AGE AND SEX DISTRIBUTION OF THE MONGOLIAN POPULATION: PRESENT AND FUTURE IMPLICATIONS

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The age and sex composition of the population is essential research in demography. The main reason for studying the age and sex composition of the population is that important to formulate a policy and planning on business, economic, education and health services and on the other hand to bring population variables in the analysis of the socioeconomic development.

The study is considered the past, present and future implications of age and sex composition of the population in Mongolia and developed some interesting discussions and conclusions. Moreover, the researchers have calculated some indicators, which can show age and sex composition of the population, studied population momentum and conducted projections of population growth by population momentum. So the and that are very important and new topic.

Also in the recent time to decline population fertility and growth, for the researchers, who are studying age and sex composition the study is relative and basic material.

Introduction

The age and sex composition of the population is essential in demographic research, in the formulation of population and socioeconomic policies and in general to bring population variables in the analysis of the socioeconomic development. The main reason for analyzing the age and sex of people is that they are related to a number of economic, social and cultural events such as attending schools, entering to the labor force, getting married, giving births, migrating, etc. It is also important because purchasing some products or using a number of services also varies according to age and sex. Information on age and sex composition is essential to explain social trends, targeting markets, and planning for the future. Moreover, it is also essential to understanding the nature and function of societies (Rowland, 2003). In addition, it reveals much about the history of a population and its future prospects.

The composition of a population depends on three components of the demographic dynamics: mortality, fertility and migration. A population with high fertility and high mortality will result in *young* population, that is, a population with high proportion of children and youngsters. As fertility and mortality decline, the population experiences a process of aging, that is, there is an increase in proportion of young adults, middle age and aged people. Immigration may increase the share of male young adults (or female). Traumatic events such as wars, political unrest, and economic crises may

result in the shrinking of some age groups because of temporary fertility decline or mortality increase.

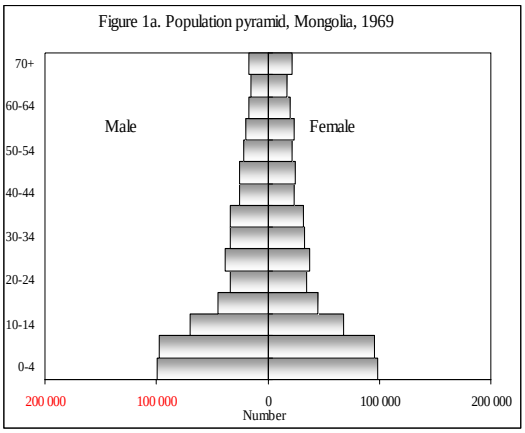
At the same time, the population composition provides valuable information about future population characteristics. For example, a young population implies an in-build potential for rapid population growth because of a large proportion of women in reproductive age period. It also suggests a great and continuing need for investment in education and employment. In contrast, an aged population creates concerns about the funding of pensions and health services as well as diminishing labor supplies.

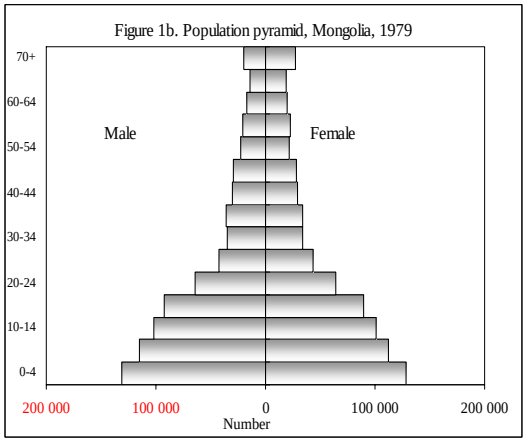
The purpose of this paper is to examine the age and sex composition of the population of Mongolia. At the same time, some relevant topics related to the population composition are studied. In particular, population momentum and differential growth of functional age groups are analyzed. The objective here is to provide demographers, economists, social scientists and policy makers with a comprehensive analytical report of very important demographic characteristics of Mongolia. The main sources of data for this study are the 1969, 1979, 1989 and 2000 censuses (NSO, 1994 and 2001) and the population projection prepared by the National Statistical Office of Mongolia (NSO, 2002).

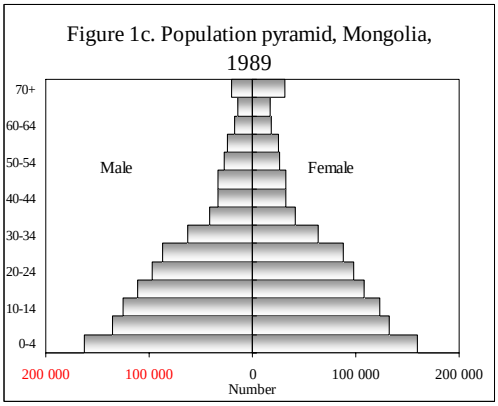
The evolution of the population composition of Mongolia

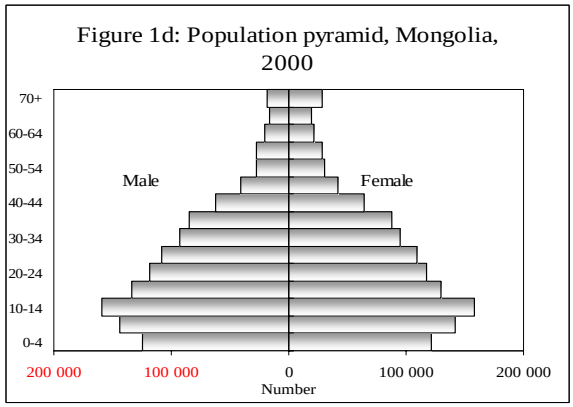
The best way to visualize the age and sex composition of a population is through population pyramids. This is a special type of graph depicting as horizontal bars the numbers or percentages of males and females in each age group. By convention, the younger age groups are at the bottom with males on the left and females on the right. Pyramids have different shapes according to the age composition of the population. For example, a young population has precisely a shape of a pyramid (triangular). As population ages, the pyramid adopts a more rectangular form. Migration as well as traumatic events usually produces indents or irregularities in the pyramid (PRB, 2000).

