

Data Quality and Costs in Measuring Time-Related Underemployment

Sulhee Kim

Korean National Statistical Office

920 Dunsan-dong, Seo-gu. 302-701

Daejeon City, Korea

Shkim@nso.go.kr

1. Introduction

Time-related underemployment exists when a person's employment is insufficient in terms of the volume of work (Husmanns et al, 1992). Two alternative definitions can be considered based on a longer-term view or a shorter-term view and these were designed into a single questionnaire. A pilot sample survey with a newly designed questionnaire was conducted with 6,116 respondents in Korea. In this paper, we discuss several issues concerning data quality and costs in measuring the time-related underemployment.

2. Measurement of time-related underemployment

The international criteria by International Labour Organisation for the measurement of underemployment were examined, including 1) working less than the regular duration; 2) doing so involuntarily; and 3) seeking or being available for additional work, during the reference period (International Labor Organization, 1982; International Labour Organisation ICLS, 1998). As a result, two alternative definitions are distinguished from the point of view of different lengths of time. While the longer-term view is implemented by eight or nine questions, the shorter-term view is implemented by only five questions, which are also used in longer-term view. The estimates of underemployment using the two definitions show some differences given the ages, genders, industrial areas and main activities of the respondents. A larger number of people could be identified as underemployed when the longer-term view is used than when the shorter-term view is used, but there is a greater cost associated with the former.

3. Discussion

The interviewers in the survey were required to visit the sample households up to three times until they completed the interviews. At the first visit for the interviews in the pilot survey, 2,851 persons or 46.62% of the respondents were contacted and interviewed. In order to examine the benefit of efforts to reduce the non-response errors and the impact of the non-respondents on the estimates, we make comparisons between estimates based on successful responses at the first visit with responses from subsequent visits. We also examine the relationships between the benefits and the costs for the reduction of the non-response at the first visit, based on the costs of the field tasks.

Regarding labour and underemployed status, the longer-term definition of underemployment was used to classify the respondents as underemployed or not-underemployed. To be recognised as underemployed among the persons in the labour force, persons should have actually worked during the reference week or they should usually work less than the regular hours of work. Regarding the additional work desired, they should have desired and looked for more hours of work at the same time. They should also have been available for additional work during the reference week or be available in the future. As a result, 337 persons among the 2,868 persons in the labour force, about 12%, were recognised as being underemployed.

The estimates of underemployment would become biased if the data responded later were ignored, since the underemployment rates vary across the main activity levels. Therefore, we test whether the number or proportion of underemployment is different in two groups of the respondents, *the respondents at the first*

visits and the respondents later. As a results, we have found that the underemployment rate varies across the main activity groups, but within these groups, there is no statistically significant difference between the respondents at the first visit and later. According to the results of the cost calculation, the costs for the interview with the respondents at the first visit can be supposed as only 40.7% of the total interviewer's salary. If the costs for the persons with unknown data are excluded from the current concern, about 36.24% of the total costs for the field interviews are supposed to be spent on reducing the number of non-respondents. The ratio of 36.24% includes 25.4% for the type of *Absence-Finish*, 10.21% for the type of *Absence-Absence-Finish* and other non-respondent types.

We can consider again how much money should be spent to reduce the non-response errors in the pilot sample survey. That is, when planning a household sample survey base on face-to-face interviewing, the maximum number of visits can be decided. Otherwise, the decision can be made by choosing one of two alternatives: for fixed costs, T, 1) the 36.24 % of the interviewers salary still be used to reduce the non-response or 2) that amount of money be used to increase the quality in other variables. For example, for the alternative 2), the size of the sample can be increased instead of revisiting the sample households. In other words, to make the number of the respondents about 6,000 persons, the sample size should be over 12,870 persons. In this case, the interviewer's salary could decrease to about \$6,500, which can be calculated by multiplying the number of the expected sample persons by the cost per unit.

4. Conclusion

In this paper, we have investigated several issues on the quality and costs for the measurement of time-related underemployment. The results of the survey based on the two different definitions of underemployment show that the underemployment status of more workers could be identified when the longer-term view for the definition is used than when the shorter-term view is used. However, there is still a greater cost associated with the former because the more relaxed measurement by the longer-term view needs a greater number of questions than that by the shorter-term view. Meanwhile, the efforts to reduce non-responses in the field survey can be a source of the increase in the survey costs. Using the data of non-responses at the first visit in the pilot survey, the benefits of reduction of non-response errors were examined. For the measures derived from the survey data such as underemployment, they can be estimated by checking the individual answers to the related questions and ignoring the non-responses in the survey with little bias.

REFERENCE

- Groves, R. M.** (1989) *Survey Errors and Survey Costs*, John Wiley & Sons: New York.
- Husmanns, R., Mehran, F. and Verma, V.** (1992) *Surveys of Economically active population employment, unemployment and underemployment: An ILO Manual on concept and methods*, Bureau of Statistics, International Labour Organisation: Geneva.
- International Labour Organisation** (1982) *Resolution Concerning Economically Active Population, employment, Unemployment and Underemployment, The 13th International Conference of Labour Statistics*, Bureau of Statistics, International Labour Organisation: Geneva.
- International Labour Organisation, ICLS** (1998) *Report 1: The Measurement of underemployment*, International Labour Office: Geneva.

RESUME

WORK EXPERIENCE

Jun 1982 - National Statistical Office, Assistant Director
Feb 1979 - May 1982 Daehan Surety and Insurance Company, Programmer

EDUCATIONAL BACKGROUND

Aug 1997 - Jul 2000 Queensland University of Technology, Brisbane, Australia
Philosophy of Doctors, Statistics, Specialized in Survey Methodology
Mar 1990 - Jul 1992 Yonse University, Seoul, Korea, Masters, Industrial Engineering
Specialized in database theory of Geographic Information System
Mar 1975 - Feb 1979 Ehwa Woman's University, Seoul, Korea, Bachelors, Mathematics