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تقدير الهجرة الداخلية في الجزائر (1987-2008) باستعمال الورقة CSMIGR

Indirect Estimation of Internal Migration in Algeria (1987-1998): An assessment of the Worksheet CSMIGR

Estimation indirecte de la migration interne en Algérie (1987-1998): une Évaluation de la feuille de travail CSMIGR

* Siham ABDELAZIZ Email : Abdelaziz.siham@yahoo.fr

University of Batna 1, Algeria

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Abstract

The major difficulty of the quantitative analysis of internal migration for a country like Algeria, where no population register exists, and no law is forcing any person who moves to declare himself outgoing from his place of origin and incoming at the place of destination.

Demographers have developed several estimation techniques, all based on simplifying assumptions and leading to rough estimates of migration flows. Therefore, indirect techniques could be a palliative to the shortcomings of direct estimates.

CSMIGR the spreadsheet developed by the US Census Bureau is the main tool used in this paper, is precisely based on an indirect technique assuming implicit equivalent mortality across different regions of a country. This hypothesis can be raised if a reasonable estimate of the differential levels of mortality is available. In this paper, data from 2 Algerian censuses are used (1987 and 1998) and a correction of the output produced by CSMIGR will be proposed, based on differentials in regional mortality.

* Corresponding author: Siham ABDELAZIZ Email : Abdelaziz.siham@yahoo.fr

Résumé

La difficulté majeure de l'analyse quantitative de la migration interne pour un pays comme l'Algérie, où il n'existe pas de registre de la population et où aucune loi n'oblige une personne qui se déplace à se déclarer sortant de son lieu d'origine et à destination du lieu de destination. Les démographes ont développé plusieurs techniques d'estimation, toutes basées sur des hypothèses simplificatrices et conduisant à des estimations approximatives des flux migratoires. Par conséquent, les techniques indirectes pourraient pallier les lacunes des estimations directes.

CSMIGR, le tableur mis au point par le US Census Bureau, est le principal outil utilisé dans le présent document. Il repose précisément sur une technique indirecte supposant une mortalité équivalente implicite dans différentes régions d'un pays. Cette hypothèse peut être soulevée si une estimation raisonnable des niveaux différentiels de mortalité est disponible. Dans cet article, les données de 2 recensements algériens sont utilisées (1987 et 1998) et une correction de la production produite par le CSMIGR sera proposée, sur la base des différentiels de mortalité régionale.

The aim of this work is twofold: first, to test the contribution of indirect techniques by identifying their possible weaknesses, and then to show the need to go down in the production of demographic data and their level analyzes at the local level, to highlight the differential impact of population displacements on population dynamics. The choice of the study period 1987-1998 is dictated by the objective to shed light on the impact of the 1990-2000 decade on migrations between wilayates. This decade was marked by social and security instability, at the origin of large population movements, both directed to the outside of the country and to other destinations within the country. For our part, we will focus on movements between wilayates. Violence will not be mentioned in this work except for its effects on population movements. This is a methodological work showing the possibilities of exploiting Algerian data that are not sufficiently exploited, especially at the local level First; this is the presentation of the workshhet CSMIGR by the US Bureau of the Census (NATIONS UNIES, 1984, P134)

U.S. BUREAU OF THE CENSUS INTERNATIONAL PROGRAMS CENTER
POPULATION ANALYSIS SPREADSHEETS (PAS)
DOCUMENTATION: CSRMIG
**** D E S C R I P T I O N ****
This spreadsheet estimates net migration by age for a subnational
population using the census survival rate method. The censuses must
be 5, 10, or 15 years apart.
**** I N P U T ****

CELL		ITEM				
----------		-	-	-	-	-
A1		Table number. Type both "Table" and the number.				
A2		Country name and year (e.g. Burundi: 1975).				
A10		Year of first census.				
E12-E29		* First census total male population in 5-year age groups.				
G12-G29		* First census total female population in 5-year age groups.				
F12-F29		* First census subarea male population in 5-year age groups.				
H12-H29		* First census subarea female population in 5-year age				
		groups.				
	*	Enter population data up to and including the same open-ended				
		age group for each census, area, and sex. The openended age				
		group must be in the range 65+ to 85+. If the data do not go				
		up to 85+, enter 0 for the age groups after the open ended				

		age group.			
A41		Year of second census.			
E43-E60		* Second census total male population in 5-year age groups.			
G43-G60		* Second census total female population in 5-year age groups.			
F43-F60		* Second census subarea male population in 5-year age groups.			
H43-H60		* Second census subarea female population in 5-year age			
		groups.			
	*	Enter population data up to and including the same open-ended			
		age group for each census, area, and sex. The openended age			
		group must be in the range 65+ to 85+. If the data do not go			
		up to 85+, enter 0 for the age groups after the open ended			
		age group.			
A64-H75		Sources of the input data.			
A76		Filename, disk name, date, and initials. Type all of these			
		into the same cell.			

