



# Response Bias and the Role of Third Parties in Household Surveys

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November 28–29, 2013

4th International SHARE User Conference

Liège, Belgique

# Introduction

## Motivation

- Surveys may offer unique insights
- According to Baker and Mukherjee (2007), main concerns with survey data are:
  - Representativeness
  - Accuracy
- Crucial to address data concerns, e.g.:
  - Sampling
  - Imputing (some) missing values
  - Validity–check answers, question phrasing

# Introduction

## Motivation

- Research question:

Are respondents affected by the presence of third parties when deciding *whether* or *how* to answer questions? If so, could this create a bias?

- Privacy concerns may affect respondent's answer behavior
- Social desirability bias may foster answers that are viewed favorably by others

# Presence of a third party

## Data collection

- Survey of Health, Ageing, and Retirement in Europe (SHARE)
- Computer Assisted Personal Interview (CAPI)
- 3 + 1 waves
- Multiple imputations only for main financial variables (FCS and hot-deck procedures)

# Presence of a third party

## Data collection

- Presence of third party captured at least *twice*
  - During cognitive test section
  - At the end of the interview
- Focus on subsample accompanied during cognitive test
- 2 control groups:
  - all other respondents
  - *respondents accompanied* at some other point of the interview

# Presence of a third party

- SHARE Wave 1, 2, 4

| Variable        | N       | Mean |
|-----------------|---------|------|
| Companion       | 123,356 | 0.16 |
| Partner present | 123,356 | 0.13 |
| Child present   | 123,356 | 0.02 |
| Other present   | 123,356 | 0.02 |

# Selection bias due to presence?

## Hypothesis 1

- The probability to obtain a response to a question decreases when respondents are interviewed in front of third parties.

# Selection bias due to presence?

## Health?

- Limit sample to respondents that did not need a proxy respondent
- Include health controls (and age, age-squared, etc.)

## Self-selection who is accompanied?

- Limit sample to respondents that were accompanied *at some point* of the interview
- Placebo test



# Reply probability

## Probability of a reply

|                   | <b>Reply(writing)<br/>accompanied</b> | <b>Reply(writing)<br/>accompanied</b> | <b>Reply(numeric)<br/>accompanied</b> | <b>Reply(numeric)<br/>accompanied</b> |
|-------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Companion         | -1.9814***<br>(0.2307)                |                                       | -0.8902***<br>(0.0746)                |                                       |
| Partner present   |                                       | -1.0630***<br>(0.2172)                |                                       | -0.5265***<br>(0.0851)                |
| Child present     |                                       | -1.4230***<br>(0.2157)                |                                       | -0.9380***<br>(0.1152)                |
| Other present     |                                       | -1.9920***<br>(0.2117)                |                                       | -1.1002***<br>(0.1190)                |
| Control variables | Yes                                   | Yes                                   | Yes                                   | Yes                                   |
| Year effects      | Yes                                   | Yes                                   | Yes                                   | Yes                                   |
| Country effects   | Yes                                   | Yes                                   | Yes                                   | Yes                                   |
| Observations      | 10,987                                | 10,987                                | 14,739                                | 14,739                                |

