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# **Item nonresponse to financial questions in household surveys: An experimental study of interviewer and mode effects\***

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**Abstract:** We analyze nonresponse to questions on financial items such as income and asset holdings in the SAVE survey, exploiting a controlled field experiment. As part of the SAVE study, a representative survey conducted in Germany in 2001, questions on household income and financial assets were administered using different interview modes (personal interview vs. drop-off questionnaire). The data also allow investigating the influence of interviewer characteristics on nonresponse. Our results are in line with predictions derived from models of survey response behavior that have been developed in survey research and social psychology.

**Keywords:** household surveys; item nonresponse; panel attrition; interview mode **JEL**

**classification:** C81

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# 1 Introduction

Surveys are an important source of data for the empirical analysis of household behavior. Unfortunately, data problems such as unit nonresponse (sample selection), item nonresponse, and measurement error are the rule rather than the exception in survey data. Well-designed studies using household survey data are careful to detect outliers, to impute missing values, and to correct for selection caused by missing observations.

Economists and econometricians have traditionally addressed such data problems using *ex post* approaches such as various imputation schemes or sample selection models. These methods have reached a high level of sophistication, as summarized for instance in the monograph by Wansbeek and Meijer (2000) and in the chapter on "Measurement error in survey data" by Bound *et al.* (2001) in the most recent volume of the *Handbook of Econometrics*. An important drawback of such approaches is that they either require imposing untestable assumptions about the data generating process to ensure point identification of parameters of interest or allow only for much weaker conclusions if weaker assumptions are imposed; see Horowitz and Manski (1995, 1998) for an extensive discussion.

Complementary to correcting data problems *ex post*, researchers have recently increased their efforts to improve survey administration and the design of survey questionnaires so that problems such as item nonresponse can be avoided or at least mitigated *ex ante*. In particular, economists who design survey questions are beginning to use knowledge about the sources of data problems that has been accumulated in other disciplines. For instance, Bound *et al.* (2001) devote a section of their handbook chapter to results from survey research and social psychology that apply to the measurement of quantities that are of economic interest. However, this approach has not been widely used yet. In this paper, we show how economists can use knowledge about survey response behavior accumulated in psychology and survey research not only in their analysis of existing data, but also in the design of future household surveys.

We concentrate on a specific aspect of response behavior that is of interest in the empirical analysis households' saving and asset allocation decisions: item nonresponse to questions on financial items in household surveys.<sup>1</sup> Nonresponse in household surveys has been analyzed by various authors, beginning with the work by Ferber (1966); see Schnell (1997) and Beatty and

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<sup>1</sup> In the remainder of this paper, the term "nonresponse" refers to item nonresponse. We do not address issue of unit nonresponse.

Herrmann (2002) for reviews.<sup>2</sup> However, empirical evidence on response behavior in surveys that focus on financial variables such as income, saving, and asset choice, is still sparse. Recent examples for Germany are Biewen (2001), Riphahn and Serfling (2002), and Schräpler (2003) who work with data from the German Socio-Economic Panel (GSOEP); Nicoletti and Peracchi (2001) investigate nonresponse in the European Household Panel (EHCP). In contrast to these papers, we use data from a controlled experiment that was conducted as part of a representative household survey specifically to analyze the effects of interview mode and question format.

As part of the SAVE study, a representative survey of households' saving and asset choices conducted in Germany in 2001 (see Börsch-Supan and Essig (2002) and Essig (2004), questions on household net income and on six key financial assets were administered using different modes (computer-assisted personal interview vs. self-administered drop-off questionnaire) that were assigned randomly to sample households. We show that nonresponse rates to these sensitive questions are lower in the drop-off questionnaires than in the personal interviews. These results are in line with predictions from models of survey response behavior developed in social psychology that stress, *inter alia*, the role of privacy in answering sensitive questions. Our analysis also confirms earlier findings on the influence of characteristics of the interviewer on response rates in personal interviews.

The plan of the paper is as follows. In Section 2 we briefly review models of survey response behavior from social psychology that motivate our analysis. The design of the 2001 SAVE survey and the embedded experiments on mode effects are described in Section 3. In Section 4, we present our results, primarily a series of probit regressions with nonresponse dummies for income and six key assets as dependent variables. Section 5 summarizes our results and discusses implications for the design of survey questions on financial variables.

## **2 Item nonresponse in household surveys**

Why should survey mode and question format influence responses? If respondents are perfectly certain about the quantity in question, they should be able to give the correct answer. However, respondents are rarely certain about quantities they are asked to report in household surveys. Therefore, the formation of answers to survey questions is a complicated process. As a starting point for thinking about item nonresponse and other data problems *ex ante*, or to correct for resulting bias in survey data *ex post*, it is useful to review existing research by psychologists and survey methodologists in some detail.

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<sup>2</sup> The edited volumes by Groves and Couper (1998) and Groves et al. (2002) are devoted entirely to survey nonresponse.

Since the early 1980's, psychologists and survey methodologists have worked together, trying to understand the cognitive and communicative processes that govern survey response behavior. One of the first systematic attempts to analyze survey response behavior as an interaction between the interviewer and the respondent, and to uncover the cognitive processes involved in answering survey questions, is Tourangeau (1984). There is now an extensive literature in survey research on cognitive processes that generate survey responses and on pitfalls that should be avoided in survey design; Sudman *et al.* (1996) and Tourangeau *et al.* (2000) provide overviews of the literature on survey response behavior and question design in cognitive and social psychology. Cognitive issues in households' reports of financial variables, in particular with respect to reports of household income, are discussed by Moore *et al.* (1999).

An important insight from survey research is that the process of forming the response to a survey question consists of several steps, each of which might contribute to the fact that answers often do not provide reliable measures of the quantity in question. Survey respondents first have to understand the question and determine which quantity they are to report on. To do so, they draw on a wide range of contextual information in ways that researchers are often unaware of. Second, respondents have to recall information on the quantity from memory. In many instances, respondents will have imperfect recall and need to apply various inference and estimation strategies to arrive at an answer; this is the third step of the response process. Fourth, once respondents have arrived at an answer, they need to map it onto the response alternatives provided by the researcher (unless the question format is open-ended). Finally, respondents may edit their answer because of social desirability and self-representation concerns (i.e., even though they might be aware of the "true" value of some quantity, they on purpose or unconsciously report a higher or lower value).

In order to derive hypotheses about factors that influence item nonresponse on financial questions in household surveys, we use a conceptual model by Tourangeau and Smith (1996).

For our purpose, the advantage of such a model is that it makes cognitive processes and social interaction between the interviewer and the respondents explicit. This conceptual model links interview modes, psychological variables, and data quality. Specifically, dimensions of data quality, such as accuracy, reliability, and item nonresponse are influenced by three psychological variables: privacy, legitimacy, and cognitive burden. The signs of the relationships form the basis for hypotheses about survey response behavior. For instance, privacy reduces the problem of item nonresponse on sensitive questions while increased cognitive burden reduces response accuracy. The key variables privacy, legitimacy, and cognitive burden are influenced, in turn, by the mode of data collection (face-to-face interviews, self-administrated surveys, computerized surveys such as internet surveys, or telephone interviews with auditory presentation).

In our analysis, we specifically concentrate on the trade-off between using a computer-assisted personal interview (CAPI) and a self-administered paper-and-pencil questionnaire (P&P) for collecting data on sensitive financial variables. The prediction from models of survey response behavior such as the one outlined above is that relative to CAPI, the self-administered P&P interview should result in higher perceived levels of privacy, which in turn increases responses accuracy and decreases the rate of item nonresponse.

A second hypothesis we test is related to the social interaction between interviewer and respondent. It seems plausible that in personal interviews, characteristics of the interviewer may influence response behavior; interviewer effects on survey response have been analyzed as far back as Rice (1929). For instance, there is evidence that interviewer attributes such as age and gender affect response rates in surveys. Interestingly, the effects of interviewer experience on response behavior seem to be stronger than those of personal characteristics; see Groves and Couper (1998), chapter 7, and Hox and de Leeuw (2002) for reviews. Riphahn and Serfling (2002) provide empirical evidence on interviewer effects in the German Socio-Economic Panel (GSOEP).

Finally, response behavior may depend on the respondent's motivation and on incentives for providing accurate answers. These aspects are analyzed in the rational-choice approach to survey response behavior; see Philipson (1997), Philipson (2001), Philipson and Malani (1999), Singer (2002), and Stocke (2003). In the analysis presented in this paper, we do not address these issues - our field experiment does not contain reliable indicators of respondents' motivation, and no incentives were used to increase response accuracy.

### **3 The field experiment embedded in SAVE 2001**

In this section, we present a short overview of the SAVE 2001 study, and we discuss the embedded survey experiments.