Figures 1a to 1d show the pyramids corresponding to the population of Mongolia for years 1969, 1979, 1989 and 2000. These pyramids present the population in numbers and not percentages. This alternative was chosen because the pyramids do not show only the population composition but also the population size. According to the figures the population composition of Mongolia experienced important changes. The initial very young shape changed into a transitional-type composition. This variation took place mainly between 1989 and 2000. Notice that, in the 2000 pyramid the population in age groups 0-4 and 5-9 are smaller than that in age group 10-14. According to the 1989 census the population 0-9 years old represented 29.6 percent while the share of this age interval enumerated in the 2000 census was 20.7 percent. These findings suggest a quite significant decline in fertility and, consequently, the start of a process of population aging, that is, a decline in the proportion of children and an increase in the proportion of adults and the elderly. In fact, fertility in Mongolia has declined substantially especially during the 1990s. From a total fertility rate (TFR) of above 6 children per woman in the 1980s it declined to less than 3 in the 1990s (NSO, 1995).









Source:

NSO, 1994. Population of Mongolia, Ulaanbaatar

NSO, 2001. The main results: Population and Housing Census, Ulaanbaatar

It is important to observe that the pyramid corresponding to the year 1969 shows an almost rectangular form after age group 20-24, with several irregularities or indents. The main reasons are the prevailing high mortality rates during the first half of the past century and the political instability as well as repression suffered by the country after the implementation of socialism and the participation in World War II. The base of the 1969 pyramid also reveals an increase in fertility rates as well as a mortality decline. Pro-natalist policies, the secularization of society (the large amount of monks of the past were forced into the civilian life), and the import of the European medical technology that took place during the 1940s and 1950s increased the number of surviving children and youngsters, expanding the base of the pyramid (Neupert, 1996). High fertility rates continued during the following two and a half decades. The 2000 pyramid clearly shows the process of fertility decline that took place during the 1990s. It is also relevant to mention that in the 1969 pyramid the population of female in many older-than-24 age groups is smaller than the male population. This is probably caused by the impact of high fertility on maternal mortality. This pattern disappears in the 1989 population pyramid.

Table 1 shows selected indicators of age and sex composition. The sex ratio indicates number of males per 100 females. In the case of Mongolia it reveals a population with approximately the same number of males than females. Only in year 2000 there is a little excess of females, probably caused by a more rapid increase in life expectancy among the female population. This

pattern is observed in most societies. The median age indicates the age that divides the population into two numerically equal groups, that is, half the population is younger than this age and half is older (PTB, 2000). The median ages calculated for Mongolia reveal a young population. They do not vary substantially between 1969 and 1989: however, it increases noticeably by year 2000. This is certainly the result of fertility decline. Notice that, in general, an old population exhibits a median age of over 30 years. The child dependency ratio measures the number of children (0-14 years old) per hundred people in working age (15-64 years old). The value for Mongolia also reveals a young population. The child dependency ratio experienced a substantial decline during the 1990s. Again, this is the result of fertility decline. On the other hand, the aged dependency ratio indicates the number of elderly (65 years old and above) per hundred person in working age. The values for Mongolia indicate a small proportion of old age population. The total dependency ratio is just a sum of child and aged dependency ratios.

Table 1. **Selected indicators of age and sex composition, Mongolia, 1969, 1979,1989, and 2000**

Measures	Year			
	1969	1979	1989	2000
Sex ratio	99,4	99,8	99,5	98,5
Median age	18,7	17,3	18,6	21,6
Child dependency ratio	89,6	88,8	78,3	58,9
Aged dependency ratio	12,1	10,2	7,7	5,7
Total dependency	101,7	99,1	86,0	64,6
Ageing index	13,5	11,5	9,9	9,7
Caretaker ratio	58,9	72,5	72,3	58,1

Source:
NSO, 1994. Population of Mongolia, Ulaanbaatar
NSO, 2001. The main results: Population and Housing Census, Ulaanbaatar

Continuing with Table 1, the aging index indicates the number of aged (65 years old and above) per 100 children (0-14 years old). The figure for Mongolia is very low indicating a large proportion of children and a small proportion of elders. In an old population this value is over 100. The care taker ratio is a very interesting measure: it is the population 80 years of age and older per 100 women aged 50-64 years old. It suggests the support available for the oldest population, which are usually physically dependent. In most societies, the grown up daughters (female population aged 50-64) provide care and attention to the aged parents. In other words, this measure provides a rough estimate of the human resources available to care for the very old. The figure for Mongolia is low because the oldest population is small due to the low life expectancy at older ages. In 2000 there are 14.4 elders per 100 potential care takers. In aged populations this figure could be more than 50 and sometimes near 100.

A very important concept regarding age composition is *functional age groups*. They refer to age and sex groups that have specific needs or functions in the community. Table 2 and Figure 2 show the main functional

