RESEARCH REPORT

Eurofound

Industrial relations and social dialogue

Collective labour disputes in the EU

Collective labour disputes in the EU

Eurofound

European Foundation
for the Improvement of
Living and Working
Conditions

When citing this report, please use the following wording:
Eurofound (2022), *Collective labour disputes in the EU*, Publications Office of the European Union, Luxembourg.

Authors: Neil H. Spencer (University of Hertfordshire), Ursula Huws (Analytica Social and Economic Research), Mick Brookes (University of Southern Denmark), Ed Blissett, Nelli Kampouri and Sally-Ann Goold (University of Hertfordshire), Christine Aumayr-Pintar and Matthias Rasche (Eurofound)

Research managers: Christine Aumayr-Pintar and Christian Welz

Research project: Industrial Action Monitor (180302)

Eurofound team: Matthias Rasche, Matteo Avogaro, Catherine Cerf and Eugenio Pazzini (all worked on the pilot Industrial Action Monitor)

Luxembourg: Publications Office of the European Union

Print:	ISBN 978-92-897-2242-1	doi:10.2806/84717	TJ-05-21-371-EN-C
PDF:	ISBN 978-92-897-2241-4	doi:10.2806/060345	TJ-05-21-371-EN-N

This report and any associated materials are available online at http://eurofound.link/ef21026

Research carried out prior to the UK's withdrawal from the European Union on 31 January 2020, and published subsequently, may include data relating to the 28 EU Member States. Following this date, research only takes into account the 27 EU Member States (EU28 minus the UK), unless specified otherwise.

The European Foundation for the Improvement of Living and Working Conditions (Eurofound) is a tripartite European Union Agency established in 1975. Its role is to provide knowledge in the area of social, employment and work-related policies according to Regulation (EU) 2019/127.

European Foundation for the Improvement of Living and Working Conditions

Telephone: (+353 1) 204 31 00
Email: information@eurofound.europa.eu
Web: www.eurofound.europa.eu

Contents

Country codes: EU27 + UK

AT	Austria	**ES**	Spain	**LV**	Latvia
BE	Belgium	**FI**	Finland	**MT**	Malta
BG	Bulgaria	**FR**	France	**NL**	Netherlands
CY	Cyprus	**HR**	Croatia	**PL**	Poland
CZ	Czechia	**HU**	Hungary	**PT**	Portugal
DE	Germany	**IE**	Ireland	**RO**	Romania
DK	Denmark	**IT**	Italy	**SE**	Sweden
EE	Estonia	**LU**	Luxembourg	**SI**	Slovenia
EL	Greece	**LT**	Lithuania	**SK**	Slovakia

UK	United Kingdom

Executive summary

Introduction

Labour disputes involving industrial action take place when social dialogue has failed or was absent or when attempts at dispute resolution break down. They can be very disruptive for companies, workers and societies, and they highlight areas that potentially require policy attention. To understand these situations better, Eurofound developed a pilot database in 2017 called the Industrial Action Monitor (IAM). The main focus of the data collection was to identify different types of grievances, the reasons behind them, the main issues involved, the countries and sectors in which they are most likely to occur and the outcomes when these actions have been concluded.

This report analyses collective labour disputes in Europe, based on a feasibility study and the pilot database. Data in the IAM were collected by Eurofound and the Network of Eurofound Correspondents over the period 2018–2019 and cover all EU Member States plus Norway and the United Kingdom.*

Following the updating of the data to take account of subsequent outcomes, 463 cases were grouped, using cluster analysis, to develop a typology of labour disputes, which was then compared with existing typologies of industrial relations. The analysis was carried out using indicators derived from a literature review.

Policy context

Labour disputes are significant for European policy in several respects. In the context of the right to organise collectively and negotiate, the right to strike is a key right of European workers. It is, however, generally managed at national, rather than European, level. The right to strike interacts in complex ways with other rights. For example, recent attempts by national governments (including in Belgium, Germany, Greece and the UK) to change legislation on the right to strike have been at least partially linked to establishing rights to representation and/or representativeness.

In each country, industrial action is embedded in particular institutional contexts, shaped by national political and legal structures and traditional industrial relations practices. This, combined with the fact that clear definitions are lacking, makes comparative analysis difficult. Nevertheless, useful attempts have been made to analyse longer term trends, including commonalities and differences among Member States, by organisations such as the European Trade Union Institute (ETUI) and Eurofound. Recent studies point to a general decrease in industrial action across Member States, albeit interrupted by spikes in some years.

During the COVID-19 pandemic, there has been a clear reduction in industrial action, with the most significant labour disputes related to COVID-19 unsurprisingly occurring in the human health and social services sector, the education sector and the transport and logistics sector. It should be noted, however, that the absence of overt conflict such as strikes or lockouts does not necessarily signify an absence of conflict.

Key findings

- The contexts in which disputes arose were diverse and not all were related to workplace issues. Collective bargaining was the context of over a third of disputes, with grievances over company-level policies making up another quarter and grievances over public policies accounting for a further 18%.
- In terms of specific issues, problems over pay accounted for over 40% of disputes, employment problems accounted for 20%, other aspects of working conditions accounted for 16% and protests accounted for 13%. Over 80% of disputes concerned matters of interest as opposed to matters of rights.
- The study points to the relative lack of reliable comparable data on the causes and issues of collective labour disputes across Europe and if and how they were resolved, hindering efforts to analyse patterns and compare them nationally or by sector. This absence of empirical data has made it difficult to test the validity of various typologies proposed in the literature, as well as to develop policies to address the underlying issues.

* During the pilot phase to investigate the feasibility of a Europe-wide industrial action monitor, Eurofound had compiled a dataset of more than 600 labour disputes related mainly to the year 2018 and first quarter of 2019. In the framework of its internal tripartite decision-making process, it was decided not to establish the monitor on a regular basis and to wrap the project up with the production of the present analytical report on collective labour disputes.

- The disputes studied fall into five main clusters:
  - cluster A – national disputes of interest and rights, including different forms of employment and more frequent third-party interventions
  - cluster B – extended disputes of interest concerning collective (pay) agreements with a mix of realised and non-realised actions and more frequent third-party interventions
  - cluster C – localised disputes on matters of interest, concerning employment problems, working time and restructuring, with short work stoppages
  - cluster D – localised disputes concerning workers' rights and grievances over company policies
  - cluster E – disputes concerning public policies
- When focusing on their prevalence by country, the distribution of these types did not follow any of the patterns that might be expected based on five of the existing typologies in the literature: typologies based on national differences in varieties of capitalism, union density, intensity of strike activity, types of industrial democracy and collective bargaining.
- The nearest correlations that could be found were between cluster B (disputes concerning collective agreements with a mix of realised and non-realised actions) and both those countries classified as 'corporate' and those classified as having 'predominantly sector-level or higher level bargaining'. However, the overwhelming message is that no clear relationship can be found between the typology of labour disputes derived from these data and other typologies of industrial democracy.
- Analysis by sector showed that mining, manufacturing and utilities were particularly likely to be associated with cluster C and, to a lesser extent, cluster A. Nearly half of the disputes associated with the wholesale and retail sectors were linked to cluster A, and the same was true for the finance and insurance sector and, even more so, for the information and communications sector. The public administration and education sectors were, unsurprisingly, particularly associated with cluster E, while transport and health were relatively evenly spread across all clusters. Clusters C and D were distributed proportionately across all sectors.
- In terms of outcome, the disputes in clusters A and B were most likely to lead to a negotiated settlement, while those in cluster E were, unsurprisingly, least likely to do so.
- These results, in particular the lack of correlation with existing typologies, indicate that the type of data collected by IAM is adding important new empirical evidence to the body of knowledge on industrial relations in Europe, unavailable in existing scholarship, and is deserving of further development and investigation.

Policy pointers

- The analysis draws attention to the extent to which the existing literature on industrial action in Europe is based on incomplete data and points to the need for the systematic collection of empirical evidence in the future to provide a basis for comparative analysis.
- This detailed collection should be based on clear definitions agreed at international level to ensure national comparability. Data should be collected regularly to enable longitudinal analysis.
- The data collection should also be sufficiently detailed to enable comparison across a number of dimensions – agreed through discussions with relevant stakeholders – such as sector, occupation/type of employment, triggering issue, collective bargaining context and gender of the workers involved.
- Ideally, this information should be capable of being collated with other data to enable the calculation of the economic costs of disputes, to both employers and workers.

Introduction

This report sets out to analyse collective labour disputes in the EU. It is based on a project that emerged from a pilot exercise carried out by Eurofound as part of its 2017–2020 work programme to establish the feasibility of creating an EU-wide Industrial Action Monitor (IAM).

The purpose of the research on which this report is based was to analyse data contained in the IAM database and create a typology of collective labour disputes. The first step was to carry out a literature review (see Chapter 1), and then to examine the quality of the data held in the IAM database (see Chapter 2). Based on these two activities, the research proceeded to identify and develop several potential indicators. The indicators that were identified as useful and reliable were then used to create the typology of collective labour disputes. Chapter 3 explores the typology created and discusses the relationships between this typology and other typologies associated with industrial democracy. Chapter 4 rounds up the research by drawing conclusions and putting forward recommendations.

Eurofound's pilot database on industrial action

The IAM resulted from a feasibility study carried out by Eurofound and it serves as a pilot project for collecting data on collective labour disputes and their associated industrial action events across the EU. The motivation for creating the IAM arose from:

- a desire to enhance established Eurofound reporting in the area
- an awareness of the limitations and fragmentation of existing data sources on industrial action at national level

An assessment carried out by Eurofound of existing data sources on labour disputes in the EU, at both national and EU-wide levels, shows that there is a lack of timely and comparable data. Around one-third of EU Member States do not collect any data on industrial action (at least not regularly). Moreover, the data from the remaining Member States are often not comparable and focus mainly on the quantitative aspects of industrial action (the number of events, participants and working days lost) and rarely include socioeconomic and policy-relevant information on such aspects as the context of the disputes, the main issues involved, if and how they were resolved, what kind of actors were included and what occupations or other groups of workers were included.

Table A1 in Annex 1 provides an overview of the data available in national statistics.

Given these limitations, it is not possible to undertake detailed and complete cross-country analyses of labour disputes, making policy analysis at EU level impossible. To address this, the main aim of the pilot project was to establish the feasibility of providing a more comprehensive overview of collective labour disputes in the EU, with a focus on qualitative parameters such as their main issues, contexts and outcomes. In 2017, Eurofound developed an approach to capturing data on collective labour disputes involving industrial action. This was loosely based on the 1993 resolution of the International Labour Organization (ILO) on strikes statistics adopted by the International Conference of Labour Statisticians (ICLS) but was modified or extended in some areas (see Box 1). The approach was presented to and discussed with experts on industrial action research in a workshop held in 2018.

Box 1: Eurofound's approach to capturing data on collective labour disputes

The unique aspect of the Industrial Action Monitor (IAM) database is the collection of data on collective labour disputes. Labour disputes are defined, according to the ILO Resolution concerning statistics of strikes, lockouts and other action due to labour disputes of 1993, section 4(a), as follows:

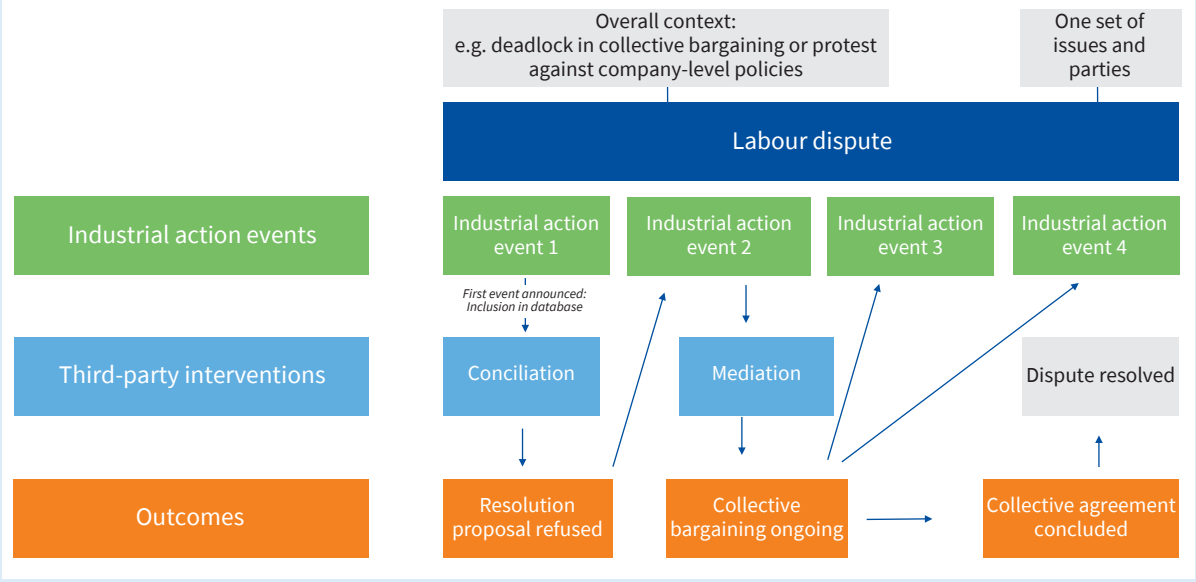
> *A labour dispute is a state of disagreement over a particular issue or group of issues over which there is conflict between workers and employers, or about which grievance is expressed by workers or employers, or about which workers or employers support other workers or employers in their demands or grievances.*
>
> (ILO, 1993)

For the purpose of Eurofound's data collection, a labour dispute takes place in a particular context (for example, during collective bargaining, restructuring or protest against governmental policies), deals with a certain issue or set of issues (one of which is regarded as 'the main issue') and involves a defined set of actors – the conflict parties, such as company management, trade unions, other employee organisations and governmental institutions.

Each labour dispute is regarded as a process and can have a set of individual 'events' associated with it (Figure 1), including industrial action events (such as strikes, lockouts, demonstrations and other forms of action), third-party interventions aimed at resolving the dispute (such as compulsory arbitration or alternative dispute resolution, including mediation or conciliation) and, ultimately, an outcome – this is when the dispute can be regarded as having reached a stage of completion (for example, a collective agreement, a court ruling or no particular identified outcome). For each event, any available additional information may be captured, such as the number of participants, the duration of the event or a description of the form of the intervention or of the outcome.

Eurofound's concept closely follows the 1993 ILO resolution adopted by the ICLS insofar as it aggregates individual industrial action events under one labour dispute when they have the same set of actors and relate to the same issue, even if they do not happen during the same period or within the same entities (ILO, 1993). The concept departs from the resolution by grouping events within the same dispute that are more than two months apart. This takes into account the fact that some disputes can stretch over a long time period and might not be resolved after two months. The data collection also includes parameters that are in addition to the contents of the resolution.

Figure 1: Eurofound's concept of a labour dispute



The pilot exercise commenced in the second quarter of 2018, using online newspaper sources and information published on social partner websites to populate the IAM database with details of labour disputes occurring in 2018.

The methodology and scope of the collection were inspired by several similar national-level monitors that were identified during the conceptual phase, all of which sought to complement the available national statistics on industrial action with further information. These national-level monitors include two from Germany (the WSI Monitor and Streikmonitor by the University of Jena) and one from the Netherlands (by the International Institute of Social History (IISH)). Each of these monitors is essentially based on a combination of online media monitoring and information from national unions. Another newly developed monitor is the Leeds Index of Platform Labour Protest, supported by the European Trade Union Institute (ETUI), which maps workers' protests against platforms globally. In addition, Hamann et al (2013) have undertaken data collection on general strikes, which is in part based on previous reporting within Eurofound's European Industrial Relations Observatory (EIRO).

Data compilation and quality control

Information on labour disputes was collected in the EU Member States (with the addition of Norway and the United Kingdom (UK)) by media monitoring conducted by an external data provider (mBrain). Using a list of relevant search terms, the provider operated with local staff in nearly all EU Member States, reviewing online newspaper articles in local languages to identify labour disputes and industrial action events. This was augmented by data obtained from other established sources of information on industrial action in Europe (such as the Collective Bargaining Newsletter of the Amsterdam Institute for Advanced Labour Studies (AIAS) and ETUI). Eurofound staff, together with some selected representatives of the Network of Eurofound Correspondents, then conducted additional research to identify further industrial action events for particular labour disputes, code the disputes and cross-check the information provided based on the four-eyes principle.

Structure of the dataset

The dataset contains three main types of records:

1. Labour disputes.
2. Events (industrial action events, third-party interventions, outcomes).
3. Sources.

The second type (events) is a drilling-down of the labour dispute, subdivided into industrial actions (both those that took place and those that were threatened but did not take place[1]), third-party interventions (for example, by courts) or outcomes (for example, dispute resolution). The third type of record in the database is sources, consisting of details of where information on disputes and events had been obtained (for example, newspaper articles). The information contained in each entry for each type of record is shown in Table 1, and the types of events recorded are shown in Table 2.

The aim of the pilot exercise was to establish to what extent this approach could yield a reliable set of data and what resources would be required. While a full version of the monitor would have included the participation of the Network of Eurofound Correspondents in all countries, the pilot version included only a limited selection of correspondents, who either coded data or reviewed coded cases for a number of countries.[2]

During 2019, Eurofound evaluated and finalised the data. An expert workshop, involving representatives from national statistical offices, social partners, the ILO and the European Commission, and academic and other experts, was held in December 2019. The workshop concluded that, although the IAM data collection could not provide the same level of coverage as that provided by some national administrative data collections, it did cover the most impactful cases and could usefully complement the quantitative information available at national level with qualitative information on dispute issues, contexts and outcomes. In addition, it was highlighted that the data collection also includes information on labour disputes from those EU countries for which no national statistics had been available previously.

1 In practice, it is not possible to distinguish between actions that were threatened and those that did take place but for which there is no record of them having occurred. Therefore, the analysis here is primarily concerned with actions that have been verified as having occurred (been realised).

2 The experts in question were the Greek correspondent, who reviewed the data for Cyprus and Greece; the Estonian correspondent, who reviewed the data for Estonia, Latvia and Lithuania; the Spanish correspondent, who reviewed the data for Spain; the Swedish correspondent, who reviewed the data for Denmark, Finland and Sweden; the Dutch correspondent, who reviewed the data for the Netherlands and cross-checked them with the IISH strike database; the Czech correspondent, who coded the data for Czechia and Slovakia; and the Polish correspondent, who coded the data for Poland. A review of data by a national correspondent also included the identification of additional labour disputes (and events) for inclusion within the database.

Table 1: Information captured for each record type

Record type	Information captured	
Labour dispute	*Type*	Whether the dispute arose from matters of rights or of interest
	Level	Whether the dispute was restricted to one location/company or was more widespread
	Main issue	The main issue behind the dispute
	Dispute issues	Issues other than the broader main issue
	Context	Whether the dispute came from a particular context, such as collective bargaining, restructuring or grievances over public/company policy
	Sector	The Nomenclature of Economic Activities (NACE) Rev. 2 sectors involved
	Occupations	If relevant, the particular occupations involved, using International Standard Classification of Occupations (ISCO) coding
	Involved parties	The parties involved (for example, management, trade unions and government)
Event	*Dates*	Used at the level of the labour dispute to determine the start and end of a dispute and its duration
	Type of event	Whether the event was industrial action, third-party intervention or the outcome (and further details of what this was – see Table 2)
	Further details collected for industrial action events	
	Status	Whether the industrial action took place (was realised) or not
	Fragmentation	Whether the event took place as a single occurrence or a number of occurrences
	Level	Whether the action was restricted to one location/company or was more widespread
	Workers involved	If available, the number of workers involved (or a broad estimate) and their employment status
	Economic cost	The number of working days affected and any costs of replacing the workers
Source	*Reference date*	The date on which the source was accessed
	Source type	The type of source (for example, newspaper, social media, union/employee organisation, employer organisation)
	Link	Internet link to the source
	Language	Language of the source
	Country	Country of the source

Table 2: Types of events recorded

Event type	Event
Industrial action	Strike
	Lockout
	Refusal to do overtime
	Short work stoppage/assembly
	Withdrawal of cooperation
	Boycott
	Go slow
	Picketing
	Protest or demonstration
	Other form of industrial action affecting work

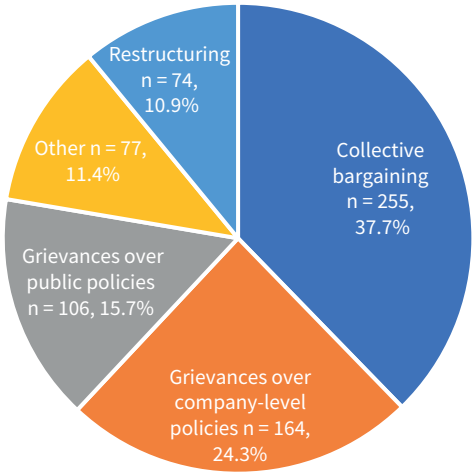
Event type	Event
Third-party intervention	Compulsory mediation
	Voluntary mediation
	Conciliation and facilitation
	Court decision
	Compulsory arbitration
	Voluntary arbitration
Outcome	Dispute resolution
	Termination without resolution
	Interlocutory agreement
	Resolution proposal refused

There are 684 disputes registered in the IAM database (excluding 'test' records), from across all the 27 EU Member States plus Norway and the UK, ranging from 2 disputes recorded in Lithuania and Latvia to 176 recorded in Spain. Of these, 549 had at least one realised industrial action event recorded, with 420 involving a strike, short work stoppage or lockout.

Of the 1,679 events in the database, 1,323 are records of industrial action. Of these, 1,036 were realised (took place). A total of 4,705 sources are recorded in the database, of which the majority (3,570) are newspaper articles.

However, the value of the database lies not only in measuring the quantity of industrial action but also in the qualitative information contained about each dispute, in terms of the context and issues involved. For example, the context of the dispute is available for 676 of the disputes, as summarised in Figure 2. The context of over a third of these disputes in the database was collective bargaining, with a further quarter involving grievances over company-level policies, just over 15% involving grievances over public policies and just over 10% related to restructuring. Those disputes classified as 'other' typically include those in which the focus is a mixture of grievances that do not, together, fit into just one of the other categories.

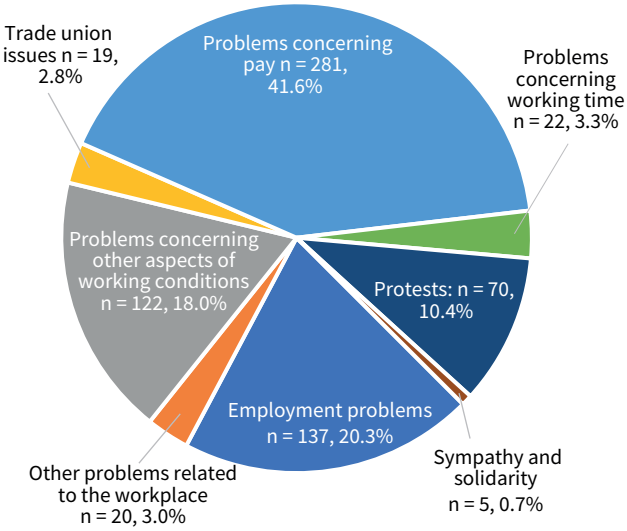
Figure 2: Context of disputes in the IAM database



Source: *IAM database, 2021, n = 676*

Figure 3 shows the main issues identified for the 676 disputes for which these data are available. The largest category relates to problems concerning pay, with employment problems (for example, contracts and staffing levels) and problems concerning other aspects of working conditions (for example, occupational safety and health and the interpretation of collective

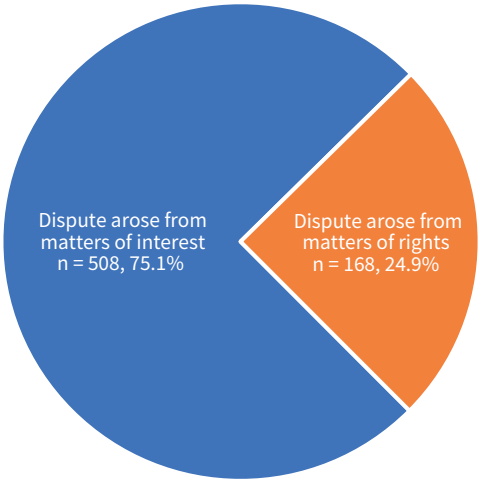
Figure 3: Main issue of disputes in the IAM database



Source: *IAM database, 2021, n = 676*

agreements) also accounting for large numbers, followed by protests. Three-quarters of the disputes concerned matters of interest (proposals to change or create terms and conditions of employment) as opposed to matters of rights (based on existing laws and agreements) (Figure 4).

Figure 4: Matters of rights or interest for disputes in the IAM database



Source: *IAM database, 2021, n = 676*

Data management and extension after the pilot phase

Although a full version of the IAM database would ideally constitute a census of all labour disputes in the countries covered, it is clear that complete coverage is impossible. Although this was especially the case during the pilot stage, it is evident that complete coverage could also not be fully achieved in a full version, particularly in larger countries with a larger number of disputes. This meant not only that some disputes were missing entirely from the database, but also that some records were incomplete (with some information not obtainable) and some events, which should be linked with disputes, were missing. While this is partially due to the pilot character of the collection (which used fewer resources than a full version would require), it can also be partially attributed to the non-availability of such information in the sources consulted.

Disputes and associated events recorded in the IAM database were subjected to quality control checks and, at the end of the data collection, a number of disputes still existed only in draft or incomplete form.

Following this phase, in 2021, the current research project was undertaken. As part of this, the research team was tasked with discovering if additional dispute outcomes could be added to the database and whether it was possible for any of the disputes noted as incomplete to be reclassified as being sufficiently coded for inclusion in subsequent analyses. In total during this project, 131 outcomes were added to the database, with data to substantiate these having been found through internet searches. During the course of this search for additional outcomes, it became clear that, in many instances, sources of information about disputes that had been included in 2018–2019 when the disputes were more current were no longer available online. For this reason, it was not possible to find outcomes for all disputes with information missing in the IAM database, and it was felt that any attempts to gather additional information about disputes after this length of time would be fraught with difficulties. A dispute outcome can be considered as a unique event in time and, subject to the reporting being accurate, one can be confident that the discovery of an outcome constitutes reliable data. However, many of the other items of data that could be collected about disputes cannot be considered unique events. Indeed, much of the database consists of records of industrial action events associated with disputes, with the number, scale and nature of industrial action events varying from dispute to dispute. As a result, as it is likely that a number of sources of data are no longer available, there is no assurance that any additional industrial action events discovered for a dispute tell the story of the dispute sufficiently to warrant the dispute being included in any subsequent analyses.

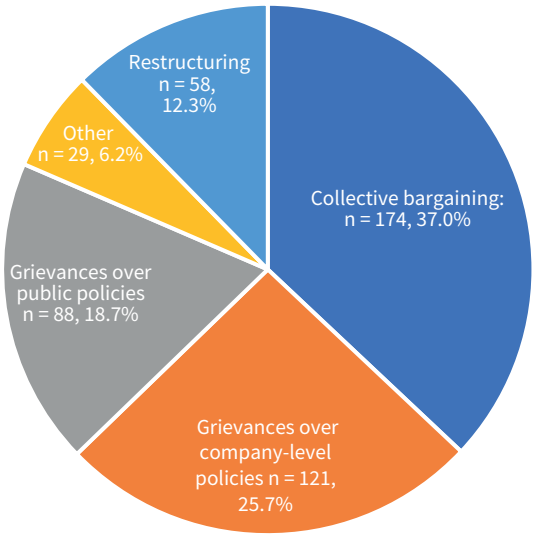
Nevertheless, the activity of adding outcomes to the IAM database and investigating disputes that were previously classed as incomplete enabled a number of additional disputes to be included in subsequent analyses. At the conclusion of data collection in 2018–2019, it was determined that there were 452 disputes that were no longer in draft form and had at least one realised industrial action event (that is, an event classed as an industrial action that a source had identified as actually having taken place, as opposed to just having been announced/planned). The rationale for omitting those disputes without a realised industrial action event was that these were either not actual disputes (as evidenced by no action taking place) or insufficiently recorded in the database (as evidenced by occurrences of action taking place being missed in the data collection). The current project was able to identify further disputes that could now be considered as being sufficiently coded for analysis to take place, bringing the total to 471 disputes.

Descriptive statistics from the data collection

The 471 disputes are spread across all the Member States of the EU plus Norway and the UK, ranging from 2 disputes recorded in Denmark, Lithuania and Latvia to 53 recorded in Spain. Of these, 350 involved a strike, short work stoppage or lockout and the remainder involved only other forms of industrial action (see Table 2). Associated with these disputes are 1,093 records of industrial action in total, of which 948 were realised.

The context of the dispute was unavailable for one of the disputes, leaving 470, which are summarised in Figure 5. The pattern shown is remarkably similar to that in Figure 2, which uses data from the whole database. Collective bargaining forms the context for over a third of the disputes, with grievances about company-level policies making up another quarter and grievances over public policies making up over 18%.

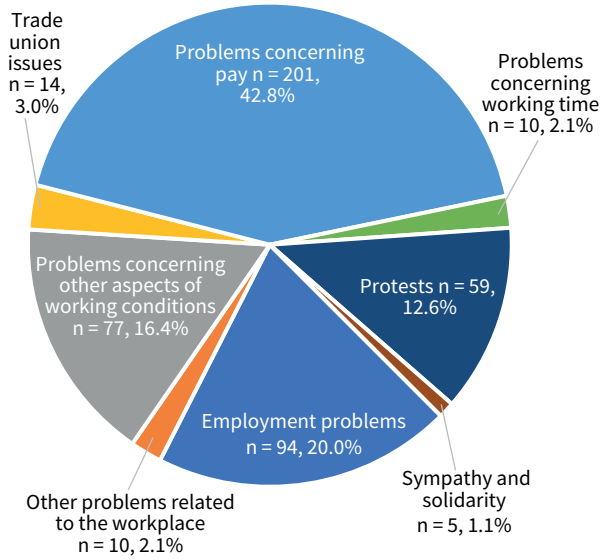
Figure 5: Context of disputes in the data to be analysed



Source: *IAM database, 2021,* n = *470*

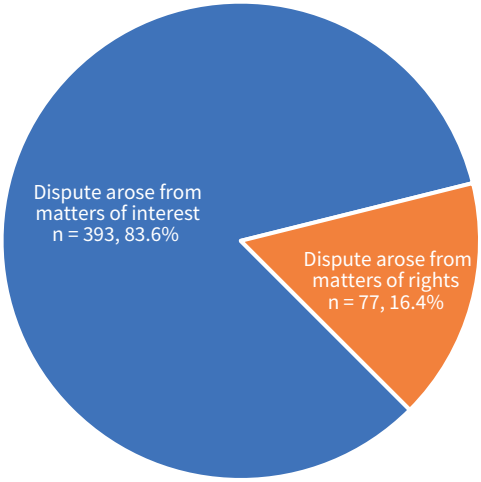
Figure 6 shows the main issues involved in the disputes, again for the 470 disputes for which these data are available. Again, the proportions shown are very similar to those for the whole database (Figure 3), with problems concerning pay accounting for over 40%, employment problems accounting for 20%, problems concerning other aspects of working conditions accounting for over 16% and protests accounting for nearly 13%. Over 80% of the disputes concerned matters of interest as opposed to matters of rights (Figure 7), which is only somewhat greater than the 75% for the whole database (Figure 4).

