The Rise of Linked Employer–Employee Panel Data: Where Are We Now?*

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September 2, 2026 *Work in progress. Comments welcome*

Abstract

Longitudinal linked employer–employee (LEE) data follow workers and firms jointly over time. This paper reviews their role in empirical labor economics and documents their availability around the world. We make two contributions. First, we place the spread of LEE data within the development of empirical labor research. By making worker and firm heterogeneity jointly observable, LEE panels have supported descriptive, structural, and causal research. Second, our review identifies broad-coverage longitudinal LEE data in at least 50 countries and compares their coverage, sampling, frequency, access, and links to other sources. The longest-running datasets and most established access arrangements remain concentrated in Europe, especially in the Nordic countries, but LEE data are also available across Africa, Asia, and the Americas. Their research value depends not only on whether they exist, but also on what they cover, who can access them, and what other information can be linked. We conclude by highlighting three priorities: harmonized cross-country research, wider use of LEE data in developing economies and Central and Eastern Europe, and links to surveys and experiments.

JEL codes: C81, J31, J63
Keywords: linked employer–employee data, matched employer–employee data, administrative data, worker–firm panels, data access, labor market dynamics

*We thank Beatrice Allamand Turner, Cristina Barcelo, Bernardo Fanfani, Olivier Godechot, Martin Hallsten, Are Skeie Hermansen, Alexander Hijzen, Miklós Koren, Alena Křížková, Marianna Kudlyak, Marta Lachowska, Salvatore Lattanzio, Zoltán Lippényi, Ben Lochner, Stefano Lombardi, Jordy Meekes, David Ortan, Marco Guido Palladino, Vladimír Peciar, Andrew Penner, Malte Reichelt, Vera Rocha, Halil Sabanci, Marta Silva, Raffaele Saggio, Andrea Weber, Oleksandr Zholud, and Wouter Zwysen for helpful comments and for sharing information about country datasets. The authors have participated in some of the COIN and LinkEED projects discussed in Section 4 and have also contributed to the GRID project. Claude and ChatGPT were used for language editing and consistency checks. The authors remain responsible for the content of the paper.

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1 Introduction

Longitudinal linked employer–employee (LEE) data have changed how labor economists study wages, mobility, inequality, and adjustment. By following workers and employers jointly over time, these data make the employment relationship observable. Researchers can separate worker composition from firm pay policies, follow careers within and across firms, and study how workers and firms respond to shocks. This makes it possible to study the labor market as a system of workers, firms, and matches.

LEE data are part of the broader use of administrative data in economics. Administrative records often provide large samples, long panels, and precisely measured earnings, although their coverage depends on the underlying administrative system. Their research value extends beyond scale and precision: the linked structure makes it possible to combine employment histories with firm accounts, ownership records, family, health and education data, as well as surveys and experiments.

Earlier reviews document matched employer–employee data and their policy uses.[1] We are not aware of a recent review that combines an updated cross-country overview of LEE data with a historical account of their use and a discussion of new research opportunities.

This paper makes two contributions. First, we place the emergence of LEE data within the development of empirical labor economics. Our review shows that longitudinal LEE panels complemented the credibility revolution by making worker and firm heterogeneity jointly observable. They established new empirical facts about worker sorting, mobility, firm wage premia, and worker–firm matches. They also allowed researchers to test models of wage setting and mobility against detailed worker–firm histories and, when combined with credible research designs, to study how policies and shocks affect different workers and firms. More recently, harmonized cross-country research and links to purpose-built surveys and experiments have expanded the questions that LEE data can address. We also show that reforms to tax, payroll, and social-security reporting increased the frequency and detail of worker–employer records in several countries.

[1] Abowd and Kramarz (1999) reviewed 38 matched employer–employee data systems in 17 countries, and Bryson, Forth, and Barber (2006) examined their policy uses. Recent surveys review firm wage effects and wage-setting power (Card, 2022; Kline, 2024). The forthcoming volume edited by Berton and Paruolo (2026) provides country-by-country accounts of access to administrative microdata in the 27 EU Member States. Our review has a different scope: it focuses on broad-coverage longitudinal LEE datasets, extends the comparison beyond the EU, and documents coverage, sampling, frequency, and linkages while placing these data within the development of empirical labor economics. Hijzen, Skans, and Salvanes (2026) discuss LEE applications for public policy and directions for future research.

Second, we provide a 2026 overview of longitudinal LEE data in 50 countries. We document their coverage, sampling, frequency, earliest year, and principal linkages. We also compare the main LEE sources in six large European economies and three large economies in the Americas. This overview extends the international perspective of Abowd and Kramarz (1999) to a larger and more diverse set of countries. We find substantial differences in coverage, sampling, frequency, access, and the information that can be linked to the core employment records. These differences affect both the questions researchers can study and the comparisons they can make.

We highlight three directions for future research: applying common research designs across national LEE datasets, expanding LEE research in developing economies and Central and Eastern Europe, and combining administrative employment histories with purpose-built surveys and experiments. These extensions can distinguish patterns that recur across labor markets from those that vary with national institutions and connect observed outcomes to information that administrative records do not contain.

This review reflects the information available in 2026. Data access, documentation, and datasets change over time, and some national sources remain difficult to verify. Its purpose is to make the current landscape easier to compare, identify important gaps, and provide a basis for future updates.

Section 2 defines the scope of LEE data, places their emergence within the development of empirical labor economics, and documents their growing use and the administrative reforms that improved their frequency and detail. Section 3 describes their availability and principal characteristics across countries. Section 4 discusses the way forward. Section 5 concludes.

2 The Emergence and Evolution of Linked Employer–Employee Data

LEE data differ in their source, coverage, and time structure. Their growing role in empirical labor economics reflects both changes in research methods and improvements in the administrative records available to researchers.

2.1 Definition and Scope of LEE Data

Linked employer–employee (LEE) data connect information about workers to information about the firms or establishments that employ them. At a minimum, the data identify both sides of the employment relationship. Cross-sectional LEE data observe workers and their employers at a given date. Longitudinal LEE data use identifiers to follow workers and employers over time. Employer identifiers may change following mergers, acquisitions, or other reorganizations, however. Additional files linking old and new employer identifiers, or worker-flow methods, may therefore be needed to distinguish firm entry and exit from changes in administrative identifiers (Benedetto, Haltiwanger, Lane, & McKinney, 2007).

LEE data can come from mandatory employer surveys, administrative records, or a combination of the two. Mandatory employer surveys often provide detailed information on hours, bonuses, qualifications, occupations, and working conditions, but may cover only a sample of firms and workers. Administrative systems generally provide broader coverage and longer employment histories because reporting is tied to taxation, social-security contributions, or benefit administration. However, they typically contain less information about hours, occupations, working conditions, beliefs, and management practices.[2]

The source of the records affects their structure. Social-security records often report employment spells or monthly contributions, while tax records commonly report monthly or annual earnings. Mandatory employer surveys generally measure employment over a reference period. Sampling can also be worker- or employer-based. Worker-based samples follow selected people across employers, whereas employer-based samples observe workers only while they are employed by sampled firms or establishments.

This paper focuses on longitudinal LEE datasets with broad population coverage, whether constructed from administrative records or population-level mandatory employer surveys. We exclude datasets that link workers and employers only cross-sectionally and narrowly selected samples that are not intended to represent a substantial labor market. We also distinguish the core longitudinal employment panel from health, education, family, survey, and other records that may be linked to it.

[2]Abowd and Kramarz (1999) provide a broader taxonomy based on time structure, the primary sampling unit, the separate representativeness of workers and firms, and whether the records originate in administrative systems or statistical surveys.

2.2 The Emergence of LEE Data in Empirical Labor Economics

The development of empirical labor economics can be organized into several broad, overlapping stages. Each stage added a new empirical capability rather than replacing earlier approaches. Successive volumes of the *Handbook of Labor Economics* reflect this shift, from an early emphasis on survey microdata to recent work on matched employer–employee data and firm wage effects. Survey microdata and aggregate evidence first established central labor-market regularities. Stafford (1986), writing in Volume 1, emphasized the importance of microdata for empirical labor research.

During the 1990s, design-based causal research placed greater weight on identifying the effects of specific policies and shocks, a shift often described as the credibility revolution (Angrist & Pischke, 2010). Angrist and Krueger (1999) reviewed research designs that became standard in applied labor economics. These methods made it possible to answer well-defined causal questions and opened the way to studying heterogeneity and the margins through which workers and firms adjust.

Around the turn of the century, matched employer–employee panels made worker and firm heterogeneity jointly observable. The Handbook chapter by Abowd and Kramarz (1999) reviewed the data sources then available and the methods for analyzing them. The AKM framework demonstrated how worker mobility across employers could be used to estimate worker and firm effects (Abowd, Kramarz, & Margolis, 1999). Using German LEE data, Card, Heining, and Kline (2013) show how increasing workplace heterogeneity and worker sorting contributed to the rise in West German wage inequality. Song, Price, Guvenen, et al. (2019) conduct a related analysis for the United States and document how changes in firm pay differences and worker sorting contributed to rising earnings inequality.

