Analysis of the PASS Wave III Incentive Experiment: Can Monetary Incentives be Used to Decrease Nonresponse Bias?

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Background Incentives for survey participation are broadly used to increase survey participation in both panel and cross-sectional studies.
Several studies show that incentives have a positive effect on response rate and can effectively be applied to decrease nonresponse (see for instance James and Bolstein (1990) or Church (1993)). However, a reduction in sample nonresponse does not necessarily mean an increase of survey quality, e.g a decrease in nonresponse bias.

Using respondents incentives to increase response rates can have different effects on nonresponse bias: nonresponse bias will not be affected at all if incentives lead to increasing response rates proportionally in all subgroups, that is, the distribution of outcome variables is constant over increasing response rates. Nonresponse bias can be reduced if incentives can be used for bringing people into the sample that would otherwise have refused — who are typically underprivileged people like the unemployed or people with low income. On the contrary, bias will be increased if incentives are effective only for subgroups who are already present in the sample.

PASS Incentive Experiment PASS wave III contains an incentive experiment which allows to evaluate the effect of incentives on nonresponse bias (see Büngeler et al. (2010)): repeater households are randomly assigned to two treatment groups, one group is promised a lottery ticket (worth about 5 Euro) which they receive after participation, whereas the other group was sent 10 Euro cash with their cover letter which was not conditioned on participation.
For our analysis we compare nonresponse bias between the treatment groups using survey data and administrative data of the federal employment agency. This data stems from employer notification to the social security system or is process data to administer benefit claims and payments and is therefore found to by very reliable (Jacobebbinghaus and Seth (2007)).

Analyses The analysis is conducted separately on survey data and administrative data level. Following Bethlehem (2002), on survey data level bias in estimating the mean of a survey variable y can be derived by an approximation of the Horvitz-Thompson estimator for unequal sample probabilities,

$$\begin{aligned} Bias(y) =& E(\bar{y}) - \bar{Y} \\ \approx& \frac{cov(y, \rho)}{\bar{\rho}} \end{aligned}$$

with ρ being an individuals response propensity and $\hat{\rho}$ being the mean response propensity. Since information about all people in the experiment is available from previous waves, this propensity can be estimated based on this data. In the second step, bias is estimated directly for some variables using the administrative data. Results from these two approaches are compared.

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