Figure 6: Main issue of disputes in the data to be analysed



Source: *IAM database, 2021,* n = *470*

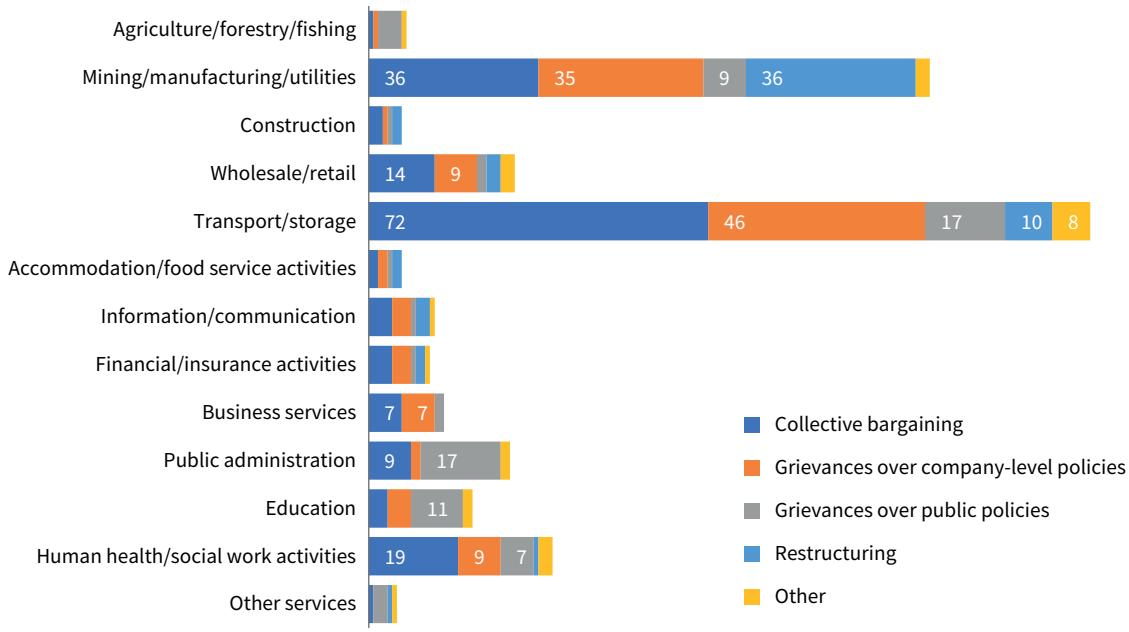
Figure 7: Matters of rights or interest for disputes in the data to be analysed



Source: *IAM database, 2021,* n = *470*

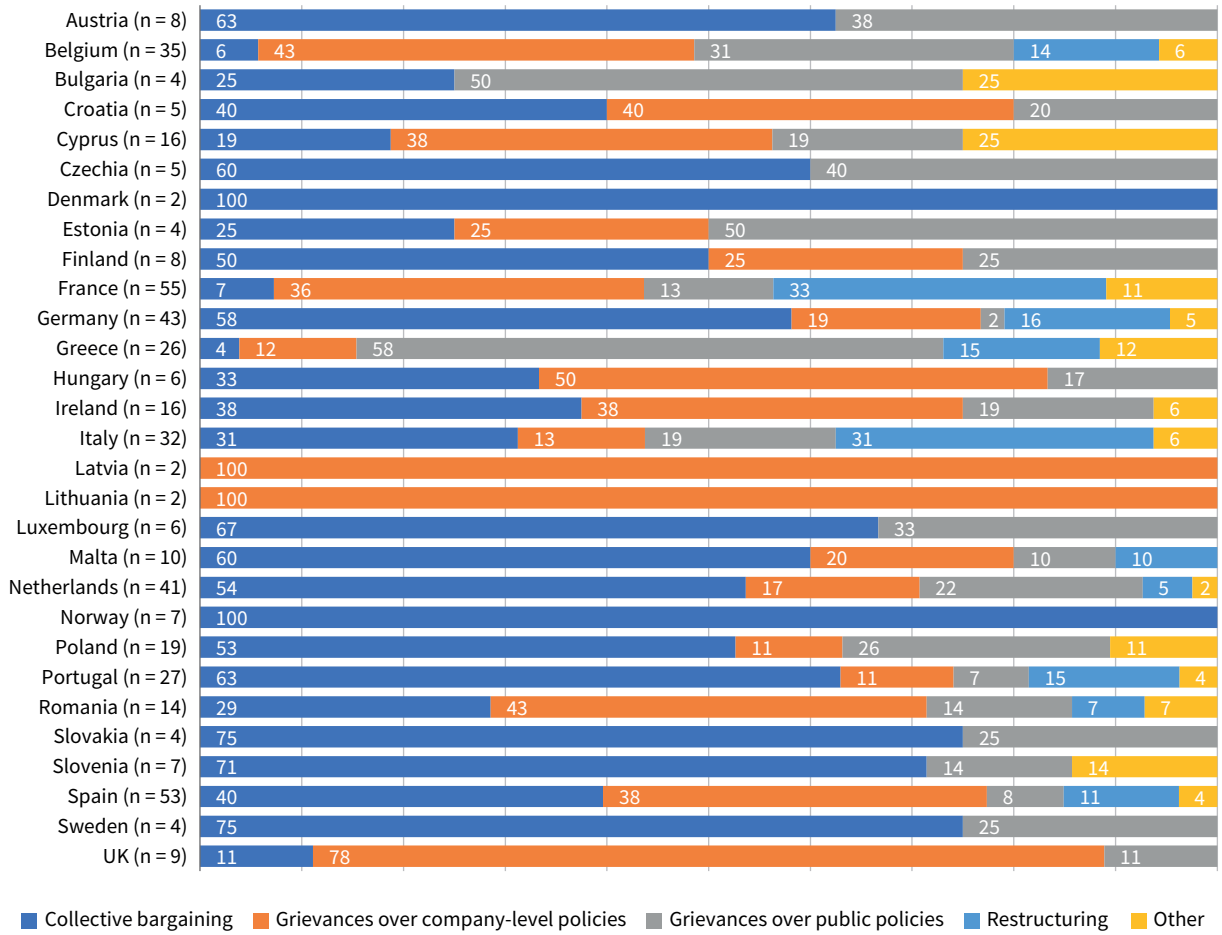
Figure 8 shows the context of the disputes, broken down by sector. It can be seen that the transport/storage and mining/manufacturing/utilities sectors predominate, with collective bargaining featuring highly as the context. In Figure 9, the contexts of the disputes are illustrated by country. Although the overall distribution shown in Figure 5 is also clear in this figure, it can be seen that there is considerable variation between countries; however, with some countries having relatively few disputes in the sample, care must be taken not to over-interpret the patterns in Figure 9. Delving more deeply into the main issues related to the disputes, Figure 10 shows that problems concerning pay dominate, with employment problems also prominent. Figure 11 shows disputes involving non-standard forms of employment, broken down by sector. The transport/storage sector dominates here, with self-employed individuals featuring significantly in this sector, while other sectors have only low numbers of cases.

Figure 8: Context in which the labour disputes emerged, by sector (number)



Note: *Some sectors were combined due to low numbers.*
Source: *IAM database, 2021,* n = *465*

Figure 9: Context in which the labour disputes emerged, by country (%), EU27 and UK

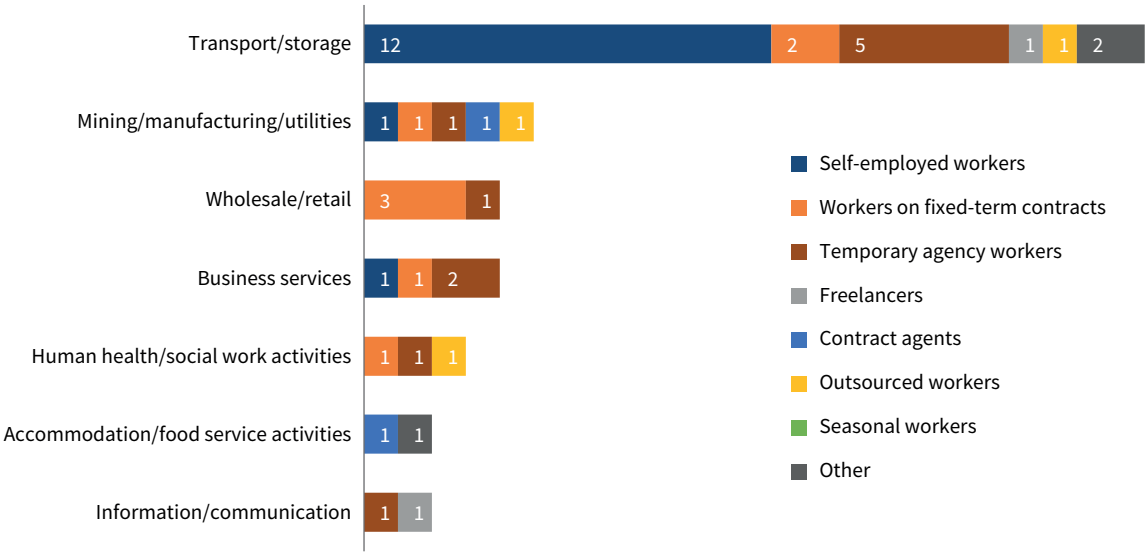


Notes: *The number of disputes available for each country is shown in parentheses after the country name. Extreme caution should be exercised in interpreting patterns due to very small numbers for some countries.*
Source: *IAM database, 2021,* n = *470*

Figure 10: Detailed breakdown of main dispute issues (number)

Note: *Only issues involved in at least 10 labour disputes are shown.*
Source: *IAM database, 2021,* n = *462*

Figure 11: Labour disputes in non-standard forms of employment, by sector (number)



Note: *Only sectors with at least two labour disputes involving non-standard forms of employment are shown.*
Source: *IAM database, 2021,* n = *471*

1 Review of the literature

Background

The literature relating to labour disputes falls into two broad categories: first-hand participant accounts detailing events within a specific dispute (for example, Taylor and Moore, 2019) and those written from a macro-level perspective seeking to deliver an overall picture of the frequency and causality of disputes (for example, Vandaele, 2016). The latter cases often seek to highlight the sociological underpinning of the disputes. However, irrespective of the type of approach adopted, there is almost universal acceptance that labour disputes are almost always very complex and multicausal (Gouldner, 1954, p. 12) and are rarely due to a single factor (Eldridge and Crombie, 1974; Hyman, 1977).

The complexity and multicausality of disputes present a challenge in terms of extracting from the literature the major drivers of labour disputes, but there is a very wide body of evidence to fall back on. By far the most commonly reported single cause of a dispute is pay and, in an era of growing neoliberal policy orientation, plus increasing austerity over the last decade, the potential for conflict within the employment relationship has increased. Hence, pay claims may be bundled up with other issues relating to work intensification, management restructuring or changing shift patterns (Vandaele, 2016).

In addition to pay, there are also several other factors regularly cited as major drivers of collective labour disputes. For example, disputes are often caused by macroeconomic tendencies such as industrial growth or retrenchments in the wider economy (Screpanti, 1987). Equally, there is also likely to be a strong, but conflicting, relationship between unemployment and disputes. On the one hand, low unemployment tends to increase workers' confidence in pursuing their claims, but it also raises the likelihood of employers conceding to their demands to avoid disruption. On the other hand, high unemployment lowers workers' confidence but at the same time may increase employers' commitment to cost cutting, leaving workers with little choice but to enter into disputes (Hyman, 1977; Screpanti, 1987).

There is also a significant portion of the literature that is focused on sectors of the economy that are particularly prone to strike (Shorter and Tilly, 1974; Edwards, 1979). Historically, this has included miners, dockers and other similar professions. Although in the post-industrial era this has evolved somewhat, the propensity of a particular sector to experience labour disputes is still driven by a number of key factors. These include the coverage and effectiveness of collective bargaining, the political and industrial radicalism of the relevant unions (Frenkel, 1980), the history of success or failure in previous disputes (Lyddon, 2015) and the sensitivity of certain sectors to fluctuations in economic activity (Gall, 2012a). Further complexity is added as a result of none of the above factors being static and the fact that the coverage and effectiveness of collective bargaining, the radicalism of particular unions and the likelihood of success of disputes are all subject to significant change over time. Silver (2003) pointed out that labour power is an inverse function of capital mobility and, when the relocation of capital takes place, it always weakens established labour power. In addition, Silver (2003) also highlighted the fact that labour power is sensitive to the product life cycle and tends to decline as industries enter more mature phases. This suggests that the reduction in trade union power and influence within EU countries over the last three or four decades could also have been influenced by many industries moving beyond their peak phase for union organising. Furthermore, Akkerman (2008) made comparisons between industries with a single union and others with multiple unions present and concluded that, when multiple unions are present, there is competition between the unions through bidding up bargaining demands. Hence, when industries have a single union or there has been a tendency towards single union agreements, the level of conflict and the number of collective disputes is likely to be much lower. Finally, Lehr et al (2015) utilised data from the Netherlands to explore the relationship between spillover effects and conflict, implying that a reduction in trade union power and influence spills over into a significant reduction in workplace conflict.

In more recent times, there has been evolution in some of the underlying causes of labour disputes, with some drivers becoming more prevalent. An increased willingness of workers to take part in disputes resulting from health and safety concerns has been observed. In recent years, there have been disputes at several Amazon workplaces in various European countries in protest against working conditions (Boewe and Schulten, 2019). Furthermore, the same source has detailed the struggle of trade unions to achieve recognition and influence in the face of Amazon's rising global power in nine EU countries, plus the UK. There have also been disputes within the London Underground (Hughes et al, 2018) that have sought to highlight health and safety concerns on the Tube network. These have taken place both before and during the COVID-19 pandemic, with increased safety concerns arising in the latter era, such as fears over staff and passengers becoming infected in the confined spaces of both the platforms and the trains.

Evolving industrial relations typologies

Although the literature described in the section above provides an insight into the major drivers of labour disputes, while also highlighting their multicausality, it does little to explain cross-country and cross-sectoral differences that are likely to be present within data collected on an EU-wide basis. However, it is clear that, in terms of understanding the context of any labour dispute, a dispute cannot be separated from the industrial relations regime within which it takes place. By the late 20th and early 21st centuries, a clear and well-established categorisation of industrial relations regimes had emerged for almost all of the EU27 countries.

Industrial relations models according to Hyman

This is most effectively summarised by Hyman (2018), whose categories are outlined below. It should be acknowledged that this categorisation takes a fairly light approach to defining how countries manage conflicts, for example, by specifying if mediation or arbitration is common, how the right to strike is regulated and if peace clauses are common within collective agreements. However, it does at least provide a starting point for understanding differences in the number, scale and nature of disputes across the EU countries.

- Nordic model – this category (including Denmark, Finland, Norway and Sweden) has a strong tradition of labour market regulation and strong central organisations of unions and employers.
- Central model – this category (including Austria, Germany and the Benelux countries – Belgium, Luxembourg and the Netherlands) is characterised by strong but less encompassing collective institutions. France is generally included within this group, although it does differ in the fact that it has considerably lower union density.
- Southern model – this category (including Greece, Italy, Portugal and Spain) is characterised by less organisational capacity among collective organisations and greater dependence on the state as a regulatory mechanism. Although rarely included in large comparative studies, this typology is probably the closest fit for Cyprus and Malta, too.
- Anglophone model – this category includes Ireland and the UK and is characterised by more weakly regulated labour markets.
- Central and eastern European model – this category is a transitional model for the most recent EU entrants and former communist regimes, being characterised by weakly developed collective institutions.

In relation to arbitration and mediation, more commonly referred to as alternative dispute resolution (ADR), there is an incredibly complex picture across the EU that rivals the complexity of the industrial relations typologies. Each country has its own history of and tendencies towards using conciliation, mediation, arbitration, specialist experts and non-judicial ADR in varying degrees. Eurofound (2010) did, however, attempt to categorise the EU countries based on their usage of the different types of ADR. With the occasional exception, it reported that countries within the Nordic, central and anglophone models tended to be medium-level or high users of ADR, while countries from southern, central and eastern Europe had much lower usage of ADR. This, in a small way, contributes to an understanding of the above typologies, rather than challenging them.

Equally, regarding the right to strike, the differences across the EU countries are consistent with the Hyman (2018) categorisation. As reported by the European Public Service Union (EPSU, undated), the differences between countries in the right to strike seem to be related to levels of commitment to collective bargaining. For example, Germany and the Nordic countries restrict the right to call strikes to those able to participate in collective bargaining processes and, in Denmark, the right to strike is restricted to trade union members only. On the other hand, in the southern and transitional countries, there is a greater tendency towards having no restrictions on who can call and participate in strike action, except when the activities are deemed to be essential services or in the public interest (EPSU, undated). Therefore, as above, this leads us to a better understanding of the reasoning behind the Hyman categorisation, rather than being a challenge to that categorisation.

Obviously, for the central and eastern European countries, the term ‘transitional model’ indicates that significant change processes are still present, as those economies continue to move away from their previous centrally planned states. Bohle and Greskovits (2007) provided some further detail on this, identifying three distinct paths in terms of their industrial relations regimes: a neoliberal model in the Baltic states, an embedded neoliberal model in the Visegrád states of Czechia, Hungary, Poland and Slovakia, and a neocorporatist model present in Slovenia. The first model is characterised by a lower coverage of collective bargaining and lower spending on active labour market policies, and the final model is characterised by widespread coverage of collective bargaining and significantly higher spending on active labour market policies, with the Visegrád countries lying between these two extremes. More recently, Bernaciak (2015) has added evidence to this debate and, with some qualifications, has largely confirmed the categorisation outlined by Bohle and Greskovits (2007). However, Bernaciak included Bulgaria and Romania, which were

not considered previously, and argued that these two countries did not quite fit into any of the three categories but were generally most closely aligned with the Visegrád countries. Furthermore, Bernaciak (2015) highlighted the experience of these nations in the post-financial crisis/austerity era and found a general weakening of labour's position within the industrial relations regime. This has played out very differently in each country; however, the varying impacts of reduced capital inflows, austerity measures endorsed by the International Monetary Fund (IMF) and the European Commission, a fall in demand for manufactured products and finally a general decline in export opportunities have combined to gradually reduce the coverage of collective bargaining and the influence of trade unions across these nations (Bernaciak, 2015).

In addition, over the last couple of decades, various actions and events have led to significant changes within industrial relations regimes across the whole of the EU, which have further emphasised some of the differences between the various types of industrial relations regime and have led to an increase in the importance of the national institutional framework within each country. This has resulted from, as Hyman (2018) described, the EU not delivering on its stated objective of achieving a harmonisation of regulatory standards, with the EU in fact ending up having facilitated the erosion of nationally based employment protection and promoting growing divergence in outcomes in the field of industrial relations. This has been described as 'divisive integration' by Lehndorff (2015a) and as a paradox by Marginson (2017), with increased European market and economic integration having actually led to more fractured industrial relations across the bloc.

This paradox has emanated from EU-wide policies designed to promote integration, most notably the creation of the single market, which has actually created what is described as a 'competition union' by Lehndorff (2015b). Like with most competition, this has generated winners and losers, and these winners and losers have not been equally distributed across the EU countries, with differing levels of pressure having subsequently been applied to the industrial relations regime in each case. This is further aggravated for the members of the euro zone, as they no longer have the option of utilising a currency revaluation or monetary policy in response to economic difficulties; their only remaining adjustment mechanism is internal devaluation through reductions in real wages and social benefits. The upshot of this is that, for any losers within this competition union, there is a resultant worsening of the industrial relations climate for all key stakeholders.

Related to this paradox, there has been a general trend towards internationalisation and globalisation that has enabled a structural shift of power from labour to more mobile capital (Meardi, 2018). This has led to a reduction in the extent and influence of labour power, as well as a decrease in the coverage of collective bargaining. Therefore, losers within the competition union experience greater pressure on the industrial relations regime, as transnational influences are brought to bear upon the state, capital and labour, but labour finds itself in a much weaker position (Meardi, 2018).

Furthermore, events within the EU have heightened the impact of this global phenomenon to create even more divergent industrial relations. The single market in itself has weakened trade unions, as relocating production to another EU country has become increasingly feasible. For those within the euro zone, there is an additional element to consider, as the euro facilitates direct unit labour cost competition (Meardi, 2018) and, for those countries with lower labour productivity, the only possible response is internal devaluation through real-term reductions in labour and social benefits. This has been exacerbated by the post-2008 economic crisis and the policy response of the EU and the European Central Bank (ECB) to that crisis. For those countries most affected by this crisis, the support administered by the European troika (namely the enhanced cooperation between the ECB, the European Commission and the IMF) came with extremely strict conditions. This necessitated labour market and industrial relations reform as part of the national agreements, leading to the decentralisation of collective bargaining and reductions in both the coverage and the extension mechanisms for bargaining, which has significantly restricted trade unions' role as bargaining agents (Marginson, 2017).

EU expansion and the eastern enlargement have also led to increasing divergence in industrial relations. Pressure and threats from multinational enterprises and mobile capital to relocate operations from western to eastern Europe has further reduced labour power and this has led to reduced regulation of labour and employment, plus a drift away from universal standards, as countries have been affected to varying extents (Marginson, 2017). Moreover, labour mobility in the opposite direction – with countries experiencing an influx of migrant labour from eastern Europe who are often willing to undercut the domestic status quo on pay and conditions – is a further detriment to labour power in the receiving countries (Meardi, 2018).

Overall, it is widely accepted that the first two decades of the 21st century have been a challenging time for industrial relations in the EU, and the institutional pillars of European social models have been weakened – in particular, the key pillars of employer associations, trade union membership and collective bargaining coverage – leading to increased heterogeneity at national level among these pillars (Marginson, 2017). Factors responsible for this decline are increased market and economic integration, globalisation, the

monetary union, EU expansion and the global financial crisis – whose impacts have been spread unequally across the EU. These events have increased the pressure to weaken employment protection, liberalise precarious contracts, decentralise collective bargaining and remove extension mechanisms (Hyman, 2018). In short, there has been a general worsening of the position of labour, relative to capital, within the realm of industrial relations but, because these transnational pressures have been spread unevenly across the nations of the EU, factors such as employment security, social benefits and representation in the workplace are now even more dependent on the country where the individual works (Meardi, 2018). Consequently, industrial relations regimes have become more diverse across the EU and the relationships between state, capital and labour at national level have become increasingly important (Marginson, 2017; Hyman, 2018; Meardi, 2018).

However, in more recent times, the EU has made efforts to boost its social credentials. Most notably, this emanates from the European Pillar of Social Rights, which was formally agreed in 2017 and represents a broad and encompassing commitment to equality and social welfare across the EU. In relation to the industrial relations regimes, Chapter II of the pillar, which covers fair working conditions, is the most relevant. This includes a reaffirmed commitment across the EU to the following aspects of working conditions: secure and adaptable employment; fair wages; information about employment conditions; employment protection; social dialogue; worker involvement; work–life balance; healthy, safe and well-adapted work environments; and data protection. The pillar is a very ambitious and long-term project but certainly, if existing and future governments are able to deliver on its central tenets, it will have a positive impact on social protection across the EU and, as part of that, will help to create industrial relations regimes that are more conducive to social dialogue.

In line with this change in focus, it is also already clear that the EU's approach to the challenges of the COVID-19 crisis is different from its approach to previous crises, especially the 2007–2008 financial crisis. There is little likelihood of an immediate return to the strict austerity measures that were imposed in the last decade, with policy responses within the euro zone involving actions such as the suspension of the Stability and Growth Pact, the ECB responding immediately to the threat of Italy having to leave the euro zone and the ECB considering removing the 'issuer limit' and enabling the bank to purchase more than 33% of any member country's bonds (Ehnts and Paetz, 2021). All of these are fundamentally different from the policy responses in the previous crisis. Given that, as outlined above, the previous austerity regime placed severe pressure on the industrial relations climate and led to a further weakening of trade union power and influence, if the current measures remain in place in the post-COVID-19 period, even if only partially, this may well lead to a more conducive environment for trade union activities. However, it must be conceded that, with the level of public expenditure currently being undertaken in response to the COVID-19 crisis, there will at some point have to be a reversal and a return to a more fiscally prudent regime. It is hoped that at least some lessons will have been learned from the previous decade and this reversal will not be applied in such a severe and draconian fashion.

More recent classification of industrial relations regimes

In view of the challenges outlined, it is not easy to make sense of and develop a clearer understanding of industrial relations across the EU – particularly in the context of constantly evolving relationships between state, capital and labour due to transnational events, especially in situations such as the austerity regime, where the response of the EU to the global crisis has translated these events into diverging industrial relations systems at the national level. Recent work by Sanz de Miguel et al (2020) goes some way towards helping us to understand the current situation. The authors have developed a categorisation for industrial relations regimes across the EU that is somewhat more comprehensive than previous attempts. This categorisation combines elements of industrial democracy – autonomy, representation, participation and influence – with contextual factors, such as the centralisation of collective bargaining, collective wage coordination, extension mechanisms, state intervention in collective bargaining and a statutory minimum wage, and with empirical dimensions relating to associational governance. Although showing many similarities to the groupings presented by Hyman (2018), this categorisation also displays some differences that reflect the unequal impact of transnational events outlined above. The result is a more up-to-date and nuanced categorisation of industrial relations regimes and a clear framework within which future changes and developments can be taken account of.

- Corporatist-framed governance – includes Austria and the Benelux countries.
- Voluntary associational governance – includes Germany and the Nordic countries.
- State-framed governance – includes France, Greece (2008–2012), Italy, Portugal, Slovenia and Spain.
- Statutory company-based governance – includes Croatia, Hungary and Slovakia.
- Voluntary company-based governance – includes Bulgaria, Cyprus, Czechia, Greece (2013–2017), Ireland, Latvia, Lithuania, Malta and Romania.
- Market-oriented governance – includes Estonia, Poland and the UK.

However, although this categorisation provides a clear insight into the differences in industrial relations regimes across the EU, it does not directly explain the nature and prevalence of labour disputes or how these might differ across the EU nations. In the preparatory work for a Eurofound cluster analysis of industrial relations regimes, an indicator on collective disputes was deliberatively disregarded, as its meaning was not completely clear with respect to industrial democracy. Among other things, the absence of conflict could be interpreted as the result of poor working conditions, a lack of worker capacity for collective organisation and increasing worker vulnerability. Henceforth, an indicator on collective disputes could not be interpreted as positive or negative for industrial democracy (Eurofound, 2017, p. 8).

Before embarking on this analysis, it is important to point out that the vast majority of the available literature on labour disputes focuses on strikes, rather than other forms of dispute. In addition, it is often difficult to establish the true cause of any dispute, as they are multicausal social phenomena; equally, where a cause is recorded, it is generally defined by a single principal category. As noted by Hyman (1977), the expressed cause of a dispute may obscure the actual underlying structural source of that conflict.

Strike activity categorisation according to Vandaele

Vandaele (2016) has produced a detailed summary of strike activity across western Europe in the last few decades. This shows a gradual decline in strike activity, from a peak of widespread social protest strikes in 1968–1974 to having reached, and remained at, an extremely low level in recent decades. This has been driven by a fall in industrial unionism, as there has been a large-scale employment shift from manufacturing to services, a significant increase in the credibility of the relocation threat from multinational enterprises as capital has become more mobile, and severe and long-standing hangovers from previous union setbacks. Vandaele (2016) predominantly focuses on 1995–2015 and highlights the fact that, in that period, there was a 50% decrease in the level of strike activity, measured by the number of working days lost. This was largely a steady downward trend, punctuated by a spike in 2010 due to large-scale disputes over pension reform as the initial responses to the 2007–2008 financial crisis started to kick in. There is, however, an issue in utilising this type of data to analyse industrial action, as it is often dominated by short mass action from public sector workers. However, this type of data has at least been able to identify significant growth in general strikes since 2000 and a larger reduction in collective bargaining disputes (Vandaele, 2016).

Furthermore, Vandaele attempted to categorise strike activity as a function of the industrial relations regime and identified three broad categories across western Europe in 1995–2015.

1. Southern countries – these are typified by frequent, large-scale but short strikes. These are often one-day demonstration strikes aimed at governments and, in the post-financial crisis austerity period, these have become increasingly prevalent, particularly in Greece.
2. Low strike countries – this group is made up of Austria, Germany, the Netherlands, Norway and Sweden. In these countries, there are extremely low levels of strike activity and general strikes are almost completely absent.
3. Mixed country group – this group includes Belgium, Denmark, Finland, Ireland and the UK. In this group, strikes are relatively frequent but predominantly are small scale and short, and there is a fairly low tendency towards general strikes.

Recent evidence and developments

The previous section sketched the beginnings of an understanding of how various industrial relations regimes may translate into differences in terms of the prevalence and nature of labour disputes. There is, however, a relative dearth of cross-country comparative studies employing empirical analysis to deconstruct differences across industrial relations typologies. Gall (2014) further explored the evolving nature of strike activity and, utilising examples from Germany, Greece, the UK and the United States, emphasised the growing use of warning strikes and smart strikes, where pressure is brought to bear on the employer and income loss is minimised for members, which have increasingly replaced the all-out economically damaging strikes of previous generations. This includes a significant reduction in wildcat strikes, not formally called by the union, but they are still present in strategic industries such as transport, distribution and communications. Gall (2014) also discussed at length strategic strikes, whereby strategic groups of workers within supply chains are used as the focus of strike activity to maximise pressure on employers while minimising income loss for union members. However, Gall concluded that this approach has been utilised surprisingly sparingly given the potential benefit-to-cost ratio that it represents.

