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THE CHALLENGES OF MEASURING EMIGRATION AND REMITTANCES

Session 3.2: Challenges to measure remittances and emigration

The challenge in creating a stock of emigrants from Israel*

Submitted by Israel Central Bureau of Statistics

ABSTRACT

1. The difficulties inherent in calculating emigration are well documented the world over. Though it is easy for Israel to calculate the yearly emigrant flows due to a good system of records in the Border Control System, it is very difficult to try and build a multi-year stock of people appearing in the Israeli Population Register whose life is actually centred outside Israel. Emigration flows from Israel are calculated on the basis of UN recommendations stipulating a continuous stay of at least one year outside the borders of the country; the difficulties inherent in constructing a multi-year stock derive from the lack of registration of people, who emigrated from Israel until the 1980's.

2. The Israeli Central Bureau of Statistics has been attempting in recent years to create an emigrant stock based on the results of the Census of Population and Housing conducted in 1995

* This paper has been prepared by Marina Sheps and Ahmad Hleihel at the invitation of the secretariat.

and in 1983 and on the Population Register (updated to the 1995 Census date). The quality of the emigrant stock is dependent on the quantity of records in the census that were not linked to the Population Register and on our ability to identify the census undercount and census overcount in the Population Register.

3. The stock was updated with the emigration movements in the years after the 1995 census and the outcome compared with the results of the 2004 field test for the next census in 2008.

This document contains:

- A description of the Border Control System and the method for calculating the emigration flows.
- A description of the changes in the Border Control System and their impact on the difficulties in creating an emigrant stock.
- A description of the Israeli attempt to create an emigrant stock.
- A description of the advantages and disadvantages in creating the stock.
- A comparison of the stock with the results of the census field test of 2004. Of the emigrants defined in the census field test, 89% were found in the emigrant stock.
- Examination of possible sources of information to improve the stock: the results of the comparison and the emigrant stock building method point to under-attribution and over-attribution in the actual stock itself.

4. The Central Bureau of Statistics has, in recent years, tried to create an emigrant stock by using the results of the last census and the links between the last and previous 1983 census. The need to create such a stock is due, on the one hand, to extensive use of information about emigrants by various CBS departments, and on the other, to the considerable public interest in reliable emigration data.

A DESCRIPTION OF THE BORDER CONTROL SYSTEM AND THE METHOD FOR CALCULATING EMIGRATION FLOWS¹

5. Every person crossing Israel's borders is carefully recorded in the computerized Border Control System. Israelis crossing the border are recorded in the Border Control System and, at the same time, their record is also updated in the Israeli Population Register. Although the Border Control System does not provide information about the purpose of travel by Israelis abroad, recording of the departure and arrival dates and linking of the migration movements to the Population Register constitutes a good frame of reference for calculating emigration flows from Israel. Knowing the departure and arrival dates of Israelis enables calculation of the length of their stay abroad as well as the length of their stay in Israel after a long time stay abroad. These calculations enable computation of the emigration flows as recommended by the UN. A new emigrant is considered one who has gone abroad and stayed abroad for at least one year. A

¹ See: Hleihel Ahmad and Ben-Moshe Eliahu. Measuring Emigration from Israel. MEDSTAT Programme, MED-Migr project on Migration Statistics. Workshop on International Migration Statistics, Rome 30-September- 3-October 2002

returnee is considered someone who has returned from a stay abroad of at least one year and who has resided in Israel for at least three consecutive months after returning from abroad. Despite the good record keeping system, several problems distort emigration flow estimates:

- a) Because we do not know the purpose of travel, we include as emigrants, Israelis staying abroad for long periods for purposes other than emigration, such as students and diplomats.
- b) Israel is considered an immigrant country. Hence, many Israelis hold passports of other countries as well. Departure and arrival of such Israelis on foreign passports distorts the calculation of the length of stay.
- c) Short visits by emigrants to Israel distort calculation of the length of stay abroad.