#### **3.1 Background and contents of the survey**

In Germany, there is currently no dataset available that records detailed data on both financial variables such as income, savings, and asset holdings and on sociological and psychological characteristics of households. The German Socio-Economic Panel (GSOEP) has rich data on household behavior, but it records only rough indicators of saving and asset choices (such as "Did you spend all of your income last year or was there anything left over?" and "Do you have a savings passbook?"). The GSOEP does not cover the quantitative composition of households' assets or any change in the amount of wealth. The situation is similar in another representative survey (*Soll und Haben*): This study records detailed data on the composition of various financial assets, but it only

has qualitative indicators and does not quantify asset holdings. Finally, the official budget and expenditure survey (*Einkommens- und Verbrauchsstichprobe*, EVS), conducted every five years by the Federal Statistical Office, has very detailed information on the amount and composition of income, expenditure, and wealth, but information on other household characteristics is very limited, in particular in the most recent 1998 wave.

Such weaknesses of existing datasets can only be overcome by new surveys. Taking as a basis the Dutch CentER Panel and the U.S. Health and Retirement Study (HRS), researchers of the University of Mannheim have cooperated with the Mannheim Center for Surveys, Methods and Analyses (ZUMA), NFO Infratest (Munich), Psychonomics (Cologne) and Sinus (Heidelberg) to produce a questionnaire on households' saving and asset choice ("SAVE 2001"); see Börsch-Supan and Essig (2002) and Börsch-Supan and Essig (2003). The questionnaire has been designed in such a way that the interview should not exceed 45 minutes. It was fielded in the summer of 2001 (details on sampling and fieldwork follow below, after we discuss the experimental design). A follow-up wave has been conducted in 2003.<sup>3</sup>

The questionnaire consists of six parts. The first, relatively short part explains the purpose of the study and describes the precautions that have been taken with respect to confidentiality and data protection. Part 2 lasts about 15 minutes and contains questions on the socio-economic structure of the household, including age, education and labor-force participation of the respondent and his or her spouse. Part 3 of the questionnaire introduces the first set of substantive questions. This part contains qualitative and simple quantitative questions on saving behavior and on how households deal with income and assets, including hypothetical choice tasks and questions on savings motives. Questions are also asked on financial decision processes, rules of thumb, and attitudes towards consumption and money.

Part 4 is the critical part of the questionnaire. It contains a comprehensive "financial review" of the household and therefore the most sensitive questions in financial items such as income from various sources, holdings of various assets, and changes in income and assets over the past year. Apart from financial assets, the questions also cover private and company pensions, ownership of property and business assets. Questions are also asked about debt. Part 4 is kept separate from the other parts of the survey and administered using different modes and question formats; respondents are allocated to the different versions randomly. We return to the experimental design below.

Part 5 contains questions about psychological and social variables. It includes the social environment, expectations about income, the economic situation, health, life expectancy and

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<sup>3</sup> Data from the follow-up survey will allow to test additional hypotheses about factors that determine unit nonresponse in the second wave of a panel survey.

general attitudes to life. The interview ends with a few questions on internet access, a few open-ended questions about the interview situation, and a question that asks whether the respondent would be willing to participate in a similar survey in the future (part 6).

### **3.2 Experimental design**

The embedded experimental design of the SAVE 2001 study is summarized in Table 1. The first four versions were computer aided personal interviews (CAPI); they were carried out by NFO Infratest, Munich. In contrast, the fifth version was a conventional paper questionnaire ("paper and pencil", P&P). The CAPI interviews were carried out using quota samples whereas conventional P&P questionnaires were given to a so-called Access Panel operated by the company TPI (Test Panel Institute, Wetzlar), in other words a standing panel of households surveyed at regular intervals.

The only difference in the four versions of the CAPI interview is in the critical part 4 of the questionnaire. In versions 1 and 2, all questions were administered by CAPI in the presence of the interviewer. The difference between these versions is that the questions on asset holdings were presented using an open-ended format with follow-up brackets (range cards) in version 1 and with "forced" brackets in version 2. The experimental manipulation of the question format with respect to follow-up vs. forced range-card questions is not investigated in the present paper. For a discussion of how follow-up questions alleviate the problem of item nonresponse, see Juster and Smith (1997). Hurd *et al.* (1998) and Winter (2002a) investigate response biases such as anchoring that arise in follow-up questions that use unfolding brackets or range cards, respectively.

Because many of these questions relate to intensely personal matters of income and wealth, we went one step further in versions 3 and 4. In these versions, part 4 of the questionnaire was not part of the personal CAPI interview, but left as a paper-and-pencil questionnaire by the interviewer (this mode is termed "P&P drop off" in the sequel). In version 3, the interviewer came back personally to collect the drop-off questionnaire; in version 4, the questionnaire had to be returned by mail using a pre-paid envelope. If this was not done within a specified number of days, the respondent was reminded by telephone several times. Nevertheless, response rates for the drop-off questionnaire were significantly lower in version 4 than in version 3 (90.5% vs. 98.0%).

Summarizing, in order to test our hypothesis that there is an anonymity/privacy effect on nonresponse to sensitive financial questions, we could compare response behavior in versions 1 and 2 to that in versions 3, 4, and 5. In this paper, we use data from versions 1, 3, and 4 only, for reasons detailed below.

The survey took place in early summer 2001. The fieldwork for the personal interviews took



place between May 29 and June 26, 2001, whereas the fieldwork for the Access Panel took place between June 29 and July 24, 2001. Both the CAPI (quota sample) and the P&P (TPI Access Panel) segments were targeted at households with head of the household aged between 18 and 69 years. For the CAPI versions, the quota performance targets were related to the dimension gender (male respondent ratio of 74 percent) and age (a distribution in age classes under 25, 25-34, 35-50 and 50-70 years) according to the current official population statistics (and, in particular, the 2000 micro census). For the TPI interviewees, the quota targets were also based on the 2000 micro census and related to whether the respondent is a wage earner or a salaried employee, and the size of the household. Table 1 shows the sample sizes for the five survey versions. In total, 1,829 households were surveyed.

## 4 Results

In this section, we present our findings on response behavior in the 2001 SAVE survey and relate these findings to the hypotheses presented in Section 2. We present summary statistics for the dependent and independent variables in Sections 4.1 and 4.2, respectively. We then turn to the main part of the analysis, a series of probit regressions that allow us to test for factors that influence item nonresponse in Section 4.3. Other aspects of response behavior that might be related to interview mode and interviewer characteristics are briefly discussed in section 4.4.

In the following, we restrict the analysis to a comparison of version 1 (CAPI) with versions 3 (P&P drop-off, pick-up) and 4 (P&P drop-off, mail-back). As noted above, version 2 differs in the format of asset questions ("forced" brackets rather than open-ended questions with follow-up brackets). An analysis of the effects of question format on nonresponse is a separate issue from the mode effects we are interested in here, so we leave that to future work. Version 5 of the SAVE 2001 study used a different sample (drawn from a standing Access Panel) that exhibits a significant middle-class bias.<sup>4</sup> We decided not to use data from version 5 in most of the subsequent analysis because of these differences in sample composition. While differences in observable characteristics could potentially be resolved using matching techniques, the problem is actually deeper: It is very likely that households in the Access Panel differ not only in observable characteristics from a random or quota sample, but also in unobservable characteristics that are relevant for our substantive analysis. For instance, members of an Access Panel typically have some survey

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<sup>4</sup> While the average household size in all four CAPI versions is about 1.9, the average household in the version 5 has about 3 persons. Specifically, the number of single households is much lower in the sample used for version 5. Furthermore, in version 5, fewer households were interviewed in Eastern Germany. Also, there are significant differences concerning education and the proportion of workers and employees between the four CAPI versions and version 5.

experience, and their response behavior might therefore differ from that in a representative sample.<sup>5</sup>

## 4.1 Dependent variables

In the main part of our analysis, we use probit regressions with indicators for item nonresponse on the household net income and on six asset questions as the dependent variables. In addition, we use the incidence of focal (rounded) values in responses to the income question and the response to the question of whether respondents would be willing to participate in a future wave of the SAVE survey as additional dependent variables. Descriptive statistics for all dependent variables are reported in table 2.

## 4.2 Independent variables

The independent variables we use in the subsequent analysis fall into four categories: (i) characteristics of the respondent, (ii) characteristics of the interviewer, (iii) self-reported feedback by the respondents, and (iv) interview mode (i. e., the different versions of the survey assigned by our experimental design). Summary statistics for the first three sets of independent variables are reported in Table 3.

The set of demographic and economic characteristics of the respondent contains age and, in some regressions, household net income (and the squared values of these variables to allow for nonlinear effects). Note that there is some nonresponse to the open-ended income question itself, so we imputed these missing values using the information from the follow-up bracket question. To check whether these imputations affect the regression results, we include a dummy for households with imputed values in those regressions that contain income as an independent variable. Other respondent characteristics we use are three dummy variables for level of education (the reference category is primary school); a dummy for households in East Germany; a set of dummy variables for occupation and labor market status (the reference category is white-collar employees)<sup>6</sup>; and a dummy variable for households in small communities with a population of less than 5000.