Evolution of industrial conflict over past two decades

In addition to the above, the pressures in the first two decades of the 21st century – most notably, increased internationalisation and globalisation, as well as the post-financial crisis austerity measures – have led to a further evolution in industrial conflict. Since 2008, there have been transformations in industrial conflict across Europe that can be attributed to several factors, including tighter restrictions on the right to strike or making lawful actions much more difficult in some EU Member States, a decline in the power of traditional labour unions to organise and the ensuing rise in self-organised actions by workers' groups or citizens' groups or through new mediums of representation (Eurofound, 2019a). Despite these common trends, however, labour unions' responses to the crisis varied significantly from country to country depending on the severity of the recession and austerity measures, as well as previous labour histories, institutional arrangements and established patterns of labour action. In fact, it can be argued, 'European trade union trajectories over recent years present a picture of increasing divergence' (Lehndorff et al, 2018, p. 24). Whereas, after 2008, most post-communist countries already had a weak labour union influence, there were countries, such as Greece and Spain, that experienced a rapid deterioration in the power of labour unions after 2008. At the opposite end of the spectrum, there are examples of labour unions that mobilised their resources against austerity, such as in Sweden, or were able to gain more power by creating broader alliances. Others connected their actions with welfare issues, such as labour unions in the UK that combined more specific labour-focused demands with the support of the National Health Service (Lehndorff et al, 2018, p. 24).

Public sector and political strikes

The neoliberal austerity policies that governments and EU institutions adopted in response to the economic crisis (2007–2013) have led to labour conflict, which has been met with new forms of labour action and protest. In some cases, such as the case of Fiat-Chrysler Automobiles in 2015–2017, workers organised strikes and protests with the support of social movements and grassroots labour unions, but against the actions of social-democratic labour unions that were co-opted (Cillo and Pradella, 2019). According to some authors, the declining economic influence of strikes – especially sectoral strikes – led and organised by labour unions was matched with the rising importance of general strikes, public sector strikes and broader 'political strikes' against austerity measures, including against issues related to welfare and public sector cuts (Gall, 2012b; Nowak and Gallas, 2014; Gallas and Nowak, 2016). Vandaele (2016) argued that the available data showed that the number and intensity of strikes seemed to have declined in most European countries but that this did not mean that labour conflicts had also diminished. It is likely that there are specific types of labour disputes and actions, commonly identified as sectoral strikes, that are in decline while other forms of labour dispute, including new types of decentralised protests, are rapidly spreading across Europe.

Although these emerging patterns of labour dispute can be found Europe-wide, they are more dominant in certain parts of the continent. The most intense wave of general, public sector and political strikes against austerity took place in the south of Europe: in France, Greece, Italy, Portugal and Spain (Hamann et al, 2013). Except for France, these were the countries that were hit most severely by the financial crisis and faced the hardest austerity measures, including widespread labour deregulation following bailout agreements signed between national governments, EU institutions and international organisations. In the context of deregulation forced on countries by supranational institutions, collective agreements, strikes and negotiations led by labour unions were especially ineffective. Labour unions were marginalised in policymaking and their ability to influence decision-making was reduced, as they were often seen as inactive and unable to respond to the challenges. In some countries, Italy for example, labour unions were able to gain social support through broader coalitions with social movements, whereas in other countries, such as Greece and Spain, they lost most of their social basis (Molina and Barranco, 2016; Vogiatzoglou, 2018).

Precarious workers

Given the ineffectiveness of more traditional types of industrial action, general strikes, public sector strikes and political strikes proved to be a much more effective means of dealing with widespread labour disputes (Vandaele, 2016). Moreover, anti-austerity movements adopted a variety of new forms of protest, including demonstrations and occupy strategies, that were supported by diverse social movements but often also expressed more traditional labour demands (Luque Balbona and González Begega, 2014; Peterson et al, 2015) related to wages or labour rights violations. Moreover, the struggles of precarious workers intensified, taking different forms, and were not centrally controlled by labour unions, such as the urban protests (described in the press as 'riots' and associated with looting and other forms of social disorder) in the UK in 2011 and in Sweden in 2013 (Gallas and Nowak, 2016). In this context, there was a resurgence of feminist strikes, which brought together professional domestic and care workers' unions with unpaid carers; such strikes are organised successfully every year across sectors and in transnational contexts (Fougner and Kurtoglu, 2011; Campillo, 2018). Such actions were carried out in increasingly deregulated, feminised and

racialised precarious sectors, where workers sometimes lack basic labour rights, including labour union representation or indeed the right to strike.

A further area of development in relation to the industrial relations context in recent decades has been the significant growth in more precarious forms of employment. There is now a considerable body of literature on the new forms of informal and casualised work in the rapidly expanding platform economy (see, for example, de Stefano, 2016; Heiland, 2020; Schor et al, 2020; Woodcock and Graham, 2020). While there are a number of different typologies of labour in this emerging field, this form of employment is generally loosely classified into two broad types: work that is carried out remotely using online means and work that, although digitally managed, is localised, involving the delivery of services in real time and space (Huws, 2015).

Within this broader literature, a significant strand is devoted to issues relating to the organisation and representation of workers and the potential for their inclusion in trade unions (Thelen, 2014; de Groen et al, 2017; Drahokoupil and Jepsen, 2017; Alimahomed-Wilson and Ness, 2018; Lenaerts et al, 2018; Van Doorn, 2020). It is often concluded that the tenuous nature of the relationships of these workers with the platforms on which they find work poses serious barriers to such forms of organisation (Vandaele and Leschke, 2010; Kilhoffer et al, 2017; Tassinari and Maccarrone, 2017, 2020). Nevertheless, some authors note signs of a growing propensity to develop collective identities and seek new forms of organisation (Wood et al, 2018; Gerber and Krzywdzinkski, 2019; Wood and Lehdonvirta, 2019; Panteli et al, 2020).

There is a consensus in the literature that the challenges of organising online 'crowd workers', operating in global virtual labour markets, are significantly different from those of organising 'real time' workers in local labour markets. There have been initiatives to develop forms of social dialogue concerning the former group, for example for online platform workers in Germany (Silberman, 2017) and Sweden (Söderqvist, 2017; Söderqvist and Bernhardtz, 2019), and various forms of organisation among such workers have been studied in developing economies (Wood et al, 2018). However, there is no evidence of such workers engaging in action that could be regarded as a labour dispute with the platforms for which they work.

Generally, the attention of scholars interested in new forms of organisation among platform workers has been focused on those working in local labour markets in real time, with particular attention paid to two groups: ride-hail taxi drivers and food delivery workers.

When platform workers have organised and taken action against the platforms for which they work, this has generally taken the form of either legal actions, for example to establish employment or 'worker' status (Risak, 2016; Kilhoffer et al, 2017; Prassl, 2019) or demonstrations (Thelen, 2018; Van Doorn, 2019; Barratt et al, 2020; Cant and Mogno, 2020; Maffie, 2020).

Evidence of labour disputes taking the form of organised action against a particular platform is rarer. Eurofound (2021a) is one of the few sources of data in this area. Eurofound constructed a database of disputes with platform employers over an 18-month period across seven EU countries and identified only 41 incidents in that time period. Nevertheless, some authors have speculated that, compared with other platform workers, transport and delivery workers have relatively strong bargaining power because of their potential to use their 'spatial proximity and temporal synchronicity' (Woodcock and Graham, 2020, p. 51) to disruptive effect. However, this may be counterbalanced by the challenges of building long-term organisations created by the extremely high rates of turnover among such platform workers (Urzì Brancati et al, 2019). Evidence from the Netherlands suggests that the solo self-employed (the category into which most platform workers fall) are particularly keen to join organisations to represent their interests and to enter into collective bargaining (Jansen, 2020).

However, despite the adoption of some broad definitions of industrial action (Joyce et al, 2020), there is little evidence of strikes or other forms of labour disputes among platform workers. The very strong reliance on social media in organisations representing platform workers brings with it some methodological problems in relation to the reporting of strikes. There may be situations in which actions involving relatively small numbers of workers are organised for their publicity value, as a means of raising the profile of the organisation and drawing attention to issues of concern. This can mean that an event that is widely reported in the media may in fact be little more than a photo opportunity, giving it a weight that is disproportional to its actual size when compared with disputes involving more traditionally employed workers.

Partial exceptions to this situation have included actions by food delivery workers in the UK in 2016 (Cant, 2019) and in 2018 organised by small, alternative unions, with those in the latter year loosely linked to other actions by fast food workers organised by mainstream unions (Cant and Woodcock, 2020). In Spain, mainstream unions have also been involved in supporting strikes by couriers (Fernàndez and Soliña Barreiro, 2020).

Although not involving labour disputes, couriers have also been the subject of collective agreements elsewhere. In Switzerland, for example, Syndicom, the Swiss media and communications union, concluded a collective agreement in 2019, setting minimum wages and other employment standards for couriers, although food delivery platforms were not covered (Dunand and

Mahon, 2019). Although Switzerland is obviously not part of the EU, and not included in this dataset, it is relevant here because of the potential crossover into the surrounding countries. Moreover, in the UK, the general union GMB negotiated a collective agreement for Hermes parcel delivery workers in 2020. In addition, a collective agreement was recently negotiated for cycle couriers in Austria covering working hours, minimum rates of pay and holiday entitlements (Eurofound, 2021b).

Non-strike industrial action

All the above is focused on strike activity and does not really provide any insight into other forms of labour dispute and how these might differ across different forms of industrial relations regimes. There is a dearth of empirical research undertaking cross-country comparisons of non-strike industrial action, largely due to the relatively low reporting of non-strike industrial action and the subsequent difficulties for researchers in compiling reliable and accurate data. However, Gall (2014) has detailed some of the developments in approaches to non-strike industrial action in recent years, although admittedly only for the UK. To a certain extent, non-strike industrial actions have taken advantage of advances in technology, not least the development of cyber or virtual sabotage, critical humour via social media, flash mobs and other publicity-grabbing stunts, as well as mass 'sickies' coordinated via social media. All of these actions would have been impossible, or at least exceedingly difficult, to undertake without the advances in information and communications technology witnessed over the last two or three decades. Some more traditional means of non-strike action, such as overtime bans, work to rule and even workplace occupations, do still occur, but the evidence that is available indicates that their prevalence is waning. Finally, Gall (2014) indicated that there has been growth in the number of individual rights cases in which an individual takes on a test case to apply pressure to the employer and other employers, the hope being that, if the case is successful, the rights that the individual is seeking to enforce will then have to be extended to all other employees.

Conclusion

It is clear that the context within which employment relations take place is an extraordinarily complex and evolving picture across the whole of the EU. Consequently, developing and presenting expectations of what cross-country differences might be revealed from these data – in terms of the prevalence and causes of, as well as the resolutions to, labour disputes – is something of a challenge. Notwithstanding this, the existing literature does at least reveal some insights into what can be anticipated from these data. Although pay is likely to remain the major reported cause of labour disputes, there are also likely to be a significant number of disputes focused on health and safety, as well as gender, issues.

In relation to cross-country differences in the types, causes and prevalence of disputes, there is no single typology that can be applied to formulate expectations. However, it is possible to point to some broad and general expected patterns. For the transitional economies of eastern Europe, it is likely that, because of the relatively weak labour organisations and sparse organising activities within groups of workers, there are relatively low levels of all forms of labour dispute. In contrast, for the southern countries, including France, there are likely to be frequent, large-scale, but relatively short disputes that are politically driven and focused on government policy. In addition, there is likely to be a further group of countries, including Belgium, Denmark, Finland, Ireland and the UK, in which labour disputes display a similar level of frequency to the southern countries, but they tend to be short, small-scale and almost exclusively focused on collective bargaining issues. There is unlikely to be much evidence of politically motivated disputes within these countries. Finally, there is a group of low prevalence countries, including Austria, Germany, the Netherlands, Norway and Sweden, in which labour disputes are at an extremely low level and, when disputes do occur, they are almost exclusively focused on collective bargaining issues.

There are also likely to be emerging trends within labour disputes that these data may or may not be able to detect. For example, platform workers are becoming an increasingly significant proportion of the workforce and, for those platform workers operating in local labour markets in real time, there is the potential to apply significant pressure on their employers through various forms of labour dispute. However, the extent to which these disputes are likely to be reported, and consequently to appear within these data, is not clear. Furthermore, emerging forms of labour dispute, largely supported by the presence of social media, have been identified within the literature, such as cyber sabotage, critical humour on social media, flash mobs and coordinated mass 'sickies'. All of these emerging forms are unlikely to be reported in the same fashion as more traditional forms of labour dispute. In a similar vein, there has also been reported growth in the use of individual rights cases, where a test case is pursued on an individual basis as a precursor to any rights gained being extended to a much larger number of employees. However, once again, it is not clear to what extent these will be reported as labour disputes.

2 Assessing data quality and generating indicators

The usefulness of any analysis is dependent on the quality of the data being analysed. This chapter documents the process of examining the data available for analysis from the Industrial Action Monitor (IAM) database in order to assess whether or not they are suitable for use in the analysis of collective labour disputes.

Methodology

A common source of error in a dataset is mistakes occurring during the data input. In the case of the IAM database, its design helps reduce such mistakes by offering the user a selection of multiple-choice options, ruling out difficulties caused by spelling and typographical errors. However, without undertaking a double entry of data, it is not possible to detect occasions when incorrect choices were made from those available. Nevertheless, any gross errors of this kind should have been picked up during the quality control checks made by Eurofound staff and by Eurofound correspondents (see 'Introduction').

As explained earlier, the data to be analysed were restricted to labour disputes that were sufficiently coded in the database and had at least one realised industrial action event recorded. This meant that there were 471 labour disputes to take forward for analysis.

It is acknowledged that, just as the IAM database does not claim to be a census of all labour disputes, it also does not claim to be a representative random sample of all labour disputes across the countries covered during the period of the data collection. Indeed, because of the absence of a sampling frame, it would never be possible to obtain such a random sample. The difficulties of collecting data on labour disputes are well known and such an expectation would not be reasonable. However, those labour disputes that are of greatest importance nationally and economically are likely to be included in the IAM database, as these disputes are the most likely to be reported on and picked up in the data collection process. Although the data are not likely to be a representative random sample, this does not mean that they are not suitable for use in an analysis that aims to create a typology of labour disputes. If it can be demonstrated that the data have a reasonable coverage of labour disputes, in terms of the mix across industrial sectors and countries, then the typology of labour disputes that is to be created can be considered to be based on firm ground.

To provide a basis against which to compare the IAM database, it was necessary to identify other sources of the same, or similar, data. To this end, data collected by the national statistical offices of the countries covered and collated by the ILO were of relevance. While differences in data collection methods and definitions between the ILO data and the IAM database prevented direct comparisons from being made, the ILO data provided a proxy against which the IAM database could be compared.

Further details of the methods used to undertake the comparisons can be found in Annex 2. The results are presented and discussed in the following section.

Results of the comparative exercise

The first comparison undertaken was of the number of realised industrial action events for each sector from the IAM data with the nearest equivalent data from the ILO. The definition of strikes and lockouts in the ILO data and the definition of a realised industrial action event in the IAM data are not the same, but both can be taken to measure the quantity of work stoppages in a sector, relative to other sectors. Table A2 (Annex 1) lists the 978 realised industrial action events affecting different sectors in the IAM database, while Table A3 displays the data on work stoppages from the ILO.

Comparing the figures in Table A2 and Table A3, it is evident that the proportion of realised industrial actions in the IAM data in different sectors is broadly in line with what is shown in the ILO data. For some sectors, the figures are surprisingly similar, given the differences in collection methods and time periods and, although the figures are less similar in a few sectors, they are still of the same order of magnitude in those cases. Sector G (commerce) appears to be underrepresented in the IAM data; however, given that the IAM database and the ILO data do not precisely mirror each other, there is insufficient evidence for this to be considered a major issue.

Turning to the number of workers involved in industrial action events, it is notable that, due to the issues discussed in Annex 2, there are fewer realised industrial action events associated with sectors where data exist (570 instead of 978). Estimated figures (again, see Annex 2) from the IAM data are shown in Table A4 and ILO data are shown in Table A5.

When comparing the figures in Table A4 and Table A5, it should be noted that uncertainties associated with missing data along with estimated mid-points for categories add to the difficulties in the comparisons possible. However, despite these issues, the proportion of workers engaged in realised industrial actions in the IAM data in different sectors is broadly in line with what is shown in the ILO data. Again, for some sectors, the figures are surprisingly similar and, although the figures are less similar in a few sectors, they are still of the same order of magnitude in those cases. Again, sector G may be underrepresented in the IAM data and in this case also sector P (education) may be overrepresented. However, as above, given that the IAM database and the ILO data do not precisely coincide, there is insufficient evidence for these to be considered major issues.

Regarding the number of days not worked because of industrial action events, it was again noted that there are fewer industrial action events associated with sectors for which relevant data exist in the IAM database. Estimated figures from the IAM data are shown in Table A6 and ILO data are shown in Table A7.

When comparing the figures in Table A6 and Table A7, it should be noted once more that uncertainties associated with missing data along with estimated mid-points for categories add to the difficulties in the comparisons possible. However, the proportion of days not worked owing to realised industrial actions in the IAM data in different sectors is broadly in line with what is shown in the ILO data. Yet again, for some sectors, the figures are surprisingly similar and, although the figures are less similar in a few sectors, they are still of the same order of magnitude in those cases. As with the number of workers involved, sector G may be underrepresented and sector P may be overrepresented in the IAM data; however, as the IAM database is not expected to show exactly the same figures as the ILO data, there is again insufficient evidence for these to be considered major issues.

The above comparisons led to the conclusion that the IAM data were of sufficient quality to be used in the creation of a typology of labour disputes. The next section outlines potential indicators for use in the creation of a typology and considers some further data quality issues.

Creating potential indicators

Taking into account the relevant literature outlined in Chapter 1, the information available in the IAM database outlined in the Introduction and the above finding that the data are of sufficient quality to be used in the creation of a typology of labour disputes, it was possible to create a set of potential indicators, as outlined below.

1. *The number/nature of employee organisations involved in the dispute*. These indicators are related to literature concerning the sociology of strike action and how disputes are mobilised (for example, Hyman, 1977).
   - **Number of employee organisations involved in the dispute** (ranging from 1 formal organisation recorded as being involved in 259 of the 463 disputes, 2 organisations in 109 disputes, up to 14 organisations being involved).
   - **Types of employee organisations involved in the dispute** (418 of the 463 disputes involving only trade unions and similar organisations, 22 disputes involving only non-trade unions and 23 involving a mix of the two).
2. *If disputes involved employees with non-standard forms of employment* (for example, seasonal workers, freelancers and outsourced workers). This indicator is related to literature concerning precarious workers (for example, Prassl, 2019).
   - **Employees with non-standard forms of employment involved in the dispute** (45 of the 463 disputes involved non-standard forms of employment, while the remainder did not).
3. *The duration of the dispute and the duration and number of industrial action events occurring as part of the dispute*. These indicators are connected with literature concerning industrial relations regimes.
   - **Duration of the dispute** (ranging from 1 to 1,396 days).
   - **Median duration of industrial action events in the dispute** (ranging from 1 to 336 days).
   - **Number of realised industrial action events in the dispute** (ranging from 1 to 27 events).
4. *If some form of third-party intervention took place during the dispute*. This indicator is related to literature concerning industrial relations regimes in which such interventions are more or less common. This covers the role that third-party conciliators, mediators or arbitrators can play within the national institutional framework, as well as the mechanisms that are utilised to enable the resolution of disputes, also including settlements by national courts (for example, Corby, 2003).
   - **Third-party intervention occurs during the dispute** (46 of the 463 disputes involved third-party intervention, while the remainder did not).
5. *The type of industrial action involved in the dispute and whether it actually took place (was realised) or was simply announced (and did not take place)*. These indicators are related to literature concerning the evolving nature of strike activity and the use of action to put pressure on employers (for example, Gall, 2014; Peterson et al, 2015).

- **Mix of realised and non-realised industrial action events** (in 401 of the 463 disputes, all recorded events were realised and, in the other 62 disputes, there was a mixture of realised and non-realised events).
- **Types of industrial action involved in the dispute, both realised and non-realised** (210 of the 463 disputes involved only strikes, 61 disputes involved only protests/demonstrations, 35 disputes involved only short work stoppages/assemblies, 36 disputes involved other forms of action and the remaining 121 disputes involved a mix of action types). A relatively large number of disputes had a mix of action types. As both realised and non-realised industrial action events are taken into account, there is a greater scope for a mix of types to be recorded (compared with the indicator immediately below, which involves only realised events).
- **Types of realised industrial action involved in the dispute** (212 of the 463 disputes had only strikes realised, 67 disputes had only protests/demonstrations realised, 42 disputes had only short work stoppages/assemblies realised, 44 disputes had other forms of action realised and the remaining 98 disputes had a mix of action types realised).

6. *The context and issues involved in the dispute* (for example, collective bargaining, pay, working time and working conditions). These indicators are connected with literature concerning disputes associated with government policies and austerity programmes (for example, Vandaele, 2016) and with literature concerning differences in regulation (for example, Hyman, 2018).
   - **Whether the dispute concerns a matter of rights or a matter of interest** (387 of the 463 disputes concerned matters of interest, while the remainder involved or were solely concerned with matters of rights).
   - **Context within which the dispute exists** (in 172 of the 463 disputes, collective bargaining formed the context, with a context of grievances over company-level policies in 120 disputes, grievances over public policies in 86 disputes and restructuring in 57 disputes, and other contexts in 28 disputes).
   - **Context within which the dispute exists, with further details of collective bargaining** (this is the same as the indicator immediately above, but with further details of collective bargaining issues detailed where available: disagreement over the application of a specific agreement, negotiation of an entirely new collective agreement, renewal of an existing collective agreement or refusal to enter into collective bargaining).
   - **Main issue concerned in the dispute** (199 of the 463 disputes concerned pay, 94 concerned employment problems, 57 concerned protests, 14 concerned trade union issues, 9 concerned working time, 74 concerned other aspects of working conditions, 10 concerned other problems relating to the workplace and 6 concerned other issues).
7. *The target of the dispute/industrial action (for example, government or a company) and whether action is targeted locally or more widely*. These indicators are related to literature concerning disputes associated with government policies and austerity programmes (for example, Vandaele, 2016).
   - **Whether the dispute targets government** (75 of the 463 disputes recorded the government as being a target of the dispute).
   - **Whether the dispute targets a company** (425 of the 463 disputes recorded a company as being a target of the dispute).
   - **Whether the dispute targets a body that is neither government nor the company affected by the action** (18 of the 463 disputes recorded a target that was neither government nor the company affected by the action, for example when a strike takes place in support of workers at a different company).
   - **Whether the dispute is countrywide or not** (218 of the 463 disputes were recorded as being countrywide). The database also contains a record of the level at which a labour dispute takes place, which, like this indicator, could indicate whether a dispute exists across a country or not. However, when a dispute is coded as being at company level, the geographical spread of the dispute will depend on the size of the company and the number of places in which it operates. Therefore, the indicator associated with whether or not a dispute is considered countrywide is preferred.
   - **Number of NUTS 2 areas involved in the dispute** (252 of the 463 disputes involved just one Nomenclature of Territorial Units for Statistics (NUTS) 2 area, 77 involved multiple NUTS 2 areas and 134 did not have NUTS 2 information recorded).
8. *The number of workers involved in a dispute and the number of days not worked due to the dispute*. These indicators are related to literature concerning the decrease in strike activity in recent decades (for example, Vandaele, 2016). For all these indicators, there are substantial numbers of disputes for which data are missing (see Chapter 1 and Annex 2) and the indicators are formed by taking mid-points of often wide intervals or taking just one interval from all of the industrial action

events associated with a dispute. For these reasons, these indicators will be subject to special scrutiny in the next section to assess whether or not they are suitable for inclusion in the typology of labour disputes.

- **Total number of workers involved in the dispute** (ranging from 5 to 47,999 workers, with 159 disputes lacking this information). This indicator is constructed from a multiple-choice option, giving intervals for the number of workers taking part in each industrial action event. As discussed in Annex 2, this is the field in the database that suffers least from missing data, and figures are obtained by taking the mid-point of the intervals chosen.
- **Highest interval given for the number of workers involved in an industrial action event** (the most common interval was 100–499, which was given for 100 of the labour disputes, with the smallest interval being 1–9 and the largest 10,000 or more). Of all the industrial action events associated with a dispute and their associated intervals for the number of workers involved, this indicator is defined as being the highest of these intervals.
- **Total days not worked in the dispute** (ranging from 5 to 2,813,531 days). This indicator is created by multiplying the estimated number of workers involved in an industrial action event by the duration of the event and totalling these over each dispute.

There are a number of indicators that ideally should have been included, but the data do not exist in the IAM database. One of these is the gender of those taking part in disputes. As this information was not collected, this aspect cannot be included when creating the typology. Another aspect for which an indicator would have been desirable is the economic cost of a dispute. Although the number of days not worked can be considered a proxy, this indicator is, as discussed above, of dubious reliability.

Evaluating the reliability of indicators

This section uses a similar approach (principal components analysis) to that of Sanz de Miguel et al (2020) and Eurofound (2018, 2019b) to identify which of the potential indicators are likely to be useful in the development of the typology. In particular, the analysis seeks to examine the reliability and usefulness of the indicators about which concern was expressed in the previous section, 'Creating potential indicators': those associated with the number of workers involved in a dispute and the number of days not worked due to the dispute (indicator no. 8): ('Total number of workers involved in the dispute', 'Highest interval given for the number of workers involved in an industrial action event' and 'Total days not worked in the dispute').

In addition, there are a number of potential indicators listed in the section 'Creating potential indicators' that are closely related. This analysis of reliability and usefulness is used to judge whether it is reasonable to include both indicators where there are two that are related and, if not, which is to be preferred and which omitted. The related indicators are as follows:

- 'Types of industrial action involved in the dispute, both realised and non-realised' and 'Types of realised industrial action involved in the dispute'
- 'Context within which the dispute exists' and 'Context within which the dispute exists, with further details of collective bargaining'
- 'Whether the dispute is countrywide or not' and 'Number of NUTS 2 areas involved in the dispute'

Because, unlike in the cases of Sanz de Miguel et al (2020) and Eurofound (2018, 2019b), there are a number of indicators that are categorical in nature, it is not possible to undertake a classic principal components analysis. If it were the case that all of the indicators were categorical, then it might be possible to carry out a latent class analysis but, as there is a mixture of continuous and categorical indicators, the research team conducted a non-linear principal components analysis, following the method of Linting and van der Kooij (2012). Annex 3 gives the details of the methodology used. It was determined that it was not appropriate or necessary to use any of the following proposed indicators: 'Total number of workers involved in the dispute', 'Highest interval given for the number of workers involved in an industrial action event' or 'Total days not worked in the dispute'. The use of these indicators is not necessary, as the indicators 'Number of realised industrial action events in the dispute' and 'Types of realised industrial action involved in the dispute' can be taken as proxies for the size of the dispute.

In addition, the indicator 'Types of realised industrial action involved in the dispute' is to be used in preference to 'Types of industrial action involved in the dispute, both realised and non-realised'; the indicator 'Context within which the dispute exists, with further details of collective bargaining' is to be used in preference to 'Context within which the dispute exists'; and the indicator 'Whether the dispute is countrywide or not' is to be used in preference to 'Number of NUTS 2 areas involved in the dispute'.

Creating the typology

Following the investigation into potential indicators (see earlier section 'Creating potential indicators'), a typology was created to include 16 indicators. It should be noted that for 8 of the 471 disputes identified there was data missing on at least one of these indicators, leaving 463 disputes to be used in the typology. The 16 indicators are as follows:

1. number of employee organisations involved in the dispute
2. types of employee organisations involved in the dispute
3. employees with non-standard forms of employment involved in the dispute
4. duration of the dispute
5. median duration of industrial action events in the dispute
6. number of realised industrial action events in the dispute
7. third-party intervention occurs during the dispute
8. mix of realised and non-realised industrial action events
9. types of realised industrial action involved in the dispute
10. whether the dispute concerns a matter of rights or a matter of interest
11. main issue concerned in the dispute
12. context within which the dispute exists, with further details of collective bargaining
13. whether the dispute targets government
14. whether the dispute targets a company
15. whether the dispute targets a body that is neither government nor a company
16. whether the dispute is countrywide or not

Cluster analysis was used to investigate the presence of groups or 'types' of labour disputes within the IAM data, in the context of the indicators listed above (Annex 4 gives details of the approach taken). Of all of the analyses explored, the only one that gives a useful breakdown of the labour disputes to create a typology (that is, has a reasonable number of clusters, with each of a reasonable size and none dominating) is that using Ward's method.[3] All of the other clustering methods give results in which one cluster dominates and/or other clusters are too small to provide meaningful summaries for the typology. The next chapter investigates the typology indicated by the preferred analysis.

3 In statistics, the agglomerative clustering method proposed by Ward in 1963 is a widely used technique of cluster analysis.

3 Exploring the typology of labour disputes

This chapter explores the typology created for the purposes of this research and discusses the relationships between this typology and other typologies associated with industrial democracy. The first section presents the five main groups of labour disputes, outlining the features of each cluster and the type of labour dispute and industrial action associated with each cluster.

Profiles of the clusters

Tables 3–5 (pp. 31–35) present summaries of the five clusters of collective labour disputes in terms of continuous and categorical variables. Table 3 gives details of the continuous indicators for each cluster, while Tables 4 and 5 give details of the categorical indicators for each cluster. In particular, Table 4 shows how the categories for each indicator are distributed within each cluster (that is, the percentages are totalled in columns) and Table 5 shows how much each cluster (as a percentage) accounts for the total of each category of the indicators (that is, the percentages are totalled in rows). Table 4 is particularly useful for exploring the characteristics of the clusters, as it shows the percentage of cases in each cluster that have particular attributes. When these percentages are notably different from those of the overall sample used in the creation of the typology, it indicates something distinctive about the cluster. For example, in Table 4, the percentages of the two categories of the indicator 'Whether the dispute concerns a matter of rights or a matter of interest' are notably different in cluster D (2.3% and 97.7%) from those of the whole sample (83.6% and 16.4%). Table 4 uses shading to highlight those percentages that are notably different from the overall sample percentages.

Tables A10 and A11 (Annex 1) show the disputes in each cluster broken down by the country they are associated with. A summary of each cluster is given below.

