

Leitner, Sandra M.

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Net migration and its skill composition in the Western Balkan countries between 2010 and 2019: Results from a cohort approach

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Net Migration and its Skill Composition in the Western Balkan Countries between 2010 and 2019: Results from a Cohort Approach Analysis

Sandra M. Leitner

Commissioned by



Net Migration and its Skill Composition in the Western Balkan Countries between 2010 and 2019: Results from a Cohort Approach Analysis

SANDRA M. LEITNER

Sandra M. Leitner is Economist at The Vienna Institute for International Economic Studies (wiiw).

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Abstract

In view of the scarcity of reliable and detailed data on migration this paper develops the novel cohort approach, which allows us to deduce from annual Labour Force Surveys (LFS) the extent and skill composition of net migration. It is based on representative age cohorts who are followed over time and whose change in size and composition provides information about the extent and skill composition of net migration. As concerns skill composition, the analysis differentiates between four educational levels (Low, Medium-general, Medium-VET and High). The analysis is applied to the six Western Balkan countries (for the period 2010-2019), which lack official, comprehensive and domestic migration statistics, particularly in terms of the skill composition of migrants. The analysis shows that during the period analysed all six Western Balkan countries experienced net emigration which, however, differs across countries in terms of magnitude and particular age pattern. A further breakdown of net migration by highest level of education shows that net emigration in the region mainly occurs among the medium- and low-educated. Contrary to widespread perception, the analysis finds evidence of brain gain in terms of partly substantial net immigration of the highly educated in all countries except Albania, Bosnia and Herzegovina and Kosovo. Brain gain is highest among those in their early to mid-20s to early 30s. As this is the age at which students usually complete tertiary education, this is likely to be related to students returning to their home countries after graduating from tertiary education abroad.

Keywords: Net-migration, skill composition, Western Balkans, cohort approach

JEL classification: J61, J24

Preface

This report forms part of the regional study on 'Migration dynamics from a human capital perspective in the Western Balkans'. The study was launched in 2020 by the European Training Foundation (ETF) and carried out jointly with the Vienna Institute for International Economic Studies (wiiw) with the aim of shedding light on the triangular relationships between human capital formation, labour markets and migration and determine how the current functioning of education systems and labour markets affect migration.

Given the limited availability or lack of information and data regarding the educational levels and skills of emigrants, in particular of the recent migration flows from the region, one of the methodologies developed by the wiiw team to address this lack of data was a 'cohort approach analysis'. This approach used Labour Force Survey data (2010-2019) as well as detailed education statistics obtained from the State Statistical Offices of the six Western Balkan countries.

Sandra Leitner from wiiw led the work on the cohort approach and drafted this report on the results of her analysis. The report also benefited from discussions, guidance and comments made by the project team (Michael Landesmann, Hermine Vidovic and Isilda Mara from wiiw; Ummuhan Bardak, Mirela Gavoci, Mariavittoria Garlappi and Cristiana Burzio from ETF) and the national experts (Mihail Arandarenko, Adnan Efendic, Ardiana Gashi, Ilir Gëdeshi, Vojin Golubovic and Marjan Petreski) from the Western Balkans. Methodologically and conceptually the report profited from intense discussions with wiiw project leader Michael Landesmann.

The ETF and wiiw would like to thank all State Statistical Offices in the six Western Balkan countries for their collaboration, which provided the research team with access to the Labour Force Survey database (2010-2019). We are particularly grateful to the members of the relevant departments of the Statistical Offices who provided guidance, information or data under their internal rules. This report would not have been possible without their data and contributions.

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1. Introduction

International migration of people is one of the most visible and significant aspects of globalisation. It has reached unprecedented levels as increasingly more people move across borders in search of better labour market opportunities elsewhere and to escape poverty, political unrest, war or the consequences of climate change. Paradoxically, however, data on international migration that countries collect and publish are limited, so that more is known about international trade and investment flows than about the extent and type of migration. This therefore leaves some important questions unanswered (Santos Tomas and Summers, 2009).

In view of the scarcity of reliable and detailed data on migration this paper develops a novel approach, which allows us to deduce from annual Labour Force Surveys (LFS) the extent and skill composition of net migration. This so-called 'cohort approach' borrows from population science the idea that in the absence of any fertility and mortality (which is an appropriate assumption to make for the age groups considered in this study), any population changes are the result of (net) migration. It is based on representative age cohorts who are followed over time and whose change in size and composition provides information about the extent and skill composition of net migration.

The analysis is applied to the six Western Balkan countries (WB6 – Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia), which lack official, comprehensive and home-based migration statistics, particularly in terms of the skill composition of migrants. In terms of skill composition, we differentiate between four educational levels (based on ISCED 2011): Low (primary or lower secondary education); Medium-general (Med-GEN = upper secondary general education); Medium-VET (Med-VET = upper secondary vocational education and training); and High (tertiary education). The analysis covers the period 2010-2019.

Our findings show that in the period under review all six Western Balkan countries experienced net emigration. This, however, differs across countries in terms of magnitude and particular age pattern:

- › In North Macedonia and Kosovo, there is net emigration among the younger cohorts and net immigration among the older cohorts.
- › In Montenegro, net migration patterns are period-specific, with net emigration among the youngest cohort and net immigration among the oldest cohorts during the first period of analysis (2012-2014) and, conversely, net immigration among the two youngest cohorts but net emigration among the oldest cohorts during the second period of our analysis (2015-2019).
- › In Serbia, all cohorts experience net emigration, with the exception of those in their 30s, who show non-negligible net immigration.
- › In Albania (with few exceptions) and in Bosnia and Herzegovina, there is net emigration among all cohorts, but especially among the youngest cohorts.

Moreover, a further breakdown of net migration by highest level of education shows that net emigration in the region mainly occurs among the medium- and low-educated:

- › In Montenegro, net emigration is mainly among the medium- and low-educated. In Bosnia and Herzegovina, net emigration is most pronounced among those with Medium-VET skills and the low-educated, while in North Macedonia and Kosovo net emigration is mainly among the low-educated and those with Medium-GEN as their highest level of education.
- › In Serbia, net emigration occurs solely among the medium-educated, but particularly among those with Medium-VET skills.
- › By contrast, in Albania net emigration is highest among the highly educated – which is evidence of substantial *brain drain* – and those with Medium-VET as their highest level of education.
- › Furthermore, and contrary to widespread perception, the analysis finds evidence of *brain gain* in terms of partly substantial net immigration of the highly educated in all countries except Albania, Bosnia and Herzegovina and Kosovo. Brain gain is highest among those in their early to mid-20s to early 30s. As this is the age at which students usually complete tertiary education, this is likely to be related to students returning to their home countries after graduating from tertiary education abroad but also to foreign students moving to and continuing their lower-level tertiary education in one of the Western Balkan countries. Furthermore, some of the WB6 countries – such as Montenegro and Serbia – also attract high-skilled immigrant workers.

The rest of the paper is structured as follows: Section 2 develops the cohort approach and discusses its key features. Section 3 shows how the cohort approach can be applied to a detailed analysis of the skill composition of net migration using detailed education statistics. Section 4 briefly discusses the data sources and highlights some of their specificities and limitations. Results from the cohort analysis for the total economy are presented and discussed in Sections 5.1, with a further breakdown by educational group presented in 5.2. Finally, Section 6 summarises the key findings.

2. The cohort approach

There are generally no official home-based migration statistics available for the six Western Balkan countries, particularly in terms of the skill composition of migrants. In view of this, the novel cohort approach is developed and applied, which identifies and follows age cohorts over time and deduces from changes in the cohort size the extent of net migration. To our knowledge, no similar approach exists in the literature. It borrows from population science the key concept of population change, which considers population change to be determined by its components: fertility, mortality and migration. Hence, put differently, in the absence of fertility and mortality any population changes are the result of migration, so that migration dynamics can be deduced from population changes observable in official statistics.

This approach uses Labour Force Survey (LFS) data, whose rotating sample design does not allow a person to be traced over time but whose stratification and weighting scheme allows the identification of representative groups (age cohorts) that can be followed over time. In view of zero fertility and in the absence of (substantial) mortality among the sub-population of interest (see below), differences in the size of an age cohort between two consecutive years give a good approximation of (cohort-specific) *net migration* in a year.

Hence, net migration ($NetMig_{it}$) in age cohort i between t and $t + 1$ can be expressed as follows:

$$Cohort_{it+1} - Cohort_{it} = \Delta Cohort_{it} = NetMig_{it} \quad (1)$$

where i refers to one of five different age cohorts (as specified below).

With $NetMig_{it} \begin{cases} > 0: \text{net-immigration}_{it} \\ < 0: \text{net-emigration}_{it} \end{cases}$

Thus, an increase in the size of an age cohort between t and $t + 1$ is indicative of net immigration in t . Conversely, a decrease in the size of an age cohort between t and $t + 1$ is an indication of net emigration in t .

The analysis uses the national (micro-level) LFS data of each WB6 country for the period 2010-2019. It concentrates on the sub-population of persons aged 15-39, which is characterised by zero fertility, little mortality and strong migration dynamics. Particularly, as concerns fertility, since this is generally captured by the number of newly born children in a year who, by definition, are zero years old, there is no fertility among the sub-population of persons aged 15-39.

Furthermore, mortality typically increases with age and tends to be low among the younger population segments and higher among the older ones. In this context, Eurostat deaths statistics by age¹ show that in the WB6 countries mortality of the sub-population of persons aged 15-39 is low: the share of deaths of

¹ Source: Eurostat (demo_magec).

the sub-population of interest only accounts for between 2% (in Albania, Bosnia and Herzegovina, North Macedonia, Montenegro and Serbia) and 5% (in Kosovo) of all deaths in 2010. We do not correct for the number of deaths in each cohort, which therefore shows up in terms of higher emigration, mainly among the oldest cohorts. However, since the number of deaths is low, this bias is negligible.

The analysis uses both the native and the foreign sub-population of persons aged 15-39 (as included in the LFS), as the foreign population is also important for the functioning of national labour markets. Hence, estimated net migration flows include both native and foreign nationals.

In 2010 – the first year of the period under review – this sample population (15-39) is split into the following five-year age cohorts ($i = 1, 2, 3, 4, 5$): 15-19, 20-24, 25-29, 30-34, 35-39, and each cohort is followed over time until 2019. So, for instance, the youngest age cohort 15-19 of 2010 has aged by nine years and become age cohort 24-28 in 2019 (see Table 1 for a schematic representation of the approach). It is important to note that, even though the focus is on the sub-population of persons who are aged between 15 and 39 years in 2010, eventually, given the nine-year time horizon of the analysis (2010-2019), a much larger population is covered by the cohort approach. In particular, the approach covers a total population of persons aged between 15 and almost 50 years (see Table 1 top half).

Table 1 / Schematic representation of how the full dataset is constructed

Years/LFS waves	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Age cohorts	15-19	16-20	17-21	18-22	19-23	20-24	21-25	22-26	23-27	24-28
	20-24	21-25	22-26	23-27	24-28	25-29	26-30	27-31	28-32	29-33
	25-29	26-30	27-31	28-32	29-33	30-34	31-35	32-36	33-37	34-38
	30-34	31-35	32-36	33-37	34-38	35-39	36-40	37-41	38-42	39-43
	35-39	36-40	37-41	38-42	39-43	40-44	41-45	42-46	43-47	44-48
Newcomers' age		15	16	17	18	19	20	21	22	23
			15	16	17	18	19	20	21	22
				15	16	17	18	19	20	21
					15	16	17	18	19	20
						15	16	17	18	19
							15	16	17	18
								15	16	17
									15	16
										15

The cohort approach focuses on the sub-population of persons who were aged between 15 and 39 in 2010 and follows them until 2019. However, in 2011 this sub-population had already aged by one year and was between 16 and 40 years of age (see column 2011 in Table 1), so that those who were aged 15 (in 2011) are not covered. Hence, to guarantee that all relevant age groups – also those younger than the aforementioned five-year age cohorts (and who would be or become part of the potential labour force) – are captured and their net migration is estimated, this group of young persons aged 15 is included as well.

In particular, starting in 2011, each year a new group of young persons aged 15 enters the survey population – *newcomers* – and ages by one year each year. Each of these newcomer groups in each year from 2011 onwards (i.e. those reaching the entry-level age of 15 in 2011, 2012 and so on until 2019) is also followed separately on a yearly basis until 2019. Due to stronger migration dynamics in later years, for each of the newcomer groups only persons who are 18 years and older are analysed (see Table 1 bottom half; the age groups and years included in the analysis are marked in bold). In the analysis, the extent of net migration is determined separately for each of these individual newcomer groups and then added up to an aggregate total, and referred to as newcomers, as a sixth cohort.

Hence, the cohort approach rests on five core age cohorts (i.e. 15-19, 20-24, 25-29, 30-34, 35-39) plus the newcomer cohort that first emerges in 2014, when the first newcomer group (which was 15 in 2011) reaches the age of 18. Since the cohort approach deduces net migration from any change in the size of a cohort between two consecutive years, net migration for the newcomers is calculated from 2015 onwards.

3. Skill composition of net migration

The cohort approach is not only applied at the aggregate level (i.e. the total economy) but also at the more detailed educational attainment level, where ISCED² classifications and labels as reported in each of the yearly LFS datasets are used to form four educational groups for further analysis, namely:

- › ‘*Low*’ for those with primary and lower secondary education as their highest educational attainment level (ISCED 1-2). Since the focus of this study is on skilled migration, persons without any formal education, who account for less than 3% of the working-age population aged 15+ in each WB6 country, were excluded from the analysis.
- › ‘*Medium*’ for those with upper-secondary or post-secondary education as their highest educational attainment level (ISCED 3-4); this group is further differentiated by particular education tracks into medium-general and medium-VET to explicitly account for the importance of vocational education and training in the region:
 - ‘*Medium-general*’ (Med-GEN) for those who followed the general upper secondary education track (i.e. gymnasium/grammar school) and have a diploma from the general upper secondary track as their highest educational attainment level;
 - ‘*Medium-VET*’ (Med-VET) for those who followed the vocational secondary track instead (and attended 1-2-, 3- or 4-year VET programmes) and hold diplomas from one of the upper-secondary VET programmes as their highest educational attainment level; and
- › ‘*High*’ for those with some form of tertiary education as their highest educational attainment level (ISCED 5 and higher). In this respect, ‘*High*’ generally encompasses diplomas from different tertiary education cycles, namely from higher education, Bachelor and undergraduate studies (BA), Master’s degree and specialised studies (MA), and doctorate (PhD) studies.

For all Western Balkan countries, the labels as reported in the LFS datasets as well as their respective classification into Low, Med-VET, Med-GEN and High are provided in Table 2 below. While it was straightforward to classify all labels for Low and High, the differentiation of any upper secondary education in terms of Med-VET and Med-GEN was sometimes complicated by labels that were too generic. This was the case for Bosnia and Herzegovina, North Macedonia and Montenegro, whose four-year upper secondary education (in italics) did not differentiate between four-year VET programmes and four-year general education (such as gymnasium or grammar school). In all cases, additional information on the particular field of education was used – which is captured in any LFS by default – and any ‘general’ field was classified as Med-GEN, while the remaining fields were all classified as Med-VET.

² International Standard Classification of Education.

Table 2 / LFS educational attainment labels and their classification into the four educational groups

	Albania since 2018	Bosnia and Herzegovina since 2017	Kosovo 2015-2019
	No education	No education	No school
Low	Primary (classes 1-5) Lower secondary (classes VI-IX of 9 years school)	1-3 & 4-7 grades of 8 yrs elementary school 1-4 & 5-8 grades of 9 yrs elementary school Completed elementary school	Elementary education (classes I-IV or I-V) 8/9-years school (classes V-VIII or V-IX)
Med- VET	Upper secondary technical, 2 years Upper secondary vocational, 2+1 years, 2+1+1 yrs, 2+2 yrs Upper secondary vocational, 4 years	Completed secondary school 1-2 yrs Completed secondary school 3 yrs Specialisation after secondary school	Upper secondary - vocational 2-3 yrs Upper secondary - vocational 4-5 yrs
Med- GEN	Upper secondary general	Completed secondary school 4 yrs and more Completed High School or first stage of college	Upper Secondary – general (gymnasium)
High	Upper secondary socio-cultural (3 years, as artistic or foreign languages); Post-secondary not tertiary (2 yrs) Bachelor Master or equivalent Doctorate	University education duration 4-4.5 yrs, study of I cycle University education duration 5-6 yrs, specialist and master's studies, integrated I and II cycle and II cycle studies PhD studies or studies of all III cycle	High-school Tertiary/University Post-university/Master Doctorate

contd.

Table 2 / Contd.

