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## **The BIBB Training Panel – An Establishment Panel on Training and Competence Development**

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### **1. Introduction**

Establishments play a major part in the training of the working age population, both within the field of apprenticeship training and in continuing vocational training. More than half of all young people in Germany still receive training within the dual vocational education and training system (VET). Moreover, a significant proportion of all formal and informal continuing training activities either takes place within the establishments themselves or is otherwise instigated by the establishments. In addition to imparting and adapting vocational qualifications, establishments create work-integrated opportunities for their employees to acquire cross-cutting competences.

To record such training events, the German Federal Institute for Vocational Education and Training (BIBB) has been carrying out the BIBB Establishment Panel on Training and Competence Development (referred to as the BIBB Training Panel)<sup>1</sup>, a regular annual survey of establishments, since 2011. The study is organised in the form of computer-assisted personal interviews. It collects representative longitudinal data on training activities in establishments in Germany. During its initial project phase, the BIBB Training Panel is financed by the Federal Ministry of Education and Research for a period of three years and is conducted by BIBB in conjunction with the market research establishment TNS Infratest<sup>2</sup>.

The aims of the BIBB Training Panel are to provide timely information for evidence-based VET policy by creating a longitudinal database focused on establishment training and competence development in Germany, something that

<sup>1</sup> “BIBB-Qualifizierungspanel – Betriebspanel zur Qualifizierung und Kompetenzentwicklung”, cf. <http://www.bibb.de/qp>. The BIBB Training Panel homepage includes further project descriptions, information on publications, press releases, a series of evaluations and brief summaries that present the panel’s main results.

<sup>2</sup> Special thanks for support during implementation are due to Dr. Sebastian Bechmann and Kerstin Sleik from TNS Infratest Sozialforschung (siehe auch Bechmann et al., 2011).

has not existed thus far, and to close the present gap in the ongoing research on the apprenticeship and continuing vocational training activities undertaken by German establishments.

The present paper is structured in the following manner. Chapter 1 contains explanations regarding the content alignment of the BIBB Training Panel. Chapter 2 provides a summary of the statistical population, entities and sampling requirements. This summary is followed by technical information on questionnaire development, the field study phase and data editing in Chapter 3. Chapter 4 addresses issues related to data access and data security. The paper concludes with a brief forecast section.

## **2. Survey Approach, Research Issues, and Main Thematic Focuses**

### **2.1 Survey Approach**

The main objectives of the investigation by the BIBB Training Panel are the development of establishment skills, competence demands and requirements, as well as the development of instruments and measures initiated by establishments for the purpose of covering these training needs. The Panel bases its work on the main fields of human resource management and focuses on establishment activities in the areas of providing apprenticeship training for young people; continuing vocational training and competence development of employees; human resources procurement; use of special forms of employment (such as temporary employment and “mini-jobs”, i.e., marginal employment); and skills-related aspects of establishment work organisation and processes. The Panel also surveys information on establishment structural characteristics (e.g., number of employees, etc.), general business administration data (e.g., turnover, total payroll, etc.) and general internal institutional conditions (e.g., ‘workers’ council, commitment to collective wage agreements, etc.), which exert either a direct or indirect influence on the amount of leeway accorded to establishments in training-related matters.

One of the project’s major objectives is to adopt both a cross-sectional and longitudinal approach to investigating the establishment-specific correlations that exist between these fields of activity with regard to: the training system, additional internal establishment factors (e.g., work organisation, economic characteristics) and extra-establishment factors (e.g., economic environment) that influence these relationships and the manner and intensity with which the relative significance of the individual fields of activity develop over time.

The following general distinctions have been implemented to obtain the greatest possible differentiation of information within this investigative concept.

- Relating information to specific occupational areas, such as differentiating between the technical and commercial and administrative occupational sectors in the case of a wide variety of questions relating to apprenticeship training
- Relating information to specific employment groups, such as employees with low skilled, skilled and highly skilled jobs<sup>3</sup>, for questions relating to human resources recruitment and fluctuation, manpower levels and establishment-based continuing training or competence development
- Relating information to specific reference periods, such as training years for apprenticeship training, relating human resource recruitment and key economic indicators to the whole of the calendar or business year and relating manpower levels to cut-off points at the end of the calendar year.

