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Sources and Problems of Data on Internal Migration and Urbanization in Korea

THERE are three major sources of data for the study of migration and urbanization in Korea: census data, special demographic survey data, and statistics from the resident registration system.

1. Census Statistics

The first modern census in Korea was conducted in 1925 under the Japanese rule. Four more censuses were taken subsequently in the years of 1930, 1935, 1940, and 1944 during the Japanese period covering the entire Korean peninsula. Results of the censuses during the colonial period are known to be of high quality in general. These statistics were extensively utilized to study the population distribution and migration in Korea for the colonial period in several published and unpublished works[1].

1. Chang, Yunshik, *The Population in Early Modernization :* Korea, (Ph.D. thesis, Princeton University), 1966. Kim Yun, *The Population of Korea,* 1910-1945, (Ph.D. Thesis, Australian National University), 1966.
Kim Chul, *The Population and Economy of Korea,* Iwanami Shoden, Tokyo, 1965. Taeuber, Irene B., "Korea in Transition : Demographic Aspects", *Population Index,* Vol. 10, No. 4, 1944.
Taeuber, Irene B., and G. W. Barclay, "Korea and the Koreans in the Northeast Asian Region", *Population Index,* Vol. XLV, No. 1, 1955.

After the end of the Second World War in 1945, a total of five censuses was conducted for the southern half of Korean peninsula in 1949, 1955, 1960, 1966, and 1970. Only one advanced report was published before the raw materials of the 1949 Census returns had been destroyed during the 1950-53 Korean War. The advanced report contains the information on the size of population in all administrative areas, age, sex and industrial composition of population for each province, and the number of repatriates and refugees by origin for each province. Basic demographic and economic items were tabulated for each province, Gun (county), and Shi (city) from the 1955 and 1960 Censuses. Place (province) of birth statistics were cross-classified by five year age group and sex, and tabulated for each province, for all Shi, all Eup, and all Myun (rural district) areas for each province from the 1960 Census. The 1966 Census publications include such items as age-sex structure, education level by age and sex, marital status, and also detailed fertility and economic activity items. These statistics are made available for each province, and entire Shi and Gun areas of each province. The 1970 Census was taken as of October 1, 1970. Only one advanced report showing the size of population up to Myun and Dong (urban administrative ward) has been published so far.

These census statistics contain a number of significant, often serious, methodological problems due to conditions that are commonly found in the census-taking procedures in a developing country. The data, however, can provide useful clues in identifying general patterns of migration in Korea if the necessary care is exercised and adjustments are properly made in using the data.

One major problem in the census statistics arises from the age counting system in Korea. According to the Korean age-counting system, a person is one year of age at the time of birth and gains another year as the calendar year changes. The 1960 Census age statistics were tabulated according to the "Korean age" as reported in the census schedule. The age statistics in the other census reports were supposedly based on completed western ages, with a significant portion of population still reporting "Korean ages". The age statistics from the various censuses ha re

to be converted or readjusted to completed ages to make them comparable.[2]

After making necessary adjustment for the varying age counting method the degree of regularity in age distribution was examined for the 1960 and 1966 census statistics. The measures employed are sex ratios and age ratios.

Table 1 presents age ratios and sex ratios of the Korean population based on the converted age statistics of the 1960 Census population. An examination of the sex ratios in this table reveals that the female children and female teens are undercounted relative to the corresponding male

TABLE 1—AGE RATIOS AND SEX RATIOS OF KOREAN POPULATION, 1960 CENSUS

Male			*Female*		*Sex Ratio*
Age Group	*Age Ratio*	*Deviation from 100*	*Age Ratio*	*Deviation from 100*	
0-4					105.53
5-9	94.74	-5.26	94.34	-5.66	107.98
10-14	98.55	-1.45	96.11	-3.89	110.75
15-19	94.64	-5.36	94.36	-5.64	108.04
20-24	106.04	6.04	101.80	1.80	103.91
25-29	95.63	14.37	103.66	3.66	89.97
30-34	90.15	-9.85	93.92	-6.08	88.83
35-39	107.76	7.76	106.26	6.26	96.02
40-44	96.58	-3.42	91.77	-8.23	102.90
45-49	101.79	1.79	103.87	3.87	100.25
50-54	103.70	3.70	97.86	-2.14	101.46
55-59	90.84	-9.16	95.07	-4.93	88.97
60-64	105.07	5.07	106.58	6.58	81.49
65-69	92.58	-7.42	98.17	-1.83	72.94
70-74					

SOURCE; *I960 Population and Housing Census of Korea.* Economic Planning Board, 1963.

