European Training Foundation

SKILLS MISMATCH MEASUREMENT IN NORTH MACEDONIA

THE EU AGENCY SUPPORTING COUNTRIES TO DEVELOP THROUGH LEARNING

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CONTENTS

INTRODUCTION

This report looks into the incidence of skills mismatches in the Republic of North Macedonia (hereinafter referred to as North Macedonia). In 2017, the European Training Foundation (ETF) initiated a skills mismatch measurement project in the ETF partner countries with two objectives: (i) to identify regular data sources; and (ii) to develop and test a series of indicators fit to capture various angles and implications of skills mismatches. Skills mismatch is recognised as one of the major challenge in the country by policymakers and stakeholders in the fields of education and employment.

The mismatch phenomenon has multiple causes, being industrial restructuring, sectoral adjustments, demographic change or technology advancement, and is inevitable in transition countries such as North Macedonia.

Using a combination of international and local expertise and in consultation with national stakeholders, the ETF aimed at definition and testing of a methodological approach to measuring skills mismatches adapted to the context of selected countries (namely transition or developing countries), while ensuring as much comparability as possible across countries and with European or similar international research.

In the first phase, four partner countries were selected – Serbia, Georgia, Egypt and Morocco – while in the second phase, the project included North Macedonia, Montenegro and Moldova. Country-specific analyses were developed to contextualise skills mismatch measurement for each country, and a cross-country report complements country findings and further delves into methodological aspects and potential to replicate such initiatives in other ETF partner countries.

The ETF plans to share with participating partner countries an easy to update template for skills mismatch measurement to support continuation or replication of such practice on a regular basis. A deeper knowledge of the nature and incidence of skills mismatch, including contextualisation (e.g. socio-economic aspects, labour regulations, job-matching services), would help countries to better target their efforts to match supply with demand via education, training, employment and other policy interventions. Such analytical exercises may also help institutions and partners to assess the effectiveness of their skills policies.

As regards the working methodology within the project, the ETF and research team selected a number of indicators from international practice and previous attempts to analyse skills mismatches. The choice of indicators was also guided by the feasibility to collect this on a regular basis and without significant investment in data generation, given each country's capacity and data availability.

Skills mismatch is mostly measured by proxy in this project. Education and occupation act as a proxy for the skills that are taught or required for a particular position (job). The various ways in which the indicators are calculated allow us to identify potential problems or mismatches; by themselves, they rarely allow us to pinpoint the exact nature or cause of the mismatch. In the context of this report, skills mismatch is a mismatch between the level of education or the skills that an individual has compared to those required for the position. This is known as a vertical mismatch. A horizontal mismatch occurs when the types of skills provided through education (i.e. education field) do not match the skills that are required, but the overall educational level does match the requirement.

As the phenomenon of skills mismatch is complex and difficult to capture, an expanded set of indicators needs calculation and analysis from various angles. An empirical study has been carried out

in each of the selected country, as part of this research project, to assess the availability and reliability of relevant indicators for such an attempt. Datasets available in the statistical system of North Macedonia allowed for calculation of the following key mismatch indicators:

- unemployment rates by various dimensions;
- proportions of unemployed people versus employed people;
- young people not in employment, education or training (NEETs);
- coefficient of variation of education;
- variance of relative unemployment rates;
- mismatch by occupation;
- over- and under-education;
- relative wages.

In describing and interpreting the indicators, we provide information about the methodology used to measure skills mismatch using existing data sources as well as information about skills mismatch analysis. We also provide some country-specific insights about mismatches that might occur in the labour market. Finally, we offer proposals on how indicators, data infrastructure or labour market analyses can be developed for the country.

Anyone who generates, interprets or uses labour market information or is otherwise involved in labour market and/or education policy may be interested in understanding the various ways in which the labour market and skills can be analysed. This attempt to calculate mismatches aimed at providing policy makers and other interested actors new or updated evidence on labour market imbalances. Both education and employment authorities can react to such imbalances by looking at incidence, angles or affected groups, regions or sectors. Choosing the right mix of policy interventions is however challenging when information is not regularly available. Therefore, ETF hopes the relevant authorities of the country, in particular the statistical, education and employment institutions, will continue the calculation of such indicators capturing skills mismatches and will expand the research of skills demand and supply, including the dissemination of results to wider public, in particular current and future learners.

Chapter 1 provides contextual information on labour market, education and skills aspects. Chapter 2 examines in more detail developments in labour demand, young people's transition from education to work and the extent of mismatch in skills supply and demand. Chapter 3 delves into methodological aspects of data availability and harmonisation with international and European standards or classifications; while in Chapter 4, the skills mismatch indicators are presented and discussed at length. The final chapter summarises the findings and proposes the most important avenues for further action.

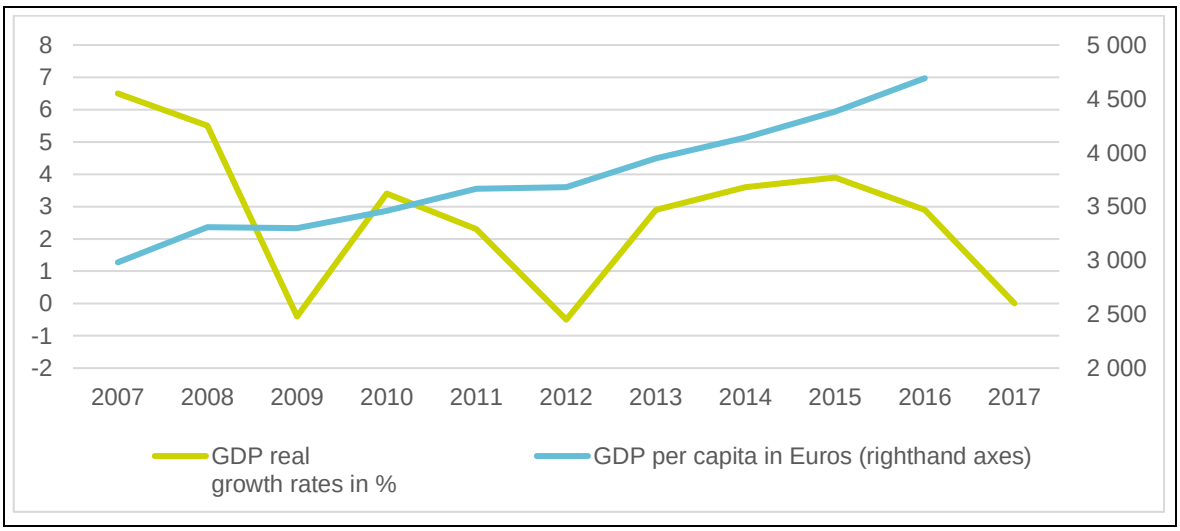
1. CONTEXTUAL INFORMATION

1.1 Country context and institutional background

As of 1 January 2017, the total population of North Macedonia was estimated at around 2 million[1]. While population growth is still positive, it has slowed down in recent years. The crude birth rate in 2016 (latest available data) was 11.1[2], whereas the crude death rate was 9.9. In the last decade (2007–17), the share of the young population (aged 0–19) as a proportion of the total population declined from 26.8% to 22.6%. In the same period, the share of the population aged 65+ increased from 11.2% to 13.3%. According to UN population data, 534 720 Macedonians were living abroad in 2017[3]. This number seems high relative to the size of the population, but even in 1990, 430 000 Macedonians were classified as emigrants. The number of immigrants in the country (stock data) in 2017 was 130 972, with the result that net migration in 2017 totalled 403 748 individuals.

In 2017, the working-age population accounted for 1.45 million individuals[4]. The growth of the working-age population was positive until 2012 when it reached a maximum of 1.46 million. Since 2012, the growth rates have been negative (an average of -0.2%).

FIGURE 1.1 GDP GROWTH RATES AND GDP PER CAPITA, 2007–16



Source: State Statistical Office, see www.stat.gov.mk/OblastOpsto.aspx?id=7

[1]Data is provided by Eurostat (https://ec.europa.eu/eurostat/data/database). There is much discussion in the country about the quality of population data as the last census was carried out in 2002. The 2011 census was cancelled due to many problems in the field, mainly related to the ethnicity of citizens. In particular, the Ohrid Framework Agreement, which the government signed following the 2001 civil conflict, confers special rights to ethnic minorities based on their representation in the overall population. This has led to misreporting of population numbers in the country (i.e. efforts are made to count individuals who have emigrated). Since then, the government has not managed to create better conditions for the implementation of the census, which in many instances is used as the main critique of official data. Moreover, the quality of the migration statistics is quite low, which sometimes gives rise to doubts about labour force survey data.

[2]Number of live births occurring among the population during a given year, per mid-year total population during the same year.

[3]See www.un.org/en/development/desa/population/migration/data/estimates2/estimates17.shtml

[4]See http://ec.europa.eu/eurostat/data/database

The latest GDP data for the first quarter of 2018 (Q1) shows a marked slowdown in the economy. In particular, 2017 was a year of considerable political instability, which has taken its toll on the economy. GDP growth in the first half of 2017 was negative, at -0.7%. After the new government came into power and political stability returned, growth picked up, albeit at a slow pace (+0.7% in the second half of 2017). The new government's economic policies are quite different to those of the previous government and should start showing their impact in 2018. However, GDP growth in Q1 2018 was only +0.1%, reflecting a very significant decline in construction activity (-37% in real terms). This has led to a sizeable decline in the share of construction in value added – from 13.8% in Q1 2017 to 8.6% in Q1 2018. Agriculture, manufacturing and trade recorded positive growth rates, accounting for a significant share of GDP. Investment dropped by 9% in Q1 2018 compared to the same period in the previous year, as did government consumption (-1.4%).

Despite the poor economic situation, the labour market shows further improvement with declining unemployment and increasing employment rates. The unemployment rate (21.9% in Q1 2018) is still very high, especially among vulnerable citizens. The employment rate in Q1 2018 increased slightly to 50.9%, up from 50.1% during the same period in the previous year.

1.2 Education system and educational outcomes

Despite significant improvements in the education structure of the population over the last decade, there are still large gaps compared to the EU-28. In 2017, about 70% of the population aged 25 to 64 in North Macedonia had completed at least upper secondary education. This has been improving, as the dynamics of the indicator in the observed period suggest (see Table 1.1). However, there is a persistently large gender gap of 13 percentage points. One positive development is that the educational attainment of young Macedonians (aged 20–24) is improving over time and is better than the EU-28 average. In 2017, 91% of young people had completed at least upper secondary education and the gender gap was very small.

TABLE 1.1 MAIN EDUCATIONAL OUTCOMES, 2012–17 (%)

Category		2012	2013	2014	2015	2016	2017
Population aged 25–64 with at least upper secondary education							
EU-28		74.2	75.2	75.9	76.5	76.9	77.5
North Macedonia	Total	64.9	65.6	65.7	66.4	68.4	69.6
	Male	71.8	71.6	71.7	72.2	74.3	76
	Female	57.8	59.4	59.7	60.4	62.3	63.1
Population aged 20–24 with at least upper secondary education							
EU-28		80.3	80.3	80.3	80.3	80.3	83.3
North Macedonia	Total	87.1	86.4	85.3	86.5	88.0	90.7
	Male	87.8	89.5	87.2	87.9	89.1	91.1
	Female	86.5	83.0	83.3	85.1	86.9	90.2
Population aged 30–34 with tertiary education							
EU-28		36.0	37.1	37.9	38.7	39.1	39.9
North Macedonia	Total	21.7	23.1	24.9	28.6	29.1	30.6
	Male	20.8	20.7	21.4	23.1	24.5	24.6
	Female	22.6	25.6	28.7	34.5	33.8	36.8

Source: Author's presentation based on Eurostat data.

Despite the large expansion of tertiary education in the country in the last decade, a relatively low share of the population aged 30 to 34 in the country has completed tertiary education compared to the EU-28 (30.6% vs. 40% of the EU-28 in 2017). Women fare comparatively better in this educational indicator, with 36.8% of all women aged 30 to 34 having completed at least tertiary education compared to 24.6% of the men.

The share of early school leavers from education and training (for the 18 to 24 age group) also declined, from 11.7% in 2012 (and as high as 22.2% in 2006) to 8.5% in 2017. This is a lower share than the EU-28 average of 10.6%. Despite this progress, many of the young people aged 15 to 24 are not in employment, education or training[5]. In particular, the NEET rate in 2017 was 24.9%; it was slightly higher for females (25.9%) relative to males (23.9%). This is much higher than the EU-28 average of 10.9%.

While the indicators for educational outcomes (i.e. quantity of education) generally show an improving situation in the country, the quality of the skills and knowledge that graduates have acquired throughout their education, as well as lifelong learning opportunities for the labour force, are crucial factors in employment probability, matching and the productivity of workers. In terms of the quality of learning, international assessments (e.g. the Programme for International Student Assessment (PISA)) show low achievement results for students in North Macedonia. In the 2015 PISA survey, North Macedonia was ranked 67th out of a total of 70 countries that participated in the study. In addition, information gathered from several employers' surveys show that employers are generally not satisfied with the skills and knowledge of either vocational education and training (VET) or third-level graduates (see Section 2.2).

The system of lifelong learning in the country needs further development to improve the quantity and quality of adult education programmes, mainly in the area of non-formal education. There is a limited supply of high-quality and certified adult learning programmes. There is relatively little demand for non-formal education and training and low awareness among companies of the benefits of training for employees. For instance, labour force survey (LFS) data shows that only 2.3% of the population aged 25 to 64 participated in education and training in the four weeks prior to the survey in 2017. This is much lower than the EU average of 10.9%. The 2016 data from the lifelong learning survey also indicates that about 10% of employed workers aged 25 to 64 were involved in job-related non-formal training or education (either paid for by their employer or paid for by the worker himself/herself). In the EU, on average, more than one-third of employed people (35.8%) took part in some job-related training or education. This data shows that in North Macedonia very few adults upgrade and augment their skills and knowledge throughout their working life. This probably hinders their productivity, and consequently their salary and promotion prospects. In addition, given the mismatches in the labour market, the apparent lack of interest in upgrading skills and knowledge seems unusual both in terms of employers' incentives to train and upskill their workers, but also workers' incentives to improve their own skills. This shows the need for significant involvement on the part of government institutions to mitigate the mismatches between the demand for and supply of skills.

Various stakeholders are involved in skills governance in the country. These include the Ministry of Education and Science, the Ministry of Labour and Social Policy, the Employment Service Agency (ESA), social partners, non-governmental organisations, research bodies and international donor organisations.

[5]Eurostat data based on LFS.

VET education

The VET Centre, established in 2006, occupies a central place in the institutional setting of the VET system. The centre's primary role is to integrate the public interest and the interests of the social partners in VET. The VET Council acts as the centre's steering body. Its task is to advise national education authorities on strategic VET issues. All major VET legal acts and the VET students' enrolment plan have to be agreed with the VET Council. The council consists of state representatives (Ministry of Education and Science, VET Centre, Ministry of Economy and Ministry of Labour and Social Policy) and organisations representing employers' and employees' interests. Moreover, the VET Council makes recommendations to the Ministry of Education and Science on the structure of VET programmes. In addition to the VET Centre, several other institutions are involved in vocational education. These include the Bureau for Development of Education, the Adult Education Centre, the State Education Inspectorate and the State Examination Centre. The Law on VET states that local government should provide analyses of the local labour market and inform the VET Centre about the latest developments, propose ideas regarding the development of new curricula and programmes and suggest enrolment quotas in VET. However, that is rarely done by the local government units, mainly due to their limited capacity. Employers' representatives are also involved in vocational schools as mandatory members of the school management body.

The main challenge in the VET system is to ensure that graduates are acquiring the skills required by employers[6]. VET education is still based on traditional instructional learning and memorising, and there is little emphasis on 'new economy' skills (e.g. the ability to complete complex tasks, analytical skills) and transferable knowledge. The Economic Reform Programme 2018 states that, within VET, the focus is still on narrowly defined professional qualifications, preventing VET graduates from adapting to the changing structure of the economy (Ministry of Finance, 2018). The practical learning component is still low and/or is not properly implemented. This reduces the employment chances of VET graduates (as employers mainly demand experienced workers). VET education is not attractive to students and it is still perceived as an avenue for low achievers.

One of the most important developments in recent years in VET education – and higher education – was the adoption of the national qualifications framework (NQF) in 2014. This helps to provide a clear definition of qualifications, facilitate the recognition of learning outcomes and improve graduate mobility at national and international level. It can also play an important role in reducing skills mismatch by defining qualification standards and including employers in the process. The Law on National Qualifications Framework came into effect in September 2015. The NQF itself is a work in progress. It requires a lot of effort from all the stakeholders involved. Employers play a very important part. In recent years, 79 new qualifications for formal education and 5 qualification standards for non-formal education were developed. In addition, 34 special adult education programmes were developed. These offer adults the opportunity to acquire a qualification, a pre-qualification or an additional qualification, based on the skills required by employers.

Cooperation with employers has increased in recent years. Employers now provide practical learning to VET students to prepare them for future work. By 2017, 737 mentors were certified in companies and they are responsible for students' practical learning. Also, around 200 occupational standards were developed in collaboration with employers.

[6]Although mismatch is a significant challenge, which requires strong policy action, the main challenge in the economy is to increase job creation and bring more unemployed people into employment.

The following reforms are currently being implemented and planned in VET education with a view to the medium term. The reforms are based on the Economic Reform Programme 2018.

- A modular approach will be introduced in VET curricula.
- The national occupational standards will be developed and employers will have more involvement in the process. Employers are still not engaged sufficiently in defining the knowledge, skills and competencies required to perform various tasks. This is very important in developing qualifications and the standards for qualifications, which should improve the match between skills that are supplied and those that are in demand.
- The network and programmes offered in vocational schools will be assessed in order to optimise the efficiency and effectiveness of the VET system in terms of expenditure, relevance and labour market needs (at local level). This analysis should be a base for establishing regional centres of excellence.
- Work-based learning will be developed. This will help VET students to acquire practical knowledge, thus improving their employability.
- The recently established Skills Observatory will be made operational. Its aim is to support evidence-based policy making by providing high-quality data and information from different sources. In 2018–19, the observatory will link in with the information systems of all the relevant institutions in order to collect all relevant data for education policy making. In addition, training will be provided to the Ministry of Education and Science staff involved in the process of creating educational policies to enable them to use the observatory data.

The main structural measure that is reported in the Economic Reform Programme 2018 in the area of education is further development of the qualification system, i.e. an NQF for lifelong learning which can be an effective tool for better communication between the education system and the labour market. The recently established Skills Observatory will support the development of the qualification system by providing data and information.

Higher education

The main challenges in the area of higher education are ensuring quality and functioning of the accreditation and evaluation system, as well as ensuring that the skills and knowledge of graduates match those required in the labour market. While the Bologna process improved and influenced reform in some study programmes, it has not yet led to genuine reform of higher education governance systems or teaching methods (Mojsoska-Blazevski and Bartlett, 2016). Teaching methods still place more emphasis on theory than on practice, leaving students limited opportunities to gain applied practical knowledge and experience. On the other hand, almost all open vacancies require practical experience and skills. In addition, universities fail to equip students with key interactive skills, which are not only needed for existing jobs but are also vital for adapting to a changing and increasingly flexible labour market.

Many changes have been made in the area of higher education in recent years. In January 2015, a Law on Amendments to the Law on Higher Education was adopted. This resulted in several important changes, including stricter criteria for the appointment and promotion of professors[7]. In 2017, a new government was

[7]The proposed amendments to the law provoked strikes by students and professors, mainly due to a lack of public debate prior to government approval. It was also seen as direct interference in the autonomy of the higher

elected. It adopted a new Law on Higher Education in May 2018, which made changes to the accreditation process and institutions responsible for quality assurance; eased the criteria for promoting professors; removed the need for mentors of master's students to be licensed; and slightly changed the curriculum requirements. Nevertheless, the regulation burden on universities increased in some areas.

Several initiatives have been adopted in recent years aimed at improving the skills of graduates and easing the transition of young people from higher education to the labour market.