A DESCRIPTION OF THE CHANGES IN THE BORDER CONTROL SYSTEM AND THEIR IMPACT ON DIFFICULTIES IN SETTING UP AN EMIGRANT STOCK

6. While the Border Control System today is of high standard, this has not always been the case. The less satisfactory state of affairs in the past constitutes the main constraint on the ability of the CBS to setup an emigrant stock. The following is a list of the main changes the system has undergone in its history:²

- Until the end of the 1970's, border crossings by Israelis were recorded by hand on cards. As a result, border control statistics were based on manual enumeration of the border cards.
- At the beginning of the 1980's, a computerized system was built into which the Interior Ministry keyed in the border cards.
- In the 1990's, the border card for Israelis was cancelled and Israeli arrival and departure dates were fed into the border control system at the time of the crossing. The border crossing data were linked simultaneously to the Population Register.

7. Since a major portion of the border crossing cards completed by hand until the end of the 1970's were not keyed into the computerized system which was set up in the 1980s, it is difficult to rely exclusively on the Border Control System in setting up an emigrant stock that includes at a particular reference time all the Israelis living abroad for long periods.

As a result, the CBS has tried in recent years to locate the people who emigrated until the end of the 1970s by linking data from the population censuses with the Population Register.

THE CREATING OF AN EMIGRANT STOCK IN 1995

8. The creating of an emigrant stock was based on four main sources of information: the 1983 census, the Border Crossing System from 1983 onwards, the 1995 census, and the Population Register since 1995. The construction of the emigrant stock was based on the census

² See: Paltiel Ari, "The Characteristics and Evolution of Israel Border Card System". Euro-Mediterranean Workshop on Border Statistics, Rome, 2000

excess principle. That is, anyone not enumerated in the last census is marked as a suspect emigrant.

People in the Population Register who were not enumerated in the 1995 census:

9. 992 thousand people appeared in the Population Register on the date of the 1995 census and did not appear in the full census file. This excess people in the Population Register comprise three main groups³:

1. People who were enumerated but their records were not linked with the 1995 Population Register file by their unique identification number (PIN).
2. People belonging in the population but who were not enumerated at all (census undercount).
3. Emigrants.

Locating the first two groups results in the remainder of the register excess being defined as emigrants⁴.

Locating people enumerated but not found in the 1995 Population Register:

10. 170 thousand Israelis were enumerated in the census that were not linked by PIN with the Population Register. By statistical linkage based on attributes such as religion, gender, date of birth, address, year of immigration and family status, these records were linked with equivalent records in the Population Register excess. Although there is a statistical error in the linking process, they were considered Israelis who had been enumerated in the census. After this linking, an excess of 822 thousand records remained in the register.

Locating the census undercount:

11. Using the Post Enumeration Survey (PES) conducted immediately after the census and analysing demographic movements before the 1995 census, an undercount of 0.69% was found at the national level. The demographic analysis also pointed to an undercount. The undercount groups of population were also found in the Population Register excess. Records were added from the Population Register excess to the census on the basis of two main criteria. The first was transferring records of all members of the same family from the Population Register excess file to the census file. The second was to check the records of demographic events in Israel (births, change of address, etc.) after the 1995 census. In this process, 84 thousand people (so called – “demographic correction”) were found these were transferred from the Population Register excess file to the full census file.

³ In the 1995 census, two groups were found that had been enumerated but who were not included in the above analysis of emigrants. The group not contained in the population register (foreigners) included 38 thousand people, plus the 18 thousand Arab residents of East Jerusalem enumerated in the census excess.

⁴ See Hleihel Ahmad S., 2006. Differences in Population Estimates between an Administrative System and Census: The Case of Israel. *Mathematical Population Studies*, 13: 63-82.

