Distr.: General
24 October 2017

English

United Nations Economic Commission for Europe

Conference of European Statisticians

Work Session on Migration Statistics
Geneva, Switzerland
30-31 October 2017
Item8 of the provisional agenda
New methods to estimate migration

A set of tables for circular migration

Note by Eurostat*

Abstract

This paper proposes a first set of recommended tables for circular migration. The set is composed by fourteen tables, four on the stocks and ten on the flows, these latter equally divided between immigration and emigration flows. All the tables refer to long-term migrations only and are built upon the concept of usual residence. The paper provides as well clarifications about the implementation of the circular migration official definition and proposes adequate labels for specific sub-categories of migrants. Further, this analysis reveals the conceptual complexity related to the measurement in a period perspective of a phenomenon longitudinal by its own nature, such as circular migration.

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I.   Introduction

1.   Although a relatively old topic (e.g., Zelinsky 1971, Hugo 1982), initially developed in scientific areas related to development and internal (rural-urban) migrations analyses, circular migration has gained policy relevance during the 2000s (e.g., European Commission 2007, European Migration Network 2011, Geddes 2015), where it is proposed as a "triple-win" strategy, meaning that the benefits of migration would go to the receiving country, to the sending country and to the migrants as well (Skeldon 2010, 2012). Ongoing research (e.g., the TEMPER project[1]) tries to provide an assessment of the pros and cons of recent initiatives to promote circular migration.

2.   The extent of the circular migration is not really known. So far, there have been occasional studies on circular migration providing some empirical evidences from a national perspective (e.g., Illés and Kincses 2012, Statistics Sweden 2014, Schneider and Parusel 2015), but not comparable large-scale international statistical investigations, the reason being the lack of a common definition of circular migration and the related difficulty of its statistical quantification.

3.   At its meeting on 11-12 October 2016, the Bureau of the UNECE Conference of European Statisticians (CES) approved the report by the UNECE Task Force on "Defining and Measuring Circular Migration". At the same time, the Bureau "*...asked the biennial UNECE-Eurostat Work Sessions on migration statistics to follow up on the implementation of the guidance, testing of the proposed concepts and implementing the proposals for further work.*" In particular, in the last paragraph of the report it is indicated the need for a set of recommended tables, taking care of distinguishing between stocks and flows in circular migration and identifying relevant variables by which circular migration data should be broken down.

4.   The present document is a first response to the invitation by the CES. It proposes a set of tables for the measurement of circular migration, for both stocks and flows, crossed with other relevant migration topics.

II.   Definition of circular migrant

5.   The definition provided in the UNECE Report (2016:35) makes a distinction between long- and short-term migrations. According to international recommendations, the former requires a duration of stay of at least 12 months, whilst the latter of 90 days (alternatively, 3 months) only.

6.   The (so-called 'general') definition for the circular long-term migration[2] is the following:

> A circular migrant is a person who has crossed the national borders of the reporting country at least 3 times over a 10-year period, each time with duration of stay (abroad or in the country) of at least <u>12 months</u>.

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[1] http://www.temperproject.eu

[2] The order of the adjectives of migration has a meaning: the topic here is the circular 'long-term migration' and not a long-term 'circular migration', which could be defined differently.

7.   Likewise, the definition (so-called 'extended') which incorporates the circular short-term migration is the following:

A circular migrant is a person who has crossed the national borders of the reporting country at least 3 times over a 10-year period, each time with duration of stay (abroad or in the country) of at least <u>90 days</u>.

8.   Circular[3] migrants (stocks) and circular migrations (flows) are always referred respectively to a specific moment in time (e.g., on 31.12.t) and to a period of time (e.g., during the reference calendar year t). The difference between the person experiencing the event (the 'migrant') and the event itself (the 'migration') is here due to the allowance for short-term migration; for long-term migration the two coincide in annual reporting. In multi-annual reporting (e.g., a country reporting the migration flows occurred over a 5-year period), long-term migrations are in the same situation of short-term migrations in annual reporting, thus without one-to-one correspondence between 'migrant' and 'migration'.

III.   The set of tables

A.   Tables for the stocks

9.   Before embarking in the tabulation of circular migration, it is useful to clarify who a migrant is when the statistical observation of a population is referred to a moment in time (so-called 'population stock'). The widespread practice is to estimate the number of immigrants who are part of the population in a given moment by using the country of birth or the citizenship. The use of the former is justified by the fact that if somebody was born abroad, then (s)he must have immigrated in the country at some moment in the past; the use of the latter is a further approximation, because it relies on the assumption that a person holds the citizenship of the country of birth. Additionally, whilst the country of birth of an individual does not change during his/her lifetime[4], the citizenship can change.

10.   Actually, the most correct way to identify migrants is the use of the information about whether the person currently in the population being statistically observed has ever resided[5] abroad. This measure has a limited applicability in the annual statistical production for those countries where the population count is based on rolling computations from the census date – which explains the 'traditional' use of the proxies 'country of birth' and 'citizenship' mentioned above. On the contrary, a measure based on having residing abroad may be a possible option in those countries with advanced population registers, which have a long enough recording and where the use of an identifier allows tracking past movements of single individuals.

