Data Observer

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A unique Employer-Employee Study: the Linked Personnel Panel (LPP) – Design, Extensions and Research Potential

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1 Introduction

In a rapidly changing work environment, researchers are concerned with various questions. For example, what is the impact of human resource management practices on working conditions and job quality? How can firms increase employee retention? However, existing data comprised only small samples of firms and workers, had no longitudinal dimension, or both and therefore were not suited to answer these research questions. The Linked Personnel Panel (LPP), a linked employeremployee panel data set, fills this gap. The LPP is created within the project "Quality of work and economic success: longitudinal study in German establishments." The project is an ongoing research cooperation between the Institute for Employment Research (IAB), the University of Cologne, the University of Tuebingen and the Centre for European Economic Research (ZEW) and is funded by the IAB and the Federal Ministry of Labour and Social Affairs (BMAS).

The LPP is representative of German private sector establishments with at least 50 employees subject to social security and covers both the employer and the employee perspective.

The current LPP data set covers three waves from 2012 to 2017, containing up to 1,219 establishments and 7,508 employees per wave. The establishment survey allows us to identify human resource management instruments, corporate culture and structural features, such as firm sizes and economic success. The employee survey gathers information on the employees' personal attitudes and job satisfaction, as well as on commitment, health and quality of the workplace environment.

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The LPP data enable broad analyses of interrelating effects between the establishment and its workforce. Further analytic potential can be unfolded when linking the LPP to other data products of the IAB, such as the IAB Establishment Panel (IAB-BP), the Establishment History Panel (BHP) and Integrated Employment Biographies (IEB). These extensions enable us to include further employer and employee characteristics and to observe developments outside the survey period.

The proceeds as follows: chapter 2 shows the covered topics, the third chapter summarizes the survey methodology. Chapters four and five give an insight into the data structure and possible data linkage, and the data access is described in chapter six.

2 Topics covered in the LPP

The LPP was designed for research on personnel economics by simultaneously observing the employer and employee perspective. This novel data product enables us to analyze several mutually influencing aspects, such as the relationship between HR management, establishment performance and job quality on the individual level (Broszeit et al. 2016).

2.1 Employer survey

The employer survey, which is the first segment of the LPP, is a follow-up survey of the IAB Establishment Panel and contains five main topics (Table 1), which remained constant over all waves but vary in their extent.

Table 1: Topics of the employer survey.

No.	Content	No.	Content
1	HR planning and recruitment	2	Human resource development
3 5	Remuneration structure Structural characteristics	4	Commitment, values and corporate culture

Source: Kantar Public (2012, 2014, 2016).

¹ Detailed information about the IAB-BP, BHP and IEB can be found on: http://fdz.iab.de/de/FDZ_Overview_of_Data.aspx (accessed June 5, 2018).

It is possible to analyze different recruiting strategies collected within the topic "Human resource planning and recruitment". Researchers can use the data of the second question module to analyze if structured appraisal interviews, target agreements, development plans or annual performance appraisals influence job satisfaction. The module on the remuneration structure inquires about tariff agreements, variable pay schemes, voluntary payments and establishment pension schemes, among other topics. The fourth module gathers information about – among others – working from home, the promotion of diversity and equal opportunities. By way of example, this HRM measures can be linked to the job satisfaction of employees or to items about the corporate culture from the employee survey. The fifth main topic, "structural characteristics", includes, for instance, average sick days and the hierarchy and changes in the management.

2.2 Employee survey

The second part of the LPP reflects and expands core aspects of the establishment level to the employee level. Table 2 illustrates that all waves of the LPP employee survey cover identical survey modules, although to varying degrees.

Table 2: Primary topics of the employee survey.

No.	Content	No.	Content
1	Personal characteristics and employment	2	Human resource development
3	Work conditions and workload	4	Remuneration
5	Commitment, values and corporate culture	6	Personality and attitude
7	Health	8	Sociodemographic background

Source: Infas (2013, 2015, 2017).

