A COMPARISON OF MALE OCCUPATION SPECIFIC LABOR FORCE SEPARATIONS OBTAINED THROUGH A LONGITUDINAL STUDY AND THOSE OBTAINED THROUGH STANDARD WORKING LIFE TABLES

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Labor Force Replacement Needs

The future occupational employment needs of a labor market area can be forecast by considering expansion needs caused by growth in the total number of jobs in the economy and by evaluating replacement needs for the people holding jobs during the period of study. The vast majority of time and effort by manpower analysts has been devoted to estimating the expansion needs of labor markets. Studies have indicated, however, that the number of job openings resulting from replacement needs frequently exceeds the number resulting from expansion needs. The number of job openings from labor force separations alone in the United States until 1985 is expected to be double the growth openings. 1/

Replacement needs are caused by people leaving the labor force, transferring occupations, and transferring to other localities. This paper will focus on the methods used to estimate needs created when males leave the labor force. These needs are called labor force separations or sometimes deaths and retirements, since they are the usual means of exiting from the labor force.

Method of Computing Male Occupational Labor Force Separations

There are several ways to approach the estimation of male occupational labor force separations. The method applied to a given labor market depends to a great extent upon the type of data available to the analyst. If one knows only the overall percentage of males leaving the labor force each year, then the total number of job openings for a future year can be estimated. This method would have the limitation of assuming the same separation rate for all males regardless of what.occupation they were, as well as the assumption that the percentage for the base year will continue in the future. The problem in finding a method of computing male separations has been one of attempting to minimize the number of quantitatively significant limitations.

The most widely used method of estimating male labor force separations is by the use of working life tables and occupation specific age distributions. This method has been used for some time by the U.S. Bureau of Labor Statistics in estimating National and State labor force separations. Age-specific labor force participation rates and age-specific death rates are used to create the working life table.

The tables of working life follow through successive ages the labor force participation experience of the population. 2/ A separate estimate is yielded of deaths and retirements for each age group under consideration. The death rate is the overall death rate for the population obtained from standard life tables. There are several advantages to this method. The main one is that it integrates data sources effectively into one system. A complete explanation of working life tables may be found in BLS Bulletin 1001. 3/

One assumption of the working life table technique is that before the maximum age of participation, no one leaves the labor force except through death. This assumes that there are no disability retirements and also assumes that no one withdraws from the labor force to attend school fulltime. How severe a limitation this is depends on the socio-economic factors affecting the area being considered.

The principal limitation of the working life table/ occupational age distribution method is the assumption that within specific age groups the separation rate does not vary by occupation. It is well known that retirement patterns and even mortality rates do vary by occupation. This assumption is usually detailed when presenting data from the working life table method. There is no way for analysts to circumvent this limitation without tapping another data source.

One additional method of estimating the number of occupational labor force separation openings is by the use of a longitudinal study. The actual labor force participation patterns of a sample can be followed over a time period to determine such factors as deaths and retirements by occupation, occupational transfers, and geographic mobility. This method has the advantage of producing a great deal of information without having to make adjustments for comparability with other sources.

The longitudinal method while yielding valuable information, however, has problems of data collection practicality. The cost of this type of survey can be great if the sample size is large. Moreover, obtaining respondent cooperation over an extended time can be difficult, particularly since similar information must be asked several times.

Purpose of this Paper

This paper will show the differences that occurred between computing occupational labor force separations by using a longitudinal study and by computing separations from age distributions and a working life table. The source of all data used in the comparison is the Saudi Arabian Labor Force Survey conducted by the Central Department of Statistics. No independent sources were interjected into the comparison that would create a need for adjustment factors to achieve the data comparability. The results will provide analysts with a quantitative measure of the limitations of the standard working life table approach.

Saudi Arabian Labor Force Survey

In order to present a clear explanation of the procedures used in developing occupational separations from the labor force using both methods, it will be helpful to give a brief explanation of the survey from which the data are taken. The Saudi Arabian Labor Force Survey is part of the Kingdom's Multipurpose Household Survey. 4/ Households are contacted for a 13-month period in order to collect information on demographic characteristics, labor force status, and income level. Approximately 60,000 persons were in the survey. Statistics on sampling errors will be available after the final round of the survey is completed.

Major labor force questions are asked two times during the survey period of all household members 12 years of age and over. The survey produces information on employment status, hours worked, occupation, industry, class of worker, job-related income, occupation worked at last year, time since last worked for those not now employed, activity engaged in to find work for those seeking work, last job of the labor force reserve, and second job of dual jobholders. In addition to these major questions, monthly questions are asked to monitor seasonal fluctuations in economic activity. Any labor force information on the individual can be readily classified by age, sex, nationality, educational level and marital status. Information from the

demographic characteristics, such as migrations and deaths, are linked by the computer to the labor force information for the individual.