The overall aim is to use such a system of differentiation relating to various fields of activity and previous surveys of establishment training activities (e.g., Beicht et al., 2009; Gericke et al., 2009; Ebbinghaus, 2009; Mühlemann et al., 2010) as a basis for enabling ongoing differentiation appropriate to the objectives of the research.

## 2.2 Panel Modules and Main Areas of Focus in the Survey Phases from 2011 to 2013

Annual *standard modules* within the questionnaire are used to record fundamental structural aspects of various business fields of activity (cf. Table 1). The data collected via the survey module *apprenticeship training* includes trainee information with regard to performance and productivity levels of apprentices and according to training cohort years. Other questions relate to new training place provisions and apprenticeship vacancies to the trainees who are offered permanent employment upon completion of training and to the training contracts that are prematurely dissolved (cf. Troltsch et al., 2012; Gerhards et al., 2012a). Information surveyed regarding *establishment-based continuing training* includes the number of participants in continuing training and the distribution of such participants according to gender and employment groups (cf. Christ et al., 2012; Gerhards et al., 2012b, 2012c).<sup>4</sup> The questions regarding human resource recruitment relate to establishment information on the recruitment and departure of employees. This information is surveyed on a two-year cycle according to employment groups.

<sup>3</sup> We distinguish between employment groups according to skill level of jobs a) employees with menial jobs, requiring no specific vocational training; b) employees with skilled jobs, requiring a vocational qualification or comparable on-the-job training or relevant work experience; c) employees with highly-skilled jobs, requiring a university degree or other higher education qualification.

<sup>4</sup> Within this context, a special evaluation of establishment-based continuing training was carried out by the BIBB Training Panel for the 2012 National Education report.

In the field of *establishment human resources structures*, it is standard practice for information to be collected on a number of part-time employees, agency workers, staff employed on a “mini-job” basis and other staff in accordance with formal qualification groups. *General establishment data* are surveyed annually and comprise questions relating to areas such as business volume, investment behaviour and average wage amounts for each employment group. The overall aim of this modular structure is to record the main factors governing establishment-based training activities and the consequences of these qualification practices for fields of activity within the establishment.

Table 1

**Panel modules and main areas of focus of the BIBB Training Panel from 2011 to 2013**

Survey phase	Panel modules (standard modules for fields of activity)	Main focuses of research	Main training policy focuses
2011	<ul style="list-style-type: none"><li>• Apprenticeship training</li><li>• Continuing vocational training</li><li>• Human resources recruitment</li><li>• Human resources structure</li></ul>	<ul style="list-style-type: none"><li>• Structures and development of establishment-based training</li></ul>	<ul style="list-style-type: none"><li>• Problems in training (vacant apprenticeships, quota of trainees offered permanent employment, etc.)</li><li>• Future of training (planning processes, etc.)</li></ul>
2012	<ul style="list-style-type: none"><li>• Apprenticeship training</li><li>• Continuing vocational training</li><li>• Human resources recruitment</li><li>• Human resources structure</li></ul>	<ul style="list-style-type: none"><li>• Activity and competence requirements</li><li>• Work organisation</li><li>• Segmentation in continuing training</li></ul>	<ul style="list-style-type: none"><li>• Skilled worker shortage and career entrants</li><li>• Selection of training place applicants</li><li>• Offering permanent employment that is adequate to training</li></ul>
2013	<ul style="list-style-type: none"><li>• Apprenticeship training</li><li>• Continuing vocational training</li><li>• Human resources recruitment</li><li>• Human resources structure</li></ul>	<ul style="list-style-type: none"><li>• Organisation and implementation of continuing training</li><li>• Methods of competence monitoring</li></ul>	<ul style="list-style-type: none"><li>• Dissolved contracts</li><li>• Effects of production depth on qualification structures</li></ul>

Together with the standard modules, specific research focuses and issues related to current training policy developments are included in the questionnaire each year (cf. table 1). The 2012 survey phase, for example, concentrated on

the current sociological labour market debate centring on the “*skill-based technological change*” approach and on the recording of employee competence levels from the point of view of the establishments that were interviewed. The main focus of the training policy was on the consequences establishments face due to issues related to seeking trainees.