Defining the emigrant stock:

12. After the above screening, 738 thousand people remained in the Population Register excess. This list was defined as the “emigrant stock” on the date of the 1995 census. This list contains three main groups:

1. People enumerated in the 1983 census but not enumerated in the 1995 census:
Of the people enumerated in the census of 1983 and who were identified in the Population Register, a list of 125 thousand who were not enumerated in the full census of 1995 and were also identified as emigrants in the border control files between the two censuses.
2. People in the Population Register who were not enumerated in the 1995 census and who ceased being residents:

241 thousand people were found in the Population Register on the date of the 1995 census, which had a status of "Ceased being residents". The major proportion of them notified the Interior Ministry that did not wish to be Israeli residents, and the other portion consisted of people whose residency was revoked by the Interior Ministry.

3. The remaining 372 thousand

Some are emigrants and some are errors that need to be corrected later.

Table 1: Summary of emigrant stock set up process
at the 1995 established census date (thousands)

Population Register	7,306.1
Deceased	978.8
Population	5,571.0
Thereof:	
Are linked to the census by PIN	5,317.4
Statistical linkage	169.9
Demographic corrections	83.7
Emigrant stock	738.2
Thereof:	
Emigrated between the 1983 census and 1995 census	125.5
Ceased to be residents	240.7
The rest	372.0
East Jerusalem	18.2

MANAGEMENT OF THE EMIGRANT STOCK IN THE YEARS 1995 TO 2005

13. On the date of the 1995 census and as a result of the activity involved in setting up the emigrant stock, we created a “Statistical” Population Register divided into three groups (three stocks):

- a. Population stock, that includes a list of the Israelis who belong to the population of the State of Israel.
- b. An emigrant stock that includes a list of living Israelis who do not belong to the population of the State of Israel (emigrants).
- c. A deceased stock that includes all Israelis whose death was reported over the years⁵.

14. From this it is evident that an emigrant stock cannot be managed as an independent entity. The emigrant stock must be maintained concurrently with the two other stocks of the Statistical Population Register. Management of the emigrant stock includes the transfer of records of people from the population stock to the emigrant stock, or transfer of people from the emigrant stock to the population stock or to the deceased stock.

15. At the end of each year, a calculation of the emigration flows produces a list of new emigrants and a list of emigrants who have returned to reside in Israel. These records are used to update the emigrant stock.

16. According to the update below (see Table 2), we see that in 1995 the emigrant stock contained 738 thousand records, and that in 2005 it contained 902 thousand records.

⁵ This document does not address the deceased because they were excluded in advance from the census file on the assumption that the reporting of deaths in Israel is good and complete.

Table 2: Emigration movements and the emigrant stock for the years 1995-2005 (thousands)

Year	Emigrant stock start of year	Emigrants departing	Emigrants arriving	Emigration Balance	Emigrant stock end of year
1995	738.3	8.2	0.4	7.8	746.1
1996	746.1	18.7	5.3	13.4	759.5
1997	759.5	19.3	4.5	14.8	774.3
1998	774.3	17.9	4.0	13.9	788.2
1999	788.2	17.6	4.1	13.5	801.7
2000	801.7	18.1	4.9	13.2	814.9
2001	814.9	19.3	4.4	14.9	829.7
2002	829.7	25.2	4.5	20.7	850.4
2003	850.4	25.4	5.1	20.4	870.8
2004	870.8	21.7	5.6	16.1	886.9
2005	886.9	20.4	5.8	14.6	901.7

Note: the flow data are provisional and were derived during the development of the system. In the final system, the data might change.

AN EVALUATION OF THE EMIGRANT STOCK

17. The emigrant stock might contain errors that we could not detect during the building of the stock. Such errors include, for example:

- Emigrant deaths abroad that are not reported to the Population Register.
- Incorrect statistical linkage of records from the census excess to the Population Register excess.
- Incorrect locating of undercounts records (demographic corrections).
- An incorrect estimate of the undercount.
- Over-coverage by the census.
- Errors in the calculation of the emigration flows.

It is therefore necessary to assess the emigrant stock using other independent data.

18. The following is a list of the checks conducted and checks that we plan to conduct in order to assess the emigrant stock:

1. Checks on the age structure of the emigrant stock in relation to the population:

In Table 3, the age composition of the emigrant stock would seem to indicate over-representation of the population of 65+, apparently due to the lack of reporting

of emigrant deaths abroad. The building and applying of mortality models to the stock are therefore planned in order to estimate the deceased abroad.

