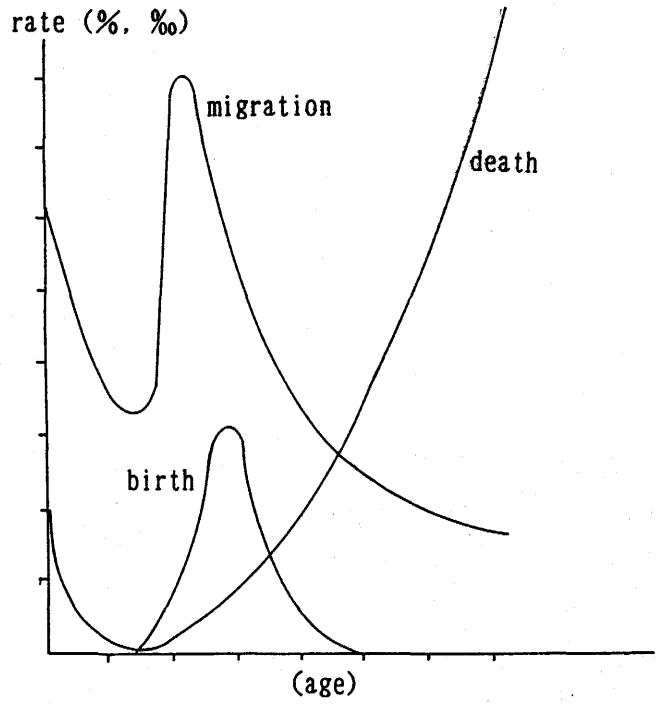
Introduction

Though the age specific migration rate varies greatly as does birth and death, there is a considerable difference in the manner in which each is generated. For instance, the birth probability by age normally draws a relatively simple exponential curve that reaches its highest in the ages of mothers between 20 and 25 years old and becomes lower on either side of that age group as the age becomes farther apart from it; the death probability likewise draws a relatively simple curve, the normal pattern being a high level during babyhood but declining fairly steeply until the lower teens and rising gradually thereafter, excepting in very rare occasions such as in pre-war Japan when a small peak was observed around the age of 20. By contrast, the migration probability curve is slightly high during infancy, and becomes extremely low during the ages of compulsory education, sharply rises after compulsory education has been completed, reaching the highest peak between the ages of 15 and 25, and gradually declines thereafter. In some areas, a small peak appears again between the ages of 50 and 60; the curve is a complex one with one trough and two peaks (Fig. 1).

Figure 1: Age pattern of birth, death and migration rates



Note: birth and death rates are ‰ and migration rate is %

The foregoing means that the probability of the occurrence of birth, death and migration is regulated by age which represents the lapse of time during one's life, but needless to say, there is a decisive difference in the way each of these variables are regulated. While the phenomena of birth and death, particularly death, is strongly affected by man's biological elements with relatively little room for cultural and socio-economic conditions to enter, migration is strongly affected by cultural and socio-economic conditions rather than by age.

The curves drawn by birth probability and death probability, therefore,are basically of a pattern common to all mankind, that is, with a trough or a peak appearing at approximately the same ages for all mankind. The migration probability curve, however, not only greatly varies according to the differences in cultural and socio-economic conditions, but the probability of its occurrence is susceptible to change by the impact of other cultures and changes in various conditions, with the result that the number of troughs and peaks in the curve, and the ages at which they occur, differ greatly by areas.

Also, birth (entry) and death (the unilateral withdrawal) of an individual into and from the population, are experienced only once in the life of that individual。 On the other hand, the two aspects of migration, namely, withdrawal (outflow) and entry (inflow) can be experienced a number of times during the life of an individual. Furthermore, while birth and death are each an independent phenomenon, withdrawal (outflow) and entry (inflow) are mutually interdependent as withdrawal from a certain area is accompanied by the entry into another area: and while birth or death may take place at only the one place, the places where withdrawal (outflow) occurs and where entry (inflow) occurs in the latter case are different.

Those differences influence the relative ease of statistically grasping and analyzing the two. They largely explain why birth and death statistics are better kept compared to migration statistics and also why the subject of migration in the field of demography has not been analyzed in depth and why there is only a small accumulation of research results.

However, the curves drawn by the occurrence probabilities of birth, death and migration are common in the respect that they, by nature, all follow an exponential function. So, although the curves drawn by birth and death may be said to be relatively simple, they are only so in comparison to migration probability, and actually their curves in

themselves are fairly complex.

In spite of such complexity, the recent accumulation of research results on birth and death in mathematical demography has been remarkable, and particularly the mathematical expression called the model schedule has made it possible to summarize and systematically organize the regularity of the probability of their occurrence by age group; for example, preparation of the model life table has made it possible to advance demographic analysis in the developing countries where data are incomplete or doubtful because both birth and death are phenomena which draw relatively simple curves. In the case of migration, however, the development of a model schedule was unsuccessful due to the complexity of the curve depicting probability of occurrence by age group. It was Andrei Rogers who generated a model for migration schedule.

The current study intends to establish a migration schedule as a part of the study on migration in developing countries and aims to analyze migration by using such a schedule. The object of the study in fiscal year 1988 was to prepare migration schedules for Japan (1980), the Republic of Korea (1985) and Thailand (1980) whose migration data by age groups are recorded in the reports of the population census which are in the collection of The Institute of Developing Economies. The following describes the results of the said study. It starts with a brief description of Rogers' migration schedule, then introduces how to obtain the parameters of migration schedules for the aforesaid three countries, and lastly shows the migration probability by age groups in those three countries and the parameters of their respective migration schedule.