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[3] From the linguistic point of view, probably 'circulating' would have been a more precise label for migrants, but the understanding of '*circular* migrant' as designating a person in a process of circular migration is straightforward.

[4] Unless the country disappears as political entity or changes its geographical borders. See also UNECE (2015:139, par. 646).

[5] 'Residence' is here intended as 'usual residence', being in fact a migrant somebody who has changed his/her place of usual residence.

11.   It should also be noted that, according to this approach for migrants' identification, an 'immigrant' is also somebody who actually returned to the country of birth after having resided abroad. This is in line with the international definition of 'migrant', which is only related to the change of place of residence and it does not look at whether the person changing residence (i.e., the migrant) has or not the same country of birth or citizenship of the new country of residence. In the international recommendations, 'migration' is a concept based uniquely on a geographical move with a defined duration of stay. It is however obvious that policy interests may focus on classifications by country of birth or citizenship (or else, like ethnicity, national/foreign background, etc.).

12.   The first target in circular migration measurement is to get information about the size of the group of circular migrants at a selected moment in time. Because the contemporary use of both long- and short-term migration definitions complicates remarkably the tabulation, the focus here is on circular *long-term* migration only, which for sake of simplicity will be indicated as 'circular migration'.

Table 1: Usually resident population in country CC on DD.MM.YYYY by residence abroad and ('general') circularity

Residence abroad	*Circularity (low level of detail)*	*Circularity (high level of detail)*	*Nr of cases*
1. Never resided abroad	n.a.	n.a.	
2. Resided abroad (migrants)	2.1. Non-circular migrants	2.1.1. One immigration only, whenever it occurred	
		2.1.2. One emigration and one immigration only, whenever they occurred	
		2.1.3. Two and more immigrations but not more than one in the last 10 years	
	2.2. Circular migrants	2.2.1. Two immigrations in the last 10 years (+ any number earlier)	
		2.2.2. Three and more immigrations in the last 10 years (+ any number earlier)	
TOTAL POPULATION			

n.a. = not applicable

13.   The Table 1 aims to show the number of persons who can be qualified circular migrants, according to the 'general' definition of circular migration. The first step is to identify the migrants, i.e. those who have ever resided abroad. For those who have never resided abroad, the concept of 'circularity' is considered not applicable. Here comes a first difficulty related to short-term migrations. Strictly speaking, the short-term migrations (i.e., those changes of place for a period between 3 and 12 months) are not based on a change of 'usual residence', which requires an actual stay of at least 12 months. The 'usual residence' is also the concept of reference for the topic 'residence abroad'. Therefore, any short-term change of place of residence (i.e., short-term migration) is not classified in the Table 1 as change of usual residence. The result is that a person who has had many short-term migrations but no (long-term)

migrations will be classified as 'never resided abroad' in the Table 1. Consequently, (general) 'circularity' will not apply here, because this is a concept strictly related to migrations. In practical terms, short-term migrations are here totally disregarded. In each category of the Table 1 it could then be included any number of short-term migrations. It should also be noted that a person who is for a short-term stay in the reporting country should not be included in the total population of the Table 1.

14.   The second step looks at the circularity, by identifying those who have crossed the border at least two times in the last 10 years. It should be noted that any individual migration trajectory there considered must end with immigration, otherwise the person would not be included in the population at the reference date. Further, the basic distinction between circular and non-circular migrants can be achieved with the simple filter of at least two immigrations (by the same person) in the last 10 years. This is enough to get the low level of detail about circularity. It should be noted that, once classified as circular migrant, it does not matter how many past migrations a person had experienced in the period preceding the past 10 years.

15.   In the highest level of detail of circularity, the non-circular migrants are distinguished between those who have entered once in the country and never migrated anymore (category 2.1.1), those who have emigrated and then returned to the country (category 2.1.2), and those who have repeated this cycle more than once but in a time window larger than 10 years (category 2.1.3).

16.   Focussing now on the circular migrants (category 2.2 in the Table 1), both sub-categories refer to a time period of 10 years, in accordance with the definition of circular migration. Therefore, the two or more immigrations must have occurred in the time window between the reference date DD.MM.YYYY and DD.MM.YYYY-10. For instance, a table referring to the population on 31.12.2017 will consider circular those migrants who have experienced two immigrations to the reporting country in the years from 2008 to 2017.

17.   The distinction between two or more cycles of circular migration is basically aiming to make a distinction according to the the intensity of the phenomenon. The first sub-category (2.2.1) identifies those circular migrants who may be considered less mobile, or with higher propensity to settle; the other category (2.2.2) should capture instead those persons with higher mobility. It should be noted that, because the Table 1 only looks at long-term migrations, thus involving an actual stay of at least a year, a set of three immigrations requires at least 5 years to be realised[6], all within the time window of 10 years.