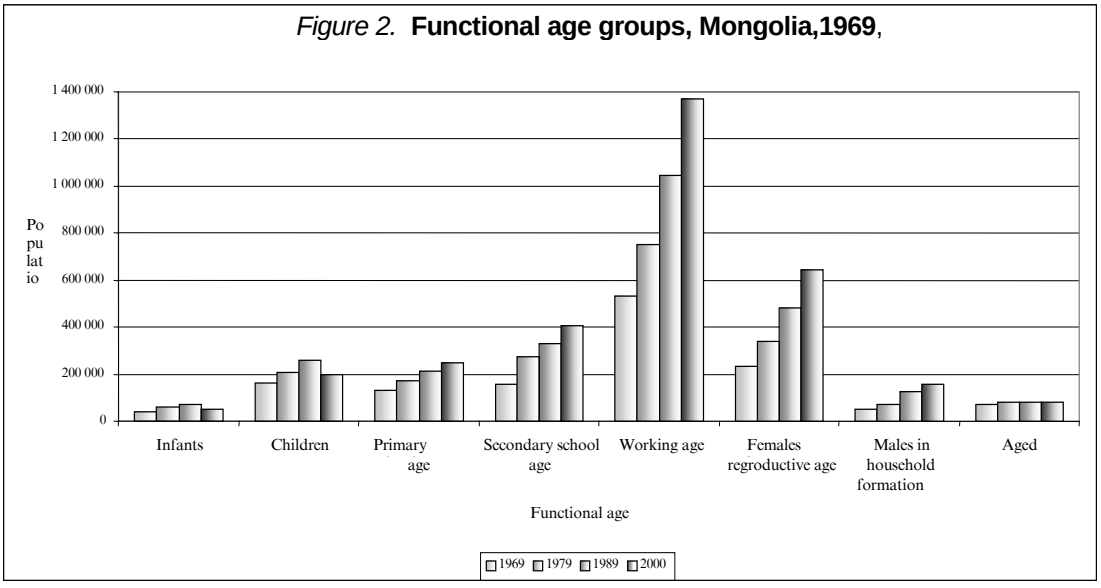
age groups for Mongolia from 1969 to 2000. This information indicates a typical young population with large educational needs and a young adult population putting pressure on the labor market and the housing stock. As expected, the elderly do not represent a significant source of pressure because of their limited size. In the next chapter it is shown how this situation is likely to change in the future.

Table 2. **Selected functional age groups, Mongolia,1969,1979, 1989, and 2000**

Functional age groups	Age (years)	Population				Percentages (as of total population)			
		1969	1979	1989	2000	1969	1979	1989	2000
Infants	0-1	38 323	59 015	71 539	49 804	3,2	3,7	3,5	2,1
Children	1-4	160 478	208 946	259 582	196 219	13,4	13,1	12,7	8,3
Primary school age	8-11	130 538	173 856	212 571	249 699	10,9	10,9	10,4	10,5
Secondary school age	12-18	156 885	275 936	331 121	406 128	13,1	17,3	16,2	17,1
Working age	males:15-59; females: 15-54	532 576	750 984	1 043 759	1 371 561	44,5	47,1	51,1	57,8
Females in reproductive age	15-49	231 136	338 141	480 329	646 535	19,3	21,2	23,5	27,2
Males in household formation age	22-28	50 299	73 370	128 769	158 094	4,2	4,6	6,3	6,7
Aged	65 and older	71 942	79 082	82 628	82 003	6,0	5,0	4,0	3,5
Total population		1 197 595	1 595 006	2 043 954	2 373 493				

Source:
NSO, 1994. Population of Mongolia, Ulaanbaatar
NSO, 2001. The main results: Population and Housing Census, Ulaanbaatar

Figure 2. **Functional age groups, Mongolia,1969**,



Source:
NSO, 1994. Population of Mongolia, Ulaanbaatar
NSO, 2001. The main results: Population and Housing Census, Ulaanbaatar

The future population composition of Mongolia

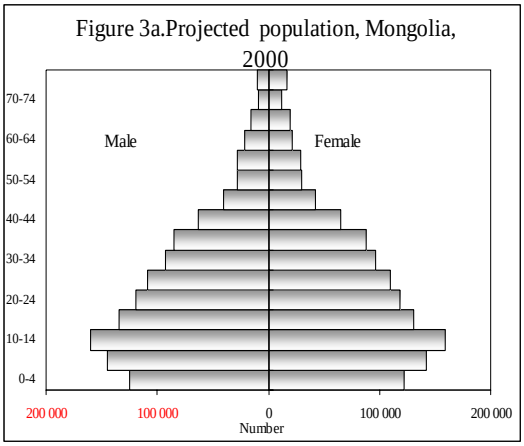
Population projections were carried out by the NSO after conducting the 2000 Population and Housing Census. This section deals with the sex and age population composition resulting in the projection exercise. Table 3 shows the population projection and annual rate of growth from year 2000 to 2020 according to the medium variant. This is the projection with the most likely future fertility, mortality and migration trends. Because of the assumptions of fertility decline (from a TFR of 2.4 children per woman in 2000-2005 to 1.9 in 2015-2020) and the prevalence of comparatively high mortality (a life expectancy a birth of 63.8 years in 2000-2005 to 68.8 in 2025-20 for males and 68.1 and 73.4 for females in the same quinquenia), the population will experience a moderate annual rate of growth. This growth, however, can not be considered low and it will probably continue being over 1 per cent for a long period, mainly because the substantial expansion experienced by the Mongolian population during the 1970s and 1980s. This population growth with low fertility rates is caused by the so-called *population momentum*, which will be examined in the next section.

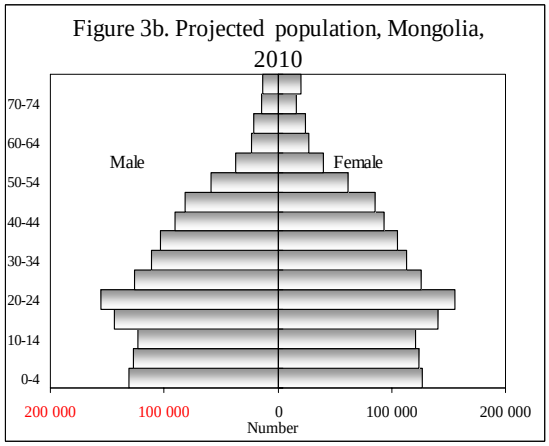
Table 3. **Population projection, Mongolia**