	North Macedonia 2010-2019	Montenegro since 2014	Serbia since 2014
	Without education	No formal education or below ISCED 1	Without education
Low	1-5 grades of primary education 6-8 grades of primary education Primary education	ISCED 1 - Primary education ISCED 2 - Lower secondary education	1-3 grades of primary education 4-7 grades of primary education Primary education (8 yrs)
Med- VET	2yrs of secondary education 3yrs of secondary education Post-secondary non-tertiary education	ISCED 3 - Upper secondary education (2 yrs and more, sequential (i.e. giving access to next ISCED 3 programme only) – partial completion of ISCED 3) ISCED 3 - Upper secondary education (2 yrs and more, terminal or giving access to ISCED 4 only) ISCED 4 - Post-secondary non-tertiary education	Lower secondary VET education 1-2 yrs Lower secondary VET education 3 yrs Upper secondary VET education 4 yrs Specialisation after secondary education
Med- GEN	4 yrs of secondary education	ISCED 3 - Upper secondary education (with access to ISCED 5, 6 or 7)	Grammar school
High	Higher vocational education Tertiary education, faculty, academy Master's degree Doctorate	ISCED 5 - Short-cycle tertiary education ISCED 6 - Bachelor equivalent ISCED 7 – Master's or equivalent ISCED 8 - Doctorate or equivalent	High education, first level of faculty Faculty, academy, undergraduate academic studies Master's academic studies, integrated studies Doctoral academic studies

Source: Individual Labour Force Surveys.

For validating this approach, the calculated shares of Med-VET and Med-GEN in upper secondary education based on LFS data were compared to the respective shares calculated from official education statistics (compiled from official documents and/or the education databases of all State Statistical Offices). The education statistics-based shares were calculated for enrolled as well as graduated students to account for the potentially substantial drop-out rates in either of the two education groups. This approach proved to be valid, as the shares based on labour force surveys and those based on education statistics were very similar.

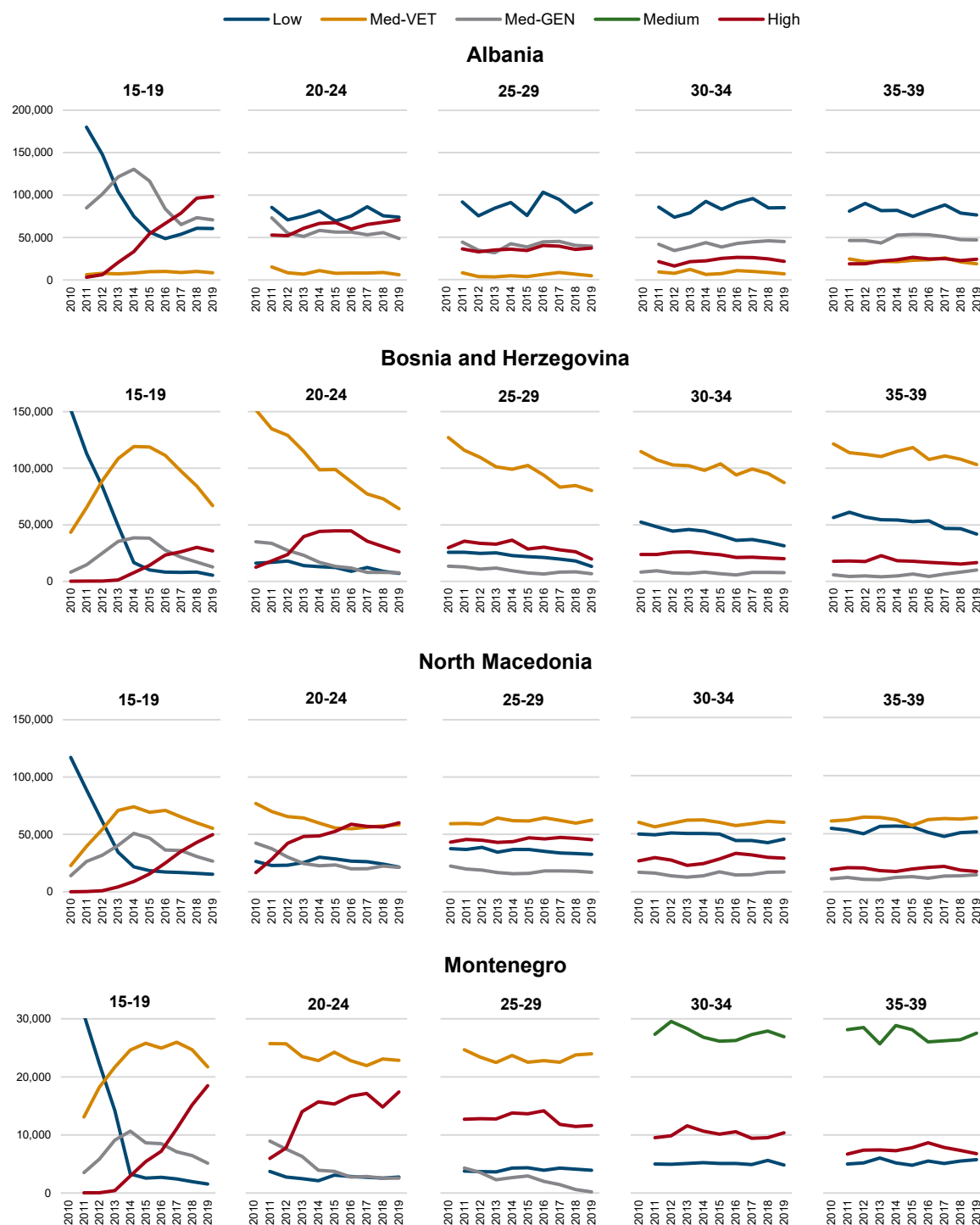
Figure 1 and Figure 2 depict the skill composition (in terms of the four educational groups defined in Table 1) of each of the five age cohorts and the three newcomer groups, with the longest periods available for Bosnia and Herzegovina and North Macedonia (2010-2019) and for Albania and Montenegro (2011-2019). For both Kosovo and Serbia shorter periods are used in the analysis (see section 4 for a discussion). Hence, their skill compositions are less informative in this respect and are therefore not shown here.³ Both figures illustrate very complex changes in the skill/education composition in some of the cohorts. This is particularly obvious in the younger-age cohorts (cohort 15-19 and cohort 20-24) and all newcomers (who are initially 15 years old but age over time) and the result of still ongoing educational careers among the younger population. As people still pursue further education (i.e. those who have not yet entered the labour market), they transit from 'Low' as their highest educational attainment to either 'Med-GEN' or 'Med-VET', and eventually to 'High' if they also pursue further tertiary education after graduating from one of the two medium educational cycles. By contrast, the three older cohorts show no further changes in their skill/education composition.

The most complex changes in the skill/educational composition and associated educational transitions to higher education levels are observable for the youngest (15-19) age cohort (Figure 1), whose members are still in the middle of their educational development. Initially, in 2010, this age cohort is strongly dominated by those with Low as their highest educational attainment level (as the majority has just finished primary education – at the age of 15 – but has not yet graduated from upper secondary education). However, in each year some of them graduate from either Med-GEN or Med-VET programmes and therefore transit from Low to the respective higher secondary education group. This transition is indicated by the convergence between the continuously falling Low curve and the simultaneously growing Med-GEN and Med-VET curves.

However, as indicated by the stronger increase of the Med-VET group, this transition occurs more strongly among the Med-VET than the Med-GEN group (except for Albania, where the transition is stronger towards Med-GEN). The transition from Low to either Med-GEN or Med-VET lasts until 2014, when the youngest members of the 15-19 cohort have also reached the age of 19 and have eventually transited. After 2014 no more low-to-medium transitions take place (as indicated by the flat Low curve in Figure 1). Simultaneously, starting in 2011, some people have already graduated from tertiary education – at the age of around 20 – and have therefore transited from either Med-VET or Med-GEN to High as their highest educational attainment level. This group is initially small but grows as more people graduate from tertiary education.

³ In Figure 2 Montenegro is not included, as information on age in Montenegrin LFS microdata available to researchers is only for five-year age brackets but not for individual age groups. Hence, the group of newcomers, which is composed of individual age groups, could not be identified.

Figure 1 / Evolution of cohorts by education groups: Albania, Bosnia and Herzegovina, North Macedonia, and Montenegro



Note: These age brackets refer to the age at the beginning of the period in 2010. Educational levels are divided into four categories: Low (primary or lower secondary education), Medium-general (upper secondary general education/gymnasium), Medium-VET (upper secondary vocational education and training) and High (tertiary education), based on ISCED. For Montenegro, the two upper secondary education categories were put together into an aggregate medium category (green line) to account for the ISCED-break between 2013 and 2014, which mainly affected the two oldest cohorts.

Sources: LFS for Bosnia and Herzegovina and North Macedonia; own calculations.

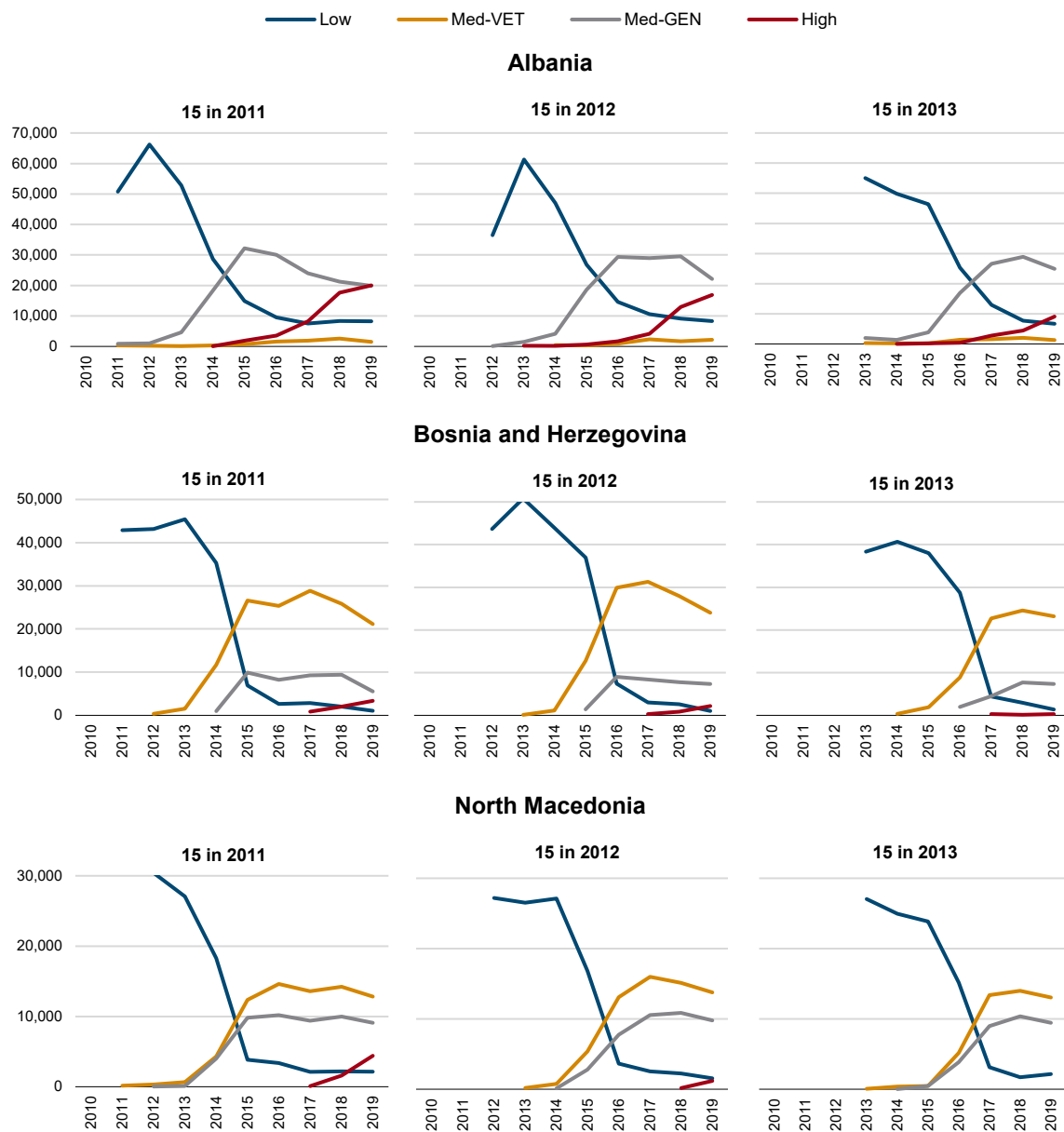
Somewhat similar but less pronounced transitions and compositional changes are also observable for the next-oldest age cohort, i.e. cohort 20-24. In this cohort the transitions out of Low as the highest educational attainment level have already come to a halt (as people typically graduate from Med-GEN or Med-VET at the age of 18 or 19). Instead, compositional changes are driven by transitions from either Med-VET or Med-GEN to High as the highest educational attainment level. The strong convergence between the Med-VET curve and the High curve suggests that educational transitions mainly occur between Med-VET and High. The Med-VET to High transitions last until 2016 (i.e. when people are aged between 26 and 30) but stop thereafter (as indicated by the flat Med-VET and High curves).

By contrast, no further convergence is observable in the remaining age cohorts, which suggests that people typically finish their education in their mid-20s.

Similar complex educational transitions are also observable for individual newcomers (those aged 15 in 2011, 2012, 2013 etc. – see Figure 2 for the first three newcomer groups). Observable patterns are more detailed and informative as, instead of the more heterogeneous age cohorts, one particular age group can be followed over time as it ages and transits to higher educational attainment levels. For instance, it shows for the first newcomer group that initially in 2011 (when people are 15) newcomers only have Low as their highest educational attainment level, since they have just finished primary/lower secondary education. A year later, in 2012, some have already graduated from a (1-2-year) Med-VET programme. As emphasised above and indicated by the pronounced decline in the low curve between 2014 and 2015, the majority of people transit at the age of 19 (i.e. in 2015), when they have finished their Med-GEN or Med-VET programmes. However, the majority graduate from a Med-VET programme (as indicated by the parallel strong increase in the Med-VET curve). Starting in 2017 – when these newcomers are 21 years old – some already start graduating from tertiary education cycles (typically from a BA programme). The bulk, however, graduates later.

For the analysis at the detailed ISCED/educational attainment level, it is essential to account explicitly for and ultimately 'remove' these observable educational transitions to avoid any biases in the estimations. In particular, the cohort approach rests on the idea that differences in the size of an age cohort between two consecutive years amount to net migration. Hence, if left unaccounted for, these educational transitions would erroneously be attributed to net migration and therefore overestimate the true level of net migration. Hence, the cohort approach needed to be adjusted accordingly. The adjusted cohort approach which takes account of educational transitions is outlined below (see section 3.1).

Figure 2 / Evolution of selective newcomers by education groups: Albania, Bosnia and Herzegovina and North Macedonia



Note: Newcomers are young persons aged 15 who enter the survey population each year, starting in 2011. Educational levels are divided into four categories: Low (primary or lower secondary education), Medium-general (upper secondary general education/gymnasium), Medium-VET (upper secondary vocational education and training) and High (tertiary education), based on ISCED.

Sources: Labour Force Surveys for Albania, Bosnia and Herzegovina and North Macedonia; own calculations.

3.1. EDUCATIONAL TRANSITIONS

At the more detailed ISCED/educational attainment level, differences in the size of age cohorts between two consecutive years – which lies at the very heart of the cohort approach – no longer amount to net migration only. Instead, they also include transitions from one educational attainment level to the next higher level. Hence, in view of this, the cohort approach as outlined in equation (1) is adjusted as follows:

$$\Delta Cohort_{ikt} = Cohort_{ikt+1} - Cohort_{ikt} = NetMig_{ikt} + transition_{ikt} \quad (2a)$$

where i refers to one of five different age cohorts and k to one of the four different education groups as specified above ($k = Low, Med-Gen, Med-VET, High$). In this case, $transition_{ikt}$ refers to any kind of transition in a cohort between $t + 1$ and t from, e.g., Low to Med-GEN or Med-VET as well as from either Med-GEN or Med-VET to High.