Cluster A – National disputes of interest and rights, including different forms of employment and more frequent third-party interventions

This cluster mainly consists of disputes that have a countrywide dimension. In contrast to cluster B, which mainly includes disputes of interest, the disputes in this cluster stem from both matters of interest (such as the regular disputes that occur in relation to pay increases) and matters of rights (such as disputes over pay arrears). The main issues in this cluster are diverse, but there is a higher than average proportion of pay-related disputes within this cluster (56% in this cluster versus 43% on average across the whole sample). Disputes that involve different forms of employment or third-party interventions are likely to be in this cluster, as are disputes that involve disagreements over the application of specific agreements. Disputes concerning trade union issues are also likely to be in this cluster (or in cluster D), although overall these are small in number. With an average duration of 149 days, disputes in this cluster are of above average duration compared with the sample as a whole. Disputes in this cluster (as well as those in cluster B) are mainly within the sphere of trade unions. The participation of other (non-trade union) employee organisations seldom happens.

In a number of countries, a large proportion of the recorded disputes are included in this cluster. Considering just those countries having a reasonable number of disputes in the database, it should be noted that over a third of the disputes in Belgium, Germany, Greece and Ireland fall into this cluster, as do more than half of the disputes in Poland and Portugal. This cluster also contains 90% of the disputes in the database for Malta.

Examples of cluster A disputes

A classic example of a dispute in this cluster is the national dispute in Portugal concerning working conditions and restructuring at CTT, the national post office. A two-day strike took place in December 2017 following the announcement of restructuring plans that would have affected 800 posts and included potential job losses. Another strike followed in February 2018, which was accompanied by a national demonstration in Lisbon. In June 2018, the dispute was resolved by an agreement between the unions and the management to accord pay rises of between 1.1% and 1.3% and the employment of an additional 100 workers by the end of 2018. As well as being typical of disputes in cluster A, this dispute could also be said to be typical of those in Portugal, as over half of all labour disputes in the database for Portugal are included in cluster A.

Although still in the minority, around one in seven of the disputes in cluster A involve non-standard or new forms of employment, which is a higher proportion than the average for all disputes in the database. An example of a dispute in cluster A that involves a non-standard or new form of employment is that concerning taxi drivers in Spain between 2018 and 2019, when established taxi drivers went on strike to protest about the different regulation of newer private hire services provided via platforms such as Uber and Cabify. Another example involves the Greek education system, in relation to which there were disputes concerning the employment of teachers and school cleaners on fixed-term contracts. There were also a number of disputes in cluster A concerning the plans announced at the end of 2017 by food delivery company Deliveroo to move from providing employment contracts for its riders to using only self-employed riders. These included riders in Belgium, the Netherlands and Spain. These disputes also displayed another characteristic of some disputes in cluster A in that they gave rise to third-party interventions in the form of court rulings. For example, the Spanish Court gave a ruling that drivers for Deliveroo were to be treated as employees rather than as self-employed. Other disputes in cluster A that involved third-party interventions included bus drivers in Estonia seeking help from the national conciliator, unsuccessful voluntary mediation at Ryanair in Sweden and a court decision in Denmark whereby the Danish Labour Court ordered train drivers back to work.

Cluster B – Extended disputes of interest concerning collective (pay) agreements with a mix of realised and non-realised actions and more frequent third-party interventions

All of the disputes in this cluster involve a mixture of realised and non-realised industrial action events and almost all of them stem from a matter of interest and are nearly exclusively related to workers with standard forms of employment. About three-quarters of the disputes in this cluster are associated with negotiating new or renewing existing collective agreements and about a quarter involved third-party intervention. The disputes in this cluster are (on average) more extended and 'larger' than those in other clusters, as evidenced by several indicators: their mean duration (182 days) is longer than the average for the sample (120 days; this is the longest average duration among all of the clusters), they involve more realised industrial action events (3.0) and more employee organisations (2.3) than the average (2.0 and 1.9, respectively) and, while strikes are the most commonly reported form of action in this cluster, many of the disputes involve a mix of different types of industrial action (in contrast with cluster A, in which such a mix is rarely observed in disputes). The disputes in this cluster are also connected to a broad range of issues (rarely, however, employment problems), but pay is the predominant main issue: nearly two-thirds of disputes in this cluster (64%) are related to pay, making it the cluster with the largest concentration of pay-related disputes.

Considering just those countries having a reasonable number of disputes in the database, it should be noted that almost a quarter of the disputes in Portugal are in this cluster.

Examples of cluster B disputes

A classic example of a labour dispute in this cluster is the national railway dispute that took place in Spain between 2018 and 2019. There was a partial strike in July 2018 concerning wages (which had failed to keep up with price rises), the outsourcing of work, staff shortages and a lack of progress in negotiations over the introduction of a 37.5-hour week. Further strikes were announced for April 2019 but were called off before they could take place. The long-running dispute was resolved that month when a new collective agreement and a pay increase of 2.25% were negotiated with the approval of the Spanish government treasury. The longer nature of the dispute, the new collective agreement and the combination of strikes that took place and strikes that were threatened but then called off are features of the Spanish railway dispute that are common among disputes in cluster B. For example, there was a long, fragmented dispute on the SNFC railway system in France in 2018 over rail reform, which included the calling of several strikes and also conciliation. In Finland, there was a dispute involving air traffic controllers, which started with negotiations towards the end of 2017, continued with a ban on overtime throughout 2018 and then included walkouts, the announcement of strikes and lockouts in 2019 and the involvement of the national conciliator. There was also a long dispute in the public transport sector in the Netherlands in 2018. This included numerous strikes by bus drivers, voluntary mediation and a court ruling that the strikes could go ahead. Issues in this dispute included pay, workloads and the time allowed for rest breaks for drivers.

Cluster C – localised disputes on matters of interest, concerning employment problems, working time and restructuring, with short work stoppages

Almost all of the disputes in this cluster were recorded as not at a national level and related to a matter of interest. Three-quarters of all of the short work stoppage/assembly disputes that were recorded are in this cluster, while disputes in this cluster involve a smaller than average proportion of strikes. Disputes that concern employment problems and problems concerning working time are likely to be in this cluster, as are disputes over restructuring and refusals to enter into collective bargaining. Disputes involving employee organisations that are not trade unions are also likely to be in this cluster, either on their own or together with unions. Just 1.6 employee organisations, on average, were involved, in disputes in this cluster – the lowest figure among all of the clusters. These localised disputes tended to have the longest duration of individual industrial action events among all clusters (with 14.9 days per event, on average), but the dispute itself tended to be shorter than average across the database (99 days versus 120 days). Third-party interventions in this cluster exist but are uncommon.

Considering just those countries having a reasonable number of disputes in the database, over half of the recorded disputes in France, Germany, the Netherlands and Spain are in this cluster.

Examples of cluster C disputes

The dispute at the ZestBus company in Menton in France is typical of the labour disputes found in cluster C. This dispute consisted of one relatively short strike in a small locality. The strike concerned specific issues, such as a request to install toilet facilities at a particular location, problems encountered by reception staff and a request for a one-off bonus in the context of profits made by the company. As well as being typical of the disputes in cluster C, this local bus company strike is also a good example of labour disputes in France, as over half of all French collective disputes in the database are members of cluster C. Another example of the disputes in cluster C is that of a 15-minute work stoppage at the state radio station in Cyprus following an accident in which an employee was electrocuted and taken to hospital. Cluster C also includes a dispute involving cleaners at Erasmus University in the Netherlands. This was resolved by the university increasing the scope of the contract with the cleaning company so that the cleaners could continue to work all of their hours in one location rather than having to work at two different locations in one day. These examples show the specific, localised nature of many of the disputes in cluster C.

Cluster D – localised disputes concerning workers' rights and grievances over company policies

Almost all of the disputes in this cluster have to do with matters of rights rather than matters of interest and almost all of them were local, rather than countrywide, disputes. Half of them are associated with grievances over company-level policies. Disputes concerning trade union issues are likely to be in this cluster (or in cluster A), although overall these are small in number, and so are disputes related to the rights of workers in non-standard forms of employment (14% of disputes in this cluster concerned such workers, versus 9.7% on average across the database). In contrast with cluster A, which also contains a relatively high proportion of (albeit nationwide) disputes related to workers in non-standard forms of employment (14.4%), as well as a substantial proportion of disputes related to matters of rights (22.4%), third-party interventions are not recorded for any of the disputes in cluster D. Like clusters A and B, strikes are the most commonly found form of industrial action in this cluster, but other types of action are also reported, including a mix of several types of actions. The average industrial action event in this cluster tends to be shorter (5.7 days) than the average across the database (10.3 days).

Considering just those countries having a reasonable number of disputes in the database, around 20% of the disputes in Ireland, Spain and the UK fall into this cluster.

Cluster E – Disputes concerning public policies

The disputes in this cluster mainly concern grievances over public policies and nearly all of them are classified as disputes over matters of interest. The government is frequently the target of the dispute and most disputes which did not target a company were in this cluster. Although the disputes in this cluster took place both countrywide and locally, three-quarters of the disputes in this cluster are national. Industrial action involving a protest or demonstration is common in this cluster. Disputes in this cluster involve more employee organisations (2.3) than on average across the database (1.9), but the disputes are shorter (79 days) than the average across all clusters (120 days). Disputes without trade union involvement are likely to be found in this cluster. Pay is seldom the main issue in this type of dispute; instead, the protests are generally related to various forms of government policies, including austerity measures and pension reforms.

Considering just those countries having a reasonable number of disputes in the database, almost half of the disputes registered in the database for Greece and a quarter of those in the database for Cyprus, the Netherlands and Poland are found in this cluster.

Examples of cluster D disputes

The labour dispute at the Lithuanian fertiliser manufacturer Achema is a good example of the disputes found in cluster D. The dispute started in June 2018 with picketing and a demonstration at the company's headquarters to protest against low wages and the company's decision not to pay bonuses, which, for some workers, amounted to over half of their wages. There were further protests in November 2018 about bonus payments. These were organised by the workers themselves rather than by the union, which was separately negotiating with the management. The dispute was resolved when, in February 2019, the company changed its remuneration system of some 20 years so that basic pay would be increased and bonuses would make up a much smaller proportion of workers' wages. The change was brought about by negotiations between the union and management. Another example of a dispute in cluster D is the strikes at the radio broadcaster RTBF in Belgium, where only around 35% of the broadcaster's staff had permanent contracts. At the centre of this dispute was a call from the unions for more of the posts to be made permanent. Another typical example of disputes in cluster D was a dispute in Austria involving taxi drivers in Vienna protesting about traditional taxi drivers being treated differently from Uber drivers, who were self-employed, due to different regulations for traditional and Uber taxis. A similar dispute in cluster D concerned taxi drivers in the Netherlands protesting against competition from Uber due to different regulations. Finally, there were disputes in cluster D in Italy, including one by migrant farm workers in Foggia over working conditions.

Examples of cluster E disputes

Of the many disputes in cluster E that took place in the context of grievances over public policies, some were related to issues that affected the population as a whole, such as pension reforms, tax policies and the right to strike, whereas others were focused on specific issues concerning particular groups of public sector employees. An example of the general disputes over public policies is the dispute over pension reforms by the Croatian government in 2018. These reforms included increasing the pension age to 67, and unions asked for the retirement age to be restored to 65 and for more flexibility over early retirement. Following a petition for a referendum on the reforms, the government revoked them. Other examples of disputes in cluster E concerning government policies affecting the whole population included a march in Athens in June 2018 to protest about a draft government bill to meet the requirements of Greece's creditors, which would affect pensions and collective labour agreements; a strike at Greek archaeological sites and state museums in October 2018 concerning the possibility of government-owned historic monuments being listed as assets that could be sold; a protest in the Netherlands about the lowering of corporate taxes while raising taxes on food and medicines; a general strike over economic measures taken by the government in Italy in 2018, including a request to repeal the government's labour reform act; and a protest in Sweden over the right to strike.

An example of disputes that concerned specific groups of public sector employees, rather than affecting the population as a whole, is the dispute that took place in Poland in 2018 over public sector salaries. It started in August 2018 with a warning from the trade union Solidarity that workers would go on strike in the autumn if salaries for public sector workers were not raised. This warning was followed in September 2018 by a large protest in Warsaw organised by the All-Poland Alliance of Trade Unions. The alliance argued that, while the Polish economy had experienced rapid economic growth, the country's public sector workers had not received a pay rise since 2010, causing financial difficulties for some workers. The demands included wage increases, a higher minimum wage and improved public sector pensions. Disputes such as this one calling for government action on public sector pay are not uncommon in Poland, as shown by the fact that disputes belonging to cluster E make up a quarter of all the Polish disputes in the database. Other examples of disputes in cluster E that concern particular groups of public sector employees include a dispute regarding pay and conditions for physiotherapists in Poland; a pay dispute by university academics in Estonia; a dispute about workloads and a lack of funding in youth services in the Netherlands; and a pay dispute involving court secretaries in Poland.

Table 3: Continuous variables in the clusters: mean values

Indicator	All labour disputes in the typology (N = 463)	Cluster A (n = 125)	Cluster B (n = 39)	Cluster C (n = 183)	Cluster D (n = 43)	Cluster E (n = 73)
		National disputes of interest and rights, including different forms of employment and more frequent third-party interventions	Extended disputes of interest concerning collective (pay) agreements with a mix of realised and non-realised actions and more frequent third-party interventions	Localised disputes on matters of interest, concerning employment problems, working time and restructuring, with short work stoppages	Localised disputes concerning workers' rights and grievances over company policies	Disputes concerning public policies
Number of employee organisations involved in the dispute	1.9	1.8	2.3	1.6	2.0	2.3
Duration of the dispute (days)	120	149	182	99	132	79
Median duration of industrial action events in the dispute (days)	10.3	9.0	8.8	14.9	5.7	4.3
Number of realised industrial action events in the dispute	2.0	2.1	3.0	1.8	1.9	2.0

Note: *Green cells indicate the highest values among the clusters, while yellow cells represent the lowest values among the clusters.*
Source: *Authors' own calculations, based on the IAM database, 2021*

Table 4: Categorical variables: distribution of indicator categories within clusters (percentages in columns)

Indicator	Category	Cluster A	Cluster B	Cluster C	Cluster D	Cluster E	Total
Whether the dispute concerns a matter of rights or a matter of interest	Dispute arose from matters of interest	97 (77.6%)	38 (97.4%)	180 (98.4%)	1 (2.3%)	71 (97.3%)	387 (83.6%)
	Dispute arose from matters of rights	28 (22.4%)	1 (2.6%)	3 (1.6%)	42 (97.7%)	2 (2.7%)	76 (16.4%)
	Total	125 (100.0%)	39 (100.0%)	183 (100.0%)	43 (100.0%)	73 (100.0%)	463 (100.0%)
Main issue concerned in the dispute	Employment problems	25 (20.0%)	3 (7.7%)	49 (26.8%)	11 (25.6%)	6 (8.2%)	94 (20.3%)
	Problems concerning pay	70 (56.0%)	25 (64.1%)	81 (44.3%)	12 (27.9%)	11 (15.1%)	199 (43.0%)
	Problems concerning working time	0 (0.0%)	0 (0.0%)	8 (4.4%)	0 (0.0%)	1 (1.4%)	9 (1.9%)
	Protests	6 (4.8%)	3 (7.7%)	5 (2.7%)	3 (7.0%)	40 (54.8%)	57 (12.3%)
	Trade union issues	6 (4.8%)	1 (2.6%)	3 (1.6%)	4 (9.3%)	0 (0.0%)	14 (3.0%)
	Other problems	18 (14.4%)	7 (17.9%)	37 (20.1%)	13 (30.0%)	15 (20.5%)	90 (19.5%)
	Total	125 (100.0%)	39 (100.0%)	183 (100.0%)	43 (100.0%)	73 (100.0%)	463 (100.0%)
Types of employee organisations involved in the dispute	All non-trade unions	1 (0.8%)	1 (2.6%)	12 (6.6%)	2 (4.7%)	6 (8.2%)	22 (4.8%)
	All trade unions, etc.	122 (97.6%)	38 (97.4%)	156 (85.2%)	39 (90.7%)	63 (86.3%)	418 (90.3%)
	Mix of trade unions and non-trade unions	2 (1.6%)	0 (0.0%)	15 (8.2%)	2 (4.7%)	4 (5.5%)	23 (5.0%)
	Total	125 (100.0%)	39 (100.0%)	183 (100.0%)	43 (100.0%)	73 (100.0%)	463 (100.0%)
Employees with non-standard forms of employment involved in the dispute	No	107 (85.6%)	38 (97.4%)	168 (91.8%)	37 (86.0%)	68 (93.2%)	418 (90.3%)
	Yes	18 (14.4%)	1 (2.6%)	15 (8.2%)	6 (14.0%)	5 (6.8%)	45 (9.7%)
	Total	125 (100.0%)	39 (100.0%)	183 (100.0%)	43 (100.0%)	73 (100.0%)	463 (100.0%)
Third-party intervention occurs during the dispute	No	99 (79.2%)	30 (76.9%)	173 (94.5%)	43 (100.0%)	72 (98.6%)	417 (90.1%)
	Yes	26 (20.8%)	9 (23.1%)	10 (5.5%)	0 (0.0%)	1 (1.4%)	46 (9.9%)
	Total	125 (100.0%)	39 (100.0%)	183 (100.0%)	43 (100.0%)	73 (100.0%)	463 (100.0%)
Mix of realised and non-realised industrial action events	All announced actions non-realised*	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
	All announced actions realised	122 (97.6%)	0 (0.0%)	167 (91.3%)	40 (93.0%)	72 (98.6%)	401 (86.6%)
	Mix of realised and non-realised announced actions	3 (2.4%)	39 (100.0%)	16 (8.7%)	3 (7.0%)	1 (1.4%)	62 (13.4%)
	Total	125 (100.0%)	39 (100.0%)	183 (100.0%)	43 (100.0%)	73 (100.0%)	463 (100.0%)
Types of realised industrial action involved in the dispute	Mix of action types	21 (16.8%)	16 (41.0%)	34 (18.6%)	9 (20.9%)	18 (24.7%)	98 (21.2%)
	Other forms of industrial action events affecting work	17 (13.6%)	1 (2.6%)	20 (10.9%)	0 (0.0%)	6 (8.2%)	44 (9.5%)
	Protest or demonstration	12 (9.6%)	0 (0.0%)	24 (13.1%)	6 (14.0%)	25 (34.2%)	67 (14.5%)
	Short work stoppage/assembly	6 (4.8%)	0 (0.0%)	31 (16.9%)	4 (9.3%)	1 (1.4%)	42 (9.1%)
	Strike	69 (55.2%)	22 (56.4%)	74 (40.4%)	24 (55.8%)	23 (31.5%)	212 (45.8%)
	Total	125 (100.0%)	39 (100.0%)	183 (100.0%)	43 (100.0%)	73 (100.0%)	463 (100.0%)

Indicator	Category	Cluster A	Cluster B	Cluster C	Cluster D	Cluster E	Total
Whether the dispute targets government	Government target	6 (4.8%)	4 (10.3%)	5 (2.7%)	2 (4.7%)	58 (79.5%)	75 (16.2%)
	No government target	119 (95.2%)	35 (89.7%)	178 (97.3%)	41 (95.3%)	15 (20.5%)	388 (83.8%)
	Total	125 (100.0%)	39 (100.0%)	183 (100.0%)	43 (100.0%)	73 (100.0%)	463 (100.0%)
Whether the dispute targets a company	Company target	120 (96.0%)	38 (97.4%)	180 (98.4%)	41 (95.3%)	46 (63.0%)	425 (91.8%)
	No company target	5 (4.0%)	1 (2.6%)	3 (1.6%)	2 (4.7%)	27 (37.0%)	38 (8.2%)
	Total	125 (100.0%)	39 (100.0%)	183 (100.0%)	43 (100.0%)	73 (100.0%)	463 (100.0%)
Whether the dispute targets a body that is neither government nor a company	No other target	118 (94.4%)	38 (97.4%)	177 (96.7%)	41 (95.3%)	71 (97.3%)	445 (96.1%)
	Other target	7 (5.6%)	1 (2.6%)	6 (3.3%)	2 (4.7%)	2 (2.7%)	18 (3.9%)
	Total	125 (100.0%)	39 (100.0%)	183 (100.0%)	43 (100.0%)	73 (100.0%)	463 (100.0%)
Whether the dispute is countrywide or not	Countrywide	119 (95.2%)	32 (82.1%)	12 (6.6%)	1 (2.3%)	54 (74.0%)	218 (47.1%)
	Not countrywide	6 (4.8%)	7 (17.9%)	171 (93.4%)	42 (97.7%)	19 (26.0%)	245 (52.9%)
	Total	125 (100.0%)	39 (100.0%)	183 (100.0%)	43 (100.0%)	73 (100.0%)	463 (100.0%)
Context within which the dispute exists, with further details of collective bargaining	Collective bargaining: disagreement over the application of a specific agreement	7 (5.6%)	0 (0.0%)	5 (2.7%)	2 (4.7%)	1 (1.4%)	15 (3.2%)
	Collective bargaining: negotiation of an entirely new collective agreement	19 (15.2%)	12 (30.8%)	25 (13.7%)	4 (9.3%)	1 (1.4%)	61 (13.2%)
	Collective bargaining: unknown	10 (8.0%)	0 (0.0%)	2 (1.1%)	0 (0.0%)	0 (0.0%)	12 (2.6%)
	Collective bargaining: refusal to enter into collective bargaining	6 (4.8%)	1 (2.6%)	9 (4.9%)	1 (2.3%)	0 (0.0%)	17 (3.7%)
	Collective bargaining: renewal of an existing collective agreement	27 (21.6%)	17 (43.6%)	38 (20.8%)	2 (4.7%)	0 (0.0%)	84 (18.1%)
	Grievances over company-level policies	27 (21.6%)	5 (12.8%)	56 (30.6%)	23 (53.5%)	4 (5.5%)	115 (24.8%)
	Grievances over public policies	7 (5.6%)	4 (10.3%)	4 (2.2%)	2 (4.7%)	64 (87.7%)	81 (17.5%)
	Other	8 (6.4%)	0 (0.0%)	11 (6.0%)	4 (9.3%)	2 (2.7%)	25 (5.4%)
	Restructuring	14 (11.2%)	0 (0.0%)	33 (18.0%)	5 (11.6%)	1 (1.4%)	53 (11.4%)
	Total	125 (100.0%)	39 (100.0%)	183 (100.0%)	43 (100.0%)	73 (100.0%)	463 (100.0%)

Notes: * *This category is recorded as zero in all clusters, as only those disputes with at least one realised industrial action were included in the analysis. When percentages for a cluster are notably high compared with the total percentage, dark green shading has been used to indicate the highest percentages, with lighter green shading used for other high percentages. When percentages for a cluster are notably low compared with the total percentage, dark yellow shading has been used to indicate the lowest percentages, with lighter yellow shading used for other low percentages.*
Source: *Authors' own calculations, based on the IAM database, 2021*

Table 5: Categorical variables: distribution of indicator categories between clusters (percentages in rows)

Indicator	Category	Cluster A	Cluster B	Cluster C	Cluster D	Cluster E	Total
Whether the dispute concerns a matter of rights or a matter of interest	Dispute arose from matters of interest	97 (25.1%)	38 (9.8%)	180 (46.5%)	1 (0.3%)	71 (18.3%)	387 (100.0%)
	Dispute arose from matters of rights	28 (36.8%)	1 (1.3%)	3 (3.9%)	42 (55.3%)	2 (2.6%)	76 (100.0%)
	Total	125 (27.0%)	39 (8.4%)	183 (39.5%)	43 (9.3%)	73 (15.8%)	463 (100.0%)
Main issue concerned in the dispute	Employment problems	25 (26.6%)	3 (3.2%)	49 (52.1%)	11 (11.7%)	6 (6.4%)	94 (100.0%)
	Problems concerning pay	70 (35.2%)	25 (12.6%)	81 (40.7%)	12 (6.0%)	11 (5.5%)	199 (100.0%)
	Problems concerning working time	0 (0.0%)	0 (0.0%)	8 (88.9%)	0 (0.0%)	1 (11.1%)	9 (100.0%)
	Protests	6 (10.5%)	3 (5.3%)	5 (8.8%)	3 (5.3%)	40 (70.2%)	57 (100.0%)
	Trade union issues	6 (42.9%)	1 (7.1%)	3 (21.4%)	4 (28.6%)	0 (0.0%)	14 (100.0%)
	Other problems	18 (20.0%)	7 (7.8%)	37 (41.1%)	13 (14.4%)	15 (16.7%)	90 (100.0%)
	Total	125 (27.0%)	39 (8.4%)	183 (39.5%)	43 (9.3%)	73 (15.8%)	463 (100.0%)
Types of employee organisations involved in the dispute	All non-trade unions	1 (4.5%)	1 (4.5%)	12 (54.5%)	2 (9.1%)	6 (27.3%)	22 (100.0%)
	All trade unions, etc.	122 (29.2%)	38 (9.1%)	156 (37.3%)	39 (9.3%)	63 (15.1%)	418 (100.0%)
	Mix of trade unions and non-trade unions	2 (8.7%)	0 (0.0%)	15 (65.2%)	2 (8.7%)	4 (17.4%)	23 (100.0%)
	Total	125 (27.0%)	39 (8.4%)	183 (39.5%)	43 (9.3%)	73 (15.8%)	463 (100.0%)
Employees with non-standard forms of employment involved in the dispute	No	107 (25.6%)	38 (9.1%)	168 (40.2%)	37 (8.9%)	68 (16.3%)	418 (100.0%)
	Yes	18 (40.0%)	1 (2.2%)	15 (33.3%)	6 (13.3%)	5 (11.1%)	45 (100.0%)
	Total	125 (27.0%)	39 (8.4%)	183 (39.5%)	43 (9.3%)	73 (15.8%)	463 (100.0%)
Third-party intervention occurs during the dispute	No	99 (23.7%)	30 (7.2%)	173 (41.5%)	43 (10.3%)	72 (17.3%)	417 (100.0%)
	Yes	26 (56.5%)	9 (19.6%)	10 (21.7%)	0 (0.0%)	1 (2.2%)	46 (100.0%)
	Total	125 (27.0%)	39 (8.4%)	183 (39.5%)	43 (9.3%)	73 (15.8%)	463 (100.0%)
Mix of realised and non-realised industrial action events	All announced actions non-realised*	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
	All announced actions realised	122 (30.4%)	0 (0.0%)	167 (41.6%)	40 (10.0%)	72 (18.0%)	401 (100.0%)
	Mix of realised and non-realised announced actions	3 (4.8%)	39 (62.9%)	16 (25.8%)	3 (4.8%)	1 (1.6%)	62 (100.0%)
	Total	125 (27.0%)	39 (8.4%)	183 (39.5%)	43 (9.3%)	73 (15.8%)	463 (100.0%)
Types of realised industrial action involved in the dispute	Mix of action types	21 (21.4%)	16 (16.3%)	34 (34.7%)	9 (9.2%)	18 (18.4%)	98 (100.0%)
	Other forms of industrial action events affecting work	17 (38.6%)	1 (2.3%)	20 (45.5%)	0 (0.0%)	6 (13.6%)	44 (100.0%)
	Protest or demonstration	12 (17.9%)	0 (0.0%)	24 (35.8%)	6 (9.0%)	25 (37.3%)	67 (100.0%)
	Short work stoppage/assembly	6 (14.3%)	0 (0.0%)	31 (73.8%)	4 (9.5%)	1 (2.4%)	42 (100.0%)
	Strike	69 (32.5%)	22 (10.4%)	74 (34.9%)	24 (11.3%)	23 (10.8%)	212 (100.0%)
	Total	125 (27.0%)	39 (8.4%)	183 (39.5%)	43 (9.3%)	73 (15.8%)	463 (100.0%)

Indicator	Category	Cluster A	Cluster B	Cluster C	Cluster D	Cluster E	Total
Whether the dispute targets government	Government target	6 (8.0%)	4 (5.3%)	5 (6.7%)	2 (2.7%)	58 (77.3%)	75 (100.0%)
	No government target	119 (30.7%)	35 (9.0%)	178 (45.9%)	41 (10.6%)	15 (3.9%)	388 (100.0%)
	Total	125 (27.0%)	39 (8.4%)	183 (39.5%)	43 (9.3%)	73 (15.8%)	463 (100.0%)
Whether the dispute targets a company	Company target	120 (28.2%)	38 (8.9%)	180 (42.4%)	41 (9.6%)	46 (10.8%)	425 (100.0%)
	No company target	5 (13.2%)	1 (2.6%)	3 (7.9%)	2 (5.3%)	27 (71.1%)	38 (100.0%)
	Total	125 (27.0%)	39 (8.4%)	183 (39.5%)	43 (9.3%)	73 (15.8%)	463 (100.0%)
Whether the dispute targets a body that is neither government nor a company	No other target	118 (26.5%)	38 (8.5%)	177 (39.8%)	41 (9.2%)	71 (16.0%)	445 (100.0%)
	Other target	7 (38.9%)	1 (5.6%)	6 (33.3%)	2 (11.1%)	2 (11.1%)	18 (100.0%)
	Total	125 (27.0%)	39 (8.4%)	183 (39.5%)	43 (9.3%)	73 (15.8%)	463 (100.0%)
Whether the dispute is countrywide or not	Countrywide	119 (54.6%)	32 (14.7%)	12 (5.5%)	1 (0.5%)	54 (24.8%)	218 (100.0%)
	Not countrywide	6 (2.4%)	7 (2.9%)	171 (69.8%)	42 (17.1%)	19 (7.8%)	245 (100.0%)
	Total	125 (27.0%)	39 (8.4%)	183 (39.5%)	43 (9.3%)	73 (15.8%)	463 (100.0%)
Context within which the dispute exists, with further details of collective bargaining	Collective bargaining: disagreement over the application of a specific agreement	7 (46.7%)	0 (0.0%)	5 (33.3%)	2 (13.3%)	1 (6.7%)	15 (100.0%)
	Collective bargaining: negotiation of an entirely new collective agreement	19 (31.1%)	12 (19.7%)	25 (41.0%)	4 (6.6%)	1 (1.6%)	61 (100.0%)
	Collective bargaining: unknown	10 (83.3%)	0 (0.0%)	2 (16.7%)	0 (0.0%)	0 (0.0%)	12 (100.0%)
	Collective bargaining: refusal to enter into collective bargaining	6 (35.3%)	1 (5.9%)	9 (52.9%)	1 (5.9%)	0 (0.0%)	17 (100.0%)
	Collective bargaining: renewal of an existing collective agreement	27 (32.1%)	17 (20.2%)	38 (45.2%)	2 (2.4%)	0 (0.0%)	84 (100.0%)
	Grievances over company-level policies	27 (23.5%)	5 (4.3%)	56 (48.7%)	23 (20.0%)	4 (3.5%)	115 (100.0%)
	Grievances over public policies	7 (8.6%)	4 (4.9%)	4 (4.9%)	2 (2.5%)	64 (79.0%)	81 (100.0%)
	Other	8 (32.0%)	0 (0.0%)	11 (44.0%)	4 (16.0%)	2 (8.0%)	25 (100.0%)
	Restructuring	14 (26.4%)	0 (0.0%)	33 (62.3%)	5 (9.4%)	1 (1.9%)	53 (100.0%)
	Total	125 (27.0%)	39 (8.4%)	183 (39.5%)	43 (9.3%)	73 (15.8%)	463 (100.0%)

