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Unit non-response in establishments surveyed for the first time in the IAB Establishment Panel

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Zusammenfassung

Im Fokus des Beitrags steht die Untersuchung der Teilnahmeverweigerung bei erstbefragten Betrieben im IAB-Betriebspanel. Dazu wird zunächst ein theoretischer Rahmen dargelegt, der die Teilnahmeentscheidung an Betriebsbefragungen erklären kann. Die empirischen Ergebnisse bestätigen diesen Rahmen im Wesentlichen: Wenn der Interviewte befugt ist, die gewünschten Auskünfte zu geben und die notwendigen Informationen mit einem vertretbaren Aufwand zu recherchieren sind, wird die Teilnahme seltener verweigert. Beides ist mit zunehmender Größe und Komplexität der Betriebe seltener der Fall und entsprechend unwahrscheinlicher wird die Teilnahme. Auch zeigt sich, dass erfahrene, professionelle Interviewer erfolgreicher bei der Rekrutierung von Betrieben sind. Allerdings gilt dieser Befund nur für kleinere Betriebe.

Abstract

The aim of this paper is to analyse unit non-response in establishments surveyed for the first time in the IAB Establishment Panel. For this a theoretical framework is presented which helps to explain the decision to participate in establishment surveys. The empirical results largely confirm this framework. If the respondent has the authority to provide the relevant information and is able to give reliable answers to the questions with a justifiable amount of effort, participation is less frequently refused. However, these two aspects are less likely to be the case as the size of the establishment and the complexity of the firm increase, so participation accordingly becomes more improbable. It can also be shown that experienced and professional interviewers are more successful in recruiting firms to take part in the survey. However this result only holds for smaller establishments.

Keywords: IAB Establishment Panel, unit non-response

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1 Introduction

In contrast to individual and household surveys (on this issue see Schnell/ Hill/ Esser 2005 and Groves et al. 2004: 176), empirical studies on participation or non-participation in establishment surveys are rare. This is surprising given that such analyses are of considerable importance for establishment surveys, too, for several reasons. First, a precise knowledge of the non-response processes is necessary in order to optimise the fieldwork management, thus improving the quality and possibly reducing the survey costs. Second, analyses of this kind can reveal any selectivities. This is of importance as such selectivities can lead to biased estimates and problems in extrapolating variables to the population.

It is basically possible to distinguish between two types of non-response: we speak of item non-response when the respondent does not answer all of the questions, and unit non-response when an establishment refuses to participate in the survey at all. In principle both types of non-response can lead to biased results if the cases of non-response are not random.

The following study refers to the IAB Establishment Panel, a survey of currently just under 15,500 establishments which has been conducted by the Institute for Employment Research in western Germany since 1993 and in the whole of Germany since 1996. In principle the survey is intended to interview the same establishments every year. As a result of cases of non-response and in order to depict structural change, however, it is also necessary to interview new establishments each year.

Janik and Kohaut (2011) have already conducted analyses of non-response for this data set. However, that study focused on establishments which had already taken part in the panel (repeat respondents). The authors find that the results confirm the action-theory decision model (see Section 2) for the respondent's behaviour. If the interview partner is authorised to provide the relevant information and is able to give reliable answers to the questions with a justifiable amount of effort and if the firm is interested in the survey, participation is less likely to be refused. Key determinants are establishment size, the degree of independence of the establishment surveyed from external decision-makers, item non-response regarding sensitive information in the previous year and a number of variables that are indirectly indicative of motivation. The key importance of the interaction between the interviewee and the interviewer is also confirmed. If there is a change of one of the two individuals, the likelihood of repeat participation falls considerably. Completing the questionnaire (at least partly) in writing without the presence of an interviewer also leads to more seldom participation. In addition to this the authors found that the interviewer's individual characteristics (e.g. education level, experience, sex etc.) have no effect. As is shown for example by Pyy-Martikainen and Rendtel (2008), initial non-response and non-response in a later panel wave are fundamentally two different processes. The causes of non-response on initial contact cannot therefore be inferred directly from the findings of the analyses conducted by Janik and Kohaut (2011).

One difficulty in analysing these non-response processes is the availability of data. While analyses of non-response in the panel can draw on details provided by the establishments in the last survey wave, in the case of establishments surveyed for the first time it is generally

only possible to use information available in the data file that was the basis for the sampling procedure. The findings that can be gained in this way are often not particularly enlightening. This problem is dealt with in two ways in this paper. First, data about the interviewer are merged with the data set¹, and second, the data set is supplemented by information from the Establishment History Panel (Betriebshistorikpanel – BHP), which is based on process-generated data from the Federal Employment Agency (Bundesagentur – BA) (Hethey-Maier/Seth 2010).