- Firstly, to enable students to gain some work experience during their studies, they are now required to undertake a one-month internship every academic year[8]. This requirement is not yet fully implemented in practice, due to the low absorption capacity of the economy – most companies are micro firms and generally do not need tertiary-educated students, nor can they guarantee a dedicated person to mentor the students. In addition, the intensity of study programmes allows little free time for students to take up internships.
- Secondly, higher education institutions are required to ensure that 30% of the curriculum is taught by practitioners from the business sector[9]. This is aimed at introducing more practical learning and skills rather than pure theoretical learning.
- Thirdly, the NQF (adopted in 2014) is expected to have a positive effect on graduate employment, as its full implementation would contribute to a clear definition of qualifications, facilitate the recognition of learning outcomes and improve graduate mobility at national and international level. It can also play an important role in reducing skills mismatch, by defining qualification standards and by including employers in the process. The Law on the National Framework of Qualifications came into effect in September 2015.
- Fourthly, Boards for Cooperation and Public Confidence were established at public higher education institutions. These are advisory bodies, which include representatives of the business community with experience of the relevant field of study. Most private higher education institutions have business councils, which play a similar role. In recent years, there has been an emphasis, in both higher and VET education, on strengthening the relationship between educational institutions and employers. However, there is still a lack of evaluation information on the effectiveness of stakeholders' involvement or on how the different channels help to make policy choices in education and the labour market (Mojsoska-Blazevski and Bartlett, 2016). All universities have established career guidance centres, although they are still at a developmental stage and provide little assistance to students or graduates in making their career choices, providing internships for students or helping graduates to find employment.

1.3 Labour market

The labour market in North Macedonia is characterised by relatively low activity and employment rates and high unemployment. In 2017, 65.3% of the working-age population aged 15 to 64 were active in the labour market. The low activity rate is mainly a result of low female activity. There is a high gender gap of 26.7 percentage points. Half of the working-age population was employed in 2017. This is on the low side but has been an increasing trend in the last decade (for instance, the employment rate in 2008 was 41.9%). The employment rate for men and workers with tertiary education (ISCED 5–8) is

education institutions. Following the strikes, the implementation of most articles of the law was postponed until 2017 or later.

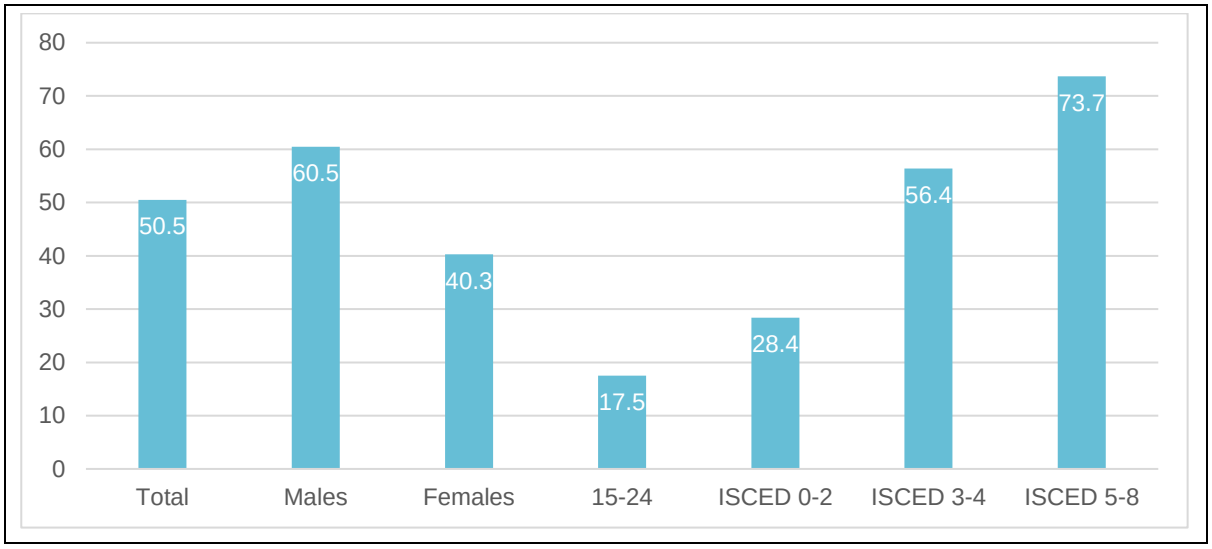
[8]This requirement was introduced by the Law on Higher Education, *Official Gazette*, No 15/2013.

[9]This obligation was also introduced by the Law on Higher Education, *Official Gazette*, No 15/2013.

relatively high (Figure 1.2). As in the case of the activity rate, there is a large gender employment gap of 20.3 percentage points. The data shows a clear link between the educational attainment of a person and his/her employment probability.

Workers with a low level of education, young workers and women are most vulnerable in the labour market. About 14% of the total employed population aged 15 to 64 in 2017 were employed on a temporary basis. Men are slightly more likely to be in temporary employment (15.2% in 2017 compared to 12.3% of women). As expected, temporary employment is much more widespread among young workers of whom about a third (30.2%) in 2017 were in temporary employment. Workers with a low level of education are also more likely to be in temporary work.

FIGURE 1.2 EMPLOYMENT RATES BY GENDER, AGE AND EDUCATIONAL ATTAINMENT, 2017 (%)



Source: Author's presentation based on Eurostat data.

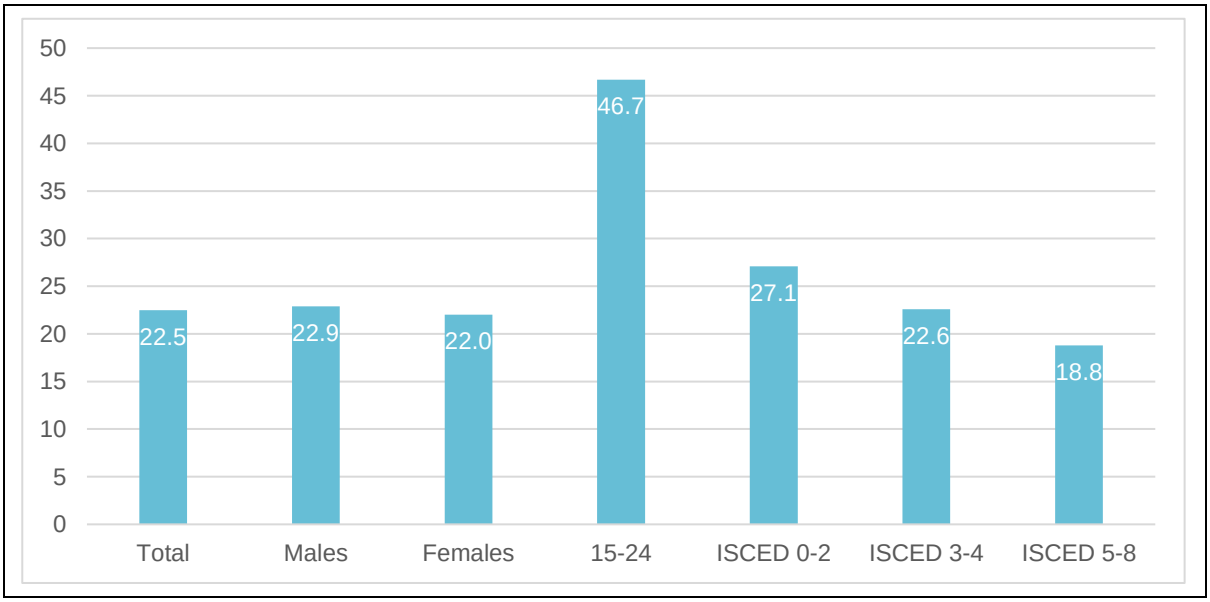
In 2017, 18.6% of all workers in the country were in vulnerable employment, which is defined as the sum of self-employment and contributing family workers. While the absolute number of people in vulnerable employment has not changed over the last decade, the share has declined from 22.5% in 2008. Men are slightly more likely to be in vulnerable employment (a share of 20%) compared to women (16.3%). However, the structure of vulnerable employment is very different among the genders: the share of women working as contributing family workers is three times higher than the share of men, whereas the opposite is the case for self-employment.

Informal employment, which does not provide any social security for workers, can also be considered as vulnerable employment. LFS data shows that 18.5% of all employed workers did not have a formal contract in 2016 (the latest year for which data is available). However, informality had declined from 28.6% in 2008. Men are more likely to work informally compared to women: 20.5% of male employment is informal, whereas 15.4% of female employment is informal. LFS data shows that informality is highest for the population aged 65+ (who are mainly retired people) and for young people aged 15 to 24 (35%). Similarly, Mojsoska-Blazevski's study (2016) showed that 48% of young workers aged 15 to 29 were working informally in 2014.

In 2017, 22.5% of the labour force (aged 15–64) was unemployed. Unemployment is continuously declining (from 34% a decade ago), but is still very high. Young workers have a high chance of being unemployed (Figure 1.3), but there is no large gender difference in unemployment. Unemployment

disproportionately affects workers with a lower level of education, although the difference between the unemployment rates of workers with a lower level of education (ISCED 0–2 and ISCED 3–4) and highly educated workers (ISCED 5–8) has declined in recent years in the wake of the large increase in the number of higher education graduates[10].

FIGURE 1.3 UNEMPLOYMENT RATES BY GENDER, AGE AND EDUCATIONAL ATTAINMENT, 2017 (%)



Source: Author's presentation based on Eurostat data.

One interesting finding here is that, despite the increase in educational attainment for women, their labour market prospects remain poor, with unemployment affecting one in five. While the unemployment rate for men decreases with educational attainment, the rate for women is similar for all three broad educational levels (although the figures show a decreasing trend for individuals with a low and medium level of education, they are relatively stable for graduates of higher education). Since 2010, women have accounted for around a quarter of the labour force. Women seem to be less employable than men: they are trapped in low-skilled jobs, experience more unemployment spells and participate less in further training. Women with a medium level of education have the highest unemployment rate and they are also most often mismatched, with 17% of them working in elementary occupations (see Table 4.4).

A functional and efficient labour market is an important element of an overall business environment and an essential prerequisite for reducing the size of the informal economy. The quality of labour law and the proper implementation of the law can also help to increase employment by positively affecting labour demand and supply, reducing transaction costs and improving labour allocation. Table 1.2 shows the efficiency of the labour market in several countries as measured by the World Economic Forum. Efficiency is similar for all the countries included and ranges from 4.4 in Bulgaria (the best score) to 3.8 in Serbia (the most inefficient labour market among the countries shown here). North Macedonia is ranked 95th out of 138 participating countries in terms of labour market efficiency. The

[10]This increase in the labour supply of tertiary-educated graduates is higher than the increase in the demand for their labour (i.e. net job creation).

country scores poorly mostly in the area of 'flexibility of wage determination', where it is ranked 118th and 'cooperation in labour-employer relations', where it is ranked 81st.

TABLE 1.2 LABOUR MARKET EFFICIENCY – SELECTED INDICATORS, 2016–17

Country	Labour market efficiency 1–7 (best)	Rank	Cooperation in labour-employer relations	Flexibility of wage determination	Hiring and firing practices	Redundancy costs (in weeks of salary)	Effect of taxation on motivation for work
North Macedonia	4.0	95	4.3	4.1	4.2	13.0	4.1
Serbia	3.8	106	3.7	5.3	3.6	7.7	3.0
Albania	3.9	98	5.1	4.7	4.0	20.8	3.1
Montenegro	4.1	83	3.9	4.9	3.6	11.2	3.8
Bulgaria	4.4	54	4.2	5.0	3.9	8.6	3.9
Slovenia	4.1	85	4.3	4.3	2.4	10.7	2.2
Croatia	3.9	100	3.5	5.1	2.6	15.1	2.7

Note: All indicators are measured on a scale of 1 to 7 (7 is the best option), with the exception of redundancy costs, which are measured in weeks of salary paid to redundant workers. This is the latest available data for North Macedonia, as it is not included in the 2017/18 report.

Source: World Economic Forum, Global Competitiveness report, database.

A survey conducted by the International Labour Organisation (ILO) (2015) shows that, in general, companies have a positive attitude towards labour relations law: over 80% of the companies surveyed agree that labour legislation is consistent and clearly defined. Companies are least satisfied with the brief period between the enactment of the legislation and its entry into force, which leaves them with little time to adapt. Table 1.3 presents the five most important aspects of current labour law that are mostly unfavourable to companies. Termination of employment contracts is the main aspect of labour law that is not favourable: this was stated by 13.2% of companies. This is followed by legislation on official holidays (for 11% of companies), legislation on the types of employment contracts (10%), overtime and recruitment. The legal framework for collective bargaining, trade unions and retirement benefits seem to be more favourable for enterprises. Many of the companies surveyed (45%) complained about occupational health and safety legislation, which, in their opinion, imposes a heavy financial burden on businesses.

TABLE 1.3 FIVE MOST UNFAVOURABLE ASPECTS OF LABOUR LAW

Aspects of labour law	% of companies stating that this aspect is a major problem
Termination of contracts	13.2
National holidays	11.1
Legislation on types of employment contracts	10.0
Overtime work	9.5
Recruitment	7.9

Source: ILO, 2015.

This analysis indicates a need for further reforms to improve the functioning of the labour market in the country. The available information shows that employers would prefer more flexible labour legislation

(related mostly to the termination of employment, national holidays, types of employment contracts and overtime work). The lack of flexibility is a significant factor influencing engagement in the informal economy and/or informal hiring practices. Moreover, there needs to be greater flexibility in wage negotiations and more effective social dialogue.

Insufficient labour demand and skills mismatches (especially in the wake of the economic transition and changing structure of the economy) are the main reasons behind the country's high rate of unemployment. For many years after transition, it was believed that economic growth would itself address the high rate of unemployment and hence the labour market policy was undermined. Government policy aimed at reducing unemployment is a combination of supply- and demand-side interventions. Demand-side policies focus mainly on reforming the general business environment to improve growth and job creation rates and to reduce labour costs. The latter has been achieved by reducing labour taxation (personal income tax and social security contribution rates), but also by implementing active labour market policies (ALMPs). Supply-side policies generally seek to improve the skills of the workforce, through formal and non-formal education and training, as well as through the ALMPs.

The newly elected government (as of May 2017) has made several changes in the way in which employment policy is designed and focused.

- **Labour costs** – The government announced a policy switch towards progressive taxation and increased personal income tax rates, which would increase labour costs. The actual policy change was postponed in the wake of considerable public debate and opposition.
- **Statutory minimum wage –** In September 2017, the government increased the statutory minimum wage to MKD 12 000 in net terms (approx. EUR 195) from the previous level of about MKD 10 000. For a transitory period of six plus six months (September 2017 to March 2018 and March to September 2018), employers were entitled to financial support to be able to pay the new, higher minimum wage. This also has an implication for labour costs, especially at low wage levels, where most registered unemployed people would find work due to their low qualifications and skills.
- **Active labour market policies** – Some progress was made in recent years regarding the effectiveness of ALMPs (based on the findings of the impact evaluation[11]) and the coverage and quality of employment services. However, the effectiveness of the programmes is still limited by the low demand for workers in the economy and the limited resources available to the ESA (both financial and human, including the high ratio of unemployed people to the number of ESA staff). A progress in the field is the introduction of the process of profiling unemployed and the preparation of Individual Employment Plans. Two types of individual employment plans are prepared depending on the employability level of beneficiaries, namely for (i) individuals who are employable or face moderate difficulties; or (ii) individuals who are facing significant difficulties in engaging in employment.

The new government has also made some changes to the ALMPs.

- The government increased ALMPs spending and scope (number of participants) for 2017 and 2018. Expenditure in 2018 amounts to approximately EUR 16.3 million, targeting around 26 000 unemployed people (of which 9 549 should be included in active measures and the remaining

[11]See Mojsoska-Blazevski and Petreski, 2015.

individuals will benefit from ESA services)[12]. These measures will cover about 13.4% of registered unemployed people. However, almost 68% of the overall number of participants in ALMPs will receive employment services (e.g. job matching/mediation services, counselling) and only 32% will be involved in active measures.

- The government has also focused its interventions on activating the unemployed, with a special emphasis on the young jobseekers and unemployed from vulnerable categories (e.g. beneficiaries of social financial assurance, Roma ethnics etc.).
- In 2018, the government piloted a Youth Guarantee scheme (based on the EU experience). The guarantee envisages that each young person under the age of 29 will be given an adequate job offer, an opportunity to continue education or will be included in some of the internship or training measures for preparation for employment, within four months of completing education or registering as an unemployed person with the ESA. The pilot will involve three employment centres (out of 34), an estimated 1 200 participants and a budget of EUR 1.6 million. Based on the results, the programme could be implemented universally, involving about 9 500 people annually, at a cost of approximately EUR 12.6 million per year (Ministry of Finance, 2018)[13].
- One of the biggest challenges for the government is the reduction of youth unemployment and their retention in the country by creating opportunities for well-paid and secure jobs. At the end of 2017, the government decided to introduce the Youth Guarantee in order to provide young people (15–29 years) an opportunity of employment, continuing education and training, or internships. North Macedonia is the first non-EU country to launch the implementation of the Youth Guarantee. In 2018, the ESA has started implementing the Youth Guarantee measure aimed at improving the position of young people in the labour market by enabling every person up to 29 years of age to get an appropriate job offer within a period of four months after registering as unemployed with the ESA or the possibility to continue education or to be included in any of the active employment programmes. During 2018, the Youth Guarantee was implemented as pilot measure in three employment centres: Gostivar, Strumica and Skopje (out of 30 employment centres), involving young people who are not employed and who are not involved in education or training (NEETs) and who were recorded for the first time as unemployed persons. The implementation of Youth Guarantee activities included a large number of actors, namely the Employment Service Agency, the Ministry of Labour and Social Protection, the Ministry of Education and Science, the Centres of Social Work, the VET Centre, social partners and non-governmental organisations. Based on the results, it is planned to expand the programme and to include 9 500 young people, on annual basis, in 2019, 2020 and 2021.

1.4 System and institutions of skills governance

Systems for collecting labour demand data and for forecasting future skills needs are still at an early stage of development, which restricts policy making in education. A few recent initiatives aim at improving the quantity and quality of information on current and future labour demand, but they are at an early stage. The main institutions involved in skills governance are the Ministry of Education and Science and the Ministry of Labour and Social Policy.

[12]Active measures account for 99% of the overall costs, and services account for only 1%. The operational plan is published at: www.avrm.gov.mk/content/ОП/Оперативен%20план%20за%202018%20година.pdf

[13]This cost is as much as 77% of the overall current cost for ALMPs.

The Ministry of Education and Science, supported by the World Bank's Skills Development and Innovation Support Project, has established a Skills Observatory (as a department within the ministry). The Skills Observatory is a website platform, initially designed to provide services to the public including, but not limited to, information on higher education opportunities, VET and adult education programmes, information on curricula and skills development, information on job placements for graduates, education costs, links to information on jobs demand and economic development and forecasting of labour demand. The web platform collects information from various data sources, i.e. the Education Management System (data aggregator for all secondary education institutions), databases operated by the country's higher education institutions and the ESA. There is also a plan to expand the functionalities for collecting data from the Pension and Disability Fund and the Public Revenue Office.

However, the practical use of this platform and its proper functioning is very limited for several reasons.

- Firstly, at the time of writing, there is no separate unit in the organisational structure of the Ministry of Education and Science whose role it is to work on the harmonisation of the data collected from various sources; arrange data clearance and data analysis; and generate periodic reports for decision-makers and the public. Instead, these are tasks that are assigned to all departments in the ministry.
- Secondly, staff at the Ministry of Education and Science lack the capacity to use the data and generate repeatable data analysis processes to support the development of evidence-based policy making.
- Thirdly, institutions are still reluctant to share information. This is due in some cases to legislative barriers and in other cases to a low awareness among the institutions of the importance of timely submission of the data (e.g. a number of higher education institutions did not harmonise their databases to communicate with the Skills Observatory).

All of the above led to delays in launching the web platform. The first tracer study of the 2014/15 graduates of VET and higher education institutions was conducted as part of the Skills Observatory's activities. The project was supported by the ETF (Mojsoska-Blazevski, 2017). However, as with most donor initiatives, the main challenge is to ensure sustainability and continuation of the projects (and the tracer study) once donors withdraw. This is the case for all candidate countries, according to the ETF's recent findings on tracking VET graduates (ETF, 2018). Looking at the state of play and various practices and challenges candidate countries face in their efforts to establish graduate tracking systems, we recommend that the methodological arrangements are subject to a quality assurance process and they are improved over time. This can be done by using representative samples, combining administrative and survey data, interfacing databases to exploit the wealth of information available and introducing longitudinal tracking measures. Countries also need to properly resource the tracking process and display real ownership of it by embedding it in their national education system for example.

The Skills Observatory has also undertaken activities to develop a skills forecasting system. The first report on future skills needs was prepared based on a simple forecasting model coupled with the Delphi method, which relies on the opinions of experts (see Petreski, 2016).

The Ministry of Labour and Social Policy developed the HERMAC model, which provides a long-term labour market forecast for five sectors. The model is being updated and revised on an annual basis, as soon as the annual statistical data are published. The model was used, for example, in the

preparation of the Youth Employment Action Plan. Since March 2018, it has been used to inform the government about the forecasts/projections produced with the model and this practice will continue on annual basis.