LEE data also strengthened structural labor research by allowing models of wage setting and mobility to be tested against detailed worker–firm histories. Cahuc, Postel-Vinay, and Robin (2006), for example, develop and estimate an equilibrium model of strategic wage bargaining and on-the-job search using French matched employer–employee data. Kline (2024) reviews subsequent evidence on firm wage differences, worker mobility, and comparisons of firm effects across countries. Together, this literature established the importance of firms in the labor market and provided a foundation for research on why wages differ across employers.

From the 2010s onward, researchers increasingly combined longitudinal LEE data with causal designs. Dustmann, Schönberg, and Stuhler (2017) use detailed employment histories and a commuting-policy shock to study how native wages and employment adjust to immigration. Goldschmidt and Schmieder (2017) use German social-security records to study jobs moved outside the boundary of an employer to a contracting firm. Their event-study estimates show that wages in outsourced jobs fall by 10–15 percent relative to comparable non-outsourced jobs, providing causal evidence that the identity of the employer affects pay. Dustmann, Lindner, Schönberg, et al. (2022) follow workers and establishments around the introduction of Germany's national minimum wage and show that adjustment operates partly through reallocation toward larger and higher-paying establishments. Long panels are also well suited to event-study designs that trace workers and firms before and after events such as job displacement.

Since the 2020s, two extensions have become more prominent. The first is harmonized cross-country LEE research, which applies common measures and research designs to several institutional environments, as in the seven-country analysis of job displacement by Bertheau, Acabbi, Barceló, et al. (2023) and the analysis of rising earnings inequality in fourteen countries by Tomaskovic-Devey, Rainey, Avent-Holt, et al. (2020).

These harmonized studies show which findings recur across labor markets and create opportunities to study why estimates differ across countries. A second extension links surveys to administrative employment histories, adding information on beliefs, expectations, bargaining, and firm practices. Studies of workers' outside options and individual wage bargaining illustrate how these links connect stated beliefs and practices to outcomes observed in LEE data (Caldwell, Haegele, & Heining, 2026a; Jäger, Roth, Roussille, & Schoefer, 2024).

Appendix Table A7 summarizes the main research uses of longitudinal LEE data and provides illustrative studies.

2.3 The Growing Prominence and Improving Quality of LEE Data

References to LEE data have become increasingly common in the economics literature. Figure 1 reports the annual share of papers in a selected set of leading economics journals and NBER Working Papers that contain the terms "linked employer–employee"

or "matched employer–employee." The share in the NBER working paper series increased from around 0.5 percent in the 2000s to around 2 percent in the early 2010s and 5 percent by 2025. For the selected leading economics journals, the series begins in the early 2010s, when the share was around 1 percent. It reached almost 3 percent by 2025. This measure tracks the use of these terms rather than the full set of papers using LEE data. In particular, it excludes papers that refer only to a specific administrative dataset.

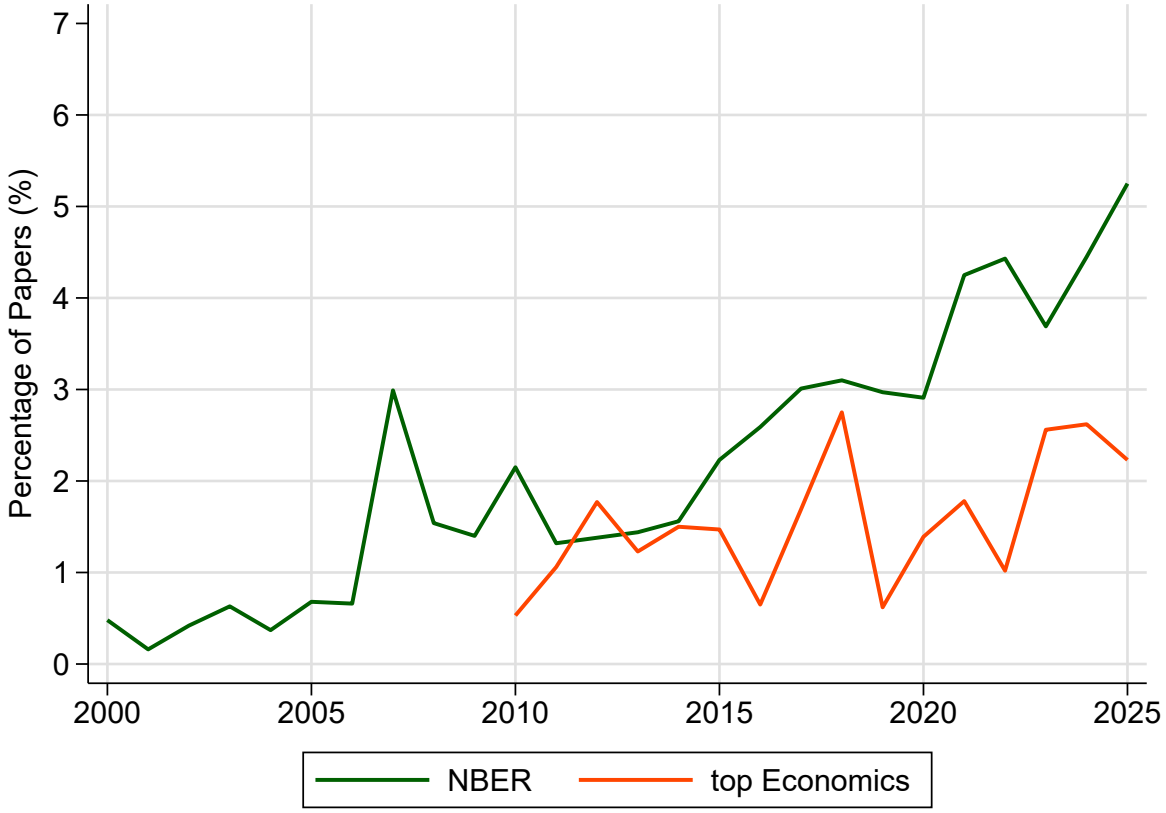

Figure 1: References to linked employer–employee data in economics

Notes: The figure reports, by year, the percentage of papers containing the terms "linked employer–employee" or "matched employer–employee" in a selected set of economics publications. It measures the use of these terms and does not include papers that identify LEE data only by the name or acronym of a specific dataset. The sample includes the *American Economic Review*, the four *American Economic Journals*, the *Journal of Political Economy*, the *Quarterly Journal of Economics*, and NBER Working Papers. The data were extracted from Paul Goldsmith-Pinkham's EconLit Search website.

The increased use of LEE data was accompanied by changes in their coverage and frequency. In several European countries, richer employer–employee records emerged from reforms to tax, payroll, and social-security reporting rather than from initiatives designed for research. Employers moved from annual or fragmented declarations to integrated individual-level reporting systems. Belgium introduced the multifunctional DmfA in

2003, Italy introduced monthly individual earnings reporting through EMens in 2005, the Netherlands created the Polisadministratie from payroll declarations in 2006, and Denmark introduced eIndkomst in 2008. Italy then unified earnings and contribution reporting through UNIEMENS in 2010. Similar reforms followed in France, Croatia, Estonia, Norway, Sweden, Austria, Finland, and Ireland.[3]

These reforms were introduced to simplify reporting, reuse information across public agencies, and improve tax enforcement. They also increased the frequency and detail of worker–employer records. Appendix Table A6 provides further details. The resulting improvements in LEE data therefore came from broader changes in public administration rather than from statistical data collection alone.

3 The State of Linked Employer–Employee Data in the World

Broad-coverage longitudinal LEE datasets are now available across Europe and in parts of the Americas, Africa, Asia, and Oceania, but they differ sharply in coverage, sampling, frequency, and access. Their research value also depends on whether the core worker–employer records can be linked to information on firms, places, families, health, education, and surveys.

3.1 Availability and Data Coverage

Tables 1 and 2 report the countries for which we found longitudinal LEE data. We compiled this information from official documentation, published research, data providers, and researchers familiar with the data. Where possible, a data owner or a researcher with direct access verified the resulting entries. We include a national dataset if at least one research paper uses it, an official website documents it, or a researcher with direct access confirms that it can be used for research. This criterion does not require a general

[3]The selected reforms are Belgium: DmfA (2003); Italy: EMens (2005) and UNIEMENS (2010); the Netherlands: Polisadministratie (2006); Denmark: eIndkomst (2008); France: DSN (from 2013); Croatia: JOPPD (2014); Estonia: TÖR (2014); Norway: a-ordningen/a-meldingen (2015); Sweden: AGI (2018–2019); Austria: mBGM (2019); Finland: Tulorekisteri/Inkomstregistret (2019); and Ireland: PAYE Modernisation (2019). Dates refer to introduction or broad implementation, which was gradual in some countries.

application route for external researchers.[4]

The main tables document national datasets in 50 countries.[5] The tables report the population covered, the share of the covered population included in the largest documented research sample, the frequency of the records, and the earliest year available.[6]

We did not identify a broad-coverage longitudinal LEE dataset meeting our inclusion criteria for Albania,[7] Belarus, Bosnia and Herzegovina, Cyprus, Czechia, Malta, Moldova, Montenegro, North Macedonia, Russia, or Serbia. Some of these countries maintain administrative employment or social-insurance registers, but we found no evidence of a broad longitudinal worker–employer dataset used for research, including through restricted access available only to researchers employed by a data-producing institution.