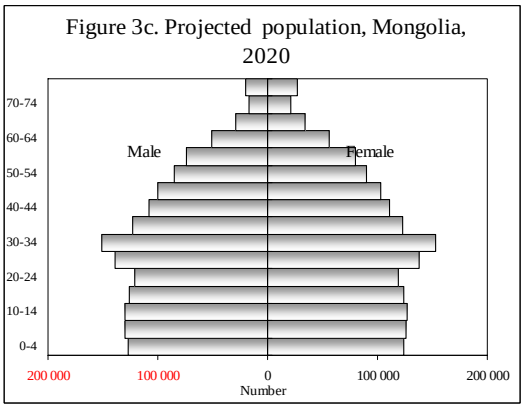
Years	Population	Annual rate of growth (%)
2000*	2 389 661	
2005	2 562 261	1,40
2010	2 741 774	1,36
2015	2 918 624	1,26
2020	3 087 048	1,13

***Source**: NSO. 2002. Population Projections of Mongolia: Analysis on the 2000 Census, Ulaanbaatar*
NSO 2003. Mongolian Statistical yearbook., Ulaanbaatar
** The population corresponding to year 2000 differs from the figure presented in Table 2 because in that table the number corresponds to the 2000 Census (conducted in 5 January) and in this table corresponds to the census population advanced to mid-2000.*

Figures 3a to 3c show the age and sex composition of the projected populations for the years 2000, 2010 and 2020. These pyramids are the expected continuation of those observed in Figures 1a to 1d. They reveal a process of demographic transition from high fertility and high mortality rates to low fertility and low mortality rates. The latter, however, cannot be considered as satisfactory. There is much space for further mortality decline. Notice that the life expectancies at birth at the end of the projection period considered here (2015-2020) are 68.8 years for males and 73.4 years for females, almost 10 years bellow the present life expectancies at births observed at present in many developed countries.



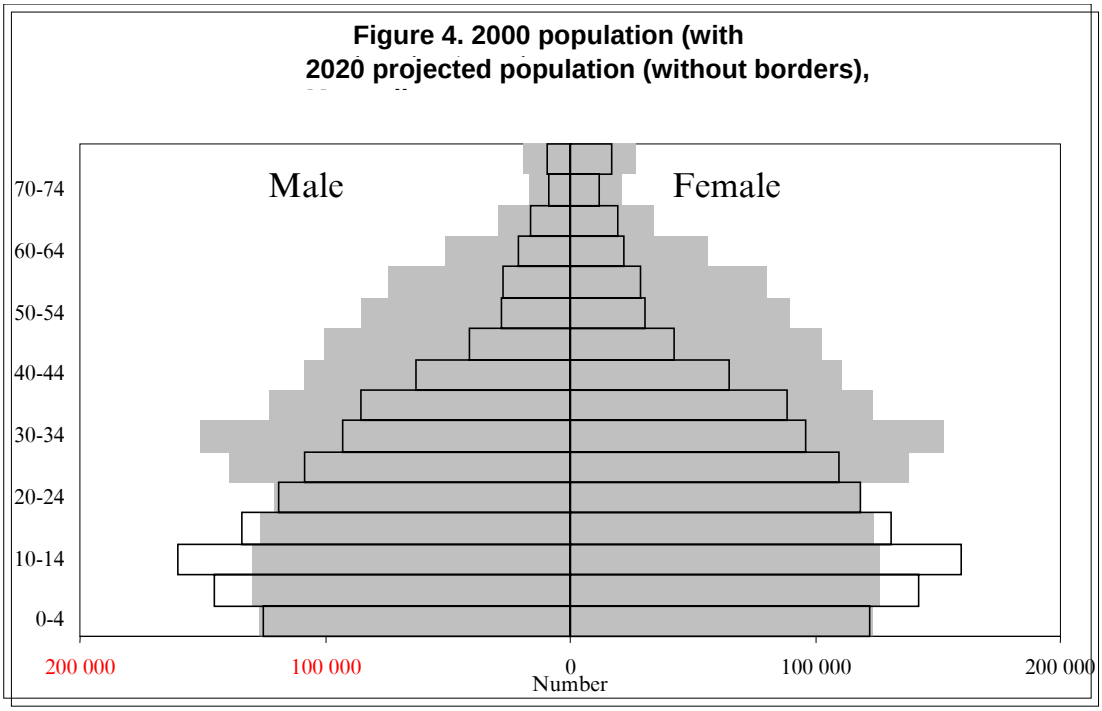




***Source**: NSO. 2002. Population Projections of Mongolia: Analysis on the 2000 Census, Ulaanbaatar*

The pyramids clearly show a process of population aging, that is, the number of children grows somewhat slower than the number of adults and the aged. However, this pattern is moderate. For example, when the base of the pyramid projected for year 2020 is compared with the 1975-79 and 1980-84 large cohorts (25-29 and 30-34 years old), they are noticeable smaller but not when they are compared with the older cohorts. This is evident in Figure 4 that show the pyramid corresponding to the 2020 projected population superimposed to the 2000 population.

Figure 4. 2000 population (with 2020 projected population (without borders),



***Source**: NSO. 2002. Population Projections of Mongolia: Analysis on the 2000 Census, Ulaanbaatar*

The previous figures show changes in the shape of the pyramids especially starting in year 2000. The form moves from a transitional to a more mature population. In particular, the pyramid corresponding to year 2020 has a transitional profile between young and old types, but still with a relatively high representation of children. Evening up of number in younger and middle age groups denote the persistence of very near replacement level fertility.

Tables 4 and 5 as well as Figure 5 show other indicators of the most probable age and sex composition of the Mongolian population during the next two decades. They also indicate a large expansion of the working age population and a moderate increase of the elderly. It also points to a decline of the younger-age population. However, as indicated above, in absolute, and even in relative terms, this decline is moderate considering the sharp decline in fertility. The reason is that past high fertility rates that resulted in a large population that, when it reaches reproductive ages, gives birth to large number of children in spite of its low fertility rates.