2 Unit non-response in establishment surveys

2.1 Typification of unit non-response in establishment surveys

In establishment surveys there are basically two different types of unit non-response: cases of non-response that occur because it was not possible to contact the establishment at all (“noncontacts”) and cases in which it was possible to contact the establishment but participation in the interview was refused. Unlike in household surveys, inability to participate in the survey for example due to language problems (see Groves et al 2004: 170) is unlikely to be of importance when surveying establishments located in Germany.

According to Rendtel (2002) there are various reasons why contacting an establishment may fail:

- An establishment has closed or become insolvent and therefore no longer exists. This is neutral non-response and does not entail any survey errors.
- The address of the establishment has either been stored incorrectly in the sample file (entry error) or the establishment has relocated. If the correct address cannot be established it is not even possible to attempt to recruit the establishment for an interview.
- No contact can be made with the establishment. Good fieldwork management should prevent this, as it can be assumed that most establishments are accessible during usual business hours.

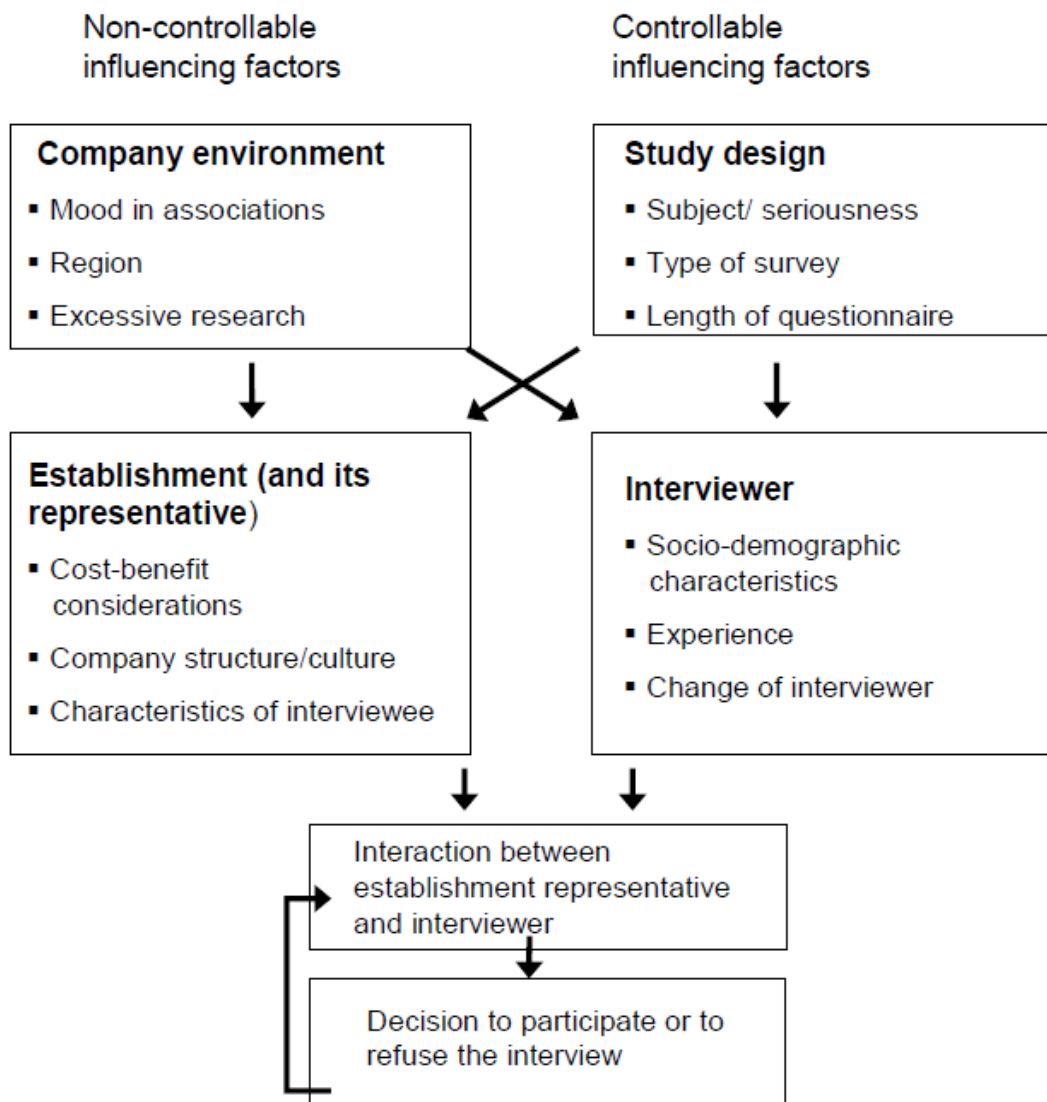
The second type of non-response, the type which is the focus of the following pages, is a refusal to participate even though contact has already been made with the establishment and one of its representatives. The processes that influence the willingness to participate in an establishment or business survey are in principle different from those in a household or individual survey. The main reason for this is that the respondent is not asked about him/herself and his/her personal opinions and attitudes but is interviewed as a representative of his/her organisation. In addition to the individual influences, it is also necessary to take into account the influences of the particular organisation on the decision to participate (see Tomaskovic-Devey/ Leiter/ Shealy 1995).