18.   The status of 'circular migrant' is changeable over time. A person considered such at a selected reference date may be not classified 'circular' one year later[7]. This is due to the adoption of a rolling time window in the CES definition of circular migration. The stocks refer to the number of persons that can be considered 'circular migrants' at the reference date, not to the number of persons who have entered the

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[6] Let suppose that the cycle starts by an immigration, which is then followed by emigration, then immigration again and so forth. Each migration requiring at least one year of stay to be considered such, it is 1 year (of actual stay in the reporting country) after immigration + 1 year (abroad) after emigration + 1 year after immigration + 1 year after emigration + 1 year after immigration = 5 years.

[7] For instance, a usually resident person who has immigrated in 2008 and in 2016 will be classified as circular migrant on 31.12.2017 but as non-circular migrant on 31.12.2018.

population within a circulation migration process (which may have occurred long before the reference date).

19.   Unlike for the category of non-circular migrants, emigration is not explicitly taken into account in the high-level disaggregation of circular migrants. In fact, even identifying those cycles of circular migration starting from an emigration would not exclude that the migrant is actually arrived in the reporting country before the 10-year period. This is because it is not possible to distinguish the circular *e*-migrants (i.e., those whose first migration has been an emigration from the reporting country) from the circular *im*-migrants (i.e., those whose first migration has been an immigration to the reporting country) unless the entire migration history of the individual is taken into account, which may well go beyond the 10-year limit. Tring to incorporate this additional information goes beyond the broad scope of the Table 1 and it is therefore more appropriate to refer to them as circular migrants in general, without specifying any 'direction' of the cycle.

20.   To overcome the limitation mentioned just above, the breakdown by country of birth provides a useful shortcut. In the Table 2 the 'country of birth' dimension is added to the Table 1. The new topic is introduced with a basic breakdown, making a first distinction between those born in the reporting country and those born abroad, with the possibility to add further detail as for the specific country of birth (or macro-region, like for instance EU / non-EU). The marginal row of the dimension 'country of birth' is a common breakdown in population statistics, where the distinction is made between native-born and foreign-born.

21.   One aspect to be taken into account in filling the Table 2 is whether the country of birth is the *de facto* country of birth (i.e., the country where the live birth occurred), or it is the country of usual residence of the mother at the time of the delivery. Although the latter is a concept present in the international recommendations[8], it is the former concept that is more commonly applied. If this applies to the Table 2 as well, there are a few combinations that are not possible by definition.

22.   Persons who have never resided abroad are expected to be born in the reporting country and thus the case of being born abroad is flagged as 'not applicable' in the Table 2. Actually, there could be cases where the person was born abroad but whose mother was usual resident in the reporting country at the time of delivery and possibly returning to the country of residence soon after the delivery (at maximum, within a year). In that case, the usual residence of the newborn since the childbirth is that of the family[9], which would lead to his/her classification among those born abroad (according to the *de facto* concept of country of birth) but who have never resided abroad. However, for the sake of simplicity, this specific combination could, at least for the initial production, be considered as excluded.

23.   Another combination considered 'not applicable' in the Table 2 is that of the person who has immigrated only once to the reporting country and was born in the

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[8] See for instance UNECE (2015:140, §649): "*The country of birth may refer either to the country where the physical birth occurred or to the country in which the mother was usually resident at the time of the birth if this is different.*"

[9] See for instance UNECE (2015:80, §401) : "*The following persons should be included:…*", "(g) *children born in the twelve months before the census reference time and whose families are usually resident in the country at the census reference time;…*"

same country. Intuitively, if there has been only one migration in the life of the individual, and specifically an immigration (because otherwise the person would not be included in the population at the reference date), that person must be born abroad. Apart the conceptual nuances above analysed about the concept used for the topic 'country of birth' (usual residence of the mother or *de facto* country of birth), a further complication here is related to the short-term migrations. As clarified above, the short-term changes of place of residence do not affect the 'usual residence'. Therefore, a person who was born in the country, then having left for a short-term stay abroad and finally back for a long-term stay, should not be classified as 'immigration' in the Table 2 because that person has never changed the place of usual residence, which was the reporting country. Consequently, a person with one immigration only cannot be born in the reporting country and this case is flagged as 'not applicable' in the Table 2.