Table 4. **Selected indicators of age and sex composition, Mongolia, 2000, 2010, and 2020**

Measures	Year		
	2000	2010	2020
Sex ratio	98,5	98,5	98,3
Median age	21,6	25,4	30,2
Child dependency ratio	58,9	40,1	35,1
Aged dependency ratio	3,9	4,0	4,6
Total dependency	62,7	44,1	39,7
Ageing index	6,6	10,0	13,2
Caretaker ratio	25,2	23,6	16,6

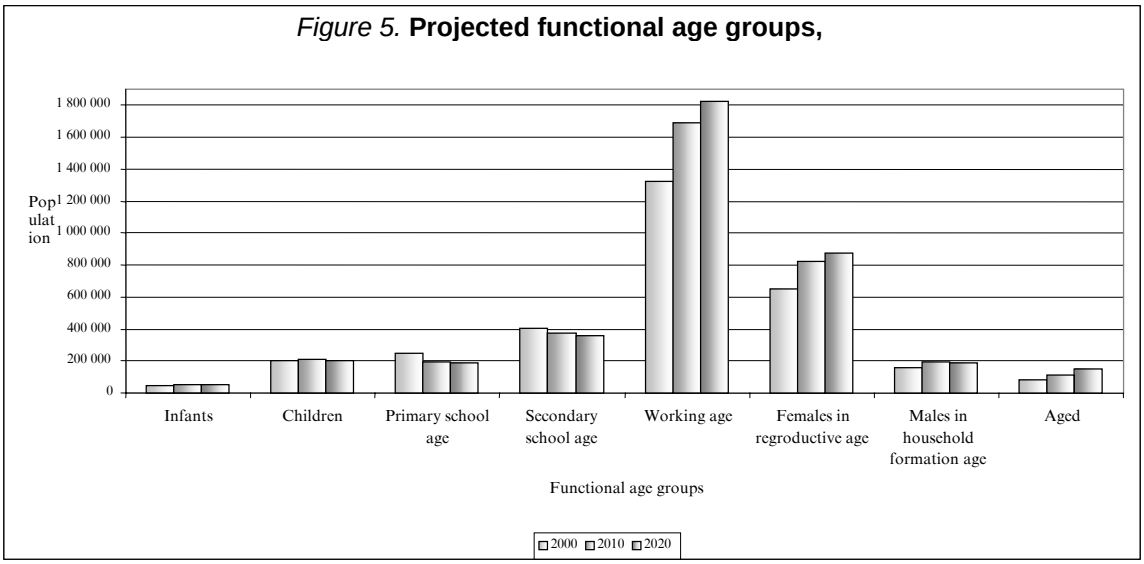
***Source**: NSO. 2002. Population Projections of Mongolia: Analysis on the 2000 Census, Ulaanbaatar*

Table 5. **Selected functional age groups, Mongolia, 1969,1979, 1989, and 2000**

Functional age groups	Age (years)	Population			Percentages (as of total population)		
		2000	2010	2020	2000	2010	2020
Infants	0-1	48 604	50 406	50 719	2,0	1,8	1,6
Children	1-4	199 095	207 647	200 125	8,3	7,6	6,5
Primary school age	8-11	249 688	194 798	190 576	10,4	7,1	6,2
Secondary school age	12-18	406 128	371 918	360 395	17,0	13,6	11,7
Working age	males:15-59; females: 15-54	1 323 005	1 690 055	1 824 786	55,4	61,6	59,1
Females in reproductive age	15-49	650 939	820 050	871 700	27,2	29,9	28,2
Males in household formation age	22-28	158 094	195 143	186 143	6,6	7,1	6,0
Aged	65 and older	82 561	109 196	147 227	3,5	4,0	4,8
Total population		2 389 661	2 741 774	3 087 048			

***Source**: NSO. 2002. Population Projections of Mongolia: Analysis on the 2000 Census, Ulaanbaatar*

Figure 5. **Projected functional age groups,**



***Source:** NSO. 2002. Population Projections of Mongolia: Analysis on the 2000 Census, Ulaanbaatar*

It is important to finish this section with one relevant question: are the future pace of population growth and changes in the age composition of the population in Mongolia favorable to a process of socioeconomic development or, on the contrary, a limitation to economic growth and the welfare of the population? Previous to respond this question it is important to examine a

quite relevant process that is frequently mentioned in the demographic literature but seldom analyzed: the *population momentum*.

The population momentum

Population momentum is when population continues growing after replacement-level fertility is reached. Past high fertility results in a population with a large proportion of people in the youngest ages. Births continue to outnumber death as this young section moves through childbearing years. Eventually, this large age group becomes old and dies and the population runs out of *momentum*. Deaths equal or exceed births and the population ceases to grow. Level of replacement- fertility refers to the level of fertility at which couples have only enough children to replace themselves, or a little more than two children per couple. It is not exactly two children because mortality has to be taken into account (PRB, 1998; Rowland, 2003).

In this section the *momentum* of the Mongolian population will be studied. As a first approach please note Figure 1d. The bars representing the female population in the reproductive ages, especially from age 15 to 39 are large as compared to the upper bars. Notice also that the bar corresponding to age group 10 to 14 is also large. This is the result of the high fertility and a substantial decline of mortality observed in the past, especially from 1970 to mid-1980s, when total fertility rate (TFR) reached values well over 6 children per women. As mentioned above, the pyramid's first two bars reveal a fertility decline. However, these bars are not as small as one may expect considering the magnitude of fertility decline: from 6.4 in 1990 to 2.8 in 1995 and to 2.2 in 2000 (NSO, 2003). Notice also Table 3c were the sex and age composition of the 2020 projected population is presented. The bars observed below the bar that indicates the substantial starting of fertility decline (25-29 years old) are not small considering the low fertility rates assumed in the projection (a little higher than two children per women) and the previous high fertility levels. As mentioned earlier, in spite of low fertility, population will continue growing during the present and following decade. These rates of growth are over 1 percent per year (NSO, 2002). The explanation of this trend is *population momentum*.

