The build of a statistical register based on administrative data for the production of international migration statistics in the Andean Community countries

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Abstract

Administrative data from border control registers – that contains information from all persons arriving and departing from a national territory – is one of the major sources used by countries for the compilation of statistics on international migration. In the Andean Community, the Andean Migration Card (TAM in Spanish) is the standardized document used for the control of people entering and leaving the member countries, both nationals and foreigners. Recently, the use of data from TAM for statistical purposes was approved by member countries by Decision 750. One of the main recommendations for the use of administrative data in the production of official statistics is that administrative registers should be transformed first into statistical registers. However there are not many experiences of this statistical process in Latin America region. This paper proposes a method to build a statistical register using data from TAM and produce international migration statistics from it. It consists of five general steps that can be applied for the use of administrative data in other subject fields. To develop our method we use records from TAM of Perú for the years 2011, 2012 and 2013.

Keywords: register-based statistics; administrative registers; official statistics.

1. Introduction

Currently there is a growing interest in Latin American countries to improve the use of administrative data in the production of official statistics due to their potential benefits on saving cost and reduce the response burden. Administrative data are produced on the basis of some administrative processes, and units and variables are defined according to administrative rules and demands, therefore they may differ from the needs of official statistics [6]. Wallgren & Wallgren [8] established that administrative registers should be transformed into statistical registers to fulfill the requirements of the statistical purposes. Simply produce statistics directly from administrative registers is usually not a good idea. However, there are not many experiences of this methodological approach on the regional context.

In the Andean Community, the Andean Migration Card (TAM in Spanish) is the only and standardized document used for the control of people entering and leaving the member countries, aimed to strengthen the andean integration process and to encourage tourism [2]. Administrative registers from TAM contains records from all movements of persons arriving and departing from a member country, both nationals and foreigners, which can be use as an effective way to collect data continuously and to produce comparable statistics on international migration flows in the Andean Community.

Recently, the use of data from TAM for statistical purposes was approved by member countries by Decision 750. We present a method to build a statistical register using data from TAM and produce migration statistics from it, based on international recommendations in using administrative registers for official statistics. The method comprises five general steps that can be applied for the use of administrative data in other subject fields. Our aim is that this work can serve as an example or guide for other initiatives and to encourage further development of register-based statistics in Latin America.

2. Conceptual Framework

In general, human migration can be understood as the movements of people from one place to another with the intention of change their location of residence. People who migrate out to a new location are called emigrants, while at the arrive point they are called immigrants. Migrations can take place between cities within a country, between countries or even regions, each one with different causes and effects, thus information needed for analysis can differ one to another.

At the international level, United Nations recommendations defined an international migrant as "any person who changes his or her country of usual residence". A person's country of usual residence is that in which the person lives, that is to say, the country in which the person has a place to live where he or she normally spends the daily period of rest [7]. Temporary travel abroad (for purposes of tourism, holiday, business, medical treatment or religious pilgrimage) is not regarded as migration because does not entail a change in the country of usual residence.

This definition do not take into account the nationality of the person to define migration, so from this point of view emigrants can be both nationals and foreigners (those who return to their country of origin) and in same way immigrants can be also foreigners and nationals (usually ending a long period of time abroad). Additionally, globalization and evolution of transport and communications media have made possible that persons could have more than one migration cycle (move out and return to their country of origin) on their life time; these should be counted independently in migrations flows statistics.

Data sources and methods used worldwide to measure international migration are diverse and may vary from one country to another. This makes comparability between the statistics produced by different countries usually difficult. Administrative data from border control registers – that contains information from all persons arriving and departing from a national territory – is one of the major sources used by countries for the compilation of statistics on international migration [7]. Data about movements of persons from these registers must be properly processed to obtain data about migrations.

Statistical registers are created and maintained by processing data from administrative registers, according to statistical concepts and definitions, solving the problems of different units and variables, and quality encountered when using administrative sources [8][4]. The basic idea of statistical registers is that they are regularly updated in order to cover all relevant units and to keep the data describing these units fully up-to-date, then statistics can be produced from them (register-based statistics). Administrative registers can therefore be used as sources for statistical registers [5].