The first question module collects personal characteristics such as age and gender, as well as current employment. Personal characteristics can be important control variables in regression models, while information about the employment - such as working from home - can be correlated with many other variables. In the second module, data on vocational training, appraisal interviews, objectives and job security are collected. These variables appear relevant when analyzing occupational satisfaction. Within this context, data about job characteristics, work-life balance and looking after persons in need of care can be used to analyze temporal developments. On the basis of the data collected in the remuneration module, one can examine whether performance-related bonuses or extra payments have an influence on job and income satisfaction. Furthermore, the data from the fifth module (i. e., turnover intention) can be correlated with the worker flows of an establishment. The personality and attitude module includes the Big Five personality traits: neuroticism, extraversion, openness to experience, agreeableness and conscientiousness. It also collects data about self-efficacy, risk behavior, reciprocity and altruism. Kampkötter et al. (2016) analyze the quality of these constructs by calculating the internal consistency using Cronbach's alpha formula.² The module on health gathers data on current well-being as well as on the number of days an employee has been ill and a) stayed at home because of this or b) went to work despite illness (presentism). Finally, data about the sociodemographic background of the interviewee (i. e., level of education, family and migration status) can enrich the quality of statistical analyses.

3 Survey methodology

3.1 Employer survey

In each wave, the target population was composed of establishments with at least 50 employees liable to social security. Establishments from the a) agricultural, fishing, forestry and public sectors and b) which are nonprofit, charitable, and church institutions were always excluded from the population.

In the first wave, all establishments that had a valid interview in the IAB Establishment Panel in 2011 functioned as the gross sample. Establishments that were interviewed for the first time in the first or second wave were contacted again in the following waves. This group of establishments are available for panel analysis. As a reaction to the panel attrition, a refreshment sample for the third wave was drawn. Table 3 shows the realized sample sizes of the first three waves of the establishment survey.

The interviews were carried out face-to-face (PAPI) with a previously chosen representative³ of the respective establishment. The field time was always at least three months and rose continually over the waves. For soft deniers, conversion measures were implemented.

² A detailed description of Cronbach's alpha is provided by Robins et al. (2007).

³ In general, the person who answered the questionnaire of the IAB Establishment Panel.

Table 3: Interviews of the employee survey.

	1. Wave	2. Wave	3. Wave
Interview	1,219	771	846

Source: Own visualization.

The data include weighting factors to extrapolate the results for all German private sector establishments with at least 50 employees. A detailed description of these factors can be found in the data report (Wolter et al. 2018).

3.2 Employee survey

The population of the employee survey is composed of employees who were, at a given target date, 4 social insurance contributors in an establishment that belongs to the population of the IAB Establishment Panel.

The sample is created with a two-stage procedure. In the first step, establishments for which a valid establishment interview exists were chosen. Afterwards, a sample of employees from those establishments was drawn. Because of panel attrition, refreshment samples for the stabilization of the net sample were needed in the second and third wave. Table 4 shows the final sample results of the three waves separated by short and long interviews. The main questionnaire (long interview) was used for refreshers and panel cases working in the same or in a different establishment as in the previous interview. Panel cases that a) changed their employer after the last interview or b) were no longer part of the target group were interviewed by means of the short questionnaire.

Table 4: Interviews of the employee survey.

	1. Wave	2. Wave	3. Wave
Long interview	7,508	7,109	6,437
Short interview	/	276	517

Source: Own visualization.

⁴ Effective date of the first wave: 31.12.2011; of the second wave: 31.12.2013; of the third wave: 31.12.2015.

The data collection was conducted via telephone (CATI). The field time covered at least four months and increased over the waves. To get the highest possible exploitation, conversion strategies for the soft deniers, such as additional contact attempts, were implemented. The data from the second and third wave are composed of two groups (panel cases and refreshers) whose affiliation to the sample is determined in different ways. The data include weighting factors to correct for the different sampling probabilities and nonresponse.⁵

4 Data structure

As stated above, the LPP consists of two separate but connectable surveys. A detailed composition of the waves is given in Figure 1.

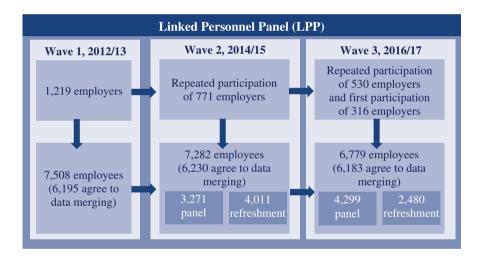


Figure 1: Composition of the LPP data. Source: Own illustration.