2. Park, Jae Soo, *An Evaluation Study for the Accuracy of the 1960 Population and* ***Housing*** *Census of Korea,* Bureau of Statistics, Economic Planning Board, Korea, 1966.

population. The male population in the 25-34 age group is under-represented relative to their female counterparts.

Two apparent drops in the age ratio scores are found for males in the age groups of 30-34 and 55-59. The drop in the 30-34 age group reflects the selective death rate of the group during the 1950 Korean War. The drop in the 55-59 age group may be due to the forced out-migration of this group to Manchuria and Japan as war-laborers under the Japanese rule during the Second World War. The low sex ratios for the 25-29 and 30-34 groups also seem to indicate the selective effect of the Korean War on males in these age cohorts.

In Table 2 are presented the age ratios and sex ratios for the 1966 Census population. The sex ratio scores of the table show that females are

TABLE 2—AGE RATIOS AND SEX RATIOS OF KOREAN POPULATION, 1966 CENSUS

	Male		*Female*		
Age Croup	*Age Ratio*	*Deviation from 100*	*Age Ratio*	*Deviation from 100*	*Sex Ratio*
0-4					107.23
5-9	114.52	14.52	111.50	11.50	107.64
10-14	98.01	-1.99	98.15	-1.85	107.21
15-19	91.43	-8.57	92.57	-7.43	106.90
20-24	95.68	-4.32	89.89	-10.11	109.86
25-29	102.43	2.43	108.53	8.28	98.93
30-34	103.04	3.04	101,07	1.07	99.21
35-39	89.81	-10.19	97.94	-2.06	89.72
40-44	101.89	1.89	99.99	-0.01	95,90
45-49	99.54	-0.46	95.19	-4.81	100.58
50-54	99.45	-0.55	99.50	-0.50	96.59
55-59	105.50	5.50	105.05	5.05	91.30
60-64	88.71	-11.29	90.84	-9.16	81.88
66-69	103.53	3.53	109.47	9.47	71.77
70-74					

SOURCE: 1966 *Population Census Report of Korea.* Economic Planning Board, 1968.

under-represented up to the 20-24 age group. Males in the 35-39 age group are also under-represented. The son preference of the Korean parents seems to account for the relative under-representation of females in the younger ages which is reflected in the high sex ratios for children.[3] The high mobility rate of females between the ages of 15-24 may be related to the under-representation of this group and accounts for its higher than expected sex ratio. A sudden dip of the sex ratio for the 35-39 age group reflects the heavy loss of males for that age cohorts during the Korean War. This fact is also reflected in the sudden drop in the age ratio for males in the same age group.

The age ratios are extremely high for the 5-9 age group for both sexes in the 1966 Census statistics, 115 for males and 112 for females. This can happen when the 5-9 age group is over-represented, when either one or both of the neighboring groups are under-represented, or when the recent birth rate of the population has actually declined. The declining birth rate of the population which began sometime in the early 1960's probably accounts for a large proportion of the decline in the 0-4 age group. However, even then the dips for the 0-4 group seem too great. It appears that there is a significant degree of undercounting of children below age 5 in the 1966 Census. Age ratios somewhat lower than expected are also observed for those in late teens and early twenties for both sexes, implying some degree of under-representation for these groups. Again, the high mobility patterns of these groups and their unstable settlement patterns in the cities may have caused the under-representation.

Both sex ratios and age ratios for the 1960 and 1966 Census population indicate that, except for those groups affected by the changing fertility patterns in recent years, the Korean War, and high mobility, the distortions of age data are not serious enough to make their utilization for the migration analysis impossible. Sex ratios generally tend to decline gradually towards the advancing ages, and age ratios do not seem to fluctuate seriously from the expected scores of 100 except for the few groups identified above.