With regard to data sources on labour demand, information is available through e.g. job vacancy data, analyses based on data from the Central Registry and the skills demand survey carried out by the ESA. ESA survey collects information from employers since 2007 onwards about short-term recruitments lasting six to twelve months, the need for specific skills and occupational shortages. The purpose of this survey is to identify short-term occupational shortages (deficient skills or occupations), which are then used to structure some of ESA training programmes. Capacity of collection and interpretation of labour demand and supply data is being consolidated. The initiative of the Ministry of Education and Science to establish a Skills Observatory is welcome. However, its current objectives and capacity are limited in scope and mainly focused on administrative data and data on skills supply. A step forward would be to develop detailed and integrated analysis using country's LFS data, job vacancy data or adult learning surveys. The Ministry of Labour and Social Policy intends to use some of this data to prepare an 'Occupational Outlook'. According to the Economic Reform Programme 2018–20, the ministry will produce and publish online an Occupational Outlook. At the time of writing, detailed outlooks for 18 occupations were available at www.zanimania.mk. Additional 72 occupational outlooks will be prepared and published by 2021. The plan is to use these outlooks to design the ALMPs from 2019 onwards.

In recent years, the government has made efforts to increase the involvement of employers and employers' organisations in the skills governance system, in order to use their inputs into education and labour market policy making. This has been done through different initiatives, such as within the development of the NQF and occupational standards, through school boards in vocational schools, through the management of the VET Centre and VET Council, through Boards for Cooperation and Public Confidence in higher education institutions, and through sectoral committees for qualifications (see the analyses above).

In summary, there is a great need to increase the use of labour demand and skills supply data and also to use the data for policy making and to help current and future students to make informed choices. The recent initiatives are a step in the right direction, although there is a need for greater coordination between labour market and education policymakers and other stakeholders to improve capacities within state institutions and other actors (e.g. research community, social partners) for data analysis, i.e. to 'make sense of the data', and to ensure regular funding for these activities.

2. KEY DEVELOPMENTS

2.1 Labour demand

Low job creation is the main reason for the country's high unemployment. Skills mismatches, which prove to be relatively large, can be seen as both a reason for the unemployment, but also a consequence of it. On the one hand, job creation by companies is constrained by the insufficient and inadequate supply of skills (especially in fast-growing companies, some of which are 'gazelles' – high-growth enterprises that have been employers for a period of up to five years). On the other hand, job scarcity pushes workers to accept any job offer, regardless of whether it matches their educational level and/or qualifications (occupation), hence perpetuating the skills mismatch.

Only a few data sources measure labour demand. None of them collects detailed data on labour demand, in terms of skills and knowledge required by firms. This section draws on most of the available (and high-quality) information, extracted from both the official statistical data and larger-scale surveys, in order to examine in more detail developments in labour demand in North Macedonia.

The data sources listed below were used. The first two datasets are regularly collected by the State Statistical Office (SSO), but they do not contain detailed information on the skills and qualifications in demand.

- LFS-based data provides both a direct and indirect measure of labour demand; this particular data is commonly used as labour demand indicators by EU countries (included in the Eurostat database).
- Data on job vacancies provided by the SSO (on the basis of the Job Vacancy Survey, rolled out in line with EU methodology) investigates the available vacancies in the economy but does not examine skills shortages, i.e. it does not look at the qualifications or skills demanded for the available vacancies.
- Skills needs analyses, implemented annually by the ESA, ask employers about their future demand for workers (in the short term) and if they face any difficulties in hiring workers (including if there is an insufficient supply of certain skills).
- A World Bank study simultaneously analysed the supply of and demand for skills; this was done by means of a questionnaire administered to firms[14] and a survey on skills supply administered as a household survey of the population aged 15 to 64[15].
- A recent European Commission study analysed higher education provision and labour market opportunities for graduates in the Western Balkans, including North Macedonia[16].

Figure 2.1 shows the share of newly employed workers as an approximation of labour demand in North Macedonia compared to the EU economies. It shows that 11.8% of all employed workers in the country in 2017 found their job in the last 12 months (prior to the survey). This is a smaller share than the EU-28 average of 15%, notwithstanding the much higher initial employment level in the EU.

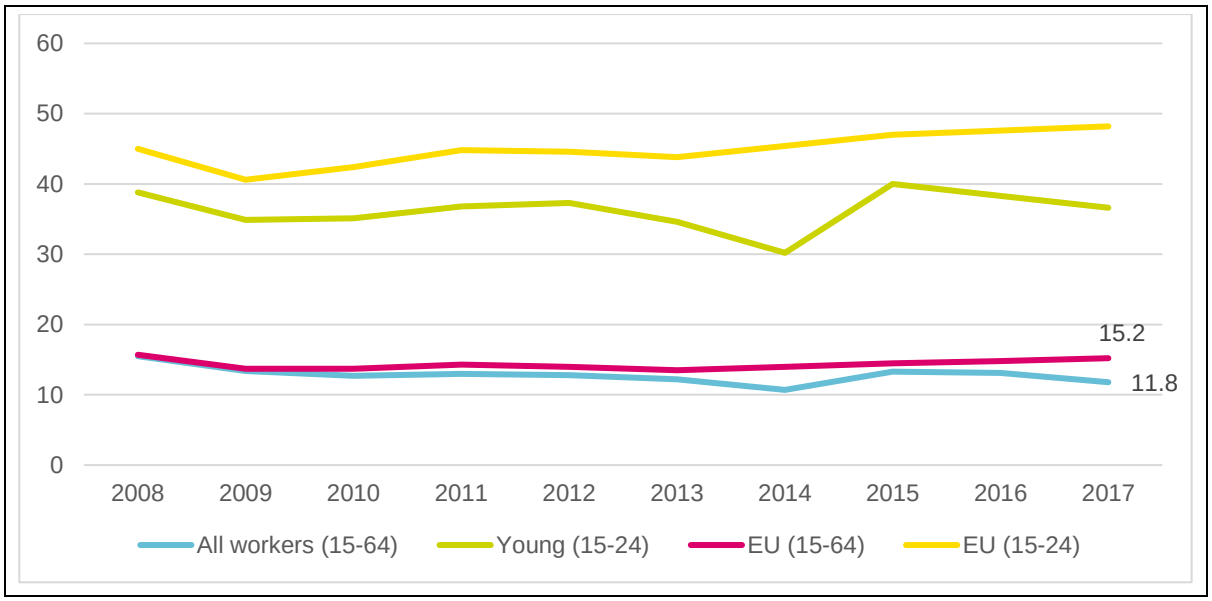
[14]Answers were collected from 1 027 companies in five sectors that were defined as sectors with high potential growth: food and textiles, automotive components, other manufacturing sectors, ICT and logistics.

[15]STEP (Skills toward Employment and Productivity) skills measurement study. See the North Macedonia report at: https://openknowledge.worldbank.org/handle/10986/27745 and a comparative international report at: https://openknowledge.worldbank.org/handle/10986/24906

[16]See http://ec.europa.eu/education/sites/education/files/2016-higher-education-labour-market-balkans_en.pdf

Moreover, there was some slowdown in the number of newly employed workers compared to 2008. The newly employed rate is higher for young workers (which is to be expected) but the graph clearly shows that young people in the EU have much better employment prospects than those in North Macedonia. By professional status, the rate of newly employed workers is highest among employees (13.6%), followed by self-employed individuals (5.6%) and contributing family workers (5.2%).

FIGURE 2.1 NEWLY EMPLOYED (SHARE OF PEOPLE IN CURRENT JOB FOR 12 MONTHS OR LESS) AS A SHARE OF TOTAL NUMBER OF EMPLOYED PEOPLE, 2008–17 (%)



Source: Author's calculations based on Eurostat data.

Data on job vacancies shows that the number of available jobs was 1.5% of the total number of jobs in the economy in 2017 (see Table 2.1). The job vacancy rate has been relatively stable since 2014. However, it is lower than the EU average (the average in the countries that provided data to Eurostat in 2017 was 1.9%). The job vacancy data shows that most of the open vacancies are in construction, professional activities, ICT and industry[17].

TABLE 2.1 JOB VACANCY RATE BY INDUSTRY, 2014–17

	2014	2015	2016	2017
Total	**1.5**	**1.5**	**1.4**	**1.5**
Industry (except construction)	1.8	1.7	1.5	1.9
Construction	2.5	2.3	1.9	2.2
Wholesale and retail trade, transport, accommodation and food service activities	1.8	1.9	1.9	1.8
Information and communication	1.2	1.3	2.0	2.0
Financial and insurance activities	0.8	0.7	1.0	0.7

[17]The growth in construction declined significantly in the first quarter of 2018 (a decline of 37% was recorded), which may result in a reduction in the job vacancy rate in this sector.

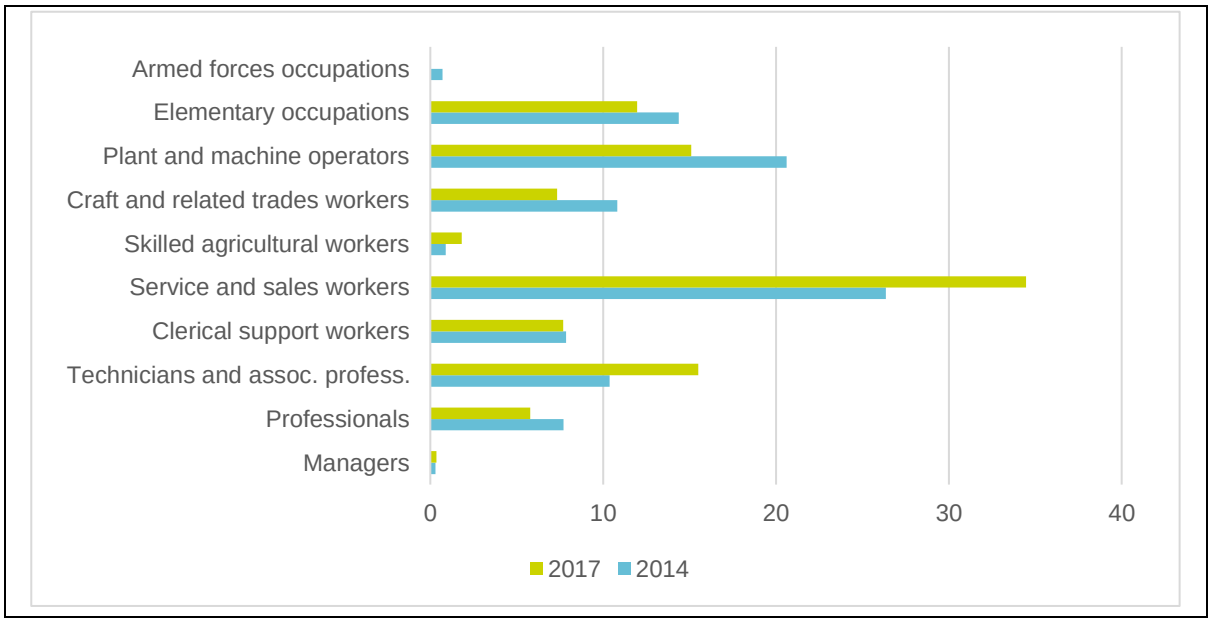
	2014	2015	2016	2017
Real estate activities	0.3	0.8	0.4	1.7
Professional, scientific and technical activities; administrative and support service activities	1.5	1.8	1.9	2.2
Public administration and defence; compulsory social security; education; human health and social work activities	0.7	0.8	0.5	0.4

Note: Annual data is calculated as an average of the quarterly data.
Source: Author's presentation based on Eurostat data.

Most of the open vacancies in 2017 were for services and sales workers (34.5% of all open vacancies), followed by technicians and associate professionals and plant and machine operators (Figure 2.2). Between 2014 and 2017, labour demand increased most for services and sales workers.

The overall structure of employment by occupation group (as defined by ISCO), and in particular the change in the structure, also provides important information about the relative extent of labour demand by occupation and changes occurring in the economy. As Table 2.2 shows, elementary occupations, services and sales occupations, and professional work are the predominant forms of employment in 2017. If occupation groups are clustered by complexity, intermediate-level skills (ISCO 4–8) prevail in overall employment in 2017 with a share of 53.4%, followed by high-level skills and/or occupations (ISCO 1–3), which account for 29% of employment. The last two columns in the table show that considerable changes have occurred in the employment structure over the last decade. The share of elementary occupations declined significantly, whereas there was a large increase in the employment of professionals, skilled agricultural workers and, to some extent, services and sales workers.

FIGURE 2.2 JOB VACANCY RATES BY OCCUPATION GROUP, 2014 AND 2017 (%)



Source: Author's calculation based on MakStat data[18].
Note: Annual data is calculated as an average of the quarterly data.

[18]See http://makstat.stat.gov.mk/PXWeb/pxweb/mk/MakStat/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef

TABLE 2.2 STRUCTURE OF EMPLOYMENT BY OCCUPATION, 2008–17

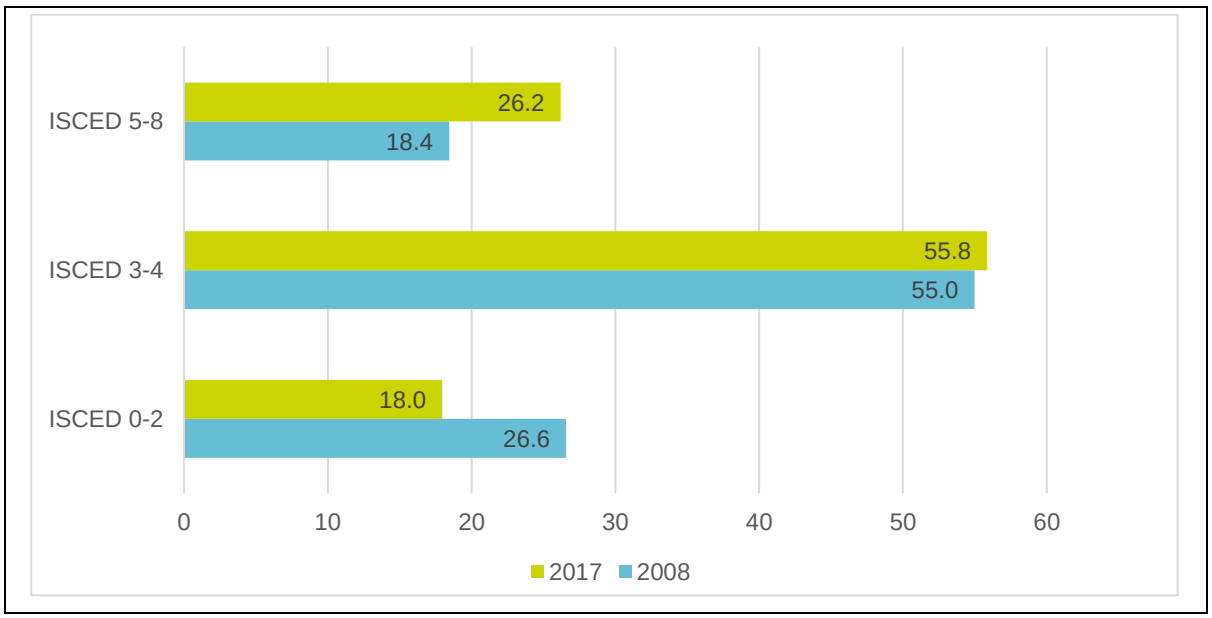
Occupation	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Structure 2008 (%)	Structure 2017 (%)
Managers	39.8	44.3	42.1	37.6	34.3	35.2	28.3	34.0	34.2	33.7	6.5	4.6
Professionals	54.5	63.3	68.3	83.2	95.1	91.8	92.8	96.1	110.7	114.1	8.9	15.4
Technicians and associate professionals	61.2	62.0	60.0	66.0	63.4	62.3	60.6	62.8	63.2	67.4	10.0	9.1
Clerical support workers	41.5	43.9	47.8	43.2	36.9	38.4	38.9	44.4	43.6	41.1	6.8	5.5
Services and sales workers	85.6	94.6	91.3	96.4	106.1	101.9	110.6	113.7	117.1	121.0	14.1	16.3
Skilled agricultural, forestry and fishery workers	7.3	3.1	2.8	5.2	9.6	18.3	28.0	29.4	42.7	43.3	1.2	5.8
Craft and related trades workers	73.6	75.0	80.1	75.0	77.3	80.7	79.1	83.6	89.4	89.8	12.1	12.1
Plant and machine operators and assemblers	84.6	81.1	75.7	78.3	79.9	95.1	100.2	93.9	95.9	101.2	13.9	13.7
Elementary occupations	153.4	157.1	164.0	153.6	143.0	149.9	146.0	141.6	119.8	121.4	25.2	16.4
Armed forces occupations	7.6	5.5	5.8	4.6	4.9	5.2	5.8	6.4	6.9	7.6	1.2	1.0
Total employment	609.1	629.9	637.9	645.1	650.5	678.8	690.3	705.9	723.5	740.6	100.0	100.0

Source: Author's presentation based on Eurostat data.

The shift from low-skill to intermediate- and high-skill jobs can also be seen in the changes in the educational structure of employed workers. As Figure 2.3 shows, the share of employed workers with low levels of education declined from 26.6% in 2008 to 18% in 2017, whereas there was a large increase in the employment of tertiary-educated individuals. Nevertheless, this change does not necessarily suggest that the economy managed to create many 'good' jobs but may also be a result of highly educated workers accepting jobs with lower skills requirements (i.e. increasing over-education[19]). These two potential explanations have a very different effect on productivity developments.

[19]In some sectors (e.g. agriculture, services) the incidence of over-education is higher than in others, suggesting that most of the workers accepting these jobs will be mismatched. People employed in services are perhaps the best example of mismatched workers (in North Macedonia but also in most of the European countries) with the highest incidence of under-/over-education. These sectors employ half of all workers in the country and, on average, three-quarters of all workers in the EU.

FIGURE 2.3 STRUCTURE OF EMPLOYMENT BY EDUCATION LEVEL, 2008 AND 2017 (%)



Source: Author's presentation based on Eurostat data.

According to the skills needs analysis conducted by the ESA (published by the ESA in 2017)[20], the surveyed companies reported that most of the jobs to be created in the following period (6 to 12 months after the survey) were to be in manufacturing, trades and accommodation and food services. In terms of labour demand, employers reported that they will need mainly services and sales workers; plant and machine operators; technicians and associate professionals; and craft and related trades workers. This information is in line with the data on employment by occupation, i.e. these are the occupations that have quite large shares in the overall employment structure (see Table 2.2). The ESA survey also finds (consistently across several years) that most of the future labour needs are for workers with secondary vocational education level. Based on the findings of this survey, the ESA then organises training for unemployed people, known as training for deficient occupations and/or skills.

In a similar vein, the World Bank's survey of employers (2016), finds that the skills demanded by firms are mainly technical skills, relating to specific jobs. In addition, workers are also expected to have many transversal skills, e.g. team working skills, communication skills, time management skills. However, when employers are asked about the technical skills that are in short supply, they are unable to articulate exactly which technical skills are in insufficient supply but instead mention socio-emotional skills and similar skills. They also usually complain about the job applicants' lack of work experience.

According to the World Bank (2016), the main sectors experiencing demand constraints for workers are the fast-growing and export-oriented sectors in the economy. These sectors report a lack of the following occupations: plant and machine operators, crafts and related trades workers, clerical support workers and professionals.

Table 2.3 summarises the available information on labour demand. While there are some differences between the findings of the studies, the most consistent result is the rising demand for services and

[20]The 2017 report is based on the 2016 survey. 2018 report not published yet (at the time of writing).

sales workers and skilled agricultural workers, as well as the decline in the demand for workers in elementary occupations.

Petreski's study (2016), prepared for the Ministry of Education and Science, and the World Bank study (2016) show that employers are particularly dissatisfied with the skills of VET graduates. They mainly complain about the VET graduates' lack of practical knowledge and skills, as well as the inability of the VET system to transfer new, updated knowledge to its participants. The World Bank study shows that the most significant skills gaps exist for workers with vocational training, across all economic sectors.

In summary, the available data on labour demand in North Macedonia shows that: (i) relatively few jobs are being created; (ii) there is a change in the educational and occupational structure of labour demand/employment towards intermediate and high-skilled jobs/qualifications; (iii) most of the demand is for medium-level, technical and vocational skills; and (iv) employers are particularly dissatisfied with the quality of the skills of VET graduates.