4.1 Employer data

Regarding the data organization, the leading letter of the variable name marks the survey wave ('a' for the first wave), and the subsequent double-digit number indicates the variable's questionnaire number. Some variable names contain one

⁵ For a detailed description, see Wolter et al. (2018).

or two additional letters after the variable number that highlight possible subcategories. It is important to note that the questionnaire numbers and hence the variable names change between the waves.

The LPP data set also contains variables that do not originate from the LPP questionnaire and thus have descriptive names. These variables include the establishment identifier (lpp_betnr) and the IAB Establishment Panel ID (idnum).

4.2 Employee data

The employee data aim to reflect and expand core statements from the establishment level to the employee level.

Variable names in the employee survey data are structured as follows: The three digit numbers resemble the position in the questionnaire, while the letters at the end indicate subcategories or variables that were added in later waves (e.g., 508aa, 113a2). The leading letter declares the source of the variable as short ('C') or long interviews ('F', 'G' and 'H' for waves 1 to 3, respectively). In contrast to the employer survey, the questionnaire numbers remain the same across all waves.

Descriptive names are given to variables that do not originate in the LPP survey. These include the person identifier (pers id) and the establishment identifier (lpp betnr). Particularly sensitive variables of the employee data are only available to guest researchers in aggregated form due to data protection. These variables are age of children (G808 gr), country of birth (G813 gr) and year of migration to Germany (G814_gr).

5 Data extensions and linkage

A great advantage of the LPP is the possibility of extending the data with other data products of the IAB, such as the IAB-Establishment Panel (IAB-BP), or administrative data such as the Establishment History Panel (BHP), as well as the Integrated Labour Market Biographies (IEB). Extending the LPP with the mentioned data sets enables the researcher to answer broader research questions. The IAB-BP is commonly accessible with the LPP data set. To gain access to the BHP and IEB data, an application for the LPP-ADIAB has to be submitted. Figure 2 illustrates a short description of the available data sources and how they relate to one another.

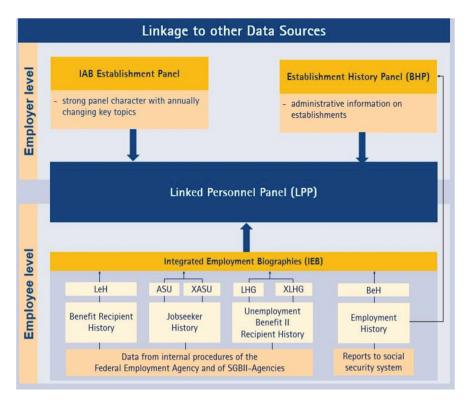


Figure 2: Data sources and linkage of the LPP-ADIAB.

Source: Own illustration.

5.1 IAB establishment panel (IAB-BP)

Since the LPP employer survey is a follow-up questionnaire to the IAB Establishment Panel, the data of the IAB-BP are available for all establishments of the LPP. The panel was carried out for the first time in 1993 and, since 1996, contains data for East Germany. The sample is stratified by 19 industry groups and 10 establishment size categories. The IAB-BP covers a wide range of topics, including employment structure, productivity measures, personnel demand, employment expectations, apprenticeship training, and state and development of technology.

The IAB-BP data are available for all waves and can easily be linked with the LPP by the idnum. Information on IAB-BP data are available in Fischer et al. (2008).

5.2 The LPP-ADIAB

The lpp-adiab 7514 v1 contains the LPP survey data and IEB data and is currently available for the first two waves of the LPP. BHP extensions are available upon request. Employees and establishments can easily be linked using the establishment identifier. The lpp-adiab 7514 v1 surveys 9,718 individuals and 1,219 establishments, as 83% of the first wave and 86% of the second wave agreed to the data linkage. Employees without linkage consent were excluded from the lpp-adiab 7514 v1. When working with the lpp-adiab 7514 v1, the corresponding data report from 03/2017 (Broszeit et al. 2017), the regular LPP Data reports from-01/2015 and 06/2016 (Broszeit/Wolter 2015; Broszeit et al. 2016), and other related data and method reports of the FDZ should be consulted. The data documentation and labels are available in German and English.

5.2.1 Administrative data from the IEB

To link the administrative IEB data with the employee survey data, the participants have to give their consent to the linkage. Figure 2 shows the five different data sources of the IEB, from which the administrative individual-level data is composed. The IEB data provides individual employment biographies from 1975 onwards. The information available includes episodes of apprenticeship training, employment, unemployment and job search. Self-employment, employment as civil servant and times outside the labor force are not reported. The respective categories are accurate to the day. With this data, detailed research regarding individuals' employment biographies is possible.