To estimate $NetMig_{ikt}$ in each cohort and for each education group, we proceed as follows. First, similar to the general cohort approach, the difference in the size of each education group in each cohort is calculated as $Cohort_{ikt+1} - Cohort_{ikt}$ based on LFS statistics. Then the various transitions are estimated based on data from official education statistics (for more details, see below). Hence, in this approach, $NetMig_{ikt}$ is a residual and is specified as follows:

$$\Delta Cohort_{ikt} = Cohort_{ikt+1} - Cohort_{ikt} - transition_{ikt} = NetMig_{ikt} \quad (2b)$$

As discussed above (see section 3, Figure 1 and Figure 2), the following four different educational transitions are possible for the target population (i.e. 15-39) and need to be taken into consideration in the approach:

$$\begin{aligned} Low &\rightarrow Med-GEN \\ Low &\rightarrow Med-VET \\ Med-GEN &\rightarrow High \\ Med-VET &\rightarrow High \end{aligned}$$

Specifically, in a first step, people with Low as their highest educational attainment level can enrol in and graduate from one of the two secondary education tracks and either transit to Med-GEN or Med-VET. Furthermore, those with either Med-GEN or Med-VET as their highest educational attainment level may enrol in and graduate from tertiary studies and subsequently transit from Med-GEN or Med-VET to High. In this context, transitions to High are captured by students with a Med-GEN or a (four-year) Med-VET background who graduate from Bachelor/undergraduate studies. This is the lowest tertiary education cycle in the broader tertiary education group, which also includes Master's and PhD studies. However, since any further educational advancement from BA to either MA or PhD does not result in a change in the highest educational attainment level – namely High – only the transition to BA matters.

In view of these diverse cross-educational transition patterns, equation (2b) needs to be further differentiated by education group ($k = L, MGen, MVET$ and $High$). The associated net migration flows for each of the four education groups k are calculated as follows:

$$\begin{aligned}
 NetMig_{i,L,t} &= \Delta L_{it} & + & \boxed{trans_{i,L \rightarrow MVET,t}} & + & \boxed{trans_{i,L \rightarrow MGEN,t}} \\
 NetMig_{i,MVET,t} &= \Delta MVET_{it} & - & \boxed{trans_{i,L \rightarrow MVET,t}} & + & \boxed{trans_{i,MVET \rightarrow H,t}} \\
 NetMig_{i,MGEN,t} &= \Delta MGEN_{it} & - & \boxed{trans_{i,L \rightarrow MGEN,t}} & + & \boxed{trans_{i,MGEN \rightarrow H,t}} \\
 NetMig_{i,H,t} &= \Delta H_{it} & - & \boxed{trans_{i,MVET \rightarrow H,t}} & - & \boxed{trans_{i,MGEN \rightarrow H,t}}
 \end{aligned}$$

This detailed representation not only shows the diverse transition channels from one education group to another but also highlights that transitions, i.e. the number of persons who transit from one education group to another, are the same for the 'origin' and the 'destination' education groups. However, these need to be treated differently mathematically as they represent outflows for the lower education group but inflows for the higher education group. For instance, to calculate net migration in cohort i among those with Low as their highest educational attainment level (i.e. $NetMig_{i,L,t}$), ΔL_{it} is calculated (as the difference between L_{it+1} and L_{it}) and the two educational transitions from Low to either Med-GEN ($trans_{i,L \rightarrow MGen,t}$) or to Med-VET ($trans_{i,L \rightarrow MVET,t}$) are *added*, as these represent outflows from L that are unrelated to emigration. From the perspective of Med-GEN and Med-VET, these transitions are inflows from L and need to be *subtracted* as they are unrelated to immigration. The same also applies to educational transitions from Med-GEN or Med-VET to High and is therefore treated accordingly.

To calculate the number of those who transit between two education groups between $t + 1$ and t , we assume that each year a certain share X_{ikt} of those with a particular high level of educational attainment (i.e. Low, Med-GEN or Med-VET) in each cohort graduates and transits to the next higher educational level. In general terms, this can be expressed as follows:

$$Transition_{ikt} = X_{ikt} \times Cohort_{ikt} \quad (3)$$

In this context, the factor X_{ikt} is of key importance and is specified based on three considerations: (1) only a share of all persons in a cohort are actually enrolled in further education and can potentially graduate (while the rest is already active in the labour market); (2) not all persons in each cohort have the relevant age (or are in the relevant age range) to graduate as some are too young or already too old to do so; and (3) not everyone graduates as some drop out prematurely. Hence, in view of these considerations, in mathematical terms, the factor X_{ikt} is specified as follows:

$$X_{ikt} = Enrolment Rate_k \times share\ Relevant\ Age_{ikt} \times Completion\ Rate_k \quad (4)$$

where $Enrolment Rate_k$ refers to the gross enrolment ratio.⁴ For the purpose of the analysis we differentiate between the gross enrolment ratio for upper secondary and tertiary education, which are

⁴ Generally, the gross enrolment ratio is defined as the number of students enrolled in a given level of education, regardless of age, expressed as a percentage of the official school-age population corresponding to the same level of education. For the tertiary level, the population used is the 5-year age group starting from the official secondary school graduation age.

both taken directly from official education statistics from the State Statistical Offices in the six Western Balkan countries. Both ratios are further differentiated by the type of secondary education into Med-GEN and Med-VET. Specifically, both enrolment ratios were further multiplied by the shares of Med-GEN and Med-VET in the total number of persons enrolled in either secondary or tertiary education, respectively, to determine enrolment ratios which differ by the type of medium education. Since the gross enrolment ratios of more recent years turn out to be more reliable, in the analysis we eventually use the average of the gross enrolment ratios of the last five years and use the same enrolment ratios for all age cohorts.

share Relevant Age_{ikt} refers to the share of persons with a certain level of educational attainment k in each age cohort i who have the relevant age to graduate at time t . It is calculated from LFS statistics. Typically, children start (compulsory) primary education at the age of 7 and graduate at the age of 15 after 8 years of primary and lower secondary education. If they continue to Med-GEN, they will typically graduate at the age of 19; if they continue to Med-VET, the majority will graduate at the age of 18 or 19 (after a 3- or 4-year VET program). Afterwards, at the tertiary level, it generally takes between 3-4 years to finish a BA, another 1-2 years to finish an MA and another 4-5 years to finish a PhD. A detailed analysis of graduates by age on the basis of yearly LFS data (not shown here) shows that students enrolled in tertiary education typically finish a BA between the age of 22 and 26.

Hence, in view of these general observable graduation patterns, it is clear that in each age cohort some persons are too young to graduate. For instance, those younger than 19 (18) cannot graduate from Med-GEN (Med-VET) programmes and those younger than 22 cannot finish a BA. At the same time, some persons are already too old to graduate from either secondary or tertiary education. For instance, after the age of 19 only very few persons graduate from secondary (Med-GEN or Med-VET) programmes, and people typically end their educational careers in their early 30s. All these age-related graduation patterns are taken into consideration in the calculation of the share of persons in each cohort with the relevant age to graduate. For this purpose, each 5-year cohort is split up into its individual age groups, which are then followed over time as they age. This detailed analysis of individual age groups allows us to identify in each year whether a particular age group (in a cohort) has the relevant age and therefore needs to be included in the analysis. Subsequently, for each year, the ratio between those in the relevant age group (i.e. 19 years for Med-GEN, 18 and 19 years for Med-VET and between 22 and 26 years for BA) and the total cohort size is calculated for each education group as the *share Relevant Age_{ikt}*.⁵

Completion Rate_k is defined as follows: $\# graduates_{kt} / \# newly\ enrolled_{kt-n}$, where $\# graduates_{kt}$ refers to the number of graduates from education level k in year t and $\# newly\ enrolled_{kt-n}$ is the number of new entrants at that level of education, n years before (n is the number of years of full-time study required to complete the qualification). The secondary and tertiary completion rates are calculated from information contained in official education statistics from the State Statistical Offices in the six Western Balkan countries. However, many official education statistics lack information on the number of newly enrolled persons at the beginning of the secondary education cycle (i.e. Med-GEN and Med-VET). In this case, the total number of persons enrolled in either Med-GEN or Med-VET is used instead and divided by the normal time to completion. As it takes between 3-4 years to complete a Med-GEN or a

⁵ For instance, for cohort 15-19 the share of persons with Med-VET as highest level of education in 2010 refers to those aged 18 and 19 in 2010 with Med-VET as highest level of education, as a share of the total number of persons with Med-VET as highest level of education in cohort 15-19.

Med-VET programme, the total number of persons enrolled at $t - 3$ is used and divided by 4 to get the total number of persons enrolled at the beginning of the Med-GEN and Med-VET education cycles.

By contrast, as concerns the tertiary completion rate, official education statistics of some WB6 countries (such as Bosnia and Herzegovina, Montenegro and Serbia) contain the relevant information on the number of students newly enrolled in BA programmes. Hence, the respective tertiary/BA completion rate is calculated as the ratio between the number of BA graduates at time t and the total number of students newly enrolled in BA programmes in $t - 3$ (as it takes about 3-4 years to finish a BA). Official education statistics of the remaining WB6 countries only report the total number of students enrolled in BA programmes. Hence, the tertiary/BA completion rate is calculated as the ratio between the number of BA graduates at time t and the total number of students enrolled in BA programmes in $t - 3$, divided by 4 (i.e. the number of years it usually takes to complete a BA course). This general tertiary completion rate is then further differentiated by the two medium education types. It is multiplied by the share of students enrolled in tertiary education with either Med-GEN or Med-VET as previous secondary school in the total number of students enrolled in $t - 3$ to calculate differentiated tertiary completion rates for Med-GEN and Med-VET. In the analysis, since the data of more recent years turn out to be more reliable, we use again the average of the completion rates for Med-GEN, Med-VET and tertiary/BA of the last five years, which we then use for all age cohorts.

Hence, ultimately, net migration flows for each of the four education groups are calculated as follows:

$$\begin{aligned}
 NetMig_{i,L,t} &= \Delta L_{it} + X_{i,L \rightarrow MVET,t} L_{it} + X_{i,L \rightarrow MGEN,t} L_{it} \\
 NetMig_{i,MVET,t} &= \Delta MVET_{it} - X_{i,L \rightarrow MVET,t} L_{it} + X_{i,MVET \rightarrow H,t} MVET_{it} \\
 NetMig_{i,MGEN,t} &= \Delta MGEN_{it} - X_{i,L \rightarrow MGEN,t} L_{it} + X_{i,MGEN \rightarrow H,t} MGEN_{it} \\
 NetMig_{i,H,t} &= \Delta H_{it} - X_{i,MVET \rightarrow H,t} MVET_{it} - X_{i,MGEN \rightarrow H,t} MGEN_{it}
 \end{aligned}$$

To validate the results, we cross-checked for each country the estimated cross-educational transitions (i.e. the estimated number of graduates by education group) with official education statistics (i.e. the yearly number of graduates from either Med-VET, Med-GEN cycles or BA programmes).

4. Data sources: availability and issues

The analysis relies on two data sources. First, the national (micro-level) labour force surveys of each WB6 country for an envisaged period of analysis from 2010 to 2019. As shown in Table 3 below, annual LFSs are generally available for the envisaged period of analysis for all WB6 countries except Kosovo, where annual labour force surveys are only available for the period 2012 to 2019.

Table 3 / Availability of labour force surveys and breaks

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
AL										
BA										
XK										
MK										
ME										
RS										

Note: Colour code for data breaks - **Census break 2011**, **ISCED break 1997/2011**, **methodological break**.

The table also highlights that some of the labour force surveys are characterised by various breaks in the data. In particular, three different types of breaks prevail: first, the *census break*, which results from a shift of the sampling frame for the LFS from the previous census⁶ to the 2011 census (the break years are highlighted by red bars in Table 3 above). Such census breaks are present for Albania and Montenegro between 2010 and 2011, for Kosovo between 2011 and 2012, and for Serbia between 2012 and 2013.

Second, an *ISCED break*, which stems from a revision of the ISCED 1997 levels of education classification and the subsequent adoption of the ISCED 2011 classification sometime after 2011 (the break years are highlighted by green bars in Table 3 above).⁷ Generally, ISCED provides a comprehensive framework for organising education programmes and qualification by applying uniform and internationally agreed definitions to facilitate comparisons of education systems across countries. ISCED breaks are present for Bosnia and Herzegovina between 2014 and 2015 and for Montenegro and Serbia between 2013 and 2014.

Third, a *methodological break*, which is only present for Serbia between 2013 and 2014 (the break year is highlighted by an orange bar in Table 3 above). In Serbia, the LFS underwent some methodological changes aimed at harmonising it with Eurostat recommendations and achieving international comparability. The process of harmonisation with international standards led to a change in survey periodicity, an increase in sample size, the modernisation of the data collection process and changes in

⁶ The previous census years are 1991 for Kosovo and Bosnia and Herzegovina, 2001 for Albania, 2002 for the Republic of Serbia and North Macedonia, and 2003 for Montenegro.

⁷ See http://uis.unesco.org/sites/default/files/documents/international-standard-classification-of-education-1997-en_0.pdf for details on the ISCED 1997 classification and <http://uis.unesco.org/sites/default/files/documents/international-standard-classification-of-education-isced-2011-en.pdf> for details on the ISCED 2011 classification.

the weighting procedure, which made the estimates of the labour force contingents more accurate but made comparisons with previous LFS data impossible.

Some of these data breaks can be corrected. For instance, the provision by the Statistical Office of the Republic of Serbia (SORS) of pre- and post-revision break LFS data for 2014 generally allows a backward correction of the revision break in Serbia between 2013 and 2014. Furthermore, the ISCED break between 2013 and 2014 in Montenegro was also more substantial and mainly affected how the two groups of Med-VETs and Med-GENs could be identified and classified. In particular, as emphasised above, for Montenegro the group of Med-GENs was extracted from the generic 'four-year upper secondary education' ISCED label and identified by means of the additional information on the particular field of education, whereas any 'general' field was classified as Med-GEN and all remaining fields as Med-VET. However, due to a change in the filter, starting in 2014, the variable 'field of education' contained many missing values, which complicated the classification of Med-VETs and Med-GENs. In particular, field of education was not captured for persons who were older than 34 years and who had graduated more than 15 years previously. Hence, this issue was particularly evident for the two oldest age cohorts (i.e. cohorts 30-34 and 35-39) and resulted in a sharper decline in the number of Med-GENs in both age cohorts.

Hence, in order to still be able to make use of the entire Montenegrin LFS data series (2011-2019) and to avoid any biases resulting from the ISCED break, for the two oldest age cohorts the two groups of Med-VETs and Med-GENs were put together into an aggregate Medium. For the remaining age cohorts we still differentiate between Med-VETs and Med-GENs. Other breaks turned out to be only of a minor nature and could therefore be safely ignored, such as the ISCED break between 2014 and 2015 in Bosnia and Herzegovina. Other breaks, however, are of a fundamental nature, such as any census breaks, which are typically corrected through a backward adjustment process by the national statistical offices, which have the necessary data and techniques at their disposal and the relevant expertise to implement such complex procedures. However, so far none of the LFS data in the countries with census breaks have undergone such a backward correction process. Furthermore, the ISCED break in Serbia between 2013 and 2014, which coincides with the revision break, was also of a substantial nature.

Hence, in view of the various substantial breaks in the LFS data, the analysis only uses LFS data for the years following any substantial data breaks to avoid any break-related biases, namely:

- › 2010-2019: Bosnia and Herzegovina, North Macedonia
- › 2011-2019: Albania, Montenegro
- › 2014-2019: Serbia
- › 2015-2018: Kosovo

For Kosovo the shorter period 2015-2018 was used, as the labour force surveys between 2012 and 2014 are not fully comparable owing to methodological changes and specific implementation conditions and data for 2019 appeared peculiar.

There is also another data issue which does, however, not affect the length of LFS data series that can safely be used in the analysis – as discussed above – but is related to the number of cohorts that could be included in the analysis. In particular, due to anonymisation and aggregation criteria used for

Montenegrin LFS microdata available to researchers, the Statistical Office of Montenegro (MONSTAT) only provides information on age for 5-year age brackets but not for individual age groups. Hence, while the five 5-year cohorts could be identified and followed, the group of newcomers, which is composed of individual age groups (i.e. those aged 15, starting in 2011, who are followed individually over time until 2019) could not be identified and is therefore not included in the analysis of Montenegro. Since the group of newcomers (which consists of young people) is generally rather mobile and characterised by non-negligible net emigration (see the results for the remaining Western Balkan countries below), the exclusion of the group of newcomers is likely to result in an underestimation (overestimation) of the 'true' extent of net emigration (net immigration).

Second, besides national (micro-level) labour force surveys, the analysis also uses national education statistics for each of the six Western Balkan countries. Relevant data and information are taken from official documents and/or statistical databases from the State Statistical Offices in the six countries. The particular education data used in the analysis are explained in section 3.1 above.

The analysis uses the statistical software STATA version 16.1.