As can be seen in Table 3, there are no striking differences in respondent and household characteristics between versions 1, 3, and 4 which were randomly assigned to households within the quota sample. One exception is income which will be used as an independent variable in the nonresponse regressions for assets, but this variable was administered differently across versions, so differences in responses are not surprising.

A second set of variables contains characteristics of the interviewer. In total, 267 interviewers

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<sup>5</sup> Such unobserved differences would violate the "ignorability" assumption that is required for the application of matching techniques.

administered the 1169 CAPI interviews, with a maximum of eight interviews by interviewer and a minimum of one. Considering this rather small average number of interviews by interviewer, we refrain from using interviewer dummies as explanatory variables. From the survey agency that administered the survey, we obtained data on gender, age, the level of schooling of the interviewer, and his interview experience (as measured by the number of years she has been working for the survey agency). In the regressions, we use a dummy variable for experienced interviewers, defined as having more than median experience (4 years); a dummy variable for female interviewers; a dummy variable for interviewers who are older than the respondent; and two dummy variables for interviewers with lower and higher education level than the respondent (with the categories defined as described above). We experimented with more complicated specifications for the age relation between interviewer and respondent, but we did not find results that were qualitatively different for those based on just a dummy for older interviewers, so we report only those results below.

The third set of explanatory variables is based on respondents self reports to an open-ended feedback question that was administered at the end of the interview. We have classified the responses to this question using a set of keywords which resulted in four indicator variables for whether the respondent mentioned specific aspects in a negative or positive way. A negative statement is coded as -1, a positive statement as 1, no statement as 0. The four aspects are: (1) overall reaction to the interview; (2) concerns about privacy; (3) length of the interview; (4) questions easy to answer. We also constructed a dummy variable that indicates whether at least one of these four aspects was mentioned in a positive way.

The final set of variables controls for mode effects. We are interested in the effects of a CAPI interview vs. a P&P drop-off questionnaire on nonresponse rates. In addition, we would like to distinguish between drop-off questionnaires that are picked up by the interviewer (version 3) and mailed back directly to the survey agency (version 4). We therefore include two dummy variables for versions 3 and 4, respectively, in our regressions. The frequencies of the interview mode indicators are reported in Table 1.

### **4.3 Nonresponse regressions**

Tables 4 through 10 contain probit estimates for nonresponse rates for absolute values of monthly net household income and the balances held in six asset categories. We should note that in the case of the asset regressions, the dependent variable is always nonresponse conditional on holding that asset. For each of those assets, households were first asked whether they hold it, and they were asked for the amount only if they do. Since ownership rates for the six assets vary, so do

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<sup>6</sup> The dummy variable for farmers is dropped from the regressions since we have only two farmers in the sample.

the numbers of observations used in the asset nonresponse regressions. For all but savings accounts, they are actually quite small, and we therefore discuss only the results of the regression for nonresponse on the income and savings account questions in detail.

For the income nonresponse regression, we report two specifications, one with interviewer characteristics and one without (Table 4). Few of the respondent and household characteristics are significant - nonresponse rates are higher in East Germany, lower for blue-collar workers, and higher in small communities. Interestingly, the willingness to report income is not affected by the interview mode - the coefficients of the dummy variables for the P&P drop-off versions are not significant. These results also hold when interviewer characteristics are included. The only interviewer variable that is significant is the dummy for older interviewers; they seem to have a positive effect on willingness to report income. Overall, nonresponse on the household net income question appears to be very heterogeneous and hard to explain with respondent and household characteristics, interview mode, and interviewer characteristics. However, self-reported feedback measures that characterize how the respondents have perceived the interview situation have explanatory power.

The situation is different for assets. In the regression results for nonresponse to the question on the balance held in saving account (Table 5), we see that respondent and household characteristics still have few significant characteristics. Nonresponse is higher for the unemployed and lower in small communities. The latter is an interesting sign change compared with the income regression. Most importantly, we see strongly negative coefficients of the dummy variables for the P&P drop-off versions. Respondents are more willing to report their saving account balance in the private P&P interview mode. The dummy variable for imputed income (i.e., nonresponse to the income question) is significantly positive which indicates that there is some consistency in nonresponse across questions. Finally, there are effects of interviewer characteristics, and there is again some evidence that self-reported feedback is related to item nonresponse.

We do not comment on the nonresponse regressions for the other five assets in detail because the number of households who hold these assets is smaller. However, we should note that the negative coefficients of the dummy variables for the P&P drop-off modes can be found in most of these regressions. This is strong evidence for a mode effect in nonresponse to questions on asset holdings - respondents are much more willing to answer if such questions are self-administered and private. In some but not all cases, the coefficient of the version 4 dummy is larger in magnitude than that of the version 3 dummy. This finding is consistent with even lower rates of nonresponse when the drop-off questionnaire is mailed back rather than being picked up by the interviewer. However, as reported in Table 1, response rates for the drop-off questionnaires are lower for version 4 than for

version 3 in the first place.

#### **4.4 Other dimensions of survey response behavior**

The incidence of focal points ("round" values) in the responses to open-ended questions is a direct measure of data quality. There are two primary reasons why survey respondents give focal-point responses to open-ended questions (see Tourangeau *et al.* (2000), section 8.1). First, rounding could reflect uncertainty about the exact value of the quantity asked. Second, even if a respondent knows the exact value of a quantity, she could round this value because of privacy concerns and other aspects of the interviewer-respondent interaction. Moreover, there could be dependence between these two effects. For instance, in the presence of an interviewer, a respondent who is uncertain about the quantity in question might report a guess, reflected in a focal-point response (so as not to disappoint the interviewer by a complete refusal). In contrast, in a self-administered mode, the respondent might be more willing to admit that she does not have an exact answer by giving an explicit "Don't know" response. Finally, other aspects of the interviewing process such as time pressure (which is more intense in personal interviews than in self-administered surveys such as a paper-and-pencil questionnaire) could also induce the respondent to report a focal-point guess rather than thinking a little longer -that is, evoking a more elaborate cognitive process - to come up with an exact answer.

The present study was not designed to disentangle these potential explanations of focal responses. However, our data allow assessing whether the factors that influence item nonresponse also affect the incidence of focal-point (rounded) rounded answers from those who respond. For this purpose, we focus on the income question for which nonresponse regressions were reported above in Table 4. Tables 11, 12, and 13 contain probit regressions in which the dependent variable is an indicator of whether the response is a multiple of 100, 500, or 1000, respectively. The most interesting observation in these regressions is that Version 3 (drop-off questionnaire picked up by the interviewer) has generated the smallest fraction of focal responses. This is evidence against the hypothesis that rounding is caused by privacy concerns or other aspects of the interviewer-respondent interaction. Rather, rounding seems to be related to response uncertainty and the opportunity and incentives to look up correct values. While these results are interesting, more research is needed to substantiate these claims. In particular, having a direct measure of respondents' uncertainty about the quantity in question seems important; see Winter (2002b) for a recent attempt in that direction.

Finally, we analyze responses to the question of whether the respondent would be willing to participate in a future wave of the SAVE survey. The fraction of "yes" responses varies between

about 60% and 70% in versions 1 through 4 which were administered with quota samples (see table 2).<sup>7</sup> To check whether respondent and interviewer characteristics affect the willingness to participate in future surveys, we run probit regressions similar to those for nonresponse reported in Section 4.3 above. Table 14 reports the results. Few of the independent variables are significant. However, a consistent pattern emerges: Respondents in version 3 (which included a drop-off questionnaire on financial items collected by the interviewer) are less willing to participate in future surveys. In the specifications that also control for income, dummies for version 3 also have a significant negative coefficient. From these results, it follows that having to return the drop-off questionnaire to the interviewer at a future point reduces stated willingness to participate in future surveys.

The present design does not allow to disentangle all possible explanations for this observation. One explanation might be that the drop-off questionnaire is perceived as a burden - respondents know that they have to do additional work after the interviewer has left. The absolute value of the coefficient of the version 3 dummy is larger than that of the version 4 dummy; this is consistent with the hypothesis that in version 4 (drop-off questionnaire mailed in rather than being picked up), respondents feel less obliged to do the extra work of filling in the drop-off questionnaire. This corresponds the lower return rate in version 4, 91% compared with 98% in version 3, see Table 2.

A weakness of this explanation is that the proxy variable for overall satisfaction (willingness to participate in future surveys) was obtained before the drop-off questionnaire has been answered; it might be possible that respondents are more willing to participate in future surveys after having answered (because they realized that the burden was less than they expected) so that the mode effect disappears. A reliable analysis of alternative explanations for the finding that the drop-off modes reduce willingness to participate in future surveys would therefore require a more complex experimental design; this is left for future research.