### 3. Statistical Population, Entity and Sample

#### 3.1 Statistical Population and Entity

The statistical population of the Panel Study encompasses all establishments, with at least one employee subject to mandatory social insurance contributions in Germany as of December 31<sup>st</sup> of the previous year of the respective year of reference of the survey.<sup>5</sup>

The establishment addresses within the database are provided by the establishment database of the Federal Employment Agency (BA) and the Institute for Employment Research (IAB). Similar to the IAB Establishment Panel Survey, numbers are drawn that generally correspond to a unit to be interviewed. An establishment is deemed to be a “unit which is delineated regionally and economically and which has employees subject to mandatory social insurance contributions” (Fischer et al., 2008). This establishment number usually designates a local establishment location (e.g., a branch or office, as opposed to a parent company with several branches).<sup>6</sup>

#### 3.2 Base Sample

The target quota for the BIBB Training Panel is an annual sample of 2,000 establishment interviews that are suitable for evaluation. The selection of establishments takes place using a disproportionately stratified sample of the statistical population of all establishments with one or more employees subject to mandatory social insurance contributions.

The sample for the BIBB Training Panel is drawn across a total of 48 strata in accordance with the following three characteristics:

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<sup>5</sup> The yearly “gap” is caused by the fact that the establishment database for the year of reference is not yet available at the time when the survey takes place. The reference period for the survey carried out in the first half of 2011 was the year 2010. The database used for drawing the sample for the 2011 survey is the establishment file of the Institute for Employment Research (IAB), consisting of datasets on normal social insurance contributors in Germany as of December 31<sup>st</sup> 2009. This data base is calculated on the basis of the employee statistic of the German Federal Employment Agency (BA) in Nuremberg.

<sup>6</sup> For more details, cf. Fischer et al. (2008).

- Domicile of the establishment in East or West Germany (2 classes)
- Company size class (4 classes): 1 to 19 employees, 20 to 99 employees, 100 to 199 employees, 200 employees or more
- Branch (6 classes): 1. Primary industry: agriculture/forestry, mining, energy/water supply, waste industry, construction; 2. Manufacturing industry; 3. Trade and repairs: motor vehicles sector, wholesale/retail; 4. Company-related services: financial/insurance services, trade and industry/scientific/freelance services; 5. Other services: transport/warehousing, information and communication, accommodation, hotel and restaurant trade, non-profit organisations; 6. Public sector, education, teaching: healthcare and social services.

Stratification takes place disproportionately. This approach ensures that establishments that are expected to display rare characteristics are included in the sample with regard to the three stratification characteristics. In overall terms, a disproportionately high number of East German establishments, larger establishments and small establishments that provide apprenticeship training have been included in the sample. Disproportionate stratification was not performed in the case of the branch structures. Disproportionate stratification stipulations for the previous survey phases in 2011 and 2012 are as follows:

- East/West: Given an establishment distribution of 80% West German establishments and 20% East German establishments in the statistical population, 70% West German establishments and 30% East German establishments are included.
- Participation in apprenticeship training: Only a few establishments within the class “1–19 employees subject to mandatory social insurance contributions” provide apprenticeship training. To increase the number of training establishments within this class in the sample, “establishments providing apprenticeship training” were overrepresented in this size class. This ensures on the one hand a sufficient number of cases for analysis within this class and on the other hand that the sample contains an overall percentage of at least 65–70% of establishments providing apprenticeship training.
- Size of establishments: The number of establishments to be included in the sample per stratum depends on the number of employees in the 48 strata. To deal with the fact that there are on the one side many small establishments with few employees and on the other side few large establishments with many employees, large establishments (with many employees) are overrepresented in the sample.

### 3.3 Supplementary Samples

Panel mortality (e.g., establishment closures, refusal to respond, etc.) results in an adapted approach to the drawing of supplementary samples for the scope and composition of the second and subsequent panel phases. The stratification structure of these supplementary samples is largely dictated by the repeated questioning of establishments prepared to participate. The new establishment numbers are drawn from the total population of all establishments. For field work, a random procedure is deployed to draw a stratified sub-sample to boost cells within the stratification matrix that were previously thinly populated.

## 4. Questionnaire Development, Field Study Phase and Data Editing

### 4.1 Survey Method

Data for the BIBB Training Panel is collected by interviewers of TNS Infratest Social Research via computer-assisted personal interviews (CAPI). At the request of the establishments, however, a paper-based questionnaire can also be supplied that establishments may complete on their own either fully or partially. Establishments are still contacted and supported by the interviewers on an ongoing basis if the latter procedure is used.