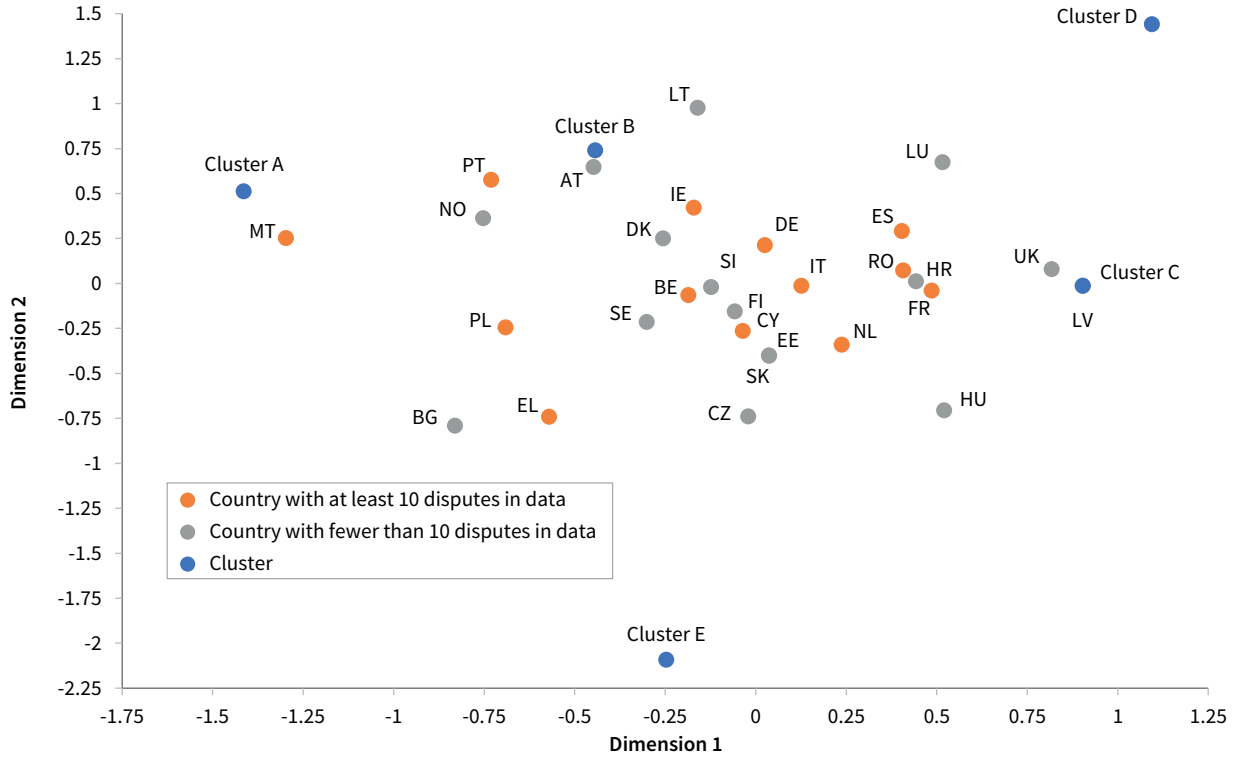
Note: ** This category is recorded as zero in all clusters, as only those disputes with at least one realised industrial action were included in the analysis.*
Source: *Authors' own calculations, based on the IAM database, 2021*

Analysis by country

As many countries have a very low incidence of industrial action, and therefore only a small number of disputes recorded in the database, the analysis of which countries are associated with which clusters was mainly restricted to countries with a higher incidence of industrial action. However, by looking broadly at the patterns, it may be possible to draw general conclusions. To this end, correspondence analysis of the data in Table A10 and Table A11 was undertaken to obtain a graphical representation (Figure 12) of the relationships that exist in these data. The correspondence analysis involved a mathematical reformulation of the row and column percentages (in this case, those in Table A10 and Table A11) to produce a two-dimensional plot that represents as large a proportion of the information about relationships in the tables as possible. In the case of Figure 12, the two dimensions together represent 67.3% of the information in Table A10 and Table A11. It is sometimes the case that a correspondence analysis yields two dimensions that themselves have an empirical interpretation but often, as here, this is not the case. The two dimensions should therefore not be interpreted in their own right, and the focus should be restricted to the relative positions of points in the plot. Each cluster is labelled (clusters A–E) and each country is labelled with its two-character country code. The nearer a country's point is to a cluster's point, the greater the strength of the relationship between the two. However, a word of caution about the interpretation of this figure. In Figure 12, the point for Latvia is covered by the point for cluster C because all of the disputes in the IAM data associated with Latvia are in cluster C. However, this is the result of only two recorded disputes and should thus be treated with caution. Indeed, the position of each point in the plot is not exact and, were more data made available, the positions of the points would change. This is particularly important in the case of countries for which only limited data are available. To overcome this to some extent, countries with at least 10 disputes in the data analysed are highlighted in Figure 12.

The interpretation of Figure 12 is difficult because the position of the point for each country is not precise. None of the countries has very large numbers of data on which to base its positioning in the chart and many have relatively low numbers. However, viewing this figure alongside Tables A10 and A11, and looking at countries which have at least 10 disputes, it is fair to attempt the following interpretation. Germany, Greece, Ireland, Malta, Poland and Portugal all have a significant proportion of their disputes associated with cluster A (national disputes of interest and rights), whereas

Figure 12: Correspondence plot for clusters and countries, EU27 and UK



Source: *Authors' own calculations, based on the IAM database, 2021*

France only has a small proportion associated with this cluster. Cluster B (extended disputes of interest) contains almost a quarter of the disputes associated with Portugal, but no other country has particularly high or low proportions of its disputes associated with this cluster. Large proportions of the disputes in France, Germany, the Netherlands, Romania and Spain are associated with cluster C (localised disputes on matters of interest), while the proportion of disputes in this cluster is lower for Poland and Portugal. Cluster D (localised disputes concerning workers' rights) contains just under a fifth of disputes associated with France, Ireland, Italy and Spain. Cluster E (disputes concerning public policies) has almost half of the disputes associated with Greece and a quarter of those associated with Cyprus, the Netherlands and Poland.

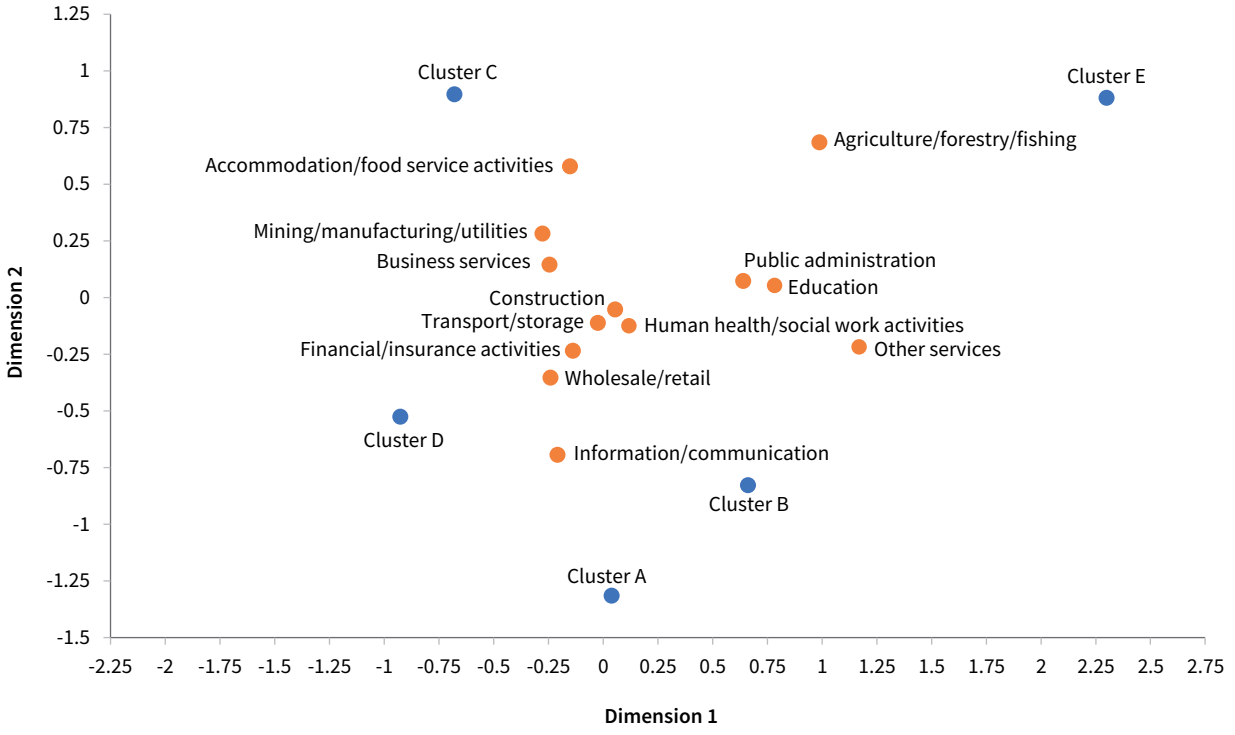
Analysis by sector

As with the analysis by country, with so many sectors only having small numbers of disputes recorded in the database, it is difficult to draw any detailed conclusions on which sectors are associated with which clusters. However, by merging a number of related NACE sectors and by looking broadly at the patterns, it may be possible to draw general conclusions. In Table A12 and Table A13, the disputes in each cluster are broken down by the (merged) sector they are associated with. Figure 13 shows a correspondence plot for the clusters and sectors, based on a correspondence analysis (see 'Analysis by country' for a full explanation). The two dimensions that are present in this chart together represent 76.8% of the information in Tables A12 and A13. Each cluster is labelled (clusters A–E) and (merged) sectors are labelled. The nearer a sector's point is to a cluster's point, the greater the strength of the relationship.

Because the IAM database cannot be considered to be a random sample of all disputes, it is not feasible to view the number of disputes in each sector as being representative of how dispute-prone different sectors may be. It is plausible, or even likely, that disputes in certain sectors are more likely to be reported than disputes in other sectors and this will affect the frequency with which these appear in the IAM database.

However, it is still possible to explore the relative frequency with which different sectors appear in different clusters of the typology, particularly for those sectors for which a reasonable number of disputes exist in the database. To this end, it should be noted that sectors B (mining), C (manufacturing), D and E (utilities) are associated to a greater degree with cluster C (localised disputes on matters of interest) and to a lesser degree with cluster A (national disputes of interest and rights) than average. Close to half of the disputes associated with sector G (wholesale/retail) are in cluster A (national disputes of interest and rights) and the same is true for sector K (financial/insurance activities); the figure is more than half for disputes in sector J (information/communication).

Figure 13: Correspondence plot for clusters and sectors



Source: *Authors' own calculations, based on the IAM database, 2021*

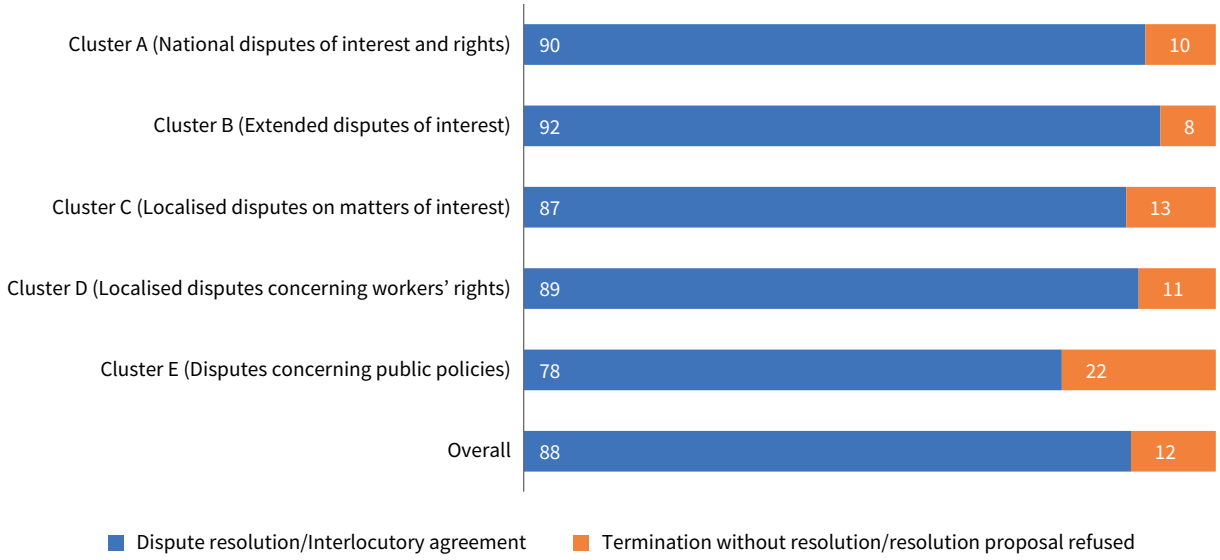
Sectors O (public administration and defence; compulsory social security) and P (education) are more closely associated with cluster E (disputes concerning public policies) than other clusters. It is interesting to note that sectors H (transport/storage) and Q (human health/social work activities) are associated with all of the clusters in approximately the same proportions as the entire database, not being particularly associated or disassociated with any cluster. Over half of the disputes in cluster B (extended disputes of interest) are associated with sector H (transport/storage), which is significant, as that sector accounts for only one-third of the disputes in the database. Cluster C (localised disputes on matters of interest) and cluster D (localised disputes concerning workers' rights) are notable in that they are distributed across sectors in the same proportions as the sectors appear in the database, suggesting that they are not particularly associated or disassociated with certain sectors.

Analysis by outcome

Of the 463 disputes used to create the typology, there are only 259 for which the outcome of the dispute is available. For a small number of disputes, more than one outcome is recorded (for example, when a separate agreement has been reached at each of a number of company bases or when a resolution has occurred after an interlocutory agreement or after a previous refusal of a proposed resolution). When this is the case, a selection was made, choosing the outcome that best reflected the overall final result of the dispute. Figure 14 shows the outcomes recorded for the disputes in each cluster. Outcomes recorded as 'resolution proposal refused' have been combined with those recorded as 'termination without resolution' due to the small number of the former. Figure 14 shows that disputes in cluster B (extended disputes of interest) are least likely to not have some form of resolution (only 8% of disputes in this cluster fall under this category), compared with the overall rate of 12% (although only marginally less than disputes in cluster A (national disputes of interest and rights), cluster C (localised disputes on matters of interest) or cluster D (localised disputes concerning workers' rights)). Disputes in cluster E (disputes concerning public policies) are least likely to be resolved or result in an interlocutory agreement (78% of disputes in this cluster).

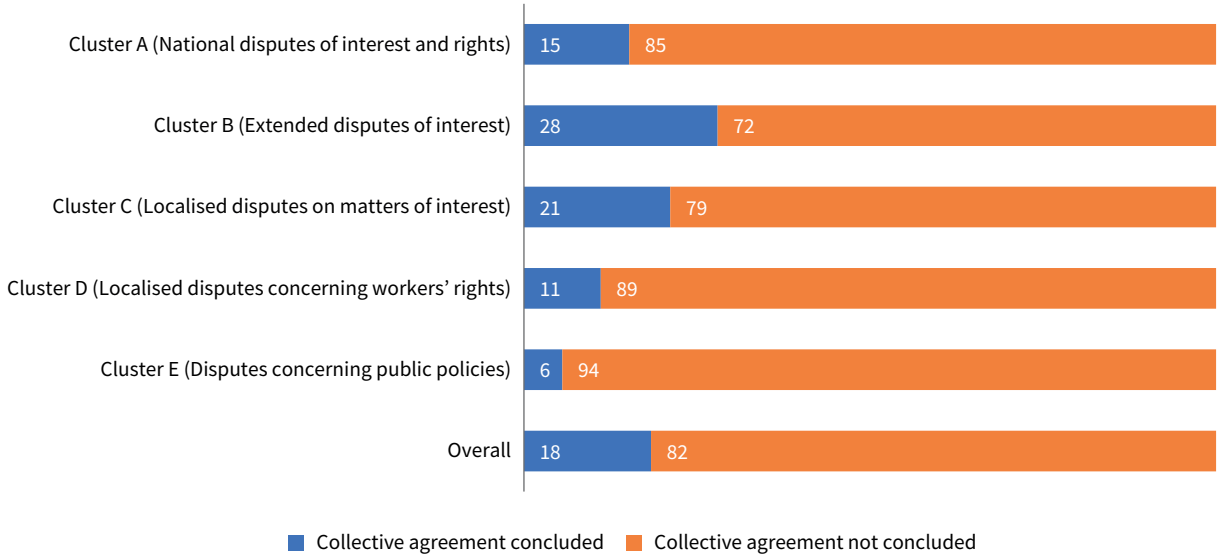
The analysis further examined the cases to identify collective agreements involved in the dispute outcome. For those disputes in which a resolution between the parties was reached, the free text information in the database concerning the outcome was scrutinised to see if a collective agreement or collective bargaining was mentioned. As Figure 15 shows, this was most commonly the case in cluster B (extended disputes of interest), namely in 28% of cases, compared with an overall rate of 18%, although it was not uncommon in cluster A (national disputes of interest and rights; 15%), cluster C (localised disputes on matters of interest; 21%) or cluster D (localised disputes concerning workers' rights; 11%). Cluster E (disputes concerning public policies) was the least likely to have disputes resolved involving a collective agreement, with such agreements concluded in only 6% of cases.

Figure 14: Dispute resolution by cluster (%)



Source: *Authors' own calculations, based on the IAM database, 2021*

Figure 15: Dispute resolution involving a collective agreement by cluster (%)



Source: *Authors' own calculations, based on the IAM database, 2021*

Relationships with other typologies

Industrial democracy in the EU is marked by two contrasting features: on the one hand, by strong path dependency, with distinctive national traditions that build on past political, economic and societal patterns, often embedded in enduring institutions; on the other hand, by dynamic patterns of transformation, reflecting not only political change but also progress towards European economic convergence, as well as the spread of increasingly international human resources practices associated with the growing dominance of large transnational employers.

In such a situation, the identification of stable patterns is extremely difficult, a challenge exacerbated by the lack of consistent definitions that would make it possible to compile comparable data. There is, as yet, no generally agreed national typology and, as shown in Table A14 (Annex 1), attempts to find relationships between existing typologies, or sets of indicators, produce very inconsistent results.

The typology of labour disputes created in the present research is compared with the following five typologies of industrial democracy.

1. **Varieties of capitalism**. Originating in Esping-Andersen's classic 1990 work *The three worlds of welfare capitalism*, this threefold typology ('social democratic', 'corporatist' and 'liberal' regimes) was enormously influential in the academic literature for three decades, and has been much critiqued and adapted – for example, by the addition of 'Mediterranean' and 'transitional' models (Esping-Andersen, 1990). Although superseded by subsequent economic and political events in several respects, it has been included in the analysis (using a fivefold typology) to test the extent to which it may have continuing relevance.
2. **Union density**. One crude measure of the extent to which working populations are, in practice, represented by some form of collective bargaining is union density. For this reason, data from the Organisation for Economic Co-operation and Development (OECD)/AIAS database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts (OECD, undated) were used to develop a threefold typology (high, moderate and low) for investigating the correlation between union density and labour disputes.
3. **Intensity of strike activity**. To explore the correlation between the labour disputes recorded in the database and other sources of information on the intensity of strike activity, the study drew on data from ETUI (undated) and its interpretation by Vandaele (2016). Unfortunately, this source does not cover all of the EU Member States, so the threefold classification (high, medium and low) could not be applied in 15 of the cases, namely those in which the country was not classified.
4. **Industrial democracy**. One of the most thorough attempts to develop a consistent typology of industrial democracy has been by Sanz de Miguel et al (2020). Hypotheses based on this sixfold typology were also developed to examine how it correlates with the patterns of labour disputes in the dataset.

5. **Collective bargaining**. The final typology investigated looks at patterns of collective bargaining, in particular the level at which this is predominantly carried out in each national context. Here, the study drew on analysis of Eurofound's European Company Survey 2019 (Eurofound, 2020) to investigate the correlations between the four types identified here and the patterns of labour disputes found in the dataset.

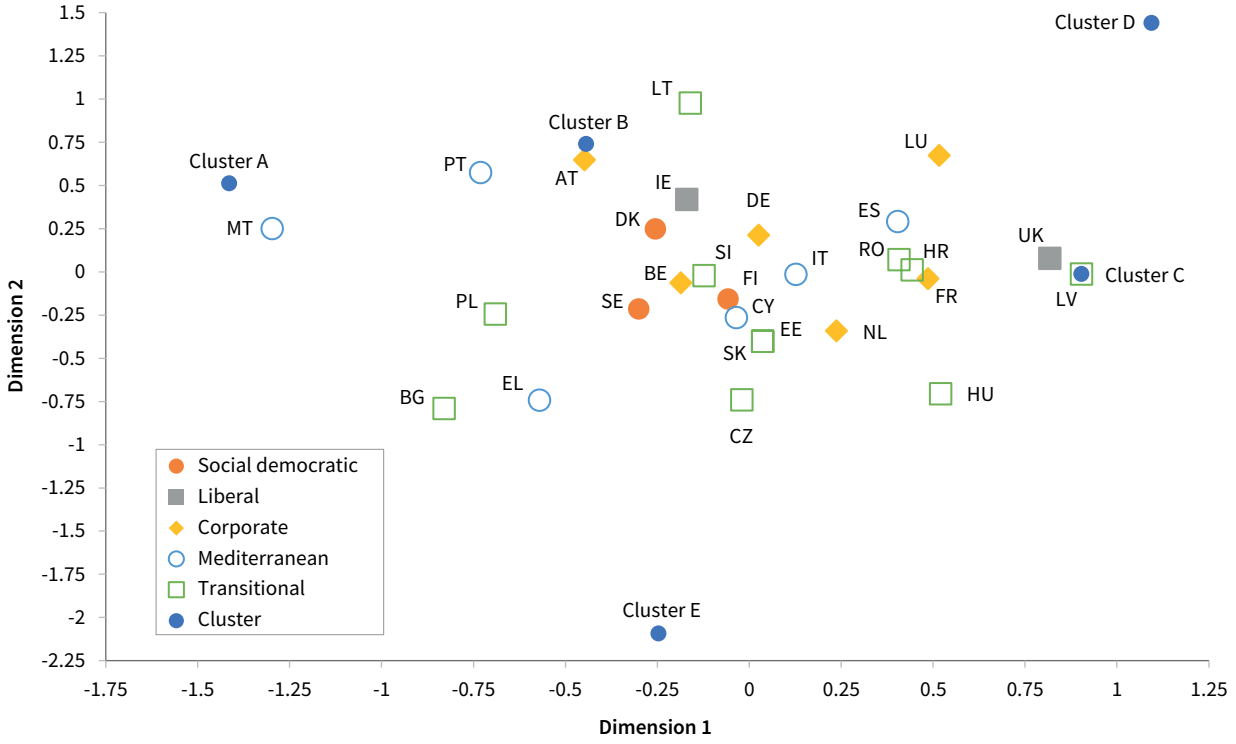
Unlike the five typologies above, the typology of labour disputes created in this report did not allocate countries to different 'types', but instead allocated disputes. Each country therefore has a mix of dispute types and a comparison with other typologies cannot be achieved just by adding another column to Table A14.

To achieve the aim of being able to compare the typologies, it was necessary to return to Figure 12, which shows the relationship between countries and labour dispute clusters. Figure 16 replicates Figure 12 (typology of labour disputes by country and cluster) and adds the label of capitalism typology to each country.

In Figures A2 to A5, we have replicated Figure 12 but, in these cases, have marked each country with its associated category from each of the other four typologies listed above.

None of the charts in Figure 16 or Figures A2 to A5 shows clear patterns of association between the typology of labour disputes and the five typologies of industrial democracy. In Figure 16, it could be argued that those countries classified as corporate have a greater relationship with cluster B than other countries. It is difficult to pick out any patterns in Figure A2 regarding union density, in Figure A3 regarding intensity of strike activity or in Figure A4 regarding industrial democracy. In Figure A5, it could be argued that those countries classified as 'predominantly sector-level or higher level bargaining' have a greater relationship with cluster B than those countries classified as 'coexistence of sector- and company-level bargaining'. Overwhelmingly, though, the message from these figures is that clear relationships between Eurofound's typology of labour disputes and other typologies of industrial democracy cannot be found. This would seem to indicate that the typology of labour disputes has important differences from the other typologies.

Figure 16: Typology of labour disputes by cluster and varieties of capitalism



Source: *Authors' own calculations, based on the IAM database, 2021*

4 Conclusions and recommendations

The IAM database represents an unprecedented source of empirical data on collective labour disputes involving industrial action in Europe. However, because of the challenges of defining disputes and of capturing data, the data do not, inevitably, represent a complete census of all labour disputes during the monitoring period (2018–2019). Nevertheless, in some countries, especially those with limited strike activity, the data do cover all or the majority of major disputes, while they account for a substantial sample of major disputes in many other countries. Compared with other data sources, this database offers greater contextual and qualitative information; it is, moreover, organised systematically in a way that enables comparative analysis and it covers all EU Member States, Norway and the UK.

The database has therefore provided, for the first time, an important new resource that offers the opportunity to test a range of hypotheses about industrial action developed within the literature on industrial relations.

After an intensive process of online research to find information missing from the original records, along with a survey of the existing literature, this study used a cluster analysis method to analyse the rich dataset, with the aim of identifying national and sectoral patterns in the distribution and characteristics of industrial action in Europe during this period.

Perhaps the most striking conclusion was that none of the existing typologies found in the literature provided a convincing explanatory framework for the distribution and characteristics of disputes in the database.

The disputes were grouped into five main clusters:

- cluster A – national disputes of interest and rights, including different forms of employment and more frequent third-party interventions
- cluster B – extended disputes of interest concerning collective (pay) agreements with a mix of realised and non-realised actions and more frequent third-party interventions
- cluster C – localised disputes on matters of interest, concerning employment problems, working time and restructuring, with short work stoppages
- cluster D – localised disputes concerning workers' rights and grievances over company policies
- cluster E – disputes concerning public policies

When looking at their prevalence by country, the distribution of these clusters did not follow any of the patterns that might be expected based on five existing typologies in the literature: typologies based on national differences in varieties of capitalism, union density, intensity of strike activity, types of industrial democracy and collective bargaining.

The nearest correlation that could be found was a greater relationship between disputes concerning collective agreements with a mix of realised and non-realised actions (cluster B) and those countries classified as 'corporate' (in the literature discussing 'varieties of capitalism') and those classified as having 'predominantly sector-level or higher level bargaining' (in the literature on the types of collective bargaining) than between other clusters and countries. However, the overwhelming message is that no clear relationship can be found between the typology of labour disputes derived from these data and other typologies of industrial democracy. Thus, the typology of labour disputes shown here reveals an important difference from the other typologies.

The implications of this are that there is a need for considerably more research on this topic, which will need to be underpinned by reliable data.

The overview of the evidence in this study has shown that there is currently a deficit of reliable information about labour disputes in Europe. In taking the first steps towards remedying this deficit, the IAM has not only demonstrated its importance but also revealed some of the challenges involved in the systematic collection of data on labour disputes.

In particular, it has flagged up the importance of establishing clear definitions of what constitutes a labour dispute, for example in relation to the distinction between labour disputes and more general political protests regarding actions relating to government policies or the distinction between protests and social media activism relating to unorganised and precarious forms of work.

It has also drawn attention to the challenge of collecting information on disputes that are not reported in the media, do not take the form of strikes and may take place out of sight of external observers within single organisations or groups of establishments.

Collecting data on industrial action in the future

Given the high costs of maintaining a single data collection instrument, and the need for both international and longitudinal comparability, perhaps the most productive way forward would be to collect information on labour disputes by adding to, or streamlining, existing data collection instruments. There might even be scope for exploring means by which employer associations and trade unions could share their own data on disputes with statistical bodies in the context of social dialogue, to avoid the duplication of effort and in recognition of a common interest in accurate tracking of industrial action.

While recognising the need to reduce the burden on respondents by keeping questionnaires to a manageable length, and the strong competing demands for additional questions on many European surveys, this nevertheless appears to be the most cost-effective way of collecting data that will not only allow comparison between Member States but also provide a longitudinal time series, enabling trends to be observed and analysed.

There is clearly a need for data at population level, sector level and – especially in countries where sector-level bargaining is less common – enterprise and/or establishment level. In some Member States, administrative data can be drawn on, but this is by no means universally the case. As a result, there is a potential opportunity to use population-based surveys such as the European Union Labour Force Survey, the European Working Conditions Survey, the European Skills and Jobs Survey or the European Union Statistics on Income and Living Conditions to better capture information on whether or not participants have taken part in labour disputes. Consideration could be given to expanding existing questions or adding new questions to facilitate this. While not providing reliable information about the actors involved or the nature of the disputes, this would provide valuable information on the occupational and demographic characteristics of the workers involved. It might also be worth investigating the possibility of adding questions to the European Social Attitudes Survey, which would not only provide evidence of whether or not an individual respondent had taken part in, or been affected by, a labour dispute but also make it possible to investigate the correlation of this experience with membership of and attitudes towards trade unions and more general political views.

A number of European countries run useful surveys that involve both employers and employees, making it possible to link data from both sources. Again, however, this is not a universal practice and there is a need for Europe-wide surveys, such as the European Company Survey. Here, too, it would be useful to investigate the potential for the expansion of existing questions or the addition of new questions in order to capture reliable, comparable information on labour disputes. Similarly, there are other instruments collecting information at enterprise or establishment level that could be explored from this perspective, such as the Community Innovation Survey. The results could be used to shed light on the extent to which labour disputes may be linked to the introduction of new technologies or other forms of innovation.