3. Lee, Hyo-Jae, "A Sociological Study of the Family in Seoul," *Journal of Korean Culture Research Centre,* Ewha Women's University, No. 1,1960.

The extent of ups and downs found in the Korean age data based on the 1960 and 1966 Censuses is not uncommon. Many other countries undergoing similar social and economic changes experience the same type of problems in their age statistics. Furthermore, the types of under-representation in the 1966 Census age data are also found to be consistent with the 1960 Census data.

2. The 1966 Special Demographic Survey Data

The Special Demographic Survey (SDS) was conducted to obtain supplementary information on fertility, mortality, family planning, and internal migration about one and a half months after the 1966 Census of Population. The SDS estimates of demographic characteristics of Korean population were published in E. H. Choe and J. S, Parks' *Some Findings from the Special Demographic Survey**. This volume remains as the only publication in which the 1966 SDS data were made available to the public and the estimates in the volume are widely utilized for the study of the recent demographic trends in Korea.

Migration items included in the 1966 SDS are : (1) place of birth, (2) place of residence five years ago, (3) reason for move, and (4) frequency of move. The SDS also included basic demographic items such as age, sex, relationship to the head of household, and marital status. However, it did not include such important items as occupation, income, education level, and other social and economic indicators of a person. Using a weighted ratio estimation procedures, the staff of Bureau of Statistics make estimates of demographic characteristics for the entire population based on the SDS returns.

The sample estimates published in the tables of the SDS report suffer from various problems related to sampling variability and biases. The SDS estimate of the total population of Chungbug province, for example, is 19 percent higher than that counted in the main census (1,824,000 versus 1,549,000). The difference is too great to be accounted for by the

4. Choe, Ehn Hyun and J. S. Park, *Some Findings from the Special Demographic Survey*, The Population and Development Studies Center, Seoul National University, Seoul, Korea, 1969.

1-1/2 months time lapse between the main census and the SDS. The discrepancies are even greater for the estimates of rural and urban population for each province. For example, the SDS estimate of urban population in Jeju province is 113 percent higher than the one counted in the census (186,000 versus 87,000) and the SDS estimate of the rural population of the same province is 38 percent less than the census count (154,000 versus 250,000). These significant over or under estimates of the total population for the provinces and the smaller geographic units are largely due to the weighted ratio estimation procedures that did not properly take care of the differential sampling ratios of urban and rural ED's and vari-tion in the size of the sample ED's.[6]

The published data of the 1966 SDS also pose several other problems. One is related to the coding and editing procedures of the SDS returns. The report of the 1966 SDS[6] states that 102,104 persons living in Chung-bug province in 1960 were living in another province (or Special City) in 1966. Of these, 77,491 persons had moved by 1966 to an urban place. Included in these are 48,122 who had moved by 1966 to Seoul, 16,322 who had moved to the urban areas of Gyeongnam province, and no one who had moved to Busan. This is not likely to be true, since Busan Special City is located right in the middle of Gyeongnam province and is the center of social, cultural, and economic activities in the region. It seems likely that these results represent a failure to edit city against province of present residence. That is, these records probably showed the city of present residence correctly as Busan, but classified it as urban areas of Gyeongnam province. Busan was part of Gyeongnam province before it was separated from the province and became an independent Special City.

A comparison of SDS population with census population by age and sex reveals that the age selective under-representation is very severe for age groups between 20-34 in tables containing migration information of the SDS report (See Table 3). For the age group 25-29, both males and females show more than 10 per cent below the census population. Males between 20-34 are very much under-represented both in urban areas and

5. Marks, Eli S., "Terminal Report to USAID". 1970, p. 6.

6. Choe, Ehn Hyun and J. S. Park, *Some Findings from the Special Demographic Survey, op. cit.*, Table 39.

TABLE 3-SDS POPULATION (TABLE 72 OF THE SDS REPORT) PER 100 CENSUS POPULATION BY AGE GROUP AND SEX FOR RURAL AND URBAN AREAS AND FOR KOREA, 1966