The CAPI approach offers several benefits compared to a purely verbal survey using a paper-based questionnaire. Consistency checks can take place during the interview itself, enabling non-plausible statements to be clarified or corrected at this stage and eliminating the risk of burdening establishments by contacting them at a later date with subsequent enquiries. This approach is an important aspect with regard to the stability of the panel because time-consuming follow-up questioning may negatively influence establishments' willingness to participate in future interviews. The CAPI technique also avoids transfer errors when entering the results of paper-based questionnaires. Use of the CAPI approach also offers filter management benefits by permitting the reliable skipping of blocks of non-applicable questions.

### 4.2 Survey Instrument – Questionnaire Development

The questionnaires used by the BIBB Training Panel have been modularly designed to consist of blocks of questions about various areas of activity as well as cross-sectional questions on current topics that are presented in a suitable order for the respective establishments (cf. Chapter 1.2). This design is necessary due to the character of the panel, the associated technical design concept and the content of the questionnaire. A balance needs to be reached be-

tween 1) detailed questioning or demanding enquiries that must be surveyed in a valid manner over several years and 2) placing a realistic burden on the establishments being interviewed. When developing the questionnaires, the questions should be formulated appropriately to ensure that they are readily understood during the interview without the need for additional queries on the part of the interviewee. However, a paper version of the questionnaire is also prepared to facilitate independent completion, if required.

The topics and methodological requirements of the BIBB Training Panel are directed towards the needs of the academic research community. Two expert reports were obtained at the outset of the project. One of these reports addressed the conditions for the realisation of the Panel (Prof. Dr. Lutz Bellmann), whereas the other report dealt with content issues that affect current skills development within the employment system (Prof. Dr. Gerhard Bosch and Dr. Dorothea Voss-Dahm). To align the BIBB Training Panel with a broad basis of vocational education and training issues as well as with training and competence development, the preparation of the questionnaire also involved several meetings with an internal BIBB project group comprised of approximately 20 academic researchers for the purpose of proposing potential questions and discussing relevant modifications. An expert round table with external researchers also took place.<sup>7</sup> This group evaluated the relevance of the various question modules and addressed individual issues within the field of establishment-based training to facilitate more precise questioning. This approach permitted the consideration of numerous proposals for possible questions. Together with apprenticeship and continuing vocational training in general, there was a focus on the topics of human resources recruitment, work organisation, economic environment, market strategies, informal forms of continuing training and the dissolution of apprenticeship training contracts.

A pre-test of the questionnaire involving the interviewing of approximately 30 establishments takes place prior to the field study phase of each wave of the survey. As is the case in the main survey, this pre-test is usually conducted in a computer-assisted fashion supplemented by the possibility of using a paper-based questionnaire. In addition, cognitive interviews are carried out to reveal any difficulties in understanding, to test the length and complexity of the questionnaire and to check the technical programming side of the survey design.

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<sup>7</sup> The participants in the expert round table were Prof. Dr. Martin Baethge, Dr. Sebastian Bechmann, Prof. Dr. Michael Beckmann, Prof. Dr. Peter Dehnhostel, Prof. Dr. Bernd Fitzenberger, Prof. Dr. Wolfgang Ludwig-Mayerhofer, Uwe Schulz-Hofen, Prof. Dr. Thomas Zwick and Monika Wenzel. We would like to express our thanks to all participants for their support.



### 4.3 Methodological Results of the First Survey Phase (2011)

The aim was to generate a random sample with a net scope of 2,000 establishments. A gross sample of 25,235 establishment addresses was drawn from the statistical population of the establishment database of the Federal Employment Agency (BA) for this purpose (cf. Table 1). Approximately 25,000 establishments were selected on the strength of empirical values in previous establishment surveys to obtain a secure reserve for the generation of the desired net sample<sup>8</sup> and served as the basis for the selection of an “initial field sample” of 7,232 establishments. This number of cases is a result of the non-responses assumed from the outset and the stratification conditions directed at the sample.