Coverage differs across countries. Some datasets include only private-sector employees, while others also include public-sector employees. Most cover dependent employment and exclude self-employment because no employer–employee relationship is recorded. Some person-based datasets nevertheless include self-employment histories and allow researchers to follow transitions between dependent employment and self-employment. We use *all employed* when the records are organized around formal employment. We use *employment and other statuses* when the core person-based records also contain at least one status outside formal employment, such as registered unemployment, benefit receipt, a pension, self-employment, or inactivity. This label does not imply that every resident, informal work, or all non-employment spells are observed.

Table 1 reports the latest documented coverage, the largest documented sample, the highest frequency available to researchers, and the earliest year of the core LEE source. These characteristics need not apply throughout the full period. Italy illustrates this distinction: annual private-sector records are available from 1974, monthly records from 2005, and public-sector records in a separate VisitINPS archive from 2014. Appendix Section A.1 documents some similar changes in other countries, although we do not provide a complete history of coverage and frequency for every dataset.

[4]For example, Germany's 100% entry refers to the full IEB, which can be used for research at the IAB; approved external researchers generally use FDZ products, including the 2% SIAB.

[5]The appendix source tables report two additional countries—Switzerland and Ukraine—that are not included in the main comparison because we could not verify all dimensions on a comparable basis.

[6]For the United States, the table reports the restricted SSA Master Earnings File; Section 3.2 discusses the more widely used LEHD.

[7]Albanian payroll records contain worker and employer identifiers. A recent working paper uses records for January and April 2021 (https://docs.iza.org/dp18510.pdf), but these data came from an unauthorized leak rather than a documented research-access procedure.

Table 1: Availability of longitudinal linked employer–employee data in Europe

Country	Coverage (latest)	Largest sample (%)	Highest frequency	Earliest year
Panel A. Western and Southern Europe				
Germany	Employment and other statuses	100%	Spell	1975
United Kingdom	All employed	1%	Annual	1975
France	All employed	8%	Annual	1976
Italy	All employed	100%	Monthly	1974
Spain	Employment and other statuses	4%	Annual	2005
Netherlands	All employed	100%	Monthly	1999
Belgium	All employed	100%	Quarterly	2003
Portugal	Private sector	100%	Annual	1985
Greece	Private sector	100%	Monthly	2002
Austria	All employed	100%	Spell	1972
Ireland	All employed	100%	Annual	2011
Luxembourg	All employed	100%	Monthly	1988
Panel B. Nordic countries				
Sweden	Employment and other statuses	100%	Monthly	1990
Denmark	All employed	100%	Spell	1980
Finland	All employed	100%	Annual	1987
Norway	All employed	100%	Monthly	1995
Iceland	All employed	100%	Annual	1981
Panel C. Central and Eastern Europe				
Poland	All employed	100%	Monthly	2015
Romania	All employed	100%	Monthly	2018
Hungary	Employment and other statuses	50%	Spell	2003
Bulgaria	All employed	100%	Annual	2009
Slovakia	All employed	100%	Monthly	2014
Croatia	All employed	100%	Spell	1970
Lithuania	All employed	25%	Monthly	2000
Slovenia	All employed	100%	Annual	1991
Latvia	All employed	100%	Monthly	2010
Estonia	All employed	100%	Monthly	2001

Notes: Countries are grouped into three geographical panels and ordered within each panel using 2025 population estimates from the United Nations (2024). *All employed* refers to formal employment; *Employment and other statuses* denotes person-based records that also include at least one status outside formal employment. The largest sample is measured relative to the population in the Coverage column; 100% denotes the full covered population, not all workers in the country. Highest frequency need not apply throughout the full period. Earliest year refers to the core LEE source identified for this review. Coverage and variable availability may change over time; country-specific qualifications are discussed in the text.

Table 2: Longitudinal linked employer–employee data outside Europe

Country	Coverage (latest)	Largest sample (%)	Highest frequency	Earliest year
Panel A. Americas				
United States	All employed	100%	Annual	1978
Brazil	All employed	100%	Annual	1985
Mexico	Private sector	100%	Monthly	1985
Colombia	All employed	100%	Monthly	2008
Argentina	Private sector	3%	Monthly	1996
Canada	All employed	100%	Annual	2001
Peru	Private sector	100%	Monthly	2008
Chile	All employed	100%	Monthly	2002
Ecuador	All employed	100%	Monthly	2006
Dominican Republic	All employed	100%	Monthly	2003
Costa Rica	All employed	100%	Monthly	2006
Uruguay	Employment and other statuses	100%	Monthly	1997
Panel B. Africa, Asia, and Oceania				
Turkey	Private sector	100%	Monthly	2012
Thailand	Private sector	100%	Monthly	2002
South Africa	All employed	100%	Monthly	2010
Kenya	All employed	100%	Monthly	2017
South Korea	All employed	100%	Annual	2002
Saudi Arabia	Private sector	100%	Spell	2009
Australia	All employed	100%	Annual	2011
Taiwan	Private sector	100%	Annual	2004
Israel	All employed	100%	Monthly	2001
New Zealand	All employed	100%	Monthly	1999
Armenia	All employed	100%	Monthly	2013

Notes: Countries are grouped into two geographical panels and ordered within each panel using 2025 population estimates from the United Nations (2024). Definitions and reporting conventions follow Table 1. Coverage and variable availability may change over time; country-specific qualifications are discussed in the text. Additional details are provided in Appendix Section A.1.

In Europe, the Nordic countries combine long panels, broad population coverage, and established research-access arrangements. Denmark is illustrative: annual worker–employer data are available from 1980, and Statistics Denmark provides an online catalogue of the registers and variables that researchers can request. The microdata themselves are accessed through a secure environment by approved projects.[8] Long histories do not imply a fixed data structure: from 2008, the BFL dataset provided finer monthly

[8]See Statistics Denmark's register and variable catalogue and research-data access page.

and spell-level information than the earlier annual IDA files, as discussed in Section 2.3. Western and Southern European countries also often provide long employment histories, but the datasets differ more in sampling and sectoral coverage. In Central and Eastern Europe, the documented datasets often begin later and access is more likely to depend on a specific project.

Outside Europe, broad administrative LEE datasets are available across the Americas and in parts of Africa, Asia, and Oceania. Coverage is often close to population-level within formal employment, but most of these datasets begin in the 2000s or 2010s.

A country may have several LEE datasets. These datasets may cover different populations, use different employer units, and provide different variables. Researchers may also have access to only a sample of the underlying administrative records. Additional information on specific countries is provided in Appendix Section A.1.

Comparability and access The files available to researchers are often samples, even when the underlying administrative records cover the full population. Among the sampled files in the tables, sampling rates range from 1% to 50%. These samples can provide representative estimates, but they are less suitable for work that requires complete coworker networks or many observations of rare transitions. Appendix Table A5 summarizes useful data features for several common applications.

Sampling design also affects cross-country comparability. Person-based samples preserve the employment histories of sampled workers but observe fewer workers within each firm. Employer-based samples may observe many workers within sampled establishments but lose workers when they move to employers outside the sample. These differences can affect the measurement of worker mobility, workforce composition, worker sorting across firms, and wage differences within and between firms. They can also leave fewer observed worker moves connecting firms, which weakens comparisons that rely on these transitions.

The frequency of the data also matters. Annual records may miss short jobs and within-year moves, as in the Portuguese dataset, the Quadros de Pessoal. Monthly and spell-level records allow researchers to measure these transitions more precisely. However, the period used to measure earnings may differ from the period used to record employment.

We do not report access rules in the main tables because they vary across data providers and research projects. Researchers may be required to work in a secure data room or

through a remote server, and results are generally reviewed before release. Restricted access also makes replication more demanding because researchers may need the same data version, software, and secure computing environment (Vilhuber, 2025). The forthcoming volume edited by Berton and Paruolo (2026) provides a country-by-country account of access to administrative microdata across all EU Member States and discusses how such data can be used for research, policy evaluation, and data-driven policymaking. Appendix Tables A1, A2, A3, and A4 provide links to the data providers and selected examples of recent research.

3.2 Main LEE Data Sources in Large Economies in Europe and the Americas

Tables 3 and 4 compare the principal LEE sources in the six largest economies in Europe and the three largest economies in the Americas by 2024 nominal GDP among the countries covered in Tables 1 and 2. The starting year refers to the earliest year of the core employment data reported in the sources we consulted and does not necessarily indicate the first year for which the data exist. The sources differ in whether they observe all jobs or only a worker's main employer, whether they report earnings, wage rates, and hours, and whether they can be linked to firm accounts or trade records. These differences affect the questions for which each source can be used. The firm-revenue row summarizes whether linked firm accounts are available; depending on the country and source, the relevant measure may be sales, turnover, value added, or a related accounting measure. The country descriptions below give further detail.[9]

[9]GDP rankings use the World Bank's GDP (current US$) series. The data sources are: IAB FDZ documentation of the IEB, SIAB, LIAB, and IAB Establishment Panel; ASHE dataset notes; INSEE Base Tous Salariés documentation; VisitINPS database documentation and UniEmens CCNL documentation; and the MCVL guide. For the three large economies in the Americas, the sources are: U.S. Census Bureau LEHD Snapshot documentation; Statistics Canada documentation of CEEDD; and Brazilian Ministry of Labor documentation of RAIS.