In any case, the survey protocol reflects that German law which requires that only those respondents who agree explicitly to participate in future waves can be contacted for a re-interview. The results on the reported willingness to participate in future surveys indicate that the higher response rates on sensitive financial items achieved in interviews with drop-off questionnaires might come at a price. Drop-off questionnaires appear to increase the perceived burden of the interview and to reduce respondents' overall satisfaction. As yet, we do not have data on actual (unit) response to future surveys for our sample of households, so we cannot judge whether stated willingness to participate in future survey translates in actual behavior, but this is a issue that

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<sup>7</sup> Not surprisingly, it is significantly higher (about 90%) in version 5 that used a standing access panel of persons who had already agreed to answer household surveys in the past.

deservers attention in future research.<sup>8</sup>

## 5 Conclusions

The present paper investigated the effects of interview mode on nonresponse to sensitive questions on items such as income and asset holdings using data from a field experiment. The main hypothesis we tested was that a self-administered interview mode results in lower rates of nonresponse than a personal interview, as suggested by models of survey response behavior developed in social psychology and survey research. We found that in comparison to the CAPI mode, rates of nonresponse are lower in a paper-and-pencil drop-off questionnaire that could be answered in private and independently of the rest of the survey interview. This effect is very strong for all six asset categories we analyzed while it is not significant for the question on household net income.

Respondent and household characteristics as well as interviewer characteristics do not appear to have strong and consistent effects on nonresponse to sensitive financial questions. This raises the question of whether correcting for item nonresponse using complex designs that require an explicit model of the nonresponse process offer much gain over straightforward imputation schemes that invoke a "missing at random" assumption. This aspect is certainly worth further investigation; our paper illustrates the usefulness of controlled survey experiments for such an analysis.

Another finding is that data quality for those households who actually answer also seems to be better in the P&P drop-off modes, as judged by the lower frequency of focal-point responses (which suggests that these responses are more accurate). This observation could be explained by the fact that respondents have more time to answer a drop-off questionnaire. We know from survey research that respondents are more likely to invoke more elaborate cognitive processes when they have more time to answer questions. These more elaborate processes should result in more accurate responses. Alternatively, respondents may be more likely to look up exact quantities when they fill in a drop-off questionnaire than in a personal interview situation. We cannot distinguish between these explanations with the experimental data obtained from the present study. This issue should be explored in future research.

Our results have a number of practical implications. Data quality seems to be better if sensitive questions on financial items are administered in a private interview mode, and drop-off questionnaires seem to be a practical way to implement private data collection modes within a random or quota sampling scheme (such as random route) that requires personal interviewer

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<sup>8</sup> The sample of the 2003 SAVE survey will contain re-interviews of 2001 sample members who said they are willing to participate in a future wave (augmented by a refreshment sample).

contact. However, it should be noted that response rates for the drop-off questionnaire might cause a problem - while the 98% achieved in SAVE 2001 when the interviewer came back to pick up the drop-off questionnaire is acceptable, a 90.5% response rate for mail-back questionnaires might be too high. This aspect should be analyzed in future work.

Finally, we have seen that stated willingness to participate in future surveys is lower if the survey interview consists not only of the CAPI component but also has a drop-off questionnaire. While it is unclear whether respondents would state that they are more willing to participate in a future survey *after* they have actually filled in the drop-off questionnaire, the interview protocol that is typically followed requires that the question on future surveys be asked at the end of the CAPI interview. A piece of practical advice would be to move that question to the end of the drop-off questionnaire. In any case, the effect that the interview mode chosen for sensitive financial questions has on participation in a follow-up survey will be investigated with data from the upcoming SAVE 2003 wave.



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## Appendix

**Table 1:** Experimental design

	Version 1	Version 2	Version 3	Version 4	Version 5
Sampling scheme	Quota	Quota	Quota	Quota	Access panel
Mode: Parts 1,2,3,5	CAPI	CAPI	CAPI	CAPI	P&P
Mode: Part 4 (sensitive items)	CAPI	CAPI	P&P (pick-up)	P&P (mail-back)	P&P (mail-back)
Response rate P&P			98.0%	90.5%	
Question format: income	open-end	open-end	open-end	open-end	open-end
Question format: assets	open-end	brackets	open-end	open-end	open-end
Number of households	295	304	294	276	660

**Table 2:** Dependent variables: Response rates and willingness to participate in future surveys

	Version 1	Version 3	Version 4
<b>Income</b>			
HH refuse values	56	58	57
in % of HH	19.0%	19.7%	20.7%
<b>Saving Accounts</b>			
HH owning	215	215	192
in % of all HH	72.9%	73.1%	69.6%
HH refuse values	100	50	31
in % of HH owning	46.5%	23.3%	16.2%
<b>Building Society Contracts</b>			
HH owning	85	90	83
in % of all HH	28.8%	30.6%	30.1%
HH refuse values	38	23	22
in % of HH owning	44.7%	25.6%	26.5%
<b>Life Insurances</b>			
HH owning	128	131	123
in % of all HH	43.4%	44.6%	44.6%
HH refuse values	71	46	36
in % of HH owning	55.5%	35.1%	29.3%
<b>Retirement Savings</b>			
HH owning	43	45	34
in % of all HH	14.6%	15.3%	12.3%
HH refuse values	34	24	14
in % of HH owning	79.1%	53.3%	41.2%
<b>Bonds</b>			
HH owning	38	38	49
in % of all HH	12.9%	12.9%	17.8%
HH refuse values	18	17	15
in % of HH owning	47.4%	44.7%	30.6%
<b>Stocks, Funds</b>			
HH owning	97	92	55
in % of all HH	32.88	31.29	19.93
HH refuse values	50	23	11
in % of HH owning	51.6%	25.0%	20.0%
<b>Would participate another time</b>			
yes	66.4%	58.8%	60.1%
no	26.4%	31.3%	30.8%
no answer	7.1%	9.9%	9.1%
Number of households	295	294	276

**Table 3:** Independent variables: respondent and interviewer characteristics

	Version 1		Version 3		Version 4	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
<b>Respondent</b>						
HH income	5731.8	8870.3	4499.9	3931.4	4396.3	2345.7
HH income imputed (D)	4.7%	21.3%	16.0%	36.7%	10.5%	30.7%
Age	45.0	13.4	46.6	13.3	46.6	13.4
Secondary school (D)	36.3%	48.2%	36.1%	36.1%	40.2%	49.1%
Graduation diploma (D)	13.2%	33.9%	11.9%	32.4%	10.1%	30.2%
University degree (D)	14.9%	35.7%	16.7%	37.3%	11.2%	31.6%
East Germany (D)	22.4%	41.7%	19.4%	39.6%	19.6%	39.7%
Worker (D)	19.7%	39.9%	14.1%	34.9%	19.6%	39.7%
Civil Servant (D)	5.8%	23.4%	3.4%	22.1%	5.4%	22.7%
Farmer (D)	0.3%	5.8%	0.3%	5.9%	0.0%	0.0%
Self-employed (D)	6.8%	25.2%	5.8%	23.5%	7.6%	26.6%
Retired (D)	17.6%	38.2%	21.4%	41.1%	17.8%	38.3%
Unemployed (D)	5.8%	23.3%	7.2%	26.0%	3.6%	18.8%
Small Community (D)	13.6%	34.3%	15.0%	35.7%	10.9%	31.2%
<b>Interviewer</b>						
Experienced > 4 years (D)	43.8%	49.7%	61.4%	48.8%	55.1%	49.8%
Female (D)	43.7%	49.7%	59.5%	49.2%	29.7%	45.8%
Older than resp. (D)	51.2%	50.1%	58.5%	49.4%	55.4%	49.8%
Higher schooling (D)	38.3%	48.7%	37.1%	48.4%	42.0%	49.5%
Lower schooling (D)	25.1%	43.4%	26.9%	44.4%	19.9%	40.0%
<b>Feedback</b>						
Positive opinion / Interesting subject	6.4%	52.1%	10.5%	57.8%	1.1%	56.9%
Privacy	-15.6%	37.3%	-18.4%	39.7%	-10.5%	33.0%
Interview not too long	-0.7%	16.5%	-0.7%	16.5%	1.4%	12.0%
Easy to answer	-1.4%	16.4%	0.3%	10.1%	-0.4%	10.4%
at least one of the 4 latter positive	-9.8%	67.5%	-4.8%	73.3%	-7.2%	66.8%

Note: Dummy variables are marked (D).