3. The Proposed Method

In contrast with the traditional way of dealing with administrative data in Latin American countries, we do not begin making a diagnosis of the administrative registers to see what statistics can be made from them, instead we start by defining the objectives of the study in which administrative data will be used for. This different approach lead us to focus the statistical work on ensuring that administrative data will fit the requirements of a specific statistical purposes, addressing the problems of different units, variables and definitions that are common when using administrative sources.

To build the statistical register and produce statistics on international migrations using data from TAM we follow the next five steps:

1. Define the objectives of the study
2. Design the statistical register

3. Evaluation of the administrative sources
4. Integration and processing of data
5. Using the register for aggregates and tabulations

Define the objectives of the study

The requirement of statistical information is defined, given a clear idea of the target population, units and variables of statistical interest. In our case the objective of study is provide the basic statistical information about international migrations from a country, that can be resume in the following questions:

Emigration
a. How many nationals emigrate from the country every year?
b. How many national emigrants live out of the country?
c. How many foreigners emigrate (return abroad) every year?

Immigration
d. How many foreigners immigrate to the country every year?
e. How many foreigner immigrants live in the country?
f. How many nationals immigrate (return to country) every year?

Questions a, c, d and f refers to information about the migration flows of a country, while questions b and e refers to information about the stock of migrants, foreigners and nationals, in or out the country. According to this, target population should cover both, nationals and foreigners, who in some moment of time change their country of residence to the country of study or outside. Variables of statistical interest will be the country of residence of the person, nationality and country of bird, and the period of time as international migrant.

Design the statistical register

The main characteristics of the statistical register to build are established here, related to units, variables and update process, according with the statistical requirements of the study. Usually statistical units are modeled, and implemented as physical units in the register for a better management of data in response to the study questions. In our case, although statistical unit still be "migrants" we introduce a unit called "register migration" to handle the cases of persons with more than one migration cycle on their life time and to make possible link the begin of a migration (emigration or immigration) with the return of the person to the country of study or abroad, as end of his period of international migrant. Thus the unit of the statistical register is defined as:

Register migration: "a period of time between one change of country of residence and another, while a person keeps his or her condition of international migrant with respect to the country of study". Figure 1 shows a graphic representation to the unit of the register.
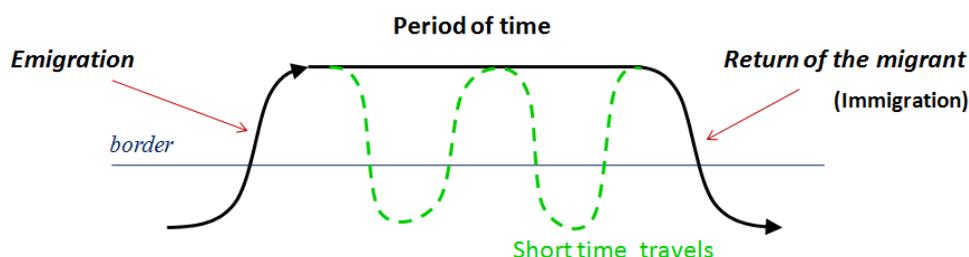

Figure 1: Representation of a "register migration", type "emigration"

To answer the research questions the register will include the following variables for the unit:

1) Migration ID
2) Migration type (emigration / immigration)
3) Begin date
4) End date
5) Country of departure / arrive of the migration
6) Country of birth
7) Nationality
8) Sex
9) Date of birth
10) Person ID

In this way, every time a new migration is detected a new record in the statistical register will be added with information about the person and the moment of the emigration or immigration. If the same person presents forward another migration, returning to the country or leaving abroad, this will update the record created before, ending the period of migration. If the person migrates again a new record must be added. Records with blank end date will represent migrants living in the country (foreigner immigrants) or abroad (national emigrants). Information about short time travels could be used to confirm the continuity of the condition of international migrant of the persons.

Evaluation of the administrative sources

Administrative sources that can provide data to update the statistical register are evaluated and selected in this step. One or more administrative registers can be used to create and maintain the statistical register. Usually one is managed as principal source, used to keep updated the coverage of the units, while the others provide complementary information about the variables. A very good knowledge of the administrative registers is required to decide what and how administrative data will be used as source for a specific statistical register. Statistical requirements of the study are crucial in this step. An administrative registers could be consider good for one statistical purpose but maybe not so good for another, thus usefulness of the administrative registers will depends of the specific use.