**** R E S U L T S ****						
CELL		ITEM				
----------		-	-	-	-	-
A78-H110		Estimated net number of migrants, by age and sex.				
**** G R A P H S ****						
NAME		ITEM				
----------		-	-	-	-	-
GRAPH1		Net number of migrants, by age and sex.				
GRAPH2		Census survival rates, by age and sex.				

CSMIGR estimates the net number of migrants by age and sex for a subpopulation using the census survival rate method. Intercensal periods could be 5, 10, or 15 year (GENDREAU & AL, 1985, P112). The needed data are:

- The age-sex structure in 5-year groups at the two censuses at national level
- The age-sex structure in 5-year groups at the two censuses at local or regional level

As illustration, we now use data from two Algerian censuses (1987 and 1998) and estimate the net number of internal migrants for the Wilaya of Batna between the two censuses. We are interested by population aged 0-4 at the 1987 census (estimated in 1988 to have the 10 year span 1988-1998) that we compare to the population aged 10-14 at the 1998 census. After calculating the survival ratio of this age group at the national level, we apply it to the

local área population in 1988 and we obtain the expected population aged 10-14 in 1998. These expected numbers are 1434 for males and 1455 for females. By difference with the 1998 census figures (1752 for males and 1716 for females) we estimate the net number of migrants to 318 for males and 261 for females (KATEB, 2007, P560)

	Males		*Females*	
	Algeria	Area	Algeria	Area
1988	1,961,097	1,467	1,873,787	1,474
1998	1917719	1752	1849840	1716
Survival ratio				
	0.978		0.987	
Expected area population		1434	1455	
Population at the census		1752	1716	
Net number of migrants		318	261	

Data and Methods

To use CMIGR, the only data we need are age and sex structures for the 48 wilayates, derived from the 1987 and 1998 general population and housing censuses.(WUNSCH, 1984, P198)

In order to run CSMIGR we need to:

- Unprotect the worksheet so that we can enter our data to replace the example used
- select the option 'automatic calculation'

Table 1. Net numbers of migrants in Algeria (1987-1998) by province/wilayate

Wilayate	Net number of migrants Absolute values				wilayate	Net number of migrants Absolute values			
	Indirect	Direct	Indirect	Direct		Indirect	Direct	Indirect	Direct
	Estimation	Account	Estimation	Account		Estimation	Account	Estimation	Account
ADRAR	7333	-20898	7333	20898	CONSTANTINE	-10290	2132	10290	2132
CHLEF	-29626	-10806	29626	10806	MEDEA	-30195	-59508	30195	59508
LAGHOUAT	37684	-841	37684	841	MOSTAGANEM	-8702	5243	8702	5243
O.E.BOUAGHI	-5883	-5201	5883	5201	M SILA	2756	-4017	2756	4017
BATNA	-17124	-7145	17124	7145	MASCARA	-20167	-3103	20167	3103
BEJAIA	-2536	2919	2536	2919	OUARGLA	32929	12236	32929	12236
BISKRA	20680	9187	20680	9187	ORAN	54308	40959	54308	40959
BECHAR	-5029	-4937	5029	4937	EL BAYADH	18523	3285	18523	3285
BLIDA	-67889	18252	67889	18252	ILLIZI	6658	3553	6658	3553
BOUIRA	-26021	-10252	26021	10252	B.B.ARRERIDJ	-70002	-2063	70002	2063
TAMANRASSET	11222	3284	11222	3284	BOUMERDES	-113139	29056	113139	29056
TEBESSA	6875	1453	6875	1453	EL TARF	9920	12978	9920	12978
TLEMCEN	108826	2141	108826	2141	TINDOUF	4592	1895	4592	1895