**Table 4:** Nonresponse regressions: income

Income	Coef.	$P > z$	Coef.	$P > z$	Coef.	$P > z$	Coef.	$P > z$
<b>Respondent</b>								
Age	-0.001	0.964	-0.01007	0.813	80.78	0.784	-0.0010	0.735
Age squared	0.000	0.962	0.000	0.882	0.000	0.885	0.000	0.928
Secondary school (D)	0.053	0.695	0.0490	0.551	0.048	0.754	0.049	0.747
Graduation diploma (D)	-0.151	0.444	-0.070	0.751	-0.152	0.499	-0.138	0.537
University degree (D)	<b>-0.409</b>	0.030	-0.355	0.111	<b>-0.451</b>	0.047	<b>-0.448</b>	0.048
East Germany (D)	<b>0.313</b>	0.019	<b>0.345</b>	0.013	<b>0.383</b>	0.006	<b>0.392</b>	0.005
Worker (D)	<b>-0.409</b>	0.012	<b>-0.413</b>	0.013	<b>-0.440</b>	0.009	<b>-0.435</b>	0.010
Civil Servant (D)	-0.442	0.118	-0.453	0.115	-0.453	0.122	-0.476	0.104
Self-employed (D)	0.262	0.175	0.11	0.126	0.319	0.111	0.334	0.094
Retired (D)	0.056	0.776	0.055	0.787	0.048	0.812	0.054	0.790
Unemployed (D)	-0.264	0.279	-0.223	0.375	-0.207	0.414	-0.230	0.365
Small Community (D)	<b>0.350</b>	0.017	<b>0.394</b>	0.010	<b>0.394</b>	0.010	<b>0.399</b>	0.009
<b>Version</b>								
Interview version 3 (D)	0.050	0.689	0.115	0.377	0.117	0.375	0.130	0.323
Interview version 4 (D)	0.093	0.460	0.157	0.226	0.181	0.169	0.169	0.195
<b>Interviewer</b>								
Experienced > 4 years (D)			-0.041	0.703	-0.008	0.940	-0.020	0.855
Female (D)			0.089	0.418	0.0890	0.471	0.075	0.496
Older than resp. (D)			<b>-0.410</b>	0.003	-0.431	0.002	<b>-0.429</b>	0.002
Higher schooling (D)			-0.126	0.323	-0.147	0.254	-0.1260	0.215
Lower schooling (D)			-0.215	0.156	-0.188	0.220	-0.2150.1	0.168
<b>Feedback</b>								
Positive / Interesting					<b>-0.182</b>	0.064		
Privacy					<b>-0.293</b>	0.029		
Interview not too long					-0.503	0.209		
Easy to answer					0.053	0.899		
at least one of the 4 latter							<b>-0.242</b>	0.002
Constant	-0.820	0.204	-0.272	0.698	-0.243	0.731	-0.172	0.808
Number of obs	84		8		836		836	
LR	30.75		46.5		56.26		56.35	
Prob larger chi2	0.0060		0.0004		0.0001		0.0000	
Pseudo R2	0.03	10	0.05700		0.06890		0.068900	
Log likelihood	-399.43856		-384.90723		-380.03051		-379.98598	

**Table 5:** Nonresponse regressions: savings accounts

<b>Saving Accounts</b>	Coef.	P>z	Coef.	P>z	Coef.	P>z	Coef.	P>z
<b>Respondent</b>								
HH income	-1.04E-06	0.978	1.97E-06	0.960	3.85E-06	0.922	3.97E-06	0.919
HH income squared	1.10E-10	0.880	1.19E-10	0.876	7.85E-11	0.918	7.20E-11	0.925
HH income imputed (D)	<b>0.483</b>	0.006	<b>0.487</b>	0.008	<b>0.477</b>	0.010	<b>0.470</b>	0.011
Age	-0.020	0.559	-0.008	0.825	-0.007	0.842	-0.007	0.839
Age squared	0.000	0.568	0.000	0.686	0.000	0.705	0.000	0.703
Secondary school (D)	0.206	0.191	0.182	0.310	0.162	0.369	0.158	0.381
Graduation diploma (D)	0.039	0.859	-0.124	0.635	-0.161	0.541	-0.156	0.551
University degree (D)	-0.182	0.429	-0.336	0.226	-0.408	0.147	-0.410	0.144
East Germany (D)	-0.201	0.263	-0.181	0.328	-0.152	0.414	-0.152	0.414
Worker (D)	-0.048	0.784	-0.126	0.489	-0.128	0.482	-0.119	0.512
Civil Servant (D)	-0.204	0.416	-0.299	0.246	-0.303	0.245	-0.321	0.217
Self-employed (D)	-0.414	0.126	<b>-0.579</b>	0.041	-0.578	0.045	-0.569	0.048
Retired (D)	-0.159	0.508	-0.225	0.358	-0.213	0.384	-0.207	0.399
Unemployed (D)	<b>0.554</b>	0.067	<b>0.513</b>	0.098	0.542	0.081	0.528	0.089
Small Community (D)	<b>-0.442</b>	0.035	<b>-0.494</b>	0.032	-0.498	0.031	-0.488	0.035
<b>Version</b>								
Interview version 3 (D)	<b>-0.575</b>	0.000	<b>-0.529</b>	0.000	<b>-0.552</b>	0.000	<b>-0.532</b>	0.000
Interview version 4 (D)	<b>-0.871</b>	0.000	<b>-0.785</b>	0.000	<b>-0.793</b>	0.000	<b>-0.789</b>	0.000
<b>Interviewer</b>								
Experienced \$>\$ 4 years (D)			<b>-0.381</b>	0.002	<b>-0.352</b>	0.006	<b>-0.362</b>	0.004
Female (D)			0.190	0.140	0.181	0.164	0.179	0.165
Older than resp. (D)			0.210	0.181	0.221	0.163	0.212	0.178
Higher schooling (D)			0.008	0.960	-0.017	0.913	-0.024	0.875
Lower schooling (D)			<b>0.342</b>	0.063	<b>0.368</b>	0.048	<b>0.360</b>	0.052
<b>Feedback</b>								
Positive / Interesting subject					-0.113	0.291		
Privacy					-0.261	0.121		
Interview not too long					-0.128	0.751		
Easy to answer					-0.024	0.953		
at least one of the 4 latter pos.							<b>-0.168</b>	0.054
Constant	0.233	0.754	-0.266	0.742	-0.308	0.704	-0.282	0.728
Number of obs	586		579		579		579	
LR	58.38		74.6		78.19		78.32	
Prob larger chi2	0.0000		0.0000		0.0000		0.0000	
Pseudo R2	0.0868		0.113		0.1184		0.1186	
Log likelihood	-307.28906		-292.87995		-291.08286		-291.01689	

**Table 6:** Nonresponse regressions: buildings society savings

<b>Building Society Contracts</b>	Coef.	P>z	Coef.	P>z	Coef.	P>z	Coef.	P>z
<b>Respondent</b>								
HH income	<b>0.000</b>	0.059	<b>0.000</b>	0.043	<b>0.000</b>	0.035	<b>0.000</b>	0.043
					<b>2.11E-09</b>		<b>2.07E-09</b>	
HH income squared	<b>1.83E-09</b>	0.093	<b>2.07E-09</b>	0.080		0.070		0.080
HH income imputed (D)	<b>0.641</b>	0.067	<b>0.6281</b>	0.089	<b>0.709</b>	0.060	<b>0.6327</b>	0.091
Age	0.026	0.610	0.0190	0.710	0.015	0.775	0.0188	0.712
Age squared	0.000	0.868	0.0001	0.802	0.000	0.701	0.0001	0.799
Secondary school (D)	0.028	0.906	0.1107	0.676	0.158	0.557	0.1122	0.673
Graduation diploma (D)	-0.173	0.597	-0.0694	0.863	0.017	0.967	-0.0684	0.865
University degree (D)	-0.156	0.646	-0.0949	0.814	-0.001	0.998	-0.0903	0.825
East Germany (D)	-0.272	0.278	-0.3151	0.241	-0.324	0.235	-0.3182	0.242
Worker (D)	0.011	0.964	-0.0356	0.889	-0.039	0.879	-0.0365	0.886
Civil Servant (D)	-0.221	0.471	-0.1658	0.599	-0.230	0.476	-0.1646	0.602
Self-employed (D)	-0.385	0.456	-0.4252	0.409	-0.474	0.369	-0.4282	0.407
Retired (D)	<b>-0.717</b>	0.093	<b>-0.8189</b>	0.056	-0.897	0.041	-0.8214	0.056
Unemployed (D)	0.193	0.673	0.1207	0.796	0.071	0.880	0.1213	0.795
Small Community (D)	<b>-0.598</b>	0.078	<b>-0.6907</b>	0.067	<b>-0.697</b>	0.067	<b>-0.6903</b>	0.068
<b>Version</b>								
Interview version 3 (D)	<b>-0.491</b>	0.029	<b>-0.4658</b>	0.057	<b>-0.449</b>	0.075	-0.4675	0.058
Interview version 4 (D)	<b>-0.473</b>	0.034	<b>-0.4587</b>	0.047	<b>-0.469</b>	0.050	-0.4607	0.048
<b>Interviewer</b>								
Experienced \$>\$ 4 years (D)			-0.1575	0.434	-0.220	0.293	-0.1592	0.432
Female (D)			-0.0342	0.866	-0.038	0.854	-0.0325	0.873
Older than resp. (D)			<b>0.5641</b>	0.032	<b>0.572</b>	0.031	<b>0.5649</b>	0.032
Higher schooling (D)			0.0590	0.799	0.079	0.738	0.0618	0.792
Lower schooling (D)			0.0010	0.997	-0.039	0.890	0.0015	0.996
<b>Feedback</b>								
Positive / Interesting subject					-0.034	0.833		
Privacy					0.337	0.216		
Interview not too long					0.060	0.917		
Easy to answer					0.191	0.787		
at least one of the 4 latter pos.							0.0106	0.937
Constant	-0.440	0.683	-0.9369	0.416	-0.844	0.466	-0.9371	0.416
Number of obs	243		241		241		241	
LR	26		29.98		29.98		29.98	
Prob larger chi2	0.0745		0.1190		0.1190		0.1499	
Pseudo R2	0.0866		0.1014		0.1014		0.1014	
Log likelihood	-137.1763		-132.81767		-132.81767		-132.81456	