Table 3: Characteristics of principal LEE sources in six large European economies

Characteristic	Germany	United Kingdom	France	Italy	Spain	Netherlands
Time span and population						
Starting year	1975	1975	1976	1974	2005	1999
All jobs per year	Yes	No	Yes	Yes	Yes	Yes
Sample (%)	100%	1%	8%	100%	4%	100%
Public-sector jobs	Some	Yes	Yes (1988–)	Yes (2014–)	Partial	Yes
Self-employed workers	No	No	Yes (2006–)	No	Yes	Yes
Employee information						
Earnings	Total	Total	Total	Total	Base	Total (1999–)
Wage	Daily	Hourly	Hourly	Daily	Monthly	Hourly (2006–)
Hours worked	No	Yes	Yes	Contractual	No	Yes (2006–)
Temporary contract	Yes (2011–)	Yes	Yes (2005–)	Yes	Yes	Yes (2006–)
Collective agreement ID	No	No	Yes (2005–)	Yes	No	Yes (2006–)
Occupation	Yes	Yes	Yes	Partial (2010–)	No	No
Employer information						
Firm revenue	Limited	No	Yes	Yes (1996–)	No	Yes
Exports and imports	No	No	Yes	Yes (2010–)	No	Yes
Region (NUTS 2)	Yes	No	Yes	Yes	Yes	Yes
Industry (2-digit)	Yes	Yes	Yes	Yes	Yes	Yes
Data source or provider	IEB	ASHE	DADS/BTS	INPS	MCVL	SSB/Polis

Notes: The countries are the six largest economies in Europe by 2024 nominal GDP among those covered in Table 1. "Sample (%)" reports the share of the covered population included in the dataset. "Some" means available only for certain records or groups. "Total" earnings include base pay and other recorded compensation; a contribution base need not equal actual earnings. Occupation requires a national code with at least three digits; region is NUTS 2 and industry two-digit NACE for Europe. Entries describe the most recent years; parentheses give the first year available. "No" means unavailable in the principal source; a separate linkage may still be possible. See the text for further details.

Table 4: Characteristics of principal LEE sources in three large economies in the Americas

Characteristic	United States	Canada	Brazil
Time span and population			
Starting Year	Varies by state; about 1990	2001	1985
All jobs per year	Yes	Yes	Yes
Sample (%)	100%	100%	100%
Public-sector jobs	State and local	Yes	Yes
Self-employed workers	No	Yes	No
Employee information			
Earnings	Total	Total	Total
Wage	No	No	Monthly
Hours worked	No in most states	No	Contractual hours
Temporary contract	No	No	Yes
Occupation (at least 3-digit)	No in most states	No	Yes
Employer information			
Firm revenue	No	Yes	No
Exports and imports	No	Yes	No
Detailed region	Yes	Yes	Yes
Industry (2-digit)	Yes	Yes	Yes
Principal data source	LEHD	CEEDD	RAIS

Notes: The countries are the three largest economies in the Americas by 2024 nominal GDP among those covered in Table 2. This table summarizes the main characteristics of the principal LEE sources used in each country. See the previous table for definitions. The U.S. entry refers to the full unemployment-insurance records available for participating states; most states do not report hours, while Washington State reports quarterly paid hours. The Canadian entry refers to the broader CEEDD environment, including its business-owner and firm-level modules.

Germany Germany's main LEE source is the Integrated Employment Biographies (IEB), provided by the Institute for Employment Research (IAB). The IEB combine daily employment spells from social-security records with Federal Employment Agency records on benefits, job search, and labor-market programs. Coverage begins in 1975 in West Germany and 1993 in East Germany; marginal employment is included from 1999. Civil servants and self-employed workers are generally excluded. The records include earnings, occupation, education, employment status, worker characteristics, and an establishment identifier. This identifier may group several workplaces of the same firm within a municipality when they share an industry (Schmucker & vom Berge, 2025).

Table 1 reports the full IEB because research carried out within the IAB can use the population database (FDZ-IAB, 2026). Approved external researchers generally use FDZ products. The SIAB is a 2% person sample that follows individuals across employment and non-employment records, whereas the LIAB links the IAB Establishment Panel to workers while they are employed at sampled establishments (Panahian Fard, Schmucker, Seth, et al., 2024; Schmucker & vom Berge, 2025). The establishment survey provides

sales and input costs for some establishments and has been used to relate productivity and wage premia (Bruns, 2019; Palladino, Bertheau, Hijzen, et al., 2025).[10] Access is provided on site or through controlled remote access after project approval. The standard files do not report exact hours, and earnings above the social-security contribution ceiling are censored (Drechsler & Ludsteck, 2025; vom Berge, Umkehrer, & Wanger, 2023).

The United Kingdom In the United Kingdom, researchers have long used the New Earnings Survey Panel Dataset and its successor, the Annual Survey of Hours and Earnings (NESPD/ASHE), an annual 1% sample of employees that reports earnings and hours (Bryson, Forth, Stokes, et al., 2025). ONS and ESCoE are developing a new administrative LEE dataset that links monthly PAYE payroll records to the business register. Relative to ASHE, the new data cover all payrolled employees linked to an enterprise and follow workers and enterprises monthly from 2014 to 2025 (Forth, Bryson, Lemma, & Jones, 2026).

France France provides secure research access to several LEE datasets. The DADS Panel, now called the Panel Tous Salariés, follows a fixed sample of workers whose salaried employment histories begin in 1976. It covers 4% of employees before 2002 and 8% thereafter, including the state, territorial, and hospital public services from 1988 (INSEE, 2026c).[11] The broader Panel Tous Actifs adds administrative records for the self-employed from 2006 and follows transitions across private employment, public employment, and self-employment (INSEE, 2026b). The monthly *Déclaration sociale nominative* replaced the DADS as the underlying source for private-sector employees from 2017 and public-sector employees from 2022. The research files remain annual, but short contracts and hours are measured differently before and after this change.

DADS Postes, now distributed as the Base Tous Salariés (BTS), is nearly exhaustive and contains one record for each worker–establishment pair in a year (INSEE, 2026a). Before 2009, it covers the territorial and hospital public services but not state civil servants. Its original worker identifiers are stable only within overlapping two-year files. Babet, Godechot, and Palladino (2025) use these overlaps to construct a nearly exhaustive

[10] The Research Data and Service Centre of the Deutsche Bundesbank also provides company microdata for approved research projects.

[11] A consistent coverage definition can be maintained from 1988 by excluding jobs paid by private household employers, which were added to the panel only in 2009.

longitudinal panel from 2002, although employment histories can break after a worker spends more than a year outside the covered population. The employment files report earnings, hours, occupation, and other job characteristics and can be linked to firm accounts and customs records (Centre d'accès sécurisé aux données, 2026). Researchers can apply for secure access through the CASD (see https://www.casd.eu/en/).

Italy INPS maintains several Italian employer–employee files. Annual private-sector records are available from 1974 and monthly records from 2005; current coverage extends through 2024 (INPS, 2026). A separate VisitINPS archive provides monthly public-sector records from 2014, while domestic and agricultural workers are held in other files. The records include earnings, employment duration, contract type, worker and firm characteristics, and the dates and reasons for separations. Subject to project approval, they can be linked to Cerved firm accounts for 1996–2018, Orbis accounts through 2024, and employers' notifications of contract starts and terminations. These notifications add occupation and education for workers with a recorded job flow from 2010 onward. Recent applications combine the employment records with work-from-home contracts, family and fertility records, firm accounts, and collective-agreement wage floors (Basso, De Paola, Lattanzio, & Paradisi, 2026; Fanfani, 2023).

The Bank of Italy provides more restricted alternatives. The INPS–INVIND dataset links workers' complete employment histories to the Bank's firm survey and can be combined with firm accounts and collective-agreement data (Ciani, Lattanzio, Mendicino, & Viviano, 2025; Daruich, Di Addario, & Saggio, 2023). A separate 7% employee sample is available from 1990 and can be linked to firm-level customs records from 2010. Further details on these samples are provided in Appendix Section A.1.

Spain Spain's main LEE dataset is the Muestra Continua de Vidas Laborales (MCVL). Each annual edition contains a 4% sample of people registered with Social Security as affiliates or pensioners for at least one day in the reference year. Individuals remain in later editions while they continue to meet this condition, and the sample is refreshed to represent the current reference-year population. The standard version is available from 2005 and contains current and earlier employment spells with exact dates, contract characteristics, and monthly contribution bases. Job histories are therefore observed at the spell level even though a new sample is released annually. Contribution bases approximate

monthly earnings excluding overtime and are subject to statutory floors and ceilings.

The main Social Security contribution account identifies the employer, but it need not correspond to a physical establishment. The MCVL CDF adds annual tax earnings for the reference year and is available from 2006. The MCVL also reports the date of birth, gender, and education of cohabitants registered with sampled workers, but the standard files do not contain firm balance sheets (Spanish Social Security Administration, 2026). ES DataLab provides approved researchers with secure access to linked records from several public institutions (see https://es-datalab.es/en/).