Table 2: Usually resident population in country CC on DD.MM.YYYY by residence abroad, ('general') circularity and country of birth

Residence abroad	*Circularity (low level of detail)*	*Circularity (high level of detail)*	*Country of birth*			*Nr of cases*
			Reporting country	*Other country*	*Specific other country*	
1. Never resided abroad	n.a.	n.a.		n.a.	n.a.	
2. Resided abroad (migrants)	2.1. Non-circular migrants	2.1.1. One immigration only, whenever it occurred	n.a.	*'immigrant proper'*	*'immigrant proper'*	
		2.1.2. One emigration and one immigration only, whenever they occurred	*'returned emigrant'*	n.a.	n.a.	
		2.1.3. Two and more immigrations but not more than one in the last 10 years	*'returned emigrant'*	*'immigrant proper'*	*'immigrant proper'*	
	2.2. Circular migrants	2.2.1. Two immigrations in the last 10 years (+ any number earlier)	*'returned (circular) emigrant'*	*'(circular) immigrant proper'*	*'(circular) immigrant proper'*	
		2.2.2. Three and more immigrations in the last 10 years (+ any number earlier)	*'returned (circular) emigrant'*	*'(circular) immigrant proper'*	*'(circular) immigrant proper'*	
TOTAL POPULATION			Native-born	Foreign-born	Foreign-born	

n.a. = not applicable

24.   Likewise, a person who has emigrated and then immigrated must be born in the reporting country. In fact, the opposite cycle (i.e., immigration and then

emigration) is excluded by definition, because the persons having emigrated do not belong anymore to the population of the reporting country. Accordingly, for persons with one emigration and one immigration (both long-term) the birth abroad cannot apply. These persons are native-born who have returned to their country of birth or, in short, 'returned emigrants'.

25.   The category of persons with at least two immigrations but not more than one in the last 10 years can be either born in the reporting country or not. The same applies for the two sub-categories of circular migrants in the Table 2. Here the breakdown by country of birth allows distinguishing between '*returned emigrants*' and '*immigrants proper*', the former being those native-born persons who have (more than once) emigrated and then immigrated back to the country of birth and the latter group being composed by those born abroad and immigrated (more than once) to the reporting country. In fact, in the Table 2 this distinction is made explicit when the total number of immigrations is just one (see above for the categories 2.1.1 and 2.1.2). The stock of '*returned emigrants*' is thus composed by the number of persons belonging to the categories 2.1.2, 2.1.3, 2.2.1 and 2.2.2 in the Table 2 and born in the reporting country, while the '*immigrants proper*' are those belonging to the categories 2.1.1, 2.1.3, 2.2.1 and 2.2.2 but born abroad.

26.   In the international recommendations, the concept of return migration is based on citizenship[10]. It is therefore appropriate to consider the breakdown by citizenship as well, which is introduced in the Table 3. Unlike in the breakdown by country of birth, the classification by citizenship applies also to the persons who have never resided abroad, or with only one migration in their life. This is due to the fact that persons born in the reporting country may hold a foreign citizenship only, even if the *jus soli* applies in that country; likewise, an immigrant who has never resided before in the reporting country can well be a national citizen born abroad. Therefore, 'not applicable' cases are not present in the Table 3 as for what concerns citizenship.

27.   When a person holds more than one citizenship, the criterion of allocation to the right case follows the international recommendations, where it is indicated to give first consideration to the citizenship of the reporting country (UNECE 2015:141, §659). Thus, an immigrant with foreign citizenship who has acquired the citizenship of the reporting country will be reported as holding the national citizenship. While this may weaken the assessment of foreign contribution to circular migration, it may as well give hints about the extent of circular migration not yet part of the national community (regardless of its origins). Understandably, this criterion also affects the analysis based on mirror statistics, because the same person may be classified as national in both countries being mirrored.

28.   Because of the conceptual proximity of the topics 'country of birth' and 'citizenship', it may happen that figures drawn from their breakdown are equally presented as representative of the migration phenomenon. This may lead to confusion about the real extent of migration, when they are generically referred to as measures of 'migrants stocks'. To prevent such misunderstanding, it is of paramount

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[10] UNSD (1998:94): "*Returning migrants: Persons returning to their country of citizenship after having been international migrants (whether short-term or long-term) in another country and who are intending to stay in their own country for at least a year.*"

importance to clarify to which aggregate the specific measure being reported is referring to. Following this reasoning, in the Table 3 there are categories whose denomination has been changed as compared to the parallel classification in the Table 2. Namely, those persons who hold the national citizenship (either as sole citizenship, or as part of a set of citizenships but being that the first considered) and have experienced at least a migration are now labelled 'returned citizens'[11]; likewise, those migrants not having the national citizenship are labelled 'foreign immigrants'[12]. By doing so, the conceptual difference from the parallel categories of 'returned emigrants' and 'immigrants proper' should be more evident to the user.