Supplementing these data with data from administrative sources would, however, be advantageous and there may be scope in some countries for developing new ways of making such administrative data available without compromising data security.

In summary, the analysis in this report draws attention to the extent to which the existing literature on industrial action in Europe is based on inadequate data and highlights the need for the systematic collection of empirical evidence in the future to provide a basis for comparative analysis. Such detailed collection should ideally be:

- based on clear definitions agreed at international or EU level to ensure national comparability
- collected regularly to enable longitudinal analysis
- sufficiently detailed to enable comparison across a number of dimensions (which should be agreed through discussion with relevant stakeholders), such as sector, occupation/type of employment, triggering issue, collective bargaining context and gender of the workers involved
- capable, if possible, of being triangulated with other data to enable the calculation of the economic costs of disputes, to both employers and workers.

Bibliography

All Eurofound publications are available at www.eurofound.europa.eu

Akkerman, A. (2008), 'Union competition and strikes: The need for analysis at the sector level', *International Labour Review*, Vol. 61, No. 4, pp. 445–459.

Alimahomed-Wilson, J. and Ness, I. (2018), *Choke points – Logistics workers disrupting the global supply chain*, Pluto Press, London.

Barratt, T., Goods, C. and Veen, A. (2020), '"I'm my own boss …": Active intermediation and "entrepreneurial" worker agency in the Australian gig-economy', *Environment and Planning A: Economy and Space*, Vol. 52, No. 8, pp. 1643–1661.

Bernaciak, M. (2015), *Beyond the CEE 'black box': Crisis and industrial relations in the new EU member states*, ETUI working paper 2015.05, European Trade Union Institute, Brussels.

Boewe, J. and Schulten, J. (2019), *The long struggle of Amazon employees – Laboratory of resistance: Union organising in e-commerce worldwide*, Rosa-Luxemburg-Stiftung, Brussels.

Bohle, D. and Greskovits, B. (2007), 'Neoliberalism, embedded neoliberalism and neocorporatism: Towards transnational capitalism in Central-Eastern Europe', *West European Politics*, Vol. 30, No. 3, pp. 443–466.

Campillo, I. (2018), '"If we stop, the world stops": The 2018 feminist strike in Spain', *Social Movement Studies*, Vol. 18, No. 2, pp. 252–258.

Cant, C. (2019), *Riding for Deliveroo: Resistance in the new economy,* Polity Press, Cambridge, UK.

Cant, C. and Mogno, C. (2020), 'Platform workers of the world, unite! The emergence of the Transnational Federation of Couriers', *South Atlantic Quarterly*, Vol. 119, No. 2, pp. 401–411.

Cant, C. and Woodcock, J. (2020), 'The fast food shutdown: From disorganisation to action in the service sector', *Capital and Class*, Vol. 44, No. 4, pp. 513–521.

Cillo, R. and Pradella, L. (2019), 'Remaking the labour movement in Italy: The revival of strikes at Fiat-Chrysler Automobiles in 2015–17', *Globalizations*, Vol. 16, No. 4, pp. 457–471.

Corby, S. (2003), *Public sector disputes and third party intervention*, Research paper 02/03, ACAS, London.

de Groen, W. P., Lenaerts, K., Bosc, R. and Paquier, F. (2017), *Impact of digitalisation and the on-demand economy on labour markets and the consequences for employment and industrial relations*, European Economic and Social Committee, Brussels.

de Stefano, V. (2016), 'The rise of the "just-in-time workforce": On-demand work, crowd work and labour protection in the "gig-economy"', *Comparative Labor Law & Policy Journal*, Vol. 37, No. 3, pp. 471–504.

Drahokoupil, J. and Jepsen, M. (2017), 'The digital economy and its implications for labour: The platform economy', *Transfer: European Review of Labour and Research*, Vol. 23, No. 2, pp. 103–119.

Dunand, J.-P. and Mahon, P. (2019), 'Switzerland', in Daugareilh, I., Degryse, C. and Pochet, P. (eds.), *The platform economy and social law: Key issues in comparative perspective*, ETUI working paper 2019.10, European Trade Union Institute, Brussels, pp. 107–113.

Edwards, P. K. (1979), 'The "social" determination of strike activity', *Journal of Industrial Relations*, Vol. 21, No. 2, pp. 198–216.

Ehnts, D. and Paetz, M. (2021), 'COVID-19 and its economic consequences for the euro area', *Eurasian Economic Review*, Vol. 11, pp. 227–249.

Eldridge, J. E. T. and Crombie, A. D. (1974), *A sociology of organisations*, George Allen & Unwin, London.

EPSU (European Public Service Union) (undated), *The right to strike – Country factsheets*, web page, accessed July 2021.

Esping-Andersen, G. (1990), *The three worlds of welfare capitalism*, Princeton University Press, Princeton, NJ.

ETUI (European Trade Union Institute) (undated), *Strike map of Europe*, web page, accessed 5 November 2021.

Eurofound (2010), *Individual disputes at the workplace: Alternative disputes resolution*, Publications Office of the European Union, Luxembourg.

Eurofound (2017), *Mapping varieties of industrial relations: Eurofound's analytical framework applied*, Publications Office of the European Union, Luxembourg.

Eurofound (2018), *Measuring varieties of industrial relations in Europe: A quantitative analysis*, Publications Office of the European Union, Luxembourg.

Eurofound (2019a), *Annual review of working life 2018*, Publications Office of the European Union, Luxembourg.

Eurofound (2019b), *Measuring varieties of industrial relations in Europe: Methodology*, Eurofound working paper, Dublin.

Eurofound (2020), *Collective agreements and bargaining coverage in the EU: A mapping of types, regulations and first findings from the European Company Survey 2019*, Publications Office of the European Union, Luxembourg.

Eurofound (2021a), *Platform economy database*, Platform economy repository, Dublin.

Eurofound (2021b), *Collective agreement for bicycle couriers in Austria*, Platform economy repository, Dublin.

Fernàndez, A. and Soliña Barreiro, M. (2020), 'The algorithm is not my boss anymore: Technological appropriation and (new) media strategies in Riders x Derechos and Mensakas', *Contracampo*, Vol. 39, No. 1, pp. 65–83.

Fougner, T. and Kurtoglu, A. (2011), 'Transnational labour solidarity and social movement unionism: Insights from and beyond a women workers' strike in Turkey', *British Journal of Industrial Relations*, Vol. 49, No. s2, pp. s353–s375.

Frenkel, S. J. (1980), 'Inter-industry strike patterns: Towards a new analytical framework', *Australian Journal of Management*, Vol. 5, No. 1–2, pp. 27–43.

Gall, G. (2012a), 'The engineering construction strikes in Britain, 2009', *Capital & Class*, Vol. 36, No. 3, pp. 411–431.

Gall, G. (2012b), 'Quiescence continued? Recent strike activity in nine western European economies', *Economic and Industrial Democracy*, Vol. 34, No. 4, pp. 667–691.

Gall, G. (2014), 'New forms of labour conflict: A transnational overview', in Atzeni, M. (ed.), *Workers and labour in a globalised capitalism: Contemporary themes and theoretical issues*, pp. 210–229, Palgrave Macmillan, London.

Gallas, A. and Nowak, J. (2016), 'Mass strikes in the global crisis', *Workers of the World*, Vol. 1, No. 8, pp. 6–15.

Gerber, C. and Krzywdzinkski, M. (2019), 'Brave new digital work? New forms of performance control in crowdwork', in Vallas, S. and Kovalainen, A. (eds.), *Work and labor in the digital age: Research in the sociology of work*, Vol. 33, pp. 121–143, Emerald, Bingley, UK.

Gouldner, A. W. (1954), *Patterns of industrial bureaucracy*, Free Press, Glencoe, IL.

Gower, J. C. (1971), 'A general coefficient of similarity and some of its properties', *Biometrics*, Vol. 27, No. 4, pp. 857–871.

Hamann, K., Johnston, A. and Kelly, J. (2013), 'Striking concessions from governments: The success of general strikes in western Europe, 1980–2009', *Comparative Politics*, Vol. 46, No. 1, pp. 23–41.

Heiland, H. (2020), *Workers' voice in platform labour: An overview*, Hans-Böckler-Stiftung, Dusseldorf.

Hughes, E., Dobbins, T. and Murphy, S. (2018), 'Going underground: A tube worker's experience of struggles over the frontier of control', *Work, Employment and Society*, Vol. 33, No. 1, pp. 174–183.

Huws, U. (2015), *Online labour exchanges, or 'crowdsourcing': Implications for occupational safety and health*, European Agency for Safety and Health at Work, Bilbao.

Hyman, R. (1977), *Strikes*, Palgrave Macmillan, London.

Hyman, R. (2018), 'What future for industrial relations in Europe?' *Employee Relations*, Vol. 40, No. 4, pp. 569–579.

IlO (international Labour Organization) (1993), *Resolution concerning statistics of strikes, lockouts and other action due to labour disputes*, adopted by the Fifteenth International Conference of Labour Statisticians (January 1993), Geneva.

Jansen, G. (2020), 'Solo self-employed and membership of interest organizations in the Netherlands: Economic, social and political determinants', *Economic and Industrial Democracy*, Vol. 41, No. 3, pp. 512–539.

Joyce, S., Neumann, D., Trappman, V. and Umney. C. (2020), *A global struggle: Worker protest in the platform economy*, European Trade Union Institute, Brussels.

Kilhoffer, Z., Lenaerts, K. and Beblavý, M. (2017), *The platform economy and industrial relations: Applying the old framework to the new reality*, CEPS Research Report No. 2017/12, CEPS, Brussels.

Kinnunen, A. and Gustafsson, A-K. (2021), *Relative calm on the industrial action front in 2020*, web page, accessed 24 July 2021.

Lehndorff, S. (ed.) (2015a), *Divisive integration: The triumph of failed ideas in Europe – Revisited*, European Trade Union Institute, Brussels.

Lehndorff, S. (2015b), 'Europe's divisive integration: An overview', in Lehndorff, S. (ed.), *Divisive integration: The triumph of failed ideas in Europe – Revisited*, European Trade Union Institute, Brussels, pp. 7–37.

Lehndorff, S., Dribbusch, H. and Schulten, T. (2018), 'European trade unions in a time of crises – An overview', in Lehndorff, S., Dribbusch, H. and Schulten, T. (eds.), *Rough waters: European trade unions in a time of crises*, pp. 7–28, European Trade Union Institute, Brussels.

Lehr, A. R., Akkerman, A. and Torenvlied, R. (2015), 'Spillover and conflict in collective bargaining: Evidence from a survey of Dutch union and firm negotiators', *Work, Employment and Society*, Vol. 29, No. 4, pp. 641–660.

Lenaerts, K., Kilhoffer, Z. and Akgüç, M. (2018), 'Traditional and new forms of organisation and representation in the platform economy', *Work Organisation, Labour and Globalisation*, Vol. 12, No. 2, pp. 60–78.

Linting, M. and van der Kooij, A. (2012), 'Nonlinear principal components analysis with CATPCA: A tutorial', *Journal of Personality Assessment*, Vol. 94, No. 1, pp. 12–25.

Luque Balbona, S. and González Begega, D. (2014), 'Goodbye to competitive corporatism in Spain? Social pacting and conflict in the economic crisis', *Revista Española de Investigaciones Sociológicas*, Vol. 148, pp. 79–102.

Lyddon, D. (2015), 'The changing pattern of UK strikes, 1964–2014', *Employee Relations*, Vol. 37, No. 6, pp. 733–745.

Maffie, M. D. (2020), 'The role of digital communities in organizing gig workers', *Industrial Relations*, Vol. 59, No. 1, pp. 123–149.

Marginson, P. (2017), *European industrial relations: An increasingly fractured landscape?*, Warwick Papers in Industrial Relations No. 106, Warwick Business School, University of Warwick, Coventry, UK.

Meardi, G. (2018), 'Economic integration and state responses: Change in European industrial relations since Maastricht', *British Journal of Industrial Relations*, Vol. 56, No. 3, pp. 631–655.

Molina, O. and Barranco, O. (2016), 'Trade union strategies to enhance strike effectiveness in Italy and Spain', *Transfer: European Review of Labour and Research*, Vol. 22, No. 3, pp. 383–399.

Nowak, J. and Gallas, A. (2014), 'Mass strikes against austerity in western Europe – A strategic assessment', *Global Labour Journal*, Vol. 5, No. 3, pp. 306–321.

OECD (Organisation for Economic Co-operation and Development) (undated), *The OECD/AIAS ICTWSS database*, web page, accessed 16 July 2021.

Panteli, N., Rapti, A. and Scholarios, D. (2020), '"If he just knew who we were": Microworkers' emerging bonds of attachment in a fragmented employment relationship', *Work, Employment and Society*, Vol. 34, No. 3, pp. 476–494.

Peterson, A., Wahlström, M. and Wennerhag, M. (2015), 'European anti-austerity protests – Beyond "old" and "new" social movements?' *Acta Sociologica*, Vol. 58, No. 4, pp. 293–310.

Prassl, J. (2019), *Humans as a service: The promise and perils of work in the gig economy*, Oxford University Press, Oxford.

Risak, M. (2016), 'Crowdworking: Towards a "new" form of employment', in Blanpain, R, Hendrickx, F. and Waas, B. (eds.), *New forms of employment in Europe*, Wolters Kluwer, Alphen aan den Rijn, Netherlands, pp. 93–102.

Sanz de Miguel, P., Welz, C., Caprile, M. and Rodríguez Contreras, R. (2020), 'Industrial democracy in Europe: A quantitative approach', *Labour & Industry: A Journal of the Social and Economic Relations of Work*, Vol. 30, No. 2, pp. 101–132.

Schor, J., Attwood-Charles, W., Cansoy, M., Ladegaard, I. and Wengronowitz, R. (2020), 'Dependence and precarity in the platform economy', *Theory and Society*, Vol. 49, pp. 833–861.

Screpanti, E. (1987), 'Long cycles in strike activity: An empirical investigation', *British Journal of Industrial Relations*, Vol. 25, No. 1, pp. 99–124.

Shorter, E. and Tilly, C. (1974), *Strikes in France, 1830–1868*, Cambridge University Press, New York.

Silberman, M. S. (2017), 'Fifteen criteria for a fairer gig economy', in Graham, M. and Shaw, J. (eds.), *Towards a fairer gig economy*, Meatspace Press, London, pp. 16–19.

Silver, B. (2003), *Forces of labor: Workers' movements and globalization since 1870*, Cambridge University Press, Cambridge, UK.

Söderqvist, F. (2017), 'A Nordic approach to regulating intermediary online labour platforms', *Transfer: European Review of Labour and Research*, Vol. 23, No. 3, pp. 349–352.

Söderqvist, C. F. and Bernhardtz, V. (2019), *Labor platforms with unions: Discussing the law and economics of a Swedish collective bargaining framework used to regulate gig work,* Swedish Entrepreneurship Forum working paper No. 57, Swedish Entrepreneurship Forum, Stockholm.

Tassinari, A. and Maccarrone, V. (2017), 'The mobilisation of gig economy couriers in Italy: Some lessons for the trade union movement', *Transfer: European Review of Labour and Research*, Vol. 25, No. 3, pp. 353–357.

Tassinari, A. and Maccarrone, V. (2020), 'Riders on the storm: Workplace solidarity among gig economy couriers in Italy and the UK', *Work, Employment and Society*, Vol. 34, No. 1, pp. 35–54.

Taylor, P. and Moore, S. (2019), *Cabin crew conflict: The British Airways dispute 2009–11*, Pluto Press, London.

Thelen, K. (2014), *Varieties of liberalization and the new politics of social solidarity*, Cambridge University Press, Cambridge, UK.

Thelen, K. (2018), 'Regulating Uber: The politics of the platform economy in Europe and the United States', *Perspectives on Politics*, Vol. 16, No. 4, pp. 938–953.

Urzì Brancati, C. U., Pesole, A. and Fernández-Macías, E. (2019), *Digital labour platforms in Europe: Numbers, profiles, and employment status of platform workers*, Publications Office of the European Union, Luxembourg.

Van Doorn, N. (2019), *On the conditions of possibility for worker organising in platform-based gig economies*, Notes from Below, web page, accessed 8 November 2021.

Van Doorn, N. (2020), 'At what price? Labour politics and calculative power struggles in on-demand food delivery', *Work Organisation, Labour and Globalisation*, Vol. 14, No. 1, pp. 136–149.

Vandaele, K. (2016), 'Interpreting strike activity in western Europe in the past 20 years: The labour repertoire under pressure', *Transfer: European Review of Labour and Research*, Vol. 22, No. 3, pp. 277–294.

Vandaele, K. and Leschke, J. (2010), *Following the 'organising model' of British unions? Organising non-standard workers in Germany and the Netherlands*, ETUI working paper 2010.02, European Trade Union Institute, Brussels.

Vogiatzoglou, M. (2018), 'Re-paving the path to hell? Greek trade unions amid crisis and austerity', in Lehndorff, S., Dribbusch, H. and Schulten, T. (eds.), *Rough waters: European trade unions in a time of crises*, European Trade Union Institute, Brussels, pp. 117–134.

Ward, J.H. (1963), 'Hierarchical grouping to optimize an objective function', *Journal of the American Statistical Association*, Vol. 58, pp. 236–244.

Wood, A. and Lehdonvirta, V. (2019), 'Platform labour and structured antagonism: Understanding the origins of protest in the gig economy', *SSRN Electronic Journal,* doi:10.2139/ssrn.3357804.

Woodcock, J. and Graham, M. (2020), *The gig economy: A critical introduction*, Polity Press, Cambridge.

Wood, A., Lehdonvirta, V. and Graham, M. (2018), 'Workers of the internet unite? Online freelancer organisation among remote gig economy workers in six Asian and African countries', New Technology, Work and Employment, Vol. 33, No. 2, pp. 95–112.

Annexes

Annex 1: Supplementary data

Table A1: Overview of parameters covered and gaps in national statistics on industrial action and collective labour disputes

Country	Number of strikes	Number of lockouts	Including demonstrations and political strikes	Including other forms of industrial action	Days not worked	Number of participants	By sector	By occupation	By NUTS region	Main issue	Context	Mediation	Arbitration	Outcome
Austria	✓	x		x	✓	✓	x	x	x	x	x	x	x	x
Belgium	x	x			✓		x	x	x	x	x	x	x	x
Cyprus	✓	x	x	x	✓	✓	✓	x	x	x		✓	x	x
Denmark	✓	✓			✓	✓	✓	x	x	x	x	x	x	x
Estonia	✓	✓	x		✓	✓	✓	x	x	x		✓	x	x
Finland	✓	✓			✓	✓	✓	x	x	x		x	x	x
France	✓				✓		✓			✓				
Germany	✓	✓	x		✓	✓	✓	x	x	✓	x	x	x	x
Hungary	✓	x		x	✓	✓	x	x	x	x	x	x	x	x
Ireland	✓	x	x		✓	✓	✓	x	x	x	x	x	x	
Italy*	✓	x	x		x	✓	✓	x		x		x	x	x
Lithuania	✓	✓			✓	✓	✓			x	✓	x	x	x
Netherlands	✓	x			✓	✓	✓		x	✓	✓	x	x	✓
Norway	✓	✓			x	x	x	x	x	x	x	✓		✓
Poland	✓	x			✓	✓	x	x	x	x	x			
Portugal	✓	x			✓	✓	✓		x	✓	✓	x	x	x
Romania	✓	x			✓	✓	✓	x	✓	x	x			
Spain	✓	✓	x		✓	✓	✓		✓	✓	✓	✓	✓	✓
Sweden	✓	x			x	✓	x		x	x		✓		
UK	✓	x			✓	✓	✓	x	✓	✓	x	x	x	x

Notes: * *Public sector. Green cells represent those parameters that are covered and purple cells represent those parameters that are not covered by the national source. Blank cells represent cases in which no information was available on if the national data covered the parameter (but in these cases the parameter was probably not covered).*
Source: *Authors' own compilation based on methodological description of national sources*

Table A2: Number of realised industrial action events by country and sector from the IAM database, EU27 and UK

Country	NACE Rev. 2 sector*																				Total
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	Unknown	
Austria	0	0	1	0	0	0	1	5	0	0	0	0	0	0	5	0	0	0	0	5	17
Belgium	0	0	6	0	1	0	10	20	0	2	1	0	1	0	14	0	1	0	1	6	63
Bulgaria	0	1	0	0	0	0	0	3	0	0	0	0	0	0	1	0	0	0	0	2	7
Croatia	1	0	4	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	8
Cyprus	0	0	0	0	4	4	0	11	1	1	1	0	0	0	0	4	3	0	0	0	29
Czechia	0	1	0	0	0	0	0	4	0	0	1	0	0	0	0	0	0	0	0	0	6
Denmark	0	0	0	0	0	0	0	5	1	0	0	0	0	0	0	0	0	0	0	0	6
Estonia	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	5
Finland	0	0	2	0	0	0	0	9	0	0	0	0	0	3	0	1	0	0	0	31	46
France	2	0	14	4	2	1	4	32	1	0	5	0	0	0	0	2	2	2	0	2	73
Germany	0	1	32	4	0	1	22	19	0	18	0	0	1	2	0	1	6	0	0	7	114
Greece	2	0	6	5	2	0	5	10	1	7	0	0	0	3	0	4	6	2	0	5	58
Hungary	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	10
Ireland	0	0	3	0	0	0	10	5	0	0	1	0	0	0	2	1	11	0	0	0	33
Italy	2	0	35	1	0	2	2	23	0	1	0	0	2	1	0	0	2	0	0	1	72
Latvia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	3
Lithuania	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	4
Luxembourg	1	0	0	0	0	1	0	1	0	0	1	0	0	0	1	0	1	0	0	0	6
Malta	0	0	0	0	0	0	1	5	0	0	0	0	0	0	1	0	9	0	0	0	16
Netherlands	0	1	19	0	7	0	10	41	0	0	1	5	0	0	10	11	12	0	0	4	121
Norway	0	2	1	2	0	0	1	0	0	2	1	0	0	0	0	0	2	0	0	0	11
Poland	0	0	5	1	0	0	5	6	0	0	1	0	0	0	2	2	7	0	0	0	29
Portugal	0	8	9	0	0	0	5	26	0	0	2	0	0	1	10	3	4	0	0	0	68
Romania	0	0	7	5	0	0	0	6	0	0	0	0	0	0	2	1	3	1	0	0	25
Slovakia	2	0	3	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	7
Slovenia	0	0	1	0	0	0	0	2	0	0	0	0	0	0	4	2	0	0	0	1	10
Spain	1	1	35	0	0	2	6	42	1	2	0	0	1	4	2	1	6	0	0	4	108
Sweden	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	1	7
UK	0	1	3	0	0	0	0	2	5	0	0	0	0	1	0	0	3	0	0	1	16
Total	11	16	196	22	16	11	82	288	10	34	15	5	5	15	54	38	79	5	1	75	978
Percentage	1.1%	1.6%	20.0%	2.2%	1.6%	1.1%	8.4%	29.4%	1.0%	3.5%	1.5%	0.5%	0.5%	1.5%	5.5%	3.9%	8.1%	0.5%	0.1%	7.7%	100.0%

Note: * *See Table A12 for key to the NACE Rev. 2 sector codes.*
Source: *Authors' own calculations, based on the IAM database, 2021*

Table A3: Number of strikes and lockouts by country and sector from the ILO data for the latest year available, EU27 and UK

Country	Year	NACE Rev. 2 sector*																					Total
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	X	
Austria	2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cyprus	2019	0	0	2	1	0	14	0	5	0	0	2	2	0	0	7	0	5	0	1	0	0	0	39
Czechia	2017	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Denmark	2019	1	0	37	0	0	55	0	31	0	0	0	0	0	0	15	0	0	0	0	0	0	11	150
Estonia	2018	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Finland	2019	0	0	46	1	0	2	1	41	4	1	0	0	1	0	5	0	4	1	0	0	0	0	107
Germany	2019	0	0	74	12	0	0	652	86	0	23	123	0	19	5	83	46	98	0	5	0	0	0	1,226
Hungary	2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Italy	2009	6	11	454	15	0	18	41	100	13	31	9	0	98	0	53	18	22	0	0	0	0	0	889
Latvia	2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lithuania	2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Malta	2012	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	1	0	0	0	4
Netherlands	2019	0	0	12	0	0	0	0	7	0	0	0	0	0	0	0	1	3	0	0	0	0	3	26
Norway	2019	0	0	0	0	0	1	2	3	0	0	0	0	0	0	1	0	1	0	0	0	0	0	8
Poland	2019	0	0	4	0	0	0	0	0	17	0	0	0	0	0	0	9,673**	111	30	0	0	0	0	9,835
Portugal	2017	0	3	28	1	4	2	18	25	7	3	0	0	9	24	0	1	11	1	5	0	0	0	142
Romania	2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Slovakia	2019	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Spain	2018	6	4	235	2	12	12	34	94	18	23	6	0	20	83	18	32	92	28	7	0	0	0	726
Sweden	2019	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	6
UK	2019	0	1	6	0	1	1	0	25	1	0	0	0	0	8	7	30	10	6	0	0	0	0	96
Total		13	19	900	32	17	105	748	427	60	81	142	2	147	120	190	9,801	357	66	19	0	0	16	13,262
Percentage		0.4%	0.5%	25.1%	0.9%	0.5%	2.9%	20.8%	11.9%	1.7%	2.3%	4.0%	0.1%	4.1%	3.3%	5.3%	3.6%	9.9%	1.8%	0.5%	0%	0%	0.4%	100.0%

Notes: ** See Table A12 for key to the NACE Rev. 2 sector codes, with X indicating economic activity not classified elsewhere. **The anomalous figure of 9,673 for Poland in sector P was the result of a national teachers' strike; it was omitted when calculating the percentages. The latest year for which ILO work stoppages data were available was considered to be too far in the past for Belgium (2000), France (2004) and Greece (1998). ILO data on work stoppages had no figures for any year for Bulgaria, Croatia, Luxembourg or Slovenia.*

Source: *Authors' own calculations, based on the IAM database, 2021*

Table A4: Number of workers involved in realised industrial action events by country and sector from the IAM database (in thousands), EU27 and UK

Country	NACE Rev. 2 sector*																				Total
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	Unknown	
Austria	0	0	12.5	0	0	0	0	17.0	0	0	0	0	0	0	6.4	0	0	0	0	32.5	68.4
Belgium	0	0	0.6	0	0	0	10.0	7.8	0	0.6	3.0	0	0.3	0	5.3	0	0.7	0	0	32.5	60.9
Bulgaria	0	3.0	0	0	0	0	0	9.0	0	0	0	0	0	0	0	0	0	0	0	25.0	37.0
Croatia	0.3	0	12.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.5	19.8
Cyprus	0	0	0	0	0.1	12.9	0	1.6	0	0	0	0	0	0	0	12.5	0	0	0	0	27.0
Czechia	0	0.7	0	0	0	0	0	25.3	0	0	0	0	0	0	0	0	0	0	0	0	26.1
Denmark	0	0	0	0	0	0	0	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0.7
Estonia	0	0	0.1	0	0	0	0	0.1	0	0	0	0	0	0	0	0.3	0	0	0	0	0.4
Finland	0	0	3.0	0	0	0	0	1.9	0	0	0	0	0	7.6	0	0	0	0	0	46.0	58.5
France	12.5	0	2.7	0.3	0.4	0.1	13.1	2.2	0.1	0	0.9	0	0	0	0	0	0.6	0.6	0	0.3	33.7
Germany	0	3.0	29.9	13.8	0	0.3	42.3	23.1	0	20.7	0	0	0	0.6	0	0.1	9.0	0	0	18.5	161.3
Greece	0	0	0	12.5	0	0	0	12.5	0	0	0	0	0	15.0	0	37.5	3.0	0	0	10.5	91.0
Hungary	0	0	18.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13.5	31.5
Ireland	0	0	0.9	0	0	0	2.0	1.2	0	0	0.7	0	0	0	0.4	0	42.3	0	0	0	47.5
Italy	0	0	34.8	0.3	0	12.5	0.1	54.3	0	0	0	0	25.0	0	0	0	25.0	0	0	0	152.8
Latvia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.0	3.0	0	0	0	9.0
Lithuania	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.0	0	0	0	0	6.0
Luxembourg	0	0	0	0	0	3.0	0	0.3	0	0	0.3	0	0	0	0.3	0	0	0	0	0	3.9
Malta	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0.3	0	0	0	0.4
Netherlands	0	0	6.7	0	0.7	0	0.5	31.4	0	0	0.3	3.0	0	0	15.5	73.1	12.0	0	0	15.5	158.6
Norway	0	3.7	0	3.7	0	0	0	0	0	3.0	3.0	0	0	0	0	0	0.8	0	0	0	14.4
Poland	0	0	0.9	0.3	0	0	0.3	0.9	0	0	0	0	0	0	12.5	25.0	16.6	0	0	0	56.4
Portugal	0	0	0.3	0	0	0	0	13.4	0	0	7.5	0	0	0	31.1	37.5	0	0	0	0	89.8
Romania	0	0	5.4	0.7	0	0	0	14.9	0	0	0	0	0	0	0.6	3.0	15.8	3.0	0	0	43.4
Slovakia	0.3	0	9.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.3
Slovenia	0	0	0.1	0	0	0	0	3.3	0	0	0	0	0	0	15.5	25.0	0	0	0	0.7	44.6
Spain	0	0.7	19.4	0	0	0.6	1.2	77.7	3.0	0	0	0	0	1.2	0.6	7.5	13.5	0	0	45.0	170.4
Sweden	0	0	0	0	0	0	0	6.0	0	0	0	0	0	0	0	0	0	0	0	0	6.0
UK	0	0.3	0.2	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0.6
Total	13.9	11.5	156.4	31.7	1.1	29.3	69.7	304.6	3.1	24.3	15.7	3.0	25.3	24.4	88.2	233.4	142.6	3.6	0	247.5	1,429.5
Percentage	1.0%	0.8%	10.9%	2.2%	0.1%	2.1%	4.9%	21.3%	0.2%	1.7%	1.1%	0.2%	1.8%	1.7%	6.2%	16.3%	10.0%	0.3%	0%	17.3%	100.0%

Note: ** See Table A12 for key to the NACE Rev. 2 sector codes. Any differences between the row sum and the total are due to decimal rounding.*
Source: *Authors' own calculations, based on the IAM database, 2021*

Table A5: Number of workers involved in strikes and lockouts by country and sector from the ILO data for the latest year available (thousands)