*Table 2*  
**Stages of the sampling procedure**

Stage	Number
Company numbers drawn in the IAB	25,235 establishments
Gross sample for the field study phase	7,232 initial field sample 1,123 second field sample = 8,355 establishments contacted
Target size of the net sample	2,000 establishments <sup>9</sup>

An additional “second field sample” of 1,123 addresses was used during the last third of the field study phase to react to systematic non-responses with regard to the stratification characteristics. The responses received until this time were taken into consideration and readjusted appropriately.

#### *4.3.1 Resulting Samples and Reasons for Non-Response (Non-Response Unit)*

The field study phase of the first survey, which was conducted by TNS Infratest Social Research, began at the beginning of May 2011 and ended three months later in July 2011.<sup>10</sup> A total of 8,355 establishment addresses were deployed in the field for this stage of the BIBB Training Panel (cf. Table 3).

<sup>8</sup> The deviation between 25,235 and 25,000 cases is a result of rounding the figures starting from the net sample of 2,000 establishments to be achieved.

<sup>9</sup> The stipulation was to contact approximately 8% of the base addresses, which should not be confused with the response rate.

<sup>10</sup> Establishments included in the initial field sample received a letter announcing the survey immediately beforehand.

A total of 937 establishments (11.2%) were omitted due to quality-neutral (i.e., non-distortionary) reasons for non-response. These establishments either did not form a part of the target group, did not exist (or no longer existed) or could not be found at the provided address.<sup>11</sup> A total of 7,418 establishments could be contacted. Among these establishments, there were 5,224 cases of systematic non-response. The most significant reasons for this issue were that target respondents could not be contacted or were not prepared to take part in the survey due to either their lack of time or their general unwillingness to participate.

A total of 2,194 establishments participated in the survey.<sup>12</sup> This number corresponds to a participation rate of 29.6% of the 7,418 addresses used, not including quality-neutral non-responses. A total of 2,004 interviews ultimately proved to be suitable for our evaluation (net sample). This sample gives a return rate (response rate) of 24.0% based on the 8,355 addresses used.

Table 3  
Reasons for non-response

	Initial field sample	Second field sample	Total
<b>Addresses used (gross sample)</b>	<b>7,232</b>	<b>1,123</b>	<b>8,355</b>
1. Quality-neutral non-responses	714	223	937
<b>2. Addresses used not including quality-neutral responses</b>	<b>6,518</b>	<b>900</b>	<b>7,418</b>
<b>2.1. Participants</b>	<b>2,040</b>	<b>154</b>	<b>2,194</b>
<b>2.1.1. Interviews capable of evaluation (net sample)</b>	<b>1,867</b>	<b>137</b>	<b>2,004</b>

4.3.2 Survey Mode, Interviewers, and Respondents

The interviewers made their own arrangements for contacting the establishments and respective target respondents. They were instructed to interview the person within the establishment who was best able to offer an overview of the various fields of activity. This generally included owners, shareholders or employees at the executive management level. In most cases, a single meeting took place during which the interview at the respective establishment was conducted. In some instances, however, human resources administrators were in a better position to respond, and some of the questions were frequently referred

<sup>11</sup> A further reason for omission was that addresses were not processed due to the fact that the target case figure had been reached.

<sup>12</sup> Interviews not capable of evaluation and interviews capable of evaluation (net sample).

to these staff members for supplementary information based on the establishment's wishes. An additional paper-based questionnaire was left at the establishment to be completed, and it was usually collected from the establishment by the interviewer in person. In such cases, a second interview appointment took place, which allowed for the clarification of any queries from the respondent. The establishments interviewed were also afforded the opportunity to complete all parts of the questionnaire themselves. In these circumstances, the questionnaire was generally handed to a member of the establishment and was subsequently collected in person by the interviewers.

Approximately three-quarters of the 2,004 interviews (73.4%) were conducted completely in CAPI mode. An additional 3.9% were largely carried out using CAPI. The remaining 22.7% of the interviews were either fully (21.9%) or partially (0.8%) completed by the establishments using the paper-based questionnaire. Of the 2,004 establishments that were interviewed, 79% expressed a willingness to participate in follow-up interviews (i.e., to participate in future survey phases conducted by the Panel).