The Netherlands The Netherlands is included as the sixth-largest European economy by 2024 nominal GDP among the countries in Table 1. Statistics Netherlands provides a particularly rich environment for linked research. BAANKENMERKENBUS supplies annual worker–employer links from 1999, while the Polisadministratie supplies monthly payroll-based records from 2006 with worker and employer identifiers, earnings, hours, and contract characteristics. Within the secure CBS Microdata environment, these employment records can be linked to population registers and to business and international-trade statistics; self-employment is recorded separately. The table combines the longer 1999 worker–employer history with the richer monthly information available from 2006. These details follow the Statistics Netherlands microdata documentation. For applications using the Dutch Polisadministratie data, see Meekes and van Lent (2025), who study neighbour, colleague, and family peer effects on paid working hours, and Roesch, Gerritse, Karreman, et al. (2025), who study the roles of workers and firms in the foreign-acquisition wage gap.

United States The United States has several LEE datasets. The most widely used is the Census Bureau's Longitudinal Employer–Household Dynamics (LEHD) database. It combines quarterly state unemployment-insurance wage records with establishment information from the Quarterly Census of Employment and Wages and other Census Bureau data (Abowd, Stephens, Vilhuber, et al., 2009; U.S. Census Bureau, 2026b). The restricted LEHD files cover more than 95% of U.S. employment and report quarterly earnings for each worker–employer relationship. Employment not covered by state unemployment-insurance systems, including self-employment and most federal employment, is generally excluded. Most states do not report hours. Washington State is an important exception: its unemployment-insurance records report quarterly paid hours for

each worker–employer relationship, which Lachowska, Mas, and Woodbury (2022) find to be reliable. The initial employer identifier is a state unemployment-insurance account rather than a national firm identifier (Sorkin, 2018). Qualified researchers can apply to use the restricted files through the Federal Statistical Research Data Centers (U.S. Census Bureau, 2026a).

Other U.S. sources provide broader annual earnings coverage. Song, Price, Guvenen, et al. (2019) use the Social Security Administration's Master Earnings File (MEF), which is compiled from W-2 forms submitted by employers and follows nearly all workers who receive W-2 earnings. These records identify workers and their employers, observe annual rather than quarterly earnings, and generally do not report hours. Table 2 uses the restricted MEF for its single U.S. entry, while Table 4 describes the more widely used LEHD. W-2 records can also be linked to IRS employer tax returns, adding information on payroll and other business outcomes, as illustrated by Rao and Risch (2026). Access to these tax records is more restricted than access to the LEHD and is limited to approved projects in secure research environments.

Brazil Brazil's main LEE source is the Relação Anual de Informações Sociais (RAIS), a mandatory annual administrative register maintained by the Ministry of Labor and Employment. It covers the near-universe of formal employment throughout the country but excludes informal work and most self-employment (Ministry of Labor and Employment of Brazil, 2026). Persistent worker and establishment identifiers make it possible to follow workers across employers and to construct long employment histories. The files report earnings, contractual hours, occupation, education, worker characteristics, contract type, and the dates and reasons for hiring and separation (Gerard, Lagos, Severnini, & Card, 2021). Although reporting is annual, the employment dates make within-year job changes observable. Alvarez, Benguria, Engbom, and Moser (2018) use the worker–firm links in RAIS to study the role of firms in the decline in earnings inequality in Brazil. RAIS itself does not contain firm balance sheets, but its firm identifiers can support links to other administrative or firm data where access is available.

Canada Canada's CEEDD links T4 records on jobs and earnings, T1 personal tax files, T2 corporate tax returns, Records of Employment, firm files, and immigration records. It covers all individuals and firms appearing in the underlying administrative records and

follows workers, employers, and business owners from 2001 onward (Dostie, Li, Card, & Parent, 2023; Statistics Canada, 2026). The employer–employee records report annual earnings but not hours or occupation. Links to corporate tax and trade records provide information on firm revenue, exports, and imports. A recent example is Beauregard, Lemieux, Messacar, and Saggio (2025), who use Canadian matched employer–employee data for 2001–2019 to compare workers moving between unionized and non-unionized firms and relate wage differences to firm value added.

No dataset dominates across population coverage, frequency, job characteristics, and employer information. Long-running datasets also change over time and may cover different sectors or populations in different periods. Much of the variation in research potential comes from additional linkages: core LEE data generally provide employment and earnings histories, while firm accounts, tax records, trade data, and other sources add information about employers and workers.

3.3 What Core LEE Data Show

At a minimum, the core LEE panel contains stable worker and employer identifiers and earnings. These records allow researchers to study wage differences across firms, worker sorting, mobility, displacement, and co-worker networks before adding information from other sources.

Because some workers move between firms, the data can separate persistent differences across workers from systematic differences in pay across firms. This is the central idea of the AKM model (Abowd, Kramarz, & Margolis, 1999). Estimation requires enough worker moves to connect employers. When mobility is sparse, estimates of firm effects and their contribution to wage inequality can be substantially biased (Kline, 2024). Interpreting these effects causally requires stronger assumptions about wage determination and worker mobility.[12] Applications of this approach show how firm wage premia and worker sorting contribute to wage inequality (Card, Heining, & Kline, 2013; Song, Price, Guvenen, et al., 2019).

The worker–employer link also helps explain wage changes over a career. For displaced workers, it separates losses due to fewer hours, lower-paying firms, and the loss of a

[12] In the standard AKM model, wages are additively separable into worker and firm effects, and mobility is exogenous conditional on those effects.

valuable worker–firm match. Using LEE data from Washington State, Lachowska, Mas, and Woodbury (2020) find that the loss of match-specific wage components accounts for more than half of long-run wage losses. Detailed employment histories can also identify co-worker networks and trace movements toward better-paying firms (Glitz & Vejlin, 2021).

The suitability of an LEE source depends on the research question. Appendix Table A5 summarizes the main data features needed for several common applications.

3.4 What Additional Linkages Add

Table 5 summarizes selected information beyond the core worker–employer panel for 15 countries.[13] Information on location, immigration, and firms is relatively common: workplace and residential location and immigration status are each documented in 12 countries, firm accounts or ownership in 11, and hours, overtime, or bonuses in 10. By contrast, health records and family links are each documented in 7 countries, and cognitive skills in 6. The presence of a core LEE panel therefore does not determine the range of questions that can be studied; this also depends on the records that can be linked to it. The table is illustrative rather than exhaustive: a linkage may exist even when it was not identified in the information collected for this review. The paragraphs below use selected studies to show how these linkages expand the questions that LEE data can address.

Job and location characteristics. Workplace and residential location allow researchers to assign workers and firms to local labor markets and distinguish worker sorting from worker–firm matching across places. Dauth, Findeisen, Moretti, and Suedekum (2022), for example, use German LEE data to show that stronger assortative matching in large cities contributes to geographical wage differences. Information on hours, overtime, and bonuses helps distinguish wage rates from labor supply and variable compensation.

Firm characteristics. Firm accounts add sales, value added, capital, productivity, and profits. These variables allow researchers to study whether high-paying firms are more productive and whether workers share in firm rents. Card, Cardoso, and Kline (2016), for example, link Portuguese worker records to firm accounts to study sorting and bargaining.

[13] Austria, Denmark, France, Germany, Hungary, Italy, Lithuania, Norway, Portugal, Slovakia, Spain, Sweden, Canada, Chile, and the United States.

Table 5: Additional information available in selected LEE datasets

	Documented	Not documented
Workplace location	12	3
Place of residence	12	3
Hours, overtime, or bonuses	10	5
Firm accounts or ownership	11	4
Health records	7	8
Social benefits or transfers	10	5
Number of children	9	6
Family links	7	8
Immigration status	12	3
Educational institutions attended	8	7
Cognitive skills	6	9

Notes: Not documented means that the linkage was not identified in the information collected for this exercise; it does not imply that the linkage is unavailable. The original data collection is described in Boza & Pető (2025).

Using Portuguese LEE data linked to firm-level trade records, Garin and Silvério (2024) construct shift-share measures of export demand based on firms' pre-recession destinations. They use these shocks to estimate how firm-specific labor demand affects wages and how the response depends on local labor-market competition. Ownership records can also be used to compare wage setting and employment practices across family, domestic, and foreign-owned firms (Di Porto, Pagano, Pezone, et al., 2026; Pető & Reizer, 2025; Setzler & Tintelnot, 2021).

Health and social transfers. Links to health and social-security records extend the analysis beyond earnings and employment. They allow researchers to study the effects of health shocks and the role of social-insurance programs. Bíró and Elek (2020), for example, identify workers displaced in mass layoffs and follow their subsequent disability-insurance receipt and healthcare expenditure. Taking the opposite perspective, Jäger, Heining, and Lazarus (2024) use unexpected worker deaths as exogenous shocks to firms' labor supply. Whereas displacement studies follow workers after job loss, they examine how firms adjust when an employee exits unexpectedly, using changes in hiring and incumbent workers' wages and retention to measure replacement costs.

Family links. Family identifiers connect workers to parents, children, siblings, and partners. Such links are particularly extensive in the Nordic registers. Combined with employer identifiers, they allow researchers to study how firms and family networks contribute to the intergenerational transmission of labor-market outcomes. Engzell and Wilmers (2025), for example, use Swedish data to study sorting across firms, employer inheritance, and parental referral networks. Family links are also available in other countries. In Hungary, Horn and Pető (2026) combine employment, family, and education records to study how maternal job loss affects children's educational outcomes.