Age	*Urban*			*Rural*			*Total*		
	Male	*Female*	*Total*	*Male*	*Female*	*Total*	*Male*	*Female*	*Total*
5-9	96.97	95.75	96.38	98.01	93.64	95.91	97.69	94.29	96.06
10-14	110.22	104.87	107.62	106.77	106.41	106.60	107.94	105.88	106.94
15-19	95.87	101.66	98.72	103.54	102.92	103.24	100.48	102.40	101.41
20-24	87.17	105.55	66.46	80.86	97.56	88.51	83.15	100.86	91.59
25-29	79.92	89.12	84.61	82.70	89.73	86.20	81.64	89.49	85.59
30-34	79.87	91.59	85.72	78.26	97.53	87.96	78.85	95.34	87.13
35-39	101.12	105.92	103.60	103.72	101.20	102.27	102.73	102.80	102.76
40-44	116.13	100.76	108.53	107.10	105.51	106.28	110.41	103.88	107.08
45-49	110.07	101.45	105.99	104.86	112.75	108.89	106.65	109.25	107.94
50-54	108.24	108.87	108.55	115.37	99.39	107.17	113.22	102.14	107.58
55-59	123.28	103.42	112.95	103.89	103.32	103.59	109.27	103.35	106.20
60-64	122.61	101.53	110.50	108.98	96.27	102.09	112.18	97.63	104.19
65-69	102.39	88.01	93.36	100.38	102.83	101.77	100.79	99.13	99.83
70+	109.24	110.04	109.51	103.55	99.02	100.79	104.39	101.67	102.78

SOURCE: Table 72 of the 1966 SDS Report, 1966 Census of Population.

rural areas. Only 80 per cent of the census population is accounted for by the SDS for males in the 20-34 age groups. Because of a high propensity of these age groups for migration, any significant degree of under-representation for the group can seriously affect the results of the migration analysis based on the SDS report. Age and sex ratio tests also reveal that female children and persons in 20's and 30's are seriously under-represented from the mobility tables of the SDS report. Since persons in the 20's and 30's would appear to be the most mobile population, the results of any analysis on migration based on the data from the SDS report will be affected to the extent that these groups are significantly under-represented. The extent of the effect will be greater if the missing persons are different in character, especially with respect to their mobility status from the rest of the population covered in the survey.

Estimated numbers within specific demographic characteristics for the country in the SDS report are not completely dependable for the reasons stated above. The problem is more serious for a province or a smaller geographic unit. These problems can be remedied to some degree if the figures in the report are used as proportions. The proportion of in-migrants for a province during the 1961-1966 period, for example, is less influenced by the biased sample estimate procedures used in the SDS report, because the same weight was given to each individual migrant as to the resident in making estimates. Likewise, the proportion of persons in any specific age group who changed residency during the 1961-1966 period will be less affected than when the actual numbers are used, since it is likely to be true that the factors affecting the underestimation may have entered for both non-movers and movers.

The impact of the biased estimates is lessened when the total figures are used for a given demographic characteristic. The total figures for all ages in the rural and urban areas in the SDS report do not deviate much from the census figures and these can be satisfactorily utilized for migration analysis. In migration analysis, therefore, the volume and major directions of the five-year migration between rural-rural, rural-urban, urban-urban, and urban-rural streams can be satisfactorily identified. Mobility status, migration selectivity, and reasons for these moves for the total population, for the rural population, and for the urban population

can be calculated respectively without seriously being affected by the sampling errors and biases involved in the sample estimate of the SDS.

There are other significant but less serious problems in the migration data from the 1966 SDS. They are problems relating to editing, memory, lack of clarity in the definitions, and boundary changes. These problems should be taken into account for a meaningful interpretation of the results of any migration analysis using the data from the 1966 SDS.

3. Migration Data from the Resident Registration System

Another important source of data for the study of internal migration in in Korea was made available recently by the resident registration system. The system was enacted in May, 1962. It is believed that the registration system has shown a remarkable increase in completeness and accuracy with respect to living adults 18 years of age or older as a result of the requirement that all persons over 18 must have a valid and current identification card in order to perform even the simplest errand outside the home.