5. Results

In the following sections we present the results of the cohort approach for the total economy (section 5.1), as well as a further breakdown by educational attainment levels, differentiating between Low, Medium-VET, Medium-GEN and High (section 5.2). Generally, the period of analysis refers to the period 2010-2019. However, since the cohort approach is based on differences in cohort size between two consecutive years, results are reported from 2011 onwards, with 2011 as the difference between 2010 and 2011. As discussed above, for Kosovo and Serbia only shorter (and more recent) periods were analysed to avoid biases which stem from breaks in the data. Hence, in order to make results comparable across all Western Balkan countries analysed here, the longer period of analysis for Bosnia and Herzegovina and North Macedonia (2011-2019) was also divided into the periods 2011-2014 and 2015-2019, and for Albania and Montenegro (2012-2019) into the periods 2012-2014 and 2015-2019. For the latter four countries this division also allows to shed light on general period-specific effects and particular cohort-specific effects, as cohorts may display different net migration patterns when they are younger (during the first period) as compared to when they are older (during the second period).

Generally, results are presented in cumulative numbers by period instead of yearly numbers, which tend to fluctuate considerably.

For the interpretation of the results it is important to recall that for all WB6 countries – also those with shorter data series – the five 5-year age cohorts analysed here are defined in 2010 and then followed over time until 2019. Each year, each cohort ages by one year. Hence, during the first period (either 2011-2014 or 2012-2014), each cohort ages by 4 years, while during the second period (2015-2019) each cohort ages by another 5 years (the age range of each of the five cohorts in each year between 2010 and 2019 is reported in the top half of Table 1 above). Furthermore, ‘newcomers’ refers to young persons aged 15 who enter the survey population (15-39) each year, starting in 2011, when the youngest age cohort 15-19 has already aged by one year and is aged between 16 and 20. However, due to stronger migration dynamics in later years, for each of the individual newcomer groups only persons who are 18 years and older are analysed. Hence, the group of newcomers comprises individual age groups of young persons aged 18 and older. The first group of young persons aged 18 only emerges in 2014 (i.e. when the first group, which was 15 in 2011, turns 18). Hence, since net migration is approximated by the difference in cohort size between two consecutive years, newcomers only emerge in the second period of analysis, 2015-2019. Each of the individual age groups is followed separately until 2019. The cohort ‘newcomers’ reported below refers to the sum of the estimated net migration of each individual age group. Whenever the total number of net migration is reported in the text below (either for the total or the second period), it always includes the group of newcomers.

5.1. NET MIGRATION AT THE AGGREGATE LEVEL

Albania

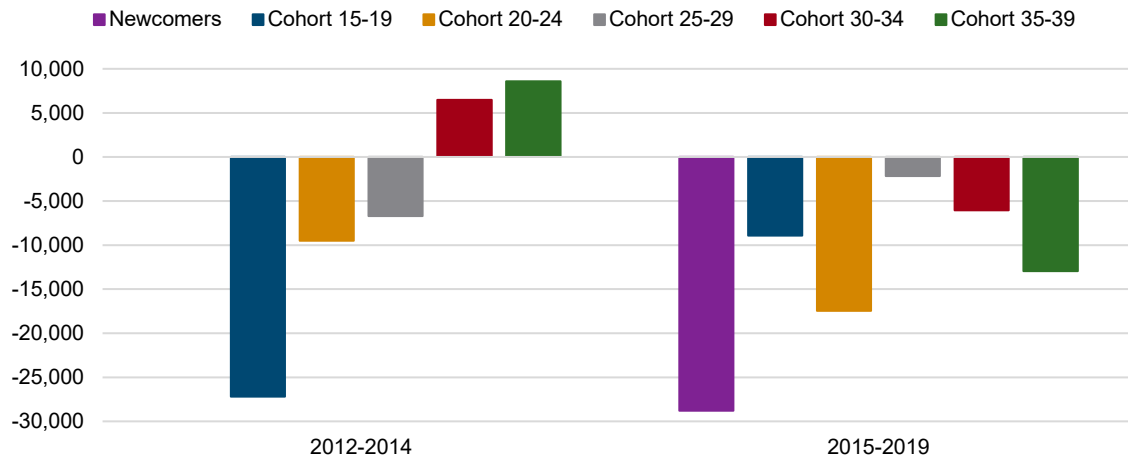
Results of the cohort approach for Albania (see Figure 3) show that, with only a few exceptions, all cohorts experience net emigration. The extent of net emigration, however, differs across age cohorts and tends to be most pronounced among the youngest cohorts, which highlights that the young are the most mobile and the most likely to emigrate. Overall, the period 2012-2019 is characterised by substantial net emigration, estimated at around 105,000 persons.

In general, the period analysed (2012-2019) must be seen in relation to two key events which determine net migration patterns. First, the global financial crisis and the subsequent economic depression in Greece and Italy, which hit the population of Albanian migrants in these two key destination countries particularly hard, especially the large Albanian diaspora in Greece, which saw its unemployment rate soar (Hausmann and Nedelkoska, 2017). This spurred a wave of mass return migration, estimated at over 100,000 persons between 2009 and 2013 (Filipi et al., 2014).⁸ This mass return migration occurred and is reflected in the first period of analysis (2012-2014), not only in terms of lower cumulative net emigration of only -28,000 persons (compared with over -76,000 persons in the second period of analysis, 2015-2019) but also in terms of high net immigration among some cohorts. Particularly – and consistent with findings by Filipi et al. (2014), who show that the average Albanian returnee was in his/her 30s – persons over 30 years of age (i.e. cohorts 30-34 and 35-39) show non-negligible net immigration.

The second key event was the mass emigration in 2015, when the number of Albanians seeking asylum in the EU soared.⁹ In 2010 the number of asylum applications in the EU28 was small at only 1,925. After that the numbers began to climb until they peaked at 67,950 in 2015. Germany, with almost 55,000 applications, bore the brunt of all asylum applications made throughout the EU28. The number of asylum applications went down in subsequent years, mainly because of stricter migration regulations and lower acceptance rates in Germany. In particular, already in 2016, the number of asylum applications by Albanian nationals had more than halved to 32,465 and then stabilised at around 24,000 annually between 2017 and 2019, with France reporting the largest number of Albanian asylum seekers (on average 10,000 per annum). However, asylum applications from Albanian nationals were not too successful, and many had to return. This was also related to Germany's decision to put Albania on the list of safe countries of origin – the law took effect in October 2015 – which also allowed for faster asylum procedures and the speedier return of Albanian asylum seekers. The number of Albanians who returned following an order to leave amounted to 36,635 in 2015 and 44,160 in 2016. In the following years this number decreased continuously and reached pre-2015 levels of 18,465 in 2019. This mass emigration and the subsequent (lower) return migration occurred in the second period of analysis (2015-2019) and is also reflected in an estimated cumulative net emigration volume of 76,000 persons. Moreover, net emigration is observable among all cohorts, but especially among the youngest cohort of newcomers, that is, among persons aged between 18 and 23 in the period 2015-2019.

⁸ Filipi et al. (2014) surveyed 2,000 return migrants in 2013 and based on this sample estimated the number of returnees aged 18 or more at 133,500 between 2009 and 2013.

⁹ Source: Eurostat (migr_asyappctza).

Figure 3 / Cumulative net migration flows by cohort in Albania: 2012-2014 and 2015-2019

Note: These age brackets refer to the age at the beginning of the period in 2010. The cohort approach approximates net migration through the differences in cohort size between two consecutive years. Hence, 2012 – the first year reported here – refers to the difference between 2011 and 2012. Negative numbers refer to net emigration, while positive numbers refer to net immigration.

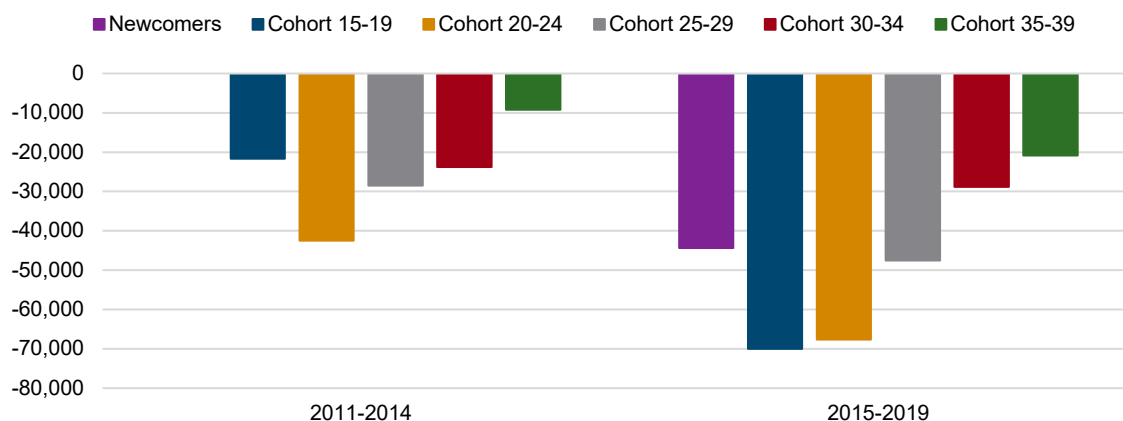
Sources: LFS for Albania; own calculations.

Bosnia and Herzegovina

Results of the cohort approach for Bosnia and Herzegovina (see Figure 4) show that, without exception, all cohorts experience strong net emigration. Generally, however, the extent of net emigration differs across age cohorts and tends to be most pronounced among the youngest cohorts but declines continuously across subsequent (older) age cohorts. This age pattern of migration highlights that the young are the most mobile and the most likely to emigrate.

Furthermore, a comparison of cumulative net migration flows for each of the age cohorts across the two periods (2011-2014 and 2015-2019) shows that net emigration of each cohort is systematically higher in the second period. This noticeable difference across periods is likely to have been caused, first, by the changing entry conditions in EU destination countries during the second period, which further facilitated and fuelled emigration, and second, by the after-effects of the global financial crisis and the debt crisis in the first period, which was further exacerbated by austerity measures and pushed many key destination countries into sometimes severe recessions. Consequently, unemployment rates increased, which not only triggered return migration but also dampened emigration. However, economic recovery in many destination countries during the second period reinvigorated net emigration among all cohorts, but especially among the youngest cohort 15-19, whose net emigration more than tripled between the two periods. Overall, the period 2011-2019 is characterised by substantial net emigration of around 405,000 persons.

Figure 4 / Cumulative net migration flows by cohort in Bosnia and Herzegovina: 2011-2014 and 2015-2019



Note: These age brackets refer to the age at the beginning of the period in 2010. The cohort approach approximates net migration through the differences in cohort size between two consecutive years. Hence, 2011 – the first year reported here – refers to the difference between 2010 and 2011. Negative numbers refer to net emigration, while positive numbers refer to net immigration.

Sources: LFS for Bosnia and Herzegovina; own calculations.

North Macedonia

As concerns estimated cumulative net migration flows by cohort for North Macedonia, Figure 5 shows that net migration follows a specific life cycle, with net emigration among the younger-age cohorts and net immigration among the oldest-age cohorts. However, the specific patterns, as well as the extent of net migration flows, differ across periods. During the first period (2011-2014) net emigration is most pronounced for cohort 25-29 – i.e. persons who were in their mid-20s to mid-30s between 2011 and 2014 – and cohort 30-34 – i.e. persons who were in their (early to late) 30s between 2011 and 2014. By contrast, net immigration was strongest for the youngest cohort 15-19 as well as the oldest cohort 35-39.

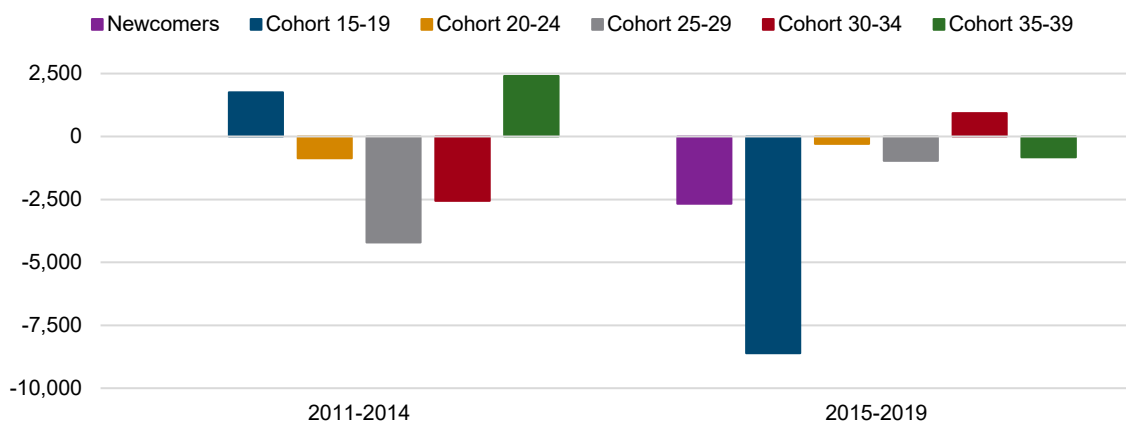
However, during the second period (2015-2019) net emigration was more common and observable for all cohorts except cohort 30-34. Net emigration was particularly strong among the two youngest cohorts, namely the group of newcomers and cohort 15-19. The latter refers to persons who were in their (early to late) 20s between 2015 and 2019. By contrast, there was also some net immigration among cohort 30-34, who were in their mid-30s to mid-40s between 2015 and 2019.

Overall, the period 2011-2019 is characterised by an estimated net emigration of around 16,000 persons. However, it needs to be highlighted here that this estimated number is substantially lower than figures from other data sources. For instance, the United Nations reports net emigration of 131,000 persons for the same period.¹⁰ This discrepancy is related to the fact that there had been no census since 2002 in North Macedonia. And even though the weighting scheme of the underlying LFS guarantees representativeness of the total population aged 15-79, it nonetheless uses the 2002 Population and Housing Census as sampling frame, which makes underlying weights representative of the 2002 population (which was still growing in 2002) and neglects emigration dynamics which have

¹⁰ See <https://www.un.org/en/development/desa/population/migration/data/estimates2/estimates19.asp>.

taken place since. However, since weighting is not expected to have a significant effect on the structure, results from the cohort approach are still informative in terms of the general migration structure.

Figure 5 / Cumulative net migration flows by cohort in North Macedonia: 2011-2014 and 2015-2019



Note: These age brackets refer to the age at the beginning of the period in 2010. The cohort approach approximates net migration through the differences in cohort size between two consecutive years. Hence, 2011 – the first year reported here – refers to the difference between 2010 and 2011. Negative numbers refer to net emigration, while positive numbers refer to net immigration.

Sources: LFS for North Macedonia; own calculations.

Montenegro

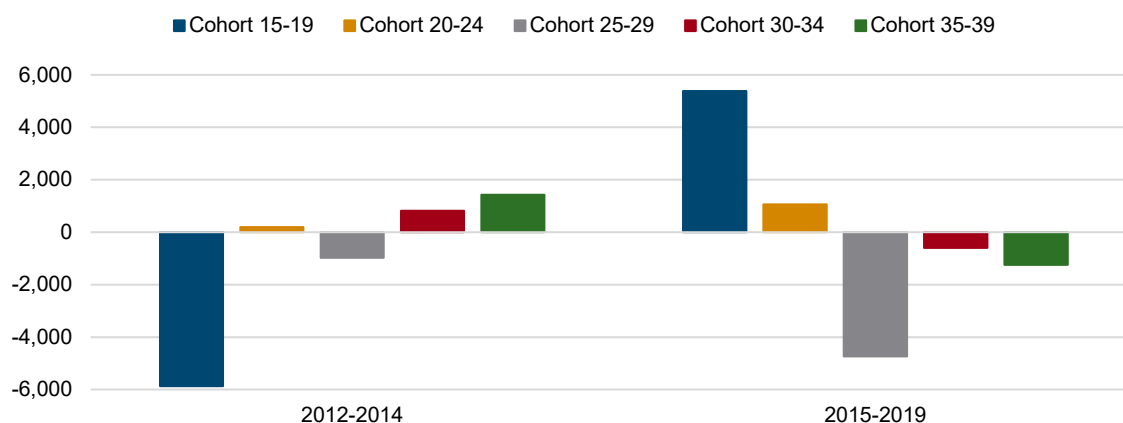
As concerns estimated cumulative net migration flows by cohort for Montenegro, Figure 6 points to period-specific migration patterns. The first period of analysis (2012-2014) is dominated by substantial net emigration of almost 6,000 persons among the youngest age cohort 15-19. There is also net emigration among cohort 25-29, which is, however, of small magnitude. The remaining cohorts experience net immigration, especially the oldest cohort 35-39. However, by and large the extent of net immigration is comparably small.

By contrast, the second period of analysis (2015-2019) is characterised by net immigration among the two youngest cohorts and net emigration among the three oldest cohorts. In this regard, two cohorts stand out. First, cohort 15-19 (i.e. persons who are in their early to late 20s between 2015 and 2019), which, in contrast to the strong net emigration during the first period, experiences substantial net immigration of over 5,000 persons during the second period. Second, cohort 25-29 (i.e. persons, who are in their early to late 30s between 2015 and 2019), which experiences high net emigration of almost 5,000 persons (in addition to net emigration of almost 1,000 persons during the first period).