There is a more technical approach to analyze *population momentum*. It is based on projecting a *stationary population* with a cohort component method. A stationary population is a population with constant replacement-level fertility and constant mortality. The result is a population with zero growth and constant age structure after approximately 100 years. Therefore, if a country's population is projected for 100 years by assuming constant replacement fertility, constant mortality (life expectancy), at the level of the initial year and no migration, after a century the population will be stationary (Rowland, 2003). A comparison of the size of the initial population reveals the inherent level of momentum. This comparison can be done in terms of percentage growth.

Table 6, first column, shows the 2000 mid-year census population projected assuming a constant level of mortality: life expectancies at birth of 63.8 for male and 68.1 for females. These mortality levels were assumed by the NSO population projection for the quinquenium 2000-2004 (NSO, 2002). The replacement fertility was estimated as a TFR of 2.24 children per woman,

taking into account the level of mortality. After 100 years the size of the population will be 3,769,627. Hence, population increases from 2000 to 2100 will be 1,38 million or 57.7 percent. This percentage indicates the magnitude of the *momentum*. It means that if Mongolia experiences a replacement fertility-level and the estimated mortality level of 2000-2004 its population will grow by 57.7 percent in 100 years. This result indicates that in spite of fertility decline the population will continue to grow up to the 2060s. After that, if the demographic regime is constant, the population will stop growing and experience only minor variations but tending to stabilize. This clearly shows that if fertility remains at approximately the present level the population will not experience an absolute decline. Notice that if mortality decrease the *momentum* will last longer and may go beyond the 2060s.

Table 6. **Population projections under different fertility and mortality rates,Mongolia**

	Population projections under different scenarios			
	TFR=2.24	TFR=1.80	TFR=2.50	TFR=2.24
	$e(0)_M$=63.8	$e(0)_M$=63.8	$e(0)_M$=63.8	$e(0)_M$=73.3
Years	$e(0)_F$=68.1	$e(0)_F$=68.1	$e(0)_F$=68.1	$e(0)_F$=78.0
2000	2 389 661	2 389 661	2 389 661	2 389 661
2010	2 746 436	2 649 330	2 803 642	2 825 826
2020	3 136 387	2 928 155	3 259 144	3 309 833
2030	3 422 935	3 090 119	3 625 108	3 707 207
2040	3 606 277	3 105 974	3 922 593	4 020 622
2050	3 725 150	3 035 615	4 175 251	4 270 352
2060	3 758 922	2 871 846	4 359 273	4 426 269
2070	3 752 880	2 655 586	4 525 889	4 528 888
2080	3 766 454	2 466 725	4 720 765	4 646 275
2090	3 773 774	2 298 010	4 909 437	4 761 349
2100	3 769 627	2 124 851	5 099 169	4 861 861

***Source**: Researcher's projection based on the Population Projections of Mongolia: Analysis on the 2000 Censusr*

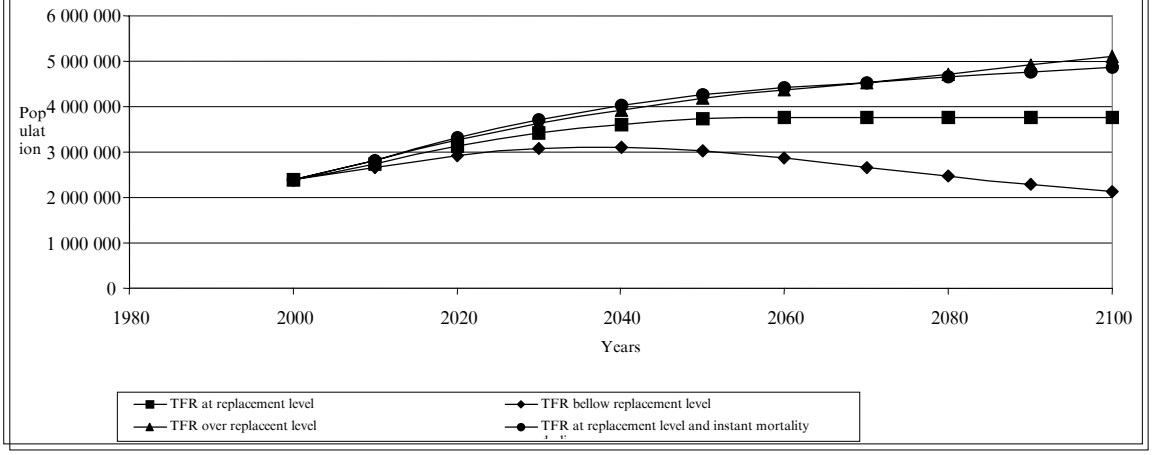
Additional exercises were performed in the following columns of Table 6. In the second column the population of Mongolia was projected using a below-replacement-level-fertility: the TFR was 1.8. Life expectancies at birth were assumed to be the same as in previous projection. In this case population will continue growing by *momentum* up to 2040. The percentage increase will be 30.0 or 716,313 persons. After 2040 the population will experience an absolute sustained decline. However, in spite of the very low fertility levels the population will continue growing for four decades. The third column of Table 6 shows the population assuming an instant increase in TFR of 2.50 children per woman. The assumed life expectancies at birth are the same as in the exercises presented in the previous two columns. In this case the population will reach 5 million by the end of the present century. Finally, the fourth column of Table 6 indicates the future population assuming a

constant TFR at the present replacement level (2.24 children per woman) but an immediate substantial decline of life expectancies at birth: 73.3 years for males and 78.0 years for females. These life expectancy values were not randomly selected. They correspond to the expected life expectancies for Ulaanbaatar for year 2025 according to the projections carried out by the NSO (2002). In other words, they are not unreal high, but possible to reach with substantial investment in health, education, and in the welfare of the population. Under these assumptions, by 2100 the size of the population will reach 4.9 million.

