

Well-Being and Measurement Error of Income Reported in a Social Survey versus Income Recorded by Tax Administration

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Correct information on income distribution is crucial for micro- and macro-economic analysis that is based on survey data. However, surveys fail to provide full information about individuals' and households' income, due to measurement error and non-response bias. Additional challenge in estimation of income distribution arises when income items are inquired with categorical questions or ranges of income. Introduction of these items is usually motivated by sensitivity of gathering a more detailed information on income and wealth, reduction of response burden, increase of survey participation rate, and decrease of item non-response.

In this study, measurement error of reporting individual's gross income with a range-wise question is analyzed by matching the responses in Israel's 2008 Social Survey (ISS) to the respondents' records in the income tax administration files. We connect the differences between the two sources of information to three possible factors of measurement error. The first one relates to the cognitive process of response in a personal interview: how long does it take for a respondent to answer the gross income question; does she return to the income question during the interview and corrects a previously given answer; what is the size of the correction. Information about these factors is obtained from the "audit-trail" log file of the computerized interview record that contains, among other things, all responses to the questionnaire items and duration of each action taken during the interview. The second source of measurement error is related to the differences in definition of "gross" and "net" income in a survey against the concept of taxable income as recorded by the tax authority, and to discrepancies in timing of income reportage. The third factor of measurement error is associated with certain characteristics of employment, such as self-employment and existence of business income, unstable or part-time employment, multiple jobs, that complicate the ability of a respondent to produce and report a correct estimate of monthly gross income on spot during the personal interview.

The relationship between the income measurement error and the abovementioned factors is analyzed first by the LMA curve, a graphical tool proposed recently (Yitzhaki et al., 2011) for detecting monotonic relationship between the variables. Then, we fit parametric distribution to administrative income data based on the income distribution reported in a survey in order to estimate the measurement errors, and analyze them by standard econometric models. After all, we connect the extent of measurement error to the reported levels of well-being (life-satisfaction), job satisfaction, and financial satisfaction which are key variables of interest in the ISS. Duration of respondent's answer and changing a previously given answer exert a statistically significant negative effect on the measurement error. These influences differ markedly between the wage-earners and the self-employed individuals, proving that 'poolin" of these two populations in empirical analysis of survey data may be misleading. Significant differences in the

measurement error distribution were found between the respondents who tend to overestimate their gross income and those who underestimate it.

The existence and intensity of a measurement error strongly and positively correlate with the respondent's income. For the wage-earners, we find a negative effect of educational level and job satisfaction on the extent of income measurement error. For the self-employed, few of economic and demographic variables typically present in a wage equation are useful in explaining the measurement error, whereas most of the respondents in this group significantly underestimate their income. This phenomenon can be explained by annual definition and reportage of income for tax purposes by the self-employed in Israel, as opposed to monthly incomes of the wage-earners. Appropriate changes in the ISS questionnaire are proposed, which can reduce measurement error in this popular data source.