Overall, the period 2012-2019 is characterised by net emigration, estimated at around 4,500 persons, whereby net emigration is considerably higher during the first period (4,400 persons) than in the second period (130 persons). This substantial reduction in net emigration in the second period could indicate that Montenegro is potentially on the brink of transiting from a traditional emigration country to an

immigration country, as suggested by Krasteva et al. (2018). The development of the tourism sector plays an important role here.

Figure 6 / Cumulative net migration flows by cohort in Montenegro: 2012-2014 and 2015-2019



Note: These age brackets refer to the age at the beginning of the period in 2010. The cohort approach approximates net migration through the differences in cohort size between two consecutive years. Hence, 2012 – the first year reported here – refers to the difference between 2011 and 2012. Negative numbers refer to net emigration, while positive numbers refer to net immigration.

Sources: LFS for Montenegro; own calculations.

Kosovo

Cumulative net migration flows for Kosovo for each of the cohorts in the period 2016-2018 also point to a particular life cycle of migration, with net emigration among the young cohorts and net immigration among the two oldest cohorts (see Figure 7). Specifically, with over -20,000 persons each, net emigration was most pronounced among the youngest age cohorts, particularly among those who were in their early to late 20s (i.e. cohort 15-19) and in their mid-20s to mid-30s (i.e. cohort 20-24) between 2016 and 2018. Conversely, there was slight net immigration among the two oldest age cohorts, especially in the second oldest age cohort of persons who were in their mid-30s to early 40s (i.e. cohort 30-34) between 2016 and 2018. Overall, the period 2016-2018 is characterised by substantial net emigration of around 53,000 persons.

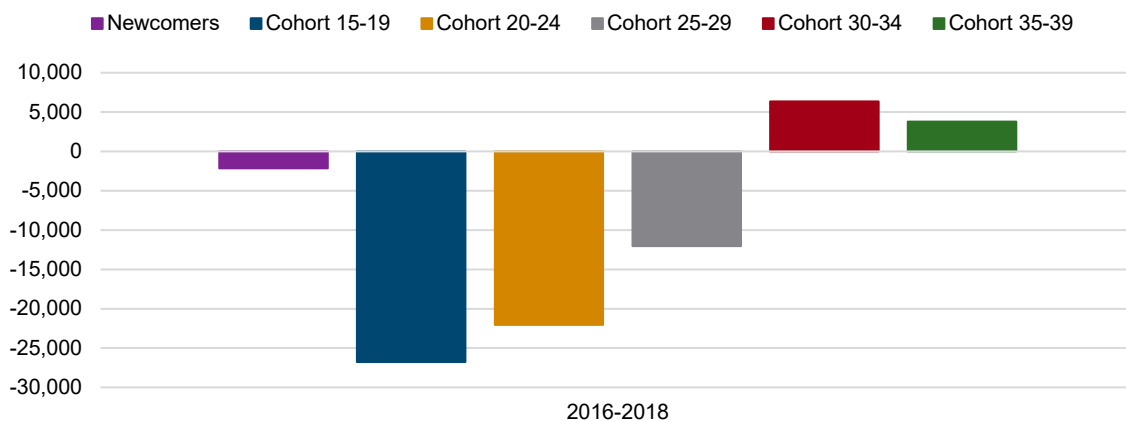
In general, however, the period analysed (2016-2018) must be viewed in the context of the population exodus and mass emigration in 2014/15, when an estimated 5% of Kosovo's population left for the EU (World Bank, 2015), as well as the subsequent policy responses of the main destination countries. Both are expected to be reflected in the results of the analysis – mainly in the high number of returnees. Particularly, over the course of the mass emigration in 2014/15 the number of Kosovans seeking asylum in the EU soared: over the period 2010-2013 the number of asylum applications in the EU28 was between 10,000 and 20,000.¹¹ In 2014, however, this number almost doubled to 37,890 (mainly recorded in Hungary), and in 2015 it almost doubled again to 72,480 (with around 37,100 the majority

¹¹ Source: Eurostat (migr_asyappctza).

was recorded in Germany, followed by Hungary with 24,500). However, in 2016 this number dropped substantially to 11,680, and then further to 7,410 and 4,745 in the two subsequent years.

The substantial drop in the number of asylum seekers from Kosovo in the EU was mainly the result of policies and prohibitions imposed by EU countries, such as the construction of a border fence in Hungary or Germany's decision to declare the Western Balkan countries 'safe countries of origin' and its introduction of the Western Balkan Regulation in 2016. Germany's decision to put Kosovo on the list of safe countries of origin, which took effect in October 2015, also allowed for faster asylum procedures and the speedier return of asylum seekers. The number of Kosovans who returned following an order to leave amounted to 18,860 in 2015 (from between 4,000 and 5,000 in the previous years) and to 13,170 in 2016.¹² Between 75% and 80% returned from Germany. This number halved to 6,255 in 2017 and almost halved again to 3,350 in 2018. At the same time, the number of first permits issued to Kosovans in the EU28 for reasons of employment tripled from almost 900 in 2015 to around 2,700 in 2016. Over the subsequent years this number increased further, from around 7,000 in 2017 to 16,700 in 2019. The high numbers for Germany in this respect are largely related to its Western Balkan Regulation.

Figure 7 / Cumulative net migration flows by cohort in Kosovo: 2016-2018



Note: These age brackets refer to the age at the beginning of the period in 2010. The cohort approach approximates net migration through the differences in cohort size between two consecutive years. Hence, 2016 – the first year reported here – refers to the difference between 2015 and 2016. Negative numbers refer to net emigration, while positive numbers refer to net immigration.

Sources: LFS for Kosovo; own calculations.

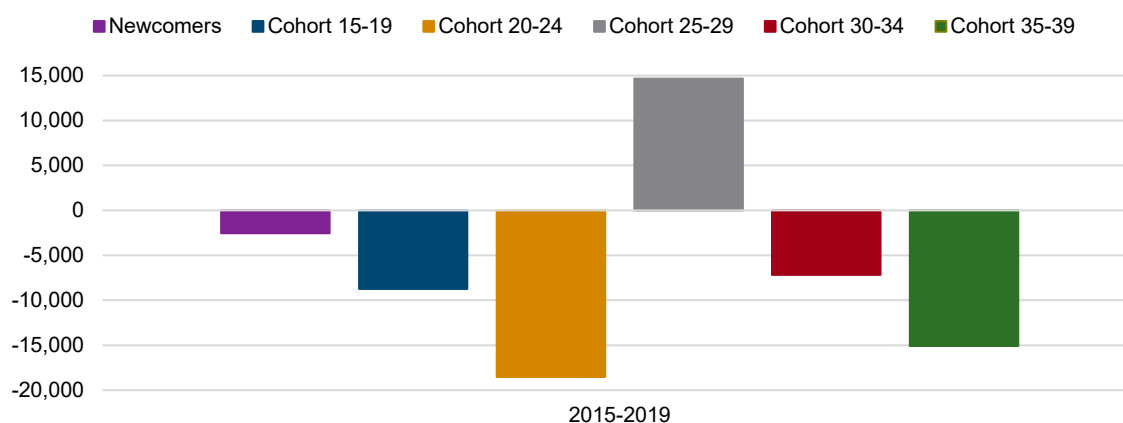
Serbia

Similarly, cumulative net migration flows for Serbia for the period 2015-2019 (see Figure 8) also point to a particular life cycle of migration. There was strong net emigration among the youngest age cohorts, particularly among those who were in their late 20s and early 30s between 2015 and 2019 (i.e. age cohort 20-24). Overall, net emigration of this group amounted to around 18,500 persons. Net emigration was less pronounced among the two youngest age cohorts (i.e. newcomers and cohort 15-19). In contrast, there was substantial net immigration of around 15,000 persons among those in their 30s between 2015 and 2019 (i.e. cohort 25-29). Furthermore, net emigration was also strong among the two

¹² Source: Eurostat (migr_eirtn).

oldest age cohorts, particularly among those in their 40s between 2015 and 2019 (i.e. cohort 35-39). Altogether, the period 2015-2019 is characterised by net emigration, which is estimated to have amounted to almost 40,000 persons.

Figure 8 / Cumulative net migration flows by cohort in Serbia: 2015-2019



Note: These age brackets refer to the age at the beginning of the period in 2010. The cohort approach approximates net migration through the differences in cohort size between two consecutive years. Hence, 2015 – the first year reported here – refers to the difference between 2014 and 2015. Negative numbers refer to net emigration, while positive numbers refer to net immigration.

Sources: LFS for Serbia; own calculations.

To summarise, results from the cohort approach for the total economy highlight that all six Western Balkan countries reviewed here experienced net emigration (of the target population 15-39) during the period of analysis. However, the extent of net emigration differs across countries (not least because of the different time horizons analysed).

Furthermore, net migration patterns are very country- and cohort-specific and follow a particular life cycle. In North Macedonia and Kosovo the age pattern of net migration is characterised by net emigration among the younger cohorts and net immigration among the older cohorts. In Montenegro net migration patterns are period-specific, with net emigration among the youngest cohort and net immigration among the oldest cohorts during the first period and, conversely, with net immigration among the youngest cohorts but net emigration among the oldest cohorts during the second period. In Serbia all cohorts show net emigration with the exception of persons who were in their 30s between 2015 and 2019 (i.e. cohort 25-29) whose net immigration is non-negligible. In Albania, with only a few exceptions, there is net emigration among all cohorts, which is, however, most pronounced among the youngest cohorts. In Bosnia and Herzegovina there is net emigration among all cohorts; there are no exceptions, but net emigration is again strongest among the youngest cohorts.

Generally, there are several potential factors underlying the non-negligible net emigration flows for the countries analysed: pervasive poverty (such as in Kosovo); diaspora networks which provide information and resources that facilitate emigration; a relatively high unemployment rate; more, higher-quality and better-paying employment options in potential destination countries; or particular schemes which facilitate migration, such as Germany's Western Balkan Regulation, which entered into force in 2016 and induced numerous Western Balkan nationals to seek employment in Germany.

Furthermore, there are some additional factors which help to explain some of the particular age patterns of net migration in the countries analysed. For instance, for the youngest age cohorts the relatively high youth unemployment rate may be an important driver behind emigration. Table 4 reports cohort-specific unemployment rates at the beginning of the period of analysis. It highlights that unemployment rates among the two youngest age cohorts (15-19 and 20-24) were substantially higher than among the older age cohorts.

Table 4 / Cohort-specific unemployment rates (in %) at the beginning of the period of analysis

Country	Cohorts				
	15-19	20-24	25-29	30-34	35-39
AL ²⁾	22.7	24.5	18.2	14.5	11.5
BA ¹⁾	68.8	54.5	34.6	26.8	23.0
MK ¹⁾	59.3	52.3	39.1	31.2	28.9
ME ²⁾	41.6	33.5	29.5	22.1	21.3
XK ⁴⁾	56.0	43.7	35.6	29.5	24.9
RS ³⁾	49.3	33.4	22.9	17.3	16.1

Note: ¹⁾ refers to 2010, ²⁾ to 2011, ³⁾ to 2014 and ⁴⁾ to 2015.

Sources: National LFS datasets; own calculations.

Moreover, many young people emigrate to pursue further education abroad, particularly those in their early to mid-20s who have finished their upper secondary education (typically between the ages of 18 and 19) and enrol in higher education programmes (i.e. BA, MA or PhD courses) abroad. Measured by the number of first permits issued in the EU28+ (EU28 plus Iceland, Liechtenstein, Norway and Switzerland) for educational reasons, a non-negligible number of persons left the Western Balkan countries between 2010 and 2019 for the EU28+ to pursue further education (see Table 5). While education generally plays a minor role compared with other reasons for migration, this nonetheless shows that education abroad is an important pull factor for migration of the young to the EU28+. Furthermore, besides the EU28+, the Western Balkan countries also attract larger numbers of students from the region to study at their universities. In this respect, Serbia is an important regional hub which attracts a larger number of foreign students, mainly from neighbouring countries (Statistical Office of the Republic of Serbia, 2019b). Strong cultural and linguistic links foster and facilitate the partly non-negligible intra-regional mobility of students.

Family reunification is another potentially important factor driving young people to emigrate. While family reunification is a key reason for emigration (see Table 5), a further breakdown by age for those EU28+ countries which had data on age distribution (not shown here) reveals country-specific age patterns – both from a sending and a receiving country perspective – but highlights that emigration for family reunification was generally most prevalent among the group of persons aged 19 years or younger, followed by those between 20 and 29 years of age.

In fact, the numbers for education are much higher, as many young people who reunite with their families then also pursue education in their destination countries.

Finally, while young people have a higher propensity for risk-taking behaviour, they are also more likely to have fewer responsibilities, such as looking after family members, and are more willing to embark on new professional career paths – all of which makes them generally more prone to migrate.

Table 5 / Total number of first permits issued in the EU28 and Iceland, Liechtenstein, Norway, Switzerland, by reason (2010-2014 and 2015-2019)

	Family		Education		Remunerated activities		Other		Total	
	2010-14	2015-19	2010-14	2015-19	2010-14	2015-19	2010-14	2015-19	2010-14	2015-19
AL	123,810	157,493	8,405	10,360	51,007	35,066	31,012	83,947	214,234	284,641
BA	37,781	67,704	6,213	10,820	22,607	106,978	9,147	11,575	75,748	196,407
MK	34,777	53,490	3,970	5,355	10,286	30,563	9,832	14,100	58,865	101,768
ME	3,896	5,417	1,309	1,767	969	4,125	2,048	2,683	8,222	13,858
XK	58,617	83,987	3,046	4,352	7,771	38,882	22,170	29,625	91,604	154,936
RS	54,808	78,245	12,225	12,601	30,120	95,999	31,688	37,265	128,841	222,889

Source: Eurostat (migr_resfas).

Let us finally also refer to two examples which show the importance of intra-regional mobility and of immigration from outside the region.

In Montenegro, the substantial net immigration flow in the second period of analysis (2015-2019) of persons in their early to late 20s (i.e. cohort 15-19) is unusual, particularly since the same cohort experiences strong net emigration during the first period of analysis (2012-2014). The substantial net immigration during the second period may be related to Montenegrins returning home after a shorter stint abroad, but also to immigration into Montenegro. According to Krasteva et al. (2018), the number of immigrants in Montenegro is considerable. Between 2010 and 2017 around 20,000 work permits were issued annually to foreigners, mainly to persons in their prime age (and mainly to Serbians and Bosnians). While this number may seem small, in relation to the size of the population of Montenegro (622,000) it is actually very high.¹³ Most of the work permits are of a seasonal nature, for work in construction, tourism and trade (Krilić and Jevšnik, 2018). The high number of work permits issued each year underscores the importance of foreign immigrant workers to explain the substantial net immigration of persons in their late 20s, as shown in the cohort approach.

Similarly, in Serbia, the substantial net immigration flows of persons in their 30s (in contrast to net emigration of all remaining cohorts) is peculiar and deserves attention. Their high net immigration could be the result either of people returning to Serbia after finishing their studies abroad, saving enough capital and accumulating labour market experience abroad, or of immigration into Serbia from other Western Balkan countries and beyond. In fact, immigration into Serbia is quite substantial: in 2015 there were 7,103 temporary first residence permits issued, followed by 6,323 in 2016, 6,714 in 2017, 7,591 in 2018 and 11,119 in 2019 (Commissariat for Refugees and Migration, 2016, 2017, 2018, 2019, 2020). While around 42% of all temporary first residence permits were issued for the purpose of work (mainly to Chinese, Russian, Ukrainian and Turkish citizens), around 40% were issued on the grounds of family reunification (mainly to Russian, Chinese and Libyan citizens). Furthermore, these immigrants were mainly in their 30s, which underscores their importance for explaining the substantial net immigration of

¹³ See population estimations available at <https://www.monstat.org/eng/page.php?id=234&pageid=48>.

persons in their 30s as shown in the cohort approach (MMWD, 2014). The high share of Chinese immigrants is likely to be related to China's Belt and Road initiative, which frequently relies on Chinese workers for infrastructure projects.

5.2. NET MIGRATION BY EDUCATIONAL ATTAINMENT

In the following section we present a further breakdown of cohort-specific net migration patterns by highest educational attainment level.