#### *4.3.3 Non-Response Items*

During the course of the interviews, there were instances of non-response to certain questions (non-response items). Half of the establishments responded to approximately 98% of the questions. The interviews conducted in CAPI mode enable a distinction to be made between “do not know” and “do not wish to state.” Responding to questions involving figures caused particular difficulties for the establishments. As expected, establishments tended not to respond when sensitive structural establishment data were involved. Among the establishments interviewed, 33.5% did not provide information on total payroll. Non-response levels between 25.4% and 30.6% occurred in the case of average gross salaries according to the employment groups. Establishments also frequently (23.9%) refused to respond to questions concerning turnover, investments, intermediate consumptions, non-domestic turnover and turnover development.

Imputations were performed based on the fundamental structure of the data to replace missing values because of their central significance to further evaluations (see below).

### **4.4 Data Preparation**

#### *4.4.1 Editing*

The use of the CAPI instrument enabled a large number of plausibility and consistency checks to be carried out during the survey itself. This benefit par-

ticularly applied to the checking of totals and to the exclusion of response to non-relevant questions (filter management). Contradictions could be clarified as required during the interview, and relevant corrections were provided by the respondent. To secure high quality data, several extensive verification and correction steps were undertaken by TNS Infratest Social Research upon the conclusion of the field study phase. This editing process included the application of several cycles of test routines, and establishments were once again contacted by telephone for clarification.

Further controls and corrective procedures followed the transfer of data to BIBB project management. These corrections included adjustments to filter variables, logical determination of missing information and proportional rounding of mismatched totals.

#### *4.4.2 Imputation*

Following the corrective steps, regression analysis imputations were carried out for several important variables because analyses using a large number of evaluation characteristics can lead to relatively low cell populations and because of the importance of using a complete value matrix for our analyses. For these reasons, imputed values were generated to supplement the missing values caused by the non-responses.<sup>13</sup> A regression analysis was conducted for each respective imputation. The following approach was adopted:

Imputations were carried out only for metric variables for which extensive non-responses occurred. These variables represent important indicators of the survey. As the imputation of absolute figures has a number of drawbacks, proportional values for the metric variables were calculated when performing the imputations, and these proportional values formed the dependent variable.<sup>14</sup>

A joint model that accounted for important structural variables was selected for all imputations.<sup>15</sup> The imputations used the linear predictive value of the

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<sup>13</sup> Within the eligible variables, only those cases in which values could be effectively interpreted were imputed. Turnover, for example, was only imputed for establishments that had stated that they had this type of business volume. The imputation of information on continuing training represented a special case in which a two-level procedure had to be deployed. Because establishments were initially able to state information in persons or in cases of participation, the first stage of the imputation needed to involve the calculation of the respective number of person cases (i.e. persons) for all establishments. This figure was then used as the basis of the second step of the process, in which the partial continuous training groups were imputed according to gender, part-time workers and employment groups.

<sup>14</sup> The advantages of this approach are that imputations can be limited to the area of values between 0 and 100% and that preceding filter management processes can serve as a vehicle for calculating significantly more plausible values.

regression model with the addition of an error term (cf. Alda/Rohrbach-Schmidt, 2011, Chap. 2.2.2). Three types of censored regression models were used to ensure that an imputation value was obtained for all cells to be imputed. These are (a) many variables (full model), (b) some variables and (c) a minimal set of variables (branch and size). The regression model was censored to the extent that only plausible values were replaced. The imputed dataset is available at the Federal Institute for Vocational Education and Training Research Data Centre (BIBB-FDZ) also for external scientific researchers. Considering this, multiple imputation was not used, because handling a dataset that has been multiply imputed represents a great obstacle for most data users (ibid).

Imputations were carried out for 60 variables. More than 10% of the values of the resulting variable were imputed for a few major variables only.<sup>16</sup> Following the imputation, the proportional values were calculated back into absolute figures that were rounded to whole figures. These values verified to ensure they were between 0 and 100% (i.e., adjustments to 0 or to 100% were made wherever necessary) and to ensure that the sum variable totals matched (i.e., proportional adjustments took place wherever required). The final dataset, which will be made available for academic research use in the BIBB-FDZ, contains both the original variables and the imputed variables.