**Table 7:** Nonresponse regressions: life insurance contracts

<b>Life Insurances</b>	Coef.	\$P>z\$	Coef.	\$P>z\$	Coef.	\$P>z\$	Coef.	\$P>z\$
<b>Respondent</b>								
HH income	<b>-0.0001</b>	0.057	<b>-0.0001</b>	0.063	<b>0.000</b>	0.054	<b>0.000</b>	0.062
HH income squared	<b>2.90E-09</b>	0.053	<b>2.96E-09</b>	0.053	<b>3.03E-09</b>	0.045	<b>2.96E-09</b>	0.053
HH income imputed (D)	0.238	0.303	0.272	0.248	0.285	0.228	0.276	0.244
Age	-0.040	0.366	-0.028	0.531	-0.027	0.551	-0.028	0.530
Age squared	0.000	0.365	0.000	0.426	0.000	0.432	0.000	0.425
Secondary school (D)	-0.034	0.862	-0.138	0.529	-0.113	0.610	-0.135	0.540
Graduation diploma (D)	0.010	0.971	-0.181	0.566	-0.120	0.709	-0.176	0.578
University degree (D)	-0.304	0.250	-0.518	0.112	-0.464	0.160	-0.511	0.120
East Germany (D)	-0.025	0.903	0.067	0.752	0.069	0.746	0.064	0.761
Worker (D)	0.074	0.734	0.006	0.979	0.023	0.919	0.006	0.978
Civil Servant (D)	-0.161	0.543	-0.201	0.458	-0.236	0.393	-0.199	0.465
Self-employed (D)	-0.069	0.781	-0.103	0.684	-0.097	0.703	-0.106	0.676
Retired (D)	-0.221	0.435	-0.292	0.307	-0.300	0.295	-0.293	0.305
Unemployed (D)	<b>-0.669</b>	0.067	<b>-0.810</b>	0.030	-0.837	0.026	-0.811	0.030
Small Community (D)	<b>-0.612</b>	0.013	<b>-0.651</b>	0.013	-0.654	0.013	-0.651	0.013
<b>Version</b>								
Interview version 3 (D)	<b>-0.400</b>	0.019	<b>-0.309</b>	0.087	<b>-0.304</b>	0.094	<b>-0.310</b>	0.086
Interview version 4 (D)	<b>-0.669</b>	0.000	<b>-0.679</b>	0.000	<b>-0.702</b>	0.000	<b>-0.679</b>	0.000
<b>Interviewer</b>								
Experienced \$>\$ 4 years (D)			-0.172	0.255	-0.211	0.171	-0.173	0.252
Female (D)			-0.230	0.144	-0.225	0.159	-0.229	0.146
Older than resp. (D)			0.240	0.198	0.239	0.201	0.241	0.196
Higher schooling (D)			0.018	0.923	0.029	0.877	0.021	0.910
Lower schooling (D)			<b>0.357</b>	0.080	0.341	0.096	0.357	0.080
<b>Feedback</b>								
Positive / Interesting subject					-0.0340454	0.785		
Privacy					0.2400224	0.203		
Interview not too long					0.1096004	0.798		
Easy to answer					0.0428822	0.954		
at least one of the 4 latter pos.							0.0144056	0.883
Constant	1.489	0.129	1.067	0.305	1.073081	0.306	1.064985	0.307
Number of obs	368		364		364		364	
LR	37.24		42.77		44.55		42.79	
Prob larger chi2	0.0031		0.0050		0.0132		0.0073	
Pseudo R2	0.076		0.0883		0.092		0.0884	
Log likelihood	-226.31737		-220.66524		-219.77686		-220.6544	

**Table 8:** Nonresponse regressions: retirement savings contracts

<b>Retirement Savings</b>	Coef.	$P > z$	Coef.	$P > z$	Coef.	$P > z$	Coef.	$P > z$
<b>Respondent</b>								
HH income	0.000	0.393	0.000	0.284	-0.0001953	0.00019	-	0.293
HH income squared	0.000	0.398	0.000	0.307	8.49E-09	2.57E-01	7.76E-	0.301
HH income imputed (D)	0.801	0.66	0.782	0.121	0.650	0.223	0.650	0.221
Age	-0.012	0.888	-0.015	0.859	0.007	0.939	-0.025	0.771
Age squared	0.000	0.940	0.000	0.789	0.000	0.977	0.000	0.711
Secondary school (D)	0.526	0.191	0.400	0.3860	0.409	0.3860	0.386	0.406
Graduation diploma (D)	0.298	0.556	0.132	0.847	0.119	0.777	0.195	0.777
University degree (D)	0.518	0.312	0.369	0.576	0.337	0.615	0.357	0.589
East Germany (D)	<b>-1.052</b>	0.006	<b>-1.244</b>	0.005	<b>-1.397</b>	0.003	<b>-1.188</b>	0.008
Worker (D)	0.143	0.742	0.069	0.879	0.056	0.903	0.084	0.852
Civil Servant (D)	0.164	0.784	0.172	0.8250	0.146	0.825	0.163	0.801
Self-employed (D)	0.009	0.981	-0.046	0.902	80.982	0.801	80.982	0.982
Retired (D)	0.356	0.598	0.235	0.732	0.169	0.811	0.325	0.645
Unemployed (D)	-0.377	0.538	-0.393	0.539	-0.477	0.477	-0.3770.5	0.555
Small Community (D)	-0.405	0.317	-0.447	0.3	-0.576	0.198	-0.437	0.316
<b>Version</b>								
Interview version 3 (D)	<b>-0.865</b>	0.010	<b>-0.889</b>	0.018	<b>-0.844</b>	0.031	<b>-0.850</b>	0.025
Interview version 4 (D)	<b>-1.055</b>	0.002	<b>-1.132</b>	0.002	<b>-1.102</b>	0.004	<b>-1.149</b>	0.002
<b>Interviewer</b>								
Experienced > 4 years (D)	1.504	0.427	-0.200	0.505	-0.276	0.396	-0.204	0.500
Female (D)			0.076	0.812	0.087	0.796	0.057	0.860
Older than resp. (D)			0.518	0.144	0.499	0.187	0.504	0.158
Higher schooling (D)			-0.431	0.270	-0.567	0.164	-0.445	0.256
Lower schooling (D)			-0.141	0.746	-0.186	0.674	-0.155	0.722
<b>Feedback</b>								
Positive / Interesting subject					-0.007	0.980		
Privacy					0.122	0.739		
Interview not too long					dropped			
Easy to answer					dropped			
at least one of the 4 latter							-0.160	0.430
Constant	1.504	0.427	1.514	0.462	1.387	0.512	1.720	0.406
Number of obs	115		114		110		1	
LR	24.16		27.73		27.96		28	
Prob larger chi2	0.1151		0.1850		0.2619		0.2028	
Pseudo R2	0.154		0.178		0.2619		0.182	
Log likelihood	-66.370471		-64.029633		-60.788319		-63.717127	