Albania

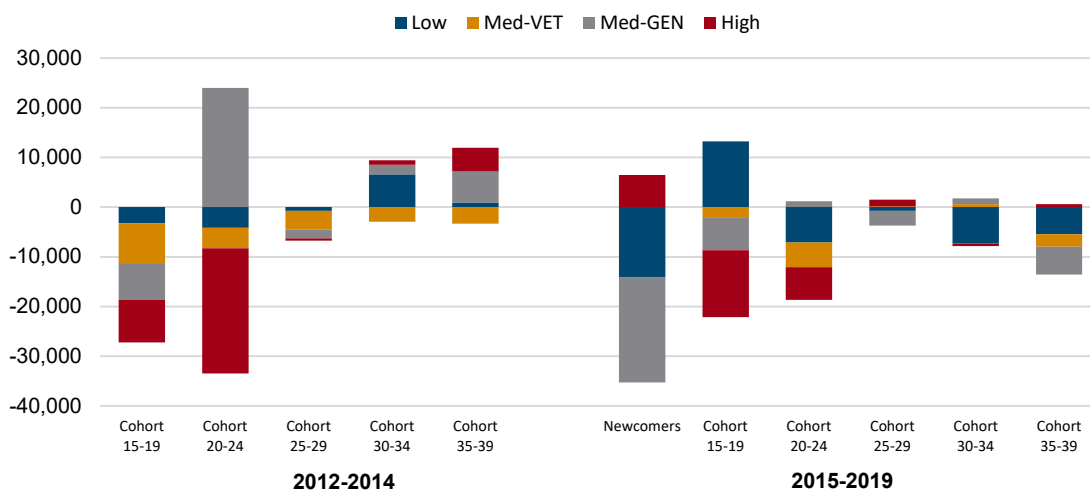
Such a breakdown for the period 2012-2019 in Albania – as depicted in Figure 9 – points to sizeable net emigration of the highly educated (completed any tertiary education), which is evidence of *brain drain*. Irrespective of the period considered, brain drain is particularly strong among the young – more specifically among those who are in their early to late 20s and have therefore more recently finished their tertiary education in Albania (i.e. cohorts 15-19 and 20-24). Furthermore, there is also some brain drain among persons in their 30s to early 40s (cohort 25-29 in the first period and cohort 30-34 in the second period). By contrast, the remaining cohorts show *brain gain*, which is generally small-scale, except for the oldest cohort 35-39 in the first period but particularly for the group of newcomers in the second period. The somewhat larger net immigration of the highly educated among the 35-39 age cohort during the first period is probably the result of the global financial crisis and the economic crisis in Greece and Italy, which spurred return migration among the unemployed. By contrast, the high net immigration among newcomers is likely to be related to their educational career choice: as newcomers are between 18 and 23 years old in 2015-2019 and therefore of an age at which students usually complete their tertiary education, this suggests that those young Albanian university graduates who have pursued and completed their tertiary education abroad return in larger numbers to Albania.

The strong net emigration flow of those with Med-GEN as their highest educational level from the same group is consistent with this idea: young Med-GENs seem to leave in larger numbers after graduating from general upper secondary education, and many return as university graduates when they are in their early/mid-20s. This argument is further substantiated by the number of first permits issued to Albanian nationals in the EU28+ for educational reasons (mainly to study in Italy), which amounts to just over 1,900 first permits annually between 2012 and 2019 (see Table 5). Overall, in cumulative terms, there is net emigration of the highly educated in both periods, which is estimated at around 40,700 persons and accounts for almost 40% of the total cumulative outflow of 105,000 persons between 2012 and 2019. Generally, brain drain is higher in the first period: with almost 29,000 persons in the first period, high-skilled net emigration is more than twice as high as the high-skilled net emigration of 12,000 persons in the second period.

There is also net emigration of those with Med-VET as their highest educational attainment level. This applies to all cohorts except for persons who are in their early to late 30s and early 40s between 2015 and 2019 (i.e. cohorts 25-29 and 30-34, who have aged between 5 and 9 years over the period 2015-2019). Their net immigration is, however, negligible. Generally, net emigration of Med-VETs is higher in the first period (22,400 persons) than the second period (8,800 persons), and with 31,200 persons in total between 2012 and 2019 it accounts for around 30% of the total cumulative outflow of 105,000 persons.

Net migration patterns among those with Med-GEN as their highest educational attainment level are more heterogeneous. There is substantial net emigration of Med-GENs among the two youngest age cohorts (i.e. newcomers and cohort 15-19) in both periods as well as the oldest age cohort 35-39 in the second period (whose cohort members are in their early to late 40s in the respective period). The net outflow of over 21,000 Med-GENs from the group of newcomers is particularly striking and, as highlighted above, is likely to be related to their further education abroad. Conversely, there is also substantial net immigration of Med-GENs, especially among cohort 20-24 but also among those aged over 30 (i.e. cohorts 30-34 and 35-39) in the first period. With almost 24,000 persons, the net inflow of Med-GENs among cohort 20-24 stands out. Overall, while the first period is characterised by net immigration of 23,000 persons, the second period is characterised by net emigration of 34,000 persons. These differences in migration patterns are likely to be related to the different mass migration episodes observable in both periods, particularly the double-dip recession in Greece during the first period, which left many Albanians unemployed and prompted their return to Albania. This is also suggested by Hausmann and Nedelkoska (2017), who show that Albanians who returned between 2011 and 2014 from economically hard-hit Greece and Italy mostly had Medium-GEN (and Low) as their highest level of education.

Figure 9 / Cumulative net migration flows by cohort and educational attainment level in Albania: 2012-2014 and 2015-2019



Note: These age brackets refer to the age at the beginning of the period in 2010. The cohort approach approximates net migration through the differences in cohort size between two consecutive years. Hence, 2012 – the first year reported here – refers to the difference between 2011 and 2012. Educational levels are divided into four categories: Low (primary or lower secondary education), Medium-general (upper secondary general education/gymnasium), Medium-VET (upper secondary vocational education and training), and High (tertiary education), based on ISCED. Negative numbers refer to net emigration, while positive numbers refer to net immigration.

Sources: LFS for Albania; own calculations.

Finally, net migration patterns among the low-educated are also more heterogeneous. On the one hand, during the first period there is net emigration of the low-educated among the younger cohorts, especially among those aged below 30 years (i.e. cohorts 15-19 and 20-24). In the second period all cohorts (except cohort 15-19) show high net emigration of the low-educated, which is likely to be related to the mass emigration of Albanians in 2015 towards the EU. With -14,000 persons, net emigration of the low-educated is particularly high among the group of newcomers. On the other hand, some of the cohorts are also characterised by net immigration of the low-educated, such as the two oldest cohorts during the period 2012-2014 (which is likely to be related to the economic depression in Greece and Italy) and cohort 15-19 during period 2015-2019. Overall, however, the period 2012 to 2019 is characterised by net emigration of around 22,000 low-educated persons, which accounts for 21% of the total cumulative outflow.

Bosnia and Herzegovina

The further breakdown of cohort-specific net migration patterns in Bosnia and Herzegovina between 2011 and 2019 (as depicted in Figure 4) by highest educational attainment level points to substantial net emigration of persons with Medium-VET as their highest educational attainment level among all age cohorts, without exception (Figure 10). However, net emigration of Med-VETs is generally highest among younger cohorts, especially among persons who were in their early 20s to mid-30s between 2011 and 2019 (i.e. cohorts 20-24 and 25-29 during the first period and cohorts 15-19 and 20-24 during the second period).¹⁴ With estimated net emigration of around 236,000 persons, the group of Med-VETs accounts for almost 60% of the total estimated outflow of 405,000 persons between 2011 and 2019. In relative terms, however, the loss of Med-VETs is comparatively small, since Med-VETs make up the lion's share of all medium-educated persons in Bosnia and Herzegovina (according to the Agency for Statistics of Bosnia and Herzegovina- ASBiH, 2019). Med-VETs accounted for 76% of all Medium graduates in 2018).

There is also strong net emigration among those with Med-GEN as their highest educational attainment level. Similar to the group of Med-VETs, net emigration is again highest among the younger cohorts, especially among persons who were in their early 20s to mid-30s between 2011 and 2019 (i.e. cohorts 20-24 and 25-29 during the first period and cohorts 15-19 and 20-24 during the second period). Net emigration of Med-GENs declines continuously across subsequent (older) age cohorts, and in the period 2015-2019 it even turns into net immigration among the oldest cohort 35-39, who are in their early to late 40s between 2015 and 2019. Overall, net emigration of persons with Med-GEN as their highest level of education is estimated at almost 58,000 persons, which accounts for around 14% of the total estimated outflow of 405,000 persons between 2011 and 2019. In absolute terms, total net emigration of Med-GENs is substantially lower than that of Med-VETs (58,000 persons versus 236,000 persons). However, the group of Med-GENs is small and only accounts for around 24% of all medium-educated persons in 2018 (Agency for Statistics of Bosnia and Herzegovina, 2019), so that in relative terms their net emigration was sizeable and substantially depleted the total pool of Med-GENs in Bosnia and Herzegovina.

¹⁴ It is important here to remember that each of the cohorts was defined in 2010 (i.e. the first year of the analysis) and subsequently followed over the years until 2019. In each subsequent year each cohort aged by one year. Hence, cohorts 20-24 and 25-29 aged by 4 years between 2010 and 2014 and were therefore between 20 and 33 years old during the first period. Similarly, cohorts 15-19 and 20-24 aged by between 4 and 9 years between 2015 and 2019 and were therefore between 19 and 33 years old.

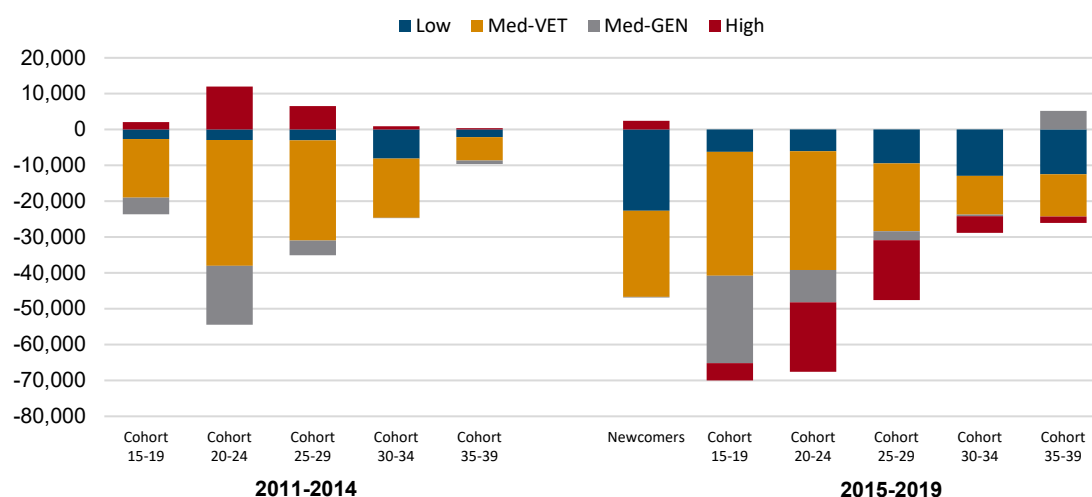
The results are also interesting for the group of highly educated persons. Generally, in cumulative terms, between 2011 and 2019 there was net emigration of persons with any form of tertiary education as their highest level of education, and therefore evidence of brain drain. With almost 23,000 persons (or around 6% of the total outflow of 405,000 persons between 2011 and 2019), it was much lower than estimated net migration of either the Med-VETs or the Med-GENs, but it was sizeable nonetheless. However, depending on the particular period under consideration, there is either evidence of brain gain or brain drain.

In particular, between 2011 and 2014 there is net immigration – brain gain – of the highly educated among all age cohorts. However, net immigration of the highly educated is highest among cohort 20-24 followed by cohort 25-29 – that is, persons who were in their early 20s to mid-30s between 2011 and 2014. Since this is also the age at which tertiary education is typically completed, these patterns suggest that net immigration of the highly educated among cohorts 20-24 and 25-29 is mainly driven by Bosnian students who return to Bosnia and Herzegovina after graduating from tertiary education abroad. The high net emigration of both Med-VETs and Med-GENs among the youngest cohort 15-19 (as highlighted above) is consistent with this idea and suggests that both groups leave in larger numbers after graduating from upper secondary education and return as university graduates when they are in their 20s or early 30s. In fact, between 2010 and 2014 around 1,200 first permits were issued annually to Bosnian nationals in the EU28+ for educational reasons, which points to the substantial number of Bosnians who pursue education abroad (see Table 5 above). Furthermore, many Bosnians also study in one of the other WB6 countries: for instance, in 2014 around 5,700 students were enrolled at Serbian universities (Statistical Office of the Republic of Serbia, 2019a).

However, a comparison with the period 2015-2019 suggests that the brain gain of the first period was only temporary. In particular, in the period 2015-2019 the situation is reversed as there is net emigration – brain drain – among all cohorts, with the exception of the group of newcomers. Moreover, in each cohort the extent of net emigration in the period 2015-2019 was systematically higher than net immigration in the period 2011-2014. This is particularly the case for cohorts 20-24 and 25-29 and suggests that net immigration during the first period was only temporary and probably the result of the global financial crisis, which reduced employment options of university graduates in their host countries significantly. Once the dust had settled and economies started to recover from the crisis, net emigration of the highly educated gained new momentum.

Finally, there is also net emigration of the low-educated among all cohorts, irrespective of the period under review. Generally, however, their net emigration is higher in the second period (2015-2019), which again is probably the result of the post-crisis economic recovery in the main destination countries and among the group of newcomers and older cohorts. This age bias towards older cohorts also has to do with the fact that the low-educated account for a larger share in their skill composition (see top panel of Figure 1). Conversely, the high net emigration among newcomers (who are between 18 and 23 years old) is likely to be related to family reunion, employment and, to a lesser degree, also to further upper secondary education abroad. Overall, net emigration of the low-educated is estimated at 88,600 persons, which accounts for around 22% of the total estimated outflow of 405,000 persons between 2011 and 2019. Hence, after the group of Med-VETs, the group of low-educated accounts for the second-highest net emigration flows.

Figure 10 / Cumulative net migration flows by cohort and educational attainment level in Bosnia and Herzegovina: 2011-2014 and 2015-2019



Note: These age brackets refer to the age at the beginning of the period in 2010. The cohort approach approximates net migration through the differences in cohort size between two consecutive years. Hence, 2011 – the first year reported here – refers to the difference between 2010 and 2011. Educational levels are divided in four categories: Low (primary or lower secondary education), Medium-general (upper secondary general education/gymnasium), Medium-VET (upper secondary vocational education and training), and High (tertiary education), based on ISCED. Negative numbers refer to net emigration, while positive numbers refer to net immigration.

Sources: LFS for Bosnia and Herzegovina; own calculations.

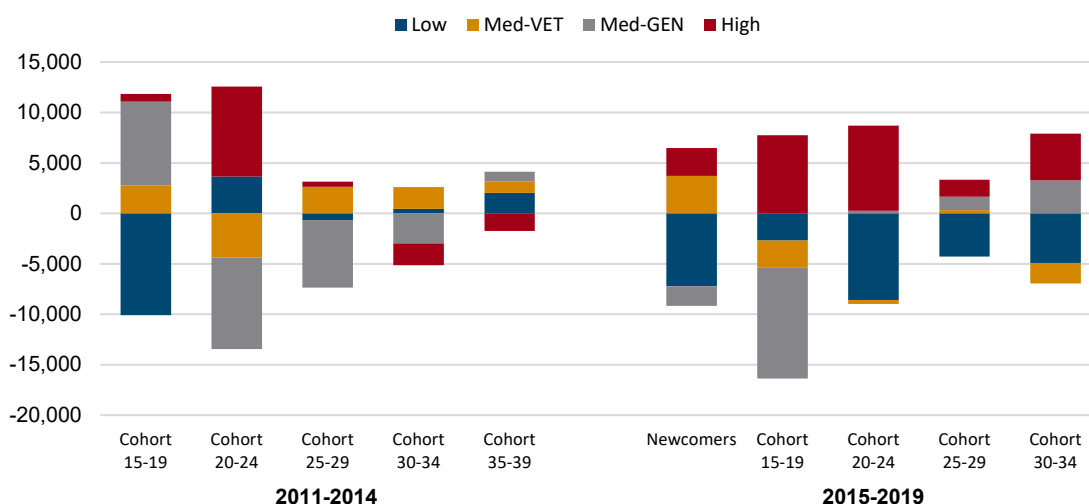
North Macedonia

The further breakdown of cohort-specific net migration for North Macedonia between 2011 and 2019 (as depicted in Figure 5) by highest educational attainment level is shown in Figure 11. In view of the data issues highlighted above, which relate to the 2002 census as sampling frame for the North Macedonian LFS, only general patterns are discussed, but not the exact extent of the estimated net migration flows of each of the four education groups.