In our case we use only one source, administrative register from TAM as principal source of the statistical register, although we evaluate other possible complementary sources. Our evaluation identified that administrative unit of TAM are "movements", that is to say, TAM records contains information about each movement of a person entering or leaving the country which are different to the data about migrations needed. Administrative data from TAM used are described below:

N°	Field	Description
1	Entry / Departure	Code that identifies whether the movement is an entry (E) or departure (D) from the country
2	Date of birth	Day, month and year of birth of the person
3	Place of birth	Code of the country of birth of the person
4	Sex	Sex of the person
5	Nationality	Code of the country of nationality of the person
6	Country of residence	Code of the country of residence of the person
7	Country of Origin/ Destination	Code of the country of destination for the movements of departure, or the country of origin for the movements of entry
8	Type of document of travel	Code of the document type used for the person to the entry or departure from the country
9	Number of document	Number of the document used for the person to the entry or departure from the country

10	Means of transport	Means of transport used for the entry or departure from the country (air, land, maritime, river)
11	Date (Entry / Departure)	Day, month and year of the movement of entry or departure from the country

Table 1: Administrative data from TAM used to build the statistical register

Additionally, we identify other administrative registers that can be included further as complementary source of the statistical register, for instance Identification and Civil Register, Consular Registers and Ministry of Labour Registers.

Integration and processing of data

The criteria and how to process the data from the administrative sources selected to create the units and update the variables of the statistical register are defined and applied here. When more than one administrative source is used or a new source is added, a set of priority rules are usually needed to include in the data process to manage inconsistency between sources. As a result of applying the data process defined the statistical register is filled in with the statistical units and variables required according with the needs of the study.

In our case we defined a process that evaluate every record of movement from TAM sequentially and identifies a change of residence of a person (migration) based in two criteria, the period of 360 days out or in the country of study and the country of residence declared in the TAM filled form, thus depending of the nationality and the place of birth of the person, and his or her previous country of residence recorded, the process creates a new migration in the register or end a migration that already exist. A complete explanation of the process applied can be found in [3].

To develop and test the data process we use administrative data from TAM of Perú for the years 2011, 2012 and 2013. The data was provided monthly for National Superintendence of Migrations in accordance with the provisions of Decision 750.

Using the register for aggregates and tabulations

Once the statistical register is created and filled with the units and variables required for the study, data from this register can be used to produce the statistics needed. As the statistical register will continue being updated every time that new administrative data comes, the part of the register required to answer the study questions should be copied into other place to make aggregations and calculations. Estimations and calibrations methods can be used here to ensure the consistency of the results.

In our case we use data from the statistical register to answer the questions of study for the period 2011. Table 2 shows the preliminary results obtained. Study questions a, c, d and f are related to migrations flows, and can be answered selecting all migrations (emigrations and immigrations) from the statistical register that has started or ended in some day of 2011.

	2011
a. How many nationals emigrate from the country?	268,175
c. How many foreigners emigrate (return abroad)?	3,980
d. How many foreigners immigrate to the country?	148,269
f. How many nationals immigrate (return to the country)?	18,118

Table 2: Preliminary results for migrations statistics of Perú.

Questions b and e are related to the stock of migrants, these can be answered selecting all migrations without date of ending or with a date of ending after 2011. As we process only three year of data these

questions cannot be solve now, but in long term it will be possible for the statistical register to provide this information for future periods. Also the incorporation of other administrative sources like Identification and Civil Register and Consular Registers will help the statistical registers to cover information about stock of migrants in short time.

How useful could be the statistical register to answer other or more specific questions of study will depends of the specifications defined in the design step, for example, we included a variable "Date of birth" that can be use to produces statistics on migrations flows by age.

5. Conclusions

The objective of our work was to develop a method to use administrative data from TAM for the production of statistics on international migrations. The result presented in this paper was to use TAM as a principal source to create and maintain a statistical register.

The build of a statistical register is a key factor when using administrative data for statistical purposes as it let you address the problems of different units, variables and definitions. Also, major concerns of statisticians about data quality can be solve by combining multiple sources in the statistical register. A next step in our work will be to include complementary sources to improve the quality of the register.

There is a big potential for using administrative data in Latin America, for that statistical offices must develop or adapt new statistical theories and methodologies that differ from those used in census and sample surveys. We hope that this work can help to move forward in that direction.

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