Table 3: The distribution of the emigrant stock and the population at the end of 2005 according to age and gender (in percentage terms)

	Emigrant stock			Population		
	Males	Females	Total	Males	Females	Total
Total	100.0	100.0	100.0	100.0	100.0	100.0
0-17	7.7	8.2	7.9	34.5	31.9	33.2
18-34	19.7	18.8	19.3	25.5	24.5	25.0
35-64	48.5	46.8	47.7	31.4	32.3	31.8
65-79	11.1	11.3	11.2	6.6	8.2	7.4
80+	13.0	14.8	13.8	2.0	3.1	2.6

2. Checking movements in the Population Register after the building of the emigrant stock:

After building of the emigrant stock, work began on updating the population base at the level of the individual with the demographic movements after 1995 until the end of 2005. In the update process, demographic movements were discovered that belong to the records found in the emigrant stock. In such cases, the emigrant's attributes were updated according to the emigrant's movement within the actual emigrant stock itself. The transfer between the population stock and the emigrant stock was made exclusively on the basis of the emigration movement (arrival or departure). Over 10 years of updates it was found that:

- a. 26% of the records in the emigrant stock performed a change.
- b. 61% of the records in the population stock performed a change.
- c. 59% of all the records linked statistically and added in the framework of demographic corrections performed a change.

It must be borne in mind that performance of the demographic changes does not constitute final confirmation that a person belongs to the population because demographic changes can be reported to the Population Register without having to reside in Israel or during visits. In addition, non-execution of demographic changes does not necessarily point to an absence of a person from the population. Nonetheless, it is reasonable to assume that multiple demographic changes in a short space of time can point to justification for attributing a person to the population or lack of justification for attributing a person to the emigrant stock.

One of the actions needed in future is to examine the justification for attributing these populations to the population stock and emigrant stocks and possibly reassigning them.

3. *Examination vis-à-vis the 2004 census pilot*

As part of the preparations for the integrated census, a field test was conducted in five towns in the framework of which three thousand emigrants were defined independently of the data in the emigrant stock. In the 2004 field test, manual checks were run against an external data source: the computer terminal at the National Insurance Institute. The results show that 89% of those defined as emigrants were indeed found in the emigrant stock. The remaining records defined as emigrants in the framework of the census pilot were found to be in the active population; most were enumerated in the 1995 census or were added to the population by linking excesses or demographic corrections. That said, it should be kept in mind that the definition of emigrants varies from one data source to another. In addition, several problems were discovered in the method used to define emigrants in the 2004 field test and these will be resolved before the census.

11% of the emigrants in the field test defined as belonging to the population were defined in the National Insurance Institute terminal as emigrants. Hence, use is planned in the future of National Insurance Institute data in order to improve the stock.

All the sources for corrections indicate that the emigrant stock built is relatively good. It will need further correction and updates of models following the next census in 2008, which will further enhance the quality of the stock.

THE IMPORTANCE OF SETTING UP THE STOCK - SUMMARY

19. The State of Israel plans to switch in the future to a census based more on administrative data and less on fieldwork. In view of the fact that the Population Register constitutes the basic Israeli list for execution of the administrative census, it is vitally important that the CBS be able to distinguish between the different stocks in the Population Register as done in the present work. While an assessment of the emigrant stock found over coverage (people found in the emigrant stock in fact belong to the population or had died) and under coverage (people found in the Population Register are in fact emigrants), the stock was found to cover most of the Israeli emigrants well.

20. Use of additional information sources and of the 2008 census results should correct the stock and improve its quality to the point that the statistics produced from it become the official emigration statistics of the State of Israel. Over and above the use of the stock as official statistics, the CBS will benefit from considerable savings, as it will be able to use the stock to derive samples for surveys based on the records of individuals, and thereby avoid sampling people who do not belong to the population of Israel.
