countries (in blue) clearly dominate the lower end of this ranking of OECD countries.

The Nordic countries are characterised by comprehensive welfare states with universal welfare benefit schemes. Coverage by the welfare benefit schemes is closely linked to participation in the labour market, which provides the basis for ‘payment’ of the schemes (both directly through taxation and indirectly through contribution to economic growth).

This is based on the fundamental idea of “from each according to his ability, to each according to his needs”.

Thus, the Nordic model is characterised by a large public sector providing (almost) free health services and education. While the health services should be considered as part of the welfare system, free education partly reflects a general theory of public goods. Due to the large positive external effects from education, public financing is seen as necessary for achieving an optimal level and distribution of educational attainment in the population. Free education, all the way from nursery to a doctoral degree, represents an important ladder for promoting social and financial equality among the Nordic populations.

A main feature of the Nordic model is a coordinated model for wage formation, with high degree of membership in trade unions and employer organisations.

Figure A3-1: Gini coefficient in OECD countries. 2017, or last available year. Norway marked in red. Sweden, Denmark, Finland and Iceland marked in blue.

Source: OECD

26 In Norway, income from the oil industry (through transfers from the Government Pension Fund Global) also plays an important role in financing the schemes.
In general, the Nordic model is perceived to contribute to:

- A compressed wage distribution and low degree of income inequality
- Due to a compressed wage distribution: higher demand for highly skilled labour, as low-skilled labour is relatively costly, compared to other countries
- A high degree of labour mobility, as workers’ incomes are secured through social benefits to some extent, while workplaces are not. This facilitates the ‘creative destruction’ of jobs and thereby productivity growth and higher incomes
- However, the Nordic model also has some potential costs. For instance – low income inequality may reduce the individual incentive for higher education, as the wage gains from the extra efforts are relatively small. This highlights why free higher education is especially important in a country with low income inequality.

The most important potential drawback of the Nordic model is perhaps how the role of wages as an incentive to work is reduced in many ways. Firstly, the welfare benefit coverage reduces the incentive to work, especially for low-skilled workers, as the alternative – being without a job – is less harmful. Low-income workers, perhaps marginalised through creative destruction, may find non-employment (or approved disability) more attractive than looking for a job. Secondly, the allocation of scarce resources in the labour market may be compromised as wages are quite compressed, which reduces the scope for wage competition.

A key feature of Norway, which also represents a distinct feature compared with many countries, is that the relationship between employee and employer is regulated through a system of tariff treaties. The Norwegian system for regulation of work-life relationships was developed over a relatively long period and became an integral part of the Norwegian wage formation model established after World War II.

Tariff agreements and a high rate of unionisation and membership in employer organisations form the basis for the Norwegian model for wage formation. This allows for a high degree of coordination in the wage formation across multiple parts of the economy.

The so called ‘Frontline model’ plays a key role in the Norwegian model for wage formation. The ‘Frontline’ represents traditional manufacturing industries exposed to international competition. In this sector of the economy, wages are determined by international prices, the exchange rate and productivity. This means that wage growth in this sector is not allowed to exceed price growth (denoted in local currency), unless through increased productivity, either by higher capital intensity per unit of labour or higher marginal productivity of labour.

In addition to being exposed to international competition in the product market, the frontline sector also competes in the domestic labour market. If wages grow faster than productivity and prices in the manufacturing part of the economy (again, prices denoted in local currency), the industrial sector will lose competitiveness either in the product or labour market.

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27 See Hægeland (2011)
28 In Norwegian: ‘Frontfagsmodellen’
Due to the high degree of coordination in the wage formation, it is possible to set a guidance norm for wage growth determined by international price growth, the exchange rate and productivity growth. In this way, the manufacturing sector may attract highly productive labour without becoming less competitive in the international product market.

The negotiations leading to the tariff agreements are the driving force in the Norwegian model for wage formation. This fundamental process contributes to stronger productivity growth within the frontier than what would have been the case if labour costs were adjusted to the productivity of each industrial enterprise. This collective agreement also contributes to a desirable dimensioning of the size of the competitive sector. Finally, the growth in the wage cost level in the frontier defines the framework for income settlements in the rest of working life.

A relatively high rate of unionisation and membership in employer organisations is crucial to the success of this model. After all, the wage norm given by the frontier only acts as guidance in the wage settlement. A high degree of unionisation and membership in employer organisations allows for coordination and helps to equalise bargaining power. A low degree of coordination, on the other hand, makes the system of tariff adjustments less functional and less viable over time.

It is unanimously agreed that the degree of coordination in wage formation is of great importance to the Norwegian economy. A high degree of coordination is favourable for macroeconomic outcomes, through low inflation and high employment, and is important for the wage formation system’s ability to adapt to changing framework conditions.

As implied above, a certain degree of membership in trade unions and employer organisations is crucial to maintaining the Norwegian model of wage formation. However, the unionisation rate has been in decline for several years (Nergaard, Barth, & Dale-Olsen, 2015). How far we can go in that direction before the system is undermined is unclear. After all, tariff agreements are acknowledged by a large amount of non-unionised workers. In some European countries, like the Netherlands and Austria, the unionisation rate is very low, while the tariff coverage is close to 100 per cent. On the other hand, the experience of the UK in the 1980s shows how a tariff-based labour market can collapse.

There is no doubt that a wage formation system based on collective agreements is subject to more internal tensions when the rate of unionisation and membership in employer organisation is low, since each collective agreement is only binding for members of the organisations that sign the agreements. Unless the rate is very high, a tariff-based system can contribute to inequality and distorted competition between the employers and employees who are covered by the agreements and those who are not party to the agreement.