The importance of the third and fourth columns is the comparison of a scenario where only fertility was increased with another where only mortality was decreased. The assumed fertility rise is not very high. The experience from most countries reveals that when fertility declines it is not easy to increase it again and, if attained, gains are quite limited (Weeks, 2002). There are several policies that have been used by the more developed low-fertility countries in order to increase their extremely low fertility. They can be grouped into three categories: Financial incentives, support for parents to combine work and family, and broad social changes supportive of children and parenting (McDonald, 2002). All these measures are extremely costly. For example, financial support has to be attractive to convince families to have an additional child. Subsidized childcare may also be expensive. Maternity and paternity leave paid by a state social security plan is also costly. For a country like Mongolia these pro-natalist measures imply an important deviation of resources that otherwise can be utilized in the expansion and improvements of social services or invested in the development of the country's infrastructure. Notice, however, the scenario in which an immediate mortality decline is assumed. In spite of replacement fertility level, the population reaches near 5 million in year 2100. Nevertheless, if these two scenarios are compared, up to year 2070 population increases more when mortality is assumed to experience an immediate decline (fourth scenario) than when fertility increases and mortality remains constant (third scenario). The expansion of the health infrastructure, improvement of the quality of health services and betterment in the standard of living of the most vulnerable population in order to reduce mortality could be less costly than the pro-natalist policy and have similar results in term of population growth, in addition of being a more sensible and ethically correct policy.

Figure 6 shows the curves corresponding to the population evolution according to the four proposed scenarios. Notice the proximity of the curves that represent the third and fourth scenarios. As mentioned above, only in 2070 the curve representing the projection that assume higher-than-replacement fertility will surpass by a little margin the projection where a low mortality is assumed.

Figure 6. **Population projections under four**



***Source**: Researcher's projection based on the Population Projections of Mongolia: Analysis on the 2000 Censusr*

This is a theoretical exercise in the sense that it consists of using a model (stationary population) to analyze the reality. Actual populations seldom behave as models, but starting from them, it is interesting to examine how a population may deviate from the ideal situation described by the model. In this particular analysis the main result obtained is that population in Mongolia will continue to grow, even if fertility persists at the present low level or even if it declines even more. In addition, it was also demonstrated that a substantial decline in mortality might have similar effects in population growth than a viable fertility increase.

Discussion

Among countries that have policies to promote or maintain current rates of population growth it is possible to distinguish two groups. On the one hand are the low-fertility, slow-growing developed nations, in particular European and North American countries as well as Japan. Governments perceive population growth an economic necessity especially considering present or possible future deficits in the labor force and the increasing number of retirees. Second, there are some developing countries where population growth is viewed as too low mainly because of nationalistic reasons, a traditional and outdated family ideology, or simply because slow natural population growth is perceived as being a barrier to achieve national objectives (Weeks, 2002). In some cases pro-natalist policies in developing countries may have valid justifications, but they should be implemented on the basis of a reality that has been analyzed from a demographic, social, economic and ecological point of view. In the case of Mongolia, there are three issues that should be considered.

The first topic is the general relationship between population growth and economic development in the context of the developing countries. This relationship can be summarized in three questions: Is population growth a stimulus to economic development? Is population growth unrelated to economic development? Is population growth detrimental to economic development? (Weeks, 2002). Of the large number of studies that have

attempted to analyze the relationship between these two variables, some conclude that there is a positive, some that there is a negative and some that there is no relationship (Cassen, 1994). More recently, however, the controversy has focused not on macro-economic studies, but on more micro-level issues such as the influence of population growth on poverty, the role of women, health, the development of human resources, the environment and migration. The results of most studies support the view that rapid population growth in developing countries under conditions of high fertility is adverse to many development goals. This that not mean that fertility and population growth at all rates, at all times, and regardless of the wealth of countries and the size of their populations, necessarily has negative consequences for all aspects of development. Nevertheless, in general, most studies conclude that many goals of development are best accomplished by low fertility and slow population growth (Cassen, 1994).

The fall in the proportion of children and adolescents, as well as the decline in its pace of growth, will probably be beneficial to Mongolia's development and welfare of families. Weaker population pressure to the health and educational systems will allow an improvement of service delivery plus a more extensive geographical and social coverage. At the household level, families will be able to invest in their own well being instead of having to support a large number of children.

It is important to point out that during the present and next decade the age composition of the Mongolian population could be particularly suitable for a process of economic development. The proportion of the young population in the overall population will diminish and the proportion of the elderly will not increase very much. Important resources, which would otherwise be diverted to social expenses, can be directed to improve the infrastructure of the country. The population in working age will increase significantly. Absorption of the numerous labor resources caused by an eventual rapid economic growth will be likely to result in substantial economic and social development. This particular demographic stage is called *demographic bonus* because of its positive connotation.

Under conditions of a healthy process of economic development similar to that experienced by many Asian countries, the present, and especially the future composition of the Mongolian population could be a *demographic bonus.* However, considering that the traditional base of the country's economy is the livestock sector, one may ask whether or not this area will be able to absorb the future expansion of the working age population without creating an underclass of poor herders, produce negative environmental effects, and end up pushing people to cities where will probably survive in the lower ranks of the informal sector. Will the livestock sector or other sectors of the economy receive enough investment to create productive employment to absorb the future labor force? It is not possible to respond these questions in this study, but these are issues that require serious research.

The second issue refers to the *population momentum*. As demonstrated in the previous section, population will continue to growth in spite of the low level of fertility. A relevant question regarding this issue is whether or not it is necessary to increase the pace of population growth in Mongolia considering the expected rates. As shown in the previous section, even if fertility remains at the replacement level population will continue

increasing for the next 50 years. This increase will be even sounder with a rapid and substantial process mortality decline. The next logical question is: Will a population increase larger than that projected benefit the country? In other words, will a pro-natalist policy directed to increase the pace of population growth be favorable for the Mongolia? As in the first issue considered in this section, it is not possible to provide a categorical and conclusive reply. However, the topic can be examined and discussed.