¹ These data were made available by the institute conducting the survey, TNS Infratest Sozialforschung.

2.2 A theoretical framework for the decision to participate

The following theoretical framework to model the decision to participate is based on the model of the decision to participate in household surveys (Groves/ Couper 1998: 30) which was applied to establishments by Willimack/ Nichols/ Sudman (2002: 222). Janik and Kohaut (2011) extended it further to include the interviewer's influence on the willingness of the establishment to participate (see Figure 1).

Figure 1: Theoretical framework for the decision to participate



Source: Janik/ Kohaut 2011

There are basically two different types of influencing factors: on the one hand factors that can be controlled by the researcher and on the other hand those that are not controllable. Aspects that cannot be controlled within the scope of the survey include both the environment of the establishment to be surveyed and the establishment itself as well as the representative

of the establishment in some cases. In contrast, the study design is controllable as are the selection and deployment of the individuals who are to conduct the interviews. The willingness or refusal to participate in the survey develops from the interplay between the establishment representative, who is influenced by the company environment, and the interviewer, who acts within the scope of the study design.

2.2.1 Non-controllable influencing factors

The company environment

In principle it is plausible that environmental factors have an influence on an establishment's decision to participate, like they do in household and individual surveys. Possible factors in this respect could be the situation in the economy as a whole or the mood in employers' associations. An excessive burden on the establishments from general and statistical surveys ("excessive research") could also play a role in the decision as to whether to participate or not (see for example Groves et al. 2004: 176). None of these aspects can be influenced by the researchers, however, and they can generally not even be taken into account in analyses as there are no relevant data available (Janik/ Kohaut 2011).

The establishment and its representative

Like in individual surveys, the basis for the establishment representative's decision to participate is an action-theory model (Schnabel 1997: 158ff; Hartmann/ Kohaut 2000: 612f). It is assumed that humans – and thus also the individuals to be interviewed – wish to maximise the utility that they can expect from a certain action. The contact person in the establishment is therefore more likely to participate if the expected utility from participation is high and the associated costs are low. In Tomaskovic-Devey/ Leiter/ Shealy (1995: 80ff) and Schnabel (1997: 161ff) three key aspects affecting an establishment representative's decision to participate are found in this context:

- "Authority to respond"
- "Capacity to respond"
- "Motive to respond"

The more complex the internal structure of an establishment is, the more likely it is that the person contacted does not have the authority to answer all or at least some of the questions in the questionnaire. They would first have to obtain appropriate permission, which would involve time and money. Similar applies for establishments that belong to a larger company (branch offices etc.) and first have to obtain approval before they can participate. The higher the costs of gaining permission are, the more probable it is that the person will try to spare himself the trouble. "Authority to respond" thus concerns the degree to which the respondent has the formal or informal authority to provide an answer (Schnabel 1997: 126).

Even if the establishment representative does have the relevant authority to participate in a survey, a lack of knowledge on his or her part can be a problem. If the person to be inter-

viewed has the feeling that he or she does not have all of the information needed to complete the questionnaire, the probability increases that he or she will refuse to participate. This is the case because obtaining information again involves costs. The “capacity to respond” therefore refers to the respondent’s ability to provide answers to the questions asked.

These two aspects are probably closely correlated with the size and thus also with the complexity of an establishment, though it should be noted that professional personnel management or management accounting, which is more likely to be found in larger establishments, tends to simplify the survey. In the light of the two arguments it also seems to make sense to select a person who is as high in the establishment hierarchy as possible (e.g. managers, heads of offices, owners) for the interview, which is already the case in the IAB Establishment Panel.

Another aspect that may be of importance for participation is corporate policy. If an establishment is basically interested in the findings that can be gained from the research, e.g. in order to benefit from them itself, it can be assumed that the establishment representative will also be more likely to decide to take part. The “motive to respond” thus covers the establishment’s interest in and preferences regarding the exchange of information (Tomaskovic-Devey/ Leiter/ Shealy 1995). It is, however, difficult to operationalise these motives for empirical analysis.

In addition, the personal motives of the person to be interviewed of course also have an influence. Whether the survey is perceived more as a burden or as a diversion in the working day is just as important as the respondent’s compliance with corporate policy and his or her identification with the firm.

2.2.1 Controllable influencing factors

While the aspects mentioned so far have to be accepted as basic conditions when conducting the survey, there are a number of factors that can be influenced by the researchers.

Study design

The study design has an important influence in this respect. Within this design, various measures are stipulated which have an impact of the decision to participate. Ideally these measures are selected in such a way as to anticipate the respondent’s reaction and to have a positive influence on the probability of participating.