TABLE 2.3 SUMMARY OF AVAILABLE DATA AND STUDIES ON LABOUR DEMAND, BY OCCUPATION

	Job vacancy rate (SSO) – based on change 2014–17	Employment by occupation – based on change 2008–17	Skills needs analysis (ESA) – data for 2016, demand in the next 6–12 months	World Bank (2016) – 2016 survey, current needs
Managers	↑ low	↓ low		
Professionals	↓ low	↑↑ large		↑
Technicians and associate professionals	↑ medium	↓ medium	↑	
Clerical support workers	= medium	↓ medium		↑
Services and sales workers	↑ large	↑ large	↑	
Skilled agricultural, forestry and fishery workers	↑ low	↑ medium		
Craft and related trades workers	↓ medium	= large	↑	↑
Plant and machine operators and assemblers	↓ large	= large	↑	↑
Elementary occupations	↓ large	↓ large		

Note: Arrows denote an increase or decrease and '=' denotes no change (large increase in the case of ↑↑). Low – a share of 0–5%; medium – a share of 5.1–10%; large – over 10%.

Source: Author's presentation of data on labour demand obtained from various sources.

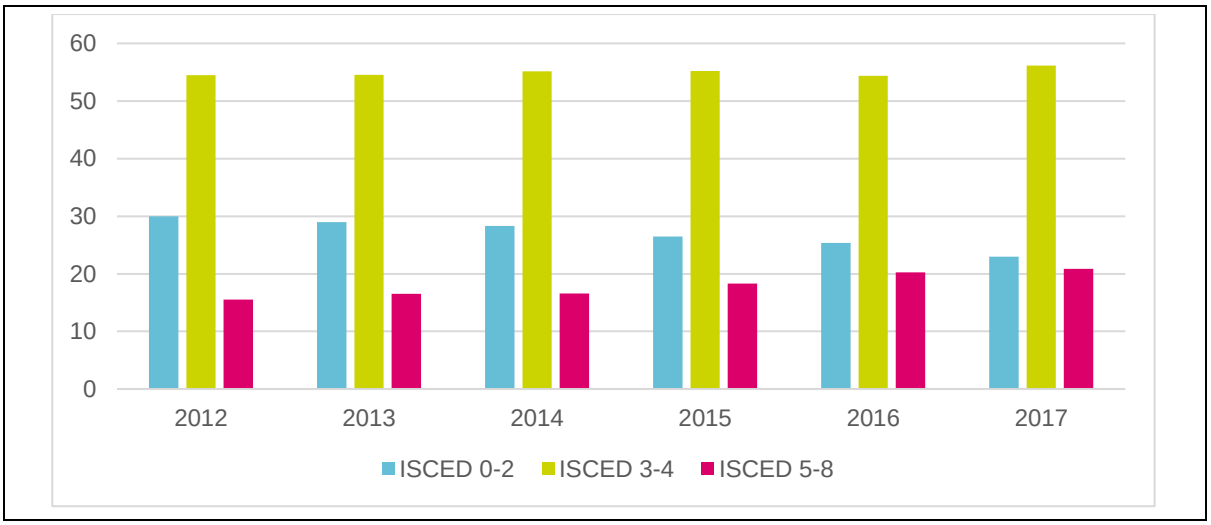
2.2 Labour supply

Available labour supply can be approximated directly by the number of unemployed people and the structure of the unemployment. Section 1.3 presented unemployment data. It showed a continuous decline in unemployment, although the level is still very high. Figure 2.4 shows the structure of unemployment by educational level. Most of the available labour (i.e. unemployed people) have secondary education (56% in 2017). Some changes have occurred in the structure of unemployment among workers with a low level of education and those with a high level of education. The share of the first category in overall unemployment decreased from 30% in 2012 to 23% in 2017. The skills profile of the active population is also changing, with fewer workers with a low level of education entering the labour force (10 points less in 2017 than in 2010). On the other hand, the share of tertiary-educated workers in total unemployment increased as a result of the rapidly growing supply of such workers relative to the increase in demand[21].

Although Figure 2.2 showed a large increase in the job vacancy rate for services and sales workers, the data on labour supply (i.e. unemployed by previous occupation) shows that most of the people who are currently unemployed worked as services or sales workers in their previous job. This implies that it may be difficult to retain workers in these types of jobs. Or it may be that there has been a change in the skill sets or skill requirements within the occupations with the result that the skills of services and sales workers became obsolete. The demand for workers in elementary occupations is declining, and they account for an increasing share of those who are unemployed.

There is a higher incidence of under-education in services. However, for a number of years now, there has also been a high incidence of over-educated workers, pointing to the same issue: a mismatch. This can indeed suggest a change in the skill sets that are needed for these jobs. The high incidence of mismatch in services is most likely due to the nature of these jobs (which are often at the borderline of low and medium-skilled and so they are more liable to be accepted by low- and medium-skilled workers). They may also be temporary jobs for more skilled workers, likely to be accepted in the absence of better (i.e. matched) jobs.

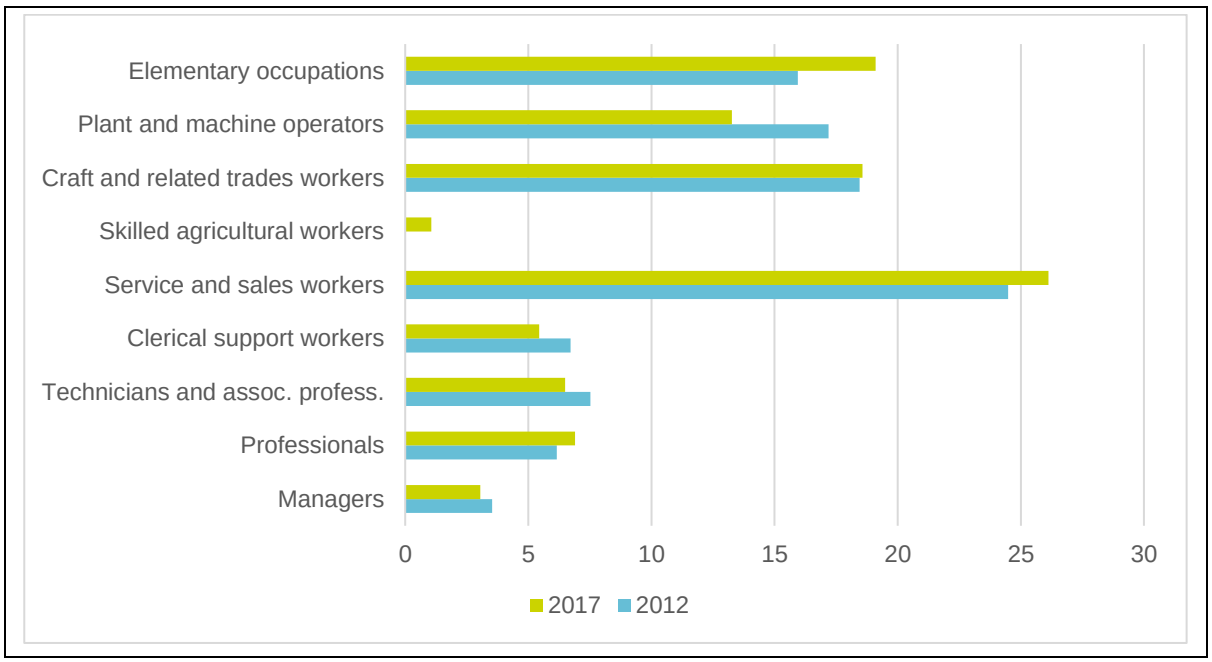
FIGURE 2.4 STRUCTURE OF UNEMPLOYMENT BY EDUCATIONAL ATTAINMENT, 2012–17 (%)



Source: Author's presentation based on Eurostat data.

[21]This refers only to the relative size of the unemployed people by education, whereas the unemployment rate declines with education, as presented in Section 1.3.

FIGURE 2.5 UNEMPLOYED PEOPLE BY PREVIOUS OCCUPATION, 2012 AND 2017 (%)



Note: Data must be treated with caution as only about 4–5% of the unemployed workers had been employed in the previous eight years and hence reported their previous occupation.
Source: Author's presentation based on Eurostat data.

2.3 School-to-Work Transition

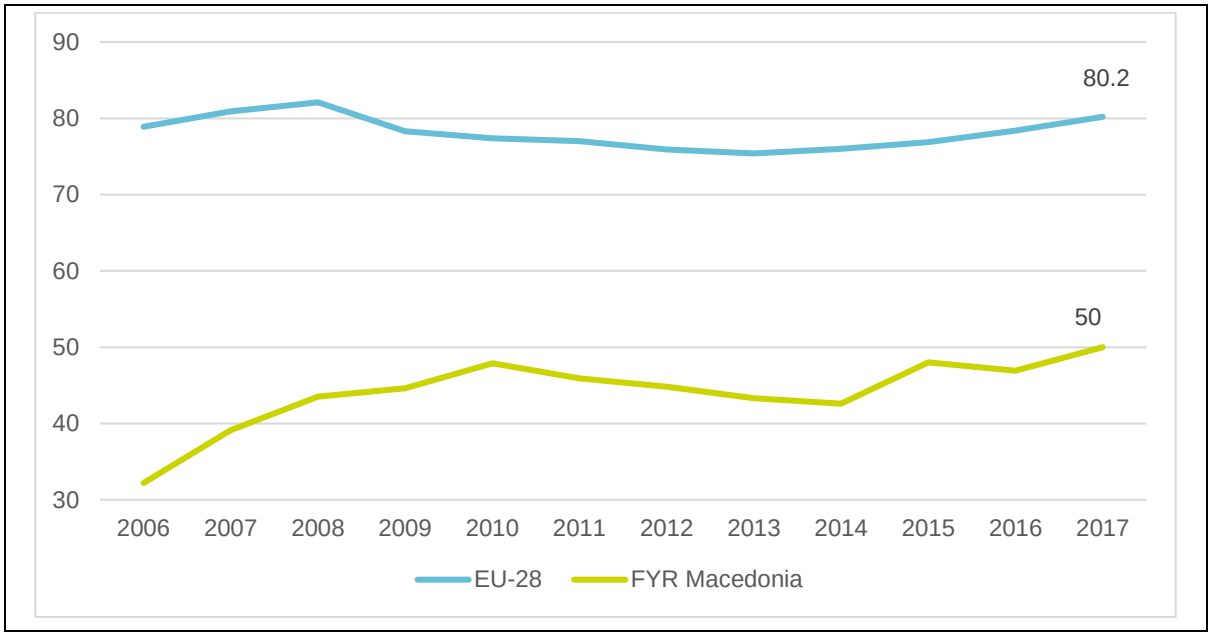
Within the overall context of high youth unemployment and very low employment, young individuals in North Macedonia face a very difficult and long transition from education to the labour market.

The ILO study on the school-to-work transition of young people in North Macedonia provides evidence of the difficult transition experienced by young people when moving from education to the labour market (Mojsoska-Blazevski, 2016). In particular, the average duration of a young Macedonian's transition from graduation (or school exit) to their first stable or satisfactory job is 31.2 months, or 2.5 years[22]. It takes more time for young men than young women to transition to a job: 37 versus 23 months, respectively. However, the vulnerability of young females in the country is related to the fact that a high percentage of them can be classified as NEETs: 54% of the 15 to 29 age group fall into this category (Mojsoska-Blazevski, 2016). In other words, the study shows that many young women do not start their transition to the labour market after completing education. Instead, they remain as inactive non-students, without any plans to enter the labour market at a later stage in life.

Figure 2.6 shows a comparison of the employment rates of recent graduates in North Macedonia and the EU. In 2017, only half of the graduates with secondary and tertiary education in the country managed to find a job up to three years after graduation. The indicator shows that young people have significantly lower employment prospects than young people in the EU. However, the data also illustrates an improvement in the country over the period that was analysed.

[22]A young person who has 'transited' is one who is currently employed in (i) a stable job, whether satisfactory or unsatisfactory; (ii) a satisfactory but temporary job; or (iii) satisfactory self-employment.

FIGURE 2.6 EMPLOYMENT RATES OF RECENT GRADUATES (AGED 20–34), 2006–17 (%)



Note: The indicator measures the employment rates of people aged 20–34 who fulfil the following conditions: (i) they are employed according to the ILO definition; (ii) they have attained at least upper secondary education (ISCED 3) as the highest level of education; (iii) they have not received any education or training in the four weeks prior to the survey; and (iv) they successfully completed their highest educational attainment one, two or three years before the survey. The indicator is calculated based on EU LFS data.

Source: Author's presentation based on Eurostat data.

Several elements create major bottlenecks in young people's transition from education to work, but the most prominent ones are:

- low job creation, including lack of formal jobs;
- graduates and/or labour supply not having adequate skills;
- employers considering the lack of work experience of young workers to be very important (World Bank, 2016).

The school-to-work transition is also seen to be increasingly linked to the existence of various types of skills mismatches. Compared to adults, young people face a number of challenges entering the labour market due to their lack of work experience and the mismatch between the skills they have to offer and those required by employers.

The government continuously implements policies aimed at boosting the demand for young workers, mainly through subsidised employment and start-up grants and loans. In addition, it implements an internship programme for secondary- and third-level graduates, which should increase the possibility of interns finding work by giving them some work experience.

2.3 Mismatches

Studies find that there is a negative relationship between skills mismatch and productivity at country level (e.g. Adalet McGowan and Andrews, 2015). Countries with a higher level of skills mismatch are therefore expected to experience lower productivity and growth than countries with a lower level of

skills mismatch. At an individual level, this is reflected in differences in earnings between matched and mismatched workers.

Over-education is costly both for society (especially in cases where the society subsidises over-educated individuals) and for individuals (McGuinness, 2006; Burdia and Moro-Egido, 2009). In the case of over-education, there are fewer than expected economic and social benefits of expanding the higher education system. In addition, public expenditure on education is wasted in this case as it is not likely to raise productivity. Indeed, the World Bank (2016) shows that over-educated workers are not using their full skills at work but instead adapt to the (lower) job requirements. From the standpoint of the individual, over-educated workers are likely to experience lower returns on education, i.e. lower wages than their peers with the same educational level who are well matched.

This section examines the extent of mismatch in skills supply and demand, based on previous studies in this area. Three recent studies on the extent of mismatch are referenced here. The first two are related to the mismatches experienced by young people shortly after completing their education (one of them is focused on higher education graduates only and the other is focused on higher education and VET graduates). The third study was conducted by the World Bank (results published in World Bank, 2016, and in Handel et al., 2016). It generally assesses the demand for skills by employers. In addition, some (statistical) estimates of mismatch can be derived from the available LFS data. The studies generally find relatively high levels of mismatch in the economy, which, ironically, exist alongside high unemployment.

Tracer study – The first tracer study of VET and higher education graduates in North Macedonia[23] shows that young people are rarely well matched to their jobs (early in their careers), although young workers with third-level education tend to be better matched (Mojsoska-Blazevski, 2017). Horizontal mismatch (i.e. a discrepancy between a person's skills and field of study and the requirements of the job held by the person) occurs in about 45% of the cases of employed VET graduates. Less than half of all employed VET graduates (45%) reported that the knowledge and skills they acquired during the education process are utilised in their current job (rating their answers 4 and 5, on a scale of 1 to 5), i.e. are well matched; 23% of students believed that their skills are useless for their current job; and 30% answered that they use the skills to a medium extent. Similarly, only half (52%) responded that their own field of study is most suitable for the job they hold; 22% stated that their job requires a totally different field of study and 23% reported that their job does not require any specific field of study. The vertical mismatch seems to be less pronounced, at about 34%; 59% reported that their education and/or qualifications match the requirements of the job (the remaining share did not answer the question). Vertical mismatch occurs mostly as over-education (for 27%) and less so as under-education (7%)[24].

Almost 70% of higher education graduates reported that their qualifications and field of study are appropriate to the job they hold (horizontal matching); 13% of respondents stated that the job requires completely different skills (i.e. field of study); and an additional 10% stated that the job does not require any specific field. In terms of vertical mismatch, a good match is achieved in 57% of cases.

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[23]Since this study was the first of its kind to be conducted for both third-level and VET graduates, its findings should be treated with caution due to certain limitations in its implementation (e.g. a rather low response rate). A strict comparison between VET and higher education should also be avoided as higher education tends to generate rather general qualifications while VET qualifications are very specific or narrow. Despite its newness and limits, the tracer study results hold when compared to other data, findings or studies pertaining to graduates' transition, the youth labour market situation and related issues.

[24]The percentages do not add up to 100% as no response was received to these questions.

One-fifth of employed higher education graduates reported that they are under-educated for the job they hold and 19% stated that they are over-educated.

Both higher education and VET graduates who reported that their job does not match their course of study were asked why they still chose to accept that particular job. In most cases, their current job was seen as a stepping stone to a more appropriate job or the respondents reported that they had not found a more appropriate job.

Study of higher education graduates published by the European Commission (Mojsoska-Blazevski and Bartlett, 2016) – This study showed that the extent of horizontal matching is 65.3%. It also found evidence that horizontal mismatch is a key risk factor in pushing postgraduates into unemployment, and that having a well-matched job is important for them to remain in the job. On the other hand, the study found a large vertical mismatch, with 53% of respondents reporting that their level of qualification is not matched to the requirements of the job they hold (one-third of graduates hold a job that is above their level of qualification, while one-fifth hold a job that is below their level of qualification). The probability that a graduate has a well-matched job increases in cases where s/he has good family connections, receives assistance from a well-connected professor, has lessons in small classes and is taught interactive skills, has control over the design of their study programmes, or follows a vocational programme. Matching is hindered by gender or ethnic discrimination. The study found that skills mismatches are partly related to the insufficient number of jobs available to higher education graduates, and to the population in general. Many higher education graduates have to accept jobs that are not in sectors that are appropriate to their field of study, or that require a lower level of qualification to the one that they hold. They accept such jobs, hoping to obtain appropriate positions at a later stage in their career. This means that employers are in a position to hire highly educated people for jobs that require a medium or low level of skills.

World Bank study based on STEP survey (supplied skills) and employers' survey – The World Bank (2016) also reports a significant skills gap in the country. It also posits that closing this gap would be beneficial to workers, firms and the economy. The findings show that although the demand for labour is relatively small, firms that are expanding report skills as the main problem in their expansion. The report concludes that the problem of lack of skills is not tied to a specific industry or occupation but is a general problem of low-quality skills acquired in education and training. The same data was used in a comparative report published by the World Bank (Handel et al., 2016). While the report finds a vertical mismatch of 27% (of which 22% is due to over-education), the mismatch in North Macedonia is relatively small compared to the middle- and low-income countries examined in the study. The over-education of tertiary graduates is highest for informal workers (reaching 95% for informal contributing family workers and 44% for informal wage employees), workers who have completed a course in business studies (33% mismatch) and those who have less than 16 years of education (only an undergraduate diploma). The regression analysis presented in the report (which is only for the case of over-education) shows that workers aged 30+, those working in the public sector, informal wage employees, informal self-employed workers and those with less than 16 years of education (but with a tertiary degree) have a high chance of being over-educated for their job.

Table 2.4 presents a statistical measure of mismatch and its development over time. The over-education phenomenon in North Macedonia is calculated as the share of employed workers who have completed tertiary education (ISCED levels 5–8) and who work in occupations at the lower end of the ISCO scale (categories 4 to 8) (dark grey cells). In 2006, the extent of over-education was 11.2%. The phenomenon of over-education has increased over the years, reaching 14.3% in 2017. The table also shows the extent of under-education, which has decreased over time (light grey cells): from 24% in 2006 to 17%

in 2017. These developments are expected as the educational structure of the population improved within this period, although some progress was also made in the structure of jobs by skills level.

TABLE 2.4 EXTENT OF AND TREND IN UNDER- AND OVER-EDUCATION

Occupation/education	Primary or less (ISCED 0–2)	Secondary (ISCED 3–4)	Tertiary (ISCED 5–6)
2006			
High (ISCO 1–3)	0.4	11.2	15.5
Medium (ISCO 4–8)	12.3	32.5	2.9
Low (ISCO 9)	16.5	7.9	0.4
2011			
High (ISCO 1–3)	0.5	9.7	16.7
Medium (ISCO 4–8)	8.6	34	4.2
Low (ISCO 9)	15.7	9.7	0.6
2017			
High (ISCO 1–3)	0.3	8.9	21.0
Medium (ISCO 4–8)	7.8	39.5	5.4
Low (ISCO 9)	8.1	8.3	0.6

Source: Author's calculations based on Eurostat data.

3. THE DATA

The mismatches calculated in this report are based mainly on LFS data produced by the State Statistical Office (SSO). The LFS was first conducted in 1996 as an annual survey. Since 2004, it has been conducted as a quarterly survey throughout the year, providing quarterly and annual results. North Macedonia is the most advanced country in the Western Balkan region in terms of data availability in the Eurostat database. The particular datasets that were required for the calculations were obtained from several sources.