Country	Year	NACE Rev. 2 sector*																					Total
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	X	
Austria	2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cyprus	2019	0	0	0.1	2.1	0	30.5	0	2.6	0	0	2.6	0.5	0	0	3.3	0	0.3	0	0.1	0	0	0	42.1
Czechia	2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.0	0	0	0	6.0
Denmark	2019	0	0	1.6	0	0	1.1	0	2.4	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0.2	5.9
Estonia	2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Finland	2019	0	0	141.2	0.2	0	0.9	0.5	15.3	2.0	0	0	0	0	0	0.7	0	0	0.4	0	0	0	0	161.3
Germany	2019	0	0	6.3	0.6	0	0	30.0	22.5	0	2.0	10.0	0	1.3	1.2	2.3	1.7	7.9	0	0.3	0	0	2.2	88.2
Italy	2009	2.5	4.2	164.0	0.8	0	2.3	5.1	33.4	0.6	5.7	1.0	0	14.9	0	12.6	12.5	7.0	0	0	0	0	0	266.5
Latvia	2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lithuania	2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.7	0	0	0	0	0	0	6.8
Malta	2012	0	0	0	0	0	0	0	0.5	0	0	0.1	0	0	0	0	0	0	0	0.1	0	0	0	0.6
Netherlands	2019	0	0	4.2	0	0	0	0	19.1	0	0	0	0	0	0	0	140.0	134.9	0	0	0	0	20.4	318.6
Norway	2019	0	0	0	0	0	0	0.4	0.7	0	0	0	0	0	0	0.1	0	0.7	0	0	0	0	0	1.9
Poland	2019	0	0	1.0	0	0	0	0	0	0.2	0	0	0	0	0	0	222.9	3.7	0.4	0	0	0	0	228.2
Portugal	2017	0	994.0	3,538.0	1.0	253.0	150.0	4,454.0	2,537.0	537.0	2,048.0	0	0	317.0	1,858.0	0	20.0	2,689.0	1.0	108.0	0	0	0	19,505.0
Romania	2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Slovakia	2019	0	0	0	0	0	0	0	603.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	603.0
Spain	2018	1.5	0.7	51.4	5.4	0.5	0.4	5.3	47.8	0.7	2.7	4.7	0	2.0	73.9	10.8	88.3	40.6	1.7	0.2	0	0	0	338.7
Sweden	2019	0	0	0	0	0	0	0	1.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	1.4
UK	2019	0	0.1	0.4	0	0.1	0	0	6.3	0.1	0	0	0	0	0.7	5.4	22.0	4.8	0.4	0	0	0	0	40.3
Total		4.0	998.9	3,908.3	10.0	253.5	185.3	4,495.2	3,292.1	540.6	2,058.4	18.3	0.5	335.3	1,933.8	35.7	514.1	2,888.9	4.0	114.7	0	0	22.9	21,614.5
Percentage		0%	4.6%	18.1%	0%	1.2%	0.9%	20.8%	15.2%	2.5%	9.5%	0.1%	0%	1.6%	8.9%	0.2%	2.4%	13.4%	0%	0.5%	0%	0%	0.1%	100.0%

Notes: * *See Table A12 for key to the NACE Rev. 2 sector codes, with X indicating economic activity not classified elsewhere. The latest year for which ILO work stoppages data were available was considered to be too far in the past for Belgium (2000), France (2004) and Greece (1998). Any differences between the row sum and the total are due to decimal rounding. ILO data on work stoppages had no figures for any year for Bulgaria, Croatia, Luxembourg or Slovenia. For Hungary and Ireland, no breakdown by sector was available so these countries were omitted.*

Source: *Authors' own calculations, based on the IAM database, 2021*

Table A6: Number of days not worked as a result of realised industrial action events by country and sector from the IAM database (in thousands), EU27 and UK

Country	NACE Rev. 2 sector*																			Total
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	Unknown	
Austria	0	0	37.5	0	0	0	0	17.0	0	0	0	0	0	0	6.4	0	0	0	0	152.5	213.4
Belgium	0	0	2.4	0	0	0	35.4	37.8	0	0.6	3.0	0	2.4	0	42.5	0	0.7	0	0	32.5	157.3
Bulgaria	0	3.0	0	0	0	0	0	9.0	0	0	0	0	0	0	0	0	0	0	0	62.5	74.5
Croatia	0	0	81.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.5	88.5
Cyprus	0	0	0	0	0.1	28.0	0	1.9	0	0	0	0	0	0	0	12.5	0.2	0	0	0	42.6
Czechia	0	37.5	0	0	0	0	0	287.8	0	0	0	0	0	0	0	0	0	0	0	0	325.3
Denmark	0	0	0	0	0	0	0	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0.7
Estonia	0	0	2.1	0	0	0	0	0.1	0	0	0	0	0	0	0	0.3	0	0	0	0	2.5
Finland	0	0	60.0	0	0	0	0	126.9	0	0	0	0	0	22.7	0	0	0	0	0	66.0	275.5
France	12.5	0	111.6	0.3	5.1	0.1	15.2	171.7	0.1	0	0.9	0	0	0	0	0	0.6	0.3	0	0.3	318.7
Germany	0	3.0	235.9	79.2	0	0.3	50.0	26.1	0	55.8	0	0	0	0.9	0	0.1	40.2	0	0	68.5	559.9
Greece	0	0	0	12.5	0	0	0	25.0	0	0	0	0	0	37.5	0	50.0	3.0	0	0	21.0	149.0
Hungary	0	0	126.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13.5	139.5
Ireland	0	0	1.5	0	0	0	6.5	2.4	0	0	0.7	0	0	0	4.6	0	225.1	0	0	0	240.9
Italy	0.7	0	53.6	9.0	0	25.0	0.2	87.0	0	0	0	0	50.0	0	0	0	50.0	0	0	0	275.6
Latvia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.0	3.0	0	0	0	9.0
Lithuania	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	123.0	0	0	0	0	123.0
Luxembourg	0	0	0	0	0	3.0	0	0.6	0	0	0.6	0	0	0	3.3	0	0	0	0	0	7.5
Malta	0	0	0	0	0	0	0.4	0.1	0	0	0	0	0	0	0	0	0.3	0	0	0	0.8
Netherlands	0	0	8.2	0	0.7	0	0.5	2,337.5	0	0	0.3	3.0	0	0	15.5	73.1	12.0	0	0	15.5	2,466.2
Norway	0	16.5	2.4	16.5	0	0	0.2	0	0	27.2	18.0	0	0	0	0	0	5.1	0	0	0	85.9
Poland	0	0	110.2	0.3	0	0	0.3	0.6	0	0	0	0	0	0	12.5	262.5	48.1	0	0	0	434.5
Portugal	0	0	0.9	0	0	0	0	39.7	0	0	15.0	0	0	0	97.2	875.0	0	0	0	0	1,027.8
Romania	0	0	12.0	0.7	0	0	0	17.3	0	0	0	0	0	0	0.6	3.0	20.6	3.0	0	0	57.2
Slovakia	0.6	0	2,813.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,814.1
Slovenia	0	0	0.1	0	0	0	0	3.3	0	0	0	0	0	0	15.5	25.0	0	0	0	0.7	44.6
Spain	0	3.0	110.9	0	0	1.5	4.8	528.8	15.0	0	0	0	0	12.6	1.5	442.5	806.9	0	0	90.0	2,017.5
Sweden	0	0	0	0	0	0	0	12.1	0	0	0	0	0	0	0	0	0	0	0	0	12.1
UK	0	0.9	0.3	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	1.7
Total	13.9	63.9	3,770.1	118.5	5.9	57.9	113.5	3,733.3	15.6	83.6	38.5	3.0	52.4	73.7	199.6	1,872.9	1,215.8	3.3	0	530.5	11,966.0
Percentage	0.1%	0.5%	31.5%	1.0%	0%	0.5%	0.9%	31.2%	0.1%	0.7%	0.3%	0%	0.4%	0.6%	1.7%	15.7%	10.2%	0%	0%	4.4%	100.0%

Notes: ** See Table A12 for key to the NACE Rev. 2 sector codes. Any differences between the row sum and the total are due to decimal rounding.*
Source: *Authors' own calculations, based on the IAM database, 2021*

Table A7: Number of days not worked as a result of strikes and lockouts by country and sector from the ILO data for the latest year available (in thousands), EU27 and UK

Country	Year	NACE Rev. 2 sector*																					Total
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	X	
Austria	2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Belgium	2018	0	1.7	125.4	3.1	8.5	6.9	37.6	78.1	2.0	3.0	0.8	1.2	1.3	15.0	78.1	25.9	31.8	0.4	1.6	0	0	0	422.2
Cyprus	2019	0	0	0.2	2.1	0	52.8	0	4.7	0	0	2.7	0.6	0	0	3.3	0	0.3	0	0	0	0	0	66.7
Czechia	2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Denmark	2019	0	0	2.0	0	0	2.3	0	3.0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0.6	8.4
Estonia	2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Finland	2019	0	0	231.9	0	0	0	0	135.9	6.0	0	0	0	0	0	0.7	0	0	0	0	0	0	0	374.4
France	2016	0	6.5	362.9	119.2	50.4	10.1	33.7	810.6	9.1	49.7	34.8	1.8	58.7	78.8	427.3	5.7	31.6	20.2	54.5	0	0	0	2,165.8
Germany	2019	0	0	8.1	1.9	0	0	67.3	48.5	0	3.3	14.4	0	1.8	1.2	2.5	2.4	8.6	0	0.3	0	0	0	160.1
Latvia	2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lithuania	2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.9	0	0	0	0	0	0	1.9
Malta	2012	0	0	0	0	0	0	0	0.1	0	0	1.0	0	0	0	0	0	0	0	0	0	0	0	1.1
Netherlands	2019	0	0	24.8	0	0	0	0	19.6	0	0	0	0	0	0	0	215.6	103.0	0	0	0	0	27.9	390.9
Norway	2019	0	0	0	0	0	0.3	2.1	8.1	0	0	0	0	0	0	0.2	0	10.8	0	0	0	0	0	21.5
Poland	2019	0	0	2.9	0	0	0	0	0	1.3	0	0	0	0	0	0	1,804.8*	28.8	2.1	0	0	0	0	1,839.9
Portugal	2017	0	3.5	4.5	0	0.4	0.2	5.0	7.0	0.5	2.0	0	0	0.3	2.4	0	0	3.3	0	0.1	0	0	0	29.3
Romania	2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Slovakia	2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spain	2018	8.3	4.3	486.0	3.8	2.7	3.2	18.4	98.4	5.9	12.6	0.6	0	1.9	85.4	40.2	45.9	30.7	9.9	0.1	0	0	0	858.4
Sweden	2019	0	0	0	0	0	0	0	7.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	7.6
UK	2018	0	0.1	3.0	0	4.6	5.8	0.1	42.6	0.8	10.6	0	2.4	0	1.6	15.9	179.4	4.9	0.8	0	0	0	0	272.7
Total		8.4	16.6	1,251.7	130.1	66.6	81.7	165.4	1,264.5	25.7	81.3	55.7	6.0	64.0	184.5	569.2	2,281.5	253.7	33.3	56.6	0	0	28.6	6,625.1
Percentage		0.2%	0.3%	26.0%	2.7%	1.4%	1.7%	3.4%	26.2%	0.5%	1.7%	1.2%	0.1%	1.3%	3.8%	11.8%	9.9%	5.3%	0.7%	1.2%	0%	0%	0.6%	100.0%

Notes: **See Table A12 for key to the NACE Rev. 2 sector codes, with X indicating economic activity not classified elsewhere. **The anomalous figure of 1,804.8 for Poland in sector P was the result of a national teachers' strike; it was omitted when calculating the percentages. The latest year for which ILO work stoppages data were available was considered to be too far in the past for Belgium (2000), Greece (1998) and Italy (2008). ILO data on work stoppages had no figures for any year for Bulgaria, Croatia, Luxembourg or Slovenia. For Hungary and Ireland, no breakdown by sector was available so these countries were omitted.*

Source: *Authors' own calculations, based on the IAM database, 2021*

Table A8: Correlations of transformed variables from the second categorical principal components analysis model

Indicator	Type	Main issue	Context	No. of employee organisations	Employee organisations mix	Different forms of employment	Duration	Median event duration	No. of industrial actions realised	Third-party intervention	Mix of realised industrial actions	Mix of all industrial action types	Mix of realised industrial action types	Government is target	Company is target	Other target	Countrywide	NUTS 2 areas	Context including collective bargaining	No. of workers	No. of days not worked	Highest interval for no. of workers
Type	1.00	-0.01	0.01	0.05	-0.01	0.09	0.03	-0.03	0.02	-0.05	-0.07	0.01	0.01	0.10	-0.01	0.12	0.04	0.07	0.01	-0.06	-0.06	-0.08
Main issue	-0.01	1.00	0.56	0.16	0.16	0.09	-0.10	-0.09	-0.01	-0.10	-0.08	-0.02	-0.03	-0.53	0.55	0.21	-0.06	-0.03	0.57	0.05	-0.03	0.08
Context	0.01	0.56	1.00	0.16	0.04	0.00	-0.15	-0.14	-0.06	-0.12	-0.15	-0.03	-0.03	-0.63	0.43	0.06	-0.16	-0.10	0.95	0.13	0.03	0.17
No. of employee organisations	0.05	0.16	0.16	1.00	0.05	0.06	0.13	-0.05	0.21	-0.03	0.06	-0.20	-0.23	-0.15	0.05	-0.01	-0.16	-0.14	0.17	0.17	0.13	0.16
Employee organisations mix	-0.01	0.16	0.04	0.05	1.00	0.01	0.01	0.05	-0.03	-0.04	-0.05	0.03	0.02	-0.07	0.08	0.02	0.11	0.11	0.05	-0.06	0.00	-0.07
Different forms of employment	0.09	0.09	0.00	0.06	0.01	1.00	0.12	-0.01	0.07	0.18	-0.02	-0.07	-0.04	-0.05	0.01	-0.07	0.00	0.04	0.02	-0.01	-0.02	-0.03
Duration	0.03	-0.10	-0.15	0.13	0.01	0.12	1.00	0.21	0.55	0.20	0.23	-0.40	-0.34	0.08	-0.17	-0.10	-0.16	0.04	-0.13	0.18	0.21	0.09
Median event duration	-0.03	-0.09	-0.14	-0.05	0.05	-0.01	0.21	1.00	-0.09	-0.03	-0.03	-0.02	-0.01	0.11	-0.09	-0.07	0.12	0.09	-0.13	-0.07	0.22	-0.05
No. of industrial actions realised	0.02	-0.01	-0.06	0.21	-0.03	0.07	0.55	-0.09	1.00	0.16	0.15	-0.53	-0.61	0.01	-0.05	-0.03	-0.17	0.05	-0.07	0.36	0.31	0.21
Third-party intervention	-0.05	-0.10	-0.12	-0.03	-0.04	0.18	0.20	-0.03	0.16	1.00	0.10	-0.11	-0.12	0.09	-0.05	0.05	-0.18	-0.02	-0.10	-0.01	0.02	-0.06
Mix of realised industrial actions	-0.07	-0.08	-0.15	0.06	-0.05	-0.02	0.23	-0.03	0.15	0.10	1.00	-0.19	-0.06	0.09	-0.07	-0.05	-0.09	-0.04	-0.14	0.08	0.04	0.08
Mix of all industrial action types	0.01	-0.02	-0.03	-0.20	0.03	-0.07	-0.40	-0.02	-0.53	-0.11	-0.19	1.00	0.85	0.02	0.02	0.01	0.08	-0.04	-0.04	-0.27	-0.29	-0.20
Mix of realised industrial action types	0.01	-0.03	-0.03	-0.23	0.02	-0.04	-0.34	-0.01	-0.61	-0.12	-0.06	0.85	1.00	0.04	0.01	0.00	0.12	0.00	-0.03	-0.34	-0.35	-0.26
Government is target	0.10	-0.53	-0.63	-0.15	-0.07	-0.05	0.08	0.11	0.01	0.09	0.09	0.02	0.04	1.00	-0.51	0.03	0.20	0.14	-0.64	-0.15	-0.06	-0.17
Company is target	-0.01	0.55	0.43	0.05	0.08	0.01	-0.17	-0.09	-0.05	-0.05	-0.07	0.02	0.01	-0.51	1.00	0.27	-0.10	-0.08	0.46	0.04	-0.02	0.07
Other target	0.12	0.21	0.06	-0.01	0.02	-0.07	-0.10	-0.07	-0.03	0.05	-0.05	0.01	0.00	0.03	0.27	1.00	-0.03	-0.02	0.08	-0.03	-0.05	-0.02
Countrywide	0.04	-0.06	-0.16	-0.16	0.11	0.00	-0.16	0.12	-0.17	-0.18	-0.09	0.08	0.12	0.20	-0.10	-0.03	1.00	0.68	-0.15	-0.32	-0.20	-0.35
NUTS 2 areas	0.07	-0.03	-0.10	-0.14	0.11	0.04	0.04	0.09	0.05	-0.02	-0.04	-0.04	0.00	0.14	-0.08	-0.02	0.68	1.00	-0.14	-0.19	-0.11	-0.24
Context including collective bargaining	0.01	0.57	0.95	0.17	0.05	0.02	-0.13	-0.13	-0.07	-0.10	-0.14	-0.04	-0.03	-0.64	0.46	0.08	-0.15	-0.14	1.00	0.12	0.01	0.15
No. of workers	-0.06	0.05	0.13	0.17	-0.06	-0.01	0.18	-0.07	0.36	-0.01	0.08	-0.27	-0.34	-0.15	0.04	-0.03	-0.32	-0.19	0.12	1.00	0.88	0.97
No. of days not worked	-0.06	-0.03	0.03	0.13	0.00	-0.02	0.21	0.22	0.31	0.02	0.04	-0.29	-0.35	-0.06	-0.02	-0.05	-0.20	-0.11	0.01	0.88	1.00	0.83
Highest interval for no. of workers	-0.08	0.08	0.17	0.16	-0.07	-0.03	0.09	-0.05	0.21	-0.06	0.08	-0.20	-0.26	-0.17	0.07	-0.02	-0.35	-0.24	0.15	0.97	0.83	1.00

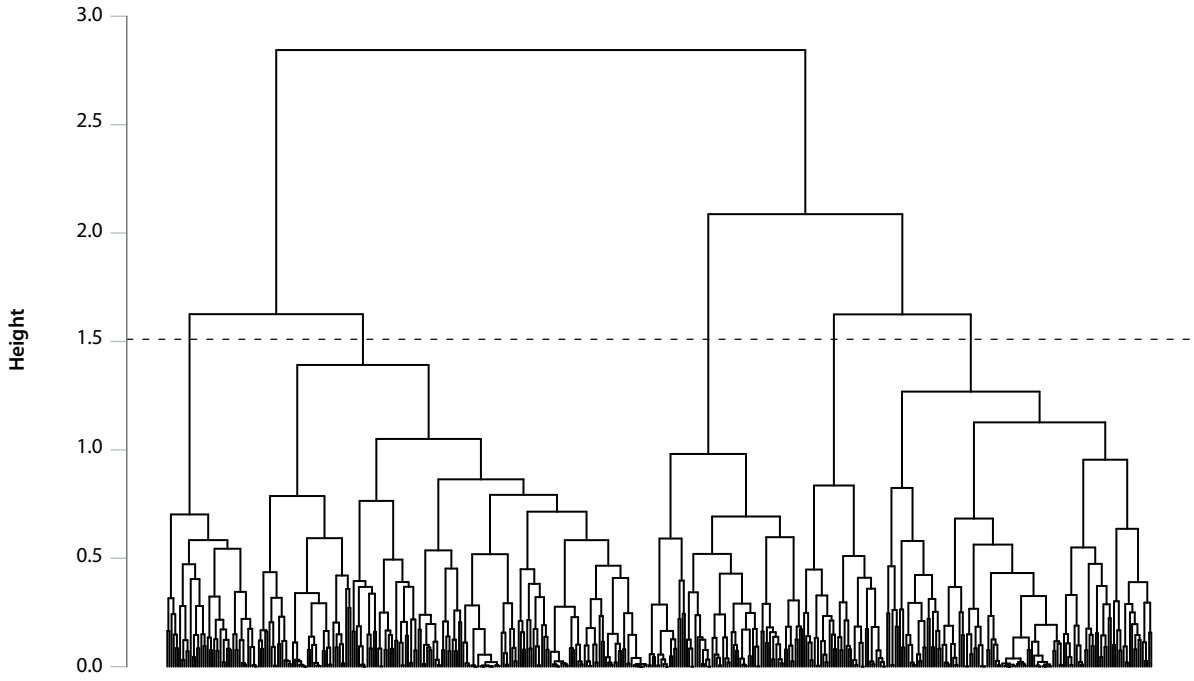
Source: *Authors' own calculations, based on the IAM database, 2021*

Table A9: Amount of indicator variance accounted for in the four-dimensional solution from the second categorical principal components analysis model

Indicator	Variance accounted for in four-dimensional solution
Type	0.019
Main issue	0.664
Context	0.819
No. of employee organisations	0.187
Employee organisations mix	0.119
Different forms of employment	0.093
Duration	0.526
Median event duration	0.288
No. of industrial actions realised	0.696
Third-party intervention	0.324
Mix of realised industrial actions	0.161
Mix of all industrial action types	0.755
Mix of realised industrial action types	0.754
Government is target	0.667
Company is target	0.531
Other target	0.052
Countrywide	0.806
NUTS 2 areas	0.733
Context including collective bargaining	0.840
No. of workers	0.898
No. of days not worked	0.876
Highest interval for no. of workers	0.892

Source: *Authors' own calculations, based on the IAM database, 2021*

Figure A1: Dendrogram from the application of Ward's method of clustering



Note: *For a description of the cluster analysis, see text in Annex 4.*
Source: *Authors' own calculations, based on the IAM database, 2021*

Table A10: Cluster breakdown by country: distribution of disputes across clusters, EU27 and UK

Country	Cluster A	Cluster B	Cluster C	Cluster D	Cluster E	Total
Austria	3 (37.5%)	3 (37.5%)	1 (12.5%)	1 (12.5%)	0 (0.0%)	8 (100.0%)
Belgium	12 (35.3%)	2 (5.9%)	12 (35.3%)	2 (5.9%)	6 (17.6%)	34 (100.0%)
Bulgaria	2 (50.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (50.0%)	4 (100.0%)
Croatia	0 (0.0%)	1 (20.0%)	2 (40.0%)	1 (20.0%)	1 (20.0%)	5 (100.0%)
Cyprus	4 (25.0%)	1 (6.3%)	6 (37.5%)	1 (6.3%)	4 (25.0%)	16 (100.0%)
Czechia	1 (20.0%)	0 (0.0%)	2 (40.0%)	0 (0.0%)	2 (40.0%)	5 (100.0%)
Denmark	1 (50.0%)	0 (0.0%)	1 (50.0%)	0 (0.0%)	0 (0.0%)	2 (100.0%)
Estonia	1 (25.0%)	0 (0.0%)	2 (50.0%)	0 (0.0%)	1 (25.0%)	4 (100.0%)
Finland	0 (0.0%)	4 (50.0%)	2 (25.0%)	0 (0.0%)	2 (25.0%)	8 (100.0%)
France	5 (9.1%)	2 (3.6%)	30 (54.5%)	9 (16.4%)	9 (16.4%)	55 (100.0%)
Germany	15 (35.7%)	1 (2.4%)	23 (54.8%)	2 (4.8%)	1 (2.4%)	42 (100.0%)
Greece	10 (38.5%)	1 (3.8%)	3 (11.5%)	0 (0.0%)	12 (46.2%)	26 (100.0%)
Hungary	0 (0.0%)	0 (0.0%)	4 (66.7%)	0 (0.0%)	2 (33.3%)	6 (100.0%)
Ireland	6 (37.5%)	2 (12.5%)	4 (25.0%)	3 (18.8%)	1 (6.3%)	16 (100.0%)
Italy	7 (21.9%)	2 (6.3%)	12 (37.5%)	5 (15.6%)	6 (18.8%)	32 (100.0%)
Latvia	0 (0.0%)	0 (0.0%)	2 (100.0%)	0 (0.0%)	0 (0.0%)	2 (100.0%)
Lithuania	1 (50.0%)	0 (0.0%)	0 (0.0%)	1 (50.0%)	0 (0.0%)	2 (100.0%)
Luxembourg	1 (20.0%)	0 (0.0%)	2 (40.0%)	2 (40.0%)	0 (0.0%)	5 (100.0%)
Malta	9 (90.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (10.0%)	10 (100.0%)
Netherlands	4 (9.8%)	5 (12.2%)	21 (51.2%)	1 (2.4%)	10 (24.4%)	41 (100.0%)
Norway	5 (71.4%)	0 (0.0%)	2 (28.6%)	0 (0.0%)	0 (0.0%)	7 (100.0%)
Poland	10 (52.6%)	1 (5.3%)	3 (15.8%)	0 (0.0%)	5 (26.3%)	19 (100.0%)
Portugal	15 (57.7%)	6 (23.1%)	3 (11.5%)	2 (7.7%)	0 (0.0%)	26 (100.0%)
Romania	2 (14.3%)	1 (7.1%)	9 (64.3%)	1 (7.1%)	1 (7.1%)	14 (100.0%)
Slovakia	1 (25.0%)	0 (0.0%)	2 (50.0%)	0 (0.0%)	1 (25.0%)	4 (100.0%)
Slovenia	1 (16.7%)	2 (33.3%)	2 (33.3%)	0 (0.0%)	1 (16.7%)	6 (100.0%)
Spain	8 (15.7%)	4 (7.8%)	26 (51.0%)	10 (19.6%)	3 (5.9%)	51 (100.0%)
Sweden	1 (25.0%)	1 (25.0%)	1 (25.0%)	0 (0.0%)	1 (25.0%)	4 (100.0%)
UK	0 (0.0%)	0 (0.0%)	6 (66.7%)	2 (22.2%)	1 (11.1%)	9 (100.0%)
Total	125 (27.0%)	39 (8.4%)	183 (39.5%)	43 (9.3%)	73 (15.8%)	463 (100.0%)

Source: *Authors' own calculations, based on the IAM database, 2021*

Table A11: Cluster breakdown by country: distribution of disputes within clusters, EU27 and UK

Country	Cluster A	Cluster B	Cluster C	Cluster D	Cluster E	Total
Austria	3 (2.4%)	3 (7.7%)	1 (0.5%)	1 (2.3%)	0 (0.0%)	**8 (1.7%)**
Belgium	12 (9.6%)	2 (5.1%)	12 (6.6%)	2 (4.7%)	6 (8.2%)	**34 (7.3%)**
Bulgaria	2 (1.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (2.7%)	**4 (0.9%)**
Croatia	0 (0.0%)	1 (2.6%)	2 (1.1%)	1 (2.3%)	1 (1.4%)	**5 (1.1%)**
Cyprus	4 (3.2%)	1 (2.6%)	6 (3.3%)	1 (2.3%)	4 (5.5%)	**16 (3.5%)**
Czechia	1 (0.8%)	0 (0.0%)	2 (1.1%)	0 (0.0%)	2 (2.7%)	**5 (1.1%)**
Denmark	1 (0.8%)	0 (0.0%)	1 (0.5%)	0 (0.0%)	0 (0.0%)	**2 (0.4%)**
Estonia	1 (0.8%)	0 (0.0%)	2 (1.1%)	0 (0.0%)	1 (1.4%)	**4 (0.9%)**
Finland	0 (0.0%)	4 (10.3%)	2 (1.1%)	0 (0.0%)	2 (2.7%)	**8 (1.7%)**
France	5 (4.0%)	2 (5.1%)	30 (16.4%)	9 (20.9%)	9 (12.3%)	**55 (11.9%)**
Germany	15 (12.0%)	1 (2.6%)	23 (12.6%)	2 (4.7%)	1 (1.4%)	**42 (9.1%)**
Greece	10 (8.0%)	1 (2.6%)	3 (1.6%)	0 (0.0%)	12 (16.4%)	**26 (5.6%)**
Hungary	0 (0.0%)	0 (0.0%)	4 (2.2%)	0 (0.0%)	2 (2.7%)	**6 (1.3%)**
Ireland	6 (4.8%)	2 (5.1%)	4 (2.2%)	3 (7.0%)	1 (1.4%)	**16 (3.5%)**
Italy	7 (5.6%)	2 (5.1%)	12 (6.6%)	5 (11.6%)	6 (8.2%)	**32 (6.9%)**
Latvia	0 (0.0%)	0 (0.0%)	2 (1.1%)	0 (0.0%)	0 (0.0%)	**2 (0.4%)**
Lithuania	1 (0.8%)	0 (0.0%)	0 (0.0%)	1 (2.3%)	0 (0.0%)	**2 (0.4%)**
Luxembourg	1 (0.8%)	0 (0.0%)	2 (1.1%)	2 (4.7%)	0 (0.0%)	**5 (1.1%)**
Malta	9 (7.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.4%)	**10 (2.2%)**
Netherlands	4 (3.2%)	5 (12.8%)	21 (11.5%)	1 (2.3%)	10 (13.7%)	**41 (8.9%)**
Norway	5 (4.0%)	0 (0.0%)	2 (1.1%)	0 (0.0%)	0 (0.0%)	**7 (1.5%)**
Poland	10 (8.0%)	1 (2.6%)	3 (1.6%)	0 (0.0%)	5 (6.8%)	**19 (4.1%)**
Portugal	15 (12.0%)	6 (15.4%)	3 (1.6%)	2 (4.7%)	0 (0.0%)	**26 (5.6%)**
Romania	2 (1.6%)	1 (2.6%)	9 (4.9%)	1 (2.3%)	1 (1.4%)	**14 (3.0%)**
Slovakia	1 (0.8%)	0 (0.0%)	2 (1.1%)	0 (0.0%)	1 (1.4%)	**4 (0.9%)**
Slovenia	1 (0.8%)	2 (5.1%)	2 (1.1%)	0 (0.0%)	1 (1.4%)	**6 (1.3%)**
Spain	1 (0.8%)	4 (10.3%)	26 (14.2%)	10 (23.3%)	3 (4.1%)	**51 (11.0%)**
Sweden	8 (6.4%)	1 (2.6%)	1 (0.5%)	0 (0.0%)	1 (1.4%)	**4 (0.9%)**
UK	0 (0.0%)	0 (0.0%)	6 (3.3%)	2 (4.7%)	1 (1.4%)	**9 (1.9%)**
Total	**125 (100.0%)**	**39 (100.0%)**	**183 (100.0%)**	**43 (100.0%)**	**73 (100.0%)**	**463 (100.0%)**