Migration. Immigration histories allow researchers to follow immigrants across employers and distinguish within-firm pay differences from sorting across firms. Using LEE data from nine countries, Hermansen, Penner, Boza, et al. (2025) show that limited access to high-paying jobs accounts for about three-quarters of the immigrant–native earnings gap. Dostie, Li, Card, and Parent (2023) document how immigrants in Canada move toward firms with higher wage premia over time.

Education and skills. Education records provide information on qualifications and institutions attended. In some countries, they can be supplemented with direct measures of cognitive and non-cognitive skills. Håkanson, Lindqvist, and Vlachos (2021), for example, link Swedish military-enlistment records to LEE data to study how workers with different skills sort across firms. Seim (2019) use similar records to examine differences in workers' exposure and responses to job displacement.

Survey links. Surveys add information on working conditions, hiring practices, beliefs, expectations, and bargaining that is rarely available in administrative records. Linking survey responses to employment histories allows researchers to compare reported beliefs and practices with subsequent wages, mobility, and employment. Boza and Reizer (2024), for example, link the Hungarian Structure of Earnings Survey to administrative LEE records to study the role of overtime and performance pay in gender differences in firm wage premia. Section 4 discusses this growing research agenda in more detail.

4 The Way Forward

LEE data have established the role of firms, worker–firm matches, and mobility in labor-market outcomes. The next step is to determine which findings generalize across institutional settings, extend the evidence to countries where LEE research remains limited, and connect administrative outcomes to the choices that produce them.

4.1 Cross-Country Comparisons

Most LEE studies examine a single country, so their estimates may partly reflect its wage-setting institutions, employment protection, collective bargaining, and social insurance. Applying the same research design across countries can distinguish common responses from those that vary with national institutions. Bertheau, Acabbi, Barceló, et al. (2023) provide a direct example. Using a harmonized displacement design in seven European countries, they find much smaller earnings losses in Denmark and Sweden than in Italy, Spain, and Portugal. Differences in reemployment and the loss of employer-specific wage premia account for much of this variation.

Confidentiality rules often prevent researchers from pooling national microdata. One solution is to agree on common samples and code, run the analysis separately in each country, and combine only results that meet national confidentiality requirements. This approach requires precise definitions, common checks of data quality and results, and transparent documentation of departures from the shared design. LEE research networks use a similar model. The Comparative Organizational Inequality Network (COIN) studies workplace inequality across more than 16 countries (Godechot, Tomaskovic-Devey, Boza, et al., 2024; Penner, Petersen, Hermansen, et al., 2022; Tomaskovic-Devey, Rainey, Avent-Holt, et al., 2020). The OECD's LinkEED group has applied common analyses to wage inequality, the gender wage gap, mass layoffs in high-emission industries, and migrant integration (Arellano-Bover, Barreto, Damas de Matos, et al., 2026; Criscuolo, Hijzen, Muraközy, et al., 2026; Lombardi, Barreto, Hijzen, et al., 2026; Palladino, Bertheau, Hijzen, et al., 2025). A recent LinkEED study applies a common analysis of low-wage work to Denmark, France, Germany, the Netherlands, Portugal, and the United Kingdom (Schack, Meekes, Barreto, et al., 2026).

A second model is to publish harmonized statistics rather than pool the underlying

records. The Global Repository of Income Dynamics (GRID) follows this approach. Its original database covers 13 countries and documents common and country-specific patterns in income inequality and dynamics (Guvenen, Pistaferri, & Violante, 2022). The statistics are available through the GRID database and soon will be updated to include data from around 30 countries.

The most direct approach is to link records across borders. Bütikofer, Løken, and Willén (2024), for example, link Danish and Swedish registers to study the labor-market effects of the Öresund Bridge.[14]

This paper only sketches the role of LEE data in comparative cross-country research. Interested readers are referred to Hijzen, Skans, and Salvanes (2026), who distinguish four purposes of harmonized cross-country LEE research: documenting cross-country differences, establishing robust stylized facts, benchmarking empirical methods, and producing comparable statistics and semi-aggregated databases.

4.2 Developing Economies and Central and Eastern Europe

Most LEE research concerns high-income countries, although administrative employment records are increasingly available in Africa, Asia, and Latin America. In lower-income countries, these records generally cover formal jobs only. A period without a record may therefore indicate informal work rather than non-employment. Even so, the data can measure entry into formal employment, mobility across employers, job duration, and wage growth. Applying common definitions to eight countries ranging from Kenya to Chile, Brockmeyer, Gerard, Ulyssea, et al. (2026) show how formal employment, job mobility, and wage growth vary with development.

Central and Eastern Europe offers another setting in which LEE data can add to existing evidence. Grassi (2024) documents rapid convergence following the 2004 EU enlargement using aggregate data. LEE data could show whether this convergence occurred through worker reallocation, changes in firm wage premia, or wage growth within firms.

[14] Related initiatives are developing links between German and Austrian records and between Austrian and Hungarian records, allowing researchers to follow workers across national borders.

4.3 Linking Surveys and Experiments to LEE Data

Administrative records show where people work, how much they earn, and when they move between firms. They provide less information about why these outcomes occur. A worker may remain with an employer because the job is attractive, search is costly, or outside options are poorly understood. Observed wages may reflect productivity, bargaining, workplace norms, or firms' beliefs about the labor market. Surveys and experiments can help distinguish these explanations (Stantcheva, 2023).

Linking worker surveys to administrative histories combines information on beliefs and preferences with long-run labor-market outcomes.[15] Researchers can compare workers' expectations with realized wages, mobility, and bargaining behavior (Caldwell, Haegele, & Heining, 2026a; Jäger, Roth, Roussille, & Schoefer, 2024). Caldwell, Haegele, and Heining (2025) link a survey of German workers to Social Security records to measure beliefs about outside pay and attachment to specific firms. Caldwell, Haegele, and Heining (2026b) use experiments in the same linked setting to measure firm-specific amenities and study how workers sort across firms. Using a survey of 20,000 Danish job movers, Humlum, Rasmussen, and Rose (2025) separate firm-wide amenities from worker–firm match effects.

Employer surveys provide information on wage setting, hiring, and employment adjustment, which can be compared with firms' observed wages, worker flows, and subsequent decisions. Using Danish employer surveys linked to administrative LEE records, Bertheau, Larsen, and Zhao (2026) study the obstacles firms report when hiring and relate them to firm characteristics measured in administrative data. Bertheau and Hoeck (2025) compare firms' beliefs about their relative pay with wage measures from administrative data, while Bertheau, Kudlyak, Larsen, and Bennedsen (2025) study why firms respond to adverse shocks with layoffs rather than wage cuts.

Some statistical agencies have built the infrastructure required for these links. The German Institute for Employment Research provides several examples. The Linked Personnel Panel combines employer and worker surveys with administrative employment histories (Mackeben, Ruf, Wolter, & Grunau, 2023). The IAB Job Vacancy Survey can be linked to information on recent hires, worker flows, and wages (Lochner, 2019, 2023; Stüber, Seth, & Lochner, 2020). Related projects combine survey and administrative LEE

[15] Because the linked sample is limited to survey respondents, it is usually much smaller than the underlying administrative population, reducing statistical power.

data in Austria and Hungary (Boza & Reizer, 2024; Mueller, Osterwalder, Zweimüller, & Kettemann, 2024). Together, these links show whether workers' and firms' stated beliefs and reported practices predict subsequent wages, mobility, hiring, and layoffs.

5 Conclusion

So, where are we now? Our review identifies longitudinal LEE data in at least 50 countries. The longest-running datasets and most established access arrangements remain concentrated in Europe, especially in the Nordic countries, but LEE data are also available across Africa, Asia, and the Americas. The relevant question is therefore not only whether a country has LEE data, but what they cover, who can access them, and what other information can be linked to them.

National datasets differ in population coverage, sampling, frequency, panel length, and employer definition. They also differ in whether they include public employment or self-employment and can be linked to firm accounts, ownership, families, education, health, surveys, or experiments. Coverage and variables often change over time, so current descriptions may not apply to earlier years. Access also matters: a dataset can cover an entire workforce yet remain available to only a small group of researchers.

By following workers and firms over time, LEE data allow researchers to separate worker composition from firm wage policies, trace mobility across employers, and measure adjustment through wages, employment, and reallocation. They support descriptive, structural, and causal research by documenting worker–firm sorting, testing models against detailed employment histories, and estimating the effects of policies and shocks when credible research designs are available.

Our review points to three priorities. First, harmonized cross-country projects can distinguish common findings from those that vary with national institutions. Second, wider use in developing economies and Central and Eastern Europe can document how formal employment, mobility, and wage growth change with development and convergence. Third, links to surveys and experiments can connect outcomes to beliefs, preferences, and firm practices not recorded in administrative data. Progress will depend not only on adding countries, but also on improving access, comparability, and links to other sources.

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A Appendix

A.1 Additional Information

Specific details about Table 1. Several entries in Table 1 compress changes in data coverage or frequency over time.

In Germany, the IEB begins in 1975 for West Germany, while East Germany is covered from 1993. In Italy, annual private-sector employment records are available from 1974 and monthly records from 2005. Public-sector records are available in a separate VisitINPS archive from 2014.