Figure 11 points to an important finding of the analysis: it indicates sizeable net immigration of the highly educated (those who have completed any tertiary education), which is evidence of *brain gain*. This applies in particular to the second period (2015-2019), where all age cohorts experience net immigration of the highly educated, without exception. Generally, in both periods net immigration of the highly educated is highest among the youngest cohorts, particularly among those in their early 20s to mid-30s (i.e. cohort 20-24 during the first period as well as cohorts 15-19 and 20-24 during the second period). This is the age at which tertiary education is typically completed. Hence, these patterns suggest that net immigration of the highly educated among cohorts 15-19 and 20-24 is mainly driven by Macedonian students returning after graduating from tertiary education abroad. The high net emigration of the medium-educated, especially of Med-GENs, among cohort 20-24 (in the first period) and cohort 15-19 (in the second period) is consistent with this idea and suggests that larger numbers of medium-educated persons leave after graduating from upper secondary education and return as university graduates when they are in their 20s to early 30s.

By contrast, there is high net emigration among the low-educated (lower secondary education as highest educational attainment level), particularly in the second period (2015-2019), when all age cohorts experience net emigration. Net emigration is strongest among the youngest cohorts, i.e. persons who are aged between 15 and 23 (cohort 15-19 and the group of newcomers). Since pupils typically graduate at the age of 15 (after 8 years of primary education, which starts at the age of 7), this indicates that many low-educated persons leave North Macedonia shortly after finishing their lower secondary education. Family reunions, but also further education abroad, are probably key drivers behind this age-specific pattern. Moreover, in the second period there is also substantial net emigration among cohort 20-24, namely among persons who have aged between 5 and 9 years over the period 2015-2019 and who are then in their mid-20s to mid-30s. In view of their advanced age their net emigration is probably more strongly related to reasons of family reunion and employment abroad.

Figure 11 / Cumulative net migration flows by cohort and educational attainment level in North Macedonia: 2011-2014 and 2015-2019



Note: These age brackets refer to the age at the beginning of the period in 2010. The cohort approach approximates net migration through the differences in cohort size between two consecutive years. Hence, 2011 – the first year reported here – refers to the difference between 2010 and 2011. Educational levels are divided in four categories: Low (primary or lower secondary education), Medium-general (upper secondary general education/gymnasium), Medium-VET (upper secondary vocational education and training), and High (tertiary education), based on ISCED. Negative numbers refer to net emigration, while positive numbers refer to net immigration.

Sources: LFS for North Macedonia; own calculations.

Net migration among the medium-educated with either Med-VET or Med-GEN as their highest level of education is more heterogeneous and period-specific. As concerns the group of Med-VETs, during the first period (2011-2014) there is net immigration among all cohorts except cohort 20-24, which experiences sizeable net emigration. During the second period (2015-2019) more cohorts experience net emigration, but especially persons in their early to mid-20s (i.e. cohort 15-19). In cumulative terms, however, both periods are characterised by net immigration of persons with Med-VET as their highest level of education, especially during the first period.

As concerns persons with Medium-GEN as their highest level of education, during the first period (2011-2014) there is net immigration among the youngest and the oldest age cohorts (i.e. cohorts 15-19 and 35-39). While net immigration of the youngest cohort is substantial, that of the oldest cohort is comparatively low. By contrast, the remaining cohorts experience sizeable net emigration, especially cohort 20-24. During the second period (2015-2019), while there is net emigration among the two youngest cohorts (i.e. newcomers and cohort 15-19), all older cohorts experience net immigration, especially persons in their mid-30s and beyond (i.e. cohorts 30-34 and 35-39). In cumulative terms, there is net emigration of persons with Med-GEN as their highest level of education in both periods, but especially in the second period. By and large, Figure 11 points to sizeable net emigration of both skill groups at a younger age, particularly among those who are in their early to mid-20s (i.e. cohort 20-24 in the first period and cohort 15-19 in the second period). As indicated above, this may be driven by their pursuit of further/tertiary education abroad.

Montenegro

The skill composition of net migration flows by cohorts for Montenegro between 2011 and 2019 is shown in Figure 12. As discussed above, for the two oldest age cohorts (30-34 and 35-39), the two medium education groups (Med-VET and Med-GEN) were put together into an aggregate Medium education category to account for the substantial ISCED break in the Montenegrin LFS data, which mainly affected how both medium education groups could be identified and primarily concerned the two oldest age cohorts. This way, a differentiation by the two medium-skill types of interest is still possible for the majority of cohorts.

Figure 12 shows that among the three youngest cohorts, for whom a differentiation between Med-VET and Med-GEN was possible, there is high net emigration of persons with Medium-GEN as their highest educational attainment level. This applies equally to all three cohorts and to both periods of analysis, but it is generally higher among cohorts 20-24 and 25-29 in the first period and cohort 25-29 in the second period. Overall, in cumulative terms, net emigration of persons with Med-GEN as their highest level of education among the three youngest cohorts is estimated at 7,300, with almost 3,600 persons in the first period and 3,800 persons in the second period.

Net migration patterns of persons with Med-VET as their highest level of education are more heterogeneous and period-specific. During the first period of analysis there is net emigration among two of the youngest cohorts (15-19 and 25-29), while cohort 20-24 shows low net immigration. Furthermore, net emigration is highest among cohort 15-19. By contrast, during the second period of analysis there is net immigration among all of the three youngest cohorts, without exception. The extent of net immigration is, however, highest among cohort 15-19 (which comprises persons who are in their early to late 20s between 2015 and 2019). This is possibly related to the substantial immigration of workers from the region – predominantly from Serbia and Bosnia and Herzegovina – who are mainly employed in the tourism and related services sectors and construction, many of whom (45%) have Med-VET as their highest level of education (ISSP, 2016). Overall, between 2012 and 2019 there is net immigration of persons with Med-VET as their highest level of education among the three youngest cohorts, which is estimated at around 1,800 persons. In cumulative terms, while the first period is characterised by net emigration of around 2,500 persons, the second period is characterised by net immigration, estimated at almost 4,300 persons.

Similarly, net migration patterns of persons with any form of Medium as highest level of education among the two oldest cohorts are also more diverse and period-specific. In particular, during the first period there is net emigration of the medium-educated among cohort 30-34 and net immigration of the medium-educated among cohort 35-39. However, during the second period this pattern is reversed, and there is net immigration of the medium-educated among cohort 30-34 – albeit of low magnitude – and net emigration of the medium-educated among cohort 35-39.

Moreover, net migration patterns of the low-educated are also diverse. During the first period there is high net emigration among the youngest two cohorts but very low net immigration among the remaining older cohorts. During the second period there is net emigration among the majority of cohorts, especially the youngest cohort 15-19 (which comprises persons who are in their early to late 20s between 2015 and 2019). The remaining cohorts experience net immigration, mainly cohort 20-24 and cohort 35-39. Overall, the entire period 2012-2019 is characterised by net emigration of the low-educated, which is estimated at around 4,500 persons. However, the extent of net emigration differs across periods and, with over 4,100 persons, is substantially higher during the first period than during the second period, for which net emigration only amounts to around 400 persons overall.

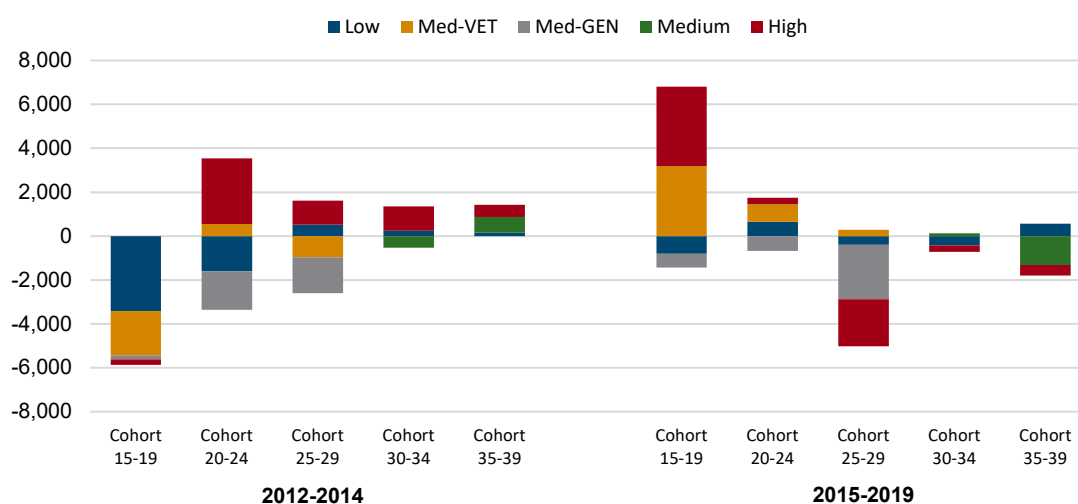
Most importantly, however, there is net immigration of the highly educated, and therefore also evidence of *brain gain*, in the case of Montenegro. This mainly applies to the first period 2012-2014, where all cohorts except the youngest age cohort 15-19 experience net immigration. In the second period 2015-2019 there is net immigration among the two youngest cohorts but net emigration among the remaining older-age cohorts, especially cohort 25-29. Generally, in both periods, net immigration is always highest among persons who are in their early to late 20s, i.e. among cohort 20-24 in the first period and cohort 15-19 (whose cohort members have aged between 5 and 9 years in 2015-2019) in the second period.

This can be explained as follows. First, as this is the age at which tertiary education is typically completed, this suggests that net immigration of the highly educated among cohorts 15-19 and 20-24 is mainly driven by Montenegrin students returning after graduating from tertiary education abroad. The higher net emigration of Med-GENs and Med-VETs (only during the first period) among the youngest cohort 15-19 is consistent with this idea and suggests that larger numbers of both skill groups leave after graduating from upper secondary education and return as university graduates when they are in their 20s to early 30s. UNESCO statistics highlight that the stock of Montenegrin tertiary students studying abroad is non-negligible and amounted to over 5,000 in 2018, with more than 80% studying in Central and Eastern Europe (UNESCO UIS). In fact, many Montenegrin students study in one of the other WB countries. In 2018 around 3,000 students were enrolled at Serbian universities (Statistical Office of the Republic of Serbia, 2019a). By contrast, the EU28+ is less important in this respect: between 2010 and 2019 only around 300 first permits were issued annually to Montenegrin nationals in the EU28+ for educational reasons (see Table 5 above). According to educational statistics from the Statistical Office of the Republic of Serbia (2019b), each year between 500 and 600 Montenegrin students graduate from Serbian universities,¹⁵ which reflects the non-negligible potential of returning highly educated Montenegrin nationals. Second, net immigration of the highly educated is also related to immigrant high-skilled workers, who account for a small but non-negligible share of all work permits (5%) issued to foreign workers with higher education (ISSP, 2016). Overall, net immigration of the highly educated is

¹⁵ See table 2.8 in <https://publikacije.stat.gov.rs/G2019/PdfE/G20196011.pdf> for 2019.

estimated at 6,500 persons between 2012 and 2019, with over 5,500 persons in total in the first period and almost 1,000 persons in total in the second period.

Figure 12 / Cumulative net migration flows by cohort and educational attainment level in Montenegro: 2012-2014 and 2015-2019



Note: These age brackets refer to the age at the beginning of the period in 2010. The cohort approach approximates net migration through the differences in cohort size between two consecutive years. Hence, 2012 – the first year reported here – refers to the difference between 2011 and 2012. Educational levels are divided into four categories: Low (primary or lower secondary education), Medium-general (upper secondary general education/gymnasium), Medium-VET (upper secondary vocational education and training), and High (tertiary education), based on ISCED. Negative numbers refer to net emigration, while positive numbers refer to net immigration. There is an ISCED break in the LFS data between 2013 and 2014, which strongly affects how the two groups of Med-VETs and Med-GENs are classified and mainly concerns the two older cohorts 34-34 and 35-39. To avoid any break-related biases for the latter two cohorts, net migration flows are calculated for an aggregate Medium group, as the sum of net migration flows of Med-VETs and Med-GENs. Sources: LFS for Montenegro; own calculations.

Kosovo

The skill composition of net migration flows by cohorts for Kosovo between 2016 and 2018 points to non-negligible net emigration of persons with Med-GEN as highest level of education across all cohorts, except for cohorts 30-34 and 35-39 (Figure 13). In fact, compared with all other skill groups, Med-GENs are the largest group of emigrants. Their net emigration is strongest among cohorts 15-19 and 20-24, particularly among persons who were in their 20s in the period analysed (i.e. cohort 15-19, which includes those who have aged by between 6 and 8 years between 2016 and 2018 and were therefore in their early to late 20s between 2016 and 2018). By contrast, there is also net immigration among cohorts 30-34 and 35-39, especially among the oldest cohort 35-39 which includes those who were in their 40s between 2016 and 2018. Overall, the cumulative net emigration of Med-GENs between 2016 and 2018 amounts to just over 26,000 persons.

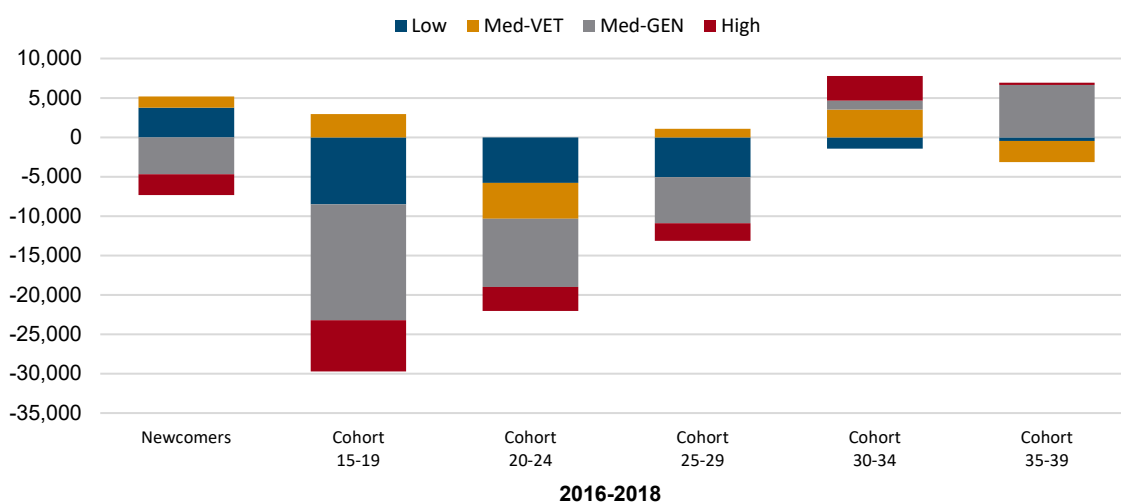
There is also net emigration among the low-educated in all cohorts, except for the group of newcomers, who experienced some non-negligible net immigration of almost 4,000 persons in the period analysed. Similar to the group of Med-GENs, net emigration of the low-educated is also highest among persons who were in their 20s in the period analysed (i.e. cohort 15-19). In view of their young age, their net

emigration is probably mainly driven by family reunification and employment. With only around 17,000 persons, net emigration of the low-educated is considerably lower than that of the group of Med-GENs (26,000 persons).

Most importantly, Figure 13 points to net emigration of the highly educated and therefore provides evidence of *brain drain* in the case of Kosovo. This applies to all cohorts but cohorts 30-34 and 35-39 which show some net immigration (i.e. brain gain) that is highest among cohort 30-34 but negligible among cohort 35-39. Generally, brain drain is highest among cohort 15-19, which includes those who were in their 20s in the period analysed. The age-pattern of net emigration of the highly educated suggests that the majority leaves Kosovo after graduated from tertiary education (i.e. cohort 15-19). Better employment perspectives and higher pay abroad may be their key motives for migration. In total, in the period analysed the cumulative net emigration of the highly educated is calculated at 11,000 persons and therefore lower than that of the group of Med-GENs (26,000 persons) and the low-educated (17,000 persons).

By contrast, there is net immigration of persons with Med-VET as their highest level of education across all cohorts, except for cohorts 20-24 and 35-39 which experience substantial net emigration. Net immigration of Med-VETs is generally highest among cohort 15-19 and 30-34 and lowest among the group of newcomers and cohort 25-29). Net immigration of Med-VETs may be related to the 2014/15 mass exodus to the EU and subsequent return of failed Kosovan asylum seekers over the following years. Overall, the cumulative net immigration of Med-VETs amounts to almost 1,800 persons between 2016 and 2018.

Figure 13 / Cumulative net migration flows by cohort and educational attainment level in Kosovo: 2016-2018



Note: These age brackets refer to the age at the beginning of the period in 2010. The cohort approach approximates net migration through the differences in cohort size between two consecutive years. Hence, 2016 – the first year reported here – refers to the difference between 2015 and 2016. Educational levels are divided into four categories: Low (primary or lower secondary education), Medium-general (upper secondary general education/gymnasium), Medium-VET (upper secondary vocational education and training), and High (tertiary education), based on ISCED. Negative numbers refer to net emigration, while positive numbers refer to net immigration.