**Table 9:** Nonresponse regressions: bonds

Bonds	Coef.	$P > z$	Coef.	$P > z$	Coef.	$P > z$	Coef.	$P > z$
<b>Respondent</b>								
HH income	0.000	0.102	0.000	0.127	0.000	0.000	0.000	0.113
HH income squared	0.000	0.110	0.000	0.109	<b>2.48E-09</b>	0.081	2.33E-09	0.096
HH income imputed (D)	0.357	0.405	0.3230	0.491	0.465	0.330	0.323	0.487
Age	-0.059	0.512	60.427	0.447	90.512	0.352	-0.076	0.427
Age squared	0.000	0.665	0.000	0.633	0.001	0.524	0.001	0.595
Secondary school (D)	-0.614	0.141	-0.721	0.127	-0.472	0.344	-0.647	0.178
Graduation diploma (D)	<b>-1.321</b>	0.019	<b>-1.921</b>	0.007	<b>-2.057</b>	0.006	<b>-1.892</b>	0.008
University degree (D)	-0.660	0.162	<b>-1.173</b>	0.094	-0.902	0.216	-1.087	0.127
East Germany (D)	-0.003	0.994	0.061	0.880	40.06	0.826	0.006	0.988
Worker (D)	-0.592	0.206	-0.667	0.204	-0.629	0.248	-0.636	0.230
Civil Servant (D)	-0.282	0.701	-0.591	0.472	-0.288	0.729	-0.602	0.463
Self-employed (D)	-0.653	0.242	-0.928	0.135	<b>-1.645</b>	0.054	-1.030	0.106
Retired (D)	-0.413	0.369	-0.534	0.240	-0.579	0.240	-0.568	0.245
Unemployed (D)	0.200	0.774	0.224	0.782	0.309	0.700	0.319	0.700
Small Community (D)	<b>-1.713</b>	0.002	<b>-1.961</b>	0.002	<b>-1.893</b>	0.003	<b>-1.968</b>	0.002
<b>Version</b>								
Interview version 3 (D)	0.498	0.233	<b>0.832</b>	0.082	0.830	0.103	0.880	0.069
Interview version 4 (D)	-0.283	0.458	-0.151	0.720	30.45	0.584	50.715	0.715
<b>Interviewer</b>								
Experienced > 4 years (D)			-0.425	0.247	-0.416	0.279	-0.434	0.237
Female (D)			-0.013	0.971	-0.012	0.976	-0.003	0.993
Older than resp. (D)			-0.257	0.518	-0.217	0.606	-0.261	0.508
Higher schooling (D)			0.055	0.885	0.112	0.778	0.087	0.820
Lower schooling (D)			<b>0.911</b>	0.066	0.767	0.137	0.886	0.076
<b>Feedback</b>								
Positive / Interesting subject					0.374	0.190		
Privacy					-0.367	0.377		
Interview not too long					dropped			
Easy to answer					-0.275	0.814		
at least one of the 4 latter							0.196	0.357
Constant	2.917	0.173	3.648	0.133	4.067	0.109	3.721	0.128
Number of obs	116		115		112		11	
LR	30.32		38.229		42.330		39.14	
Prob larger chi2	0.0241		0.0170		0.0166		0.0192	
Pseudo R2	0.19		0.2518		0.2856		0.2574	
Log likelihood	-61.322773		-56.872127		-52.930077		-56.445915	

**Table 10:** Nonresponse regressions: stocks

<b>Stocks</b>	Coef.	P>z	Coef.	P>z	Coef.	P>z	Coef.	P>z
<b>Respondent</b>								
HH income	0.000	0.105	0.000	0.134	0.000	0.146	0.000	0.136
					1.29E-		1.30E-	
HH income squared	0.000	0.107	0.000	0.118	09	0.126	09	0.121
HH income imputed (D)	0.216	0.479	0.164	0.602	0.222	0.495	0.161	0.614
Age	-0.024	0.706	-0.030	0.652	-0.036	0.590	-0.030	0.651
Age squared	0.000	0.574	0.001	0.461	0.001	0.403	0.001	0.460
Secondary school (D)	0.054	0.858	0.125	0.697	0.153	0.637	0.125	0.698
Graduation diploma (D)	0.020	0.958	0.267	0.533	0.333	0.444	0.267	0.532
University degree (D)	-0.053	0.880	0.247	0.561	0.293	0.495	0.245	0.565
East Germany (D)	0.021	0.938	-0.093	0.749	-0.085	0.771	-0.092	0.753
Worker (D)	-0.347	0.288	-0.313	0.358	-0.316	0.355	-0.313	0.358
Civil Servant (D)	-0.125	0.686	-0.059	0.850	-0.056	0.858	-0.060	0.849
Self-employed (D)	-0.099	0.778	-0.090	0.801	-0.098	0.788	-0.089	0.804
Retired (D)	-0.661	0.116	-0.652	0.129	-0.671	0.121	-0.654	0.130
Unemployed (D)	-0.655	0.319	-0.513	0.433	-0.536	0.419	-0.514	0.433
Small Community (D)	-0.280	0.321	-0.239	0.423	-0.196	0.515	-0.240	0.423
<b>Version</b>								
Interview version 3 (D)	<b>-0.570</b>	0.011	<b>-0.496</b>	0.042	<b>-0.516</b>	0.036	<b>-0.496</b>	0.042
Interview version 4 (D)	<b>-0.673</b>	0.008	<b>-0.593</b>	0.025	<b>-0.588</b>	0.028	<b>-0.594</b>	0.025
<b>Interviewer</b>								
Experienced \$>\$ 4 years (D)			-0.017	0.935	0.004	0.983	-0.016	0.941
Female (D)			0.074	0.710	0.072	0.723	0.074	0.715
Older than resp. (D)			0.378	0.126	0.403	0.106	0.379	0.126
Higher schooling (D)			0.330	0.197	0.364	0.160	0.330	0.198
Lower schooling (D)			-0.159	0.563	-0.191	0.493	-0.158	0.565
<b>Feedback</b>								
Positive / Interesting subject					0.010	0.959		
Privacy					-0.221	0.402		
Interview not too long					0.465	0.316		
Easy to answer at least one of the 4 latter pos.					0.328	0.626		
							-0.007	0.957
Constant	0.643	0.647	0.073	0.960	0.067	0.964	0.072	0.961
Number of obs	223		219		219		219	
LR	19.88		22.91		24.97		22.91	
Prob larger chi2	0.2806		0.4068		0.5205		0.4658	
Pseudo R2	0.072		0.0849		0.0926		0.085	
Log likelihood	-128.01658		-123.40718		-122.37628		-123.40573	

**Table 11:** Focal points in responses to the income question (multiples of 100)

<b>Focal Points 100</b>	Coef.	$P > z$	Coef.	$P > z$	Coef.	$P > z$	Coef.	$P > z$
<b>Respondent</b>								
Age	0.005	0.894	0.014	0.731	0.021	0.605	0.014	0.730
Age squared	0.000	0.796	0.000	0.906	0.000	0.815	0.000	0.904
Secondary school (D)	<b>0.423</b>	0.023	0.350	0.102	0.350	0.127	0.347	0.105
Graduation diploma (D)	0.410	0.142	0.241	0.456	0.255	0.441	0.236	0.467
University degree (D)	<b>0.439</b>	0.076	0.321	0.312	0.333	0.352	0.309	0.333
East Germany (D)	<b>-0.583</b>	0.001	<b>-0.534</b>	0.004	<b>-0.547</b>	0.004	<b>-0.527</b>	0.005
Worker (D)	-0.069	0.731	-0.069	0.734	-0.002	0.992	-0.069	0.741
Civil Servant (D)	-0.103	0.753	-0.140	0.673	-0.212	0.526	-0.138	0.678
Self-employed (D)	0.459	0.317	0.422	0.351	0.405	0.380	0.423	0.348
Retired (D)	<b>-0.492</b>	0.070	-0.431	0.115	-0.475	0.087	-0.433	0.114
Unemployed (D)	0.069	0.823	0.085	0.785	0.8	0.08	0.084	0.787
Small Community (D)	0.319	0.237	0.292	0.2370	0.333	0.247	0.288	0.306
<b>Version</b>								
Interview version 3 (D)	<b>-0.312</b>	0.074	<b>-0.336</b>	0.067	<b>-0.319</b>	0.088	<b>-0.334</b>	0.070
Interview version 4 (D)	<b>-0.296</b>	0.094	-0.266	0.138	-0.254	0.167	-0.267	0.136
<b>Interviewer</b>								
Experienced > 4 years			-0.047	0.754	-0.066	0.0	-0.0470	0.792
Female (D)			0.155	0.313	0.15503	0.329	0.152	0.323
Older than resp. (D)			-0.263	0.186	-0.26301	0.195	-0.262	0.186
Higher schooling (D)			-0.088	0.630	-0.111	0.556	-0.096	0.602
Lower schooling (D)			0.166	0.488	0.203	0.412	0.163	0.495
<b>Feedback</b>								
Positive / Interesting					-0.027	0.824		
Privacy					0.177	0.361		
Interview not too long					-0.800	0.077		
Easy to answer					-1.435	0.039		
at least one of the 4 latter							-0.042	0.669
Constant	0.984	0.255	1.152	0.207	1.022	0.265	1.153	0.207
Number of obs	684		676		676		676	
LR	28.31		32.1		42.83		32.28	
Prob larger chi2	0.0129		0.0304		0.0403		0.0404	
Pseudo R2	0.06590		0.07500		0.10010		0.07540	
Log likelihood	-200.63494		-197.93678		-192.57297		-197.84542	