In the Netherlands, the annual BAANKENMERKENBUS identifies worker–employer links from 1999 but does not report wages or hours. Since 2006, monthly Polisadministratie payroll records have included worker and employer identifiers, wages, and hours and have served as the principal source for employment and wage records. The table therefore combines the 1999 starting year with the monthly frequency available from 2006. Self-employment is available in a separate dataset rather than in the Polisadministratie.

Administrative records can also be linked to the LISS panel through Statistics Netherlands for approved research projects.

In Norway, the broad linked employer–employee register is available from 1995, but monthly employer reporting through the *a-ordningen* begins in 2015.

The United Kingdom entry refers to the long-running NESPD/ASHE 1% employee sample; a separate administrative LEE infrastructure based on PAYE payroll records has more recently been developed and provides broader coverage. The Spanish entry refers to the MCVL, a 4% sample drawn from individuals registered with Social Security in a given reference year that also contains retrospective employment histories.

For Denmark, the IDA datasets provide annual worker–employer information from 1980. From 2008 onward, the BFL dataset provides finer information on employment relationships, including job spells and monthly employment information.

For Sweden, LISA and the earlier RAMS-based employment records are annual. From 2019, annual employer statements were replaced by monthly employer declarations at the individual level (AGI), providing monthly worker–employer information.

For Romania, LEE data for the most recent years are currently being processed by the ministry of finance.

Specific details about Table 2. The United States entry refers to the restricted SSA Master Earnings File, which is compiled from employer-filed W-2 forms, is available annually from 1978, and identifies workers and their employers. Section 3.2 discusses the more widely used LEHD, whose coverage begins later and varies across states. For Mexico, annual IMSS worker–employer records are documented from 1985, while the monthly research file used in recent work begins in 2004.

Additional details on the eight-country comparison. *Germany.* In the IAB Establishment Panel linkage, value added is available in at least one year for about 26% of establishments in 1995–2001 and 37% in 2001–2008; annual coverage is lower. Corrected contractual hours can be constructed for 2010–2014, temporary-contract information begins in 2011, and about 10–13% of full-time wage observations are censored at the social-security contribution ceiling (Drechsler & Ludsteck, 2025; vom Berge, Umkehrer, & Wanger, 2023).

France. Babet, Godechot, and Palladino (2025) construct longitudinal identifiers in

DADS Postes by matching adjacent files using the establishment identifier and worker and job characteristics. The procedure links about 98% of workers. Because it relies on overlap between consecutive files, it cannot reconnect workers to their earlier records after more than a year of unemployment or self-employment or, before 2009, employment as a state civil servant.

Italy. The INPS–INVIND dataset now covers about 120,000 firms per year, or roughly 10% of private firms with employees. A separate sample selected using 24 dates of birth covers about 7% of employees from 1990 onward and can be linked to firm-level customs records from 2010. Access to these Bank of Italy data is more restricted than access through VisitINPS.

Spain. When a worker has several contracts with the same employer account in a month, allocating the monthly contribution base across contracts requires an assumption. Secondary contribution accounts are sometimes used to identify establishments, but firms choose how finely to report them, so these accounts need not correspond to physical establishments.

A.2 Additional Tables

Table A1: Linked employer–employee data sources in Western, Northern, and Southern Europe

Country	Dataset	Data provider
Austria	ASSD: Austrian Social Security Database	Austrian Social Insurance
Belgium	DWH LM&SP: Datawarehouse Labour Market and Social Protection[a]	Crossroads Bank for Social Security (CBSS)
Denmark	IDA: Integrated Database for Labour Market Research; BFL: Detailed employee data from e-Income (*Detaljeret lønmodtagerdata fra e-Indkomst*)	Statistics Denmark
Finland	FLEED: Finnish Longitudinal Employer–Employee Data, superseded by FOLK modules	Statistics Finland
France	DADS: Déclaration annuelle de données sociales; BTS: Base tous salariés[b]	CASD
Germany	IEB: Integrated Employment Biographies; LIAB: Linked Employer–Employee Data of the IAB[c]	FDZ-IAB
Greece	IKA/EFKA records: social-security contribution records	e-EFKA
Iceland	Register-based employer–employee records	Statistics Iceland
Ireland	EAADS: Earnings Analysis using Administrative Data Sources	Central Statistics Office (CSO)
Italy	INPS archives: employer–employee archives of the Italian Social Security Institute	INPS
Luxembourg	IGSS records: social-security employer–employee histories	General Inspectorate of Social Security (IGSS)
Netherlands	SSB: Stelsel van Sociaal-statistische Bestanden	Statistics Netherlands (CBS)
Norway	A-ordningen: formerly the Register of Employers and Employees[d]	Statistics Norway (SSB)
Portugal	QP: Quadros de Pessoal	GEP, Ministry of Labour (data source); Statistics Portugal (INE; research access)
Spain	MCVL: Muestra Continua de Vidas Laborales	Spanish Social Security
Sweden	LISA: Longitudinell integrationsdatabas för sjukförsäkrings- och arbetsmarknadsstudier	Statistics Sweden (SCB)
Switzerland	AHV/AVS individual-account records linked to population and business registers[f]	Swiss Federal Statistical Office (FSO)
United Kingdom	NESPD/ASHE: New Earnings Survey Panel Dataset and Annual Survey of Hours and Earnings[e]	Office for National Statistics (ONS)

Table A2: Linked employer–employee data sources in Central and Eastern Europe

Country	Dataset	Data provider
Bulgaria	NRA records: monthly tax and social-security employer–employee records[f]	National Revenue Agency (NRA)
Croatia	Administrative employment-spell records, 1970–2023	No standard research-access route
Estonia	Linked Administrative Employer–Employee Data from Statistics Estonia	Statistics Estonia
Hungary	Admin4: Kapcsolt Államigazgatási Adatgyűjtés	KRTK Data Bank
Latvia	Administrative employer–employee data linked from State Revenue Service and CSB registers	Central Statistical Bureau of Latvia (CSB)
Lithuania	SoDra records: administrative records from the State Social Insurance Fund Board	SoDra
Poland	ZUS records: administrative records from the Polish Social Insurance Institution	Social Insurance Institution (ZUS)
Romania	D112: monthly payroll-tax and social-contribution records[f]	Ministry of Finance
Slovakia	Slovak LEE database: Linked Employer–Employee Database of the Ministry of Finance	Ministry of Finance (IFP)
Slovenia	SRDAP: Statistical Register of Employment	Statistical Office (SURS)
Ukraine	Register of Insured Persons and electronic employment records[f]	Pension Fund of Ukraine (PFU)

Notes to Tables A1 and A2: Dataset acronyms are listed first where a commonly used acronym exists. Provider names link to the official institution through which researchers obtain the data where a public research-access route was identified. Otherwise, the provider is the official institution responsible for the underlying records.

Selected examples of recent research: For Western, Northern, and Southern Europe, see Austria (Ziegler & Bamieh, 2025); Belgium (Dhyne, Kikkawa, Komatsu, et al., 2025); Denmark (Failla, Foss, Melillo, & Reichstein, 2025); Finland (Haapanen, Pehkonen, & Seppälä, 2025); France (Babet, Godechot, & Palladino, 2025); Germany (Zimmermann, Wolbring, & Fong, 2026); Greece (Adamopoulou, Galenianos, Giannakopoulos, et al., 2026); Ireland (Flaherty, 2024); Italy (Bottasso, Bratti, Cardullo, et al., 2025); the Netherlands (Roesch, Gerritse, Karreman, et al., 2025); Norway (Bryson & Dale-Olsen, 2025); Portugal (Lehrer, Lepage, & Pereira, 2025); Spain (Garcia-Louzao, Hospido, & Ruggieri, 2023); Sweden (Athey, Simon, Skans, et al., 2026); and the United Kingdom (Bryson, Forth, Stokes, et al., 2025). For Central and Eastern Europe, see Estonia (Roosaar, Masso, & Holmen, 2025); Hungary (Boza, Neubrandt, & Pető, 2026); Lithuania (Garcia-Louzao & Jonuškaitė, 2025); Poland (Chrostek, Karbownik, & Myck, 2025); Slovakia (OECD, 2021); and Slovenia (Křížková, Kanjuo-Mrčela, Poje, & Penner, 2025).

[a] National Bank of Belgium Working Paper No. 463 uses CBSS records covering all individuals registered as working in Belgium for at least one quarter and constructs a matched employer–employee panel for 2003–2019; see Duprez, Piton, and Bignandi (2024). [b] The cited paper constructs an almost exhaustive longitudinal panel. [c] Access to the full-population data is limited. [d] A-ordningen introduced monthly employer reporting in 2015; earlier linked employment data are annual. [e] ONS is also developing a separate administrative LEE system based on PAYE-RTI records. [f] For Bulgaria, Romania, Switzerland, and Ukraine, the table identifies administrative records used in research, but a general research-access route to the same linked files was not identified.