- LFS data published in quarterly and annual reports are accompanied by Microsoft Excel files. In addition, this data is supplemented by metadata in the Euro SDMX Metadata Structure (ESMS), which provides background information on the survey and a summary of the methodology applied. A methodology report is also available.
- MakStat database (http://makstat.stat.gov.mk). The database provides users with an opportunity to select options to download data. The data is provided at aggregate level for the main labour market indicators and for different years.
- Eurostat database, where most of the LFS indicators that are reported for EU countries are also reported for North Macedonia.
- Data provided by the SSO to the project team. The SSO provided most of the data requested by the project team. The data was provided in Microsoft Excel format at aggregate level. Below we make a special reference to the data that the SSO was not able to provide as that data was not collected in the LFS or, in some cases, the disaggregation led to major statistical errors and was therefore considered unreliable. Hence, the SSO decided not to provide the data.
- The access to microdata is limited. In particular, whenever the SSO approves a request for anonymised microdata, an agreement is signed and data is provided only in safe rooms in the SSO itself.

Some educational data was also obtained from education-related publications provided by the SSO and from the newly implemented Adult Education Survey (first implemented in 2016). The Adult Education Survey collects information on the participation of the adult population (aged 24 to 64) in lifelong learning activities such as education and training. This can include formal, non-formal and informal learning. The SSO plans to conduct the survey at five-year intervals, which is in line with Eurostat recommendations. Data from the survey is also published on the SSO's website, both in report form and in tables.

The LFS is fully harmonised with the ILO methodology. It is based on international classifications, and the variables used comply almost entirely with these classifications.

- The LFS provides information at national and regional level. Regional data is provided at NUTS 3 level (NUTS stands for Nomenclature of Territorial Units of Statistics). Macedonia comprises a single NUTS 2 region, i.e. the national result is also the NUTS 2 result (as well as the NUTS 1 result). However, only limited data is published by the SSO at regional level. At a higher level of data disaggregation, e.g. self-employment at regional level, the risk of statistical error is high and data is not published or made available at the request of the SSO.
- In the case of the highest educational level attained, the LFS is based on the International Standard Classification of Education (ISCED) 2011. However, the country has not yet adopted the ISCED-F 2013, which is a classification for fields of education and training. This is seen to some

extent as a constraint that hinders better analysis of the mismatches and better coordination between education and employment policy.

- The Statistical Classification of Economic Activities in the European Community (NACE) is used for economic activities.
- The LFS uses the International Standard Classification of Occupations ISCO-08 for occupations.
- The professional status of employed people is measured using the International Standard Classification of Status in Employment (ICSE). However, this classification has not yet been officially adopted.

We have identified several data gaps in the data collection, i.e. missing data.

- As previously mentioned, regional data is not available at a more disaggregated level, as the risk of statistical error is too great.
- While the SSO publishes most indicators, including disaggregation (by age, gender, education or occupation, for example) in its regular reports, there is no direct access (through either publications or the MakStat database) to numbers or frequencies (e.g. the number of inactive people, by age group and educational attainment).
- The NEET indicator is available (published) for the 15 to 19 age group and the 15 to 24 age group, but not for the higher age groups.
- Data on underemployment is available and published in the LFS report but a breakdown of the data is problematic as the number of observations is too low and there is considerable risk of error. Hence, data can be provided only at aggregate level (and by gender and education).
- Weekly working hours are provided in ranges (0–20, 21–40 and 40+). This is done to improve data quality, but it precludes precise calculations (especially if working with microdata).
- It seems that LFS data does not fully distinguish between vocational and general education. In particular, data relating to three- and four-year secondary education is collected and published. While three-year secondary education is fully vocational, there is no distinction between VET and general education for the four-year secondary education. In addition, education data that is collected and published (e.g. data on secondary school graduates) does not specifically distinguish between three- and four-year VET education. Such possible limitations in data by programme orientation (VET vs. general) could be further addressed by MakStat in the future collection and processing of LFS data.
- Data related to education is not grouped by fields of education, as defined in ISCED-F 2013. This refers to LFS data, but also to data on secondary school and university graduates.

4. INDICATORS OF SKILLS MISMATCH: INTERPRETATION AND DISCUSSION

While labour market imbalances generally refer to differences between demand and supply, mismatch concentrates on certain aspects of the imbalances in demand and supply, specifically a mismatch in the demand for or supply of skills or qualifications. A skills mismatch can occur even when the total supply is sufficient to meet total demand in terms of numbers, but not in terms of skills or qualifications.

The micro dimension of skills mismatch is a matter of level: the skills are within the correct field of a specific task or occupation, but the level of the skill is lower than what would usually be required for the specific occupation or task. This is usually referred to as a vertical mismatch, or over- and under-education, or over- and under-skilling. A horizontal mismatch occurs when the level of the qualification is sufficient, but the type or field of qualification does not adequately match. The more detailed job requirements can be measured in terms of skills or qualifications, the more likely it is that (some) horizontal mismatch is found. The corollary is also that the less detailed data is, the less likely it is to identify a horizontal mismatch, even if it exists.

The body of knowledge and recommendations summed up in the ETF methodological note, together with other important studies carried out on skills mismatch by the Joint Research Centre (2014), Cedefop (2015), the European Commission (2015) and Eurostat (2016) represent the essential conceptual and methodological starting point for this country study. The indicators used are summarised in Table 4.1. In the following sections, the various skills mismatch indicators are discussed using existing data and an interpretation is provided in line with the country's context.

TABLE 4.1 MISMATCH INDICATORS: DEFINITIONS AND INTERPRETATION

Indicator	Definition	Purpose	Data source(s)	Interpretation
Unemployment rate	U/(E+U)	Official unemployment rate Often a strict definition of unemployed (searching for work within the past four weeks)	LFS	Higher unemployment rates show a mismatch between demand and supply.
Unemployed/employed ratio	U/E	Like the unemployment rate Simpler to calculate Provides a direct interpretation of the ratio of employed people to unemployed people	LFS	See above Note also that the different groups might exhibit quite different ratios. For example, youth unemployment shows problems in the school-to-work transition; old-age unemployment shows a lack of the relevant skills or institutional barriers to employment.

Indicator	Definition	Purpose	Data source(s)	Interpretation
NEET	IA+U/POP	Examines non-employment among young people in the school-to-work transition	LFS	The share of young people who are not working (after education) or are in education provides insights into the barriers encountered when entering the labour market. Depending on age or education level, this shows the lack of (acceptance) of skills from the education system.
Over-education	Percentage of individuals with education level above the required or identified level of education in occupation (group)	Degree of mismatch by qualification level	LFS, skills surveys	Higher percentages of over-education (or an increase) reflect higher mismatch.
Under-education	Percentage of individuals with education level below the required or identified level of education in occupation (group)	Degree of mismatch by qualification level	LFS, skills surveys	Higher percentages of under-education (or an increase) reflect higher mismatch.
Coefficient of variation		Comparison of differences in education level among employed and unemployed people	LFS	Increasing levels indicate higher skills mismatch.
(Relative) wage rates	Various definitions Mostly index of wages relative to base year (and relative to specific base level)	Examines the overall level at a specific time, also the development over time	LFS, wage surveys, administrative (tax or social security) data	Increasing (relative) wages usually indicate a higher (relative) demand for the specific group, i.e. an increase in the wages of people with a higher level of education relative to those with an intermediate level of education reflects higher relative demand for those with a higher level of education.

Notes: U – unemployed, E – employed, IA – inactive people, POP – population. The population is, by definition, the sum of employed, unemployed and inactive people (POP=U+E+IA), while the labour force (LF) is defined as unemployed plus employed people (LF=U+E).

Table 4.2 provides a general overview of employed, unemployed and inactive people by three education levels: low, intermediate and high[25]. About one-third of the population have a low level of education; about half the population have a medium level of education; the remaining 18% of the

[25]Annex 1 includes further information on aggregation by education level as used in this report. For the reasons explained in Chapter 3, current data availability does not allow disaggregation in secondary education by VET and general streams.

population have a high level of education. No identification of VET-based education was available for Macedonia.

Relative to their proportion in the population, people with a low level of education are much more likely to be inactive compared to the other categories and are less likely to be unemployed; people with a high level of education are much less likely to be inactive, but are more likely to be among the unemployed. The table confirms the information presented in Section 1.3, i.e. people with a low level of education are also over-represented among unemployed people (with a share of 25.4%), relative to their share in employment (18.6%). The opposite is the case for workers with a high level of education.

TABLE 4.2 POPULATION STRUCTURE (15–64 AGE GROUP), 2016 (%)

% share of population with the same status	Employed people	Unemployed people	Inactive people	Total population
Low	18.56	25.36	57.47	33.42
Intermediate	54.96	54.38	37.42	48.64
High	26.48	20.27	5.11	17.93
Total (%)	**100**	**100**	**100**	**100**
Total population (thousands)	**713.80**	**224.94**	**516.62**	**1 455.36**

Source: Author's calculations based on LFS 2012–17.

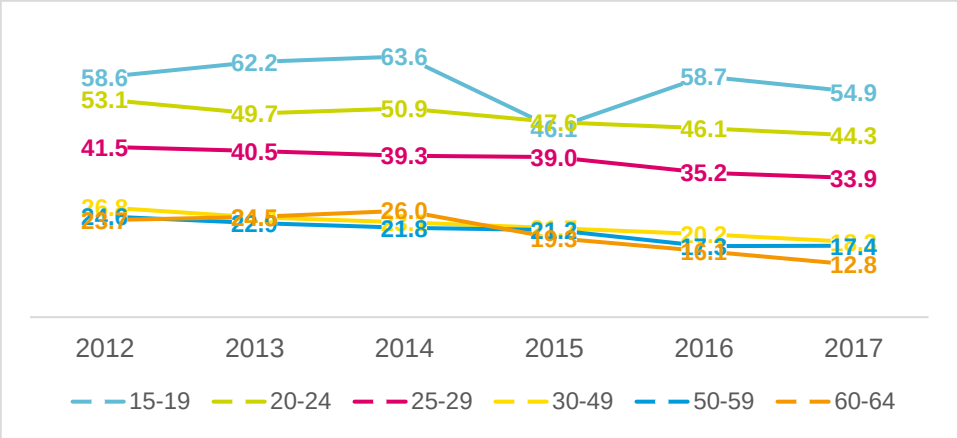
4.1 Unemployment rate and unemployed-to-employed ratios

The unemployment rate calculates the rate of unemployed people relative to the population that is active in the labour market (the sum of employed and unemployed people). Higher rates show an increasing mismatch between supply and demand. Related to this is the unemployed-to-employed ratio, which provides a placid way to express the magnitude of the number unemployed. A ratio of 0.1 implies that for each unemployed person there are 10 employed people, while 1 implies a one-to-one relationship.

The unemployment rate is rate most often used in official statistics, and inherently related to the unemployed-to-employed ratio and the ratios of employed or unemployed people to the population.

Figure 4.1 presents the unemployment rates by age group over the period 2012 to 2017. Strikingly high unemployment rates can be seen among young people, with the rate fluctuating well above 50% in the case of 15 to 19-year-olds (with the exception of 2015). The rates for 20 to 24-year-olds range from 53.1% in 2012 to 44.3% in 2017, showing a reasonably steady decline over time. These two age groups exhibit the labour market experience of very young labour market participants. The rate for 15 to 19-year-olds in particular might be unreliable given that most people in this age group are not available in the labour market but are still pursuing an education. The rate for 20 to 24-year-olds, together with the rate for 25 to 29-year-olds, can be seen as an indicator of the school-to-work transition. The rates of 40 to 50% unemployment for 20 to 24-year-olds and 30 to 40% for 25 to 29-year-olds are an indication of a slow and difficult entry into the labour market (as already discussed in Chapter 2). The decline in the 25 to 29-year-olds' rate from 41.5% (2012) to 33.9% (2017) signals an improvement over time, which can also be noticed in the younger age group. Overall, the unemployment rate also declines over time for the older age groups.

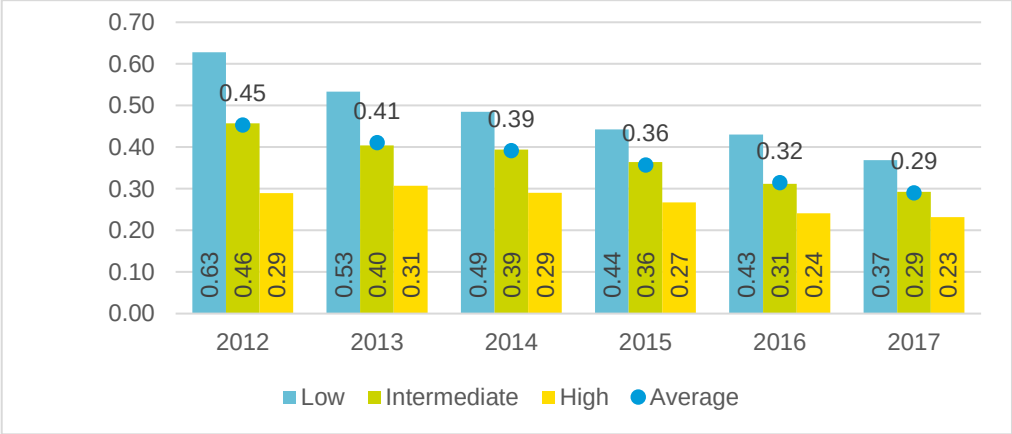
FIGURE 4.1 UNEMPLOYMENT RATES BY AGE GROUP, 2012–17 (%)



Source: Author's calculations based on LFS 2012–17.

The proportions of unemployed versus employed people by different categories allow us to analyse the relative level of unemployment (or employment), irrespective of the overall level of a specific category. Naturally, this indicator is very much related to the unemployment rate. The unemployment-to-employment ratio by educational attainment, as presented in Figure 4.2, reflects the data discussed previously. We can see the typical stacking of higher values, more problems or mismatch among lower educated individuals; intermediate indicator values for those with an intermediate level of education; and good indicator values, showing less mismatch, among those with a higher level of education. Women tend to have lower ratios than men in the case of a low level of education, similar ratios for intermediate education, and higher ratios in the case of a higher level of education (see Figures A1.1 and A1.2 in Annex 1).

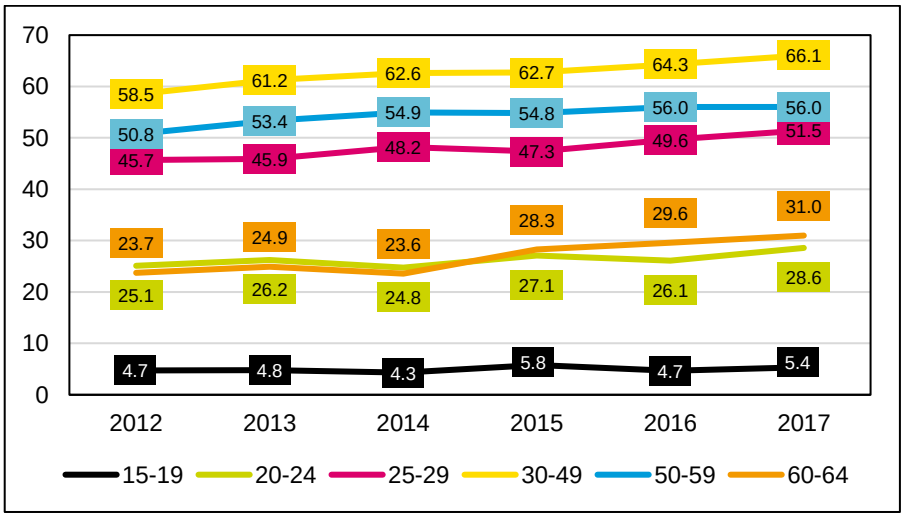
FIGURE 4.2 UNEMPLOYMENT-TO-EMPLOYMENT RATIO BY EDUCATIONAL ATTAINMENT LEVEL (15–64 AGE GROUP), 2012–17



Source: Author's calculations based on LFS 2012–16.

The overall range among the qualification levels declined over the period examined. While the ratio ranged from 0.29 to 0.63 in 2012, it declined to between 0.23 and 0.37 in 2017. This shows that the ratio is much more volatile for lower education levels than for higher education levels. It also shows that the proportion of unemployed workers with a low level of education relative to employed workers with a high level of education declined significantly over time.

FIGURE 4.3 EMPLOYMENT-TO-POPULATION RATIO BY AGE GROUP, 2012–17



Source: Author's calculations based on LFS 2012–17.

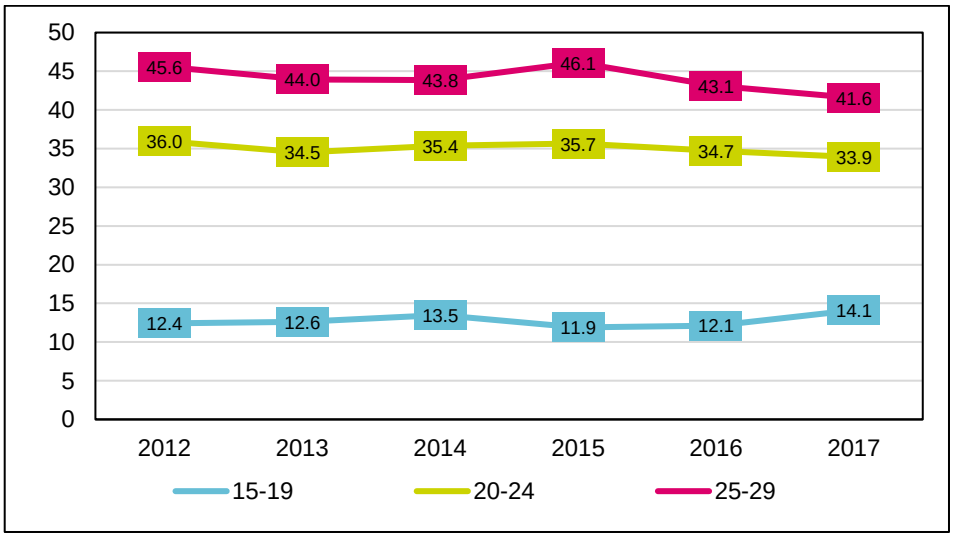
Employment in the labour market can also be measured by the ratio of employed people to the total population; it is a measure of successful participation in the labour market. In Figure 4.3 this indicator shows the ratio of employed people to the total population by age group: young (15–19, 20–24 and 25–29), prime age (30–49) and older worker (50–59, 60–64). Not surprisingly, prime age shows a ratio of 58.5% in 2012 increasing to 66% in 2017. This indicates improvements in the labour market over the period examined. The ratio for the 50–59 age group is somewhat lower, but exhibits the same pattern of growth, with the exception of 2017, when there is some stagnation. A low level of participation is shown for the 60–64 age group, but this also increases over time: starting at a value of 23.7%, it rises to 31% in 2017.

The pattern for young people should be interpreted carefully. The employment rate for 25 to 29-year-olds is 10 to 15 percentage points below that for prime age workers, starting at 45.7% and rising to 51.5%. The difference vis-à-vis prime age workers may be due to two reasons. The first may be the school-to-work transition, i.e. difficulties at the beginning of a career in the labour market. The second may be due to family formation and non-participation, especially among young women. Indeed, in Section 2.3, we showed that the NEET rate is higher among females, as many young women do not enter the labour market after exiting education. Overall, the indicator suggests a higher participation of men at all ages if we separate out Figure 4.3 into men and women (see Figures A1.3 and A1.4 in Annex 1). At prime age, the male employment-to-population ratio ranges from 68.7 to 75.9, while the ratio for women is much lower, ranging from 47.9 to 55.9. The lower ratios for women can be found at all ages, without a specific trend across ages.

4.2 Young people not in employment, education or training (NEETs)

This methodology calculates the rate of young people not in employment, education or training. It thus calculates the rate of young people who are not actively participating in the labour market or in education. The underlying reason is presumed to be some form of mismatch, as those who are not in education are generally presumed to have finished their education and should find employment in some form. It thus combines non-participation and unemployment.

FIGURE 4.4 YOUNG PEOPLE NOT IN EMPLOYMENT, EDUCATION OR TRAINING, 2012–17 (%)



Source: Author's calculations based on LFS 2012–17.

The NEET rate indicates the non-participation of young people in the labour market or education. Higher levels of the indicator show underutilisation of workforce. Given that, the employment over population figures, especially for the youngest group, may be misleading in its low values in light of the explanation regarding participation in education. The percentage of people who were not in employment, education or training in the 15 to 19 age group was 12.4% in 2012 and 14.2% in 2017. The values fluctuate around this range and there is no clear trend over time. This implies that 85 to 88% of the young people in that age group are either in education or already working.