# Placebo test

## Why placebo test?

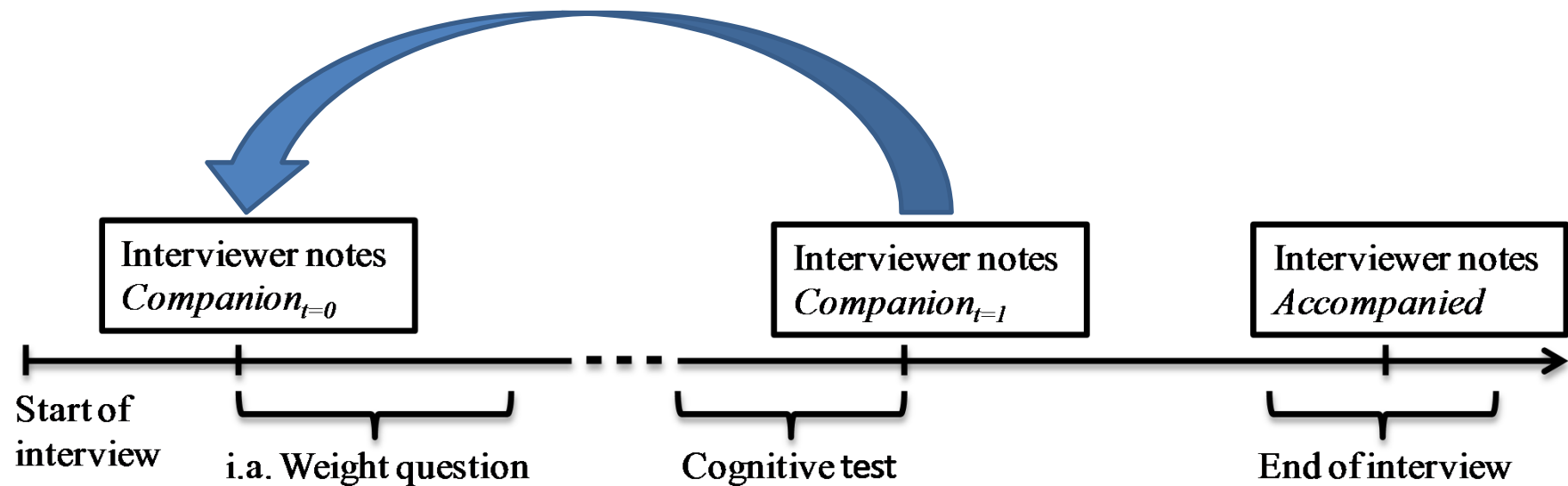
- Does *current presence* matter?

and/or

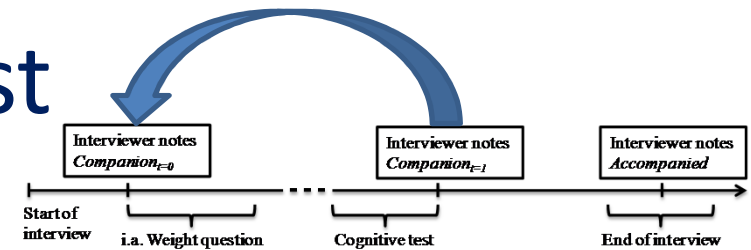
- Does the fact dominate that someone stayed during the cognitive test even though the interviewer asked the person to complete the section alone?
- Concerns about population differences driving results, due to omitted variables that correlate with companion–presence

# Placebo test

How to test? (SHARE Wave 4)



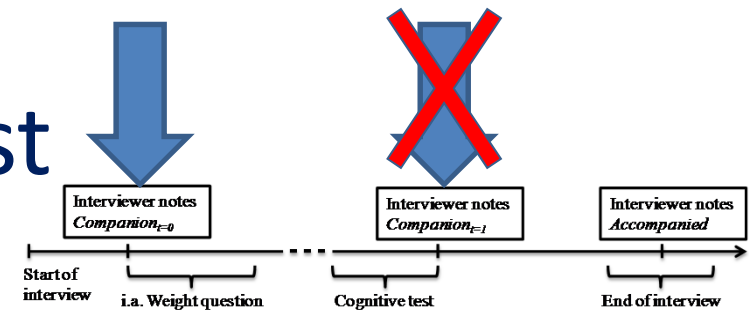
# Placebo test



## Regression results (I/II)

|                                | Reply(weight) <sub>t=0</sub><br>accompanied <sub>t=0</sub> | Reply(weight) <sub>t=0</sub><br>accompanied <sub>t=0</sub> | Reply(weight) <sub>t=0</sub><br>absent <sub>t=0</sub> | Reply(weight) <sub>t=0</sub><br>absent <sub>t=0</sub> |
|--------------------------------|--|--|---|---|
| Companion <sub>t=1</sub>       | -0.0811<br>(0.3535)  |  | -0.0822<br>(0.2757)                                   |   |
| Partner present <sub>t=1</sub> |  | -0.0349<br>(0.3622)  |   | -0.4274<br>(0.3153)                                   |
| Child present <sub>t=1</sub>   |  | 0.1048<br>(0.5338)   |   | 0.1585<br>(0.5492)                                    |
| Other present <sub>t=1</sub>   |  | 0.5504<br>(0.5988)   |   | 1.3674<br>(1.0449)                                    |
| Other controls                 | Yes  | Yes  | Yes   | Yes   |
| Country effects                | Yes  | Yes  | Yes   | Yes   |
| Observations                   | 941  | 941  | 22,112  | 22,112  |