Source: *Authors' own calculations, based on the IAM database, 2021*

Table A12: Cluster breakdown by sector: distribution of disputes across clusters

Code	Economic area	Cluster A	Cluster B	Cluster C	Cluster D	Cluster E	Total
A	Agriculture/forestry/fishing	0 (0.0%)	0 (0.0%)	2 (28.6%)	1 (14.3%)	4 (57.1%)	**7 (100.0%)**
B/C/D/E	Mining/manufacturing/utilities	21 (17.9%)	4 (3.4%)	69 (59.0%)	13 (11.1%)	10 (8.5%)	**117 (100.0%)**
F	Construction	3 (42.9%)	0 (0.0%)	3 (42.9%)	0 (0.0%)	1 (14.3%)	**7 (100.0%)**
G	Wholesale/retail	13 (41.9%)	0 (0.0%)	9 (29.0%)	7 (22.6%)	2 (6.5%)	**31 (100.0%)**
H	Transport/storage	44 (28.9%)	20 (13.2%)	58 (38.2%)	15 (9.9%)	15 (9.9%)	**152 (100.0%)**
I	Accommodation/food service activities	1 (14.3%)	0 (0.0%)	5 (71.4%)	0 (0.0%)	1 (14.3%)	**7 (100.0%)**
J	Information/communication	8 (57.1%)	1 (7.1%)	3 (21.4%)	2 (14.3%)	0 (0.0%)	**14 (100.0%)**
K	Financial/insurance activities	6 (46.2%)	0 (0.0%)	5 (38.5%)	1 (7.7%)	1 (7.7%)	**13 (100.0%)**
L/M/N	Business services	4 (25.0%)	1 (6.3%)	9 (56.3%)	1 (6.3%)	1 (6.3%)	**16 (100.0%)**
O	Public administration	7 (25.9%)	3 (11.1%)	7 (25.9%)	1 (3.7%)	9 (33.3%)	**27 (100.0%)**
P	Education	6 (27.3%)	3 (13.6%)	5 (22.7%)	0 (0.0%)	8 (36.4%)	**22 (100.0%)**
Q	Human health/social work activities	12 (30.8%)	6 (15.4%)	14 (35.9%)	2 (5.1%)	5 (12.8%)	**39 (100.0%)**
R/S/T/U	Other services	3 (50.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (50.0%)	**6 (100.0%)**
	Total	**128 (27.9%)**	**38 (8.3%)**	**189 (41.3%)**	**43 (9.4%)**	**60 (13.1%)**	458 (100.0%)

Source: *Authors' own calculations, based on the IAM database, 2021*

Table A13: Cluster breakdown by sector: distribution of disputes within clusters

Code	Economic area	Cluster A	Cluster B	Cluster C	Cluster D	Cluster E	Total
A	Agriculture/forestry/fishing	0 (0.0%)	0 (0.0%)	2 (1.1%)	1 (2.3%)	4 (6.7%)	**7 (1.5%)**
B/C/D/E	Mining/manufacturing/utilities	21 (16.4%)	4 (10.5%)	69 (36.5%)	13 (30.2%)	10 (16.7%)	**117 (25.5%)**
F	Construction	3 (2.3%)	0 (0.0%)	3 (1.6%)	0 (0.0%)	1 (1.7%)	**7 (1.5%)**
G	Wholesale/retail	13 (10.2%)	0 (0.0%)	9 (4.8%)	7 (16.3%)	2 (3.3%)	**31 (6.8%)**
H	Transport/storage	44 (34.4%)	20 (52.6%)	58 (30.7%)	15 (34.9%)	15 (25.0%)	**152 (33.2%)**
I	Accommodation/food service activities	1 (0.8%)	0 (0.0%)	5 (2.6%)	0 (0.0%)	1 (1.7%)	**7 (1.5%)**
J	Information/communication	8 (6.3%)	1 (2.6%)	3 (1.6%)	2 (4.7%)	0 (0.0%)	**14 (3.1%)**
K	Financial/insurance activities	6 (4.7%)	0 (0.0%)	5 (2.6%)	1 (2.3%)	1 (1.7%)	**13 (2.8%)**
L/M/N	Business services	4 (3.1%)	1 (2.6%)	9 (4.8%)	1 (2.3%)	1 (1.7%)	**16 (3.5%)**
O	Public administration	7 (5.5%)	3 (7.9%)	7 (3.7%)	1 (2.3%)	9 (15.0%)	**27 (5.9%)**
P	Education	6 (4.7%)	3 (7.9%)	5 (2.6%)	0 (0.0%)	8 (13.3%)	**22 (4.8%)**
Q	Human health/social work activities	12 (9.4%)	6 (15.8%)	14 (7.4%)	2 (4.7%)	5 (8.3%)	**39 (8.5%)**
R/S/T/U	Other services	3 (2.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (5.0%)	**6 (1.3%)**
	Total	**128 (100.0%)**	**38 (100.0%)**	**189 (100.0%)**	**43 (100.0%)**	**60 (100.0%)**	458 (100.0%)

Source: *Authors' own calculations, based on the IAM database, 2021*

Table A14: A representation of five typologies across countries showing (the lack of) relationships, EU27 and UK

Country	Varieties of capitalism	Union density	Strike intensity	Industrial democracy	Collective bargaining
Austria					
Belgium					
Bulgaria					
Croatia					
Cyprus					
Czechia					
Denmark					
Estonia					
Finland					
France					
Germany					
Greece*					
Hungary					
Ireland					
Italy					
Latvia					
Lithuania					
Luxembourg					
Malta					
Netherlands					
Poland					
Portugal					
Romania					
Slovakia					
Slovenia					
Spain					
Sweden					
UK					

Varieties of capitalism categories
Social democratic
Liberal
Corporate
Mediterranean
Transitional

Union density categories
High (>50%)
Moderate (21–49%)
Low (<20%)

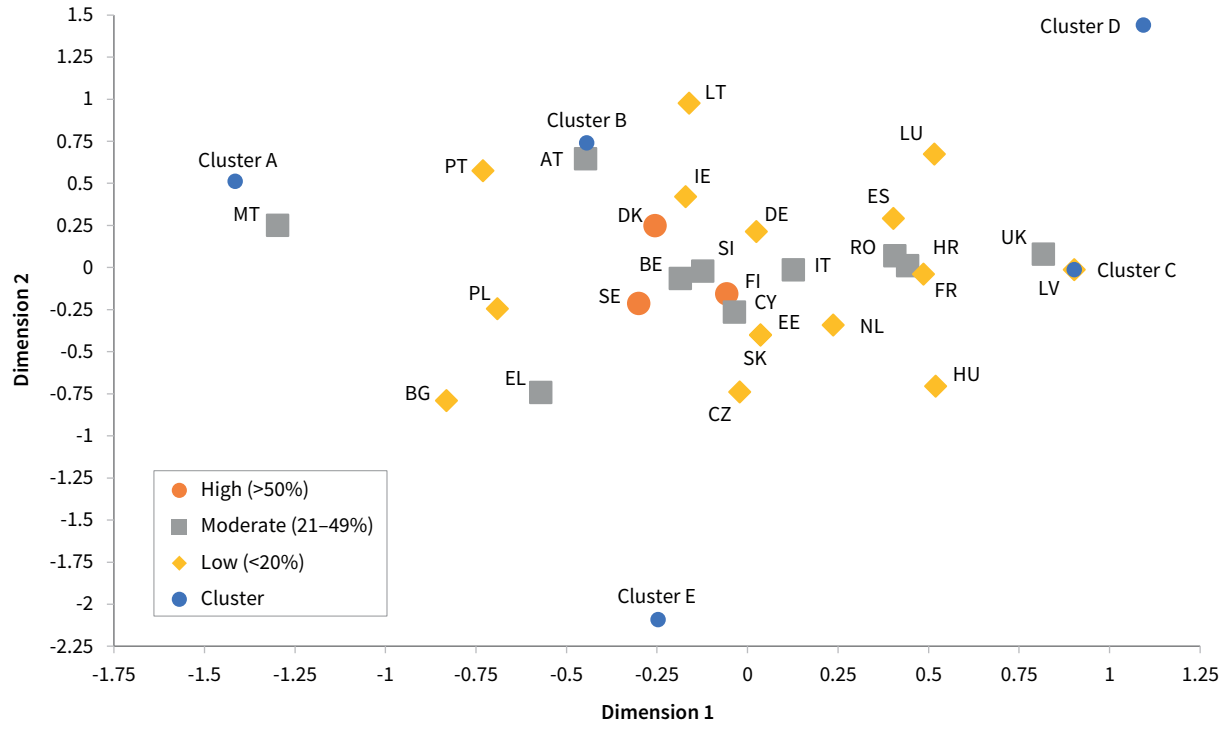
Industrial democracy categories
Corporatist
Voluntary associational
State-framed governance
Statutory company-based
Voluntary company-based
Market-oriented governance

Strike intensity categories
High (>50 days per 1,000 employees)
Medium (26–49 days per 1,000 employees)
Low (<25 days per 1,000 employees)
Unclassified

Collective bargaining categories
Predominantly company-level bargaining
Coexistence of sector- and company-level bargaining
Predominantly sector-level or higher level bargaining
Predominantly articulated bargaining

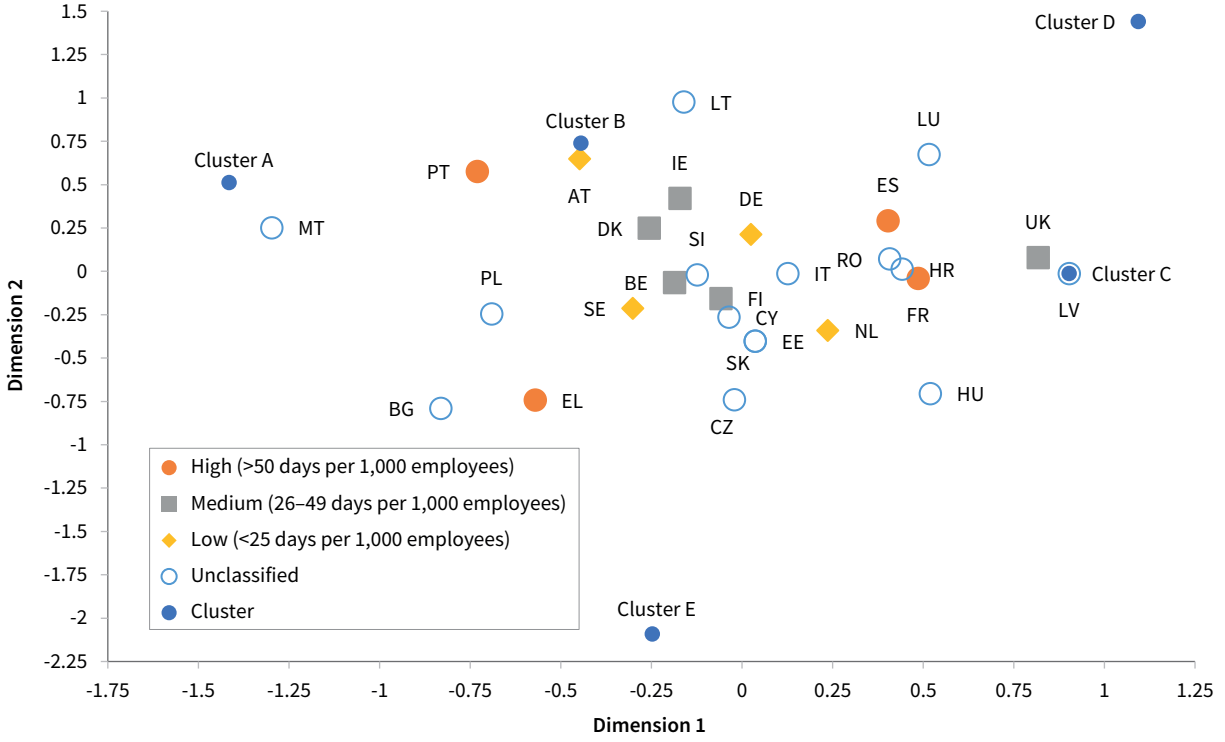
Note: *Greece is the only country that experienced a change in cluster classification between the two periods analysed for the industrial democracy typology (2008–2012 and 2013–2017).*
Source: *Authors' own calculations, based on the IAM database, 2021*

Figure A2: Relating Eurofound's typology of labour disputes to the union density typology, EU27 and UK



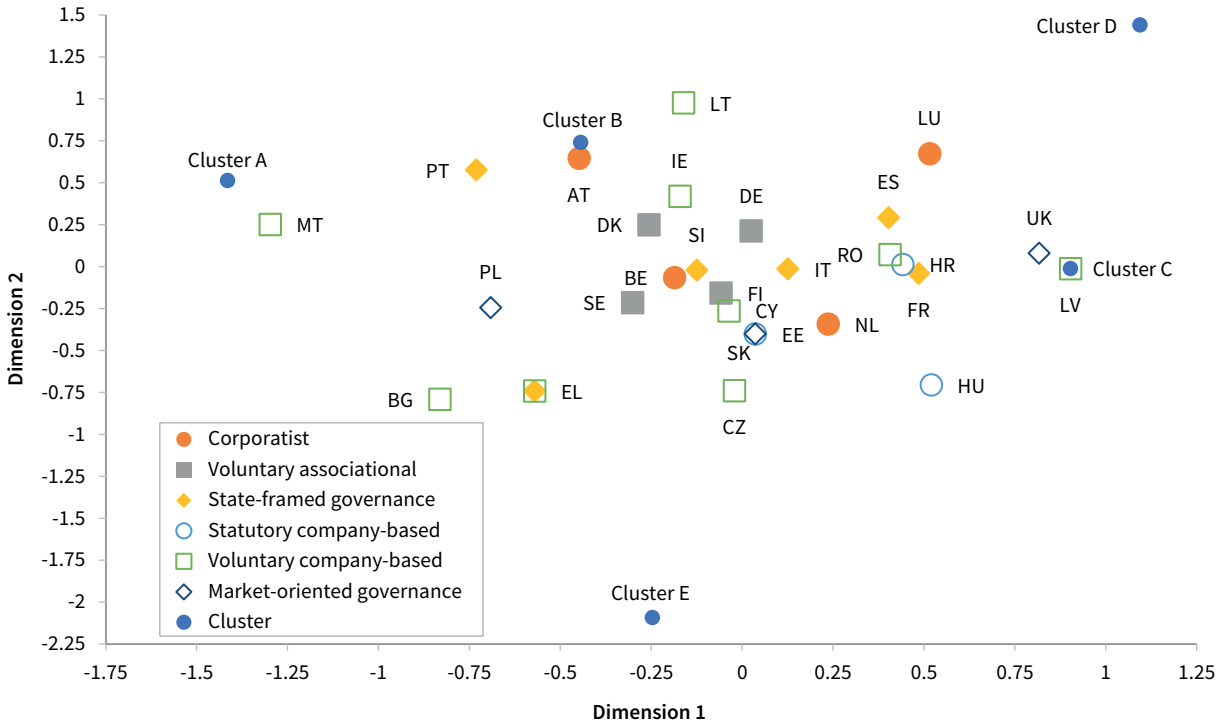
Source: *Authors' own calculations, based on the IAM database, 2021*

Figure A3: Relating Eurofound's typology of labour disputes to the intensity of strike activity typology, EU27 and UK



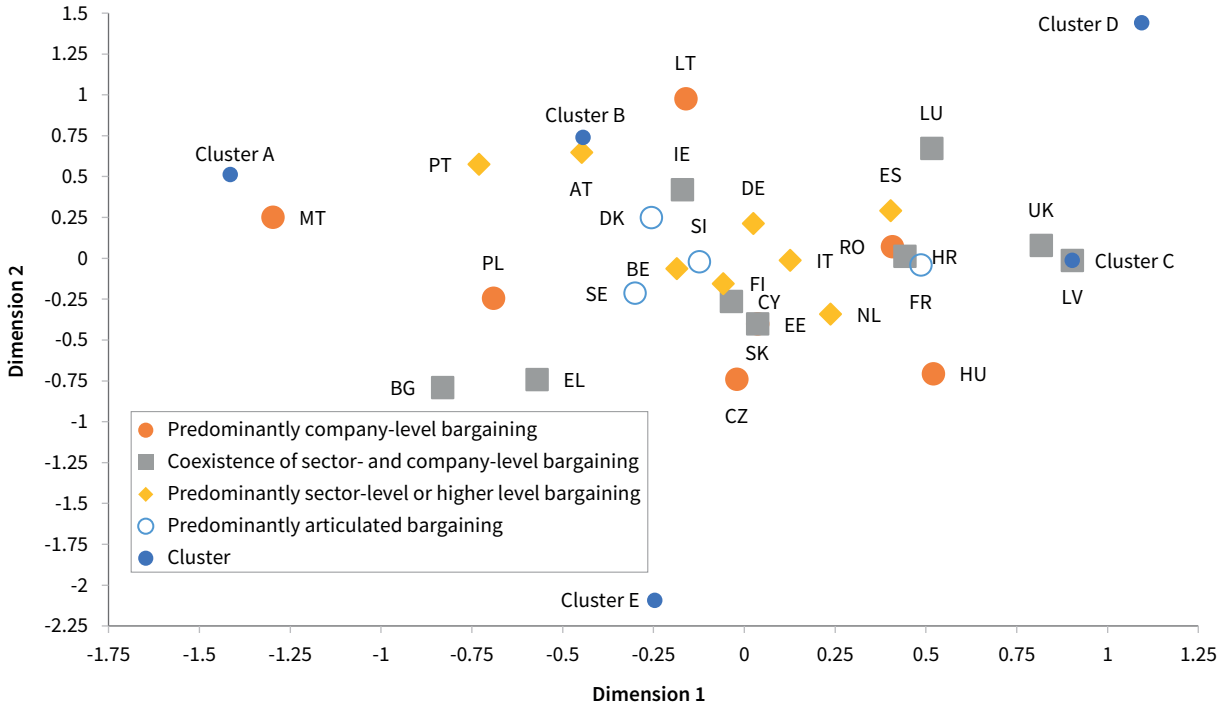
Source: *Authors' own calculations, based on the IAM database, 2021*

Figure A4: Relating Eurofound's typology of labour disputes to the industrial democracy typology, EU27 and UK



Source: *Authors' own calculations, based on the IAM database, 2021*

Figure A5: Relating Eurofound's typology of labour disputes to the collective bargaining typology, EU27 and UK



Source: *Authors' own calculations, based on the IAM database, 2021*

Annex 2: Details of methodology used for exploration of data quality

The data on work stoppages collected by national statistical offices and collated by the ILO are available on the ILO website (https://ilostat.ilo.org/topics/work-stoppages/). Data are available on strikes and lockouts in terms of (i) their number, (ii) the number of workers involved and (iii) the number of days not worked. Data are not available in a uniform fashion, with some countries not providing data at all, some providing data from only several years previously and some not providing a breakdown by sector. However, it is possible to aggregate the ILO data across countries, using the most recent year available for each country, and arrive at the number of strikes and lockouts associated with each sector of economic activity, along with the number of workers involved and the number of days not worked. Therefore, while the definitions used by the ILO and the collection methods used for the IAM prevent direct comparisons, it is possible to use the ILO tabulation as a proxy against which the IAM database can be compared.

For each of the 471 labour disputes in the IAM database available for analysis, the country and sectors of economic activity involved were extracted (the latter were available at NACE Rev. 2 level 1). With just 18 disputes being associated with more than one sector (17 were associated with two sectors and 1 was associated with three sectors), any concerns regarding double counting can be safely ignored. Combined, the disputes gave 978 industrial action events for which different sectors were affected by realised industrial action events, enabling comparisons to be made with the number of strikes and lockouts recorded in the ILO data. Data on the number of workers involved in each industrial action event were frequently unavailable, reflecting the difficulty in gathering this information. While around two-thirds of the 978 occasions lacked information on the actual number of workers involved directly or indirectly, the database field that was populated with a number of range options (namely from a series of multiple-choice options) provided more data, with only two-fifths of the events lacking such data. While lacking such data cannot be considered optimal, this was a considerable improvement on the availability of data from the other database fields and, by using the mid-points of the ranges, gave a means of approximately quantifying the number of workers involved in industrial action events in each sector and hence a way of comparing the IAM database with the ILO data. Figures for the number of days not worked were approximated by multiplying the estimated numbers of workers involved by the duration of the industrial action events. While these approaches are considerably less optimal than having more reliable data recorded, they nonetheless allowed broad comparisons with the ILO data to be made. The results of these comparisons are presented and discussed in Chapter 2.

Annex 3: Details of methodology used for assessing reliability of indicators

To assess the reliability of the indicators, the analysis used the categorical principal components analysis (CATPCA) procedure in IBM SPSS statistics software as outlined below, following the recommendations of Linting and van der Kooij (2012).

1. The first model fitted was used to assess the measurement level that was appropriate for each of the potential indicators in the CATPCA.
2. A second model, using measurement levels determined by the first model, then provided a correlation matrix for transformed variables and estimates of the amount of variance of each indicator accounted for by the model. This enabled the reliability of the indicators to be assessed and choices between competing indicators to be made.
3. A third model was then fitted, using just those indicators that were to be used in the creation of the typology of labour disputes. The continuous transformed variables created by the CATPCA process were saved so that they could be used as one possible way of constructing a typology from the indicators alongside the original indicators, which were a mix of continuous and categorical data types.

In the first CATPCA model fitted, all indicators were treated as nominal in the first instance until transformation plots were examined. Indicators that were numerical were treated as spline nominal due to the large numbers of categories involved. An analysis of the eigenvalues indicated that a four-dimensional solution was appropriate. Examining object scores showed that just one score marginally exceeded 3.5 in terms of the absolute value, indicating that no outliers needed to be removed.

Having examined the transformation plots from the first model, the measurement level for the following indicators were adjusted to be spline ordinal:

- number of employee organisations involved in the dispute
- duration of the dispute
- median duration of industrial action events in the dispute
- number of realised industrial action events in the dispute

- total number of workers involved in the dispute
- highest interval given for the number of workers involved in an industrial action event
- total days not worked in the dispute

This second model again suggested a four-dimensional solution. There were no object scores exceeding 3.5 in terms of the absolute value, indicating that no outliers needed to be removed.

The correlations between the transformed variables obtained from the second model are shown in Table A8 (Annex 1). The analysis found that the indicators associated with the number of workers involved in a dispute and the number of days not worked due to the dispute ('Total number of workers involved in the dispute' (No. of workers), 'Highest interval given for the number of workers involved in an industrial action event' (Highest interval for no. of workers) and 'Total days not worked in the dispute' (No. of days not worked)) had appreciable relationships only with the indicators 'Number of realised industrial action events in the dispute' (No. of industrial actions realised) and 'Types of realised industrial action involved in the dispute' (Mix of realised industrial action types). These relationships were not surprising, as larger disputes are likely to have more industrial action events and hence are also likely to have a wider mix of types of industrial action events. As such, the indicators associated with the number of workers involved in a dispute and the number of days not worked due to the dispute did not appear to be adding anything reliable to the information available through other indicators. Given that these indicators had appreciable relationships with the indicators 'Number of realised industrial action events in the dispute' and 'Types of realised industrial action involved in the dispute', it appeared that the latter two indicators were acting as proxies for the size of the dispute and the analysis could safely continue without the additional indicators for number of workers and number of days not worked.

The figures in Table A8 enabled identification of those pairs of indicators that were likely to be highly correlated, of which just one of each pair was selected for use when creating the typology.

- For 'Types of industrial action involved in the dispute, both realised and non-realised' (Mix of all industrial action types) and 'Types of realised industrial action involved in the dispute' (Mix of realised industrial action types), the analysis revealed a high correlation of 0.85. Table A9 shows that both indicators have the same amount of their variance accounted for by the four-dimensional solution. As a result, it was decided to opt for the indicator 'Types of realised industrial action involved in the dispute', as industrial action events that are not realised are more likely to go unreported and thus be missed in the data collection process, perhaps making the indicator 'Types of industrial action involved in the dispute, both realised and non-realised' the less reliable of the two.
- For 'Context within which the dispute exists' (Context) and 'Context within which the dispute exists, with further details of collective bargaining' (Context including collective bargaining), the analysis revealed a high correlation of 0.95. Table A9 shows that 'Context within which the dispute exists, with further details of collective bargaining' has a greater amount of its variance accounted for by the four-dimensional solution than the other indicator in this pair and hence it was decided to include this one in the set of indicators to create the typology.
- For 'Whether the dispute is countrywide or not' (Countrywide) and 'Number of NUTS 2 areas involved in the dispute' (NUTS 2 areas), the analysis revealed a high correlation of 0.70. Table A9 shows that 'Whether the dispute is countrywide or not' has a greater amount of its variance accounted for by the four-dimensional solution than the other indicator in this pair and hence it was decided to include this one in the set of indicators to create the typology.

Looking at the relationships between other indicators in Table A8, it can be seen that there are some indicators (for example, 'Whether the dispute concerns a matter of rights or a matter of interest', which is shown in Table A8 as 'Type') that have low correlations with other indicators. However, there is no reason to omit them from the set of indicators used to create the typology of labour disputes because, unlike those discussed above, there is no reason to believe that they are unreliable due to data quality issues.

Annex 4: Details of cluster analyses undertaken

The indicators cover a combination of continuous, binary, nominal and ordinal data, and cluster analysis provided the flexibility required for dealing with this mix.

To create a matrix of quantified differences (or 'distances') between the cases in the dataset (the labour disputes), considering the mixture of different measurement levels for the indicators, Gower's distance was used (Gower, 1971). This approach standardised the indicators that are measured on a continuous scale and also dealt with the binary and categorical indicators in such a way that each indicator contributed the same weight to the calculation of differences. To deal with the related indicators 'Whether the dispute targets government', 'Whether the dispute targets a company' and 'Whether the dispute targets a body that is neither government nor a company', these

indicators were each given a weight of a third of the other indicators so that these binary variables did not have undue influence on the calculations of the differences.

Ward's method for clustering is one of the most commonly used and this was employed alongside other commonly used clustering methods, namely the average linkage between groups and complete linkage. A dendrogram was obtained for each of the clustering methods, which was assessed to determine how well it had identified groups of labour disputes in terms of the number of clusters identified and the number of labour disputes associated with each of the clusters.

Additionally, cluster analysis was undertaken using standardised versions of the continuous transformed variables obtained from the CATPCA analysis in the section 'Creating potential indicators' of Chapter 2. The distance matrix was calculated using the commonly used squared Euclidean distance measure and, again, Ward's method, the average linkage between groups and complete linkage were all used.

A dendrogram resulting from the application of Ward's method to the distance matrix calculated from the indicators is shown in Figure A1. From this, it can be seen that the clustering of the labour disputes occurs frequently as the joining height (the vertical axis) increases, until a height of around 1.4. There is then a gap (indicated by the dashed line) at which no clustering occurs and six clusters exist. The largest cluster contains 183 disputes and the smallest contains 43, a sufficient number to suggest that meaningful summaries of the clusters can be derived and the typology described.

When the average linkage between groups was used instead of Ward's method, the solution suggested that four clusters existed, with one cluster containing 441 of the 463 labour disputes and the other clusters containing just 15, 6 and 1 dispute(s). When complete linkage was used, three clusters were suggested, with again one cluster containing the vast majority of disputes (401 of the 463) while another contained 58 disputes and the third contained just 4 disputes.

Using the transformed variables from the CATPCA, Ward's method best identified just two clusters, one with 419 disputes and one with 44. Using the average linkage between groups, four clusters were identified, with the largest containing 455 of the 463 labour disputes and no other cluster containing more than 4 disputes. When complete linkage was used, five clusters were identified, with one dominating (having 313 of the 463 labour disputes) and, while three of the others had reasonable numbers of disputes, one contained just 2 disputes.

In conclusion, the only cluster analysis that gives a meaningful breakdown of the labour disputes (that is, has a reasonable number of clusters, with each of a reasonable size and none dominating) is that using Ward's method with the original indicators. The other clustering methods gave results in which one cluster dominated and/or other clusters were too small to provide meaningful summaries for the typology.

Getting in touch with the EU

In person

All over the European Union there are hundreds of Europe Direct information centres. You can find the address of the centre nearest you at: https://european-union.europa.eu/contact-eu_en

On the phone or by email

Europe Direct is a service that answers your questions about the European Union. You can contact this service:

– by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls)

– at the following standard number: +32 22999696

– by email via: https://european-union.europa.eu/contact-eu_en

Finding information about the EU

Online

Information about the European Union in all the official languages of the EU is available on the Europa website at: https://europa.eu

EU publications

You can download or order free and priced EU publications at: https://op.europa.eu/publications
Multiple copies of free publications may be obtained by contacting Europe Direct or your local information centre (see https://european-union.europa.eu/contact-eu_en).

EU law and related documents

For access to legal information from the EU, including all EU law since 1952 in all the official language versions, go to EUR-Lex at: http://eur-lex.europa.eu

Open data from the EU

The EU Open Data Portal (http://data.europa.eu/euodp) provides access to datasets from the EU. Data can be downloaded and reused for free, both for commercial and non-commercial purposes.

TJ-05-21-371-EN-N

In recent years, apart from some intermittent spikes, there has been a general decrease in industrial action across the EU Member States. During the COVID-19 pandemic, this trend has continued, with the most significant labour disputes not surprisingly occurring in the human health and social services sector, the education sector and the transport and logistics sector. This report analyses the data collected in 2018–2019 by Eurofound during the piloting of its Industrial Action Monitor (IAM) database. Using cluster analysis, the research classified industrial action in Europe into five categories: national disputes of interest and rights, sometimes involving different forms of employment; extended disputes about collective pay agreements; localised disputes about employment problems, working time and restructuring, with short work stoppages; localised disputes about workers' rights and grievances over company policies; and disputes concerning public policies.

In terms of specific issues, problems over pay accounted for over 40% of disputes, employment problems accounted for 20%, other aspects of working conditions accounted for 16% and protests accounted for 13%. Noting the lack of complete data on industrial action in Europe, the analysis points to the need for a systematic collection of empirical evidence in the future to provide a sound basis for comparative analysis.

The European Foundation for the Improvement of Living and Working Conditions (Eurofound) is a tripartite European Union Agency established in 1975. Its role is to provide knowledge in the area of social, employment and work-related policies according to Regulation (EU) 2019/127.

Publications Office
of the European Union

ISBN 978-92-897-2241-4
doi:10.2806/060345