The indicator for the second age group (20–24) is already much higher, ranging from 36% in 2012 to 33.9% in 2017. Obviously, the higher age pushes more young people out of education into the labour market, so that we see more obvious signs of a difficult school-to-work transition. Most young people will have finished their education between the age of 25 and 29, the final age group in the NEET indicators that shows an even higher level of non-employment for those who are not in education or training. Differences between men and women can be found especially in the highest age group: where women tend to be 10 percentage points above their male counterpart. Women tend to fare better than men in the youngest age group, which is likely to be the result of slightly lower dropout rates. All in all this confirms the weaker position of women in employment.

4.3 Variance of relative unemployment rates (by education level)

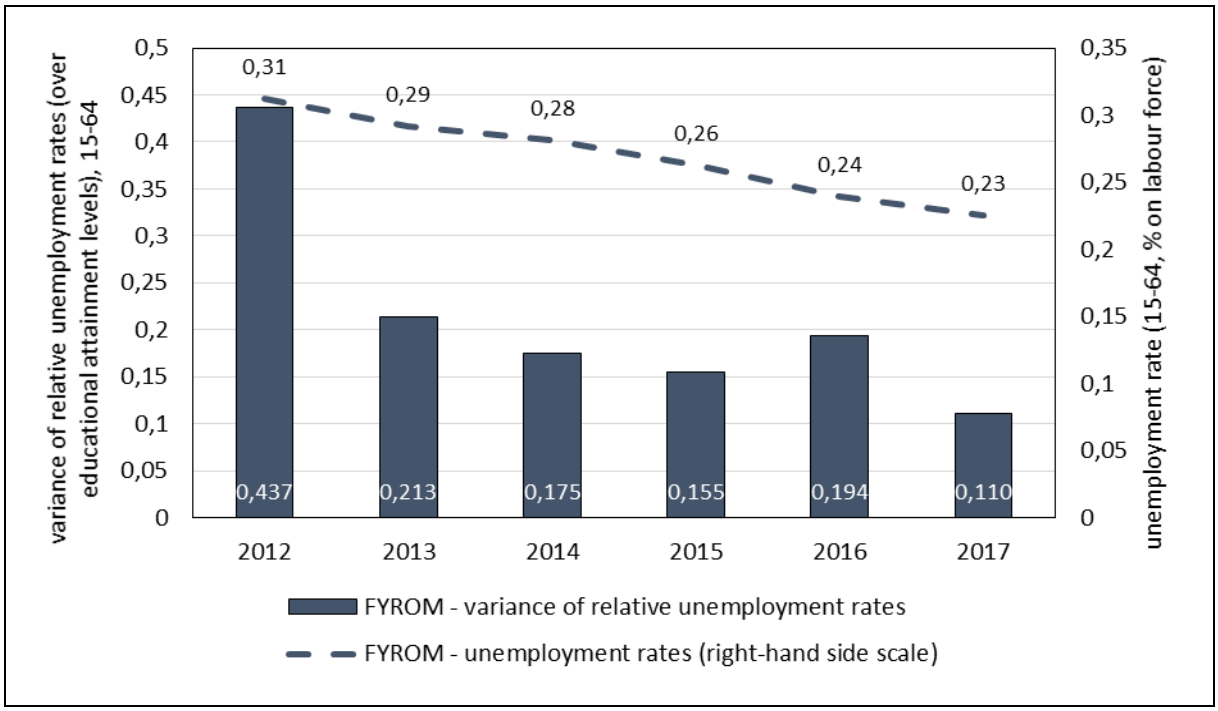
This indicator shows how unemployment deviates within education levels from the average of the entire country. The higher the value of the variance, the higher the level of mismatch. This methodology would also be applicable to sub-groups such as age, age and gender, and (previous) occupation.

The variance of relative unemployment rates, as presented in Figure 4.5, allows us to compare the variation that exists in unemployment rates at specific education levels with the national average. A higher level indicates that there are several deviations from these education levels. In other words, unemployment affects the various types of education very differently. It provides an alternative but

related indicator of skills mismatch to the coefficient of variation (CVAR). Higher values imply a higher level of mismatch.

As can be seen in Figure 4.5, the overall mismatch, as measured by this indicator, decreases from 2012 to 2017, with a slight exception in 2016, along with a decrease in the overall unemployment rate.

FIGURE 4.5 VARIANCE OF RELATIVE UNEMPLOYMENT RATES (15–64 AGE GROUP), 2012–17



Source: Author's calculations based on LFS 2012–17.

4.4 Coefficient of variation by skills

This indicator compares the distribution of skills within different groups while correcting for the overall size of the underlying statistic. The difference between the skill composition of employed people and that of the working-age population is expressed in just one number, which measures the overall extent of mismatch. The higher the number, the greater the difference between the skills possessed by people employed in the labour market and the skills possessed by the working-age population. The extent to which the distributions are different can therefore be interpreted as a measure of the ineffectiveness caused by the matching process of supply and demand of skills in the labour market (ETF, 2012, p. 6).

The CVAR by skills is related to the previous indicator. This indicator attempts to capture one or several elements of skills mismatch to quickly gauge the degree to which mismatch exists. The CVAR compares the variation in qualifications (in shares) of those who are unemployed versus those employed in the working-age population.

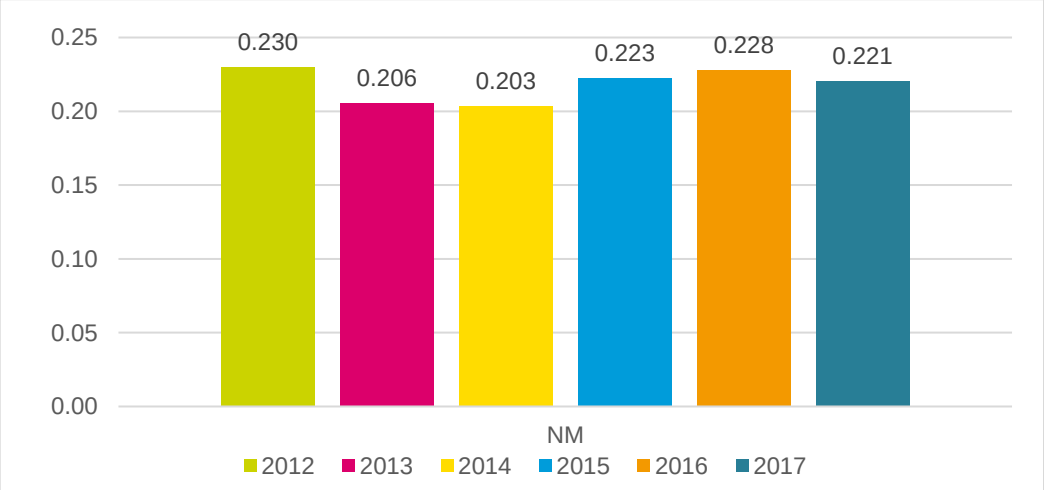
According to the indicator, the CVAR would be zero if unemployment were independent of qualification level (expressed as level of education). The more the two groups differ, the higher the CVAR.

Figure 4.6 thus implies that, over time, education becomes a less important factor in explaining unemployment. In other words, the distribution of qualifications in the working-age population seems to coincide more with those of unemployed people in 2013 and 2014 than it did in the other years. Overall, the mismatch indicated seems relatively high and fairly stable.

After analysing the development of the CVAR indicator over years, a separate calculation by age group is provided in Figure 4.7. The high CVAR indicator values for the youngest category (15–19) indicates a very different unemployment experience by qualification in that age group. However, this should not be over-interpreted, as many young people are still in the education system and the indicator is probably based on a small number of observations. Low CVAR values for the 20–24 and 25–29 age groups relative to the older age groups indicate more equally shared unemployment in the younger age groups, while it becomes more pronounced in the older age groups. Again, overall the values seem to be high, indicating that mismatch is related to education level.

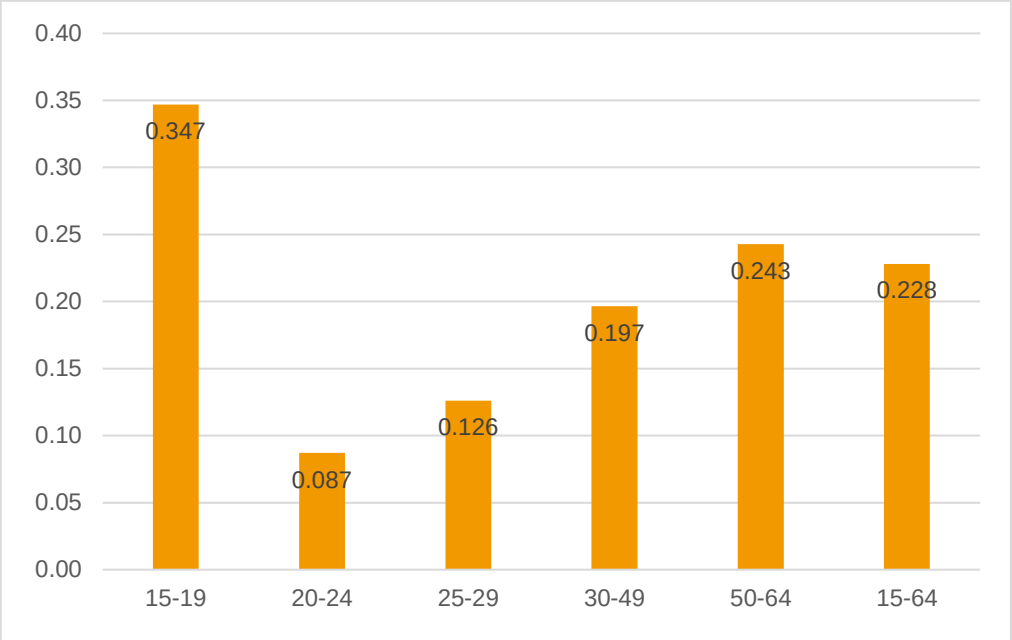
Not surprisingly, given the earlier indicator results, the CVAR of qualification composition is much higher for women than for men (Figures A1.9 to A1.12 in Annex 1). In fact, the higher CVAR values seem to be driven by women. While men tend to have values of between 0.121 (50 to 64-year-olds) and 0.031 (20 to 24-year-olds), the corresponding values are 0.386 (50 to 64-year-olds) and 0.225 (20 to 24-year-olds) for women. Qualification seems to be much more of a factor in labour market behaviour for women than for men.

FIGURE 4.6 CVAR BY QUALIFICATION COMPOSITION (15–64 AGE GROUP), 2012–17



Source: Author's calculations based on LFS 2012–17.

FIGURE 4.7 CVAR BY QUALIFICATION COMPOSITION, BY AGE GROUP, 2016



Source: Author's calculations based on LFS 2016.

4.5 Relative wages

This indicator compares wages across education levels over time, either relative to a benchmark wage or indexed vis-à-vis a base year. It can usefully be plotted in a diagram, as it is then very easy to see how certain education levels are more or less well remunerated than others over time. An education level that is seen to attract a higher income than that achieved by people with other levels of education can thus be a sign that this level of education is in higher demand in the labour market.

TABLE 4.3 INCOME BY EDUCATIONAL ATTAINMENT LEVEL, 2012–17

Year	Educational attainment level (% share of employees with the education level)	Wage range (in MKD)					Total
		Up to 8 000	8 001–12 000	12 001–20 000	20 001–30 000	30 001+	
2012	Low	20.7	50.0	26.4	2.1	0.8	100
	Medium	12.2	39.2	36.9	9.5	2.2	100
	High	3.9	12.6	35.5	39.3	8.6	100
2013	Low	15.1	48.7	31.2	3.1	2.0	100
	Medium	8.6	39.2	40.5	9.6	2.1	100
	High	2.3	10.0	36.6	41.7	9.4	100
2014	Low	15.5	47.1	31.3	3.8	2.3	100
	Medium	7.2	41.0	40.2	10.0	1.7	100
	High	2.5	13.5	34.2	40.2	9.6	100

Year	Educational attainment level (% share of employees with the education level)	Wage range (in MKD)					Total
		Up to 8 000	8 001–12 000	12 001–20 000	20 001–30 000	30 001+	
2015	Low	7.9	55.9	31.5	3.5	1.2	100
	Medium	4.1	39.9	44.5	9.9	1.6	100
	High	2.7	10.9	37.0	39.2	10.2	100
2016	Low	7.2	49.2	39.3	3.0	1.3	100
	Medium	2.0	33.7	51.7	10.5	2.0	100
	High	1.6	8.5	36.0	42.2	11.6	100
2017	Low	6.9	36.7	49.4	4.8	2.2	100
	Medium	1.0	24.0	58.5	14.2	2.3	100
	High	0.9	5.8	29.9	51.0	12.5	100

Source: Author's calculations based on LFS 2012–17.

The development in average income, as derived from LFS wage ranges, shows that individuals with a low level of education were able to improve their situation between 2012 and 2015, with a larger share moving into the mid-range scale (12 001–20 000). At the medium level of education, the increasing share in mid to upper-range wage scale seems to be slower than for those with a low level of education. In all cases, those with an intermediate level of education have a better chance than those with a lower level of gaining higher wages. Those with a higher level of education start out with a large share in the mid and second-highest range of income; a share of only 8.6% earned within the highest income range in 2012, this increased to 12.5% in 2017. It is difficult to interpret these figures: they show a continuous upward movement of average incomes, the general ordering of incomes by education level, and a stronger upward movement of people with low education.

However, without a direct comparison or at least a correction for inflation, the overall development is hard to analyse.

4.6 Occupational mismatch

This method is based on comparisons of the ratio of people with a given education level (ISCED) working at an inappropriate skill level (measured by the International Standard Classification of Occupations (ISCO)) to all workers within that ISCED level.

Table 4.4 presents the results of an empirical analysis of occupational mismatch by comparing the ratio of people with a given education level working at an inappropriate skill level to all workers within that same education level. Table 4.4 shows the occupational mismatch for individuals with an intermediate educational level and for individuals with a high educational level[26].

[26]Note that the education level is only determined by the rudimentary levels – low, intermediate and high. This does not allow for a detailed analysis of occupational mismatch.

TABLE 4.4 OCCUPATIONAL MISMATCH – MEDIUM AND HIGHER LEVELS, 2012–17

	2012	2013	2014	2015	2016	2017
Medium level – People (15–64) with upper secondary education working in elementary occupations, as a % of all people (15–64) with upper secondary education (ISCED 3–4)						
Total	14.8	15.8	13.6	14.4	13.9	14.3
Male	14.0	13.3	12.1	13.6	12.4	12.7
Female	16.2	19.9	16.3	15.7	16.6	17.3
Higher level – People (15–64) with tertiary education working in semi-skilled occupations, as a% of all people (15–64) with tertiary education (ISCED 5–8)						
Total	19.6	19.1	22.7	25.1	21.7	22.2
Male	19.6	19.8	26.0	25.0	22.9	24.7
Female	19.5	18.4	19.5	25.2	20.6	19.9

Notes: Occupational classification based on ISCO 2008.
See www.oecd-ilibrary.org/education/education-at-a-glance-2010/education-and-occupational-mismatches-for-young-individuals-2003-2007_eag-2010-table175-en
Upper secondary education: medium education (ISCED 2011 3–4), elementary occupations: ISCO 2008 9.
Tertiary education: high education (ISCED 2011 5–8), semi-skilled occupations: ISCO 2008 4–9.
Source: Author's calculations based on LFS 2012–17.

A comparison of these two tables shows that the occupational mismatch is higher for people with a tertiary level of education than for those with an upper secondary level of education across all years. At the higher level of education, the overall degree of occupational mismatch rose from 19.6% in 2012 to 22.2% in 2017. The mismatch seems to be more common among men with a higher level of education than among women with the same education level. The women did not follow the downward trend experienced by their male counterparts. The opposite is true for occupational mismatches for people with an intermediate level of education: men are somewhat less likely to be mismatched (14% in 2012) than women (16.2% in 2012), while men managed to improve their situation, reaching the lower level of 12.7% in 2017, whereas the percentage of women in an occupational mismatch deteriorated to 17.3% in 2017.

4.7 Over-education

'This method can be used in cases where datasets do not include specific questions on over-education or over-skilling; it is nevertheless quite a simplistic measurement and must be interpreted as a proxy. The empirical method is a purely statistical measure where the distribution of education is calculated for each occupation; over-education is defined as existing when the level of education is more than one standard deviation above the mean (Bauer, 2002) or above the mode (Mendes de Oliveira et al., 2000) for the education level for a given occupation. The educational mean and/or mode for each occupation is thus assumed to be a match for that occupation, but this may very well be a false assumption. In theory everybody employed in a given occupation could be mismatched.' (ETF, 2012, p. 12).

Table 4.5 uses an empirical method to illustrate the proportion of employed people who are over-educated. The table shows that the highest incidence of over-skilling is observed among services and sales workers (in 2013 and 2014 only). It is more stable among skilled agricultural workers. Some

over-education can be found among craft workers, plant operators and assemblers and this increases towards 2017. No over-education can be found in the higher occupations (ISCO 1–4).

TABLE 4.5 EMPIRICAL METHOD – OVER-EDUCATION BY OCCUPATION (15–64 AGE GROUP), 2012–17

ISCO 08	2012	2013	2014	2015	2016	2017
00 Armed forces	0.0	0.0	0.0	0.0	0.0	0.0
01 Managers	0.0	0.0	0.0	0.0	0.0	0.0
02 Professionals	0.0	0.0	0.0	0.0	0.0	0.0
03 Technicians and associate professionals	0.0	0.0	0.0	0.0	0.0	0.0
04 Clerical support workers	0.0	0.0	0.0	0.0	0.0	0.0
05 Services and sales workers	0.0	10.1	12.0	0.0	0.0	0.0
06 Skilled agricultural, forestry and fishery workers	5.9	3.8	4.3	6.0	4.3	2.6
07 Craft and related trades workers	3.0	2.7	3.3	2.5	3.8	4.7
08 Plant and machine operators and assemblers	2.7	2.8	3.3	4.3	5.1	4.9
09 Elementary occupations	2.2	2.1	2.5	3.2	2.6	3.5

Source: Author's calculations based on LFS 2012–17.

At the same time, the degree of under-education (Table 4.6) that is revealed in occupations when the empirical method is used shows that under-education does occur among the higher occupations, especially among managers, and, to a lesser degree, among technicians and associate professionals and clerical support workers. Among professionals, under-education is least prevalent within the group of higher occupations.

TABLE 4.6 EMPIRICAL METHOD – UNDER-EDUCATION BY OCCUPATION (15–64 AGE GROUP), 2012–17

ISCO 08	2012	2013	2014	2015	2016	2017
00 Armed forces	0.0	0.0	1.8	4.6	2.9	0.0
01 Managers	7.1	9.3	8.5	6.7	4.6	5.0
02 Professionals	0.3	0.0	0.3	0.5	0.2	0.1
03 Technicians and associate professionals	0.3	0.9	0.6	1.2	0.8	0.8
04 Clerical support workers	0.9	1.9	1.4	1.0	2.4	2.7
05 Services and sales workers	12.0	0.0	0.0	10.6	11.6	10.7
06 Skilled agricultural, forestry and fishery workers	0.0	0.0	0.0	0.0	0.0	0.0
07 Craft and related trades workers	0.0	0.0	0.0	0.0	0.0	0.0
08 Plant and machine operators and assemblers	0.0	0.0	0.0	0.0	0.0	0.0
09 Elementary occupations	0.0	0.0	0.0	0.0	0.0	0.0

Source: Author's calculations based on LFS 2012–17.

CONCLUSIONS

The ETF's skills mismatch measurement project develops and pilots several indicators of labour market and skills mismatch. Its aim is to develop, test and implement mismatch indicators that can be easily accessed and updated. The methodological approach that is adopted to measure skills mismatches should be country-specific, but also ensure as much comparability as possible across countries. A deeper knowledge of the direction, nature and incidence of skills mismatch, including good contextualisation (e.g. socio-economic aspects, labour regulations, job matching services,) would in turn help countries to better target their efforts to match supply to demand via education, training, employment and other policy interventions.

This report presents an analysis of the mismatch from several perspectives, using data sources available in North Macedonia. It also examines the country context in areas that are directly or indirectly related to skills supply and demand. This analytical exercise has the potential to assist institutions and partners to assess the effectiveness of their skills policies. The ETF will use the findings from the individual country studies to develop a comparable methodological approach to calculation of key mismatch indicators, and will prepare a cross-country report to present the results obtained from measuring and gathering data on skills mismatch indicators and to interpret these results.

The report presents several important findings related to skills governance systems, skills development, the demand for skills and matching. These are outlined here.