Especially when recruiting establishments to be surveyed for the first time it is important that the survey appears serious and legitimate. In the IAB Establishment Panel the establishments therefore receive two letters before the survey begins, one from the Executive Board of the Federal Employment Agency (Bundesagentur für Arbeit) and one from the president of the Federal Confederation of German Employers’ Associations (Bundesvereinigung der deutschen Arbeitgeberverbände). The letters are sent before the interviewers make their first contact. Both of the letters explain the aim of the survey and ask for support. This is intended to substantiate the serious research interest behind the survey and to encourage the establishments to participate. Furthermore, the letters announce that the interviewers will contact

the establishment by telephone in order to arrange an appointment for the interview (Fischer et al. 2009: 138ff).

As these and other aspects of the study design (length of the questionnaire, time when the survey is conducted, title of the survey etc.) were decided before the first wave of the IAB Establishment Panel in 1993 and have not been altered since then partly due to the panel character of the survey, it is not possible to examine them further empirically in the context of this article².

Influence of the interviewer

The interviewer with his/her experience and behaviour can also have a considerable influence on the establishment representative's willingness to cooperate, even if it is ultimately the representative who makes the decision as to whether to respond to the survey.

In individual and household surveys, for instance, it has been found that the person being interviewed responds (also unconsciously) to observable and non-observable characteristics of the interviewer (see for example Groves/ Couper 1998: 36). This connection can plausibly be assumed to be of importance in establishment surveys, too, where the interviewer's serious, professional appearance and manner serve as an "entrance ticket" to the establishment. An interviewer who is assessed as trustworthy on the basis of his personal appearance and manner can persuade a person to participate in a survey more easily than an interviewer who does not show these characteristics. The interviewer's socio-economic characteristics therefore play a key role because they serve as clues for the respondent from which he or she draws conclusions about the intention and the seriousness of the survey. For instance, the respondent uses the interviewer's age or sex to form an opinion about the intention of the interview.

Findings from studies on individual (see Pickery/ Loosveldt/ Carton 2001: 510) and household surveys (see Groves/ Couper 1996: 69, Groves/ Couper 1998: 36) indicate that not only these observable characteristics but also characteristics which are unobservable to the respondent, such as the interviewer's education level and his or her experience of interviewing can also be of importance. Experienced interviewers can, for example, draw on a wide range of conversation techniques to help them to persuade the respondents to take part in a survey. In a large number of interviews they have learnt what behaviour and what statements they can use to describe convincingly what the survey is about, depending on the reactions of the person they have contacted.

Whether or not a complete interview results from the interaction between the establishment representative acting in his particular company environment on the one hand and the interviewer on the other hand depends to a greater or lesser extent on the factors described in this section. The following section examines how strong their individual effects are.

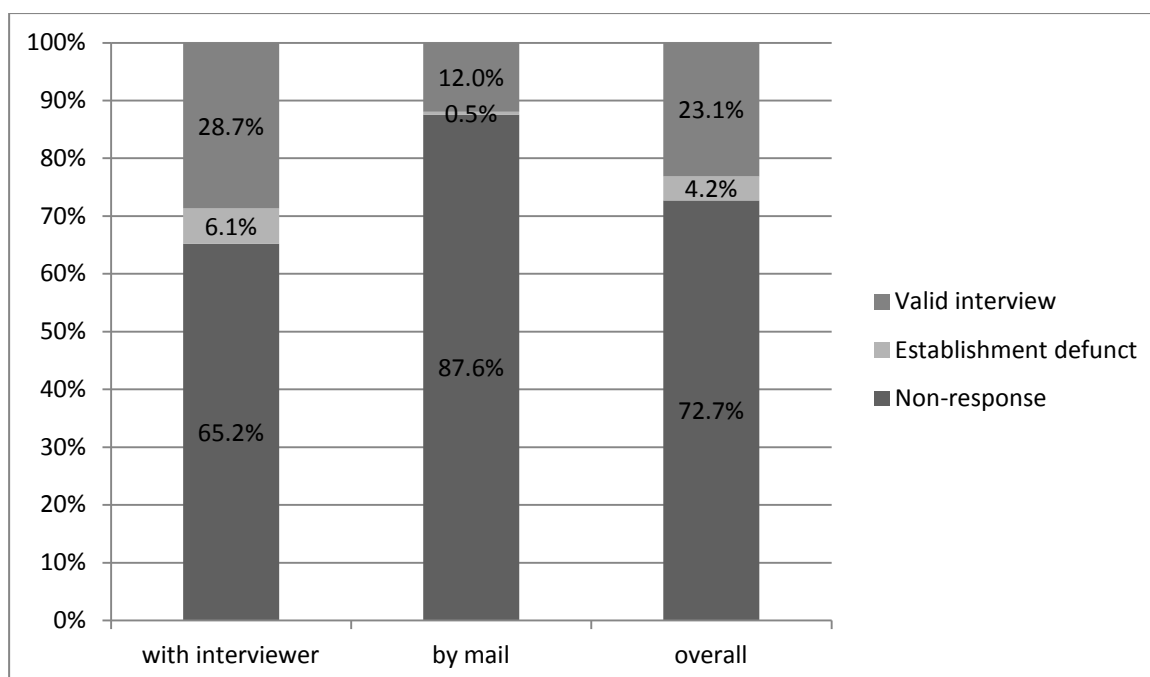
² For details about the study design of the IAB Establishment Panel see Fischer et al. (2009: 138ff).