# Placebo test



## Regression results (II/II)

|                                | Reply(weight) <sub>t=0</sub><br>accompanied <sub>t=1</sub> | Reply(weight) <sub>t=0</sub><br>accompanied <sub>t=1</sub> |
|--------------------------------|--|--|
| Companion <sub>t=0</sub>       | -0.9526***<br>(0.2557)                                     |  |
| Partner present <sub>t=0</sub> |  | -0.6906**<br>(0.3464)                                      |
| Child present <sub>t=0</sub>   |  | -0.5842<br>(0.4962)  |
| Other present <sub>t=0</sub>   |  | -0.0552<br>(0.6104)  |
| Other controls                 | Yes  | Yes  |
| Country effects                | Yes  | Yes  |
| Observations                   | 4,349  | 3,146  |

# Selection bias?

## Heckman vs. simple OLS

|                       | <b>Pr(reply)</b><br>Selection eq. | <b>ln(income)</b><br>Outcome eq. |
|-----------------------|-----------------------------------|----------------------------------|
| Companion             | -0.1899**<br>(0.0878)             |                                  |
| Companion * Unwilling | -0.1190***<br>(0.0432)            |                                  |
| Unwilling             | -0.2553***<br>(0.0345)            | -0.2345***<br>(0.0314)           |
| College               | 0.4491***<br>(0.0608)             | 0.3692***<br>(0.0490)            |
| Health                | 0.1682***<br>(0.0403)             | 0.1529***<br>(0.0359)            |
| Other controls        | Yes                               | Yes                              |
| Country effects       | Yes                               | Yes                              |
| Observations          | 6,787                             | 6,787                            |

# Response bias due to presence?

## Hypothesis 2

- Respondents are more prone to over-estimate their abilities in front of third parties.

## Hypothesis 3

- Respondents that overreport their abilities due to social desirability, induced by the presence of third parties during the interview, are less likely to exhibit overconfident traits in their decisions and behavior.

# Response bias due to presence?

Over-stating of abilities ( = implied overconfidence)

|                 | <b>OC</b>            | <b>OC</b>            | <b>OC indicator</b>   | <b>OC indicator</b>   |
|-----------------|----------------------|----------------------|-----------------------|-----------------------|
|                 | Accompanied          | Accompanied          | Accompanied           | Accompanied           |
| Companion       | 0.1307**<br>(0.0647) |                      | 0.1936***<br>(0.0722) |                       |
| Partner present |                      | 0.1565**<br>(0.0696) |                       | 0.2059***<br>(0.0770) |
| Child present   |                      | -0.0145<br>(0.1250)  |                       | 0.0818<br>(0.1606)    |
| Other present   |                      | 0.1353<br>(0.1514)   |                       | 0.0390<br>(0.1818)    |
| Other controls  | Yes                  | Yes                  | Yes                   | Yes                   |
| Country effects | Yes                  | Yes                  | Yes                   | Yes                   |
| Observations    | 5,519                | 5,519                | 5,511                 | 5,511                 |



# Response bias due to presence?

Over-stating of abilities ( = implied overconfidence)

|                 | Spending share        | Make ends meet        | Sad                    |
|-----------------|-----------------------|-----------------------|------------------------|
| OC              | 0.0132***<br>(0.0026) | 0.0142***<br>(0.0026) | -0.0577***<br>(0.0057) |
| OC * Companion  | -0.0144*<br>(0.0084)  | -0.0196*<br>(0.0103)  | 0.0341*<br>(0.0189)    |
| Companion       | 0.0357<br>(0.0257)    | 0.0720**<br>(0.0354)  | -0.0349<br>(0.0589)    |
| Other controls  | Yes                   | Yes                   | Yes                    |
| Country effects | Yes                   | Yes                   | Yes                    |
| Observations    | 22,834                | 17,133                | 22,802                 |

# Conclusion

- The presence of a third party during the interview reduces the probability of an answer, consistent with privacy concerns
- This may create a selection bias for which we can correct
- Accompanied respondents are more prone to overstate their abilities, consistent with social desirability
- This can lead us to misclassify those respondents as overconfident, which introduces a downward bias in the estimation of the overconfidence effect on (financial) behavior.