Table 3: Usually resident population in country CC on DD.MM.YYYY by residence abroad, ('general') circularity and citizenship

Residence abroad	*Circularity (low level of detail)*	*Circularity (high level of detail)*	Citizenship			
			National	*Non-national**	*Specific other citizenship*	*Nr of cases*
1. Never resided abroad	n.a.	n.a.				
2. Resided abroad (migrants)	2.1. Non-circular migrants	2.1.1. One immigration only, whenever it occurred	*'returned citizen'*	*'foreign immigrant'*	*'foreign immigrant'*	
		2.1.2. One emigration and one immigration only, whenever they occurred	*'returned citizen'*	*'foreign immigrant'*	*'foreign immigrant'*	
		2.1.3. Two and more immigrations but not more than one in the last 10 years	*'returned citizen'*	*'foreign immigrant'*	*'foreign immigrant'*	
	2.2. Circular migrants	2.2.1. Two immigrations in the last 10 years (+ any number earlier)	*'(circular) returned citizen'*	*'foreign (circular) immigrant'*	*'foreign (circular) immigrant'*	
		2.2.2. Three and more immigrations in the last 10 years (+ any number earlier)	*'(circular) returned citizen'*	*'foreign (circular) immigrant'*	*'foreign (circular) immigrant'*	
TOTAL POPULATION			Nationals	Non-nationals	Non-nationals	

n.a.: not applicable. *: including stateless. Non-national = foreign + stateless.

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[11] These persons must have 'returned' because otherwise they would not be included in the population stocks at the reference date. For those persons who actually have only immigrated to the reporting country, this is a 'return' to the country of citizenship, in line with the international recommendations (see footnote 10).

[12] More correctly, the category should have been labelled 'non-national immigrants' because it includes the stateless persons, but the adjective 'foreign' has been preferred here for its simplicity and closeness to the common language.

29.   Among the most policy-relevant statistical information on migration, there are the data on the skills of migrants. Considering the conceptual and statistical complexity of such data, a common proxy is the level of educational attainment. This topic is introduced in the Table 4, where the educational attainment is measured using the international classification by UNESCO (2012), broadly grouped in primary (ISCED levels 0-2), secondary (ISCED levels 3-4) and tertiary education (ISCED levels 5-8).

Table 4: Usually resident population in country CC on DD.MM.YYYY by residence abroad, ('general') circularity and educational attainment

| *Residence abroad* | *Circularity (low level of detail)* | *Circularity (high level of detail)* | *Educational attainment ISCED2011* | | | | |
			Less than primary, primary and lower secondary education (levels 0-2)	*Upper secondary and post-secondary non-tertiary education (levels 3-4)*	*Tertiary education (levels 5-8)*	*Not applicable*	*Nr of cases*
1. Never resided abroad	n.a.	n.a.					
2. Resided abroad (migrants)	2.1. Non-circular migrants	2.1.1. One immigration only, whenever it occurred					
		2.1.2. One emigration and one immigration only, whenever they occurred					
		2.1.3. Two and more immigrations but not more than one in the last 10 years					
	2.2. Circular migrants	2.2.1. Two immigrations in the last 10 years (+ any number earlier)					
		2.2.2. Three and more immigrations in the last 10 years (+ any number earlier)					
TOTAL POPULATION							

n.a.: not applicable.

30.   The classification by educational attainment does not apply to the entire population. Census international recommendations indicate to collect those data for persons aged 10 years or over (UNECE 2015:128, §603) and to pay particular attention to the age groups 10-14 and 15-24. The regulation for the next population censuses round in the European Union prescribes instead that persons under the age

of 15 years shall be classified under 'not applicable'[13]. A specific category for these cases is thus added to the ISCED breakdown. As usually, the classification of the individual is made accordingly to the highest level of education successfully completed.

31.   In any of the tables presented above, the level of measurement of circularity can be reduced to 'low'. The column corresponding to circularity with high level of detail is then simply dropped from the tables on stocks. Its specification in this document helps however to better describe the content of the various categories. Similarly, the statistical reporting could focus on sub-groups of the entire population, such as on the migrants (thus excluding those who have never resided abroad), or directly on the circular migrants. Sub-setting a table is a reasonable solution whenever the reporting of the full table would compromise its production.

32.   The fundamental breakdowns by age and sex should be added to each of the tables proposed above. While this has been here omitted to better focus on the features of circular migration, it is recommended to add in these tables the highest possible level of detail on age, i.e. the single age. The list of tables for stocks on circular migration would then be as follows[14]:

    i.   Usually resident population by sex, age, residence abroad, ('general') circularity and country of birth

    ii.   Usually resident population by sex, age, residence abroad, ('general') circularity and citizenship

    iii.   Usually resident population by sex, age, residence abroad, ('general') circularity and educational attainment

33.   In case the full reporting is not possible, the tables can be shrunk down to the following table, subset of the Table 1 corresponding to the sole category 2.2:

    i.   Number of circular migrants in the usually resident population

which represents the minimum of the information that must be provided. Obviously, any larger sub-setting is highly recommended.

B.   Tables for the flows

34.   The interest on migration is not only on the stocks of migrants, but also on the extent these stocks are changing over time. The primary factor of these changes are the arrivals and departure of migrants[15]. The measure of such flows also informs

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[13] Commission implementing regulation (EU) 2017/543 of 22 March 2017 laying down rules for the application of Regulation (EC) No 763/2008 of the European Parliament and of the Council on population and housing censuses as regards the technical specifications of the topics and of their breakdowns, Official Journal of the European Union, L 78/13 of 23.3.2017.