The country's economic situation, including the labour market situation, is continuously improving despite some decline in growth rates in 2017 and 2018, mainly due to political instability. Nevertheless, unemployment in the country is still high (21.9% in Q1 2018), and employment and activity rates are low. A notable improvement has been achieved in the educational attainment of the population, although there is evidence that the increase in education level has not necessarily been accompanied by a rise in the skills acquired by workers. Few adults were involved in continuing education and training in 2017. For instance, the LFS data shows that only 2.3% of the population aged between 25 and 64 in the country participated in education and training in the four weeks prior to the survey. This compares with the EU average of 10.9%. A similar finding holds for participation in job-related non-formal training and education. This data shows that few adults upgrade and augment their skills and knowledge throughout their working life, which probably hinders their productivity, and consequently their wages and promotion prospects. In addition, given the mismatches present in the labour market, the lack of interest in upgrading skills and knowledge seems at odds with employers' incentive to train and upskill their workers, but also workers' incentive to improve their own skills. Employers are generally not prepared to finance or co-finance non-formal training for their employees. This calls for considerable involvement on the part of government institutions to mitigate the mismatches between the skills that are in demand and those that are supplied.

The institutional environment for the skills governance system is still at a developmental stage. The main institutions in this domain are the Ministry of Education and Science and the Ministry of Labour and Social Policy, along with their implementing agencies, such as the Employment Service Agency and the VET Centre. Both ministries have taken steps to improve the information flow in relation to labour demand and supply. Examples of such steps are the initiative to establish a Skills Observatory in the Ministry of Education and Science and the development of forecasting and analytical tools in the Ministry of Labour and Social Policy. Further efforts are needed to exploit the potential of relevant registries, such as administrative data on tax, employment and unemployment, education, social

protection, etc. in providing additional insights into, for example, school to work transition or usage of skills on the labour market. Ensuring continuity of practices developed within externally supported projects, as for example the tracer studies, sectoral approaches to skills need identification based on the work of sector skills councils, could be as well prioritised. Overall, essential elements of the labour market and skills information system are developed in North Macedonia. Priority should be given to sustainability of various instruments and practices of skills needs' identification and wider dissemination of findings, in particular to current and future learners.

One of the most important developments in recent years was the adoption of the NQF in 2014. This has the potential to improve signals between the labour market and the education system and subsequently reduce the level of mismatch. The NQF will help to clearly define qualifications, facilitate the recognition of learning outcomes and improve graduate mobility at national and international level. The government has also made efforts to increase the involvement of employers and employers' organisations in the skills governance system, in order to use their inputs into education and labour market policy making. This has been done through different initiatives, such as within the development of the NQF and occupational standards, through school boards in vocational schools, through the management of the VET Centre and VET Council, through Boards for Cooperation and Public Confidence in higher education institutions, and through sectoral committees for qualifications. However, the effectiveness of these different channels has not yet been assessed.

Very little data on labour demand (in terms of both the extent of such demand and skill composition) is available in the country. However, even the data that is regularly published (e.g. job vacancy data, data on new employment) is not commonly used by the institutions (apart from the Ministry of Labour and Social Policy's plan to start preparing an Occupational Outlook). Information about the skills required by employers comes primarily from ad hoc studies and projects and are financed mainly by international organisations and/or donors. The unavailability of data on skills and qualifications that are currently in demand or will be in demand in the future restricts policy making in education (including lifelong learning and non-formal training) and employment.

The analyses of labour demand and supply show that there has been a relatively large change in the structure of jobs by occupation, industry, skills and other variables. Employment probability is closely related to the education of workers: workers with a low level of education experience high levels of inactivity and unemployment. The structure of employment by occupation shows shifts towards intermediate- and high-level occupations over time. Most of the current and near-future demand will be for workers with secondary vocational education and/or skills, despite the large increase in the supply of tertiary-educated graduates.

Young workers face high unemployment and a very difficult transition from education to the labour market. Many young people remain inactive even after completing education. NEET rates are higher for females, as many of them do not start their transition to the labour market and remain inactive. This points to a large underutilisation of the young workforce and lost developmental potential for the economy (notwithstanding the wasted public resources invested in their education). Graduate employability remains a problem in the country. In 2017, only 50% of graduates with secondary and tertiary education found a job up to three years after graduation. This is one of the lowest values in Europe, showing that young people in North Macedonia have significantly lower employment prospects than those in the EU. VET graduates do not fare much better; their employment rate is only 48% (EU-28 is 77%), while female graduates are by far less employable than male graduates: a difference of 10 percentage points for graduates with ISCED 3–8 and 22 percentage points for VET graduates (Eurostat, 2017).

Ironically, high unemployment in the economy is accompanied by high skills mismatches. Mismatches restrict productivity growth and are costly for both society and individuals. Calculations based on available LFS data and previous studies show that horizontal mismatch is in a range between 30% and 45%, whereas vertical mismatch is in a range between 27% and 53%. The data also shows that mismatches are higher for workers with secondary education relative to tertiary-educated workers. It is inconclusive if the mismatches are higher for younger workers. On one hand, the studies that focus on recent graduates find larger mismatches than those for the general population. On the other hand, some regression analysis (for instance in Handel et al., 2016) shows that over-education is higher for workers aged 30+. The available evidence also finds that certain factors are related to a lower probability of workers being mismatched, such as good family connections, assistance from well-connected professors in finding a job or studying in small, interactive groups. Labour market discrimination against females, on the other hand, is found to limit the quality of the matching. The data shows that it is the fast-growing sectors and export-oriented sectors of the economy that experience unmet demand for workers and/or skills. This can hold back the growth of the economy.

The statistical measures of mismatch used in this report show that there is a relatively large mismatch between the skills/education of workers and those required by employers. Various measures were used to assess the extent of the mismatch, such as unemployment-to-employment ratio, unemployment rates by various dimensions, NEETs, coefficient of variation, variance of relative employment rates and relative wages. These measures generally tell a story of numerous, persistent mismatches; relative deterioration of the position of tertiary-educated workers as a result of a large increase in the supply of such workers; a level of over-education that is higher than under-education; a relatively small mismatch for workers aged 20 to 24 and 25 to 29; the rewarding of higher education in the labour market as assessed by relative wages by education; the incidence of mismatch varies by economic sector. Over-skilling, according to these calculations, is especially high for services and sales workers and skilled agricultural workers and to a lesser extent for crafts workers and plant and machine operators. Under-education, on the other hand, is highest among managers, and less so among technicians and associate professionals and clerical support workers. Some of these findings are also valid for most of the ETF partner countries included in this exercise.

While developing the various new measures of mismatch (based on the ETF methodology), several data issues were detected which we point out here as a message to the national authorities to address them.

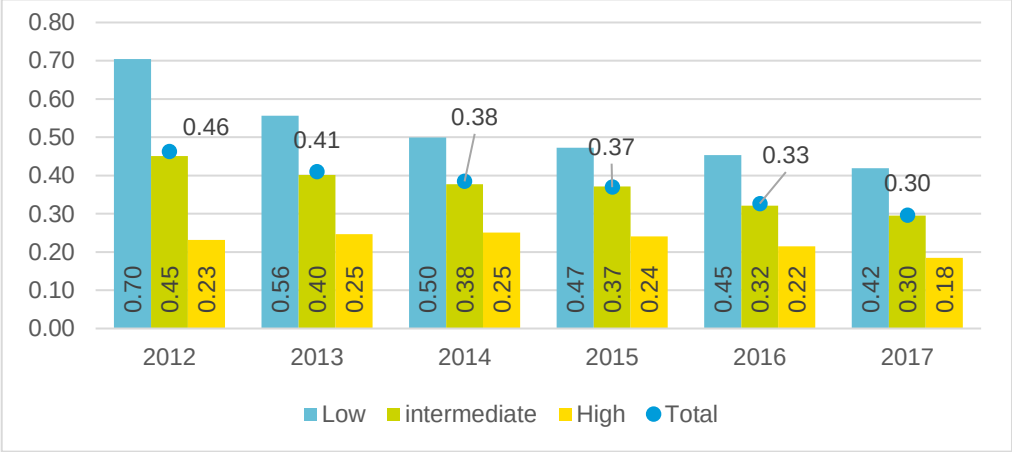
The LFS data is of a high quality and is readily available in both the MakStat database and the Eurostat database. From the viewpoint of this exercise, we would recommend that the SSO make a distinction (in the LFS questionnaire) between three-year and four-year vocational programmes. Currently, data is collected and published for three-year secondary education (which is solely vocational) and four-year secondary education (which combines vocational and general programmes). It is very important to analyse separately (VET and non-VET) the outcomes of secondary education graduates in the labour market.

There is a need both in the LFS, but also in the educational data (administrative data and survey-based data) to implement the ISCED-F 2013 classification of fields of education. The analysis of labour supply, demand and the respective mismatches should also be conducted on the basis of the fields of study to identify horizontal mismatch, in order to provide better information for the future students and for policymakers. To do so would require direct access to microdata, therefore, we recommend to include the skills mismatch topic among the regular research activities of national authorities, in particular the SSO.

ANNEXES

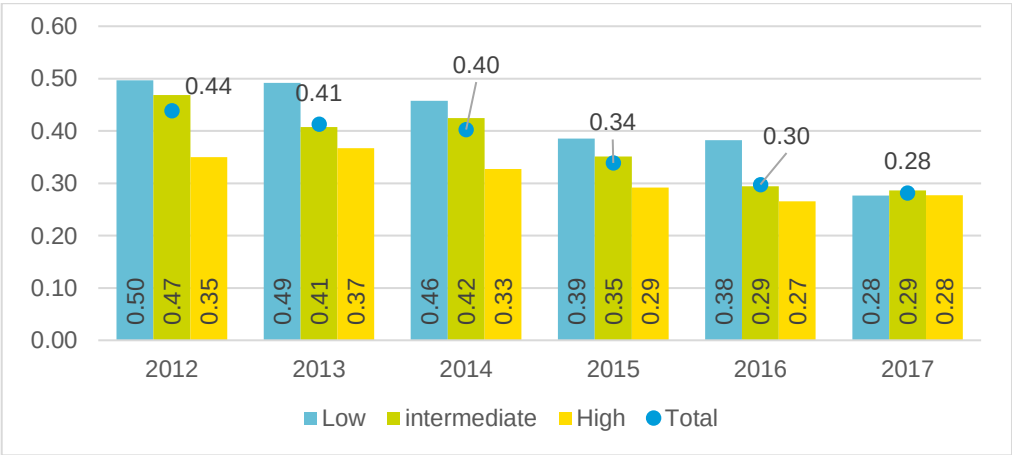
Annex 1. Additional Indicators

FIGURE A1.1 UNEMPLOYMENT-TO-EMPLOYMENT RATIO OF MEN BY EDUCATIONAL ATTAINMENT LEVEL (15–64 AGE GROUP), 2012–17



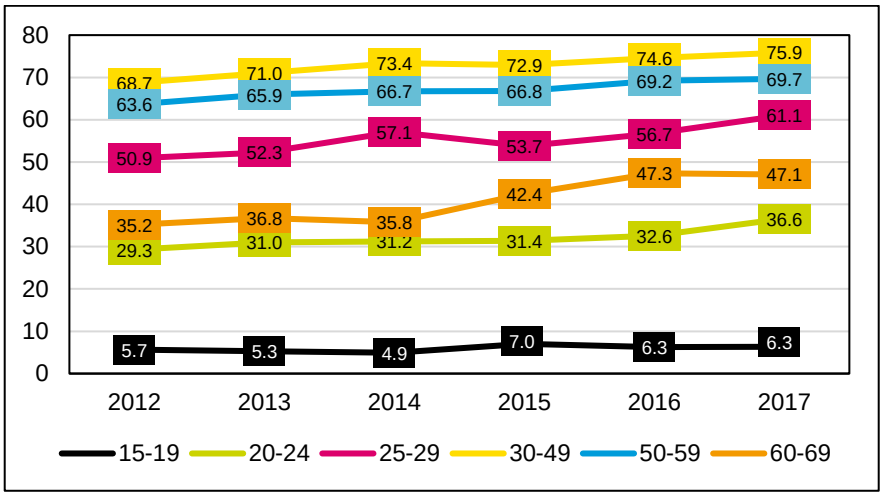
Source: Author's calculations based on LFS 2012–17.

FIGURE A1.2 UNEMPLOYMENT-TO-EMPLOYMENT RATIO OF WOMEN BY EDUCATIONAL ATTAINMENT LEVEL (15–64 AGE GROUP), 2012–17



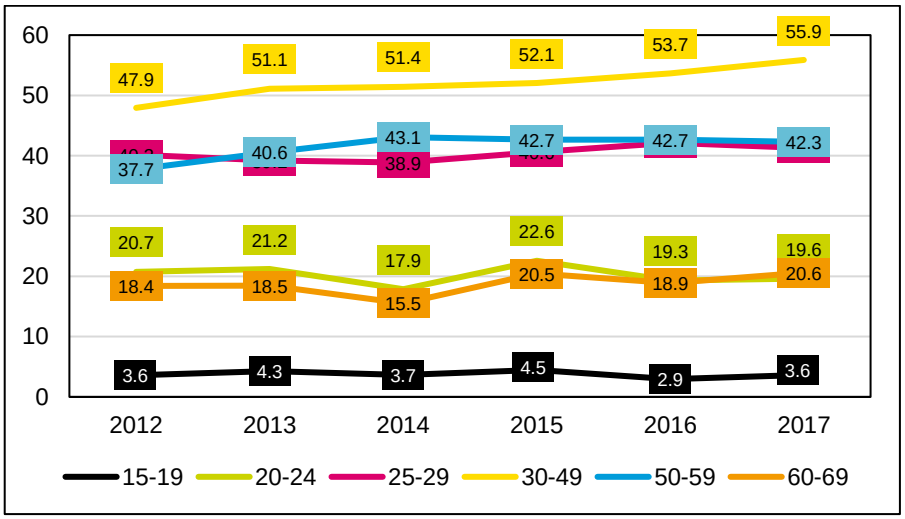
Source: Author's calculations based on LFS 2012–17.

FIGURE A1.3 EMPLOYMENT-TO-POPULATION RATIO OF MEN BY AGE GROUP, 2012–17



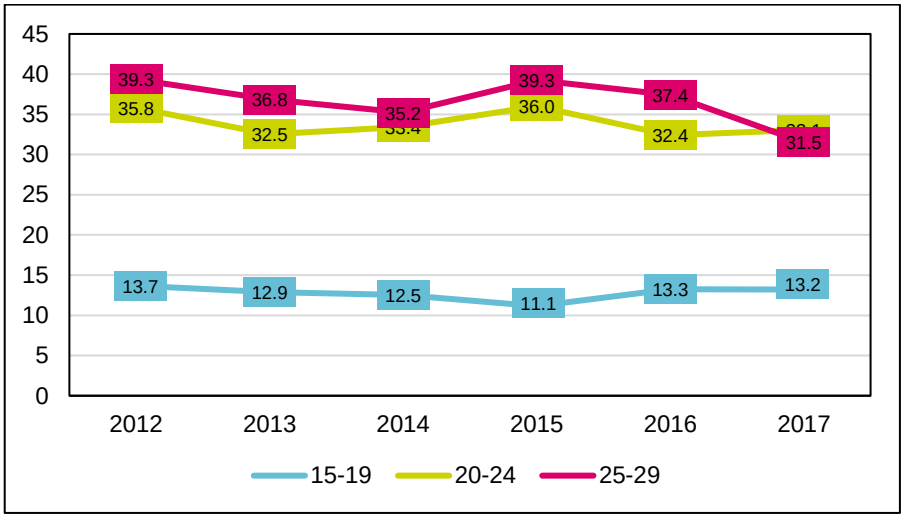
Source: Author's calculations based on LFS 2012–17.

FIGURE A1.4 EMPLOYMENT-TO-POPULATION RATIO OF WOMEN BY AGE GROUP, 2012–17



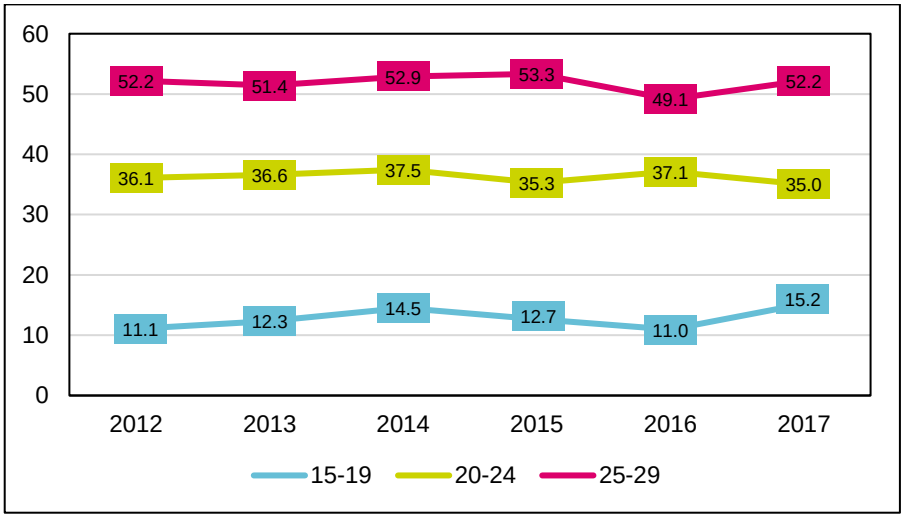
Source: Author's calculations based on LFS 2012–17.

FIGURE A1.5 YOUNG MALES NOT IN EMPLOYMENT, EDUCATION OR TRAINING BY AGE GROUP, 2012–17 (%)



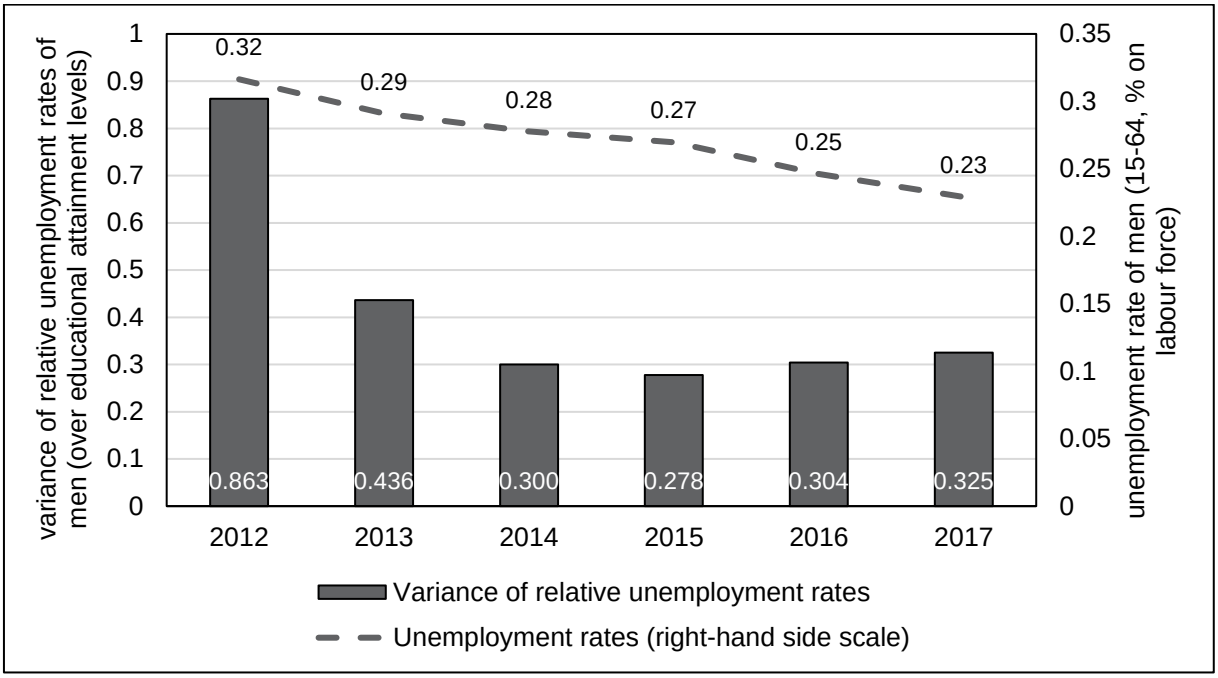
Source: Author's calculations based on LFS 2012–17.