3 Empirical analysis

3.1 Description

Analogous to the theoretical classification developed by Rendtel (2002), two types of unit non-response are distinguished in the IAB Establishment Panel, too. First, neutral non-response due to an establishment closing down, and second, non-response as a result of refusal to participate. Figure 2 shows the distribution of these two categories and survey participation.

Figure 2: Participation of establishments surveyed for the first time in the IAB Establishment Panel of 2009



Source: IAB Establishment Panel 2009, organisation file, own calculations

It should be noted that the category “establishment defunct” is definitely underestimated for the establishments that participated in the survey by mail. In the context of the postal survey it will only be possible to record the closure of an establishment or another form of neutral non-response in exceptional cases as the establishments contacted by mail simply do not reply and there is no feedback regarding the reason. This is different in the case of establishments surveyed using interviewers (face-to-face interviews). The interviewers have the explicit task of researching the status of establishments that cannot be reached. In these cases the differentiation between neutral non-response and actual non-response is thus likely to be relatively good.

It can be seen that the postal survey results in higher rates of non-response. This corresponds with the findings from individual and household surveys. Furthermore it is evident that in the case of first-time surveys deploying interviewers some 30 % of the establishments can be recruited for the survey. These shares are essentially stable over time, though in the last waves there has been a slight decline in the willingness to participate among establish-

ments approached for the first time (Fischer et al. 2009: 140f), a phenomenon which is also seen in other surveys (see Aust/ Schröder 2009).

3.2 Analysis strategy

The following analyses refer to the establishments surveyed for the first time in the 2009 wave which were to be recruited for the survey using interviewers. The data about the establishments to be surveyed which are available from the establishment file of the Federal Employment Agency at the time of sampling (Brixy/ Fritsch 2004) are used. This information is supplemented by details about the interviewer deployed. These data were provided by TNS Infratest Sozialforschung and were merged with the organisation file of the Establishment Panel. In order to deepen the analyses, information from the Establishment History Panel (Hethey-Maier/ Seth 2010) is also merged with the data set. With this data product it is possible to make statements about the establishment to be surveyed before sampling on the basis of the social security data and in this way to examine more closely the influence of business development. In a final step the data set is augmented by information about the establishment entry status, which was generated from the Establishment History Panel following a procedure developed by Hethey/ Schmieder (2010). This data structure is intended to combat the problem that, especially for analyses of non-response for units surveyed for the first time, little information is available because it is not possible to draw on data from the questionnaire. As no usable information about the establishment representative to be interviewed is available either when establishments surveyed for the first time refuse to participate, it is not possible to examine the interaction effects here.

These data sets are then used to examine the reasons for establishments to be surveyed for the first time in 2009 refusing to participate. Cases are regarded as non-response when the establishment still exists, i.e. is not defunct, but was not willing to participate in the survey. A dummy variable is formed as a dependent variable, which takes on the value one if the establishment does not respond and the value zero if it does. For the multivariate analysis logit models are estimated where, due to the two analysis levels (interviewers who can each interview several establishments) the interviewers are clustered for the estimates.

3.3 Independent variables and expected correlations

In the following section the independent variables used in the various estimates and the expected correlations with participation or non-participation are described³.

The establishment and its representative

As a result of the preliminary theoretical considerations, small establishments can be expected to refuse to participate less often. It can be assumed that as the size of the establishment increases it becomes more difficult, more time-consuming and more costly to find a person who is permitted to answer the questions asked (authority to respond) and who has the resources to obtain the required information (capacity to respond). Establishment size is taken into consideration by including a total of nine dummies in all of the estimates. In this

³ The aspects of company environment and study design from the theoretical framework are not included in the analyses, however, as no suitable variables are available for this.

way the disproportionate stratification of the sample of the IAB Establishment Panel is taken into account at the same time.

On the basis of the theoretical considerations it can be assumed that the economic situation plays a role in the decision to participate even if the direction is not clear at first. On the one hand it is conceivable that establishments are happy to speak about successes, on the other hand especially establishments that are currently experiencing a crisis may report about their difficult situation in the hope of receiving assistance. Two dummies are therefore included as proxy variables for the economic situation of the establishment. They report whether employment increased or decreased in the year prior to sampling. As this information is generated from the Establishment History Panel of 2008 and 2007, the variable cannot be taken into account in all of the models.