[14] The Table 1 is dropped from the list because it is already contained in the tables with additional breakdowns and it has here served mainly an explicative purpose. It remains an option between the extreme cases reported in the paragraphs 1.32 and 1.33.

[15] For now. In fact, but depending also on the measure taken when looking at migrants, births becomes a relevant factor of change in the demographic balance referred to migrants when such group (or, more

policy-makers on the potential challenges that sending and receiving societies may face.

35.   In measuring migrants' flows, a basic decision to be taken is the choice of the period of reference, i.e. the interval of time during which the migrations have occurred[16]. In the context of the usual residence concept, a time frame of one year is particularly suitable, because for each individual it allows one event only[17], thus setting an identity between the event (the *migration*) and the person experiencing the event (the *migrant*). In other words, it is then possible to equally refer either to migrants or to migrations, given the one-to-one correspondence on annual basis. The perspective here taken is thus the annual reporting of migration flows occurred within a selected calendar year.

Table 5: Immigrants to country CC in YYYY by ('general') circularity

Circularity *(low level of detail)*	*Circularity* *(high level of detail)*	*Nr of cases*
1. Non-circular immigrants / immigrations	1.1. First immigration to the reporting country	
	1.2. Already immigrated in the past to the reporting country, but not in the last 10 years	
2. Circular immigrants / immigrations	2.1. Already immigrated once to the reporting country in the last 10 years (+ any number earlier)	
	2.2. Already immigrated to the reporting country more than once in the last 10 years (+ any number earlier)	
TOTAL IMMIGRANTS / IMMIGRATIONS		

36.   The operational simplicity of the definition of circularity can be appreciated in the Table 5. In fact, it is sufficient to detect whether the immigrant has experienced another immigration to the same country in the previous 10 years to classify by circularity. A higher level of detail is achieved by distinguishing between first-time immigrants and those who have multiple immigrations, but not qualifying for circularity; and between multiple immigrations within circularity.

37.   The period of time taken into consideration for circular migration is 10 years. It is assumed that this 10-year interval goes backwards from the *beginning* of the (1-

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precisely, migrant women of childbearing age) reaches a sizeable dimension. Deaths are still little relevant, as in several countries immigration is a relatively recent phenomenon and usually the age pattern of migrants is younger than that of the hosting population.

[16] In accordance with current recommendations, preference is here given to the moment of the *occurrence* rather than of the *registration* of the event (the migration).

[17] In fact, a person who is classified as migrant based on the intention of stay, but does not complete a period of 1 year of actual stay – which would allow the same person to experience a new migration in the same year – should not be considered migrant at all in the framework of the usual residence concept.

year) reference period. Therefore, a table referring to 2017 will consider for circularity any previous migration occurred during the years from 2007 to 2016.

38.   It should be noted that the breakdown proposed in the Table 5 is such to identify the circularity also when there has been an emigration prior to the immigration. For the category 1.1 there is no issue, because a person cannot undertake two emigrations from the same country without an immigration in the between, which limits the number of possible migratory events to two (thus two border crossings). For the category 1.2, the migrant reaches the threshold of three border crossings of the definition of circularity, but not in the relevant time period of ten years. Because the emigration must precede the (previous) immigration, any additional event of emigration would anyway be occurred out of this time window. For circularity, it is irrelevant as well whether the emigration preceding the current immigration occurred in the previous 10 years or not[18].

Table 5a: Immigrants to country CC in YYYY by ('general') circularity - modified

Circularity *(low level of detail)*	*Circularity* *(high level of detail)*	*Nr of cases*
1. Non-circular immigrants / immigrations	1.1. First immigration to the reporting country	
	1.2. First immigration to the reporting country, following a previous emigration	
	1.3. Already immigrated in the past to the reporting country, but not in the last 10 years	
2. Circular immigrants / immigrations	2.1. Already immigrated once to the reporting country in the last 10 years (+ any number earlier)	
	2.2. Already immigrated to the reporting country more than once in the last 10 years (+ any number earlier)	
TOTAL IMMIGRANTS / IMMIGRATIONS		

39.   There is an almost direct correspondence between the table on flows and those on stocks. The category 1.1 in the Table 5 is linked to the categories 2.1.1 and 2.1.2 in the Table 1; the category 1.2 to the category 2.1.3; 2.1 to 2.2.1; and 2.2 to 2.2.2. The additional split in the stocks table for the first-time immigrants is due to the relevance of the return migration, which may be easier to capture in stocks than in flows. In fact, the categories 2.1.1 and 2.1.2 could be merged in the Table 1, or the Table 5 could be modified as in the Table 5a. However, in this latter case, the

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[18] For instance, a person has immigrated twice to the reporting country, once in the reference year 2017 and previously in 2005. The emigration from the reporting country may have occurred at any time in between without this affecting the classification by circularity of the individual. Any emigration previous to the first immigration (in 2005) would be irrelevant as well for circularity.

attractive simplicity of the Table 5 would be somehow lessened and the choice has been made to privilege the original format.