**Table 12:** Focal points in responses to the income question (multiples of 500)

<b>Focal Points 500</b>	Coef.	$P > z$	Coef.	$P > z$	Coef.	$P > z$	Coef.	$P > z$
<b>Respondent</b>								
Age	0.031	0.286	0.038	0.189	0.038	0.186	0.038	0.191
Age squared	0.000	0.374	0.000	0.216	0.000	0.215	0.000	0.217
Secondary school (D)	0.205	0.117	0.157	0.1550	0.321	0.321	0.155	0.308
Graduation diploma (D)	<b>0.443</b>	0.022	0.344	0.125	0.328	0.147	0.341	0.128
University degree (D)	<b>0.383</b>	0.029	0.281	0.205	0.263	0.238	0.273	0.220
East Germany (D)	<b>-0.701</b>	0.000	<b>-0.679</b>	0.000	<b>-0.677</b>	0.000	<b>-0.675</b>	0.000
Worker (D)	-0.083	0.570	80.698	0.698	-0.044	0.769	80.698	0.698
Civil Servant (D)	0.295	0.2	0.268	0.249	0.257	0.267	0.267	0.250
Self-employed (D)	<b>0.681</b>	0.007	<b>0.767</b>	0.003	<b>0.768</b>	0.003	<b>0.773</b>	0.003
Retired (D)	-0.190	0.321	-0.158	0.414	-0.165	0.394	-0.158	0.416
Unemployed (D)	<b>-0.405</b>	0.077	-0.322	0.170	-0.3	0.168	-0.32201	0.171
Small Community (D)	-0.020	0.903	0.036	0.834	0.045	0.796	0.034	0.842
<b>Version</b>								
Interview version 3 (D)	<b>-0.228</b>	0.062	<b>-0.272</b>	0.035	<b>-0.260</b>	0.045	<b>-0.270</b>	0.036
Interview version 4 (D)	-0.188	0.128	-0.166	0.183	-0.156	0.212	-0.167	0.182
<b>Interviewer</b>								
Experienced > 4 years			0.041	0.700	0.048	0.656	0.045	0.676
Female (D)			0.203	0.060	0.198	0.067	0.2030	0.063
Older than resp. (D)			-0.142	0.300	-0.139	0.312	10.301	0.301
Higher schooling (D)			-0.092	0.486	-0.0	0.450	20.486	0.466
Lower schooling (D)			0.066	0.675	0.073	0.642	0.064	0.685
<b>Feedback</b>								
Positive / Interesting					-0.006	0.947		
Privacy					-0.027	0.851		
Interview not too long					-0.140	0.672		
Easy to answer					-0.445	0.294		
at least one of the 4 latter							-0.032	0.657
Constant	-0.460	0.470	-0.511	0.43	70.457	0.433	-0.507	0.457
Number of obs	684		676		676		676	
LR	68.93		76.28		77.81		76.48	
Prob larger chi2	0.0000		0.0000		0.0000		0.0000	
Pseudo R2	0.07370		0.08260		0.08420		0.08420	
Log likelihood	-433.16659		-423.8715		-423.10341		-423.77277	

**Table 13:** Focal points in responses to the income question (multiples of 1000)

<b>Focal Points 1000</b>	Coef.	$P > z$	Coef.	$P > z$	Coef.	$P > z$	Coef.	$P > z$
<b>Respondent</b>								
Age	0.001	0.985	0.009	0.759	0.0010	0.747	0.009	0.760
Age squared	0.000	0.955	0.000	0.731	0.000	0.727	0.000	0.732
Secondary school (D)	0.188	0.160	0.074	0.635	0.074	0.638	0.073	0.637
Graduation diploma (D)	0.141	0.461	-0.052	0.815	-0.053	0.811	-0.052	0.813
University degree (D)	<b>0.396</b>	0.025	0.173	0.439	0.175	0.436	0.172	0.443
East Germany (D)	<b>-0.637</b>	0.000	<b>-0.568</b>	0.000	<b>-0.568</b>	0.000	<b>-0.567</b>	0.000
Worker (D)	-0.123	0.417	-0.112	0.466	-0.096	0.535	-0.112	0.466
Civil Servant (D)	-0.160	0.456	-0.196	0.362	-0.210	0.330	-0.196	0.362
Self-employed (D)	0.296	0.171	0.324	0.141	0.326	0.142	0.326	0.141
Retired (D)	-0.317	0.113	-0.271	0.180	10.180	0.182	-0.271	0.180
Unemployed (D)	-0.314	0.205	-0.257	0.309	-0.275	0.279	-0.257	0.310
Small Community (D)	-0.145	0.371	-0.097	0.569	-0.082	0.631	-0.097	0.569
<b>Version</b>								
Interview version 3 (D)	-0.201	0.105	<b>-0.254</b>	0.051	<b>-0.236</b>	0.073	<b>-0.254</b>	0.051
Interview version 4 (D)	-0.096	0.438	-0.076	0.546	-0.07	0.593	-0.076	0.545
<b>Interviewer</b>								
Experienced > 4 years			0.101	0.350	0.094	0.389	0.102	0.349
Female (D)			0.162	0.134	0.162	0.139	0.162	0.135
Older than resp. (D)			-0.167	0.219	-0.167	0.223	-0.167	0.219
Higher schooling (D)			-0.145	0.286	-0.15	0.257	-0.145	0.286
Lower schooling (D)			0.139	0.364	0.36	0.377	0.139	0.366
<b>Feedback</b>								
Positive / Interesting					0.012	0.891		
Privacy					0.077	0.594		
Interview not too long					0.136	0.678		
Easy to answer					-0.506	0.241		
at least one of the 4 latter							-0.005	0.948
Constant	-0.309	0.635	30.644	0.642	-0.3240	0.627	-0.323	0.644
Number of obs	684		676		676		676	
LR	38.12		44.49		44.49		44.5	
Prob larger chi2	0.0005		0.0008		0.0027		0.0013	
Pseudo R2	0.04330		0.05110		0.0532		0.051	
Log likelihood	-421.00946		-413.15682		-412.24823		-413.15466	

**Table 14:** Willingness to participate in future surveys

<b>Would participate another time</b>	Coef.	P>z	Coef.	P>z	Coef.	P>z	Coef.	P>z
<b>Respondent</b>								
HH income	0.000	0.267	0.000	0.266	0.000	0.352	0.000	0.352
HH income squared	0.000	0.167	0.000	0.167	-6.21E-	0.209	-6.11E-10	0.216
HH income imputed (D)	-0.202	0.181	-0.228	0.140	-0.166	0.287	-0.168	0.280
Age	0.000	0.996	0.005	0.863	0.007	0.811	0.009	0.759
Age squared	0.000	0.813	0.000	0.692	0.000	0.679	0.000	0.628
Secondary school (D)	0.064	0.619	-0.010	0.946	0.035	0.811	0.024	0.868
Graduation diploma (D)	0.144	0.430	0.003	0.989	0.092	0.667	0.063	0.765
University degree (D)	-0.134	0.433	-0.287	0.175	-0.172	0.424	-0.191	0.373
East Germany (D)	<b>0.246</b>	0.070	<b>0.285</b>	0.044	<b>0.240</b>	0.095	<b>0.241</b>	0.093
Worker (D)	0.174	0.228	0.132	0.369	0.148	0.320	0.136	0.356
Civil Servant (D)	0.113	0.593	0.082	0.703	0.0740	0.853	0.074	0.731
Farmer (D)	-0.755	0.426	-0.924	0.341	-1.121	0.266	-1.076	0.288
Self-employed (D)	-0.124	0.529	-0.174	0.387	-0.216	0.22	30.273	0.273
Retired (D)	<b>0.302</b>	0.097	0.273	0.139	0.274	0.139	0.271	0.143
Unemployed (D)	0.147	0.2	0.260	0.255	0.201	0.383	0.245	0.287
Small Community (D)	<b>0.493</b>	0.002	<b>0.559</b>	0.001	<b>0.601</b>	0.000	<b>0.577</b>	0.001
<b>Version</b>								
Interview version 3 (D)	<b>-0.407</b>	0.001	<b>-0.352</b>	0.004	<b>-0.344</b>	0.006	<b>-0.375</b>	0.003
Interview version 4 (D)	<b>-0.367</b>	0.002	<b>-0.350</b>	0.005	<b>-0.364</b>	0.004	<b>-0.356</b>	0.004
<b>Interviewer</b>								
Experienced > 4 years			<b>-0.199</b>	0.051	<b>-0.260</b>	0.013	<b>-0.233</b>	0.024
Female (D)			-0.104	0.302	-0.0930	0.380	-0.09003	0.361
Older than resp. (D)			-0.056	0.656	-0.058	0.646	-0.051	0.685
Higher schooling (D)			-0.018	0.887	0.007	0.956	0.023	0.852
Lower schooling (D)			<b>0.259</b>	0.069	0.235	0.106	0.271	0.060
<b>Feedback</b>								
Positive / Interesting					<b>0.249</b>	0.004		
Privacy					<b>0.471</b>	0.000		
Interview not too long					<b>0.591</b>	0.080		
Easy to answer					-0.206	0.594		
at least one of the 4 latter							<b>0.283</b>	0.000
Constant	0.490	0.419	0.553	0.394	0.556	0.396	0.463	0.478
Number of obs	773		764		764		764	
LR	38.665		49.669		73.85		66.4	
Prob larger chi2	0.0032		0.0010		0.0000		0.0000	
Pseudo R2	0.0381		0.0495		0.0736		0.0662	
Log likelihood	-487.86982		-476.60255		-464.51825		-468.25	



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