The theoretical framework suggests that the age of the establishments also plays a role in survey participation. Here, too, however, the direction of the correlation is not clear. On the one hand it may be argued that there is a greater willingness to provide information in young establishments as they have yet to position themselves on the market and are therefore also especially interested in the results (motive to respond). On the other hand it is plausible that in relatively young establishments the structures do not yet exist to generate the information required (capacity to respond) or that the establishment representative simply has too much to do. This aspect is taken into account by two different variables. In one model a dummy is included which indicates whether the establishment was in the establishment file for the first time when the sample was drawn. In the other models the age of the establishment is taken into consideration, which is defined as the period between the first appearance of the establishment in the establishment file and the survey date⁴.

In independent companies or a company headquarters it should be easier to procure the information needed for the survey than is the case in a dependent establishment, where it may be necessary first to clarify with a superior department what information, if any, may be passed on. As this information is not available in the establishment file, we use the establishment entry status created by Hethey/ Schmieder (2010) from the Establishment History File on the basis of inflows and outflows. A dummy indicates whether an establishment is a spin-off from an existing establishment. In these cases it can be assumed that the establishment is more likely to belong to a firm and is not an independent establishment. Accordingly a higher likelihood of non-response is expected.

Up until the 2001 wave of the IAB Establishment Panel all establishment identification numbers that had ever been included in the gross sample in one of the waves and did not participate or had stopped participating in the survey had been excluded from all future waves. This means that they were no longer available for sampling. From the 2002 wave onwards establishment IDs that had once belonged to the gross sample but had since failed to respond can be drawn again following a waiting period. This information can be generated from the or-

⁴ The date obtained in this way is not necessarily the date when the establishment was founded, as establishments with no employees subject to social security (e.g. self-employed individuals with no employees) do not appear in the establishment file. This is, however, the only available approximation of the actual start-up date.

organisation file of the IAB Establishment Panel. The reason for this decision was that the population in the upper establishment size classes in some sectors and some federal states was almost exhausted and problems had therefore arisen in filling cells in the stratification matrix. It is therefore possible for an establishment that had taken part in the survey at some time in the past to be approached again. A corresponding dummy is included in all of the estimates and it can be presumed that an establishment that had previously decided not to participate in the survey is even more likely to refuse again (motive to respond).

Interviewers

As experienced interviewers can be assumed to have better strategies and to be more likely to be able to persuade the establishment representatives to participate, a negative correlation with the likelihood of non-response is expected here. The length of time that the interviewer has belonged to the interview team of TNS Infratest Sozialforschung is therefore included in the estimates.

Furthermore, interviewers who do not do this work as a second job or as a source of supplementary income but as their main job can be expected to be characterised by a higher level of professionalism and therefore to be more successful in recruiting firms. The number of interviews in a wave (in log form) is used as a measure for this aspect.

By including the interviewer's sex and educational level, some socio-demographic characteristics are also controlled for.

Due to the disproportionality of the sample, sector affiliation is also taken into account in all of the estimates by means of 16 dummies. As a further control variable it is also taken into consideration in all of the models whether the business premises are located in eastern or western Germany.

3.4 Results

The results reported in the following paragraphs can be found in Table 1⁵. In the first model only information from the organisation file of the IAB Establishment Panel is used. In the second model the age of the establishment is added as an independent variable. This can be generated using the Establishment History Panel of 2008. In Model 3 the development of employment between 2007 and 2008 on the basis of the Establishment History Panel is additionally incorporated into the analysis. The information regarding the establishment entry status is taken into account in the fourth model and all available information in Model 5. The case numbers vary due to the different periods of time. The 2007 Establishment History Panel does not contain any establishments that did not appear in the establishment file until 2008 and the data set on establishment entries only contains information about establishments until 2004.

⁵ A table including the other control variables and the coefficients can be found in Appendix A.

Table 1: Non-response in establishments surveyed for the first time in the IAB Establishment Panel of 2009, marginal effects⁺

	Model 1	Model 2	Model 3	Model 4	Model 5
Data sets					
Organisation file	X	X	X	X	X
Establishment History Panel 2008		X	X	X	X
Establishment History Panel 2007			X		X
Establishment entry data set				X	X
Newly founded establishment	0.009				
Age of establishment (in years)		-0.002*	-0.001	0	0
Development of employment (reference: no change)					
Increase in employment			0.024		0.051
Reduction of employment			0.044*		0.063*
Spin-off (dummy)				-0.003	-0.002
Already refused to take part in the past (dummy)	0.076***	0.086***	0.083***	0.084**	0.080**
Establishment size (reference: 1-4 employees)					
5-9 employees	0.023	0.027	0	-0.024	-0.039
10-19 employees	0.078***	0.081***	0.062*	0.039	0.011
20-49 employees	0.064***	0.069***	0.038	0.021	-0.001
50-99 employees	0.118***	0.125***	0.110***	0.083**	0.057
100-199 employees	0.113***	0.121***	0.100***	0.076*	0.052
200-499 employees	0.162***	0.171***	0.156***	0.161***	0.140***
500-999 employees	0.175***	0.183***	0.170***	0.184***	0.169***
1000+ employees	0.221***	0.226***	0.211***	0.191***	0.177***
No. of years that interviewer has belonged to interviewer team	-0.002*	-0.002*	-0.002	-0.003**	-0.003**
No. of interviews (log)	-0.055**	-0.055**	-0.048**	-0.048**	-0.048*
Female interviewer (dummy)	0.033	0.033	0.034	0.035	0.032
Interviewer's education level (ref.: lower secondary school)					
Intermediate secondary sch.	0.033	0.034	0.045	0.055	0.054
Upper secondary cert.	0.038	0.039	0.061	0.077*	0.069
N	7354	7294	4837	2648	2487
Pseudo R ²	0.060	0.062	0.069	0.074	0.079