FIGURE A1.6 YOUNG FEMALES NOT IN EMPLOYMENT, EDUCATION OR TRAINING BY AGE GROUP, 2012–17 (%)



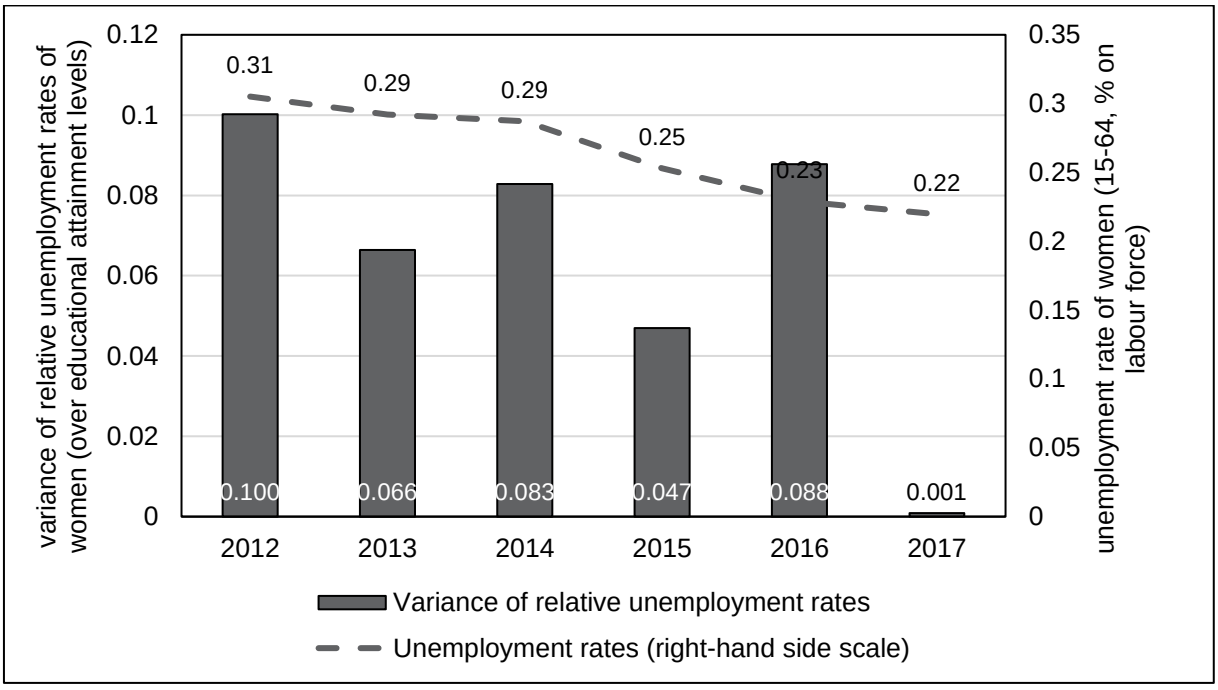
Source: Author's calculations based on LFS 2012–17.

FIGURE A1.7 VARIANCE OF RELATIVE UNEMPLOYMENT RATES FOR MEN (15–64 AGE GROUP), 2012–17



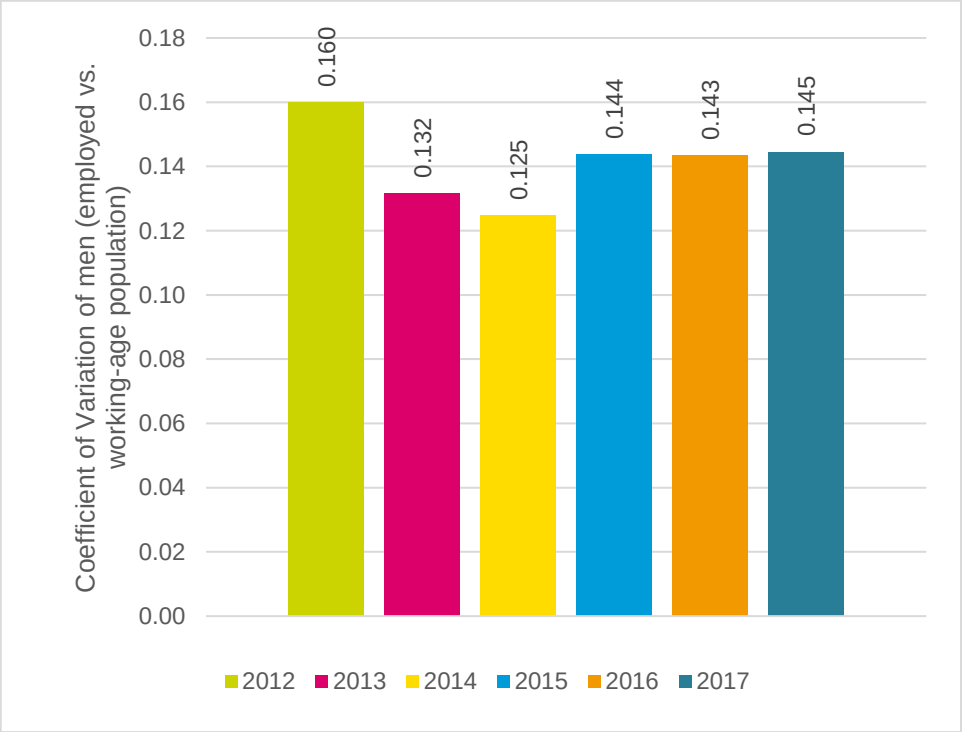
Source: Author's calculations based on LFS 2012–17.

FIGURE A1.8 VARIANCE OF RELATIVE UNEMPLOYMENT RATES FOR WOMEN (15–64 AGE GROUP), 2012–17



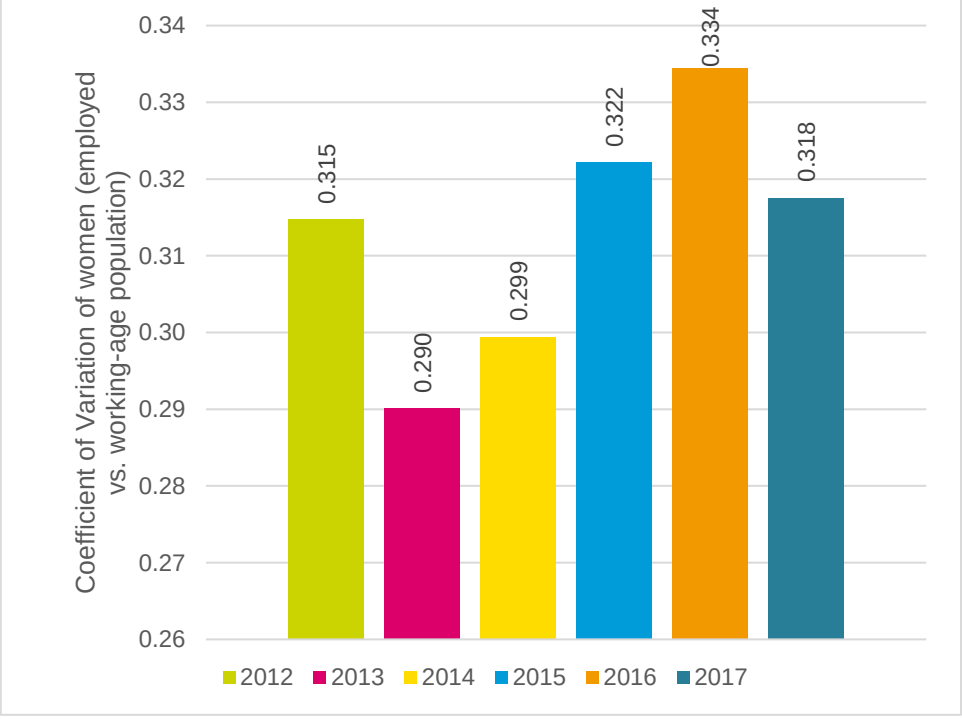
Source: Author's calculations based on LFS 2012–17.

FIGURE A1.9 CVAR OF QUALIFICATION COMPOSITION OF MEN (15–64 AGE GROUP), 2012–17



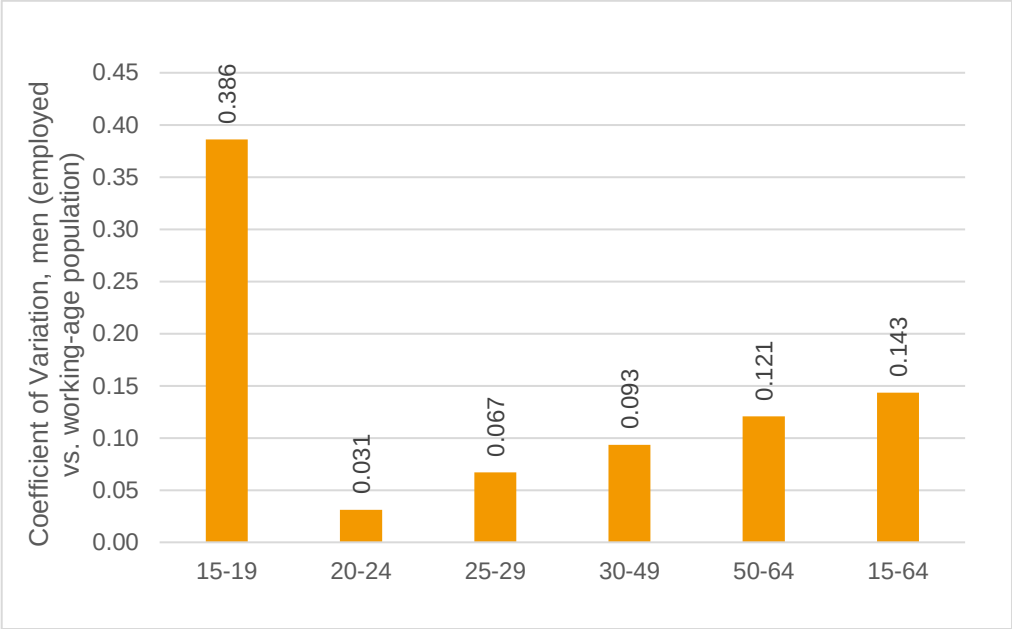
Source: Author's calculations based on LFS 2012–17.

FIGURE A1.10 CVAR OF QUALIFICATION COMPOSITION OF WOMEN (15–64 AGE GROUP), 2012–17



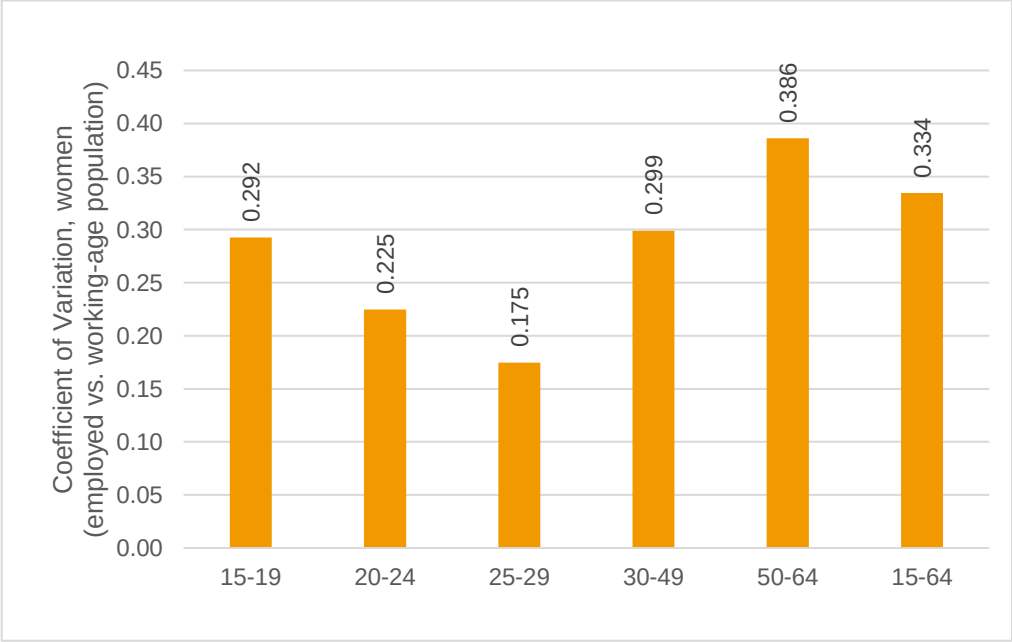
Source: Author's calculations based on LFS 2012–17.

FIGURE A1.11 CVAR OF QUALIFICATION COMPOSITION OF MEN BY AGE GROUP, 2016



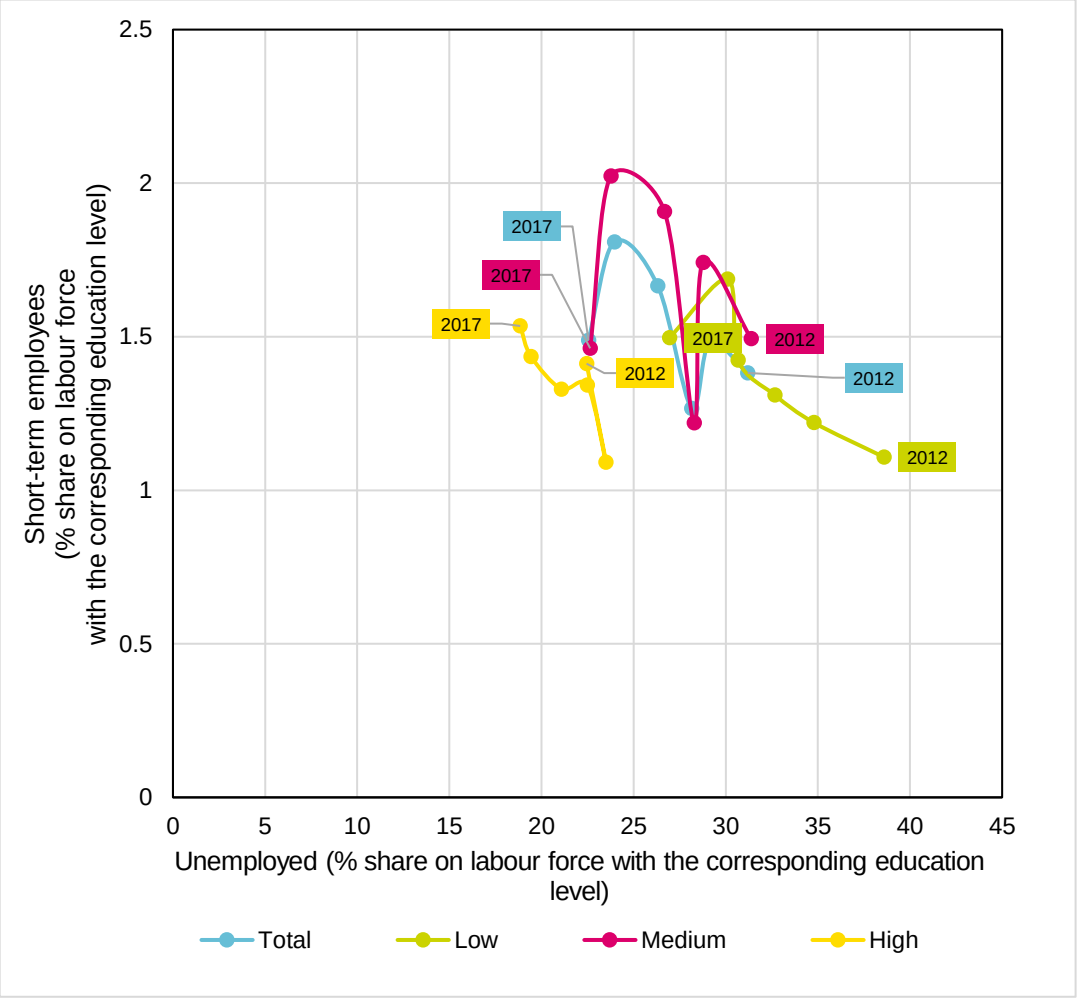
Source: Author's calculations based on LFS 2016.

FIGURE A1.12 CVAR OF QUALIFICATION COMPOSITION OF WOMEN BY AGE GROUP, 2016



Source: Author's calculations based on LFS 2016.

FIGURE A1.13 UNEMPLOYMENT VS SHORT-TERM (UP TO ONE MONTH) EMPLOYMENT (15–64 AGE GROUP), 2012–17 (BEVERIDGE CURVE)



Source: Author's calculations based on LFS 2012–16.

Annex 2. Aggregation by education level

The following aggregation by education level was used to calculate the mismatch indicators, throughout the report.

ISCED 2011	Aggregation ETF
0–2	Low
3–4	Intermediate
5–8	High

LIST OF ACRONYMS

ALMPs	Active labour market policies
CVAR	Coefficient of variation
ESA	Employment Service Agency
ETF	European Training Foundation
EUR	Euro (currency)
GDP	Gross domestic product
ICT	Information and communications technology
ILO	International Labour Organisation
ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
LFS	Labour force survey
MKD	Macedonian denar (currency)
NEET	(Young people) not in employment, education or training
NQF	National qualifications framework
NUTS	Nomenclature of Territorial Units of Statistics
PISA	Programme for International Student Assessment
SSO	State Statistical Office
VET	Vocational education and training

LITERATURE

Adalet McGowan, M. and Andrews, D., *Skill mismatch and public policy in OECD countries*, OECD Economics Department Working Papers, No 1210, OECD Publishing, Paris, 2015.

Burdia, S. and Moro-Egido, A.I., 'The over education phenomenon in Europe', *Revista International de Sociologia*, Vol. 67(2), 2009, pp. 329–345.

ESA (Employment Service Agency), *Annual report for 2016*, ESA, Skopje, 2017. Last accessed April 2019 at: www.avrm.gov.mk/content/Dokumenti/%D0%98%D0%B7%D0%B2%D0%B5%D1%88%D1%82%D0%B0%D1%98%20%D0%BD%D0%B0%20%D0%90%D0%92%D0%A0%D0%9C%202016.compressed.pdf [in Macedonian language only].

ETF (European Training Foundation), *Young people not in employment, education or training (NEET): An overview in ETF partner countries*, ETF, Turin, 2015. Last accessed April 2019 at: www.etf.europa.eu/web.nsf/pages/NEET_ETF_partner_countries

ETF (European Training Foundation), *Tracking vocational graduates in the EU candidate countries*, ETF, Turin, 2018. Last accessed April 2019 at: www.etf.europa.eu/sites/default/files/m/9C43BF40FE2B51DEC125829B005A1BFF_Tracking%20vocational%20graduates_candidate%20countries.pdf

European Commission, *Measuring skills mismatch*, Publications Office of the European Union, Luxembourg, 2015. Last accessed April 2019 at: http://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=7860

Eurostat, *Statistical approaches to the measurement of skills: 2016 edition*, Publications Office of the European Union, Luxembourg, 2016. Last accessed April 2019 at: http://ec.europa.eu/eurostat/documents/3888793/7753369/KS-TC-16-023-EN-N.pdf/438b69b5-2fcb-4923-b9e2-fa7b59906438

Handel, M.J., Valerio, A. and Sancez Puerta, M.L., *Accounting for mismatch in low- and middle-income countries: Measurement, magnitudes, and explanations,* World Bank, Washington, DC, 2016.

Joint Research Centre, *Occupational mismatch in Europe: Understanding overeducation and overskilling for policy making*, Publications Office of the European Union, Luxembourg, 2014. Last accessed April 2019 at: http://publications.jrc.ec.europa.eu/repository/bitstream/JRC89712/occupational%20mismatch%20in%20europe.pdf

McGuiness, S., 'Overeducation in the labour market', *Journal of Economic Surveys*, Vol. 20(3), 2006, pp. 387–417.

Ministry of Finance, *Economic Reform Programme 2018–2020*, Ministry of Finance, Skopje, 2018. Last accessed April 2019 at: www.finance.gov.mk/en/node/4832

Mojsoska-Blazevski, N., *Labour market transitions of young men and women in the former Yugoslav Republic of Macedonia,* International Labour Office, Geneva, 2016.

Mojsoska-Blazevski, N., *Tracing secondary vocational and tertiary education graduates in the former Yugoslav Republic of Macedonia: 2016 tracer study results,* ETF, Turin, 2017. Last accessed April 2019 at: www.etf.europa.eu/web.nsf/pages/2016_Tracer_study_results_MK

Mojsoska-Blazevski, N. and Bartlett, W., *From university to employment: Higher education provision and labour market needs in the former Yugoslav Republic of Macedonia,* European Commission, Directorate-General for Education and Culture, Brussels, 2016.

Mojsoska-Blazevski, N. and Petreski, M., *Impact evaluation of active labour market programs in FYR Macedonia: Key findings*, International Labour Office, Budapest, 2015. Last accessed April 2019 at: www.ilo.org/budapest/what-we-do/publications/WCMS_384854/lang--en/index.htm

Petreski, M., *Skills forecasting in the Republic of Macedonia,* report prepared for the Ministry of Education and Science, Skopje, 2016.

World Bank, *Looking for skills in the former Yugoslav Republic of Macedonia*, Social Protection and Labour Global Practice, Europe and Central Asia Region, World Bank, Washington, DC, 2016.

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