How the Labor Force Separations were Developed - Longitudinal Method

The first step in developing occupation specific labor force separations was to separate all of the labor force participants according to occupational groups. The four groups chosen were: (1) Professional, Technical and Managerial workers; (2) Sales, Service and Clerical workers; (3) Operatives, Laborers and Production workers; and (4) Farmers and workers not classified by occupation. Each of these four groups were further divided into five groups: Under 25 years of age; 25-34 years of age; 35-44 years of age; 45-54 years of age; and 55 years of age and over. Thus, twenty distinct occupational age groups were stratified.

The occupation specific male labor force separations from the longitudinal method were derived by dividing the number of males who were not in the labor force at the end of the survey by the number who were in the survey at the beginning. As of the writing of this paper, nine months of data have been processed, so adjustments were made to produce an annual rate. An exit rate for each of the four occupation groups was developed to compare with the rate obtained through the working life table approach.

Ancillary products of the Saudi Arabian longitudinal study are the development of occupational mobility and geographic mobility estimates. These factors were considered in the separation study since they affect the size of the cohort groups under consideration. If a person changed occupations during the survey period, the occupation he was engaged in during the initial survey round was the one assigned to him for the separation study. Anyone who in-migrated to or outmigrated from a survey household during the survey period was excluded from the labor force separation estimates since their labor force status while out of the survey is unknown. The geographic mobility factor is particularly important to Saudi Arabia due to the large number of foreign workers in the Kingdom.

How the Working Life Table Rates were Developed

A working life table was developed from the data collected through the Multipurpose Survey. The standard methodology found in the BLS Bulletin 1001 was followed in developing the table. Some columns of the standard working life table, such as the average number of remaining years of work, were not developed, as this information would not contribute to the development of the age-specific labor force withdrawal rates.

The age-specific withdrawal rates produced by the table were adjusted to conform to the five age groups of the longitudinal study. The withdrawal rates by age were then applied to their respective occupational age numbers to arrive at a number of withdrawals for each of the four occupation groups, by the five age groups. A withdrawal rate for each of the four occupational groups was obtained by adding the withdrawals of the five age groups within the occupation and dividing this sum by the total number of males in the occupation.

Comparison of Results

Table 1 (immediately after references) depicts the separation rates for the four occupation groups resulting from both methods.

The Working life table/age distribution labor force withdrawal rate for Professional, Technical, and Managerial people was 182% of the withdrawal rate produced through the longitudinal study. Utilization of the Working life table/age distribution rate would result in a tremendous overestimation of the labor market needs for this occupational group. It was expected that the withdrawal rate for this group would be less using the longitudinal study. The magnitude of the difference, however, was alarming.

The Working life table/age distribution labor force withdrawal rate for Production workers, Operatives, and Laborers was 60% of the longitudinal study rate. The fact that the nature of the work of people in this group leads to more labor force withdrawals within age groups than other occupation groups is not being considered by the working life table approach. The severity of the differences between the Working life table/age distribution approach and the longitudinal studies was not as great in the other two occupational groups. The Working life table/ age distribution method produced a rate of 121% of the longitudinal study for Clerks, Salespersons, and Service workers. The withdrawal rate for Farmers obtained through the Working life table approach was 93% of the longitudinal study rate.

The rates obtained in the Saudi Arabian study are unique to that Kingdom, but the numerical discrepancies with the longitudinal study reveal the inadequacies of the Working life table/age distribution approach. Certainly more effort should be directed toward improving the quality of data used to estimate labor force withdrawals. The number of occupational withdrawals, together with the number of expansion openings, give the labor market analyst an estimate of the total job openings by occupation in an area. Vocational education coordinators frequently use this information to formulate training programs. If a vocational coordinator in Saudi Arabia utilized the results of the working life method to estimate how many people would have to be trained to replace the Production workers, Operatives, and Laborers who exited from the labor force, they would have accounted for only 60% of the labor market needs for these replacement workers.

A more critical situation would be encountered if the coordinator used the working life estimates for Professional, Technical, and Managerial workers. Numerous people would have been channeled into lengthy training programs in anticipation of jobs that would not have existed. Thus, it is essential that analysts continue to seek more effective methods to utilize in estimating labor force withdrawals.

This paper does not serve to render obsolete all applications of the Working life table approach. It has the desirable feature of being able to produce projected rates for future years which is important in analyzing future occupational needs.

As mentioned previously, the longitudinal method has potential data collection problems. The problem of respondent irritance during extended surveys can be minimized, however, if the group conducting the survey takes measures to inform respondents of the purposes of the survey. The officials at the Saudi Arabian Central Department of Statistics spent a great deal of time and effort publicizing the surveys, and these efforts have paid off in a virtually non-existent non-response problem.

References

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TABLE 1.

Occupation Group	Working Life Separation Rate	Longitudinal Separation Rate
Professionals, Technical, and Managerial workers	. 0186	. 0102
Clerical, Sales, and Service workers	. 0251	. 0207
Production workers, Operatives, and Laborers	. 0137	.0229
Farmers and workers not else- where classified	. 0539	. 0579