Table A3: Linked employer–employee data sources in the Americas

Country	Dataset	Data provider
Argentina	MLER: Muestra Longitudinal de Empleo Registrado, based on SIPA records[a]	Secretariat of Labor, Employment and Social Security (OEDE)
Brazil	RAIS: Relação Anual de Informações Sociais	Ministry of Labor and Employment (MTE)
Canada	CEEDD: Canadian Employer–Employee Dynamics Database	Statistics Canada
Chile	Muestra de Afiliados al Seguro de Cesantía	Superintendence of Pensions (SP)
Colombia	PILA: Planilla Integrada de Liquidación de Aportes	Ministry of Health and Social Protection
Costa Rica	CCSS administrative worker–employer records	Costa Rican Social Security Fund (CCSS)
Dominican Republic	Social-security and pension-contribution employer–employee records	Social Security Treasury (TSS) / Superintendency of Pensions (SIPEN)
Ecuador	Historia Laboral: Sistema de Historia Laboral	Ecuadorian Social Security Institute (IESS)
Mexico	IMSS administrative employer–employee records	Mexican Social Security Institute (IMSS)
Peru	Planilla Electrónica	SUNAT / Ministry of Labor and Employment Promotion (MTPE)
United States	LEHD: Longitudinal Employer–Household Dynamics; SSA Master Earnings File and IRS business-tax records[f]	U.S. Census Bureau; Social Security Administration (SSA); Internal Revenue Service (IRS)
Uruguay	HILA: Historia Laboral	Social Security Bank (BPS)

Table A4: Linked employer–employee data sources in Africa, Asia, and Oceania

Country	Dataset	Data provider
Armenia	Armenian linked employer–employee data from tax and social-contribution records[b]	State Revenue Committee (SRC)
Australia	LEED: Linked Employer–Employee Dataset; L-LEED: Longitudinal Linked Employer–Employee Dataset[c]	Australian Bureau of Statistics (ABS)
Israel	Linked employer–employee data of the Israel Central Bureau of Statistics	Israel Central Bureau of Statistics (ICBS)
Kenya	PAYE: Pay As You Earn employer payroll and employee tax records	Kenya Revenue Authority (KRA)
New Zealand	LEED: Linked Employer–Employee Data, available within the Integrated Data Infrastructure	Stats NZ
South Africa	PAYE employer payroll and employee tax records	South African Revenue Service (SARS)
Saudi Arabia	GOSI administrative employer–employee records	General Organization for Social Insurance (GOSI)
South Korea	Income–Asset Database of the National Health Insurance Service	National Health Insurance Service (NHIS)
Taiwan	Linked employer–employee data from fiscal records[d]	Fiscal Information Agency, Ministry of Finance
Thailand	SSO insured-worker and employer records	Social Security Office (SSO)
Turkey	Entrepreneurship Information System (EIS)[e]	Republic of Türkiye Ministry of Industry and Technology

Notes to Tables A3 and A4: Dataset acronyms are listed first where a commonly used acronym exists. Provider names link to the official institution through which researchers obtain the data where a public research-access route was identified. Otherwise, the provider is the official institution responsible for the underlying records.

Examples of recent research: Argentina (Blanco, Díaz de Astarloa, Drenik, et al., 2022); Australia (Buckley & Griselda, 2025); Brazil, Chile, Colombia, Ecuador, Kenya, South Africa, Thailand, and Uruguay (Brockmeyer, Gerard, Ulyssea, et al., 2026); Canada (Akbar & Banerjee, 2025); Costa Rica (Alfaro-Ureña, Manelici, & Vásquez, 2022); Israel (Buzaglo-Baris, 2025); Mexico (Pérez Pérez & Nuño-Ledesma, 2024); New Zealand (Fabling & Maré, 2024); South Korea (Chang, Han, Jang, et al., 2026); Taiwan (Huang, Chen, Lien, & Yang, 2026); Turkey (Gürer & Taymaz, 2025); and the United States (Abowd, Stephens, Vilhuber, et al., 2009; Rao & Risch, 2026).

[a] The MLER is a 3% sample. The cited study uses population-level SIPA records for 1996–2015. [b] The Armenian data were first presented at an academic conference in 2026. [c] LEED begins in 2011–12 and L-LEED in 2015–16. [d] An earlier Taiwanese dataset covers 1998–2004. [e] Worker registers are available from 2006, but unique worker identifiers that permit longitudinal tracking are documented from 2012. Records are quarterly until 2018 and monthly from 2019. [f] Access to SSA earnings and IRS tax microdata is substantially more restricted than access to the LEHD.

Table A5: Useful data features for selected LEE studies

Application	Useful data features
Worker and firm effects (AKM)	Stable worker and employer identifiers, a long panel, a large sample, and many moves between employers
Displacement studies	Employer identifiers, broad worker coverage, and earnings histories before and after job loss
Firm labor supply and monopsony	Broad worker coverage, wages, worker moves, and measures of local labor markets
Minimum-wage studies	Wage rates, or earnings and hours, policy timing, and broad coverage of affected jobs
Co-worker and network studies	Broad coverage of workers within employers, employment histories, and stable identifiers

Notes: The table provides examples rather than strict requirements. The features needed depend on the research question.

Table A6: Selected administrative reporting reforms underlying richer LEE data in Europe

Reform or reporting system	Implication for LEE data
Belgium	
DmfA (2003)	Common quarterly worker–employer records on employment, earnings, and working time.
Netherlands	
Polisadministratie (2006)	Individual employment and wage records from payroll declarations, replacing or complementing earlier employer surveys.
Denmark	
eIndkomst (2008)	Provides the basis for detailed monthly and spell-level worker–employer information in the BFL register, complementing the earlier annual IDA files.
Italy	
EMens (2005); UNIEMENS (2010)	Monthly worker–employer earnings and social-contribution histories.
France	
DSN (2013–)	The underlying administrative source becomes monthly and more detailed, although the principal BTS and panel research files remain annual.
Croatia	
JOPPD (2014)	Creates detailed individual worker–employer tax and contribution records at high frequency.
Estonia	
TÖR (2014)	Provides event-level information on employment relationships and job spells.
Norway	
a-ordningen / a-meldingen (2015)	Provides population-wide monthly information on jobs, wages, employers, and employment relationships.
Sweden	

Continued on next page

Table A6 continued

Reform or reporting system	Implication for LEE data
AGI (2018–2019)	Monthly worker–employer earnings information replaces the previous annual reporting structure.
Austria	
mBGM (2019)	Provides monthly individual contribution-base and employment information.
Finland	
Tulorekisteri / Inkomstregistret (2019)	Creates high-frequency individual earnings records linked to employers and other administrative registers.
Ireland	
PAYE Modernisation (2019)	Produces payslip-level worker–employer earnings and tax records.

Notes: The table reports selected administrative reporting reforms that materially changed the frequency, organization, or reuse of employer reporting and thereby improved the administrative infrastructure underlying linked employer–employee data. Dates refer to the introduction or broad implementation of each system; implementation was gradual in some countries. These reforms were generally introduced for tax, social-security, administrative-simplification, or enforcement purposes rather than specifically to create research data.

DmfA refers to the Belgian *Déclaration multifonctionnelle / multifunctionele Aangifte* (Multifunctional Declaration). eIndkomst refers to the Danish *Indkomstregisteret* (Income Register). EMens is the Italian individual monthly earnings declaration; UNIEMENS is the unified EMens–DM10 earnings and contribution reporting system. DSN refers to the French *Déclaration sociale nominative* (Nominative Social Declaration). JOPPD refers to the Croatian *Izvješće o primicima, porezu na dohodak i prirezu te doprinosima za obvezna osiguranja* (Report on Receipts, Income Tax, Surtax and Compulsory Insurance Contributions). TÖR refers to the Estonian *Töötamise register* (Employment Register). The Norwegian *a-ordningen* is the coordinated employer reporting scheme, implemented through the monthly *a-meldingen* employer report. AGI refers to the Swedish *Arbetsgivardeklaration på individnivå* (Individual-level Employer Declaration). mBGM refers to the Austrian *monatliche Beitragsgrundlagenmeldung* (Monthly Contribution-Base Report). *Tulorekisteri / Inkomstregistret* is the Finnish Incomes Register. PAYE Modernisation refers to the Irish reform of the *Pay As You Earn* payroll-tax

reporting system.

The frequency of the underlying administrative records does not necessarily coincide with the frequency of the standard research files available to researchers.

Table A7: What longitudinal linked employer–employee data add to empirical labor research

Research use	What longitudinal LEE data add	Illustrative studies
Descriptive analysis	Separates persistent differences across workers from systematic pay differences across employers and measures sorting and mobility	(Abowd, Kramarz, & Margolis, 1999; Card, Heining, & Kline, 2013; Song, Price, Guvenen, et al., 2019)
Structural models	Provides detailed wage and job histories against which models of wage setting, search, and mobility can be tested	(Cahuc, Postel-Vinay, & Robin, 2006)
Causal analysis	Shows how workers and firms adjust to policies and shocks through wages, employment, and movements across employers	(Dustmann, Lindner, Schönberg, et al., 2022; Goldschmidt & Schmieder, 2017)
Cross-country comparisons	Applies common definitions and designs across countries to distinguish recurring patterns from results that vary with national institutions	(Bertheau, Acabbi, Barceló, et al., 2023; Tomaskovic-Devey, Rainey, Avent-Holt, et al., 2020)
Surveys and experiments	Connects beliefs, preferences, bargaining, and firm practices to subsequent wages, hiring, mobility, and layoffs	(Caldwell, Haegele, & Heining, 2026; Jäger, Roth, Roussille, & Schoefer, 2024)

Notes: The categories overlap, and the cited studies are selected examples rather than an exhaustive list.

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