Robust standard errors, clustered by interviewers

* p<0.05, ** p<0.01, *** p<0.001

+ The marginal effects refer to the mean values of the independent variables. For dummy variables the effect of switching from zero to one is shown.

Further control variables (see also Appendix A): 16 sector dummies and an east dummy.

In all five models by far the largest effects are found for establishment size. According to the results it is indeed easier to recruit small establishments for participation in the survey than large establishments⁶. It is obviously easier to find people who are both able and willing to participate in the survey in small establishments. The costs of procuring the information are presumably lower in such establishments.

Another aspect that is of great importance is non-response in a previous wave. Establishments which have at some time decided not to participate or to stop participating are also considerably more difficult to recruit.

Contrary to the assumption described above, it can be seen that establishments are more likely to refuse to participate if their employment figures are falling. Obviously establishments do not like to report about their own failures.

The age of the establishment or the fact that the establishment has been started up only recently, on the other hand, have no effect. Establishments that are spin-offs, which are presumably more often dependent on other units, also participate in the survey no less frequently than other, independent establishments.

The results also confirm the assumption that the interviewers play a role in recruiting new participants, too. The effects are moderate compared with the variables that describe the establishment and indirectly also its representative. Although no effects emerge for the socio-demographic characteristics, the two variables intended to measure the interviewer's experience and professionalism are statistically significant in almost all cases. Experienced professional interviewers therefore raise the establishment representative's propensity to participate.

Table 2: Effect of the interviewer's experience and professionalism on non-response in the IAB Establishment Panel of 2009, marginal effects⁺

	Number of interviews (log)	Number of years in the interviewer team
1-4 employees	-0.078**	-0.004*
5-9 employees	-0.092*	-0.004
10-19 employees	-0.092**	-0.005*
20-49 employees	-0.055	-0.003
50-99 employees	-0.012	0.001
100-199 employees	-0.071	-0.000
200-499 employees	-0.038	-0.002
500-999 employees	-0.029	-0.002
1000+ employees	-0.019	0.001

Robust standard errors, clustered by interviewers

* p<0.05, ** p<0.01, *** p<0.001

+ The marginal effects refer to the mean values of the independent variables.

⁶ This correlation is also found in an alternative specification using the logarithm of establishment size.

From these findings one could conclude that the experienced and professional interviewers should be deployed to raise the willingness of larger establishments to participate, as these are the most reluctant. However, in view of the results shown in Table 2, this conclusion must be relativised. The table shows the marginal effects of the two variables depicting the interviewer's experience and professionalism if the estimates of Model 1 are conducted separately for each establishment size class. It becomes clear that the positive effect that the interviewer has on the willingness to participate only applies to smaller establishments. The effects already decrease substantially in establishments with 20 or more employees, reversing in some cases, and are also statistically insignificant. This is disappointing from the viewpoint of fieldwork management, as it indicates that even the targeted deployment of "good" interviewers cannot increase the willingness of reluctant establishments to participate. From the viewpoint of the theoretical framework, however, this result is quite plausible. If we assume that interviewers develop their positive effect on the willingness to participate by means of personal contact with the respective establishment representative and if we then take into account that in larger establishments it is more difficult for the interviewer to gain contact to this person at all, then these results are not surprising.

4 Summary and discussion

The results of the analyses are largely in accord with the theoretical framework to explain establishments' decisions regarding survey participation which was suggested by Willimack/Nichols/ Sudman (2003) and extended by Janik/ Kohaut (2011).

If the respondent is authorised to provide the desired information and the information required can be researched with a justifiable amount of effort, participation is less frequently refused. As the size and complexity of the establishment increases, however, the more rarely these two factors are given and accordingly the more unlikely participation becomes. The fact that establishments which are selected for the survey again after having previously refused to participate are more likely to refuse again is also in accord with the theoretical framework. The main features of the action-theory model are therefore confirmed by the results.