Sources: LFS for Kosovo; own calculations.

Serbia

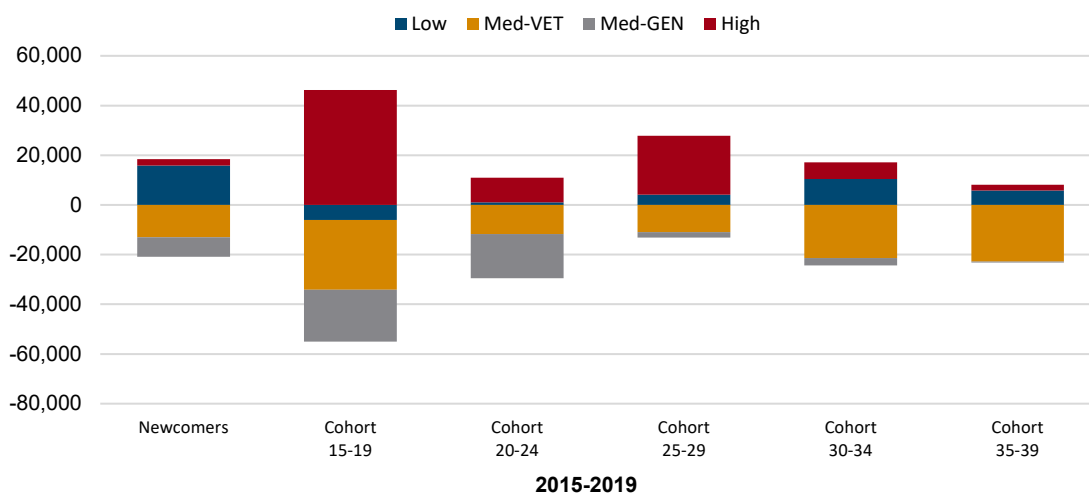
The further breakdown of migration patterns in Serbia between 2015 and 2019 by highest educational attainment level for each of the 5-year cohorts (plus newcomers) shows that there is substantial net emigration of persons with Med-VET as their highest educational attainment level (Figure 14). This applies equally to all age cohorts but is generally strongest among the two youngest age cohorts, which comprise those who were in their 20s between 2015 and 2019 (i.e. newcomers and cohort 15-19) as well as the two oldest cohorts 30-34 and 35-39 (which comprise those who were in their mid-30s to mid/end-40s between 2015 and 2019). Since this is also the largest group among the medium-educated in Serbia (representing around 74% of all medium-educated in 2018), seen in relation to the total number of Med-VET students in the country, the loss of persons with Med-VET as their highest educational attainment level is relatively small.

Furthermore, there is also net emigration of those with Med-GEN as their highest educational attainment level (completed gymnasium/grammar school), irrespective of age cohort. However, net emigration of Med-GENs is generally higher among the youngest three age cohorts, particularly among those who were in their early 20s to mid-30s (cohorts 15-19 and 20-24) between 2015 and 2019. In absolute terms, total net emigration of Med-GENs is substantially lower than net emigration of Med-VETs. However, since the group of Med-GENs is small and only accounts for around 26% of all medium-educated persons in Serbia in 2018, in relative terms their net emigration is sizeable.

Most importantly, and contrary to widespread perception, there is net immigration of the highly educated in Serbia (completed any tertiary education) and therefore evidence of *brain gain*. While there is net immigration among all age cohorts, the youngest cohort 15-19 experiences the strongest net immigration. Their substantial net immigration is likely to be related to the following three reasons. First, those in the youngest age cohort (15-19) are already in their early to late 20s between 2015 and 2019 and therefore at the age at which tertiary education is typically completed. This suggests that young Serbian university graduates, who have pursued their tertiary education abroad and have graduated from BA, MA or PhD programmes abroad, return in larger numbers. The strong net emigration of both Med-VETs and Med-GENs among the youngest cohort 15-19 (as highlighted above) is consistent with this idea: both groups seem to leave in larger numbers after graduating from upper secondary education and return as university graduates when they are still in their 20s. Between 2010 and 2019 more than 2,000 first permits were issued annually to Serbian nationals in the EU28+ for educational reasons, which points to the large number of Serbians in education abroad.

Second, Serbian universities attract a large number of foreign students: between 2011 and 2018 the number of foreign students at Serbian Universities increased from almost 9,000 to around 11,500 (Statistical Office of the Republic of Serbia, 2019a). In 2018 almost 5% of all students were foreign students, mainly from neighbouring countries: 54% (or around 6,200) of all foreign students were from Bosnia and Herzegovina, 26% (or around 3,000) were from Montenegro, while the remaining foreign students were mainly from Croatia, Libya, North Macedonia, Russia, Slovenia and Greece (Statistical Office of the Republic of Serbia, 2019b). Some foreign students may already come with some lower-level tertiary education to pursue further tertiary education in Serbia. Third, Serbia also increasingly attracts high-skilled immigrants to work there.

Figure 14 / Cumulative net migration flows by cohort and educational attainment level in Serbia: 2015-2019



Note: These age brackets refer to the age at the beginning of the period in 2010. The cohort approach approximates net migration through the differences in cohort size between two consecutive years. Hence, 2015 – the first year reported here – refers to the difference between 2014 and 2015. Educational levels are divided in four categories: Low (primary or lower secondary education), Medium general (upper secondary general education/gymnasium), Medium VET (upper secondary vocational education and training), and High (tertiary education), based on ISCED. Negative numbers refer to net emigration, while positive numbers refer to net immigration.

Source: LFS for Serbia, own calculations.

Finally, there is net immigration of the low-educated among all age cohorts with the exception of cohort 15-19 (i.e. persons who were in their 20s between 2015 and 2019). Net immigration of the low-educated may be related to expanding employment opportunities in the low-skill segment of the Serbian labour market. Overall, the estimated total net emigration between 2015 and 2019 (see Figure 8 above) is mainly driven by the medium-educated – especially those with Med-VET as their highest skill level – leaving the country on a large scale.

A summary and overview of the results from the cohort approach by educational level is provided in Figure 15 below. It shows that the skill composition of net migration differs across all Western Balkan countries analysed here. One of the most important findings in this respect is that, except for Albania, Bosnia and Herzegovina and Kosovo, there is net immigration of the highly educated, and therefore evidence of *brain gain*.

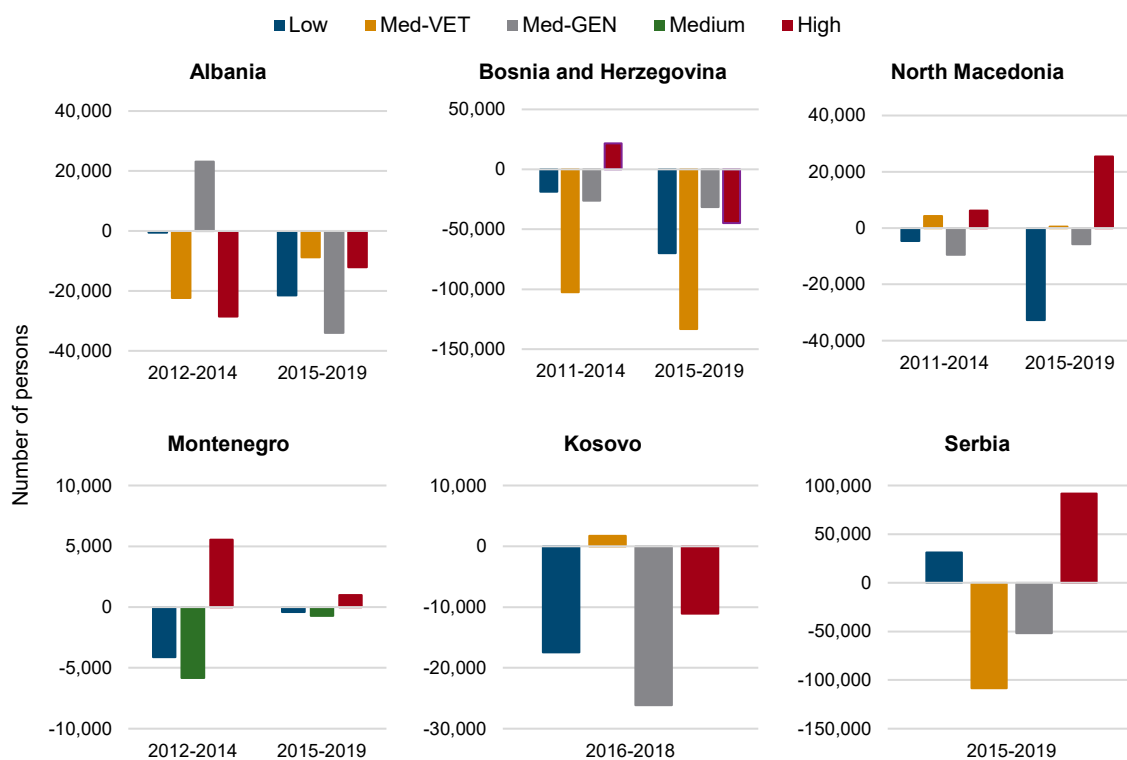
Generally, different skill groups lie behind the estimated total net emigration in each Western Balkan country. For Albania, net emigration is highest among the highly educated, who account for almost 40% of the total cumulative outflow of around 105,000 persons between 2012 and 2019. Furthermore, Med-VETs account for around 30% of the total cumulative outflow, while the low-educated and Med-GENs account for the remaining 21% and 10%, respectively.

In Bosnia and Herzegovina, net emigration is strongest among Med-VETs, who account for 58% of the total estimated outflow of 405,000 persons between 2011 and 2019, followed by the low-educated, who

account for 22% of the total estimated outflow. Med-GENs and the highly educated account for the remaining 14% and 6%, respectively.

In both North Macedonia and Kosovo, net emigration is also mainly among the low- and medium-educated, particularly among the group of Med-GENs. However, in North Macedonia net emigration is mainly among the low-educated, while in Kosovo it is mainly among persons with Med-GEN as their highest level of education. In Kosovo, there is also net emigration among the highly educated which is, however, lower that of the group of Med-GENs and the low-educated. By contrast, both countries experience net immigration of the group of Med-VETs, which is, however, higher in North Macedonia than in Kosovo¹⁶.

Figure 15 / Cumulative net migration flows by educational attainment level: 2011-2019



Note: The cohort approach approximates net migration through the differences in cohort size between two consecutive years. Hence, 2011 – the first year reported here – refers to the difference between 2010 and 2011. Educational levels are divided in four categories: Low (primary or lower secondary education), Medium-general (upper secondary general education/gymnasium), Medium-VET (upper secondary vocational education and training), and High (tertiary education), based on ISCED. Negative numbers refer to net emigration, while positive numbers refer to net immigration. The ISCED break in the Montenegrin LFS data between 2013 and 2014 strongly affects how the two groups of Med-VETs and Med-GENs are classified, particularly for the two oldest cohorts (34-34 and 35-39). To facilitate interpretation, net migration flows for both periods are calculated for the aggregate Medium group as the sum of net migration flows of Med-VETs and Med-GENs. Sources: LFS for Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, Kosovo and Serbia; own calculations.

¹⁶ In Kosovo, net immigration of Med-VETs is likely to be related to the involuntary return of many persons who applied for asylum in the EU over the course of the population exodus and mass emigration in 2014/15 as outlined in section 5.1 above.

In Montenegro, net emigration is also mainly driven by the medium- and low-educated (the medium-educated comprise both Med-GENs and Med-VETs; in view of a non-negligible ISCED break the two groups were put together to avoid any break-related biases).

In Serbia, net emigration is only observable among the medium-educated and, in absolute terms, is twice as high among Med-VETs (however, not necessarily in relation to the total population of Med-VETs) than among Med-GENs. Conversely, in addition to the highly educated, the low-educated also experience net immigration, albeit of substantially smaller magnitude.

6. Summary

This paper develops the 'cohort approach' – which can be applied to any country with regular and representative surveys – and applies it to the Western Balkan countries for the period 2010-2019. Thus it addresses the scarcity of official home-based migration statistics in these countries, particularly in terms of the skill composition of migrants. It provides estimates for the total extent of net migration as well as its skill composition, differentiating between four educational levels: Low (primary or lower secondary education), Medium-general (upper secondary general education), Medium-VET (upper secondary vocational education and training), and High (tertiary education).

Results from the cohort approach show that all Western Balkan countries experienced net emigration during the period of analysis, but with important differences across countries in terms of magnitude and age pattern. Net migration patterns follow particular country-specific life cycles.

In North Macedonia and Kosovo, there is net emigration among the younger cohorts and net immigration among the older cohorts. In Montenegro, net migration patterns are period-specific and tend to reverse across periods: there is net emigration among the youngest cohort and net immigration among the oldest cohorts during the first period, but net immigration among the youngest cohorts – particularly of those in their early to late 20s – and net emigration among the oldest cohorts during the second period. The substantial net immigration flows in the second period of analysis of persons in their early to late 20s is related to substantial immigration, mainly by Serbians and Bosnians, on temporary work permits to work in construction, tourism and trade.

In Serbia, all cohorts experience net emigration except for non-negligible net immigration among persons in their 30s. Net immigration of this cohort is related to immigration into Serbia mainly of Chinese, Russian, Ukrainian and Turkish citizens for reasons of work and family reunification. In Albania, with few exceptions, there is net emigration among all cohorts but especially among the youngest cohorts, while in Bosnia and Herzegovina there is net emigration among all cohorts, and especially among the youngest cohorts.

A further breakdown of net migration by highest level of education reveals important patterns. Generally, the estimated net emigration in the region mainly occurs among the low- and medium-educated, with the exception of Albania and Serbia. In Bosnia and Herzegovina net emigration is most pronounced among persons with Medium-VET skills followed by the low-educated, while in North Macedonia and Kosovo net emigration is mainly among the low-educated and those with Medium-GEN as their highest level of education. In Montenegro, net emigration is also mainly among the medium- and low-educated. Among the youngest three cohorts, for which a differentiation by Medium-VET and Medium-GEN skills was possible, net emigration of the medium-educated is mainly among those with Medium-GEN skills.

By contrast, in Albania net emigration is highest among the highly educated and those with Medium-VET as their highest level of education, who account for almost 40% and 30%, respectively, of the total cumulative outflow between 2012 and 2019. Furthermore, in Serbia net emigration is solely among the

medium-educated, but particularly among those with Medium-VET skills. Overall, net emigration of the low- and medium-educated is strongest among the younger cohorts, which comprise those who are in their early to mid-20s to early 30s. Employment abroad, family reunification and further education are likely to be the key drivers of this age pattern.

Importantly, and contrary to widespread perception, the analysis finds evidence of *brain gain* in terms of partly substantial net immigration of the highly educated in all Western Balkan countries analysed, with the exception of Albania, Bosnia and Herzegovina and Kosovo, where there is evidence of *brain drain*. In Albania, there is substantial net emigration of the highly educated, especially among those who are in their early to late 20s, who have more recently finished their tertiary education in Albania. In Bosnia and Herzegovina, migration patterns of the highly educated are more complex and differ according to the period under consideration, with temporary net immigration during the first period but substantial net emigration during the second period. In Kosovo, net emigration of the highly educated is also substantial but lower than that of the group of Med-GENs and the low-educated.

Generally, net immigration of the highly educated is most pronounced among the youngest cohorts, which comprise those who are in their early to mid-20s to early 30s. Since this is also the age at which tertiary education is typically completed, this suggests that net immigration of the highly educated is mainly driven by students who return to their home countries after graduating from tertiary education abroad. The simultaneous strong net emigration of both Medium-VETs and Medium-GENs among the youngest cohort 15-19 is consistent with this idea. Furthermore, some Western Balkan countries also attract larger numbers of foreign students, who may already come with some lower-level tertiary education to pursue further tertiary education, or high-skilled migrants to work in the region.

Some of the WB6 countries analysed here also experience net immigration from members of other education groups in addition to the highly educated. In particular, in both North Macedonia and Kosovo there is net immigration of the group of Medium-VETs, which is observable mainly among the younger cohorts in Kosovo and mainly among older cohorts in North Macedonia. Serbia also experiences net immigration from among the low-educated, irrespective of age cohort.

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Offenlegung nach § 25 Mediengesetz: Medieninhaber (Verleger): Verein "Wiener Institut für Internationale Wirtschaftsvergleiche", A 1060 Wien, Rahlgasse 3. Vereinszweck: Analyse der wirtschaftlichen Entwicklung der zentral- und osteuropäischen Länder sowie anderer Transformationswirtschaften sowohl mittels empirischer als auch theoretischer Studien und ihre Veröffentlichung; Erbringung von Beratungsleistungen für Regierungs- und Verwaltungsstellen, Firmen und Institutionen.