Except for the possible delays in reporting the change of address in the registration system, the data from the system seem to contain an unusually rich information on population mobility that is not available from census or survey data. The Bureau of Statistics publishes monthly statistics on the resident registration system for each province by rural and urban areas in *Monthly Statistics of Korea*[7]. These statistics normally contain (1) the total number of persons in urban and rural areas of each province by sex, (2) the total number of movers, inmigrants, out-migrants for rural and urban areas of each province by sex and by place of origin and destination, (3) reasons for move, (4) the total number of births and deaths by urban and rural areas of each province. Detailed statistics on mobility status from the resident registration system are also available from yearbooks published by local administrative offices of Gun (rural county), Shi (city) and Do (province). Besides the published data, local files of the registration system contain rich statistics concerning migration differentials, migration history, and migration streams.

7. **Bureau of** Statistics, Economic Planning Board, Seoul, Korea.

4. Problems Related to Urban Definition

There are three types of administrative units that have an important bearing upon the term "urban" : Shi (city), Eup (rural township), and Gun (rural county). Shi and Eup are administratively defined areas with a minimum required number. Shi is defined as an area with a minimum number of 50,000. Eup is an area with a population more than 20,000 but less than 50,000. The entire area of Korea except areas covered by Shi is divided by Gun. Gun includes Eups but not Shis. The Gun is similar to the county in the United States. Areas covered by Shi are customarily designated as urban areas. The part of Gun that is covered by Eup is sometimes designated as urban and some other times as rural. For example, the 1966 Population Census reports treat Eup as an area under rural category, but the *Municipal Year book of Korea, 1969*, published by the same agency (Bureau of Statistics), treats Eup as an urban area. There were 27 Shis (including a Special City), 85 Eups, and 140 Guns at the time of the 1960 Census. By the time of the 1966 Census, the number of Shis increased to 32 (including two Special Cities), Eups increased to 91, and the number of Guns decreased to 139.

In terms of the number of population involved and industrial composition, the Shi can be safely viewed as an urban area. The Eup, on the other hand, creates some problems. The Eup is generally viewed as an area standing somewhere in the middle of rural and urban continuum in terms of the population size and other characteristics. However, there are a significant number of exceptions. With respect to the population size and industrial composition, many Eups should have been reclassified as Shis but still remain as Eups due to the delay in legal status. The 1966 Population Census shows that three Eups, Dongducheon, Anyang, and Jangseung had a population more than 50,000 respectively. The industrial character of these areas is closer to urban than rural. The 1966 Municipal Year book shows that the proportions of non-farm households in these areas are 91 per cent in Dongducheon, 86 per cent in Anyang, and 93 per cent in Jangseung. Many Eups with less than 50,000 inhabitants also seem to posses more urban characteristics than rural characteristics. For example, non-farm households in Sosa constituted 84 per cent of the total households. The population density of the Sosa Eup was 1,509 per square kilometre, which is a little less than the average density of Shis (1,824), but

higher than that of many Shis. In order to understand the true nature of urbanization in Korea, these areas should have been treated as urban areas. Unfortunately all Eups are treated as rural areas and detailed characteristics of Eup areas are not provided in the 1966 Population Census publications. Statistics on Eups are lumped together with those in Gun statistics except for the total population in each Eup. There is no way of isolating the statistics of Eups from the Gun statistics. The 1960 Population and Housing Census publications, however, contain detailed statistics on Eups, and they are valuable sources of data for the study of urbanization in Korea.

On the other hand, there are Eups that contain a population less than 20,000. At the time of the 1966 Census, there were 10 Eups with less than 20,000. Two extreme cases of these are Chulweon and Keumwha, each containing a population *7,324* and 2,154 respectively. These two areas gained Eup status a long time ago. Located close to the demilitarized zone, these two Eups were completely destroyed during the Korean War, and the population shrank to a small level. Despite the drastic decline in population size in these two areas, their legal status has remained as Eups. Taking only administratively defined Shi as an urban area, we will underrate the true level of urbanization. If we include all Eups in urban areas, we will overrate the level of urbanization. Criteria would have to be developed for a proper definition of an urban area in terms of the size of population and industrial composition. As an expedience, however, one may be justified for using both Shi and Eup as urban. Most of the Eups have urban characteristics and landscape and often have the function of local rural centers[8].

8. *Urban Development*, Regional Physical Planning, Volume 7, Report prepared for the United Nations by OTAM-Metra International, Seoul, Korea, June, 1971, p. 8.