5.2.1 Establishment history panel (BHP)

The BHP originates from the reports of social security insurance and is made available with the IEB data in the form of the LPP-ADIAB. This data set contains administrative information on the surveyed establishments since 1975 and can be merged by using the establishment number. The individual data in the BeH are aggregated to the establishment level over the establishment numbers (Schmucker et al. 2016). The BHP is composed of one core data set and three extension files. The core data set holds information on general establishment characteristics and the structure of employees. The extension files report worker

⁶ For detailed information on the IEB data sources, see Antoni et al. (2016).

flows, entry and exit information and time-consistent classifications of economic activities. BHP information is available upon request, as for many research questions, the information of the IAB Establishment Panel is sufficient.

6 Data access and documentation

6.1 Data access

Access to the data is possible via the FDZ, which provides data for noncommercial research. To access the LPP data, the research question has to be in the field of labor market research and of public interest. The data access is free of charge. There are three different data products available via different access channels. Table 5 gives an overview.

Table 5: Overview of data sets and the degree of anonymization.

Data set	Degree of anonymization	Conditions of use	Access	Further information
LPP	weakly anonymized	accessible for noncommercial empirical research	application	https://fdz.iab.de/de/ Integrated_Establishment_and_ Individual_Data/lpp/lpp-adiab. aspx
LPP- ADIAB	weakly anonymized	accessible for noncommercial empirical research	application	https://fdz.iab.de/de/ Integrated_Establishment_and_ Individual_Data/lpp/lpp-adiab. aspx
Campus File	absolutely anonymized	accessible for the purpose of academic teaching at universities and research institutes	online registration	https://fdz.iab.de/de/campus- files/lpp-cf.aspx

Source: Own visualization.

To facilitate the preparation of do-files, the FDZ provides test data for the LPP. These test data can be used to get familiar with the data and to test the scripts prior to the onsite stay or remote access. The test data include all variables in the original data with the same variable names, variable labels and value labels. As with the original data, it

is possible to set up a longitudinal data set. However, the test data are random and cannot be used for any analyses. Furthermore, the FDZ provides a *Campus-File (CF)* for use in teaching at universities and research institutes. Contrary to the test data, the CF includes a sample of the original data. It is also important to note that the CF was developed as a teaching tool and not for research. Further information can be found in the corresponding data report on the CF (Frodermann et al. 2017).

To access the LPP or the LPP-ADIAB, an application has to be sent in writing to the FDZ. After the project has been approved, a contract between the user's institute and the IAB is signed. The data can be used during on-site stays, which are possible in different German and foreign locations (currently the United States of America, United Kingdom, and France). To use the data in locations other than Germany or France, they have to be anonymized. After the initial onsite visit, it is possible to use remote data access via JoSuA. Data access is possible using Stata; we also provide R and Matlab if needed.

6.2 Data documentation

In addition to detailed data documentation, such as the questionnaires, IAB method and data reports, several research projects using the LPP have been conducted and published. Within the framework of the project, broad research fields such as digitalization, diversity and gender equality, social change, personnel development and quality of work have been explored. Figure 3 illustrates both the number of research projects and number of users that access LPP and LPP-ADIAB via FDZ. Both have steadily risen from 5 users in 3 projects in 2015 to 52 users in 32 projects.



Figure 3: Development of projects and users working with the LPP. Source: FDZ, 07/20/2018.

7 Summary and outlook

With its unique structure, the LPP offers the possibility to disentangle relations among a broad set of firm specific personnel instruments and their influence on their employees. The LPP not only enables research on causal effects of HR practices due to its panel format but also allows comparison between firm sizes and industries, as it is representative of the German private sector (Kampkötter et al. 2016). Furthermore, the data set can be linked to several other data products of the IAB, such as the administrative data on individual biography data, thus providing even broader access to alternative research fields.

So far, three waves of the LPP have been carried out between 2012 and 2017, with a fourth wave planned for 2018/2019. To tackle the challenges of a changing labor market due to digitalization, the new wave will have a stronger emphasis on this subject and its effects on both the employer and the employee.

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