40.   The parallel for emigration is presented in the Table 6. Here, *mutatis mutandis*, it applies the same reasoning presented just above for the Table 5. Again, circularity is identified by simply detecting whether another emigration occurred in the last 10 years.

Table 6: Emigrants from country CC in YYYY by ('general') circularity

Circularity (low level of detail)	*Circularity (high level of detail)*	*Nr of cases*
1. Non-circular emigrants / emigrations	1.1. First emigration from the reporting country	
	1.2. Already emigrated in the past from the reporting country, but not in the last 10 years	
2. Circular emigrants / emigrations	2.1. Already emigrated once from the reporting country in the last 10 years (+ any number earlier)	
	2.2. Already emigrated from the reporting country more than once in the last 10 years (+ any number earlier)	
TOTAL EMIGRANTS / EMIGRATIONS		

41.   In both tables on flows, attention should be paid not to confuse the *period of reference* (e.g., the year 2017) with the *period used for the qualification for circularity* (the 10-year period, e.g. 2007-2016). Data on flows are published for the reference period, while the period used for the qualification is just a filter. The risk of confusion is higher when the period of reference is extended over more than one year, and particularly over 10 years[19]. In the case the flows table aims to measure the circular migrations[20] over a multi-annual reference period, the period used for the qualification of circularity must be correspondingly shifted backwards. For instance, in filling a table reporting the circular migrations in the period 2001-2010 it has to be ensured that the migrations occurred in 2001 are qualified for circularity in the period 1991-2000, those occurred in 2002 in 1992-2001, those in 2003 in 1993-2002 and so forth. Such computational complexity is an additional argument in favour of annual reference periods.

42.   The reasoning in the previous paragraph also shows that the number of circular migrants over a selected (multi-annual) period should not be computed as the sum of individuals who experience three migrations (or two migrations in the same direction) over the period of reference. Such approach would in fact overlooks those persons who have migrated only once in the reference period, but who migrated also before the reference period within the 10-year time interval. For instance, considering again the example of a reference period 2001-2010, a person who has

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[19] Larger time windows are unlikely. Approximately, a time interval of 10 years corresponds usually to the period between two population censuses.

[20] It should be noted that here the correspondence between number of migrants and number of migrations is lost.

immigrated only in 2001 would not be considered circulating. However, if that same person had immigrated also in previous years, for instance in 1995, actually (s)he should have been included in the circular migrants. Alternatively, one may consider applying the simple rule of thumb of a single 10-year period attached at the beginning of the reference period. Thus, for the reference period 2001-2010, the period for qualification for circularity would be 1991-2000 for any migration occurred during the reference period. However, such approach would imply that an immigration occurred in 2010 could be considered circular based on a previous immigration occurred in 1991, thus well beyond the 10-year limit of the CES definition. Therefore, the simple sum of individuals with two or more migrations over the reference period causes an under-coverage of circular migration; the use of a single 10-year period attached to the beginning of the period of reference causes an over-coverage of circular migration.

43.   The risk of over-coverage identified in the previous paragraph is actually present also in the approach taken in the annual reporting (see paragraph 37). In principle, the qualification for circularity of a person who has migrated (in or out) on a specific date should be evaluated until the very same day of the calendar 10 years earlier. Considering a reference period of one year and the 'qualification period' starting from the beginning of the reference period, a migration could be considered as circular even if the previous relevant event has occurred out of the strict qualification period; precisely, this can happen when the previous relevant event has occurred in the tenth year preceding the reference period. For instance, an immigration occurred on 30 June 2017 should be evaluated for circularity searching for previous immigrations of the same person back until 1 July 2007. If such previous event has occurred for instance in March 2007, the person strictly speaking should not be qualified for circular migration; on the contrary, the rule proposed in the paragraph 37 would include that person in the circular migrants. It is here considered that the benefits of the simplicity of the identification and application of a qualification period equal for all migrants of the same reference period is higher of those deriving from the strict application of the rolling 10 years at individual level, and the over-coverage hopefully limited. However, when the reference period is stretched over more years, the over-coverage may become too important to be neglected, which leads to consider such approximation reasonable only for annual reporting.

44.   Having circular migration nested in a wider framework of migration statistics has the advantage to allows assessing the relevance of circularity in the ongoing migratory flows. The *share of circularity* can be easily computed for both immigration and emigration from respectively the Table 5 and the Table 6 by the number of circular migrants (category 2) over the total number of migrants. Such a measure can be computed for each flow separately and for the gross number as well (i.e., summing immigration and emigration flows).

45.   The breakdown of the Table 5 and Table 6 by country of birth, citizenship and educational attainments follows the same reasoning already made for the corresponding tables for stocks and it is not repeated here. However, in the case of flows, an additional breakdown is of particular interest, namely for immigration the country of origin (more precisely, the country of previous usual residence) and for emigration the country of destination (more precisely, the country of next usual residence). This is shown in the Table 7 for immigration and in the Table 8 for emigration.