#### *4.4.3 Cross-Sectional Weighting*

A cross-sectional weighting was carried out for the dataset of the first survey phase of the BIBB Training Panel. This method needed to fulfil the following two conditions. Firstly, it was required to balance out the disproportional sample approach and create a “representatively” useable dataset. During the weighting, the number of major establishments, East German establishments in the smallest size category and establishments providing training had to be taken into account. Another purpose of the cross-sectional weighting was to compen-

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<sup>15</sup> There was less focus on informative content with respect to the models (cf. Alda/Rohrbach-Schmidt, 2011). The independent variables for the complete model were legal form, position of the firm within the establishment, commitment to collective wage agreement, branch, number of employees, numbers of employees working for only a small number of hours each month, number of temporary workers and trainees, age groups and school leaving qualifications, number of recruitments and dismissals and a number of issues assessed by the establishments themselves (hierarchical level, promotion of continuing training, comparison with the branch and incentives for employees).

<sup>16</sup> Variables with high proportions of imputation resp. non-response item are particularly sensitive key business indicators such as gross wage and total payroll, proportion of intermediate consumptions, non-domestic turnover, investment total, average gross wage according to employee groups and numbers participating in continuing training.

sate for any distortions that may have been caused by disproportional non-responses. Tools deployed included an outlier analysis to adjust implausible weights and generate the final weighting. Thus, a structural adjustment weighting according to the characteristics of branch, size class and West/East on the basis of the establishment database of the Federal Employment Agency as of 31 December 2010 and an extrapolation weighting for the approximate number of 2,046,000 establishments in the statistical population were formed for the dataset, enabling statements in absolute figures to be made for the statistical population. Additionally, there was a weighting adjustment for the proportion of establishments providing apprenticeship training.

#### *4.4.4 Longitudinal Weighting*

Longitudinal weightings were added in the following phases of the Panel to permit representative statements over time. Longitudinal weighting will be undertaken for establishments that have participated in the previous survey phases since the selection of the initial sample and for which the information provided in all surveys accurately relates to the same establishment unit. Within this process, “Panel cases” include all establishments that have ceased to exist since the beginning of the respective longitudinal section and newly established establishments to be interviewed for the first time, rather than merely establishments for which an interview capable of evaluation is available. Longitudinal weighting is performed separately for West and East Germany. The weightings are formed for the following longitudinal sections: longitudinal section 2011/2012, longitudinal section 2012/2013 and longitudinal section 2011/2012/2013. In the case of disproportional stratification, the aim is to balance out structure-neutral non-responses.

## **5. Data Access and Data Security**

Data access to the BIBB Training Panel takes place via the Federal Institute for Vocational Education and Training Research Data Centre (BIBB-FDZ)<sup>17</sup>. The dataset is available for use from January 2013 by visiting academic researchers or via remote data processing. The BIBB-FDZ makes the following data and tools available:

- The primary dataset
- The survey materials – questionnaires, interviewer instructions, and letters (contact letter, data protection sheet, letter of recommendation)

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<sup>17</sup> Cf. <http://www.bibb.de/en/50113.htm>.

- The methodological information – field report, methodological report, code book, and list of imputed variables.

The data have been anonymised to prevent the risk of individual establishment identification. A number of variables were specifically deleted from the original dataset for this purpose.

## 6. Forecast

The BIBB Training Panel creates new analytical opportunities for the investigation of training activities of establishments in Germany. It provides a longitudinal database not previously available that offers the possibility of studying determining factors of training and competence development within the context of establishment-based fields of activity and closes the existing gap in on-going investigations of apprenticeship and continuing vocational training activities at German establishments.

Initial investigations into areas such as the correlation between the shortage of skilled workers and participation in continuing training (cf. Gerhards et al. 2012c) are already available. The BIBB Training Panel dataset also offers a sustainable and easily accessible database featuring a comparatively large sample for a broad spectrum of academic research issues relating to establishment-based apprenticeship and continuing training. Main thematic focuses addressing current problems are currently being prepared for future phases of the survey.

Future plans also exist to establish links with other databases if there is sufficient user interest. These plans relate to aggregated establishment statistical data for occupational fields, which could be added to the dataset according to stratification characteristics such as branch and establishment size, thereby facilitating considerations regarding quarterly development in employment, and to links at an establishment unit-based micro-level with the LIAB (the Linked Employer-Employee Dataset produced by the Institute for Employment Research, IAB). This approach would enable the establishment of links with employee characteristics of the establishments.

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