The idea that a rapid population growth is beneficial for development has some foundations. In Europe and the United States, development may well have been stimulated by a fast and sound population increase. According to some historians, a major determinant of the Industrial Revolution in Europe was the decline in mortality and subsequent population growth. Although history may show that population growth was favorable for development in the now industrialized nations, there are very important differences between them and that of modern developing countries. The less developed countries today are not retracing the steps of the currently developed nations. The amount of capital to create a job now is several times larger than it was in the past when the developed countries began their processes of economic growth. The rate of economic growth in many underdeveloped countries has recently been higher than at comparable periods in the history of the developed nations; however, population growth is also significantly higher. In other words, more capital-intensive technologies and rapid population growth it is not a great way to create employment and set off a process of sustained development. To facilitate economic and social development, population growth must occur within certain structures and, according to this structural and institutional environment, a given rate of population growth can be beneficial or negative. The most important issue is that this complex relationship between that context and the pace of population growth should be studied systematically.

It is also important to consider that the starting point of economic development is capital investment. Capital consists not only in equipment and construction, but also in investments in human capital such as education, health, the accumulation and application of knowledge. For an economy to grow, the level of capital investment must grow. The higher the rate of population growth, the higher the rate of investment must be. If in a country population growth overreaches the rate of investment, then the country will be likely to be struck in a vicious cycle of poverty: Economic growth will probably be enough to feed more mouths but not enough to escape from poverty (Weeks, 2002; Leibenstein, 1957). It seems that currently less developed countries do not need a large population but better quality human resources, a goal that can be better achieved with a small population.

The third issue refers to the real effectiveness of a pro-natalist policy in a developing country. As mentioned above, a policy to increase fertility is expensive and its results are dubious. There are five examples worth to mention.

Upon independence in 1965, the government of Singapore adopted a strong anti-natalist policy initially based on a family planning approach and then on a number of disincentives to couples with more than two children. Between 1966 and 1985 the TFR in the country dropped from 4.5 to 1.4 children. Because of several economic, social and political concerns the government moved to a pro-natalist policy driven mainly by incentives. The

idea was a pro-family policy that provided strong support to working mothers. The government introduced generous tax incentives for working mothers, employers were encouraged to grant special leave for working mothers with sick children, and subsidized child care was widely available (Tarmugi, 1999). The goal was to increase fertility back up to replacement level. However that did not happen and by the end of the 1990s the TFR had risen to 1.8. This increase seemed caused by women who had postponed births at an earlier age and had gone ahead and had them. By year 2000 TFR was back down to 1.5 children per woman (Weeks, 2002)

In 1976 the former German Democratic Republic introduced a number of incentives to increase fertility. For example, each mother was granted a year of maternity leave with an allowance amounting to 70 to 80 per cent of salary and other welfare benefits. However, these incentives led to accelerated family formation for some women, without affecting their completing fertility (van de Kaa, 1987; Monnier, 1990).

France has experienced a low birth rate for longer than any other country in the World. It provides monthly allowances to couples who have two or more children, despite the lack of evidence that such allowances have had any measurable impact on fertility. Single mothers are also assured a monthly allowance, and all mothers in France have access to nursery school placement for their children by age three to make child rising compatible to work (Bergman, 1996). It is considered that these measures have not been enough to increase fertility but that they may have contributed to maintain TFR at 1.8 children per woman, one of the highest in Europe.

Because of diverse unexpected or non-taken into account factors, pro-natalist policies may experience notable failures. For example, in Chile, during the 1970s and 1980s, the government of Pinochet called for a significant population increase in population mainly for nationalistic reasons. However, events worked in the opposite directions. After overthrowing Allende's government in 1973, the Pinochet dictatorship imposed a level of austerity that cut incomes and raised the levels of unemployment. These encouraged emigration, postponement of marriage, and the widespread use of contraception within marriage. Obviously population did not increase but continue a process of decline.

It is quite difficult to change the reproductive behavior of a population decided to reduce their fertility. In 1966 the Romanian government decided to halt the descending trend in fertility, which was being realized mainly through abortions, by establishing a policy that made abortions illegal. The government also discouraged the use of contraceptives by prohibiting their importation. Although birth rate increased substantially for a short period, in 1997 it did begin to drop again as women resorted to illegal abortions and found other means of family planning (mostly rhythm and withdrawal). By 1989 the TFR was 2.3 children per woman, only a little higher than the 1.9 during 1966. By the end of 1989 Nicolae Ceausescu, longtime dictator of Romania, was removed from power. One of the first legislative acts of the new government was to legalize abortion in order to reduce maternal mortality (Serbanescu, et al. 1995). By the early 2000s TFR has dropped to 1.3.

This examples show how difficult is to increase fertility when it has experienced an important decline, and especially when it is near replacement

level. Government's pro-natalist policies are able to increase birth rates just a little or have no significant effect, no matter how expensive or strict they are.

In any case, a country has the right to increase their population but these three issues discussed here have to be considered, especially in a country as Mongolia with limited resources and a strong *population momentum*.

Conclusions

In many socialist countries low birth rates appear to have been a response on the one hand, to the economic limits placed on the family especially scarce and undersized housing and limited consumer goods and, on the other, on the emphasis on female education and labor force participation. In the particular case of Mongolia, during the 1970s and 1980s the population increased because of a strong pro-natalist campaign. However, as economic problems begin to mount fertility began what it seems an irreversible decline.

Contrary to the perception and opinions of many policy makers the present demographic situation of the country seems adequate in terms of economic development. It seems that the economic and social structures of the country are not sufficiently developed to undertake a population increase resulting from a rise in fertility. Even if the population issue is considered from a nationalistic perspective, it appears to be better to have a small, skilled, educated and healthy population than a large, unqualified, uneducated and weak population. Actually, the main present and future population problem in Mongolia is whether or not the main economic sector of the country, the livestock economy, will be able to absorb the large population in working age that is resulting from the past high fertility rates.

More important than invest the scarce resources of the country in increasing fertility is to invest in improving the health status of the population, reduce mortality levels and reduce poverty. It is quite important for the academic and research agencies in the country to study scientifically and examine the real possibilities to increasing fertility and mainly its consequences. The debate should be based in facts and not in poorly developed ideological arguments.

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