TIARET	-131428	-4494	131428	4494	TISSEMSILT	-24018	-11625	24018	11625
TIZI OUZOU	-6534	4762	6534	4762	EL OUED	5537	-929	5537	929
ALGER	393871	24961	393871	24961	KHENCHELA	6694	2647	6694	2647
DJELFA	102949	11781	102949	11781	SOUK AHRAS	2526	-1934	2526	1934
JIJEL	-22691	-19126	22691	19126	TIPAZA	-186356	15086	186356	15086
SETIF	426	1033	426	1033	MILA	-3461	3196	3461	3196
SAIDA	-8687	-1871	8687	1871	AIN DEFLA	-28219	-11734	28219	11734
SKIKDA	-9776	-903	9776	903	NAAMA	7765	2931	7765	2931
SIDI BEL ABBES	-9807	4954	9807	4954	AIN TEMOUCHENT	-2816	6311	2816	6311
ANNABA	51322	5578	51322	5578	GHARDAIA	9035	382	9035	382
GUELMA	-4963	-260	4963	260	RELIZANE	-39502	-15309	39502	15309
								1787292	429151
						17574	35239	17574	35239

Between 1987 and 1998, according to Table 1, the total number of migrants (using absolute values) is 1787292 if we use CSMIGR and only 429151 if we use the direct measure

published by ONS/Office National des Statistiques. This huge difference must be discussed. If we obtain 4 times net number of migrants by indirect techniques, then we have a serious problema with either one or even both sources.

The direct measure is obviously mistaken if we sum up the net number of migrants that must be 0 if the methodology was respected: If we work with peoples present at the 2 census, the net number of outmigrants from losing áreas should be equal to the net number of immigrants in winning áreas.

By comparing the answers to 3 questions: place of birth, place of residence 5 years ago and place of residence at the time of the census, we can identify several categories of migrants and even some returns. However, return migrations between the reference dates cannot be identified. And so, estimation based on census questions is necessarily underestimating the true level of internal migration.

On the other hand, indirect techniques have a pitfall since CSMIGR assumes that mortality is evenly distributed among regions. We know that this assumption is not sustainable and algerian demographers (see for example Berdrouni, (2007)) have presented evidences of regional differentials in infant mortality. This is why we suggest correcting CSMIGR estimations by using the mortality differentials and adjusting the net number of migrants by wilaya

RESULTS

TABLE 2 NET NUMBERS OF MIGRANTS BY WILAYA CSMIGR CORRECTED FOR INFANT MORTALITY DIFFERENTIALS

WILAYA	IMR	IMR	OVER/	NET NUMBER	NET NUMBER	ABSOLUTE
	Infant	wilaya/Algeria	UNDER	of migrants	of migrants	value
	Mortality	ratio	ESTIMATION	CSMIGR	corrected	
	Rate					
	1	2	(3) = 1/(2)	4	(5)=(3)x(4)	6
ADRAR	47	1.424	0.702	7333	5149	5149
CHLEF	33	1	1	-29626	-29626	29626
LAGHOUAT	36	1.091	0.917	37684	34544	34544
O. E. BOUAGHI	32	0.97	1.031	-5883	-6067	6067
BATNA	29	0.879	1.138	-17124	-19486	19486
BEJAIA	40	1.212	0.825	-2536	-2092	2092
BISKRA	30	0.909	1.1	20680	22748	22748
BECHAR	31	0.939	1.065	-5029	-5353	5353
BLIDA	24	0.727	1.375	-67889	-93347	93347
BOUIRA	32	0.97	1.031	-26021	-26834	26834
TAMANRASSET	63	1.909	0.524	11222	5878	5878
TEBESSA	34	1.03	0.971	6875	6673	6673
TLEMCEN	28	0.848	1.179	108826	128259	128259
TIARET	33	1	1	-131428	-131428	131428
TIZI OUZOU	27	0.818	1.222	-6534	-7986	7986
ALGER	25	0.758	1.32	393871	519910	519910
DJELFA	35	1.061	0.943	102949	97066	97066
JIJEL	38	1.152	0.868	-22691	-19705	19705
SETIF	38	1.152	0.868	426	370	370
SAIDA	33	1	1	-8687	-8687	8687
SKIKDA	32	0.97	1.031	-9776	-10082	10082
SIDI BEL ABBES	31	0.939	1.065	-9807	-10440	10440
ANNABA	30	0.909	1.1	51322	56454	56454
GUELMA	34	1.03	0.971	-4963	-4817	4817