While these findings also hold for establishments which are repeating participation (see Janik/ Kohaut 2011), the interviewer's influence differs considerably in the case of establishments surveyed for the first time. According to the results obtained by Janik and Kohaut (2011), repeat respondents react sensitively to a change of interviewer. The mutual trust is disturbed and the probability of participation falls. In addition they find that the interviewer's characteristics such as experience and professionalism have no influence. In this study it becomes clear that this is different for recruiting establishments to take part in the survey for the first time. Experienced, professional interviewers are more successful in this case. This confirms the statements made by Pyy-Martikainen and Rendtel (2008) that non-response in establishments approached for the first time and that in later panel waves are different processes. However, this finding only holds for smaller establishments. It can be assumed that in smaller establishments it is easier for the interviewers to gain direct contact to the establishment representative who is to be interviewed.

The strong influence of establishment size on willingness to participate must also be examined more closely for another reason. As the sample is stratified according to this variable and consequently the weighting is based on establishment size (see Fischer et al. 2009: 140ff), this connection must be borne in mind when conducting analyses using the IAB Establishment Panel. This issue can become problematic if there is also a causal relationship between the establishment size and the outcome variables of the particular analysis. Initial statements have been made concerning such selections and their consequences for analyses using data from the IAB Establishment Panel (Bellmann et al. 2005) but they should be examined more closely in further research projects.

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Appendix A

Unit non-response in establishments surveyed for the first time in the IAB Establishment Panel of 2009, coefficients

	Model 1	Model 2	Model 3	Model 4	Model 5
Data sets					
Organisation file	X	X	X	X	X
Establishment History Panel 2008		X	X	X	X
Establishment History Panel 2007			X		X
Establishment entry data set				X	X
Newly founded establishment	0.043				
Establishment age (in years)		-0.008*	-0.007	0.000	0.000
Development of employment (reference: no change)					
Increase in employment			0.122		0.257
Reduction of employment			0.225*		0.332*
Spin-off (dummy)				-0.015	-0.011
Already refused to take part in the past (dummy)	0.391**	0.444***	0.431***	0.448**	0.429*
Establishment size (reference: 1-4 employees)					
5-9 employees	0.113	0.133	-0.002	-0.120	-0.194
10-19 employees	0.411***	0.429***	0.335*	0.206	0.059
20-49 employees	0.331***	0.357***	0.198	0.110	-0.004
50-99 employees	0.647***	0.688***	0.619***	0.454*	0.307
100-199 employees	0.620***	0.669***	0.557***	0.411*	0.282
200-499 employees	0.934***	1.001***	0.909***	0.957***	0.826***
500-999 employees	1.101***	1.170***	1.103***	1.260***	1.140***
1000+ employees	1.563***	1.631***	1.519***	1.353***	1.241**
No. of years that interviewer has belonged to interviewer team	-0.011*	-0.011*	-0.009	-0.017**	-0.017**
No. of interviews (log)	-0.270**	-0.269**	-0.243**	-0.244**	-0.244**
Female interviewer (dummy)	0.164	0.163	0.173	0.182	0.164
Interviewer's education level (ref.: lower secondary school)					
Intermediate secondary sch.	0.164	0.169	0.227	0.279	0.276
Upper secondary cert.	0.184	0.193	0.309	0.395*	0.358
Sector (ref.: agriculture/hunting/forestry)					
Mining/energy	0.322	0.309	-0.269	1.389*	1.048
Food products/tobacco prod's	0.404	0.377	-0.405	-0.196	-0.935
Consumer goods	-0.097	-0.124	-0.927*	-0.132	-0.739
Producer goods	-0.180	-0.219	-1.041**	-0.118	-0.737
Capital goods / consumer durables	-0.096	-0.126	-0.867*	-0.017	-0.582
Construction	0.323	0.278	-0.731	0.221	-0.422
Wholesale and retail trade / repairs	0.381	0.330	-0.324	0.521	-0.008
Transport / storage	0.183	0.127	-0.583	0.183	-0.371
Information / communication	1.100***	1.031***	-0.026	0.721	0.130
Financial intermediation	0.028	-0.006	-0.752	0.307	-0.274

Hotels and restaurants	0.592*	0.583	-0.251	1.190*	0.774
Education	0.516*	0.442	-0.300	0.569	-0.030
Health and social work	0.032	0.012	-0.862*	-0.039	-0.832
Business services	0.349	0.319	-0.440	0.556	-0.009
Other service activities	0.394	0.324	-0.478	0.448	-0.370
Non-profit organisations	0.093	0.074	-0.584	-0.155	-0.797
Public administration	-0.390	-0.427	-1.131**	0.194	-0.390
Establishment in eastern Ger.	0.049	0.020	0.053	0.195	0.291
Constant	1.003*	1.116**	1.582**	0.829	1.263*
N	7354	7294	4837	2648	2487
Pseudo R ²	0.060	0.062	0.069	0.074	0.079

Robust standard errors, clustered by interviewers

* p<0.05, ** p<0.01, *** p<0.001

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