Table 7: Immigrants to country CC in YYYY by ('general') circularity, repetition and country of previous usual residence

Circularity (low level of detail)	Circularity (high level of detail)	Repetition	Country of previous usual residence	Nr of cases
1. Non-circular immigrants / immigrations	1.1. First immigration to the reporting country	n.a.		
	1.2. Already immigrated in the past to the reporting country, but not in the last 10 years	1.2.1. From the same country		
		1.2.2. From different countries		
2. Circular immigrants / immigrations	2.1. Already immigrated once to the reporting country in the last 10 years (+ any number earlier)	2.1.1. From the same country		
		2.1.2. From different countries		
	2.2. Already immigrated to the reporting country more than once in the last 10 years (+ any number earlier)	2.2.1. From the same country		
		2.2.2. From different countries		
TOTAL IMMIGRANTS / IMMIGRATIONS				

Table 8: Emigrants from country CC in YYYY by ('general') circularity, repetition and country of next usual residence

Circularity (low level of detail)	Circularity (high level of detail)	Repetition	Country of next usual residence	Nr of cases
1. Non-circular emigrants / emigrations	1.1. First emigration to the reporting country	n.a.		
	1.2. Already emigrated in the past from the reporting country, but not in the last 10 years	1.2.1. To the same country		
		1.2.2. To different countries		
2. Circular emigrants / emigrations	2.1. Already emigrated once from the reporting country in the last 10 years (+ any number earlier)	2.1.1. To the same country		
		2.1.2. To different countries		
	2.2. Already emigrated from the reporting country more than once in the last 10 years (+ any number earlier)	2.2.1. To the same country		
		2.2.2. To different countries		
TOTAL EMIGRANTS / EMIGRATIONS				

46.   In the Table 7 and in the Table 8 it has been added the dimension 'repetition', which clarifies whether the person migrates always from/to the same country of not. This information may be of particular relevance for bilateral migration policies.

IV.   Conclusive remarks

47.   The tables presented above are a first proposal for an internationally comparable measurement of circular migration. The tables for the stocks have a statistical complexity which may hamper their implementation in countries whose statistical system is not based on advanced and well established population registers. These tables answer to the question about how many circular migrants are in the population at a given moment. The tables for the flows benefit more of the simple rule for circularity adopted in the official statistical definitions and their implementation seems less problematic. They answer to the question on what share of the observed migratory flow is part of a circular process. All the tables fit nicely in the general conceptual framework based on the usual residence.

48.   The tables proposed for the stocks are one of more general nature and three with additional breakdowns:

   i.   Usually resident population in country CC on DD.MM.YYYY by residence abroad and ('general') circularity

   ii.   Usually resident population in country CC on DD.MM.YYYY by residence abroad, ('general') circularity and country of birth

   iii. Usually resident population in country CC on DD.MM.YYYY by residence abroad, ('general') circularity and citizenship

   iv.   Usually resident population in country CC on DD.MM.YYYY by residence abroad, ('general') circularity and educational attainment

49.   The tables proposed for the flows are:

   i.   Immigrants to country CC in YYYY by ('general') circularity

   ii.   Emigrants from country CC in YYYY by ('general') circularity

   iii. Immigrants to country CC in YYYY by ('general') circularity and country of birth

   iv.   Emigrants from country CC in YYYY by ('general') circularity and country of birth

   v.   Immigrants to country CC in YYYY by ('general') circularity and citizenship

   vi.   Emigrants from country CC in YYYY by ('general') circularity and citizenship

   vii. Immigrants to country CC in YYYY by ('general') circularity and educational attainment

   viii. Emigrants from country CC in YYYY by ('general') circularity and educational attainment

   ix.   Immigrants to country CC in YYYY by ('general') circularity, repetition and country of previous usual residence

x. Emigrants from country CC in YYYY by ('general') circularity, repetition and country of next usual residence

50.   All the proposed tables should be further broken down by sex and by age, to the highest possible detail.

51.   Most of the difficulties in the implementation come from the fact that the concept of circular migration is intrinsically longitudinal, and the attempt here is its capture in a 'period' / cross-sectional framework. This is another element for consideration in reflections about the setting of a statistical observation on the migratory trajectories over the life time of the individuals.

52.   There are certainly additional dimensions which are worth exploring in their relation with circular migration, such as the reason for migration and the developmental impact. The set of 14 tables here proposed is just an initial proposal and it also serves the purpose of testing the implementation of the concept of circular migration, possibly calling for further refinements. It has therefore been considered premature to address advanced tabulations with non-core topics.

53.   The proposed set of tables does not cover either the 'extended' definition of circular migration. Whilst definitely relevant for policy purposes, the use of this definition is likely to increase the conceptual and statistical complexity of the tabulation and it should be matter of a specific in-depth analysis.

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