CONSTANTINE	28	0.848	1.179	-10290	-12128	12128
MEDEA	28	0.848	1.179	-30195	-35587	35587
OSTAGANEM	60	1.818	0.55	-8702	-4786	4786
M SILA	29	0.879	1.138	2756	3136	3136
MASCARA	44	1.333	0.75	-20167	-15125	15125
OUARGLA	35	1.061	0.943	32929	31047	31047
ORAN	28	0.848	1.179	54308	64006	64006
EL BAYADH	40	1.212	0.825	18523	15281	15281
ILLIZI	41	1.242	0.805	6658	5359	5359
B.B.ARRERIDJ	32	0.97	1.031	-70002	-72190	72190
BOUMERDES	25	0.758	1.32	-113139	-149343	149343
EL TARF	32	0.97	1.031	9920	10230	10230
TINDOUF	33	1	1	4592	4592	4592
TISSEMSILT	36	1.091	0.917	-24018	-22017	22017
EL OUED	31	0.939	1.065	5537	5894	5894
KHENCHELA	33	1	1	6694	6694	6694
SOUK AHRAS	30	0.909	1.1	2526	2779	2779
TIPAZA	27	0.818	1.222	-186356	-227768	227768
MILA	37	1.121	0.892	-3461	-3087	3087
AIN DEFLA	31	0.939	1.065	-28219	-30040	30040
NAAMA	34	1.03	0.971	7765	7537	7537
AIN	27	0.818	1.222	-2816	-3442	3442
GHARDAIA	36	1.091	0.917	9035	8282	8282
RELIZANE .	49	1.485	0.673	-39502	-26603	26603
						2019954

During the decade 1990-2000, many wilayates presented net numbers of negative migrants, and others positive. In many cases, families who have fled violence have returned to the original wilayates once the security situation has improved. (KOUAOUCI, 2004. P30)

Indirect estimates give an idea of at least minimalist movements between wilayates. According to indirect calculations, it is about 1800000 people over 10 years, at least who would have changed wilaya during the black decade and only 1250000 during the period 1998-2008, a difference of nearly 536,000 people. It is clear that the numbers actually involved may be much higher and a thorough study of inter-wilayate migration is more than necessary, but it is reasonable to think that among the people who had to leave their fields

and homes, fleeing violence terrorist and repression of the security forces, a sizeable proportion will not make the return migration. (BEDROUNI, 2007, P153)

More than 100,000 people went to live in the suburbs of cities such as Djelfa, Medea and Chlef and many villages such as Ouled Ali, near the capital, was deserted. And 1.5 million displaced persons, only 170,000 have returned to their towns, defense groups have ensured the buildings safety. More than 1.3 million people still live on the outskirts of Algerian cities. This migration is linked to the security situation in the past, only part of a broader pattern of poverty (ARRIAGA, 1994, P213)

One consequence of internal migration is the transfer of different values and attitudes and the implantation of the economic and social organization in urban areas (MARTINEZ, 2004, P19)

The indirect methods used to allow us to discover the various internal migration trends and gave us an overview and description of everything that happened before and after the black decade. (BOUKHEMIS, & ZEGHICHE, 2015, P186)

This was achieved only by estimations at the local level that showed unexpected results. With regard to migration, the factor of violence produced different levels of instability by each wilaya, especially in urban and rural areas. (OFFICE NATIONAL DES STATISTIQUES, 2000, P89)

This was followed by a large population movement from the most affected wilayate to the less affected wilayate, and many people who left their land and homes returned, and others did not return and remained in the wilayate where they sought refuge. (OFFICE NATIONAL DES STATISTIQUES, 2008, P360)

DISCUSSION

Of all the demographic phenomena, internal migrations are certainly the most difficult to measure except when the country has a population register which records obligatorily and

effectively any change of residence. (HTTP://WWW.CENSUS.GOV/POPULATION/INTERNATIONAL/SOFTWARE/PAS)

Information based on the use of residence questions in censuses is widely used, but they seriously underestimate the real levels of internal displacement. This is why indirect techniques such as CSMIGR are much more promising, provided that they are corrected for differential mortality.

CONCLUSION

At the end of this work, the main conclusions are of a methodological nature: Internal migration is largely underestimated by census statistics in Algeria. During the black decade, there would have been only about 400,000 internal migrants.

CSMIGR, an indirect technique provided an estimate very close to the figures published by several researchers. CSMIGR provided a figure of 1700000 compared to 1500000 cited by several authors.

Finally, we wanted to relax the implicit hypothesis of CSMIGR according to which the mortality would be equivalent between the different regions of the country. By estimating a corrective factor of infant mortality according to the wilayates, we were able to recalculate the net number of migrants per wilaya. The total net number of migrants would then be around 2000000.

Our recommendation for the US Census Bureau would be to revisit CSMIGR so that the strong equivalent mortality hypothesis across the different regions of a country can be removed.

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